Ref. Certif. No.

SE-101780

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Circuit breakers
Name and address of the applicant	LEGRAND SNC 128 avenue du Maréchal de Lattre, de Tassigny, FR-87045 Limoges cedex, FRANCE
Name and address of the manufacturer	Same as applicant
Name and address of the factory Note: *When more than one factory, please report on page 2*	Bticino S.P.A Via Folzoni 5, IT-24052 Azzano San Paolo, Bergamo. ITALY.
Ratings and principal characteristics	U_e=220÷690V (50÷60Hz); I_n=40÷250A U_i=800V, U_{imp}= 8kV, Pattern No. 3 and 4
Trademark (if any)	Legrand
Customer's Testing Facility (CTF) Stage used	CTF Stage 2
Model / Type Ref.	DPX^3 250 (Electronic release)
Additional information (if necessary may also be reported on page 2)	See page 2
A sample of the product was tested and found to be in conformity with	IEC 60947-2:2016
As shown in the Test Report Ref. No. which forms part of this Certificate	1909324STO-001

This CB Test Certificate is issued by the National Certification Body

Intertek Semko AB
Torshamnsgatan 43
Box 1103
SE-164 22 Kista, Sweden

intertek

Signature:

Date: 15 July, 2020

Leif Mattsson

Additional information (if necessary)

DPX³ 250 (Pastel Orange label) Electronic release

U_e (V)	I_{cm}(kA)	I_{cu} (kA)	I_{cs} (kA)	I_{cw} (kA)
240	84,0	40,0	40,0	N/A
415	52,5	25,0	25,0	N/A
440	40,0	20,0	20,0	N/A
500	17,0	10,0	10,0	N/A
690	13,6	8,0	8,0	N/A

DPX³ 250 (Traffic Red label) Electronic release

U_e (V)	I_{cm}(kA)	I_{cu} (kA)	I_{cs} (kA)	I_{cw} (kA)
240	132,0	60,0	60,0	N/A
415	75,6	36,0	36,0	N/A
440	63,0	30,0	30,0	N/A
500	52,5	25,0	25,0	N/A
690	32,0	16,0	16,0	N/A

DPX³ 250 (Blue Lilac label) Electronic release

U_e (V)	I_{cm}(kA)	I_{cu} (kA)	I_{cs} (kA)	I_{cw} (kA)
240	176,0	80,0	80,0	N/A
415	105,0	50,0	50,0	N/A
440	84,0	40,0	40,0	N/A
500	63,0	30,0	30,0	N/A
690	36,0	18,0	18,0	N/A

DPX³ 250 (Light Blue label) Electronic release

U_e (V)	I_{cm}(kA)	I_{cu} (kA)	I_{cs} (kA)	I_{cw} (kA)
240	220,0	100,0	100,0	N/A
415	154,0	70,0	70,0	N/A
440	132,0	60,0	60,0	N/A
500	84,0	40,0	40,0	N/A
690	40,0	20,0	20,0	N/A

Date: 15 July, 2020

Signature:

Test Report issued under the responsibility of:

intertek
Total Quality. Assured.

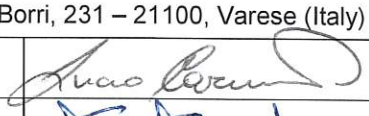
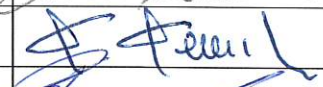
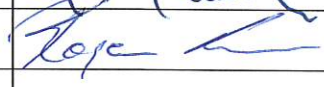
TEST REPORT
IEC 60947-2
Low-voltage switchgear and controlgear - Part 2: Circuit-breakers

Report Number. ..... :	**1909324STO-001**
Date of issue ..... :	**2019/06/28**
Total number of pages ..... :	**210**
Name of Testing Laboratory preparing the Report ..... :	Intertek Semko AB Torshamnsgatan 43, Box 1103 SE-164 22 Kista Sweden
Applicant's name ..... :	Legrand SA
Address ..... :	128, Avenue du Marechal-de-Lattre-de-Tassigny 87045 Limoges Cedex (France)
Test specification:	
Standard ..... :	IEC 60947-2:2016
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60947_2H
Test Report Form(s) Originator .... :	DEKRA Certification B.V.
Master TRF ..... :	Dated 2017-04

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

General disclaimer:
The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description .....:	Three and Four poles Moulded Case Circuit Breaker
Trade Mark .....:	Legrand
Manufacturer .....:	Legrand SA 128, Avenue du Marechal-de-Lattre-de-Tassigny 87045 Limoges Cedex (France)
Model/Type reference .....:	DPX^3 250 (Electronic release)
Ratings .....:	Ue=220÷690V (50÷60Hz); In=40÷250A Ui=800V, Uimp= 8kV, Pattern No. 3 and 4 (see page 9 for general view of the serie)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☐ **CB Testing Laboratory:**		
Testing location/ address.....:		
Tested by (name, function, signature).....:		
Approved by (name, function, signature)...:		
☐ **Testing procedure: CTF Stage 1:**		
Testing location/ address.....:		
Tested by (name, function, signature):		
Approved by (name, function, signature)...:		
☐ **Testing procedure: CTF Stage 2:**		
Testing location/ address.....:		
Tested by (name + signature).....:		
Witnessed by (name, function, signature) .:		
Approved by (name, function, signature)...:		
☒ **Testing procedure: CTF Stage 3:**		
☐ **Testing procedure: CTF Stage 4:**		
Testing location/ address.....:	Bticino S.p.a. – Via dei Folzoni, 5 – 24052, Azzano San Paolo, Bergamo (Italy) Bticino S.p.a. – Viale Borri, 231 – 21100, Varese (Italy)	
Tested by (name, function, signature):	**Lucio Carminati** Laboratory Manager	
Witnessed by (name, function, signature) .:	**Sergio Seminati** ACAE Inspector	
Approved by (name, function, signature)...:	**Roger Larson** Intertek Inspector	
Supervised by (name, function, signature) :		

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

Attached 1: Test on Neutral pole for Test Sequence II (Ics=Icu)
Attached 2: Application test voltage
Attached 3: Test Annex F
Attached 4: Instrumental measurement uncertainty
Attached 5: List of drawings

Summary of testing:

The test report is based on test report 1301945-1 issued 2013/03/04 by Intertk Semko AB. Additional test have been done in comply with the new standard edition.

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

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

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

☐ **Alternative program not applicable**

Tests performed (name of test and test clause):		**Testing location:**
§ 8.3.3	: Sequence I	Bticino
§ 8.3.4	: Sequence II/III	Bticino/Semko
§ C	: Annex C	Bticino/Semko
§ H	: Annex H	Bticino/Semko
§ F	: Annex F	Bticino
§ 8.2.4	: Constructional requirements	Bticino

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

This product has been tested according to IEC 60947-2: 2016+AMD1:2019

☒ **The product fulfils the requirements of IEC 60947-2: 2016+AMD1:2019**

Copy of marking plate:

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

The labels here below are related to the maximum rated current of all I_{cu} levels with “version measure” included.

N° Poles	In (A)	Test sequences and number of samples						
		I	II-III	III	Annex C	Annex H	Annex F	Constr. Req.
4	250	1-2	5-7-8-9-11-12	N/A	17	17	20-21-22	19
4	40		6-10	N/A	18			
3	250	3-4	13-15-16	N/A				
3	40		14	N/A				

Test item particulars: test item vs. test requirements	
3. Classification	
3.1. Utilization category: (A or B). ..... :	A
3.2. Interruption medium: (air, vacuum, gas break) ..... :	Air
3.3. Design: (open construction, moulded case)..... ..... :	Moulded case
3.4. Method of controlling the operation mechanism: (dependent manual, independent manual, dependent power, independent power, stored energy operation) ..... :	Independent manual
3.5. Suitability for isolation: (suitable, not suitable) .... :	Suitable
3.6. Provision for maintenance: (maintainable, non-maintainable) ..... :	Non Maintainable
3.7. Method of installation: (fixed, plug-in, withdrawable .... :	Fixed
3.8. Degree of protection of enclosure: (IP code) ..... :	IP30
4.7. Type of release (thermo-magnetic / electronic) ..... :	Electronic
4.8. Integral fuses (integrally fused circuit-breakers) Type and characteristics of SCPD..... :	N/A
7.3 Electromagnetic compatibility (EMC) Environment A or B ..... :	B
Circuit-breaker for use on phase-earthed systems..... :	Yes
Circuit-breaker for use in IT systems..... :	Yes
Rated and limiting values, main circuit .... :	
- rated operational voltage: U_e (V) ..... :	220÷690
- rated insulation voltage: U_i (V)..... :	800
- rated impulse withstand voltage: U_{imp} (kV)..... :	8.00
- rated current: I_n (A)..... :	40–100–160–250
- kind of current..... :	a.c.
- conventional free air thermal current: I_{th} (A)..... :	40–100–160–250
- conventional enclosed thermal current: I_{the} (A) ..... :	N/A
- current rating for four-pole circuit-breakers: (A) ..... :	40–100–160–250
- number of poles ..... :	3 and 4
- rated frequency: (Hz) ..... :	50.0÷60.0
- integral fuses (rated values) ..... :	N/A
Rated duty :	
- eight-hour duty ..... :	N/A
- uninterrupted duty: I_u (A)..... :	40–100–160–250
Short-circuit characteristic :	

rated short-time making capacity: I_{cm} (kA)..... :	220 at 240V; 154 at 415V; 132 at 440V; 84,0 at 500V; 40,0 at 690V
rated ultimate short-circuit breaking capacity: I_{cu} (kA) .. .. :	100 at 240V; 70,0 at 415V; 60,0 at 440V; 40,0 at 500V; 20,0 at 690V
rated service short-circuit breaking capacity: I_{cs} (kA)..... :	100 at 240V; 70,0 at 415V; 60,0 at 440V; 40,0 at 500V; 20,0 at 690V
rated short-time withstand current: I_{cw} (kA/s) ..... :	N/A
Selectivity category (A or B)..... :	A
Control circuits :	
Electrical control circuits :	
- kind of current: (AC, DC) ..... :	N/A
- rated frequency: (Hz) ..... :	N/A
- rated control circuit voltage: U_c (nature, frequency, V) ... :	N/A
- rated control supply voltage: U_s (nature, frequency V) ... :	N/A
Air supply control circuits: (pneumatic or electro-pneumatic) :	N/A
- rated pressure and its limit..... :	N/A
- volumes of air, at atmospheric pressure, required for each closing and each opening operation..... :	N/A
Auxiliary circuits :	
Rated and limiting values, auxiliary circuits..... :	N/A
- rated operational voltage U_e (V) ..... :	N/A
- rated insulation voltage: U_i (V)..... :	N/A
- rated operational current: I_e (A) ..... :	N/A
- kind of current..... :	N/A
- rated frequency: (Hz) ..... :	N/A
- number of circuits..... :	N/A
- number and kind of contact elements ..... :	N/A
- rated uninterrupted current: I_u (A)..... :	N/A
- utilization category: (AC, DC, current and voltage)..... :	N/A
Short-circuit characteristic :	N/A
- Rated conditional short-circuit current (kA)..... :	N/A
- kind of protective device ..... :	N/A

Releases :	
1) shunt release ..... :	Yes
2) Over-current release ..... :	Yes
a) instantaneous ..... :	Yes
b) definite time delay ..... :	N/A
c) inverse time delay ..... :	Yes
- independent of previous load ..... :	N/A
- dependent on previous load; (for example thermal type release) ..... :	Yes
3) Undervoltage release (for opening) ..... :	Yes
4) Other releases ..... :	N/A
Characteristics :	
1) Shunt release and undervoltage release (for opening) .. :	Yes/Yes
- rated control circuit voltage: U_c (nature, frequency, V) ... :	Shunt 12V-24V-48V / 100÷130V-200÷277V-380÷480V Undervoltage 12V-24V-48V-100÷130V / 200÷240V-277V-380÷415V-440÷480V
- kind of current ..... :	a.c. – d.c.
- rated frequency: (if AC) ..... :	50.0÷60.0Hz
2) Over-current release ..... :	Yes
- rated current ..... :	40-100-160-250A
- kind of current ..... :	a.c.
- rated frequency: (if AC) ..... :	50.0÷60.0Hz
- current setting (or range of settings) ..... :	(0.4÷1)xI_n–Overload (1.5÷10)xI_r– Short Circuit
- time settings (or range of settings) ..... :	3-5-10-15-s @6I_r–Overload 0-0.1-0.2-0.3-0.4-0.5s–Short Circuit

Classification of installation and use..... :	Fixed installation
Supply Connection ..... :	With cables with terminal unit/lug
..... :	
..... :	
Possible test case verdicts:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	2013/02/11 and 2019/05/05
Date (s) of performance of tests ..... :	From 2013/02/12 to 2013/03/01 and from 2019/05/09 to 2019/05/31
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	☒ **Yes** ☐ **Not applicable**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	Bticino S.p.a. – Via dei Folzoni, 5 – 24052, Azzano San Paolo, Bergamo (Italy)

General product information:

DPX³ 250 (Light Blue label) represent the higher power breaking capacity of an homogeneous series of circuit breaker with the same constructional characteristics.

As follow, the common and detailed short-circuit characteristics

The label color after the denomination identify the level of short-circuit breaking capacity (I_{cu})

Common characteristics:

Voltage ratings	U_e=220-690V (50-60Hz)
Rated current	I_n=100-250A
Current setting	Adjustable

Short-circuit characteristics:

DPX³ 250 (Pastel Orange label)

U_e (V)	I_{cm} (kA)	I_{cu} (kA)	I_{cs} (kA)	I_{cw} (kA)
240	84,0	40,0	40,0	N/A
415	52,5	25,0	25,0	N/A
440	40,0	20,0	20,0	N/A
500	17,0	10,0	10,0	N/A
690	13,6	8,00	8,00	N/A

DPX³ 250 (Trafic Red label)

U_e (V)	I_{cm} (kA)	I_{cu} (kA)	I_{cs} (kA)	I_{cw} (kA)
240	132	60,0	60,0	N/A
415	75,6	36,0	36,0	N/A
440	63,0	30,0	30,0	N/A
500	52,5	25,0	25,0	N/A
690	32,0	16,0	16,0	N/A

Short-circuit characteristics:

DPX³ 250 (Blue Lilac label)

U_e (V)	I_{cm} (kA)	I_{cu} (kA)	I_{cs} (kA)	I_{cw} (kA)
240	176	80,0	80,0	N/A
415	105	50,0	50,0	N/A
440	84,0	40,0	40,0	N/A
500	63,0	30,0	30,0	N/A
690	36,0	18,0	18,0	N/A

DPX³ 250 (Light Blue label)

U_e (V)	I_{cm} (kA)	I_{cu} (kA)	I_{cs} (kA)	I_{cw} (kA)
240	220	100	100	N/A
415	154	70,0	70,0	N/A
440	132	60,0	60,0	N/A
500	84,0	40,0	40,0	N/A
690	40,0	20,0	20,0	N/A

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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:	40 - 100 - 160 - 250A	P
	- suitability for isolation, if applicable, with the symbol 	Yes	P
	- indication of the open and closed position: with ○ and I respectively, if symbols are used	Yes	P
b)	Marking on equipment not needed to be visible after mounting:		
	- manufacturer's name or trademark	Legrand	P
	- type designation or serial number	DPX^3 250 (Light Blue label)	P
	- IEC 60947-2 if the manufacturer claims compliance with this standard.	Yes	P
	- selectivity category	A	P
	- rated operational voltage(s) U_e	220 ÷ 690V	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 marked on the circuit-breaker immediately following these values of rated voltage	Circuit-breaker have been tested according to Annex H	P
	-rated impulse withstand voltage (U_{imp});	8.00kV	P
	- value (or range) of the rated frequency and/or the indication DC (or symbol)	50,0 ÷ 60,0 Hz	P
	- rated service short-circuit breaking capacity. I_{cs}	100%	P
	- rated ultimate short-circuit breaking capacity. I_{cu}	100kA-240V;70kA-415V; 60kA-440V; 40kA-500V; 20kA-690V	P
	- rated short-time withstand current, (Icw) and associated short-time delay, for utilization category B		N/A
	- line and load terminals, unless their connection is immaterial	Unmarked terminals	P
	- 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

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	- ref. temperature for non-compensated thermal releases, if different from 30°C	40°C	P
	- range of the current setting (I_r) of adjustable overload release	Adjustable: (0.4÷1)xI_n	P
	- value / range of the rated instantaneous short-circuit current setting (I_i), fixed or adjustable	Adjustable: (1.5÷10)xI_r	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 (I_{cm}) (if higher than specified in 4.3.5.1)	See 4.3.5.1	P
	- rated insulation voltage. (U_i) if higher than the maximum rated operational voltage)	800V	P
	- rated impulse withstand voltage (U_{imp}), when declared.	8.00kV	P
	- pollution degree if other than 3		P
	- conventional enclosed thermal current (I_{the}) if different from the rated current:		N/A
	- IP Code, where applicable:	IP30 on front	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:	Height : 265mm Width : 179,5mm Depth : 73,5mm	P
	- suitability for environment A or B		N/A
	- r.m.s sensing if applicable, according to F.4.1.1		N/A
	- minimum cable cross-section, if different from Table 9 of IEC 60947-1, for ratings ≤ 20 A according to rated ultimate short-circuit breaking capacity I_{cu};	See Table.9 of IEC 60947-1	P
	- values of tightening torque for the circuit-breaker terminals.	10.0Nm	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:	Shunt 12V-24V-48V / 100÷130V-200÷277V-380÷480V Undervoltage 12V-24V-48V-100÷130V / 200÷240V-277V-380÷415V-440÷480V	P

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	- 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	Not identified terminals	P
	- load terminal	Not identified terminals	P
	- neutral pole terminal ”N”	Identified	P
	- protective earth terminal ⏚		N/A
	- terminal of coils (A/B)		N/A
	- terminal of shunt release (B)	Identified	P
	- terminals of under-voltage release (D)	Identified	P
	- terminals of interlocking electromagnets (E)		N/A
	- terminals of indicated light devices (X)		N/A
	- terminals of contact elements for switching devices (no)		N/A

7.1	**CONSTRUCTION**		
7.1.5 part 1	Actuator		
7.1.5.1	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	Yes	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		N/A
7.1.5.2	Direction of movement		
	The direction of operation for actuators of devices shall normally conform to IEC 60447.	Yes	P

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	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 the ”I” and ”O” positions and the direction of operation	Yes	P
7.1.6 part 1	Indication of contact position		
7.1.6.1	Indicating means		
	When an equipment is provided with means for indicating the closed and open positions, these positions shall be unambiguous and clearly indicated	Yes	P
	This is done by means of a position indicating device (see 2.3.18)	By handle operation	P
	If symbols are used, they shall indicate the closed and open position respectively, in accordance with IEC 60417-2:		
	- 60417-2-IEC-5007 **I** On (power)	Yes, with red colour	P
	- 60417-2-IEC-5007 **O** Off (power)	Yes, with green colour	P
	For equipment operated by means of two push-buttons, 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 push-button		N/A
	The colours of other push-buttons, illuminated push-buttons and indicator lights shall be in accordance with IEC 60073		N/A
7.1.6.2	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	Yes	P
7.1.8 part 1	Terminals		
7.1.8.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength	Tightening torque: 10.0 Nm	P
	Terminal connections shall be such that necessary contact pressure is maintained	Yes	P
	Terminals shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	Yes	P

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	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	Yes	P
7.1.8.2	Connection capacity		
	type of conductors :	Solid stranded and flexible cables	P
	minimum cross-sectional area of conductor (mm^2) :	2.50	P
	maximum cross-sectional area of conductor (mm^2) :	120	P
	number of conductors simultaneously connectable to the terminal :	1	P
7.1.8.3	Connection		
	terminals for connection to external conductors shall be readily accessible during installation	Yes	P
	clamping screws and nuts shall not serve to fix any other component	Yes	P
7.1.8.4	Terminal identification and marking		
	terminal intended exclusively for the neutral conductor	Yes	P
	protective earth terminal		N/A
	other terminals		N/A
7.1.10 part 1	Provisions for protective earthing		
7.1.10.1	The exposed conductive parts (e.g. chassis, framework and fixed parts of metal enclosures) 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		N/A
	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

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7.1.10.2	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
7.1.10.3	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
7.1.11 part 1	Enclosure for equipment		
7.1.11.1	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
	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

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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		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
7.1.11.2	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
7.1.12 part 1	Degree of protection of enclosed equipment		
	Degree of protection.	IP30	P
	Test for first characteristic.	IP3X	P
	Test for first numeral (1, 2, 3, 4, 5, 6) .....:	1 2 3: Verified 4 5 6	P
	Test for second characteristic	IPXX	
	Test for second numeral (1, 2, 3, 4, 5, 6, 7, 8) .....:	1 2 3 4 5 6 7 8	N/A

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7.1.13 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
7.1.2	Withdrawable circuit-breaker		
	In the disconnected position (main- and auxiliary circuits)		
	Isolating distances for circuit-breaker suitable for isolating comply with the requirements specified for the isolating function		N/A
	Mechanism fitted with a reliable indicating device with indicates the position of the isolating contacts.		N/A
	Mechanism fitted with interlocks which only permit the isolating contacts to be separate or re-closed when main contacts are open		N/A
	Mechanism fitted with interlock, which only permit the main contacts to be closed when the isolating contacts are fully closed.		N/A
	Mechanism fitted with interlock, which only permit the main contacts to be closed when in disconnected position.		N/A
	In disconnected position, the isolating distances between the isolating contacts cannot be inadvertently reduced.		N/A
7.1.3	Additional requirements for circuit-breakers suitable for isolation		
7.1.7 part 1	Additional safety requirements for equipment suitable for isolation		
7.1.7.1	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	Yes	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	Yes	P

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	Actuator front-plate fitted to the equipment in a manner which ensures correct contact position indication and locking	Yes	P
	The indicated open position is the only position in which the specified isolation distances between the contacts is ensured.	Yes	P
	- minimum clearances across open contacts (see Table XIII, Part 1) (mm) :	8.00	P
	- measured clearances (mm) :	14,7	P
	- test Uimp across gap (kV) :	12,1	P
7.1.7.2	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

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7.1.7.3	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	Yes	P
	Alternatively, the design may provide padlockable means to prevent access to the actuator	Yes	P
	test force F applied to the actuator in an attempt to operate to the closed position (N) :	150	P
	rated impulse withstand voltage (kV) :	8.00	P
	test Uimp on open main contacts at the test force	12.1kV	P
	If the tripped position is not the indicated open position, it should be clearly identified.	Yes	P
7.1.4	Clearances 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:	8.00kV	
	- max. value of rated operational voltage to earth	690V	
	- nominal voltage of supply system:	Up to 400/690V	
	- overvoltage category:	IV	
	- pollution degree:	3	
	- field-in or homogeneous:	Field-in	
	- minimum clearances (mm):	8.00	
	- measured clearances (mm):	14.7	P
	Creepage distances:		
	- rated insulation voltage Ui (V)	800	
	- pollution degree	3	
	- comparative tracking index (V)	600	
	- material group	I	
	- minimum creepage distances (mm)	10.0	
	- measured creepage distances (mm)	15.8	P
7.1.5	Requirements for the safety of the operator		
	There shall be no path or opening which allows incandescent particles to be discharged from the area of the manual operating means:	Yes	P

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7.1.7	Additional requirements for equipment provided with a neutral pole		
7.1.9 part 1	When 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.).	Yes	P
	A switched neutral pole shall break not before and shall make not after the other poles	Yes	P
	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	Yes	P
	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	Yes	P
	If a pole with an appropriate making and breaking capacity is used as a neutral pole, then all poles, incl. the neutral pole, may operate substantially together.	Yes	P
7.1.8	Digital inputs and outputs for use with programmable logic controllers (PLCs)		
	Compliant with Annex S of IEC 60947-1:2007		N/A
	Annex S does not apply to digital inputs and outputs dedicated to devices other than PLCs		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	Yea	P
7.2.1.1.2	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 the conditions of mechanical operation		N/A
	Such a circuit-breaker should not be used in circuits having a prospective peak making current exceeding 10 kA		N/A

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	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
7.2.1.1.3	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	Yes	P
7.2.1.1.4	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
7.2.1.1.5	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
7.2.1.1.6	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 which 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

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	- not possible for the moving contacts to move from the open position, unless the charge is sufficient for satisfactory completion of the closing operation.		N/A
	- by manually operated circuit-breaker is the direction of operation indicated. (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		
7.2.1.2.2	Opening by undervoltage releases		
7.2.1.3. part 1	Limits of operation of under-voltage relays and releases		
7.2.1.3. a	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	Lower limit: 84V Upper limit: 140V	P
	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	Not Close: 85V Close: 170V	P
	Unless otherwise stated in the relevant product standard, the upper limit of the supply voltage shall be 110% of its rated value	Upper limit: 264V	P
7.2.1.3. b	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		P

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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	Lower limit: 140V Upper limit: 305V	P
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	Yes	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)	See page 122	P
	- I^2t characteristics for circuit-breakers of utilization category A and, if applicable, B for circuit-breakers with instantaneous override (see note to 8.3.5)	See page 121	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 $\pm$ 10% of the tripping current value of the current setting for all values of current setting of the overload release		N/A
2)	Inverse time-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	Yes	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	Yes	P

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	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	Independent of ambient temperature	P
	The width of the temperature band shall be at least 10 K on either side of the reference temperature	Tested at 40.0°C	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	Operational voltage tests are made with undervoltage release	P
	The operational performance on-load during 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	Yes	P

8	**TESTS**		
8.2.1	Materials		
8.2.1.1	Test of resistance to abnormal heat and fire		
8.2.1.1.1	Glow wire test (on equipment)		P
	The glow-wire test according to IEC 60695-2-10 and IEC 60695-2-11 are performed on		
	the equipment; or		
	sections taken from the equipment; or	Yes	P
	any parts of identical material having representative cross-section.		
8.2.1.1.2	Flammability		N/A
	flammability test, in accordance with IEC 60695-11-10;		
	hot wire ignition (HWI) test, as described in Annex M;		
	arc ignition (AI) test, as described in Annex M.		
8.2.4	Mechanical properties of terminals		
	Mechanical strength of terminals		
	maximum cross-sectional area of conductor (mm^2) :	120	
	diameter of thread (mm) :	10.0	

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	torque (Nm) :	10.0	
	5 times on 2 separate clamping units	Yes	P
	Testing for damage to and accidental loosening of conductor (flexion test)		
	conductor of the smallest cross-sectional area (mm²) :	10.0	
	number of conductors of the smallest cross section :	1	
	diameter of bushing hole (mm) :	9.50	
	height between the equipment and the platen :	280	
	mass at the conductor(s) (kg) :	2.00	
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit	Circle described ø=75.0mm 10.0rpm±2.00rpm	P
	Pull-out test		
	force (N) :	90.0N	
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	Time : 1.00m	P
	conductor of the largest cross-sectional area (mm²) :	120	
	number of conductors of the largest cross section :	1	
	diameter of bushing hole (mm) :	22.2	
	height between the equipment and the platen :	406mm	
	mass at the conductor(s) (kg) :	14	
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit	Circle described ø=75.0mm 10.0rpm±2.00rpm	P
	Pull-out test		
	force (N) :	427N	
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	Test Time : 1.00m	P
	conductor of the largest and smallest cross-sectional area (mm²) :	N/A	
	number of conductors of the smallest cross section, number of conductors of the largest cross section :	N/A	
	diameter of bushing hole (mm) :	N/A	
	height between the equipment and the platen :	N/A	
	mass at the conductor(s) (kg) :	N/A	

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	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) :	N/A	
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	N/A	

8.3.3	**TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS**		
8.3.3.2	Test of tripping limits and characteristic		
8.3.3.2.2	Short circuit releases		
	Manufacturer's name or trademark	Legrand	
	Type designation or serial number	DPX³ 250 Pastel Orange label (Electronic release)	
	Sample no:	1 (4 poles)	
	Rated operational voltage: Ue (V)	690	
	Rated current: In (A)	250	
	Ambient temperature 10-40 °C :	23.0	P
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.	1.2 times short-circuit setting current	P
	Range of adjustable setting current. (A)	(1.5÷10)xI_r	P
	Time delay stated by the manufacturer, in the case of definite time delay releases.	0-0.1-0.2-0.3-0.4-0.5s	P
	Electromagnetic over current releases		
	Test current: 80% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Test current: 120% of the rated, or **minimum** adjustable setting current: (A)		N/A

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	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Test current: 80% of the **maximum** adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Test current: 120% of the **maximum** adjustable setting current: (A)		N/A
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Test current: tripping current declared for single pole operation (A)		N/A
	Operating time: < 0,2 s in case of instantaneous release: L1: L2: L3: N:		N/A

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	Operating time: < twice time delay stated by manufacturer in case of definite time delay releases L1: L2: L3: N:		N/A
	Electronic over current releases		
	For circuit-breakers with an electronic over current release, the operation of the short-circuit releases shall be verified by one test only on each pole individually.		P
	Test current: 80% of the rated, or **minimum** adjustable setting current: (A)	Phase poles 0.80x1.5x0,4x250=120; Neutral pole 0.80x1.5x0.4x0.5x250=60;	P
	Operating time: >0,2s in case of instantaneous releases: L1: L2: L3: N:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:	≥200ms ≥200ms ≥200ms ≥200ms	P
	Test current: 120% of the rated, or **minimum** adjustable setting current: (A)	Phase poles 1.20x1.5x0.4x250 = 180; Neutral pole 1.20x1.5x0.4x0.5x250=90.0;	P
	Operating time: <0,2s in case of instantaneous releases: L1: L2: L3: N:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:	120ms 122ms 120ms 115ms	P
	Test current: 80% of the **maximum** adjustable setting current: (A)	Phase poles 0.80x10x1x250= 2.00kA; Neutral pole 0.80x10x1x1x250=2.00kA;	P

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	Operating time: >0,2s in case of instantaneous releases: L1: L2: L3: N:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:	≥1.00s ≥1.00s ≥1.00s ≥1.00s	P
	Test current: 120% of the **maximum** adjustable setting current: (A)	Phase poles 1.20x10x1x250= 3.00kA; Neutral pole 1.20x10x1x1x250=3.00kA;	P
	Operating time: <0,2s in case of instantaneous releases: L1: L2: L3: N:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:	512ms 511ms 513ms 511ms	P
8.3.3.2.3	Overload releases		
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 which value they shall operate.		N/A
	Range of adjustable setting current. (A)		N/A
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the rated, or minimum adjustable setting current: (A)		N/A

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	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 releases		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
b)	Inverse time delay releases		
	Manufacturer's name or trademark	Legrand	
	Type designation or serial number	DPX³ 250 Pastel Orange label (Electronic release)	
	Sample no:	1 (4 poles)	
	Rated operational voltage: Ue (V)	690	
	Rated current: In (A)	250	
	For releases dependent of ambient air temperature: Reference temperature		N/A
	Test ambient temperature (°C)		N/A

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	For releases dependent on ambient air temperature, the operating characteristics shall be verified at the reference temperature, the release being energized on all phase poles. If the test made at a different ambient temperature, a correction shall be made in accordance with the manufacturer's correction temperature/current data		N/A
	For thermal-magnetic releases independent of ambient temperature: Tests shall be made at 30°C and 20°C or 40°C, the release being energized on all phase poles		N/A
	For electronic releases, the operating characteristic shall be verified at the ambient temperature of the test room (see 6.1.1 of IEC 60947-1), the release being energised on all phase poles.		N/A
	Test ambient air temperature:		N/A
	Range of adjustable setting current: (A)		N/A
	Releases, dependent of ambient air temperature: Reference temperature (°C)		N/A
	Thermal Magnetic releases, independent of ambient air temperature: at 30°C		N/A
	Test current: 105% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the rated, or **minimum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Test current: 105% of the **maximum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the **maximum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A

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	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Thermal Magnetic releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:	25.0°C	P
	Test current: 105% of the rated, or **minimum** adjustable setting current: (A)	Rated current:0.40x250 Current: 1.05x100=105 Phase Poles Rated current:0.40x0.50x250 Current: 1.05x50=52.5 Neutral Pole	P
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	Non-tripping time: 2.00h	P
	Test current: 130% of the rated, or **minimum** adjustable setting current: (A)	Rated current:0.40x250 Current: 1.30x100=130	P
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.	Rated current:0.40x125 Current:1.2x1.3x50=78	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 55.0s for Phase Poles 46.0s for Neutral Pole	P
	Test current: 105% of the **maximum** adjustable setting current: (A)	Rated current:1.00x250 Current: 1.05x250=263 Phase Poles Rated current:1.00x250 Current: 1.05x250=263 Neutral Pole	P
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	Non-tripping time: 2.00h	P
	Test current: 130% of the **maximum** adjustable setting current: (A)	Rated current:1.00x630 Current: 1.30x250=325	P
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.	Rated current:1.00x 630 Current:1.2x1.3x250=390	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 4.46min for Phase Poles 1.49min for Neutral Pole	P
	An additional test, at a current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer		
	Releases, dependent of ambient air temperature: Reference temperature (°C)		N/A

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	Releases, independent of ambient air temperature: at 30°C		N/A
	Test ambient air temperature:		N/A
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)		N/A
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)		N/A
	Releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:	25.0°C	P
	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)	Test current: 2 x I_r Min: 200A Phase Pole Min: 100A Neutral Pole Max: 500A	P
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)	Tripping time: 23.0÷45.0s/160÷230s Min/Max 35.0s/188s on Phase Poles 29.0s/171s on Neutral Pole	P
8.3.3.2.4	Additional test for definite time-delay releases		
a)	Time delay		
	Test is made at a current equal to 1,5 times the current setting. If the test current overlaps with another tripping characteristic (e.g. an instantaneous tripping characteristic), the trip setting and the test current shall be reduced as necessary to prevent premature tripping.		
	overload releases: (all phase poles loaded)		N/A
	for circuit-breakers having an identified neutral pole provided with an overload release, the test current for this release shall be 1,5 times the current setting;		N/A
	short-circuit releases		P
	Electromagnetic release: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		N/A
	Electronic releases: on one pole chosen at random.	L2	P

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	Test current: 1,5 times of the rated, or **minimum** adjustable setting current: (A)	1.5 x 0.4 x 1.5 x 250=225	P
	Operating time, overload releases: (s)		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electromagnetic): (s) L1-L2: L1-L3: L2-L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electronic): (s) L1: L2: L3:	0.07	P
	Time-delay: between the limits stated by the manufacturer:		P
	Test current: 1,5 times of the **maximum** adjustable setting current: (A)	1.5 x 10 x 250=3.75kA	P
	Operating time, overload releases: (s)		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electromagnetic): (s) L1-L2: L1-L3: L2-L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electronic): (s) L1: L2: L3:	0.39	P
	Time-delay: between the limits stated by the manufacturer:		P
b)	Non-tripping duration		
	Firstly, the test current equal to 1,5 times the current setting is maintained for a time interval equal to the non-tripping duration stated by the manufacturer.		
	Then, the current is reduced to the rated current and maintained at this value for twice the time-delay stated by the manufacturer. The circuit-breaker shall not trip.		
	overload releases: (all phase poles loaded)		N/A

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	for circuit-breakers having an identified neutral pole provided with an overload release, the test current for this release shall be 1,5 times the current setting;		N/A
	short-circuit releases		P
	Electromagnetic release: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		N/A
	Electronic releases: on one pole chosen at random.	L2	P
	Test current: 1,5 times of the **minimum** adjustable setting current: (A)	1.5 x 0.4 x 1.5 x 250=225	P
	non-tripping duration stated by the manufacturer for overload release: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release thermal magnetic: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release electronic: (s)	0.07	P
	Time duration of current when reduced to the rated current: shall be twice the delay-time stated by the manufacturer: (s)	0.22	P
	Rated current	0.40 x 250 = 100A	P
	Operating time, overload releases: the circuit-breaker does not trip:		N/A
	Operating time, short-circuit releases (electromagnetic), shall not trip: (s) L1-L2: L1-L3: L2-L3:		N/A
	Operating time, short-circuit releases (electronic), shall not trip: (s) L1: L2: L3:	0.22	P
	Test current: 1,5 times of **maximum** adjustable setting current: (A)	1.5 x 10 x 250=3.75kA	P
	non-tripping duration stated by the manufacturer for overload release: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release thermal magnetic: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release electronic: (s)	0.39	P
	Time duration of current when reduced to the rated current: shall be twice the delay-time stated by the manufacturer: (s)	≥1.10	

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	Rated current	250A	P
	Operating time, overload releases: the circuit-breaker does not trip:		N/A
	Operating time, short-circuit releases (electromagnetic), shall not trip: (s) L1-L2: L1-L3: L2-L3:		N/A
	Operating time, short-circuit releases (electronic), shall not trip: (s) L1: L2: L3:	1.10	P
8.3.3.3	Test of dielectric properties, impulse withstand voltage (Uimp indicated):		
8.3.3.4 part1	The 1,2/50µs impulse voltage shall be applied five times for each polarity at intervals of 1s minimum		
	- rated impulse withstand voltage (kV) :	8.00	P
	- sea level of the laboratory:	0.00m	P
	- test Uimp main circuits (kV) :	9.80	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) :	12.3	P
a)	Application of test voltage	See page 149	P
	i) Between all terminals of the main circuit connected together (incl. control and auxiliary circuits connected to the main circuit) and the enclosure or mounting plate, with the contacts in all normal positions of operation.	See page 149	P
	ii) Between each pole of the main circuit and the other poles connected together and to the enclosure or mounting plate, with the contacts in all normal positions of operation.	See page 149	P
	iii) Between each control and auxiliary circuit not normally connected to the main circuit and: - the main circuit		N/A
	- other circuits		N/A
	- exposed conductive parts		N/A
	- enclosure of mounting plate		N/A
	iv) equipment suitable for isolation	See page 149	P
	equipment not suitable for isolation		N/A

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	- no unintentional disruptive discharge during the test's		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		P
	- between all live parts of all poles connected together and the frame of the circuit-breaker .	See page 149	P
	- between each pole and all the other poles connected to the frame of the circuit-breaker	See page 149	P
2)	with the circuit-breaker in the open position and, additionally, in the tripped position, if any.	See page 149	P
	- between all live parts of all poles connected together and the frame of the circuit-breaker.	See page 149	P
	- between the terminals of one side connected together and the terminals of the other side connected together.	See page 149	P
b)	Control and auxiliary circuits		
1)	- between all the control and auxiliary circuits which are not normally connected to the main circuit, connected together, and the frame of the circuit-breaker.		N/A
2)	- where appropriate, between each part of the control an auxiliary circuits which may be isolated from the other parts during normal operation and all the other parts connected together.		N/A
	No unintentional disruptive discharge during the tests		N/A
(i)	the normal positions of operation include the tripped position, if any;	Yes	P
(ii)	circuits incorporating solid-state devices connected to the main circuit shall be disconnected for the test;		N/A
(iii)	circuit-breakers not declared as suitable for isolation shall be tested with the test voltage applied across the poles of the main circuit, the line terminals being connected together and the load terminals being connected together.		N/A

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(iv)	For circuit-breaker suitable for isolation, the leakage current shall be measured through each pole with the contacts in the open position, at a test voltage of 1,1 Ue, and shall not exceed 0,5mA.	Test voltage: 759V Leakage current: 0.01mA	P
(v)	circuit-breakers having a rated insulation voltage greater than 1 000 V a.c. shall be tested at a voltage of Ui + 1 200 V a.c. r.m.s. or 2 Ui whichever is the greater		N/A
(vi)	withdrawable circuit-breakers shall be subject to verification of impulse withstand voltage and shall be applied between the withdrawable unit's main contacts and their associated fixed contacts, in the disconnected position.		N/A
8.3.3.4	Mechanical operation and operational performance capability		
8.3.3.4.2	Construction and mechanical operation		
8.3.3.4.2.1	Construction		
	A withdrawable circuit-breaker shall be checked for the requirements stated in 7.1.2		N/A
	A circuit-breaker with stored energy operation shall be checked for compliance with 7.2.1.1.6, regarding the charge indicator and the direction of operation of manual energy storing		N/A
8.3.3.4.2.2	Mechanical operation		
	A circuit-breaker with dependent power operation shall comply with the requirements stated in 7.2.1.1.4		N/A
	A circuit-breaker with dependent power operation shall operate with the operating mechanism charged to the minimum and maximum limits stated by the manufacturer		N/A
	A circuit-breaker with stored energy operation shall comply with the requirements stated in 7.2.1.6 with the auxiliary supply voltage at 85% and 110% of the rated control supply voltage.		N/A
	It shall also be verified that the moving contacts cannot be moved from the open position when the operating mechanism is charged to slightly below the full charge as evidenced by the indicating device		N/A
	For a trip-free circuit-breaker it shall not be possible to maintain the contacts in the touching or closed position when the tripping release is in the position to trip the circuit-breaker		P
	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

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8.3.3.4.2.3	Undervoltage releases		
	Undervoltage releases shall comply with the requirements of 7.2.1.3 of Part 1. For this purpose, the release shall be fitted to a circuit-breaker having the maximum current rating for which the release is suitable	Yes	P
i)	Drop out voltage		
	It shall be verified that the release operates to open the circuit-breaker between the voltage limits specified	Yes	P
	The voltage shall be reduced from rated voltage at a rate to reach 0 V in approximately 30 s	Yes	P
	The test for the lower limit is made without current in the main circuit and without previous heating of the release coil	Yes	P
	In the case of a release with a range of rated voltages, this test applies to the maximum voltage of the range	Yes	P
	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	Yes	P
	This test may be combined with the temperature-rise test of 8.3.3.7	Yes	P
	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	Test voltage: 440÷480V	P
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	Cannot be closed by the actuator	P
	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	Can be closed by the actuator	P
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	Test Voltage: 582V (Rated Voltage:480V)	P

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8.3.3.4.2.4	Shunt releases		
	Shunt releases shall comply with the requirements of 7.2.1.4 of Part 1. For this purpose, the release shall be fitted to a circuit-breaker having the maximum rated current for which the release is suitable	Yes	P
	It shall be verified that the release will operate to open the circuit-breaker at 70% rated control supply voltage when tested at an ambient temperature of + 55 °C ± 2 °C without current in the main poles of the circuit-breaker	Ambient temperature 55.0°C	P
	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	Test Voltage 266V (min rated Voltage: 380V)	P
8.3.3.4.3	Operational performance capability without current.		
	Type designation or serial number	DPX^3 250 Pastel Orange label	
	Sample no:	1 (4 poles)	
	Rated current In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt releases: Uc (V)	N/A	
	Rated control supply voltage undervoltage releases: Uc (V)	220÷250	
	Ambient temperature 10-40 °C :	23.3°C	P
	Number of operating cycles per hour	120/h	P
	Number of cycles without current (total) (closing mechanism energized at the rated Uc)	7000	P
	Number of cycles without current (without releases)		N/A
	Applied voltage of 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	700	P
	Applied voltage: shunt releases (V)		N/A

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	10% of total cycles for circuit-breaker with undervoltage releases: (50% at the beginning- and 50% at the end of the test.) Energized at the minimum rated Uc		N/A
	10 attempts to close the breaker without applied voltage at the undervoltage releases. (Shall not possible to close the circuit-breaker.)	Yes	P
	Applied voltage: undervoltage releases (V)	220÷250	P
	In the case of circuit-breakers fitted with electrical or pneumatic closing devices, these devices shall be supplied at their rated control supply voltage or at their rated pressure.		N/A
	Precautions shall be taken to ensure that the temperature rises of the electrical components do not exceed the value indicated in tab. 7.		N/A
8.3.3.4.4	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	690	
	Conductor cross-sectional area (mm²) :	120	P
	Number of operating cycles per hour	120.0/h	P
	Number of cycles with current (total) (closing mechanism energized at the rated Uc)	1000	P
	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.	Overload setting: 250A Short-circuit setting: 375A	P
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:	763 735 705	P
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:	256 259 252	P
	- power factor/time constant:	0.78	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	180	P
	- off-time (s):	29.8	P
	In the case of circuit-breakers fitted with electrical or pneumatic closing devices, these devices shall be supplied at their rated control supply voltage or at their rated pressure.		N/A

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	Precautions shall be taken to ensure that the temperature rises of the electrical components do not exceed the value indicated in tab. 7.		N/A
8.3.3.4.5	Additional test of operational performance capability without current for withdrawable circuit-breaker.		
	Number of operations cycles : 100		N/A
	After test, the isolating contacts, withdrawable mechanism and interlocks shall be suitable for further service.		N/A
8.3.3.5	Overload performance		
	this test applies to circuit-breaker of rated current up to and including 630 A		
	Type designation or serial number	DPX^3 250 Pastel Orange label	
	Sample no:	1 (4 poles)	
	Rated current In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt releases: Uc (V)	N/A	
	Rated control supply voltage undervoltage releases: Uc (V)	N/A	
	Ambient temperature 10-40 °C :	23.8°C	P
	Number of operating cycles per hour	120/h	P
	Maximum rated operational voltage: Ue (V)	690	P
	Number of operating cycles per hour	120/h	P
	Number of cycles with current (total) (closing mechanism energized at the rated Uc)	12.0	P
	Applied voltage: closing mechanism (V)		N/A
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload/short-circuit settings at maximum.	Overload setting: 250A Short-circuit setting: 2.50kA	P
	Conditions, overload operations:		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	765 747 716	P

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	- test current AC/DC: I/Ie = 6,0/2.5 (A) .....L1: .....L2: L3:	1.51kA 1.54kA 1.50kA	P
	- power factor/time constant:	0.51	P
	- Number of cycles manually opened: 9	9.00	P
	- Number of cycles automatically opened by an overload release: 3	3.00	P
	for circuit-breakers having a short-circuit release of a maximum setting less than the test current		
	all 12 operations automatic		N/A
	If the testing means do not withstand the let-through energy occurring during the automatic operation		
	– 12 manual operations – three additional operations with automatic opening, made at any convenient voltage		N/A
	- frequency: (Hz)	50.0	P
	- on-time max 2s:	189ms	P
	Operating rate if different from Table 8		N/A
8.3.3.6	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V for 5 seconds	1.38kV	P
	- no breakdown or flashover	No	P
	For circuit-breaker suitable for isolation, the leakage current shall be measured through each pole with the contacts in the open position, at a test voltage of 1,1 Ue, and shall not exceed 2 mA.	Test voltage: 759V Leakage current: 0.34mA	P
8.3.3.7	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See Table n°1 at page 111	P
	Temperature rise of main circuit terminals ≤ 80 K (K) :	58.2	P
	conductor cross-sectional area (mm^2) :	120	P
	test current Ie (A) :	250	P
8.3.3.8	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	363	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	1.35 min	P

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8.3.3.9	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 -	(Rated Voltage 440÷480V) Test Voltage: 308V	P
	and shall operate at 35% of the maximum control supply voltage.	(Rated Voltage 440÷480V) Test Voltage: 168V	P
	Circuit-breaker fitted with shunt releases. The release shall operate at 70% of the minimum rated control supply voltage. Test made at room temperature.	(Min. rated voltage 380V) Test Voltage: 266V	P
8.3.3.10	Verification of the main contact position for circuit-breakers for isolation		
	actuating force for opening (N) .....:	45.0	—
	test force with blocked main contacts for 10 s (N) .:	135	—
	Dependent power operation		N/A
	Supply voltage of 110% of rated voltage (V)……:		N/A
	Three attempts of 5 s to operate the equipment at intervals of 5 min.		N/A
	Independent power operation		P
	Three attempts to operate the equipment by the stored energy.		N/A
	Lock ability of driving mechanism in OFF-position at test force and blocked main contacts .....:		P
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P

8.3.3	**TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS**		
8.3.3.2	Test of tripping limits and characteristic		
8.3.3.2.2	Short circuit releases		
	Manufacturer's name or trademark	Legrand	
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	3 (3-poles)	
	Rated operational voltage: Ue (V)	690	
	Rated current: In (A)	250	
	Ambient temperature 10-40 °C :	40.0	P

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	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.		N/A
	Range of adjustable setting current. (A)		N/A
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Electromagnetic over current releases		
	Test current: 80% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Test current: 120% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Test current: 80% of the **maximum** adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A

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	Test current: 120% of the **maximum** adjustable setting current: (A)		N/A
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3: N-Lx:		N/A
	Test current: tripping current declared for single pole operation (A)		N/A
	Operating time: < 0,2 s in case of instantaneous release: L1: L2: L3: N:		N/A
	Operating time: < twice time delay stated by manufacturer in case of definite time delay releases L1: L2: L3: N:		N/A
	Electronic over current releases		
	For circuit-breakers with an electronic over current release, the operation of the short-circuit releases shall be verified by one test only on each pole individually.		N/A
	Test current: 80% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases: L1: L2: L3: N:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:		N/A
	Test current: 120% of the rated, or **minimum** adjustable setting current: (A)		N/A

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	Operating time: <0,2s in case of instantaneous releases: L1: L2: L3: N:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:		N/A
	Test current: 80% of the **maximum** adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases: L1: L2: L3: N:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:		N/A
	Test current: 120% of the **maximum** adjustable setting current: (A)		N/A
	Operating time: <0,2s in case of instantaneous releases: L1: L2: L3: N:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1: L2: L3: N:		N/A
8.3.3.2.3	Overload releases		
a)	Instantaneous or definite time-delay releases		
	Manufacturer's name or trademark	N/A	
	Type designation or serial number	N/A	
	Sample no:	N/A	
	Rated operational voltage: Ue (V)	N/A	
	Rated current: In (A)	N/A	

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	Ambient temperature 10-40 °C :		N/A
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.		N/A
	Range of adjustable setting current. (A)		N/A
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the rated, or minimum adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the maximum adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 110% of the rated, or minimum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)		N/A
	Operating time: <0,2s in case of instantaneous releases:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 110% of the maximum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)		N/A
	Operating time: <0,2s in case of instantaneous releases		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
b)	Inverse time delay releases		
	Manufacturer's name or trademark		
	Type designation or serial number		
	Sample no:		

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	Rated operational voltage: Ue (V)		
	Rated current: In (A)		
	For releases dependent of ambient air temperature: Reference temperature		N/A
	Test ambient temperature (°C)		N/A
	For releases dependent on ambient air temperature, the operating characteristics shall be verified at the reference temperature, the release being energized on all phase poles. If the test made at a different ambient temperature, a correction shall be made in accordance with the manufacturer's correction temperature/current data		N/A
	For thermal-magnetic releases independent of ambient temperature: Tests shall be made at 30°C and 20°C or 40°C, the release being energized on all phase poles		N/A
	For electronic releases, the operating characteristic shall be verified at the ambient temperature of the test room (see 6.1.1 of IEC 60947-1), the release being energised on all phase poles.		N/A
	Test ambient air temperature:		N/A
	Range of adjustable setting current: (A)		N/A
	Releases, dependent of ambient air temperature: Reference temperature (°C)		N/A
	Thermal Magnetic releases, independent of ambient air temperature: at 30°C		N/A
	Test current: 105% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the rated, or **minimum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Test current: 105% of the **maximum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A

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	Test current: 130% of the **maximum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Thermal Magnetic releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:		N/A
	Test current: 105% of the rated, or **minimum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the rated, or **minimum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Test current: 105% of the **maximum** adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the **maximum** adjustable setting current: (A)		N/A
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	An additional test, at a current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer		
	Releases, dependent of ambient air temperature: Reference temperature (°C)		N/A
	Releases, independent of ambient air temperature: at 30°C		N/A
	Test ambient air temperature:		N/A

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	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)		N/A
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)		N/A
	Releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:		N/A
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)		N/A
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)		N/A
8.3.3.2.4	Additional test for definite time-delay releases		
a)	Time delay		
	Test is made at a current equal to 1,5 times the current setting. If the test current overlaps with another tripping characteristic (e.g. an instantaneous tripping characteristic), the trip setting and the test current shall be reduced as necessary to prevent premature tripping.		
	overload releases: (all phase poles loaded)		N/A
	for circuit-breakers having an identified neutral pole provided with an overload release, the test current for this release shall be 1,5 times the current setting;		N/A
	short-circuit releases		N/A
	Electromagnetic release: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		N/A
	Electronic releases: on one pole chosen at random.		N/A
	Test current: 1,5 times of the rated, or **minimum** adjustable setting current: (A)		N/A
	Operating time, overload releases: (s)		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A

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	Operating time, short-circuit releases (electromagnetic): (s) L1-L2: L1-L3: L2-L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electronic): (s) L1: L2: L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Test current: 1,5 times of the **maximum** adjustable setting current: (A)		N/A
	Operating time, overload releases: (s)		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electromagnetic): (s) L1-L2: L1-L3: L2-L3:		N/A
	Time-delay: between the limits stated by the manufacturer:		N/A
	Operating time, short-circuit releases (electronic): (s) L1: 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.		
	Then, the current is reduced to the rated current and maintained at this value for twice the time-delay stated by the manufacturer. The circuit-breaker shall not trip.		
	overload releases: (all phase poles loaded)		N/A
	for circuit-breakers having an identified neutral pole provided with an overload release, the test current for this release shall be 1,5 times the current setting;		N/A
	short-circuit releases		N/A
	Electromagnetic release: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		N/A

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	Electronic releases: on one pole chosen at random.		N/A
	Test current: 1,5 times of the **minimum** adjustable setting current: (A)		N/A
	non-tripping duration stated by the manufacturer for overload release: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release thermal magnetic: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release electronic: (s)		N/A
	Time duration of current when reduced to the rated current: shall be twice the delay-time stated by the manufacturer: (s)		N/A
	Rated current		N/A
	Operating time, overload releases: the circuit-breaker does not trip:		N/A
	Operating time, short-circuit releases (electromagnetic), shall not trip: (s) L1-L2: L1-L3: L2-L3:		N/A
	Operating time, short-circuit releases (electronic), shall not trip: (s) L1: L2: L3:		N/A
	Test current: 1,5 times of **maximum** adjustable setting current: (A)		N/A
	non-tripping duration stated by the manufacturer for overload release: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release thermal magnetic: (s)		N/A
	non-tripping duration stated by the manufacturer for short-circuit release electronic: (s)		N/A
	Time duration of current when reduced to the rated current: shall be twice the delay-time stated by the manufacturer: (s)		N/A
	Rated current		N/A
	Operating time, overload releases: the circuit-breaker does not trip:		N/A
	Operating time, short-circuit releases (electromagnetic), shall not trip: (s) L1-L2: L1-L3: L2-L3:		N/A

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	Operating time, short-circuit releases (electronic), shall not trip: (s) L1: L2: L3:		N/A
8.3.3.3	Test of dielectric properties, impulse withstand voltage (Uimp indicated):		
8.3.3.4 part1	The 1,2/50µs impulse voltage shall be applied five times for each polarity at intervals of 1s minimum		
	- rated impulse withstand voltage (kV) :	8.00	P
	- sea level of the laboratory:	200m	P
	- test Uimp main circuits (kV) :	9.60	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) :	12.1	P
a)	Application of test voltage	See page 149	P
	i) Between all terminals of the main circuit connected together (incl. control and auxiliary circuits connected to the main circuit) and the enclosure or mounting plate, with the contacts in all normal positions of operation.	See page 149	P
	ii) Between each pole of the main circuit and the other poles connected together and to the enclosure or mounting plate, with the contacts in all normal positions of operation.	See page 149	P
	iii) Between each control and auxiliary circuit not normally connected to the main circuit and: - the main circuit		N/A
	- other circuits		N/A
	- exposed conductive parts		N/A
	- enclosure of mounting plate		N/A
	iv) equipment suitable for isolation	See page 149	P
	equipment not suitable for isolation		N/A
	- no unintentional disruptive discharge during the test's		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

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	- 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		P
	- between all live parts of all poles connected together and the frame of the circuit-breaker .	See page 149	P
	- between each pole and all the other poles connected to the frame of the circuit-breaker	See page 149	P
2)	with the circuit-breaker in the open position and, additionally, in the tripped position, if any.		P
	- between all live parts of all poles connected together and the frame of the circuit-breaker.	See page 149	P
	- between the terminals of one side connected together and the terminals of the other side connected together.	See page 149	P
b)	Control and auxiliary circuits		
1)	- between all the control and auxiliary circuits which are not normally connected to the main circuit, connected together, and the frame of the circuit-breaker.		N/A
2)	- where appropriate, between each part of the control an auxiliary circuits which may be isolated from the other parts during normal operation and all the other parts connected together.		N/A
	No unintentional disruptive discharge during the tests		N/A
(i)	the normal positions of operation include the tripped position, if any;	Yes	P
(ii)	circuits incorporating solid-state devices connected to the main circuit shall be disconnected for the test;		N/A
(iii)	circuit-breakers not declared as suitable for isolation shall be tested with the test voltage applied across the poles of the main circuit, the line terminals being connected together and the load terminals being connected together.		N/A
(iv)	For circuit-breaker suitable for isolation, the leakage current shall be measured through each pole with the contacts in the open position, at a test voltage of 1,1 Ue, and shall not exceed 0,5mA.	Test voltage: 760V Leakage current: 0.18mA	P
(v)	circuit-breakers having a rated insulation voltage greater than 1 000 V a.c. shall be tested at a voltage of Ui + 1 200 V a.c. r.m.s. or 2 Ui whichever is the greater		N/A

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(vi)	withdrawable circuit-breakers shall be subject to verification of impulse withstand voltage and shall be applied between the withdrawable unit's main contacts and their associated fixed contacts, in the disconnected position.		N/A
8.3.3.4	Mechanical operation and operational performance capability		
8.3.3.4.2	Construction and mechanical operation		
8.3.3.4.2.1	Construction		
	A withdrawable circuit-breaker shall be checked for the requirements stated in 7.1.2		N/A
	A circuit-breaker with stored energy operation shall be checked for compliance with 7.2.1.1.6, regarding the charge indicator and the direction of operation of manual energy storing		N/A
8.3.3.4.2.2	Mechanical operation		
	A circuit-breaker with dependent power operation shall comply with the requirements stated in 7.2.1.1.4		N/A
	A circuit-breaker with dependent power operation shall operate with the operating mechanism charged to the minimum and maximum limits stated by the manufacturer		N/A
	A circuit-breaker with stored energy operation shall comply with the requirements stated in 7.2.1.6 with the auxiliary supply voltage at 85% and 110% of the rated control supply voltage.		N/A
	It shall also be verified that the moving contacts cannot be moved from the open position when the operating mechanism is charged to slightly below the full charge as evidenced by the indicating device		N/A
	For a trip-free circuit-breaker it shall not be possible to maintain the contacts in the touching or closed position when the tripping release is in the position to trip the circuit-breaker		N/A
	If the closing and opening times of a circuit-breaker are stated by the manufacturer, such times shall comply with the stated values		N/A
8.3.3.4.2.3	Undervoltage releases		
	Undervoltage releases shall comply with the requirements of 7.2.1.3 of Part 1. For this purpose, the release shall be fitted to a circuit-breaker having the maximum current rating for which the release is suitable		N/A

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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 8.3.3.7		N/A
	In the case of a release with a range of rated voltages, this test is made at both the minimum and maximum rated control supply voltages		N/A
ii)	Test for limits of operation		
	Starting with the circuit-breaker open, at the temperature of the test room, and with the supply voltage at 30% rated maximum control supply voltage, it shall be verified that the circuit-breaker cannot be closed by the operation of the actuator		N/A
	When the supply voltage is raised to 85% of the minimum control supply voltage, it shall be verified that the circuit-breaker can be closed by the operation of the actuator		N/A
iii)	Performance under overvoltage conditions		
	With the circuit-breaker closed and without current in the main circuit, it shall be verified that the undervoltage release will withstand the application of 110% rated control supply voltage for 4 h without impairing its functions		N/A
8.3.3.4.2.4	Shunt releases		
	Shunt releases shall comply with the requirements of 7.2.1.4 of Part 1. For this purpose, the release shall be fitted to a circuit-breaker having the maximum rated current for which the release is suitable		N/A

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	It shall be verified that the release will operate to open the circuit-breaker at 70% rated control supply voltage when tested at an ambient temperature of + 55 °C ± 2 °C without current in the main poles of the circuit-breaker		N/A
	In the case of a release having a range of rated control supply voltages, the test voltage shall be 70% of the minimum rated control supply voltage		N/A
8.3.3.4.3	Operational performance capability without current.		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	3 (3-poles)	
	Rated current In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt releases: Uc (V)	N/A	
	Rated control supply voltage undervoltage releases: Uc (V)	N/A	
	Ambient temperature 10-40 °C :	24.4°C	P
	Number of operating cycles per hour	240/h	P
	Number of cycles without current (total) (closing mechanism energized at the rated Uc)	8500	P
	Number of cycles without current (without releases)		N/A
	Applied voltage of 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	850 cycles	P
	10 attempts to close the breaker without applied voltage at the undervoltage releases. (Shall not possible to close the circuit-breaker.)	Yes	P
	Applied voltage: undervoltage releases (V)	230	P

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	In the case of circuit-breakers fitted with electrical or pneumatic closing devices, these devices shall be supplied at their rated control supply voltage or at their rated pressure.		N/A
	Precautions shall be taken to ensure that the temperature rises of the electrical components do not exceed the value indicated in tab. 7.		N/A
8.3.3.4.4	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	690	
	Conductor cross-sectional area (mm^2) :	120	P
	Number of operating cycles per hour	120/h	P
	Number of cycles with current (total) (closing mechanism energized at the rated Uc)	1500	P
	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.	Overload setting: 250A Short-circuit setting: 375A	P
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:	L1: 707 L2: 700 L3: 707	P
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:	L1: 257 L2: 256 L3: 253	P
	- power factor/time constant:	0.79	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	198	P
	- off-time (s):	29.8	P
	In the case of circuit-breakers fitted with electrical or pneumatic closing devices, these devices shall be supplied at their rated control supply voltage or at their rated pressure.		N/A
	Precautions shall be taken to ensure that the temperature rises of the electrical components do not exceed the value indicated in tab. 7.		N/A
8.3.3.4.5	Additional test of operational performance capability without current for withdrawable circuit-breaker.		
	Number of operations cycles : 100		N/A
	After test, the isolating contacts, withdrawable mechanism and interlocks shall be suitable for further service.		N/A

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8.3.3.5	Overload performance		
	this test applies to circuit-breaker of rated current up to and including 630 A		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	1 (3-poles)	
	Rated current In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt releases: Uc (V)	N/A	
	Rated control supply voltage undervoltage releases: Uc (V)	N/A	
	Ambient temperature 10-40 °C :	25.5°C	P
	Number of operating cycles per hour	60.0/h	P
	Maximum rated operational voltage: Ue (V)	690	P
	Number of operating cycles per hour	60.0/h	P
	Number of cycles with current (total) (closing mechanism energized at the rated Uc)	12.0	P
	Applied voltage: closing mechanism (V)		N/A
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload/short-circuit settings at maximum.	Overload setting: 250A Short-circuit setting: 375A	P
	Conditions, overload operations:		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	L1: 736 L2: 726 L3: 729	P
	- test current AC/DC: I/Ie = 6,0/2.5 (A) .....L1: .....L2: L3:	L1: 1.55kA L2: 1.56kA L3: 1.56kA	P
	- power factor/time constant:	0.48	P
	- Number of cycles manually opened: 9	9.00	P
	- Number of cycles automatically opened by an overload release: 3	3.00	P
	for circuit-breakers having a short-circuit release of a maximum setting less than the test current		
	all 12 operations automatic		N/A

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	If the testing means do not withstand the let-through energy occurring during the automatic operation		
	– 12 manual operations – three additional operations with automatic opening, made at any convenient voltage		N/A
	- frequency: (Hz)	50.0	P
	- on-time max 2s:	165ms	P
	Operating rate if different from Table 8		N/A
8.3.3.6	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V for 5 seconds	1.40kV	P
	- no breakdown or flashover	No	P
	For circuit-breaker suitable for isolation, the leakage current shall be measured through each pole with the contacts in the open position, at a test voltage of 1,1 Ue, and shall not exceed 2 mA.	Test voltage: 760V Leakage current: 0.32mA	P
8.3.3.7	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See Table n°2 at page 111	P
	Temperature rise of main circuit terminals ≤ 80 K (K) :	39.2	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P
8.3.3.8	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
8.3.3.9	Verification of undervoltage 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
8.3.3.10	Verification of the main contact position for circuit-breakers for isolation		
	actuating force for opening (N) .....:		—

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	test force with blocked main contacts for 10 s (N) .:		—
	Dependent power operation		N/A
	Supply voltage of 110% of rated voltage (V)……:		N/A
	Three attempts of 5 s to operate the equipment at intervals of 5 min.		N/A
	Independent power operation		N/A
	Three attempts to operate the equipment by the stored energy.		N/A
	Lock ability of driving mechanism in OFF-position at test force and blocked main contacts .....:		N/A
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		N/A

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	5 (4-poles)	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	240	
	Rated service short-circuit breaking capacity: (kA)	100	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting: 250A Short-circuit setting: 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A

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	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 128	P
	Conductor cross-sectional area (mm^2) :	120	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	132 134 140	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1,05 (V) ..... L1: ..... L2: L3:	270 268 270	P
	- r.m.s. test current AC/DC: (A) ..... L1: ..... L2: L3:	100kA 110kA 102kA	P
	power factor/time constant :	0.19	P
	- Factor ”n”	2.20	P
	- peak test current (A) :	220kA	P

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	Test sequence ”O”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	7.00 27.8 21.3	P
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	0.04MA²s 1.02MA²s 0.67MA²s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	13.6 22.0 26.3	P
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	0.33MA²s 0.49MA²s 1.05MA²s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	10.9 23.6 24.4	P
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	0.29MA²s 0.57MA²s 0.98MA²s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	240	
	Conductor cross-sectional area (mm²) :	120	
	Number of operating cycles per hour	120/h	P
	Number (5% of the number given in column 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75.0	P
	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.	Overload setting: 250A Short-circuit setting: 375A	P

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	Conditions, make/break operations:		
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:	253 251 255	P
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:	257 257 254	P
	- power factor/time constant:	0.80	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	172	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.00kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage: 264V Leakage current: 0.75mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See Table n°3 at page 112	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	55.2	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=362	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 380s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P

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	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	80.0 88.0 91.0	P

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	6 (4 poles)	
	Rated current: In (A)	40.0	
	Rated operational voltage: Ue (V)	240	
	Rated service short-circuit breaking capacity: (kA)	100	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting: 40.0A Short-circuit setting: 400A	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	P
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A

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	Fuse ”F”: copper wire: diameter 0,8 mm, 50 mm long	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 128	P
	Conductor cross-sectional area (mm²) :	10.0	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤39.0s	
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	33.0 35.0 33.0	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1,05 (V) ..... L1: ..... L2: L3:	270 268 270	P
	- r.m.s. test current AC/DC: (A) ..... L1: ..... L2: L3:	 100kA 110kA 102kA	P
	power factor/time constant :	0.19	P
	- Factor ”n”	2.20	P
	- peak test current (A) :	220kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) ..... L1: ..... L2: L3:	11.6 29.2 18.1	P
	- Joule integral I²dt (A²s) ..... L1: ..... L2: L3:	0.14MA²s 1.10MA²s 0.52MA²s	P
	Pause, t: (min)	3.00	P

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	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	27.9 17.4 11.8	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	1.00MA^2s 0.44MA^2s 0.14MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	26.8 12.9 18.6	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	1.06MA^2s 0.31MA^2s 0.37MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)		
	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 column 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: L3:		N/A
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:		N/A
	- power factor/time constant:		N/A

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	- frequency: (Hz)		N/A
	- on-time (ms):		N/A
	- off-time (s):		N/A
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.00kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage: 264V Leakage current: 0.76mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed 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
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x16.0=23.2	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 80.0 s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤ 39.0s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	18.0 17.0 17.0	P

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX³ 250 Light Blue label (Electronic release)	
	Sample no:	7 (4 poles)	

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	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	415	
	Rated service short-circuit breaking capacity: (kA)	70.0	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting: 250A Short-circuit setting: 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 128	P
	Conductor cross-sectional area (mm^2) :	120	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P

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8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	135 134 134	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	440 440 438	P
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:	69.8kA 74.8kA 69.2kA	P
	power factor/time constant :	0.20	P
	- Factor ”n”	2.29	P
	- peak test current (A) :	159kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	27.7 27.3 20.4	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	1.19MA^2s 2.44MA^2s 0.96MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	15.3 32.2 18.3	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	0.30MA^2s 2.16MA^2s 1.05MA^2s	P
	Pause, t: (min)	3.00	P

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	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	26.5 20.7 21.6	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	2,22MA^2s 0,93MA^2s 0,65MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	415	
	Conductor cross-sectional area (mm^2) :	120	
	Number of operating cycles per hour	120/h	P
	Number (5% of the number given in column 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75.0	P
	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.	Overload setting: 250A Short-circuit setting: 375A	P
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:	450 456 443	P
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:	257 252 250	P
	- power factor/time constant:	0.79	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	145	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.00kV	P

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	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage: 456V Leakage current: 0.81mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See Table n°4 at page 112	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	58.5	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=365	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 405s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196 s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	80.0 84.0 88.0	P

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX³ 250 Light Blue label (Electronic release)	
	Sample no:	8 (4-poles)	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated service short-circuit breaking capacity: (kA)	20,0	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	

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	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting: 250A Short-circuit setting: 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 128	P
	Conductor cross-sectional area (mm²) :	120	P
	If terminals unmarked: line connected at: (underside/upside)	Underside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	132 140 135	P

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8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1,05 (V) ..... L1: ..... L2: L3:	726 731 726	P
	- r.m.s. test current AC/DC: (A) ..... L1: ..... L2: L3:	21.1kA 21.4kA 22.0kA	P
	power factor/time constant :	0.28	P
	- Factor ”n”	2.35	P
	- peak test current (A) :	51.8kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) ..... L1: ..... L2: L3:	17.8 18.0 22.0	P
	- Joule integral I^2dt (A^2s) ..... L1: ..... L2: L3:	1.10MA^2s 1.08MA^2s 2.50MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... L1: ..... L2: L3:	18.1 13.6 19.0	P
	- Joule integral I^2dt (A^2s) ..... L1: ..... L2: L3:	1.28MA^2s 0.50MA^2s 2.13MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... L1: ..... L2: L3:	7.50 12.9 11.8	P
	- Joule integral I^2dt (A^2s) ..... L1: ..... L2: L3:	0.13MA^2s 0.39MA^2s 0.51MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P

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8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	690	
	Conductor cross-sectional area (mm²) :	120	
	Number of operating cycles per hour	120/h	P
	Number (5% of the number given in column 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75.0	P
	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.	Overload setting: 250A Short-circuit setting: 375A	P
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:	727 727 725	P
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:	258 259 255	P
	- power factor/time constant:	0.79	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	173	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.40kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage: 760V Leakage current: 0.81mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See Table n°5 at page 113	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	64.5	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P

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8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=365	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 340s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	100 105 100	P

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	13 (3-poles)	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	240	
	Rated service short-circuit breaking capacity: (kA)	100	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting : 250A Short-circuit setting : 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P

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	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0.45-0.65	0.51	P
	- size of hole: <30mm^2	25mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 128	P
	Conductor cross-sectional area (mm²) :	120	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	135 142 148	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1.05 (V) .....L1: .....L2: L3:	270 268 270	P
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:	100kA 110kA 102kA	P
	power factor/time constant :	0.19	P
	- Factor ”n”	2.20	P

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	- peak test current (A) :	220kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	19.7 28.9 9.90	P
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	0.41MA²s 1.14MA²s 0.27MA²s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	20.9 8.30 25.8	P
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	0.54MA²s 0.05MA²s 0.81MA²s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	22.9 9.90 21.7	P
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	0.87MA²s 0.29MA²s 0.53MA²s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	240	
	Conductor cross-sectional area (mm²) :	120	
	Number of operating cycles per hour	120 cycles per hour	P
	Number (5% of the number given in column 4. tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75	P
	Applied voltage: closing mechanism (V)		N/A

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	For circuit-breaker fitted with adjustable releases, test shall be made with the overload setting at maximum and short-circuit setting at minimum.	Overload setting : 250A Short-circuit setting : 1.25kA	P
	Conditions. make/break operations:		
	- test voltage U/Ue = 1.0 (V) .....L1: .....L2: L3:	249 251 258V	P
	- test current I/Ie = 1.0 (A).....L1: .....L2: L3:	258 257 252	P
	- power factor/time constant:	0.80	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	160	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.00kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage : 264V Leakage current :0.85mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See table n°6 at page 113	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	56.4	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=363	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 245s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P

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	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	95.0 99.0 91.0	P

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	14 (3-poles)	
	Rated current: In (A)	40.0	
	Rated operational voltage: Ue (V)	240	
	Rated service short-circuit breaking capacity: (kA)	100	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting : 40.0A Short-circuit setting : 400 A	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0.45-0.65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	P
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		N/A

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	Fuse ”F”: copper wire: diameter 0.8 mm. 50 mm long	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 128	P
	Conductor cross-sectional area (mm²) :	10.0	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤39.0s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	30.0 28.0 31.0	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1.05 (V) ..... L1: ..... L2: L3:	270 268 270	P
	- r.m.s. test current AC/DC: (A) ..... L1: ..... L2: L3:	100kA 110kA 102kA	P
	power factor/time constant :	0.19	P
	- Factor ”n”	2.20	P
	- peak test current (A) :	220kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) ..... L1: ..... L2: L3:	14.5 28.9 19.0	P
	- Joule integral I^2dt (A^2s) ..... L1: ..... L2: L3:	0.22MA^2s 1.08MA^2s 0.40MA^2s	P
	Pause. t: (min)	3.00	P

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	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	8.80 27.8 19.7	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	0.07MA^2s 0.93MA^2s 0.52MA^2s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	9.30 27.8 19.2	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	0.07MA^2s 0.94MA^2s 0.51MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	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. 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: L3:		N/A
	- test current I/Ie = 1.0 (A).....L1: .....L2: L3:		N/A
	- power factor/time constant:		N/A

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	- frequency: (Hz)		N/A
	- on-time (ms):		N/A
	- off-time (s):		N/A
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.01kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage : 265V Leakage current :0.75mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed 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
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x40.0=23.2	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 55.0 s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤ 39.0 s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	16.0 18.0 19.0	P

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX³ 250 Light Blue label (Electronic release)	

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	Sample no:	15 (3-poles)	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	415	
	Rated service short-circuit breaking capacity: (kA)	70.0	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting : 250A Short-circuit setting : 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0.45-0.65	0.51	P
	- size of hole: <30mm^2	25mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 128	P
	Conductor cross-sectional area (mm^2) :	10.0	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P

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8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	165 172 164	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1.05 (V) .....L1: .....L2: L3:	467 464 468	P
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:	69.8kA 74.8kA 69.2kA	P
	power factor/time constant :	0.20	P
	- Factor ”n”	2.29	P
	- peak test current (A) :	159kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	27.6 27.4 20.0	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	1.17MA^2s 2.38MA^2s 0.92MA^2s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	22.5 28.9 19.3	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	0.70MA^2s 2.24MA^2s 0.91MA^2s	P
	Pause. t: (min)	3.00	P

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	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	28.1 24.7 17.5	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	1.36MA^2s 1.97MA^2s 0.74MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	415	
	Conductor cross-sectional area (mm^2) :	120	
	Number of operating cycles per hour	120 cycles per hour	P
	Number (5% of the number given in column 4. tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75	P
	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.	Overload setting : 250A Short-circuit setting : 375A	P
	Conditions. make/break operations:		
	- test voltage U/Ue = 1.0 (V) .....L1: .....L2: L3:	448 454 440	P
	- test current I/Ie = 1.0 (A).....L1: .....L2: L3:	253 255 256	P
	- power factor/time constant:	0.79	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	166	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.01kV	P

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	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage : 457V Leakage current :0.83mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See table n°7 at page 114	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	51.5	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=362	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 260s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	92.0 100 97.0	P

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX³ 250 Light Blue label (Electronic release)	
	Sample no:	16 (3-poles)	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated service short-circuit breaking capacity: (kA)	20.0	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	

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	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting : 250A Short-circuit setting : 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0.45-0.65	0.51	P
	- size of hole: <30mm^2	25mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 128	P
	Conductor cross-sectional area (mm^2) :	10.0	P
	If terminals unmarked: line connected at: (underside/upside)	Underside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	156 161 167	P

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8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1.05 (V) .....L1: .....L2: L3:	726 731 726	P
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:	21.1kA 21.4kA 22.0kA	P
	power factor/time constant :	0.28	P
	- Factor ”n”	2.35	P
	- peak test current (A) :	51.8kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	20.2 19.5 22.9	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	1.54MA^2s 1.39MA^2s 3.17MA^2s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	19.4 14.0 21.1	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	1.86MA^2s 0.53MA^2s 2.53MA^2s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	24.5 21.3 16.3	P
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	3.37MA^2s 1.76MA^2s 0.78MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P

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8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	690	
	Conductor cross-sectional area (mm²) :	120mm²	
	Number of operating cycles per hour	120 cycles per hour	P
	Number (5% of the number given in column 4. tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75 cycles	P
	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.	Overload setting : 250A Short-circuit setting : 375A	P
	Conditions. make/break operations:		
	- test voltage U/Ue = 1.0 (V) .....L1: .....L2: L3:	726 735 727	P
	- test current I/Ie = 1.0 (A).....L1: .....L2: L3:	259 259 253	P
	- power factor/time constant:	0.78	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	172	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.00kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage : 552V Leakage current :0,86mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See table n°8 at page 114	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	48.5	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P

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8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=362	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 255s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	81.0 89.0 93.0	P

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		
	A short-circuit test is made with a value of prospective current (Isu) equal to 25% of the ultimate rated short-circuit breaking capacity (Icu)		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	17 (4 poles)	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated ultimate short-circuit breaking capacity: (kA)	20	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	The test sequence of operations is O – t - CO		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting: 250A Short circuit setting: 2.50kA	P
	closing mechanism energized with 85% at the rated Uc: (V)		N/A

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	The circuit-breaker is mounted complete on its own support or an equivalent support.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point	P
	Conductor cross-sectional area (mm^2):	120	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
	Test sequence of operation: O – t – CO		
	Test circuit according figure: 9	See page 129	P
	- test voltage U/Ue = 1,05 (V) ..... L1: ..... L2: L3:	727	P
	short-circuit test current (Isu): equal to 25% of the ultimate rated short-circuit breaking capacity (Icu)	5.00kA	P
	- r.m.s. test current AC/DC: (A):	5.40kA	P
	power factor/time constant:	0.78	P
	- Factor "n"	2.85	P
	- peak test current (Amax):	15.4kA	P
	Test sequence "O" L1		
	- max. let-through current: (kApeak) L1:	10.3	P
	- Joule integral I^2dt (A^2s) L1:	0.56 MA^2s	P

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	Pause, t: (min)	3.00	P
	Test sequence ”CO” L1		
	- max. let-through current: (kApeak) L1:	11.5	P
	- Joule integral I^2dt (A^2s) L1:	1.18MA^2s	P
	Test sequence ”O” L2		
	- max. let-through current: (kApeak) L2:	12.1	P
	- Joule integral I^2dt (A^2s) L2:	0.90MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” L2		
	- max. let-through current: (kApeak) L2:	12.1	P
	- Joule integral I^2dt (A^2s) L2:	0.84MA^2s	P
	Test sequence ”O” L3		
	- max. let-through current: (kApeak) L3:	12.1	P
	- Joule integral I^2dt (A^2s) L3:	1.71MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” L3		
	- max. let-through current: (kApeak) L3:	11.9	P
	- Joule integral I^2dt (A^2s) L3:	3.00MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
C.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	Test voltage: 1.40kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<6mA / 1,1 Ue)	Test voltage : 760V Leakage current :0.70mA	P

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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:	≤231s	
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N:	80.0 85.0 88.0	P

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		
	A short-circuit test is made with a value of prospective current (Isu) equal to 25% of the ultimate rated short-circuit breaking capacity (Icu)		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	18 (4 poles)	
	Rated current: In (A)	40	
	Rated operational voltage: Ue (V)	690	
	Rated ultimate short-circuit breaking capacity: (kA)	20	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	The test sequence of operations is O – t - CO		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting: 16.0A Short circuit setting: 24.0A	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A

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	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point	P
	Conductor cross-sectional area (mm²):	10.0	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
	Test sequence of operation: O – t – CO		
	Test circuit according figure: 9	See page 129	P
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	727	P
	short-circuit test current (Isu): equal to 25% of the ultimate rated short-circuit breaking capacity (Icu)	5.00kA	P
	- r.m.s. test current AC/DC: (A):	5.40kA	P
	power factor/time constant:	0.78	P
	- Factor ”n”	2.85	P
	- peak test current (Amax):	15.4kA	P
	Test sequence ”O” L1		
	- max. let-through current: (kApeak) L1:	12.1	P
	- Joule integral I²dt (A²s) L1:	0.9 MA^{2}s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” L1		
	- max. let-through current: (kApeak) L1:	12.0	P
	- Joule integral I²dt (A²s) L1:	0.96MA^{2}s	P
	Test sequence ”O” L2		
	- max. let-through current: (kApeak) L2:	12.0	P

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	- Joule integral I^2dt (A^2s) L2:	0.87MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” L2		
	- max. let-through current: (kApeak) L2:	11.5	P
	- Joule integral I^2dt (A^2s) L2:	1.24MA^2s	P
	Test sequence ”O” L3		
	- max. let-through current: (kApeak) L3:	11.9	P
	- Joule integral I^2dt (A^2s) L3:	0.91MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” L3		
	- max. let-through current: (kApeak) L3:	8.00	P
	- Joule integral I^2dt (A^2s) L3:	0.29MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
C.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	Test voltage: 1.40kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<6mA / 1,1 Ue)	Test voltage : 760V Leakage current :0.73mA	P
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:	15.0 19.0 20.0	P

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Annex F	**Additional tests for circuit-breakers with electronic over-current protection**		
F4 and F5	Verification of electromagnetic compatibility (EMC)		
	See report:	11.258: Attached n°3	P
F6	Suitability for multiple frequencies		P
	The tests shall be performed at each rated frequency or, when a range of rated frequencies is declared, at the lowest and the highest rated frequencies.		N/A
F.6.2	Tests shall be performed on any pair of phase-poles chosen at random at any convenient voltage. Under-voltage releases, if any, shall either be energized or disabled. All other auxiliaries shall be disconnected during the test.		N/A
	The short-time and instantaneous trip current settings shall each, if relevant, be adjusted to 2,5 times the current setting. If this setting is not available, the next closest higher setting shall be used.		N/A
	A current of 0,95 times the conventional non-tripping current (see Table 6) is applied for a time equal to 10 times the tripping time which corresponds to 2,0 times the current setting.		N/A
	Immediately following the test of a), a current of 1,05 times the conventional tripping current (see Table 6) is applied.		N/A
	A further test starting from the cold state is made at 2,0 times the current setting.		N/A
	For each test frequency, the overload tripping characteristics shall comply with the following requirements: – for test a) no tripping shall occur; – for test b) tripping shall occur within the conventional time (see Table 6); – for test c) tripping shall occur within 1,1 times the maximum and 0,9 times the minimum values of the manufacturer's stated time-current characteristic.		N/A
F.7.	Dry heat test		P
F.7.1	The test shall be performed on the circuit-breaker in accordance with 7.2.2 at the maximum rated current for a given frame size, on all phase poles, at an ambient temperature of 40 °C	In=250 A	P
	The duration of the test, once temperature equilibrium is reached, shall be 168 h	Yes	P
	Tightening torques applied to the terminals shall be in accordance with the manufacturers' instructions. In absence of such instructions, table 4 of IEC 60947-1 shall apply	Torque=10.0 Nm	P

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	As an alternative, the test may be performed as follows:		
	- measure and record the highest temperature rise of the air surrounding the electronic components, during the temperature rise verification of test sequence 1	Ambient temperature during temperature rise test : _____ °C	
	- install the electronic controls in the chamber		
	- supply the electronic controls which there input energizing value		
	- adjust the temperature of the test chamber to a value of 40 K above the temperature rise recorded for the surrounding the electronic components and maintain this temperature for 168 h	Chamber temperature: ____°C	
	Test carried out.….:….:	☒ normal ☐ alternative	P
F.7.2	Test results		
	The circuit-breaker and the electronic controls shall meet the following requirements:		
	- no tripping of the circuit-breaker shall occur	Yes	P
	- no operating of the electronic controls which would cause the circuit-breaker to trip shall occur	Yes	P
F.7.3	Verification of the overload releases		
	Following the test F.7.1, the operation of the overload releases of the circuit-breaker shall be verified in accordance with 7.2.1.2.4, item b).	I test:250A Ambient temperature: 40.0°C	P
7.2.1.2.4	Opening by over-current releases		P
b)	Opening under overload conditions		
1)	Instantaneous or definite time-delay operation		
	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		
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	Rated current 1.00x250= 250A Test current 1.05x250=262A Conventional time:2h	P

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	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	Test current: 1.30x250=325A Tripping time:213s	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		P
	The width of the temperature band shall be at least 10 K on either side of the reference temperature		P
F.8.	Damp heat test		
F.8.1	Test procedure	11.258: Attached n°3	
	The test shall be performed according to IEC 60068-2-30 (12 +12 hours cycle)	Yes	
	Test Db temperature cycle between 25°C and upper temperature	Yes	
	The upper temperature shall be 55°C ± 2 °C (variant 1) and number of cycles shall be six.	Yes	
	The relative humidity is maintained at a high level at the upper temperature	Yes	
	The test may be performed with only the electronic controls in the test chamber	Yes	
	Test result……..:		P
F.8.2	Verification of the overload releases		
	Following the test F.8.1, the operation of the overload releases of the circuit-breaker shall be verified in accordance with 7.2.1.2.4, item b).	I test: 250A Ambient temperature: 40.0°C	P
7.2.1.2.4	Opening by over-current releases		
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		

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	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	Rated current 1.00x250= 250A Test current 1.05x250=262A Conventional time:2h	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	Test current: 1.30x250=325A Tripping time:183s	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		P
	The width of the temperature band shall be at least 10 K on either side of the reference temperature		P
F.9.	Temperature variation cycles at a specified rate of change		
F.9.1	Test conditions		
	Each design of electronic controls shall be submitted to temperature variation cycles in according with figure F.15	Yes	
	The rise and fall of temperature during the rate of variation shall be 1 K/min ± 0,2 K/min.	Yes	
	Their temperature, once reached, shall be maintained for at least 2 h.	Yes	
	The number of cycles shall be 28.	Yes	
F.9.2	Test procedure		
	The test shall be carried out according IEC 60068-2-14.	Yes	
	For the these test, the electronic controls may be mounted inside the circuit-breaker or separately.	Inside	
	The electronic controls shall be energized to simulate service conditions.	Yes	
	Where the electronics controls are mounted inside the circuit-breaker, the main circuit shall not be energized.	Yes	
F.9.3	Test results		
	The electronic controls shall meet the following requirement.		P

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	No operation of the electronic controls which would cause the circuit-breaker to trip during the 28 cycles shall occur.	Yes	P
F.9.4	Verification of overload releases		
	Following the test F.8.1, the operation of the overload releases of the circuit-breaker shall be verified in accordance with 7.2.1.2.4, item b).	I test: 250A Ambient temperature: 40.0°C	P
7.2.1.2.4	Opening by over-current releases		P
b)	Opening under overload conditions		N/A
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		P
	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	Rated current 1.00x250= 250A Test current 1.05x250=262A Conventional time:2h	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	Test current: 1.30x250=325A Tripping time:207s	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		P
	The width of the temperature band shall be at least 10 K on either side of the reference temperature		P

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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_{IT}) equal to 1,2 times the maximum 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 maximum setting of the definite time delay release tripping current, but not less than 500 A nor exceeding 50kA.		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	17	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated ultimate short-circuit breaking capacity: (kA)	20	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	The test sequence of operations is O – t - CO		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting: 250A Short circuit setting: 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0,45-0,65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	P

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	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	Yes	P
	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point	P
	Conductor cross-sectional area (mm^2):	120	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10,0	P
	Test sequence of operation: O – t – CO		
	Test circuit according figure: 9	See page 129	P
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	727	P
	Short-circuit test current (I_{IT}): equal to 1,2 times the max. setting of the short-time delay release tripping current,		N/A
	or, in the absence of such a release, 1,2 time the max. setting of the tripping current of the instantaneous release,	3.00kA (Tested at 5.00kA	P
	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)	5.40kA	P
	power factor/time constant:	0.68	P
	- Factor ”n”	2.85	P
	- peak test current (Amax) :	15.4kA	P
	Test sequence ”O” L1		
	- max. let-through current: (kApeak) L1:	12.1	P
	- Joule integral I^2dt (A^2s) L1:	0.98MA^2s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” L1		
	- max. let-through current: (kApeak) L1:	12.0	P
	- Joule integral I^2dt (A^2s) L1:	0.96MA^2s	P

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	Test sequence ”O” L2		
	- max. let-through current: (kApeak) L2:	12.0	P
	- Joule integral I²dt (A²s) L2:	0.87MA²s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” L2		
	- max. let-through current: (kApeak) L2:	11.5	P
	- Joule integral I²dt (A²s) L2:	1.24MA²s	P
	Test sequence ”O” L3		
	- max. let-through current: (kApeak) L3:	11.9	P
	- Joule integral I²dt (A²s) L3:	0.91MA²s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” L3		
	- max. let-through current: (kApeak) L3:	8.00	P
	- Joule integral I²dt (A²s) L3:	0.29MA²s	P
	For 4-pole circuit-breakers with a protected neutral pole, the test voltage for that pole shall be phase-to-phase voltage divided by √3. This test is applicable only where the construction of the protected neutral pole differs from that of the phase poles.	Test voltage 690V	P
	Test sequence ”O” N		
	- max. let-through current: (kApeak) ..... N:	12.0	P
	- Joule integral I²dt (A²s) ..... N:	0.90MA²s	P
	Pause, t: (min)	3.00	P
	Test sequence ”CO” N		
	- max. let-through current: (kApeak) ..... N:	7.10	P
	- Joule integral I²dt (A²s) ..... N:	0.34MA²s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	7.10	P
H.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	Test voltage: 1.40kV	P

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	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<6mA / 1,1 Ue)	Test voltage : 760V Leakage current :0.75mA	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:	≤196s	P
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	80.0 85.0 88.0 86.0	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 the symbol  which shall be market on the circuit-breaker immediately following these values of rated voltage	Samples have been tested according to this Annex	P

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	TABLE n°1: Heating Tes on Sample n°1 (4 poles – Test Sequence I)t		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 39.9°C		—

Thermocouple Locations	**Max. temperature measured, (˚C)**	**Max. temperature limit, (˚C)**
Terminal for external connections	98.1	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	46.9	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	46.6	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	56.7	100

	TABLE n°2: Heating Test Sample n°3 (3-poles: : Test Sequence I)		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.3°C		—

Thermocouple Locations	**Max. temperature measured, (˚C)**	**Max. temperature limit, (˚C)**
Terminal for external connections	79.5	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	48.5	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	50.8	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	65.7	100

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	TABLE n°3: Heating Test Sample n°5 (4-poles: Test Sequence II/III)		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.0°C		—

Thermocouple Locations	**Max. temperature measured, (˚C)**	**Max. temperature limit, (˚C)**
Terminal for external connections	95.2	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	51.2	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	54.4	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	75.5	100

	TABLE n°4: Heating Test Sample n°7 (4-poles: Test Sequence II/III)		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.2°C		—

Thermocouple Locations	**Max. temperature measured, (˚C)**	**Max. temperature limit, (˚C)**
Terminal for external connections	98.7	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	51.6	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	53.1	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	70.2	100

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	TABLE n°5: Heating Test Sample n°8 (4-poles: Test Sequence II/III)		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.0°C		—

Thermocouple Locations	**Max. temperature measured, (˚C)**	**Max. temperature limit, (˚C)**
Terminal for external connections	105	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	58.1	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	60.6	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	80.3	100

	TABLE n°6: Heating Test Sample n°13 (3-poles: Test Sequence II/III)		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.0°C		—

Thermocouple Locations	**Max. temperature measured, (˚C)**	**Max. temperature limit, (˚C)**
Terminal for external connections	96.4	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	49.6	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	51.7	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	67.4	100

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	TABLE n°7: Heating Test Sample n°15 (3-poles: Test Sequence II/III)		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.0°C		—

Thermocouple Locations	Max. temperature measured, (˚C)	Max. temperature limit, (˚C)
Terminal for external connections	91.8	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	42.7	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	48.3	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	55.4	100

	TABLE n°8: Heating Test Sample n°16 (3-poles: Test Sequence II/III)		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.1°C		—

Thermocouple Locations	Max. temperature measured, (˚C)	Max. temperature limit, (˚C)
Terminal for external connections	98.5	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	40.7	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	44.6	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	58.6	100

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	TABLE n°9: dielectric strength Sample n°1 (4-poles: Test Sequence I)		
Test voltage applied between:		**Test potential applied (kV)**	**Breakdown / flashover (Yes/No)**
Part 1: clause 8.3.3.4.1-2c i)	-open position	9.80	No
	-tripped position	9.80	No
	-close position	9.80	No
Part 1: clause 8.3.3.4.1-2c ii)	-open position	9.80	No
	-tripped position	9.80	No
	-close position	9.80	No
Part 1: clause 8.3.3.4.1-2c iii)	-open position	9.80	No
	-tripped position	9.80	No
	-close position	9.80	No
Part 1: clause 8.3.3.4.1-2c iv)	-open position	12.3	No
	-tripped position	12.3	No
	-close position	N/A	No
Supplementary information:			

	TABLE n°10: dielectric strength Sample n°3 (3-poles: Test Sequence I)		
Test voltage applied between:		**Test potential applied (kV)**	**Breakdown / flashover (Yes/No)**
Part 1: clause 8.3.3.4.1-2c i)	-open position	9.60	No
	-tripped position	9.60	No
	-close position	9.60	No
Part 1: clause 8.3.3.4.1-2c ii)	-open position	9.60	No
	-tripped position	9.60	No
	-close position	9.60	No
Part 1: clause 8.3.3.4.1-2c iii)	-open position	9.60	No
	-tripped position	9.60	No
	-close position	9.60	No
Part 1: clause 8.3.3.4.1-2c iv)	-open position	12.3	No
	-tripped position	12.3	No
	-close position	N/A	No
Supplementary information:			

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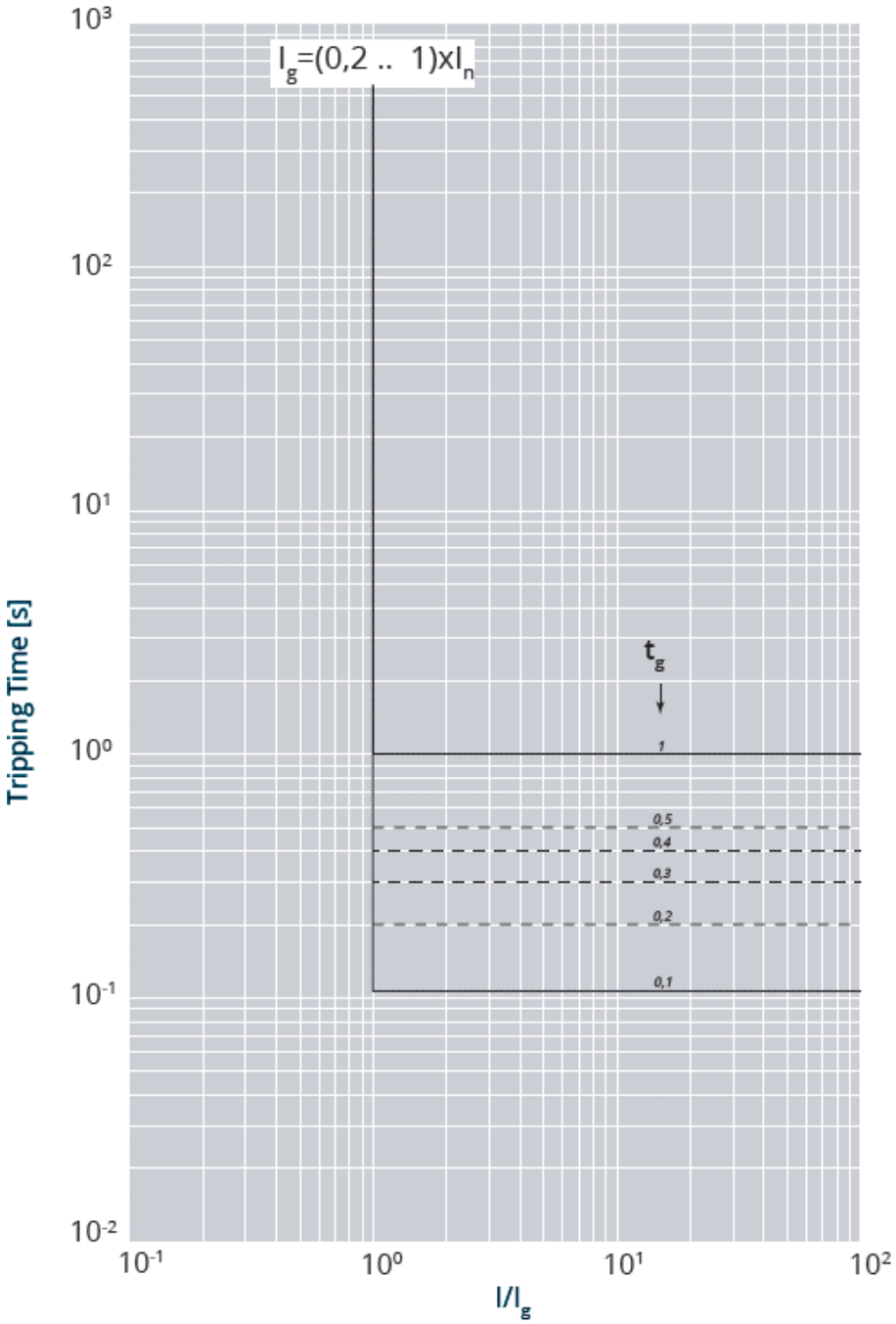
Time current characteristics

Type designation: DPX³ 250 (Electronic release)

Ground Tripping



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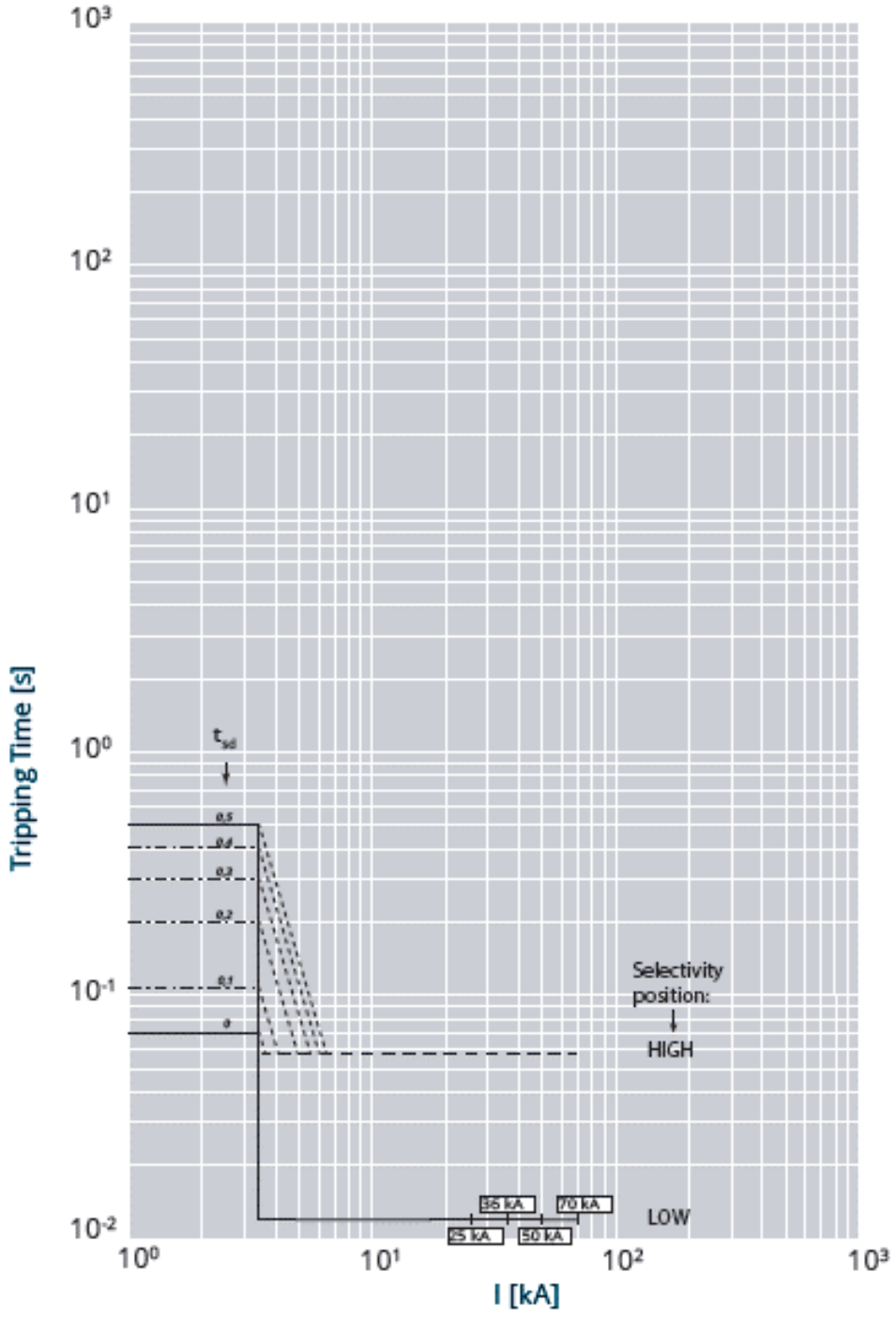
Type designation: DPX³ 250 (Electronic release)
Instantaneous tripping



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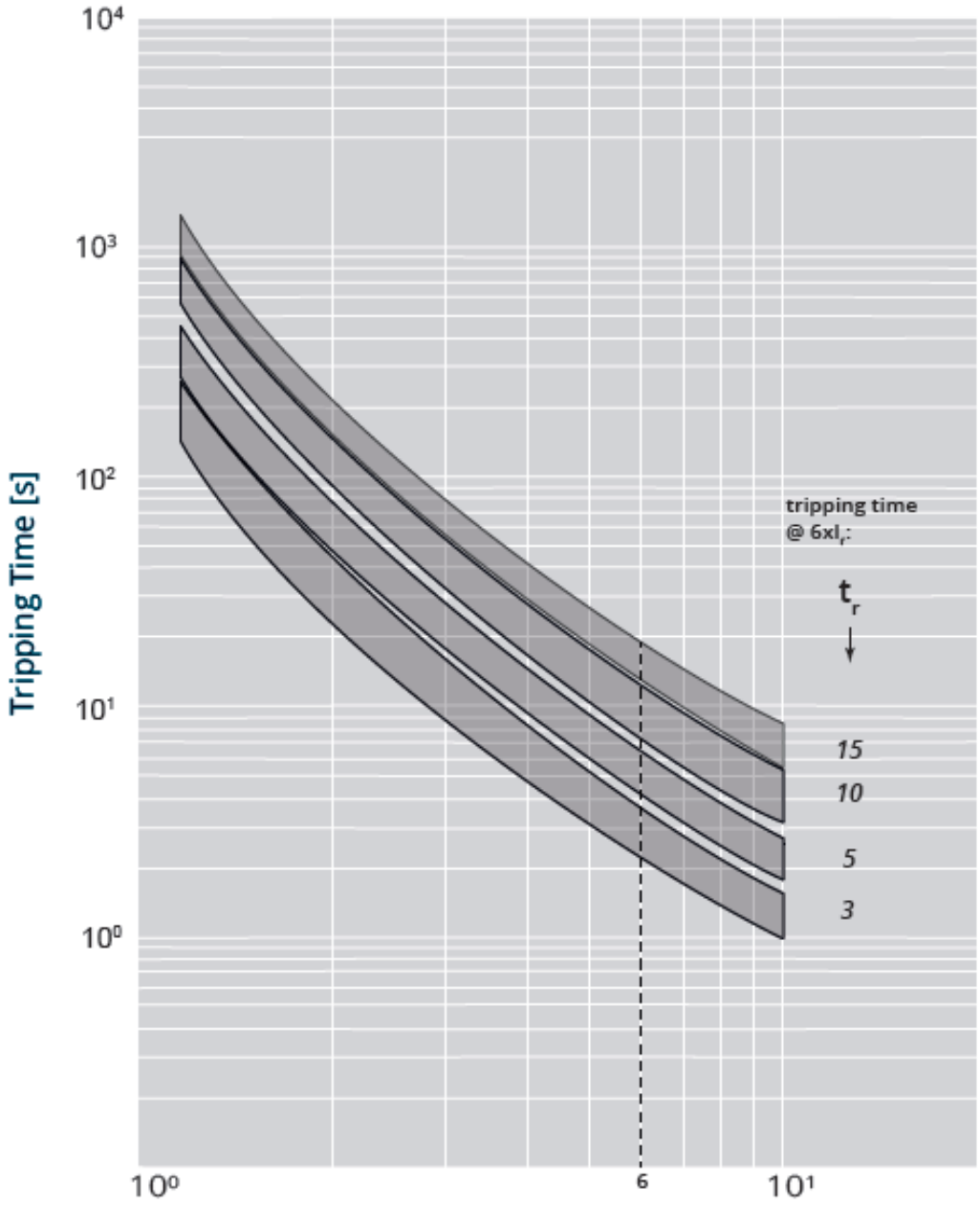
Type designation: DPX³ 250 (Electronic release)

Long time tripping



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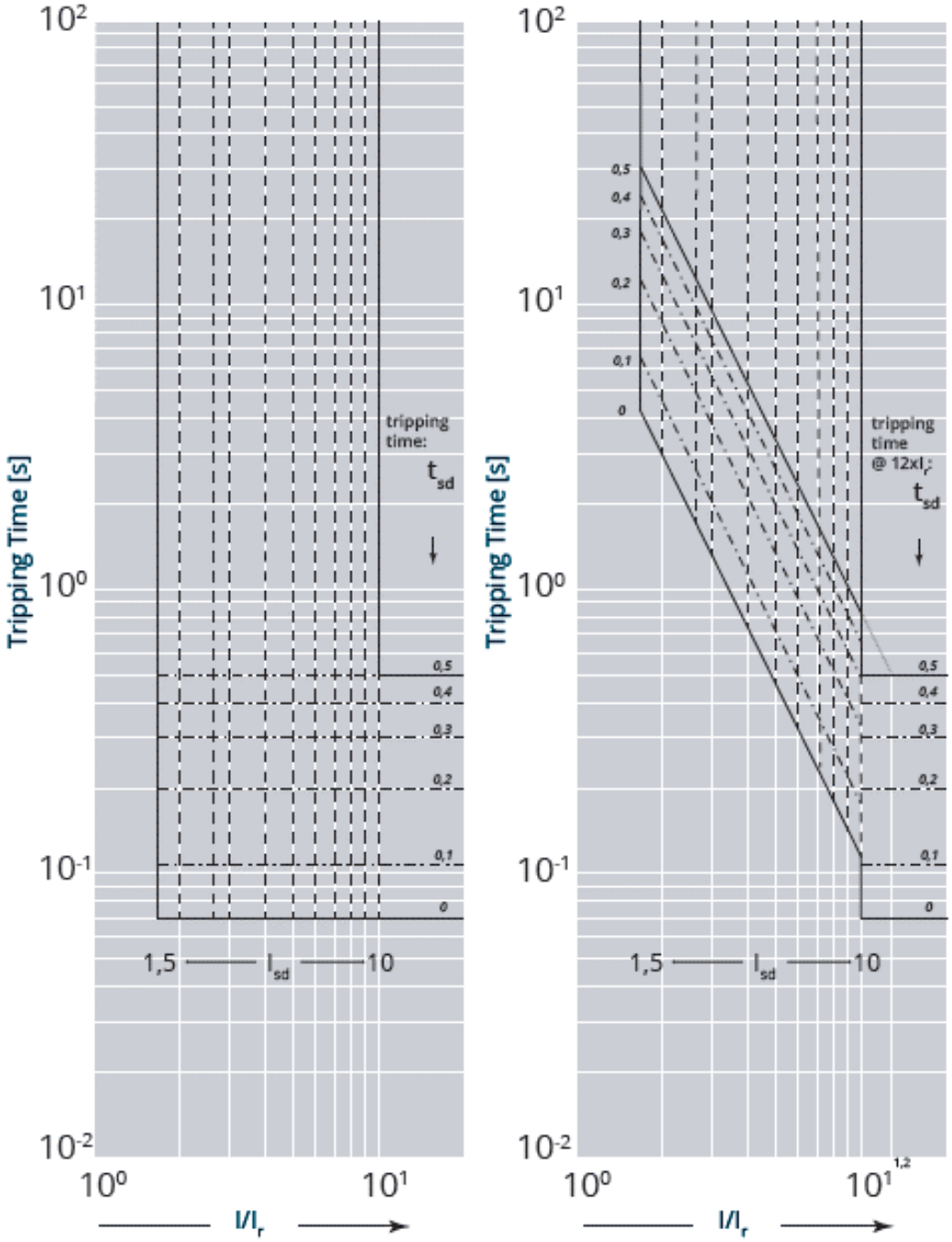
Type designation: DPX³ 250 (Electronic release)

Short time tripping



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Temperature/current characteristics

Temperature/current data

Moulded-case circuit breaker DPX³ 250 E			*Influence of ambient temperature*			
Ambient temperature -->		°C	up to 40	50	60	70
		In (A)				
DPX³ 250		40	40	40	34	30
		100	100	100	84	76
		160	160	160	134	122
		250	250	250	210	190

Correction factor declared by Manufacturer

For phase poles
Correction factor at the minimum current setting k1 = 1.00
Correction factor at the maximum current setting k2 = 1.00
For neutral pole
Correction factor at the minimum current setting k1 = 1.00
Correction factor at the maximum current setting k2 = 1.00

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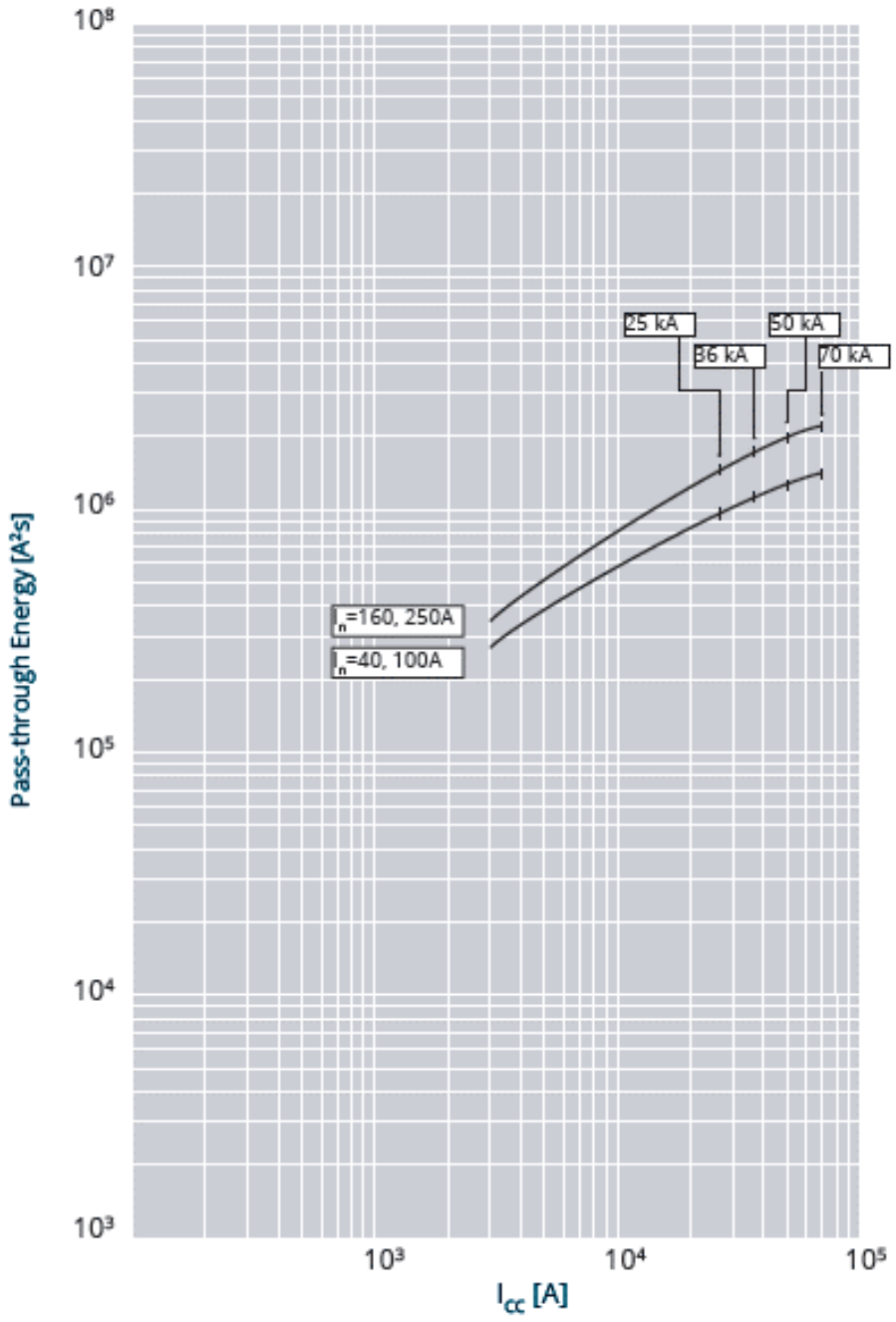
Energy I^2t characteristics

Type designation: DPX³ 250 (Electronic release)



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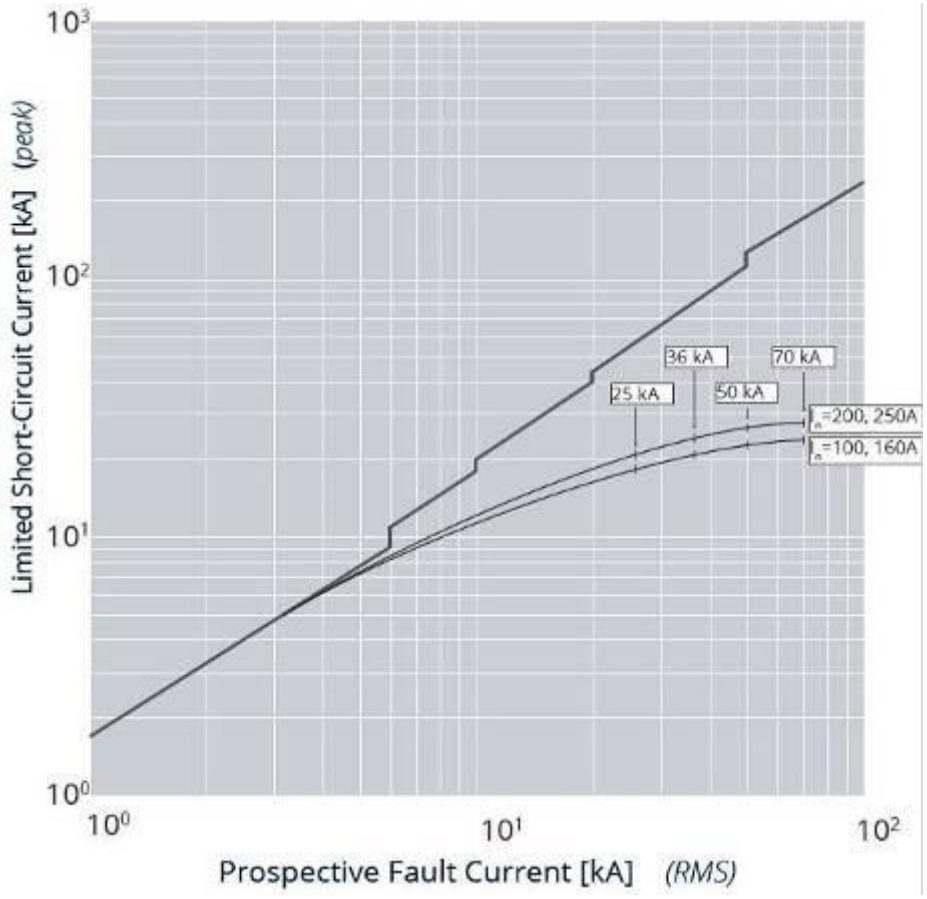
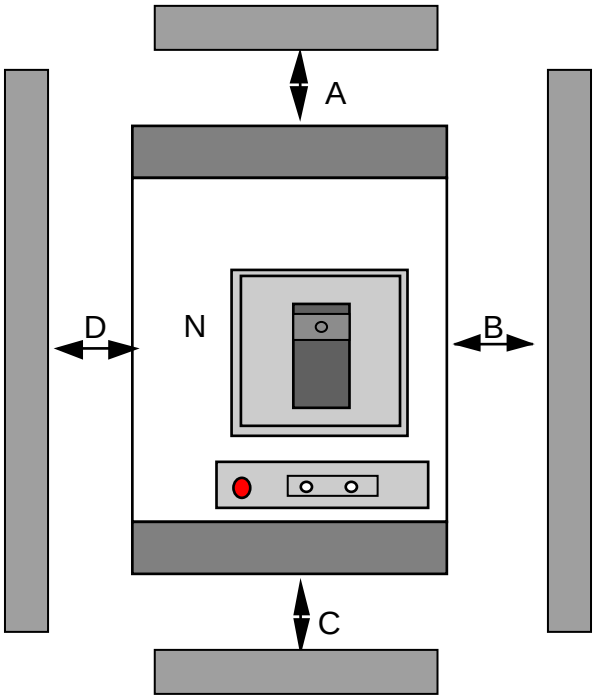
Maximum cut-off peak current characteristics

Type designation: DPX³ 250 (Electronic release)



Minimum Safety Distances



Circuit-breakers	**A** (mm) from wall to earth	**B** (mm) from side wall to earth	C (mm) from wall to earth	**D** (mm) from side wall to earth
DPX^3 250	60	20	20	20

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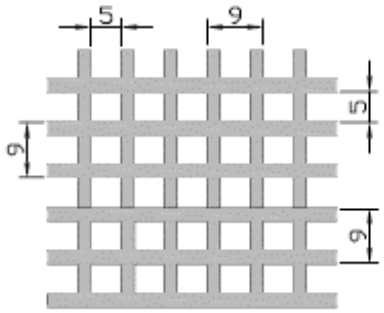
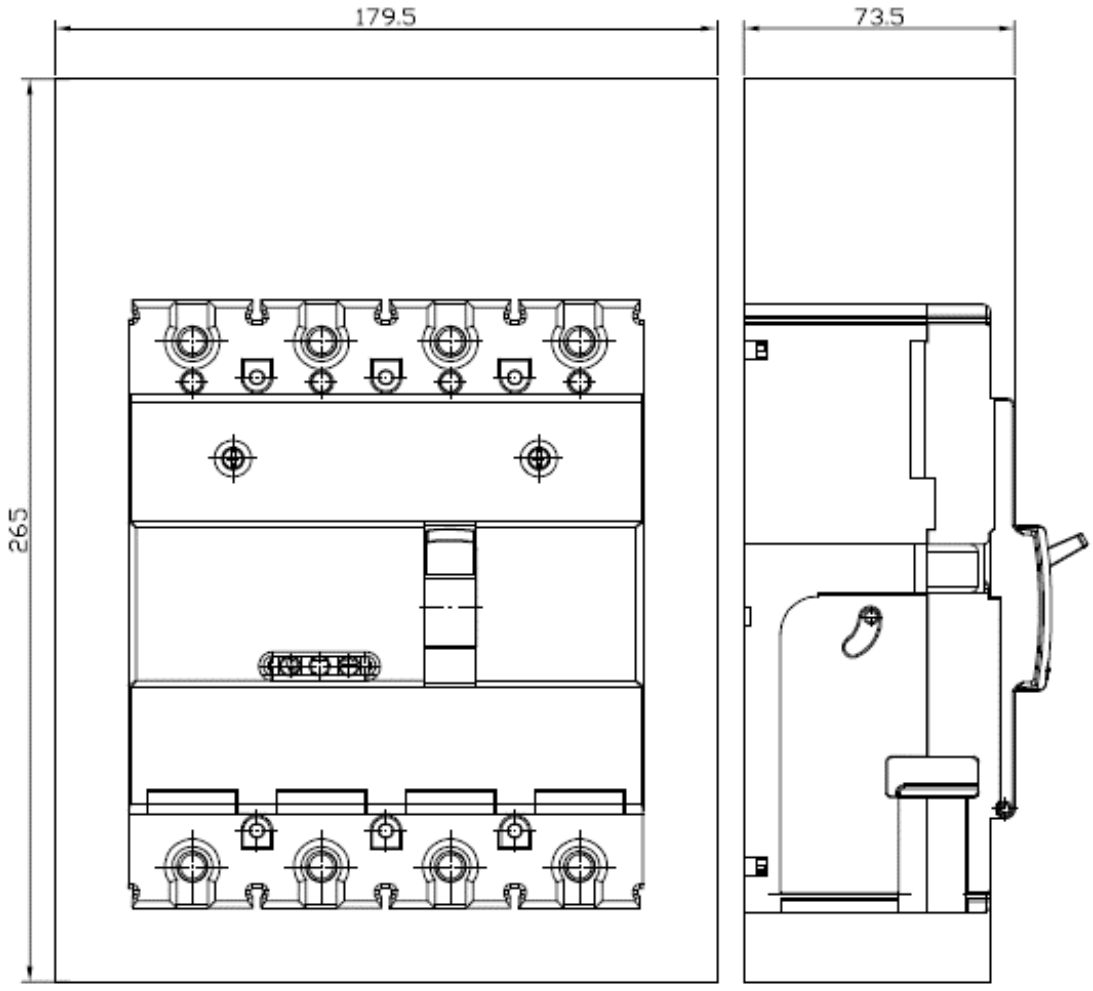
Metallic grid





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Photographs

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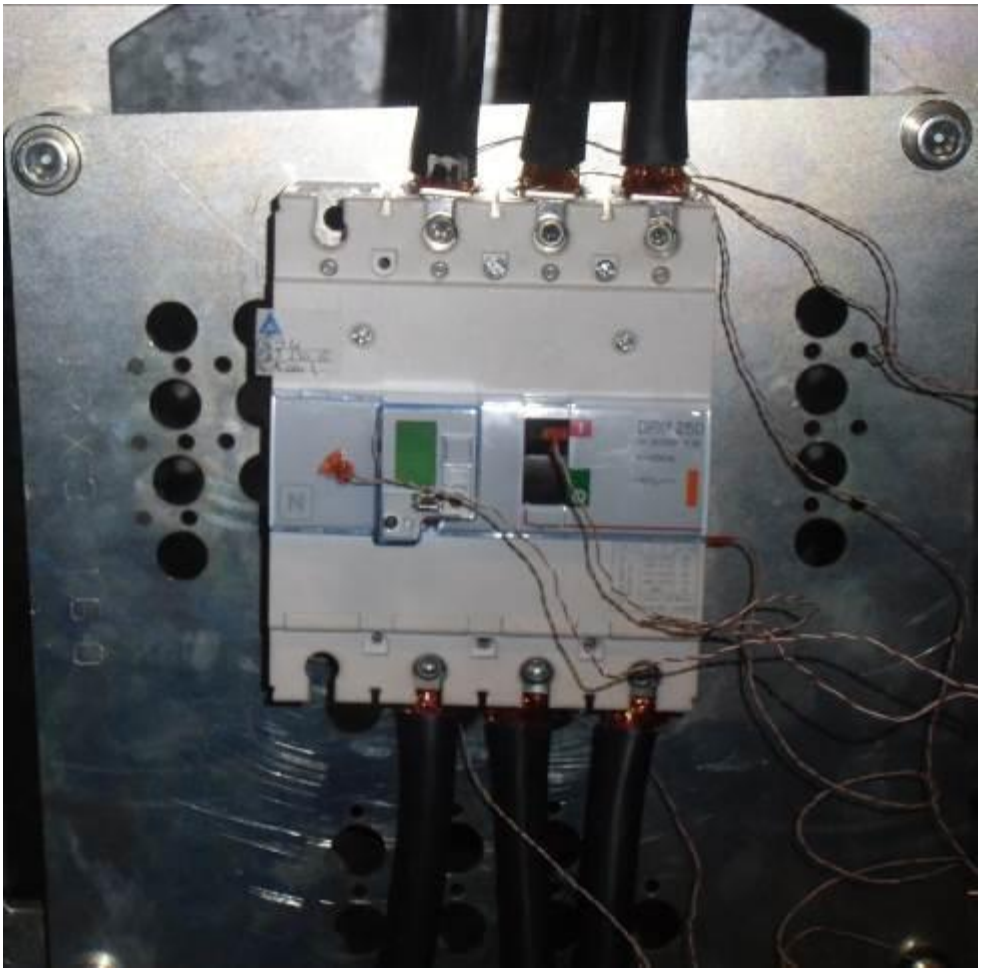
Sample under test



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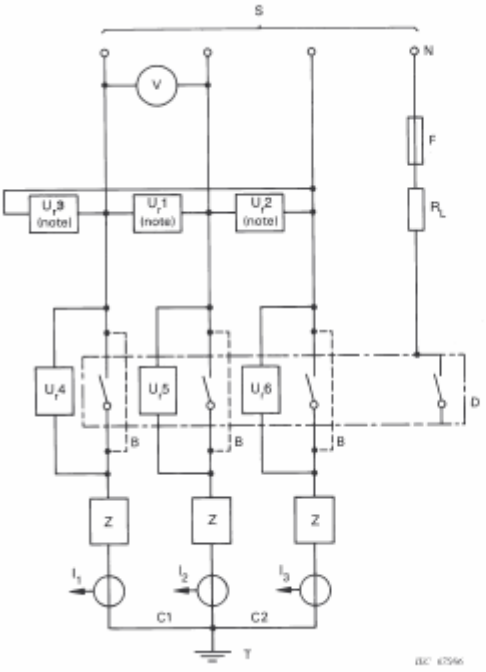
Test circuit for the verification of making and breaking capacities on four-pole equipment



S = Supply

U_r1, U_r2, U_r3, U_r4, U_r5, U_r6 = Voltage sensors

V = Voltage measuring device

N = Neutral of supply (or artificial neutral)

F = Fusible element (8.3.3.5.2, item g))

Z = Load circuit (see Figure 8)

R_L = Fault current limiting resistor

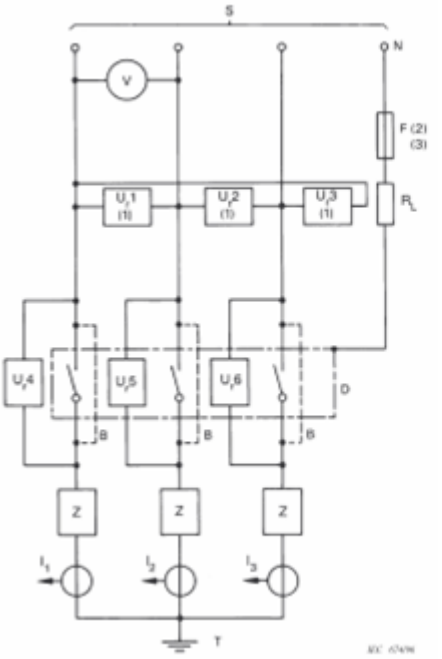
D = Equipment under test (including connecting cables)
NOTE – Outline includes metallic screen or enclosure.

B = Temporary connections for calibration

I_1, I_2, I_3 = Current sensors

T = Earth – One earthing point only (load side or supply side)

Test circuit for the verification of making and breaking capacities on three-pole equipment



S = Supply

U_r1, U_r2, U_r3, U_r4, U_r5, U_r6 = Voltage sensors

V = Voltage measuring device

N = Neutral of supply (or artificial neutral)

F = Fusible element (8.3.3.5.2, item g))

Z = Load circuit (see Figure 8)

R_L = Fault current limiting resistor

D = Equipment under test (including connecting cables)
NOTE – Outline includes metallic screen or enclosure.

B = Temporary connections for calibration

I_1, I_2, I_3 = Current sensors

T = Earth – One earthing point only (load side or supply side)

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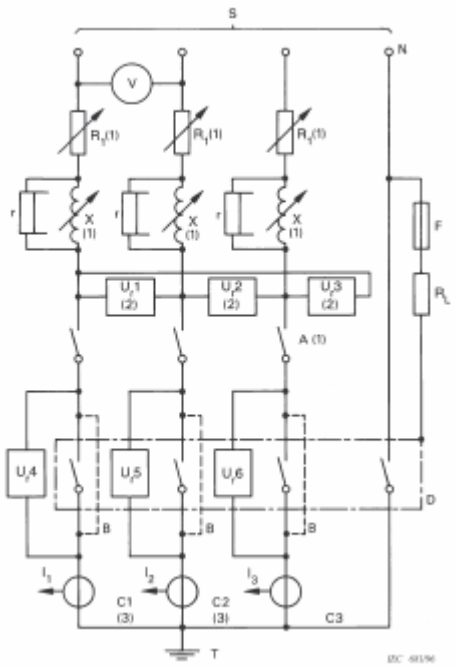
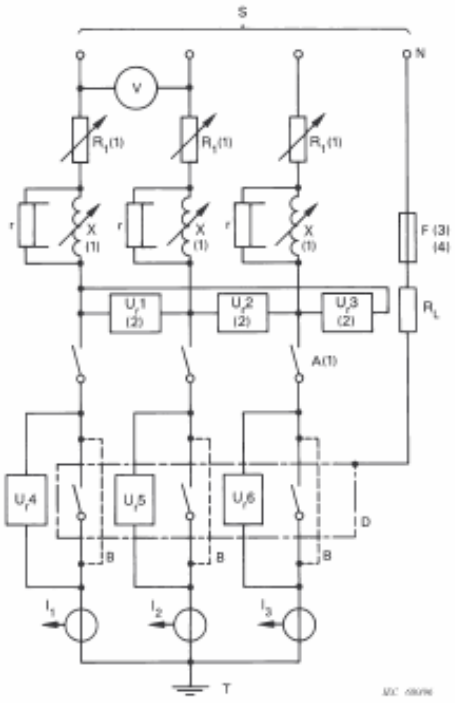
Test circuit for the verification of short-circuit making and breaking capacities on four pole equipment



S = Supply
U_r1, U_r2, U_r3, U_r4, U_r5, U_r6, = Voltage sensors
V = Voltage measuring device
R_1 = Adjustable resistor
N = Neutral of supply
F = Fusible element (8.3.4.1.2, item d))
X = Adjustable reactors
R_L = Fault current limiting resistor
A = Closing device
D = Equipment under test (including connecting cables) NOTE – Outline includes metallic screen or enclosure.
B = Temporary connections for calibration
I_1, I_2, I_3 = Current sensors
T = Earth – One earthing point only (load side or supply side)
r = Shunt resistor (8.3.4.1.2, item b))

Test circuit for the verification of short-circuit making and breaking capacities on three pole equipment



S = Supply
U_r1, U_r2, U_r3, U_r4, U_r5, U_r6, = Voltage sensors
V = Voltage measuring device
A = Closing device
R_1 = Adjustable resistor
N = Neutral of supply (or artificial neutral)
F = Fusible element (8.3.4.1.2, item d))
X = Adjustable reactors
R_L = Fault current limiting resistor
D = Equipment under test (including connecting cables) NOTE – Outline includes metallic screen or enclosure.
B = Temporary connections for calibration
I_1, I_2, I_3 = Current sensors
T = Earth – One earthing point only (load side or supply side)
r = Shunt resistor (8.3.4.1.2, item b))

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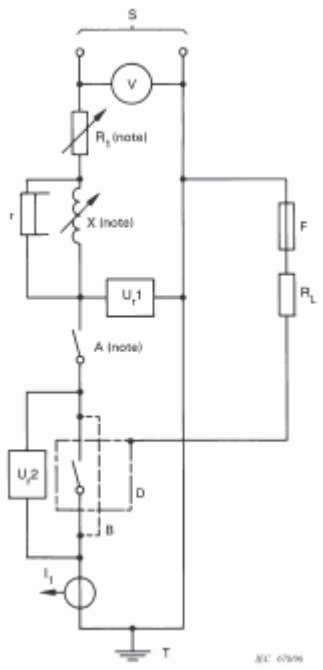
Test circuit for the verification of short-circuit making and breaking capacities single-pole equipment



S	=	Supply
U_r1, U_r2	=	Voltage sensors
V	=	Voltage measuring device
A	=	Closing device
R_1	=	Adjustable resistor
F	=	Fusible element (8.3.4.1.2, item d))
X	=	Adjustable reactor
R_L	=	Fault current limiting resistor
D	=	Equipment under test (including connecting cables) NOTE – Outline includes metallic screen or enclosure.
B	=	Temporary connections for calibration
I_1	=	Current sensor
T	=	Earth – One earthing point only (load side or supply side)
r	=	Shunt resistor (8.3.4.1.2, item b))

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Attached 1 to the report 1909324STO-001

Test on Neutral pole for Test Sequence II/III (Ics=Icu)

8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	9	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	240	
	Rated service short-circuit breaking capacity: (kA)	100	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting : 250A Short-circuit setting : 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0.45-0.65	0.51	P
	- size of hole: <30mm^2	25mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P

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	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 148	P
	Conductor cross-sectional area (mm²) :	120	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	/ / / 150	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1.05 (V) ..... N: ..... L1: L2:	270 268 270	P
	- r.m.s. test current AC/DC: (A) ..... N: ..... L1: L2:	100kA 110kA 102kA	P
	power factor/time constant :	0.19	P
	- Factor ”n”	2.20	P
	- peak test current (A) :	220kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) ..... N: ..... L1: L2:	11.8	P
	- Joule integral I²dt (A²s) ..... N: ..... L1: L2:	0.14MA²s	P
	Pause. t: (min)	3.00	P

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	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... N: .....L1: L2:	25.2	P
	- Joule integral I^2dt (A^2s) ..... N: .....L1: L2:	1.01MA^2s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... N: .....L1: L2:	15.6	P
	- Joule integral I^2dt (A^2s) ..... N: .....L1: L2:	0.25MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	240	
	Conductor cross-sectional area (mm^2) :	120	
	Number of operating cycles per hour	120 cycles per hour	P
	Number (5% of the number given in column 4. tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75 cycles	P
	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.	Overload setting : 250A Short-circuit setting : 375A	P
	Conditions. make/break operations:		
	- test voltage U/Ue = 1.0 (V) ..... N: .....L1: L2:	258 254 254	P
	- test current I/Ie = 1.0 (A)..... N: .....L1: L2:	258 254 254	P

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	- power factor/time constant:	0.80	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	175	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.00kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage: 264V Leakage current: 0.72mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See table n°14 at page 146	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	62.2	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=362	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 360s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	/ / / 95.0	P

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8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	10	
	Rated current: In (A)	40	
	Rated operational voltage: Ue (V)	240	
	Rated service short-circuit breaking capacity: (kA)	100	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting : 40.0A Short-circuit setting : 400A	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0.45-0.65	0.51	P
	- size of hole: <30mm^2	25mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P

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	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 148	P
	Conductor cross-sectional area (mm²) :	10.0	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤ 39,0 s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	/ / / 30.0	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1.05 (V) ..... N: ..... L1: L2:	270 268 270	P
	- r.m.s. test current AC/DC: (A) ..... N: ..... L1: L2:	100kA 110kA 102kA	P
	power factor/time constant :	0.19	P
	- Factor ”n”	2.20	P
	- peak test current (A) :	220kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) ..... N: ..... L1: L2:	15.2	P
	- Joule integral I^2dt (A^2s) ..... N: ..... L1: L2:	0.23MA^2s	P
	Pause. t: (min)	3.00	P

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	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... N: .....L1: L2:	16.6	P
	- Joule integral I^2dt (A^2s) ..... N: .....L1: L2:	0.27MA^2s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... N: .....L1: L2:	27.2	P
	- Joule integral I^2dt (A^2s) ..... N: .....L1: L2:	0.97MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)		
	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 column 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) ..... N: .....L1: L2:		N/A
	- test current I/Ie = 1.0 (A)..... N: .....L1: L2:		N/A

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	- power factor/time constant:		N/A
	- frequency: (Hz)		N/A
	- on-time (ms):		N/A
	- off-time (s):		N/A
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.00kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage: 264V Leakage current: 0.78mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed 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
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x16=23.5	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 70.0s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤39.0 s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	/ / / 17.0	P

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8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	11	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	415	
	Rated service short-circuit breaking capacity: (kA)	70.0	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting : 250A Short-circuit setting : 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0.45-0.65	0.51	P
	- size of hole: <30mm^2	25mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P

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	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 148	P
	Conductor cross-sectional area (mm²) :	120	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	/ / / 140	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1.05 (V) ..... N: ..... L1: L2:	467 464 468	P
	- r.m.s. test current AC/DC: (A) ..... N: ..... L1: L2:	69.8kA 74.8kA 69.2kA	P
	power factor/time constant :	0.20	P
	- Factor ”n”	2.19	P
	- peak test current (A) :	159kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) ..... N: ..... L1: L2:	27.8	P
	- Joule integral I²dt (A²s) ..... N: ..... L1: L2:	1.20MA²s	P
	Pause. t: (min)	3.00	P

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	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... N: .....L1: L2:	16.0	P
	- Joule integral I^2dt (A^2s) ..... N: .....L1: L2:	0.33MA^2s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... N: .....L1: L2:	27.2	P
	- Joule integral I^2dt (A^2s) ..... N: .....L1: L2:	2.07MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	415	
	Conductor cross-sectional area (mm^2) :	120	
	Number of operating cycles per hour	120 cycles per hour	P
	Number (5% of the number given in column 4. tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75 cycles	P
	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.	Overload setting : 250A Short-circuit setting : 2.50kA	P
	Conditions. make/break operations:		
	- test voltage U/Ue = 1.0 (V) ..... N: .....L1: L2:	447 460 443	P
	- test current I/Ie = 1.0 (A)..... N: .....L1: L2:	254 254 259	P

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	- power factor/time constant:	0.81	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	153	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.00kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage: 457V Leakage current: 0.80mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See table n°15 at page 146	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	60.1	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250A	P
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=363	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 400s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	/ / / 100	P

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8.3.4	**TEST SEQUENCE II/III (Ics=Icu):**		
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	DPX^3 250 Light Blue label (Electronic release)	
	Sample no:	12	
	Rated current: In (A)	250	
	Rated operational voltage: Ue (V)	690	
	Rated service short-circuit breaking capacity: (kA)	20.0	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	Overload setting : 250A Short-circuit setting : 2.50kA	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.	See page 126	P
	Test made in free air:	See page 126	P
	Distances of the metallic screen's: (all sides)	See page 123	P
	The characteristics of the metallic screen:		
	- woven wire mesh		N/A
	- perforated metal	See page 124	P
	- expanded metal		N/A
	- ratio hole area/total area: 0.45-0.65	0.51	P
	- size of hole: <30mm^2	25.0mm^2	P
	- finish: bare or conductive plating	Conductive plating	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	Yes	P

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	Circuit is earthed at: (load-star- or supply-star point)	Supply-star point See page 148	P
	Conductor cross-sectional area (mm²) :	120	P
	If terminals unmarked: line connected at: (underside/upside)	Upside	P
	Tightening torques: (Nm)	10.0	P
8.3.5.2	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	/ / / 139	P
8.3.4.2	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1.05 (V) ..... N: ..... L1: L2:	726 731 726	P
	- r.m.s. test current AC/DC: (A) ..... N: ..... L1: L2:	21.1kA 21.4kA 22.0kA	P
	power factor/time constant :	0.28	P
	- Factor ”n”	2.35	P
	- peak test current (A) :	51.8kA	P
	Test sequence ”O”		
	- max. let-through current: (kApeak) ..... N: ..... L1: L2:	20.5	P
	- Joule integral I^2dt (A^2s) ..... N: ..... L1: L2:	1.68MA^2s	P
	Pause. t: (min)	3.00	P

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	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... N: .....L1: L2:	19.6	P
	- Joule integral I^2dt (A^2s) ..... N: .....L1: L2:	1.63MA^2s	P
	Pause. t: (min)	3.00	P
	Test sequence ”CO”		
	- max. let-through current: (kApeak) ..... N: .....L1: L2:	20.3	P
	- Joule integral I^2dt (A^2s) ..... N: .....L1: L2:	1.75MA^2s	P
	Melting of the fusible element	No	P
	Damage to insulation on conductors	No	P
	Holes in the PE-sheet for test sequence ”O”	No	P
	Cracks observed	No	P
8.3.4.3	Operational performance capability with current.		
	Rated current: In (A)	250	
	Maximum rated operational voltage: Ue (V)	690	
	Conductor cross-sectional area (mm^2) :	120	
	Number of operating cycles per hour	120 cycles per hour	P
	Number (5% of the number given in column 4. tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	75 cycles	P
	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.	Overload setting : 250A Short-circuit setting : 2.50kA	P
	Conditions. make/break operations:		
	- test voltage U/Ue = 1.0 (V) ..... N: .....L1: L2:	727 727 729	P
	- test current I/Ie = 1.0 (A)..... N: .....L1: L2:	263 257 253	P

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	- power factor/time constant:	0.79	P
	- frequency: (Hz)	50.0	P
	- on-time (ms):	173	P
	- off-time (s):	29.8	P
8.3.4.4	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1.40kV	P
	- no breakdown or flashover	No	P
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	Test voltage: 760V Leakage current: 0.78mA	P
8.3.4.5	Verification of temperature-rise		
	- the values of temperature-rise do not exceed those specified in tab. 7.	See table n°16 at page 147	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	56.4	P
	conductor cross-sectional area (mm²) :	120	P
	test current Ie (A) :	250	P
8.3.4.6	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	Test current: 1.45x250=363	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Tripping time: 360s	P
8.3.5.5	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	≤196s	P
	- Operation time: (s) ..... L1: ..... L2: ..... L3: ..... N :	/ / / 85.0	P

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	TABLE n°14: Heating Test **Sample n°9 (4-poles: Test Sequence II/III)**		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.2°C		—

Thermocouple Locations	**Max. temperature measured. (˚C)**	**Max. temperature limit. (˚C)**
Terminal for external connections	102	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	48.4	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	53.2	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	65.1	100

	TABLE n°15: Heating Test **Sample n°11 (4-poles: Test Sequence II/III)**		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.0°C		—

Thermocouple Locations	**Max. temperature measured. (˚C)**	**Max. temperature limit. (˚C)**
Terminal for external connections	100	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic°°	44.7	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	54.2	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0

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-non metallic	63.5	100

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	TABLE n°16: Heating Test Sample n°12 (4-poles: Test Sequence II/III)		
	Test voltage (V): ~10.0V		—
	Ambient (°C): 40.2°C		—

Thermocouple Locations	**Max. temperature measured. (˚C)**	**Max. temperature limit. (˚C)**
Terminal for external connections	96.4	120
Manual operating means:		
-metallic	N/A	65.0
-non metallic	41.5	75.0
Parts intended to be touched but not handle held:		
-metallic	N/A	80.0
-non metallic	52.3	90.0
Parts which need to be touched for normal operation:		
-metallic	N/A	90.0
-non metallic	62.6	100

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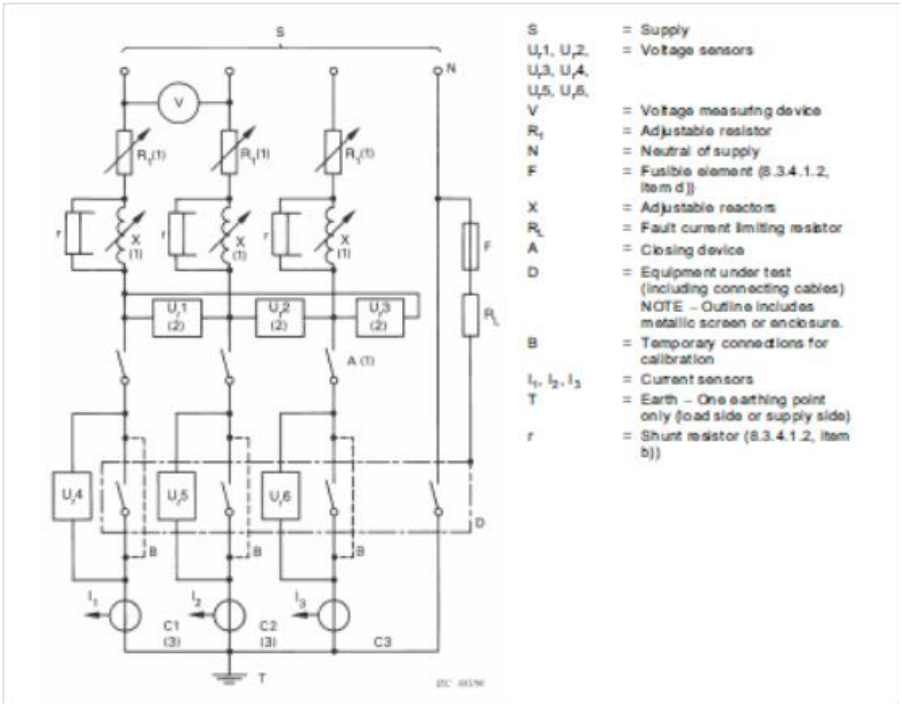
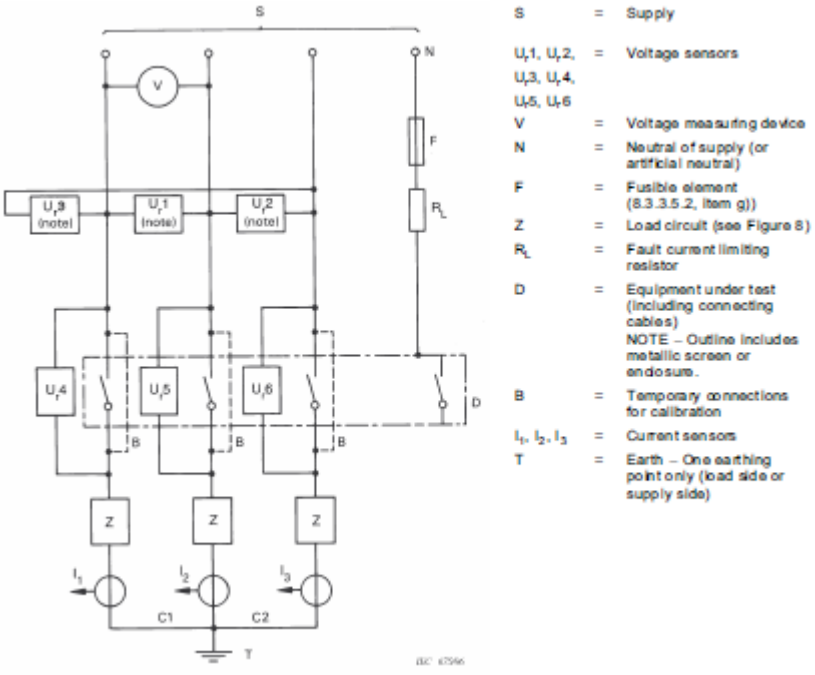
Test circuit for the verification of short-circuit making and breaking capacities on four-pole equipment

Three fase test carried out on N-L1-L2



Test circuit for the verification of making and breaking capacities on four-pole equipment

Three fase test carried out on N-L1-L2



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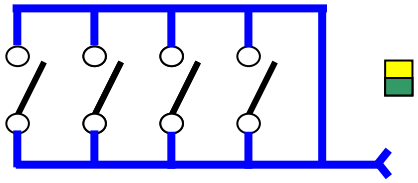
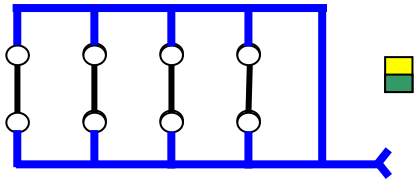
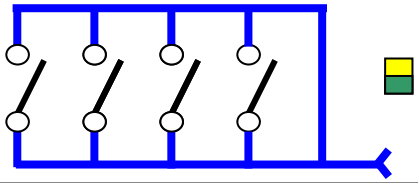
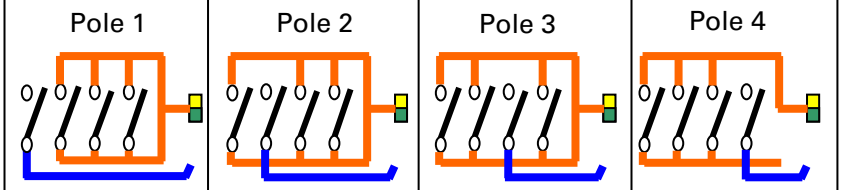
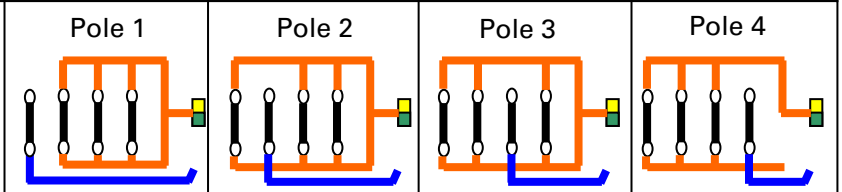
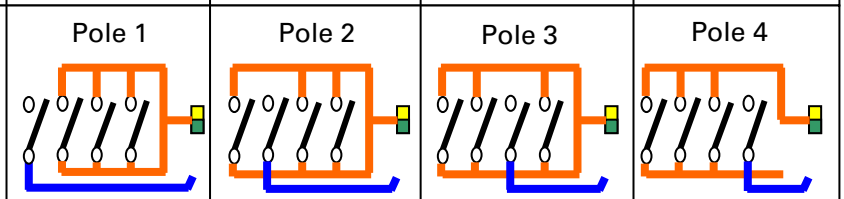
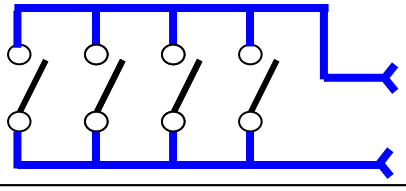
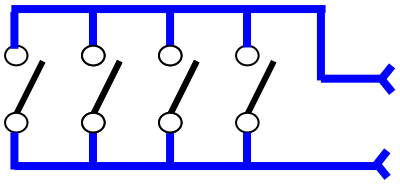
Attached 2 to the report 1909324STO-001

Application test voltage

Between all the terminals of the main circuit connected together (including the control and auxiliary circuits connected to the main circuit) and the enclosure or mounting plate, with the contacts in all normal positions	Open position	
	Close position	
	Trip position	
Between each pole of the main circuit and the other poles connected together and to the enclosure or mounting plate, with the contacts in all normal positions	Open	
	Closed	
	Tripped	
For equipment suitable for isolation, across the poles of the main circuit, the line terminals being connected together and the load terminals connected together	Open position	
	Trip position	

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Attached 3 to the report 1909324STO-001
Test Annex F

LOVAG

Test report N° . 11.258

Test laboratory:	ACAE IB01	
	Viale Borri, 231 – 21100 Varese Italy	
Client:	Legrand SNC-128, Av. Du Marechal De Lattre De Tassigny	
	87045 Limoges Cedex (France)	
Manufacturer:	Bticino S.p.A.- Legrand Group - via Messina, 38-20154 Milano (Italy)	
Test object:	Circuit Breaker	
Type designation:	DPX^3 250 4P Electronic	as Legrand
	M2 250/B/F/H Electronic release	as Bticino
Date(s) of test(s):	From 2011-10-10 to 2011-10-20	
Test specification:	IEC 60947-2:2006-02 + Amendement 1 EN 60947-2:2009	
Test sequence(s):	Annex F	
Test results:	Tests found in compliance with rated characteristics	

This Test Report consists of:
59 pages LOVAG test report forms and
---. other pages

Date of issue: 2011/10/27.

Authorized Representative

Name: Tomasina Stefano

Function: chief assistant

Signature: .....

All the measurement uncertainties are within the limits of LOVAG General Instruction G2 – Measurement Uncertainties

Responsible Test Laboratory

Name: .Cassinelli Giovanni

Function: Responsible of the laboratory

Signature: .....

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SIGNATURE OF THE RESPONSIBLE ENGINEERS FOR PERFORMING THE TESTS

Listing or No of Test sequence or Subclause	Listing or Test item description	Page no or range of page nos.	Engineer who performed the tests		
Listing	Samples under test				
Test sequence	Description and characteristics of test object		Name	Date	Signature
Immunity test	Sample n°4	8÷25	Bisello S.	2011-10-10÷12-	
Emission Test	Sample n°4	26÷27	Bisello S.	2011-10-12	
Dry heat test	Sample n°1	28÷30	Bisello S.	2011-10-10÷17	
Damp Heat Test	Sample n°2	31÷33	Bisello S.	2011-10-10÷17	
Variation cycles	Sample n°3	34÷36	Bisello S.	2011-10-10÷20	

Responsible Observer:

Name: Ing. Stefano Tomasina

Position: Chief Assistant

Organisation: Test Laboratory

Address: viale Borri, 231- 21100 Varese (Italy)

..... 2011/10/27 .....

Signature Date Signature

Test withnessed by:

Name:Ernani Besana

Position:ACAE inspector

Organisation:ACAE

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 2

IEC 60947-2

LOVAG

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Description and characterization of the test object

Characteristics

Type of circuit-breaker:

Total poles numbers	4
Number of poles connected in series (if d.c.)	N/A (see page --- / ---)
Kind of current	a.c.
Number of phases if a.c.	3
Rated frequency if a.c.	50-60 Hz
Utilization category	A
Reference temperature	40°C
Suitability for isolation	yes
Degree of protection	N/A
Pollution degree	3
Material group	I

Rated and limiting values: (according to test volume)

Main circuit:

Rated impulse withstand voltage U_{imp}	8 kV
Rated insulation voltage U_i	800 V
Conventional thermal current I_{th} / I_{the}	40-100-160-250 A
Rated current I_n	40-100-160-250 A
Rated current in the neutral pole (if applicable)	40-100-160-250 A

Short-circuit characteristics:

U_e/V	I_{cm}/kA	I_{cu}/kA	I_{cs}/kA	I_{cw}/kA	I_{SU}/kA	I_{IT}/kA
220-240	220	100	100	---	25	25
380-415	154	70	70	---	17,5	17,5
440	132	60	60	---	15	15
480-500	84	40	40	---	10	10
690	40	20	20	---	5	5

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 4

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Control circuits:

Electrical control circuits:

Kind of current	N/A
Rated frequency if a.c.	N/A
Rated control circuit voltage U_c	N/A
Rated control supply voltage U_s	N/A
Rated impulse withstand voltage U_{imp}	N/A
Rated insulation voltage U_i	N/A

Air-supply control circuits:

Rated supply pressure	N/A
Limits of pressure	N/A
Required volume for each closing operation	N/A
Required volume for each opening operation	N/A

Auxiliary circuits:

Rated operational voltage U_e	N/A
Rated impulse withstand voltage U_{imp}	N/A
Rated insulation voltage U_i	N/A
Rated frequency if a.c.	N/A
Rated operational current I_e	N/A
Number of circuits	N/A
Number and kind of contact elements	N/A

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 5

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Releases:

- Shunt release:

- Rated control circuit voltage U_c	200÷277 V
- Kind of current	a.c/d.c
- Rated frequency if a.c.	50÷60 Hz

- Undervoltage or no-voltage release

- Rated control circuit voltage U_c	200÷240 V
- Kind of current	a.c/d.c
- Rated frequency if a.c.	50÷60 Hz

- Over-current release:

Kind of release ☐ electromagnetic ☒ electronic

- Short-circuit release

- instantaneous release	yes
- definite time-delay release	yes
- Rated current I_n	40-100-160-250 A
- Rated instantaneous short-circuit current setting I_i	1,5÷10 Ir
- Kind of current	a.c.
- Rated frequency if a.c.	50÷60 Hz
- Current setting (or range of settings)	1,5÷10 I_R
- Time setting (or range of settings)	0,1-0,2-0,3-0,4-0,5 s

- Overload release (IEC 60947-1; 2.4.30):

- instantaneous release	N/A
- definite time-delay release	N/A
- inverse time-delay release	yes
dependent on ambient air temperature	N/A
independent of ambient air temperature	yes
- Reference temperature	40°C
- Rated current I_n	400-100-160-250 A
- Kind of current	a.c.
- Rated frequency if a.c.	50÷60 Hz
- Current setting (or range of settings)	0,4÷1 I_R
- Time setting (or range of settings)	3-5-10-15 s
- Time setting at 2 times I_R (on single pole)	≤300 s

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 6

IEC 60947-2

LOVAG

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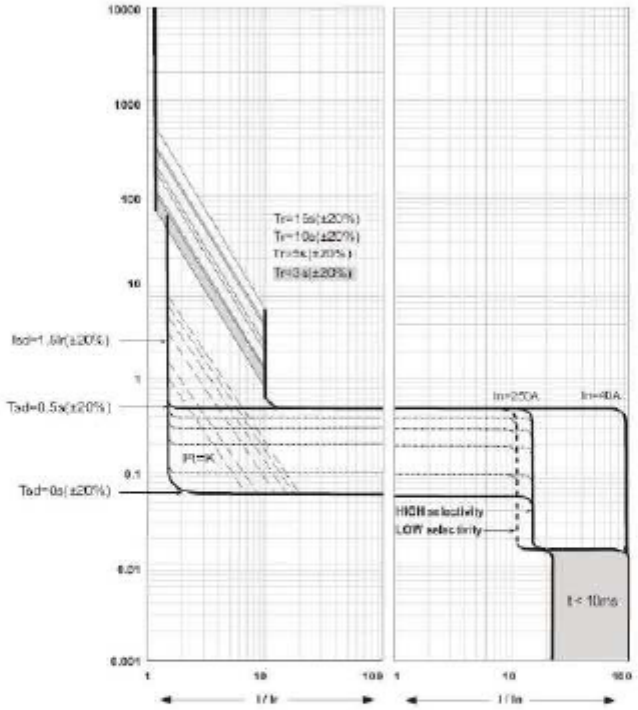
Time / current characteristics

Type designation: DPX^3 250 4P Electronic



Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 7

IEC 60947-2

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Integral fused circuit-breakers:
(Co-ordination with short-circuit protective devices)

Kind of protective devices	N/A
- Type of fuse	N/A
- Maximum operational voltage	N/A
- Rated current I_n	N/A
- Maximum prospective short-circuit peak current	N/A

Individual enclosure:

- Type	N/A
- Kind of material	N/A
- Degree of protection	N/A
- Inside dimensions	N/A
height	N/A
width	N/A
depth	N/A

When no enclosure:

Safety perimeter defined:	
height	245 mm
width	179,5 mm
depth	73,5 mm
Kind of screen (woven wire mesh, perforated metal, expanded metal)	perforated metal
Size of holes (≤ 30 mm^2)	25 mm^2
Distance during test	25 mm

Openings around the manual operating means:

Openings in the area of the manual operating means through which the arc chamber can be reached by a music wire of 0.26 mm diameter.	yes

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 8

IEC 60947-2

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Type test according to: IEC 60947-2; Annex F Immunity tests	Type: DPX^3 250 4P Electronic

IMMUNITY TESTS

Clause F.4 of the standard comprises the following tests:

Sub-clause	Test	form	Test Report Page No.
F.4.1	Harmonic currents	123 - 125	9÷10
F.4.2	Electrostatic discharges	126 – 127	11÷13
F.4.3	Radiated electromagnetic fields	128 – 129	14÷16
F.4.4	Electrical fast transient/burst (EFT/B)	130 – 131	17÷19
F.4.5	Surges	132 – 133	20÷21
F.4.6	Conducted disturbances induced by radio-frequency field (common mode)	134 – 135	22÷23
F.4.7	Current dips	136 – 137	24÷25

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.0a form 122

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 9 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.1	**HARMONIC CURRENTS**		
F.3.2	Frame size of the circuit-breaker	40÷250 A	
	☐ Rated current I_n or ☒ rating of current sensor	250 A	
	Test carried out on sample	4	
	Ambient air temperature	+10…40 °C	22 °C
	Test voltage		--- V
	Test frequency		50 Hz
	Settings (if applicable)		
	Short-circuit releases (2.5 x I_R or closest higher setting available)		
	instantaneous current		625 A
	definite time-delay current		--- A
	time-delay		--- s
	Overload releases (minimum setting)		
	instantaneous current		--- A
	definite time-delay current		--- A
	time-delay		--- s
	inverse time-delay current		250 A
	Operating time values		
	Non-tripping time (10 x tripping time at 2 x I_R)	t_1 = 540 s	
	– Tripping time	at 2.0 x I_R = 43,2 min to 64,8 s	
	resulting	t_2= 0.9 x $t_{min.}$ at 2 x I_R = 38,9 s	
		t_2= 1.1 x $t_{max.}$ at 2 x I_R = 71,3 s	
	Circuit diagram	form 208 – 210 and 220	Page 37
	Cabling characteristics		
60947-1	Cable	120 mm^2	120 mm^2
Table 9, 10	Bar	--- mm x --- mm	--- mm x --- mm
and 11	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		10 Nm
	Metallic enclosure (if applicable)		
F.4.1.1	Inside dimensions	height	--- mm
		width	--- mm
		depth	--- mm
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 123

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 10 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.1.2	Option b) Waveform consisting of a fundamental and a third, fifth and seventh harmonic component		
	Combination of poles under test (chosen at random)		L1 / L2
	Test of compound harmonics		
	Test currents:		
	0.9 x I_R (true r.m.s)		225 A
	Current conduction time during each half wave	≤ 21 % of the period	18 %
	Peak factor I_p/I_{rms}	≥ 2.1	2,9
	Oscillogram		Page 46
	No tripping	$t \geq t_1$	600 s
	2.0 x I_R (true r.m.s)		501 A
	Current conduction time during each half wave	≤ 21 % of the period	18 %
	Peak factor I_p/I_{rms}	≥ 2.1	2,9
	Oscillogram		Page 46
	Tripping time	$t_2 \leq t \leq t_3$	55 s
	Existing monitoring functions correctly indicate the status of the circuit-breaker	Yes/No	Yes
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 125

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 11 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.2	**ELECTROSTATIC DISCHARGES**		
F.3.2	Frame size of the circuit-breaker	40÷250 A	
	☐ Rated current I_n or ☒ rating of current sensor	250 A	
	Test carried out on sample	4	
	Ambient air temperature	+15…35 °C	22°C
	Relative air humidity	30…60 %	51 %
	Test voltage		--- V
	Test frequency		50 Hz
	Settings (if applicable)		
	Short-circuit releases (2.5 x I_R or closest higher setting available)		
	instantaneous	current	625 A
	definite time-delay	current	--- A
		time-delay	--- s
	Overload releases (minimum setting)		
	instantaneous	current	--- A
	definite time-delay	current	--- A
		time-delay	--- s
	inverse time-delay	current	250 A
	Operating time values		
	– Tripping time	at 2.0 x I_R = 43,2 min to 64,8 s	
	resulting	t_b= 0.9 x $t_{min.}$ at 2 x I_R = 38,9 s	
		t_b= 1.1 x $t_{max.}$ at 2 x I_R = 71,3 s	
	Circuit diagram	form 208 – 210 and 220	Page 37
60947-1 Table 9, 10 and 11	Cabling characteristics		
	Cable	120 mm^2	120 mm^2
	Bar	--- mm x --- mm	--- mm x --- mm
	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		10 Nm
F.4.1.1	Metallic enclosure (if applicable)		
	Inside dimensions	height	245 mm
		width	179,5 mm
		depth	73,5 mm
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 126

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 12 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.3	Test configuration		Page 41
J.2.2	**Contact discharge** test voltage	8 kV	8 kV
	Polarity of discharge	☒ positive / ☐ negative	
	Disturbances applicated to	see list of test points	Page 47
	Test current applicated to pole (chosen at random)		L1 / L2
	Test current		
	0.9 x I_R		226 A
	Test duration		600 s
	No tripping	Yes/No	Yes
	Verification after the application of the disturbances:		
	2.0 x I_R		501 A
	Tripping time	$t_3 \leq t \leq t_4$	54 s
	Air discharge test voltage	8 kV	8,1 kV
	Polarity of discharge	☒ positive / ☐ negative	
	Disturbances applicated to	see list of test points	Page 47
	Test current applicated to pole (chosen at random)		L1 / L2
	Test current		
	0.9 x I_R		225 A
	Test duration		600 s
	No tripping	Yes/No	Yes
	Verification after the application of the disturbances:		
	2.0 x I_R		500 A
	Tripping time	$t_3 \leq t \leq t_4$	54 s
	Existing monitoring functions correctly indicate the status of the circuit-breaker	Yes/No	Yes
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 127

IEC 60947-2

LOVAG		Test report N°.: 11.258 Page 13 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests		Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.3	Test configuration		Page 41
J.2.2	**Contact discharge** test voltage	8 kV	8,1 kV
	Polarity of discharge	☐ positive / ☒ negative	
	Disturbances applicated to	see list of test points	Page 47
	Test current applicated to pole (chosen at random)		L1 / L2
	Test current		
	0.9 x I_R		227 A
	Test duration		600 s
	No tripping	Yes/No	Yes
	Verification after the application of the disturbances:		
	2.0 x I_R		498 A
	Tripping time	$t_3 \leq t \leq t_4$	55 s
	Air discharge test voltage	8 kV	8 kV
	Polarity of discharge	☐ positive / ☒ negative	
	Disturbances applicated to	see list of test points	Page 47
	Test current applicated to pole (chosen at random)		L1 / L2
	Test current		
	0.9 x I_R		225 A
	Test duration		600 s
	No tripping	Yes/No	Yes
	Verification after the application of the disturbances:		
	2.0 x I_R		500 A
	Tripping time	$t_3 \leq t \leq t_4$	55 s
	Existing monitoring functions correctly indicate the status of the circuit-breaker	Yes/No	Yes
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 127

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 14 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.3	**RADIATED ELECTROMAGNETIC FIELDS**		
F.3.2	Frame size of the circuit-breaker	40÷250 A	
	☐ Rated current I_n or ☒ rating of current sensor	250 A	
	Test carried out on sample	4	
	Ambient air temperature		22°C
	Relative air humidity		44 %
	Test voltage		--- V
	Test frequency		50 Hz
	Settings (if applicable)		
	Short-circuit releases (2.5 x I_R or closest higher setting available)		
	instantaneous current		675 A
	definite time-delay current		--- A
	time-delay		--- s
	Overload releases (minimum setting)		
	instantaneous current		--- A
	definite time-delay current		--- A
	time-delay		--- s
	inverse time-delay current		250 A
	Operating time values		
	– Tripping time	at 2.0 x I_R = 43,2 min to 64,8 s	
	resulting	t_b= 0.9 x $t_{min.}$ at 2 x I_R = 38,9 s	
		t_b= 1.1 x $t_{max.}$ at 2 x I_R = 71,3 s	
	Circuit diagram	form 208 – 210 and 220 - 221	Page 37
60947-1 Table 9, 10 and 11	Cabling characteristics		
	Cable	120 mm^2	120 mm^2
	Bar	--- mm x --- mm	--- mm x --- mm
	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		10 Nm
F.4.1.1	Metallic enclosure (if applicable)		
	Inside dimensions	height	--- mm
		width	--- mm
		depth	--- mm
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 128

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 15 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
J.2.3	Severity level	10 V/m	10 V/m
	Calibration of field		Pages 49/50
	Test configuration		Pages 42/48
	Combination of phase poles under test (chosen at random)		L2/L3
	Polarisation of the disturbances ☒ vertical / ☐ horizontal		
F.4.4	**Step 1: Test for unwanted operation**		
	Range of frequencies of the test signal	80 – 1000 MHz 1400 – 2000 MHz	80 - 1000 MHz 1400 - 2000 MHz
	Dwell time	500 – 1000 ms	750 ms
	Test current	0.9 x I_R	226 A
	No tripping	Yes/No	Yes
	Step 2: Test for correct operation		
	Test current	2.0 x I_R	500 A
	Frequency of verification / tripping time		
		80 MHz	56 s
		100 MHz	55 s
		120 MHz	55 s
		180 MHz	54 s
		240 MHz	55 s
		320 MHz	54 s
		480 MHz	54 s
		640 MHz	55 s
		960 MHz	56 s
		1400 MHz	55 s
		2000 MHz	54 s
	Tripping time within ranges $t_3 \leq t \leq t_4$	Yes/No	yes
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 129

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 16 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
J.2.3	Severity level	10 V/m	10 V/m
	Calibration of field		Pages 49/50
	Test configuration		Pages 42/48
	Combination of phase poles under test (chosen at random)		L2/L3
	Polarisation of the disturbances	☐ vertical / ☒ horizontal	
F.4.4	**Step 1: Test for unwanted operation**		
	Range of frequencies of the test signal	80 – 1000 MHz	80 - 1000 MHz
		1400 – 2000 MHz	1400 - 2000 MHz
	Dwell time	500 – 1000 ms	750 ms
	Test current	0.9 x I_R	227 A
	No tripping	Yes/No	Yes
	Step 2: Test for correct operation		
	Test current	2.0 x I_R	501 A
	Frequency of verification / tripping time		
		80 MHz	53 s
		100 MHz	54 s
		120 MHz	54 s
		180 MHz	55 s
		240 MHz	55 s
		320 MHz	54 s
		480 MHz	56 s
		640 MHz	56 s
		960 MHz	55 s
		1400 MHz	56 s
		2000 MHz	54 s
	Tripping time within ranges $t_3 \leq t \leq t_4$	Yes/No	yes
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 129

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 17 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.4	**ELECTRICAL FAST TRANSIENT/BURST (EFT/B)**		
F.3.2	Frame size of the circuit-breaker	40÷250 A	
	☐ Rated current I_n or ☒ rating of current sensor	250 A	
	Test carried out on sample	4	
	Ambient air temperature		22°C
	Relative air humidity		50 %
	Test voltage		--- V
	Test frequency		50 Hz
	Settings (if applicable)		
	Short-circuit releases (2.5 x I_R or closest higher setting available)		
	instantaneous current		675 A
	definite time-delay current		--- A
	time-delay		--- s
	Overload releases (minimum setting)		
	instantaneous current		--- A
	definite time-delay current		--- A
	time-delay		--- s
	inverse time-delay current		250 A
	Operating time values		
	Non-tripping time		
	(the lower value of 3 - 4 x $t_{max.}$ at 2 x I_R or 10 min)	t_1 = 260 s	
	– Tripping time	at 2.0 x I_R = 43,2 min to 64,8 s	
	resulting	t_a= 0.9 x $t_{min.}$ at 2 x I_R = 38,9 s	
		t_a= 1.1 x $t_{max.}$ at 2 x I_R = 71,3 s	
	Circuit diagram	form 211 - 213	Page 37
	Cabling characteristics		
60947-1	Cable	120 mm^2	120 mm^2
Table 9, 10	Bar	--- mm x --- mm	--- mm x --- mm
and 11	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		10 Nm
	Metallic enclosure (if applicable)		
F.4.1.1	Inside dimensions	height	245 mm
		width	179,5 mm
		depth	73,5 mm
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 130

IEC 60947-2

LOVAG		Test report N°.: 11.258 Page 18 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests		Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.4 Table J.1	☒ Disturbances applied to power ports	
	Severity level $U_e \geq 100$ V:	4 kV ± 10 % / 5 kHz ± 20 %	4,2 kV 5 kHz
	$U_e < 100$ V:	2 kV ± 10 % / 5.0 kHz ± 20 %	
	Circuit diagram	form 222	Page 42
	Test configuration		Page 51
	☐ Disturbances applied to signal ports		--- kV
	Severity level	2 kV ± 10 % / 5.0 kHz ± 20 %	--- kHz
	Circuit diagram	form 223	Page ---
	Test configuration		Page ---
	Polarisation of the signal	☒ positive / ☐ negative	
	Disturbances applicated to pole		L2
	Test current applicated to combination of phase poles (chosen at random)		L1 / L3
	Test current		
	0.9 x I_R		226 A
	Test duration	1 min	1 min
	No tripping	Yes/No	Yes
	2.0 x I_R		500 A
	Tripping time	$t_3 \leq t \leq t_4$	54 s
	Existing monitoring functions correctly indicate the status of the circuit-breaker after test	Yes/No	Yes
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 131

IEC 60947-2

LOVAG		Test report N°.: 11.258 Page 19 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests		Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values / Results
F.4.4 Table J.1	☒ Disturbances applied to power ports	
	Severity level $U_e \geq 100$ V:	4 kV ± 10 % / 5 kHz ± 20 % — 4,1 kV
	$U_e < 100$ V:	2 kV ± 10 % / 5.0 kHz ± 20 % — 5,1 kHz
	Circuit diagram	form 222 — Page 42
	Test configuration	Page 51
	☐ Disturbances applied to signal ports	--- kV
	Severity level	2 kV ± 10 % / 5.0 kHz ± 20 % — --- kHz
	Circuit diagram	form 223 — Page ---
	Test configuration	Page ---
	Polarisation of the signal	☐ positive / ☒ negative
	Disturbances applicated to pole	L2
	Test current applicated to combination of phase poles (chosen at random)	L1 / L3
	Test current	
	0.9 x I_R	225 A
	Test duration	1 min — 1 min
	No tripping	Yes/No — Yes
	2.0 x I_R	501 A
	Tripping time	$t_3 \leq t \leq t_4$ — 55 s
	Existing monitoring functions correctly indicate the status of the circuit-breaker after test	Yes/No — Yes
Test laboratory: IB 01		TRF IEC/EN 60947-2 Ed. 4.1 form 131

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 20 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.5	**SURGES**		
F.3.2	Frame size of the circuit-breaker	40÷250 A	
	☐ Rated current I_n or ☒ rating of current sensor	250 A	
	Test carried out on sample	4	
	Ambient air temperature		23 °C
	Relative air humidity		53 %
	Test voltage		--- V
	Test frequency		50 Hz
	Settings (if applicable)		
	Short-circuit releases (2.5 x I_R or closest higher setting available)		
	instantaneous current		675 A
	definite time-delay current		--- A
	time-delay		--- s
	Overload releases (minimum setting)		
	instantaneous current		--- A
	definite time-delay current		--- A
	time-delay		--- s
	inverse time-delay current		250 A
	Operating time values		
	– Tripping time	at 2.0 x I_R = 43,2 min to 64,8 s	
	resulting	t_a= 0.9 x $t_{min.}$ at 2 x I_R = 38,9 s	
		t_a= 1.1 x $t_{max.}$ at 2 x I_R = 71,3 s	
60947-1 Table 9, 10 and 11	Cabling characteristics		
	Cable	120 mm^2	120 mm^2
	Bar	--- mm x --- mm	--- mm x --- mm
	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		10 Nm
F.4.1.1	Metallic enclosure (if applicable)		
	Inside dimensions	height	245 mm
		width	179,5 mm
		depth	73,5 mm
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 132

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 21 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.5	Test configuration		Page 52
	Disturbances applied to ☒ power ports / ☐ signal ports		
	Test carried out line-to-earth		
Table J.1	Test voltage	4 kV	4,2 kV
	Circuit diagram	form 214-216	Page 39
	Disturbances applicated to pole		L2
	Test current applicated to combination of phase poles (chosen at random)		L1 / L3
	Test current		
	0.9 x I_R		225 A
	Number of pulses positive polarity	0 °	0°
		90 °	90°
	negative polarity	0 °	0°
		90 °	90°
	No tripping	Yes/No	Yes
	Verification after the application of the disturbances:		
	2.0 x I_R		501 A
	Tripping time	$t_3 \leq t \leq t_4$	55 s
	Test carried out line-to-line		
Table J.1	Test voltage	2 kV	2,1 kV
	Circuit diagram	form 217-219	Page 40
	Test current		
	0.9 x I_R		
	Number of pulses positive polarity	0 °	0°
		90 °	90°
	negative polarity	0 °	0°
		90 °	90°
	No tripping	Yes/No	Yes
	Verification after the application of the disturbances:		
	2.0 x I_R		500 A
	Tripping time	$t_3 \leq t \leq t_4$	55 s
	Existing monitoring functions correctly indicate the status of the circuit-breaker	Yes/No	Yes
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 133

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 22 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.6	**CONDUCTED DISTURBANCES INDUCED BY RADIO-FREQUENCY FIELD (COMMON MODE)**		
F.3.2	Frame size of the circuit-breaker	40÷250 A	
	☐ Rated current I_n or ☐ rating of current sensor	250 A	
	Test carried out on sample	4	
	Ambient air temperature		23 °C
	Relative air humidity		50 %
	Test voltage		--- V
	Test frequency		50 Hz
	Settings (if applicable)		
	Short-circuit releases (2.5 x I_R or closest higher setting available)		
	instantaneous current		675 A
	definite time-delay current		--- A
	time-delay		--- s
	Overload releases (minimum setting)		
	instantaneous current		--- A
	definite time-delay current		--- A
	time-delay		--- s
	inverse time-delay current		250 A
	Operating time values		
	– Tripping time	at 2.0 x I_R = 43,2 min to 64,8 s	
	resulting	t_a= 0.9 x $t_{min.}$ at 2 x I_R = 38,9 s	
		t_a= 1.1 x $t_{max.}$ at 2 x I_R = 71,3 s	
	Circuit diagram	form 208 – 210 and 224-226	Pages 37/44/45
60947-1 Table 9, 10 and 11	Cabling characteristics		
	Cable	120 mm^2	120 mm^2
	Bar	--- mm x --- mm	--- mm x --- mm
	Number	1	1
	Length	≥2000 mm	≥2100 mm
	Tightening torque		10 Nm
F.4.1.1	Metallic enclosure (if applicable)		
	Inside dimensions	height	--- mm
		width	--- mm
		depth	--- mm
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 134

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 23 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
J.2.6	Test configuration		Page 53
	Disturbances applied to ☒ power ports / ☐ signal ports		
	using coupling-decoupling network	☒ M1 / ☐ M2	
	Severity level	10 V	10 V
	Disturbances applicated to pole		L3
	Test current applicated to combination of phase poles (chosen at random)		L1 / L2
F.4.6	**Step 1: Test for unwanted operation**		
	Range of frequencies of the test signal	150 kHz - 80 MHz	0,15 - 80 MHz
	Dwell time	500 – 1000 ms	750 ms
	Test current	0.9 x I_R	226 A
	No tripping	Yes/No	Yes
	Step 2: Test for correct operation		
	Test current	2.0 x I_R	500 A
	Frequency of verification / tripping time		
		0,150 MHz	54 s
		0,300 MHz	54 s
		0,450 MHz	55 s
		0,600 MHz	54 s
		0,900 MHz	54 s
		1,20 MHz	55 s
		1,80 MHz	54 s
		2,40 MHz	55 s
		3,60 MHz	55 s
		4,80 MHz	55 s
		7,20 MHz	54 s
		9,60 MHz	55 s
		12,0 MHz	54 s
		19,2 MHz	55 s
		27,0 MHz	54 s
		49,4 MHz	55 s
		72,0 MHz	54 s
		80,0 MHz	55 s
	Tripping time ≤ maximum break time	Yes/No	Yes
	Existing monitoring functions correctly indicate the status of the circuit-breaker	Yes/No	Yes
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 135

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 24 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.4.7	**CURRENT DIPS**		
	Frame size of the circuit-breaker	40÷250 A	
	☐ Rated current I_n or ☒ rating of current sensor	250 A	
	Test carried out on sample	4	
	Ambient air temperature	+10…40 °C	22 °C
	Test voltage		--- V
	Test frequency		50 Hz
	Settings (if applicable)		
	Short-circuit releases (2.5 x I_r or closest higher setting available)		
	instantaneous current		675 A
	definite time-delay current		--- A
	time-delay		---- s
	Overload releases (minimum setting)		
	instantaneous current		--- A
	definite time-delay current		--- A
	time-delay		--- s
	inverse time-delay current		250 A
	Operating time values		
	$t_{max.}$ at 2 x I_R	64,8 s	
	Circuit diagram	form 208 – 210	Page 37
	Cabling characteristics		
60947-1	Cable	120 mm^2	120 mm^2
Table 9, 10	Bar	--- mm x --- mm	--- mm x --- mm
and 11	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		36 Nm
	Metallic enclosure (if applicable)		
F.4.1.1	Inside dimensions	height	--- mm
		width	--- mm
		depth	--- mm
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 136

IEC 60947-2

LOVAG		Test report N°.: 11.258 Page 25 / 59
Type test according to: IEC 60947-2; Annex F Immunity tests		Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values / Results
F.4.7	Combination of poles under test (chosen at random)	L1 / L2
	Test duration (the lower value of 3 - 4 x $t_{max.}$ at 2 x I_r or 10 min)	262 s
F.4.2.2	**Tests with I_1 = 0.9 x I_R = and I_D = 0**	226 / 0 A
	Test No. 1: Δt = 0,5 T	10 ms
	Test No. 2: Δt = 1 T	20 ms
	Test No. 3: Δt = 5 T	100 ms
	Test No. 4: Δt = 25 T	500 ms
	Test No. 5: Δt = 50 T	2500 ms
	Tests with I_1 = 0.9 x I_R and I_D = 0.4 x I_1	225 / 100 A
	Test No. 6: Δt = 10 T	200 ms
	Test No. 7: Δt = 25 T	500 ms
	Test No. 8: Δt = 50 T	1000 ms
	Tests with I_1 = 0.9 x I_R and I_D = 0.7 x I_1	226 / 175 A
	Test No. 9: Δt = 10 T	200 ms
	Test No. 10: Δt = 25 T	500 ms
	Test No. 11: Δt = 50 T	1000 ms
	No tripping Yes/No	Yes
Test laboratory: IB 01		TRF IEC/EN 60947-2 Ed. 4.1 form 137

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 26 / 59
Type test according to: IEC 60947-2; Annex F Emission Tests	Type: DPX^3 250 4P Electronic

EMISSION TESTS

Clause F.5 of the standard comprises the following test:

Sub-clause	Test	form	Test Report Page No.
F.5.4	Radiated RF disturbances (30 MHz – 1 GHz)	139	27

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 138

IEC 60947-2

LOVAG		Test report N°.: 11.258 Page 27 / 59
Type test according to: IEC 60947-2; Annex F Emission Tests		Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values / Results
F.5.4	**TESTS FOR RADIATED RADIOFREQUENCY EMISSIONS**	
	Frame size of the circuit-breaker	40÷250 A
	☐ Rated current I_n or ☒ rating of current sensor	250 A
	Setting value I_R of overload releases	250 A
	Test carried out on sample	4
	Circuit diagram	Page 54
	Combination of poles under test (chosen at random)	L1 / L2
	Test voltage	3 V
	Test current $I = I_R$	251 A
	Test frequency	50 Hz
60947-1 Table 9, 10 and 11	Cabling characteristics	
	Cable	120 mm^2 / 120 mm^2
	Bar	--- mm x --- mm / --- mm x --- mm
	Number	1 / 1
	Length	≥2000 mm / 2100 mm
	Tightening torque	10 Nm
	Metallic enclosure (if applicable)	
	Inside dimensions height	--- mm
	width	--- mm
	depth	--- mm
	Test configuration	Page 54
	Distance between antenna and circuit-breaker	3 m
	Ambient test chamber noise level with energized power supply	<10 dB
	List of frequencies and measured emission values	Page 54
	Emission measured (maximum value in frequency range):	
CISPR 11	☒ **Environment A**	
	Frequency-Range / Limiting value (quasi-peak)	
	30 - 230 MHz: 40 dB at 10 m; 50 dB at 3 m	42 dB
	230 - 1000 MHz: 47 dB at 10 m; 57 dB at 3 m	36 dB
	☐ **Environment B**	
	Frequency-Range / Limiting value (quasi-peak)	
	30 - 230 MHz: 30 dB at 10 m; 40 dB at 3 m	--- dB
	230 - 1000 MHz: 37 dB at 10 m; 47 dB at 3 m	--- dB

Test laboratory: IB 01 — TRF IEC/EN 60947-2 Ed. 4.1 form 139

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 28 / 59
Type test according to: IEC 60947-2; Annex F Dry Heat Test	Type: DPX^3 250 4P Electronic

DRY HEAT TEST

Clause F.7 of the standard comprises the following test:

Sub-clause	Test	form	Test Report Page No.
F.7.1	Dry Heat Test	144	29
F.7.3	Verification of overload releases (as applicable)	22	30

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 143

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 29 / 59
Type test according to: IEC 60947-2; Annex F Dry Heat Test			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.7	**DRY HEAT TEST**		
F.7.1	**Test on the circuit breaker**		
	Maximum rated current I_n of the frame size	250 A	
	Test carried out on sample	1	
	Test chamber temperature	+40 °C ± 2 °C	40 °C
	Test duration at steady state temperature	168 h	168 h
	Test current		250 A
	Test frequency		50 Hz
60947-1 Table 9, 10 and 11	Cabling characteristics		
	Cable	120 mm^2	.... mm^2
	Bar	--- mm x --- mm	--- mm x --- mm
	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		10 Nm
	Arrangement ☒ 3phase or ☐ poles in series		
F.7.2	No tripping during the test	Yes/No	Yes
F.7.3	Verification carried out (as applicable)	form 20 - 22	Page 30
Test laboratory: IB01			TRF IEC/EN 60947-2 Ed. 4.1 form 144

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 30 / 59
Type test according to: IEC 60947-2 Test sequence I			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
8.3.3.1.3 b)	**Inverse time-delay releases independent on ambient air temperature**		
	Minimum current setting / Minimum time delay	100 A/0 s	
	Maximum current setting / Maximum time delay	250 A/0 s	
Table 6	Conventional time	2 h	
	Measurement 1:		
	Ambient air temperature	T_{ref} ± 2 °C	40°C
	Reference temperature according to the manufacturer's data or standard (T_{ref})	40 °C	
7.2.1.2.4 b)	Conventional non-tripping current	1.05 x --- / 250 A	--- / 264 A
	No tripping	> 2 h	--- / 2 h
	Conventional tripping current	1.3 x --- / 250 A	--- / 325 A
	Operating time	≤ 2 h	--- / 2,93 min
	Measurement 2:		
	Ambient air temperature	(T_{ref} -10) ± 2 °C or (T_{ref} +10) ± 2 °C	--- °C
	Reference temperature according to the manufacturer's data or standard (T_{ref})	--- °C	
7.2.1.2.4 b)	Correction factor k_1		
	k_1 = 0.3 %/K x | amb. air temp. - ref. temp.|	---	
7.2.1.2.4 b)	Conventional non-tripping current	(1.05 – k_1) x --- / --- A	--- / --- A
	No tripping	> --- h	--- / --- h
	Conventional tripping current	(1.3 + k_1) x --- / --- A	--- / --- A
	Operating time	≤ --- h	--- / --- min
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 22

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 31 / 59
Type test according to: IEC 60947-2; Annex F Damp Heat Test	Type: DPX^3 250 4P Electronic

DAMP HEAT TEST

Clause F.8 of the standard comprises the following test:

Sub-clause	Test	form	Test Report Page No.
F.8.1	Damp Heat Test	147	32
F.8.3	Verification of overload releases (as applicable)	22	33

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 146

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 32 / 59
Type test according to: IEC 60947-2; Annex F Damp Heat Test			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
F.8	**DAMP HEAT TEST**		
F.8.1	**Test on the circuit-breaker**		
	Maximum rated current I_n of the frame size	250 A	
	Test carried out on sample	2	
IEC 68000-2-30 4	**Environmental test: Damp heat, cyclic** Severity		
	Upper temperature	+55 °C ± 2°C	55°C
	Total test duration	6 cycles	6
	Recording		Page 55
6.3.3	Temperature cycle	Variant 1	Variant 1
F.8.2	Verification of overload releases		
60947-1 Table 9, 10 and 11	Cabling characteristics		
	Cable	120 mm^2	120 mm^2
	Bar	--- mm x --- mm	--- mm x --- mm
	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		10 Nm
	Verification carried out (as applicable)	form 20 - 22	Page 33
Test laboratory: IB01			TRF IEC/EN 60947-2 Ed. 4.1 form 147

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 33 / 59
Type test according to: IEC 60947-2 Test sequence I			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
8.3.3.1.3 b)	**Inverse time-delay releases independent on ambient air temperature**		
	Minimum current setting / Minimum time delay	100 A/0 s	
	Maximum current setting / Maximum time delay	250 A/0 s	
Table 6	Conventional time	2 h	
	Measurement 1:		
	Ambient air temperature	T_{ref} ± 2 °C	40°C
	Reference temperature according to the manufacturer's data or standard (T_{ref})	40 °C	
7.2.1.2.4 b)	Conventional non-tripping current	1.05 x --- / 250 A	--- / 265 A
	No tripping	> 2 h	--- / 2 h
	Conventional tripping current	1.3 x --- / 250 A	--- / 326 A
	Operating time	≤ 2 h	--- / 3,03 min
	Measurement 2:		
	Ambient air temperature	(T_{ref} -10) ± 2 °C or (T_{ref} +10) ± 2 °C	--- °C
	Reference temperature according to the manufacturer's data or standard (T_{ref})	--- °C	
7.2.1.2.4 b)	Correction factor k_1		
	k_1 = 0.3 %/K x | amb. air temp. - ref. temp. |	---	
7.2.1.2.4 b)	Conventional non-tripping current	(1.05 – k_1) x --- / --- A	--- / --- A
	No tripping	> --- h	--- / --- h
	Conventional tripping current	(1.3 + k_1) x --- / --- A	--- / --- A
	Operating time	≤ --- h	--- / --- min
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 22

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 34 / 59
Type test according to: IEC 60947-2; Annex F Temperature variation cycles	Type: DPX^3 250 4P Electronic

TEMPERATURE VARIATION CYCLES AT A SPECIFIC RATE OF CHANGE

Clauses F.9 of the standard comprises the following test:

Sub-clause	Test	form	Test Report Page No.
F.9.1	Temperature variation cycles at a specific rate of change	150	35
F.9.4	Verification of overload releases (as applicable)	22	36

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 149

IEC 60947-2

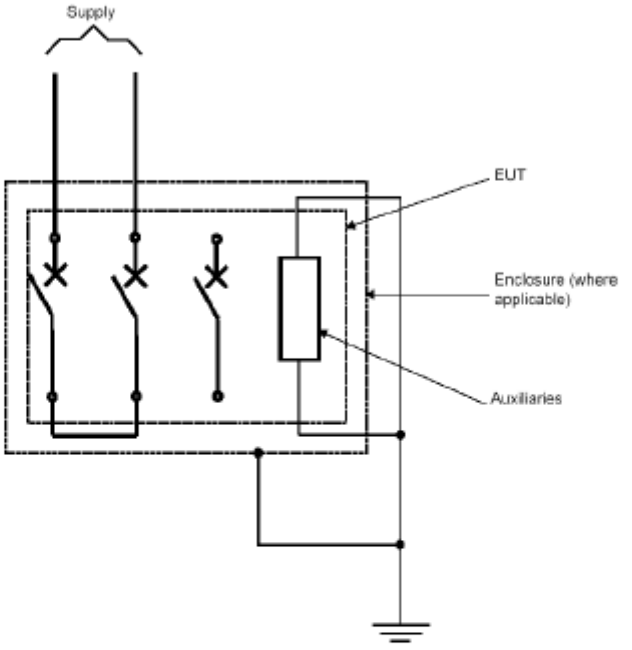
LOVAG			Test report N° .: 11.258 Page 35 / 59
Type test according to: IEC 60947-2; Annex F Temperature variation cycles			Type: DMX^3 6300
Standard and clause	Kind of tests and requirements	Test values	Results
F.9	**TEMPERATURE VARIATION CYCLES AT A SPECIFIC RATE OF CHANGE**		
F.9.1	☒ **Test on the circuit-breaker** ☐ **Alternative test on the electronic controls separately**		
	Frame size of the circuit-breaker	250 A	
	☐ Rated current I_n or ☒ rating of current sensor	250 A	
	Setting value I_R of overload releases	30 A*	
	Test carried out on sample	3	
	Maximum test chamber temperature	+80 °C ± 2 °C	80 °C
	Rate of change of temperature	1 ± 0.2 K/min	1 K/min
	Duration of exposure at maximum temperature	2 h	2 h
	Minimum test chamber temperature	-25 °C ± 2 °C	-25°C
	Rate of change of temperature	1 ± 0.2 K/min	1 K/min
	Duration of exposure at minimum temperature	2 h	2 h
	Total test duration	28 cycles	28 cycles
	Temperature/time record		Page 56
	Electronic controls supplied with energizing value		---
F.9.3	No operation of the electronic controls which would cause the circuit-breaker to trip	Yes/No	Yes
F.9.4	Verification of overload releases (In the case of the alternative test, electronic controls reinstalled in the circuit-breaker)		
60947-1 Table 9, 10 and 11	Cabling characteristics		
	Cable	120 mm^2	120 mm^2
	Bar	--- mm x --- mm	--- mm x --- mm
	Number	1	1
	Length	≥2000 mm	2100 mm
	Tightening torque		10 Nm
	Arrangement ☒ 3phase or ☐ poles in series		
	Verification carried out (as applicable)	form 20 – 22	Page 36
	*minimum current to activate electronic control		
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 150

IEC 60947-2

LOVAG			Test report N°.: 11.258 Page 36 / 59
Type test according to: IEC 60947-2 Test sequence I			Type: DPX^3 250 4P Electronic
Standard and clause	Kind of tests and requirements	Test values	Results
8.3.3.1.3 b)	**Inverse time-delay releases independent on ambient air temperature**		
	Minimum current setting / Minimum time delay	100 A/0 s	
	Maximum current setting / Maximum time delay	250 A/0 s	
Table 6	Conventional time	2 h	
	Measurement 1:		
	Ambient air temperature	T_{ref} ± 2 °C	40°C
	Reference temperature according to the manufacturer's data or standard (T_{ref})	40 °C	
7.2.1.2.4 b)	Conventional non-tripping current	1.05 x --- / 250 A	--- / 263 A
	No tripping	> 2 h	--- / 2 h
	Conventional tripping current	1.3 x --- / 250 A	--- / 325 A
	Operating time	≤ 2 h	--- / 3,27 min
	Measurement 2:		
	Ambient air temperature	(T_{ref} -10) ± 2 °C or (T_{ref} +10) ± 2 °C	--- °C
	Reference temperature according to the manufacturer's data or standard (T_{ref})	--- °C	
7.2.1.2.4 b)	Correction factor k_1		
	k_1 = 0.3 %/K x | amb. air temp. - ref. temp.|	---	
7.2.1.2.4 b)	Conventional non-tripping current	(1.05 – k_1) x --- / --- A	--- / --- A
	No tripping	> --- h	--- / --- h
	Conventional tripping current	(1.3 + k_1) x --- / --- A	--- / --- A
	Operating time	≤ --- h	--- / --- min
Test laboratory: IB 01			TRF IEC/EN 60947-2 Ed. 4.1 form 22

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 37 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic

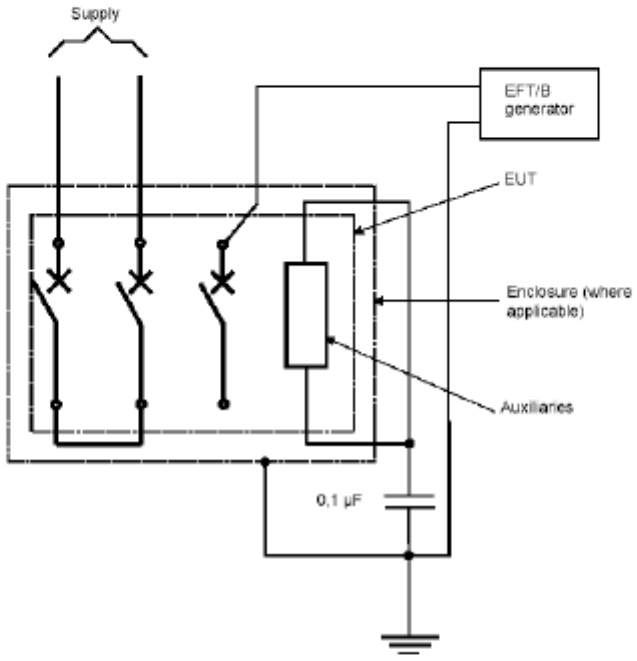


Test circuit for immunity and emission tests in accordance with F.4.1.3, F.4.2, F.4.3, F.4.6, F.4.7.1, F.5.4 and F.6.2
Two phase poles in series

Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 209

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 38 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic



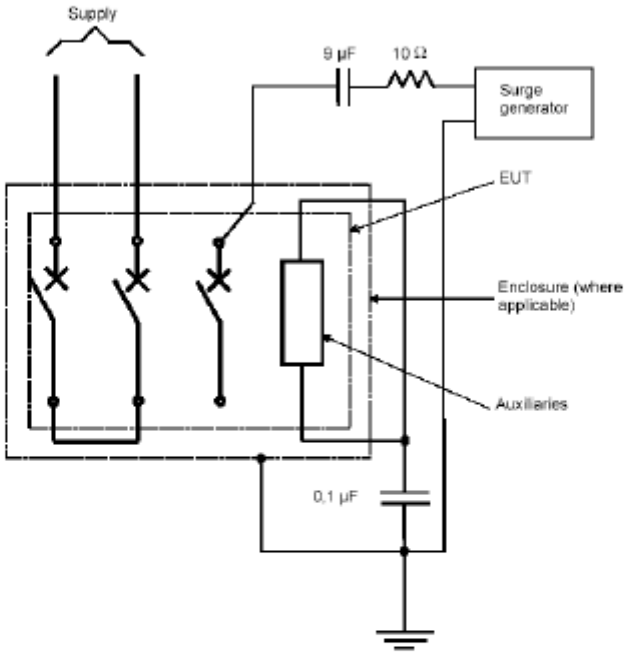
Circuit for electrical fast transients/bursts (EFT/B) immunity test in accordance with F.4.4
Two phase poles in series

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 212

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 39 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic

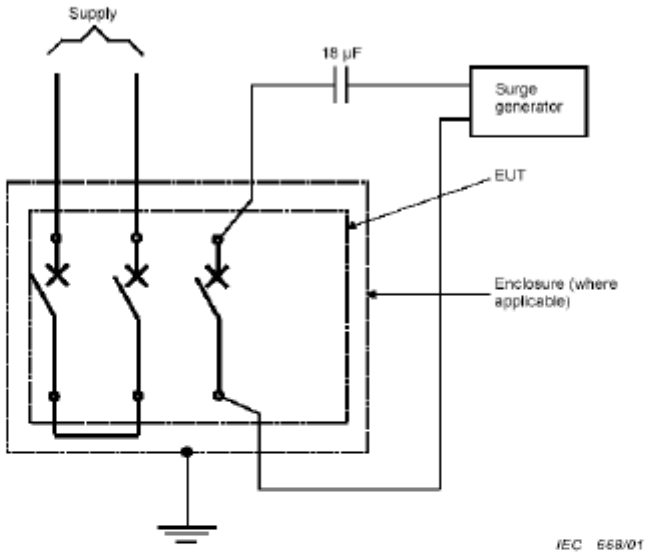


Test circuit for the verification of the influence of surges in the main circuit (line-to-earth) in accordance with F.4.5
Two phase poles in series

Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 215

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 40 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic

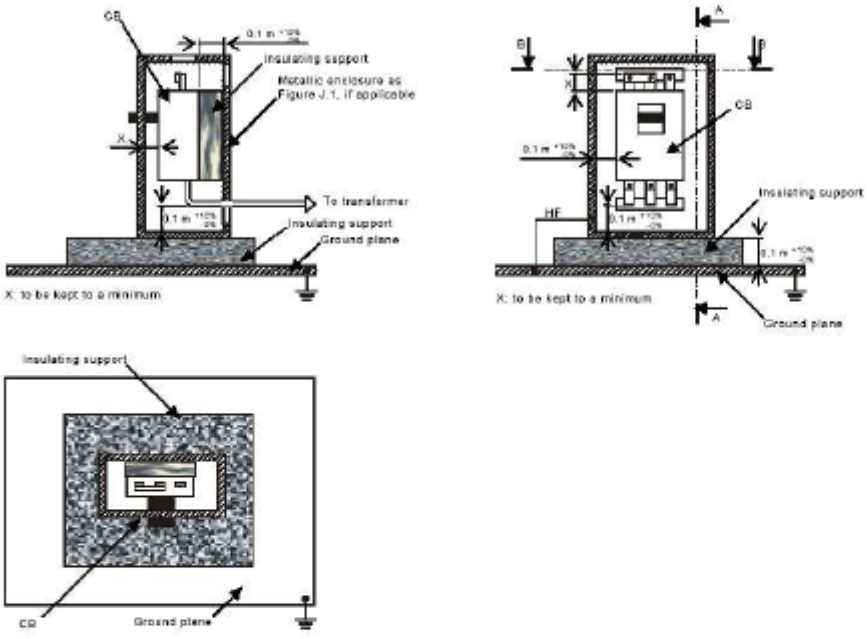


Test circuit for the verification of the influence of surges in the main circuit in accordance with F.4.5
Two phase poles in series

Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 218

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 41 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic



Key

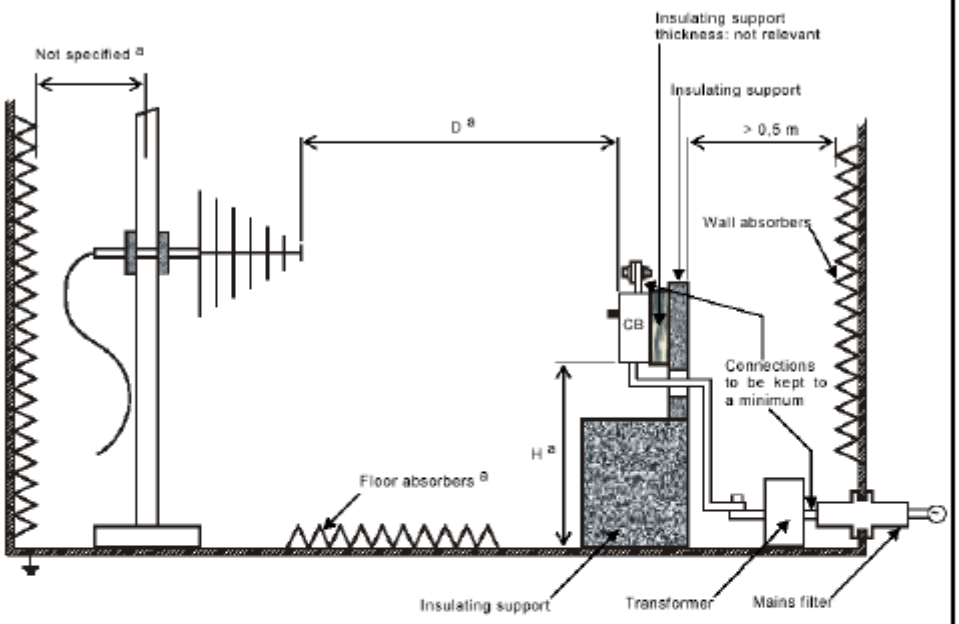
CB circuit-breaker

Figure F.16 – General test set-up for immunity tests

Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 221

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 42 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic



Key
CB circuit-breaker

a See IEC 61000-4-3

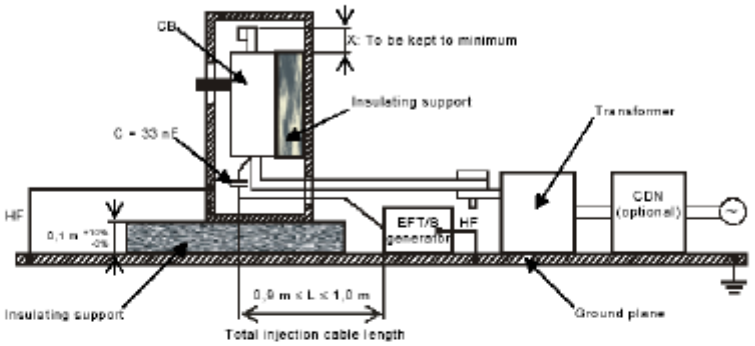
Figure F.17 – Test set-up for the verification of immunity to radiated r.f. electromagnetic field

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 222

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 43 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic



Key

CB circuit-breaker

HF high frequency connection

CDN coupling-decoupling network

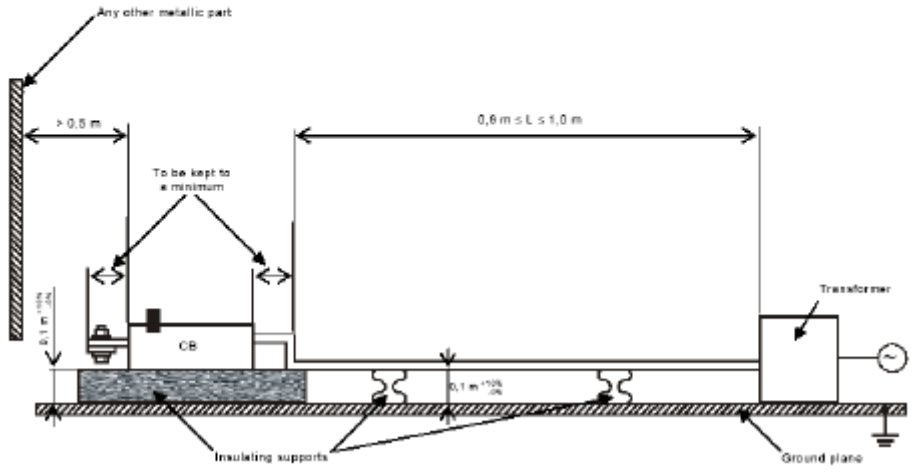
Figure F.18 – Test set-up for the verification of immunity to electrical fast transient/bursts (EFT/B) on power lines

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 223

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 44 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic



Key
CB circuit-breaker

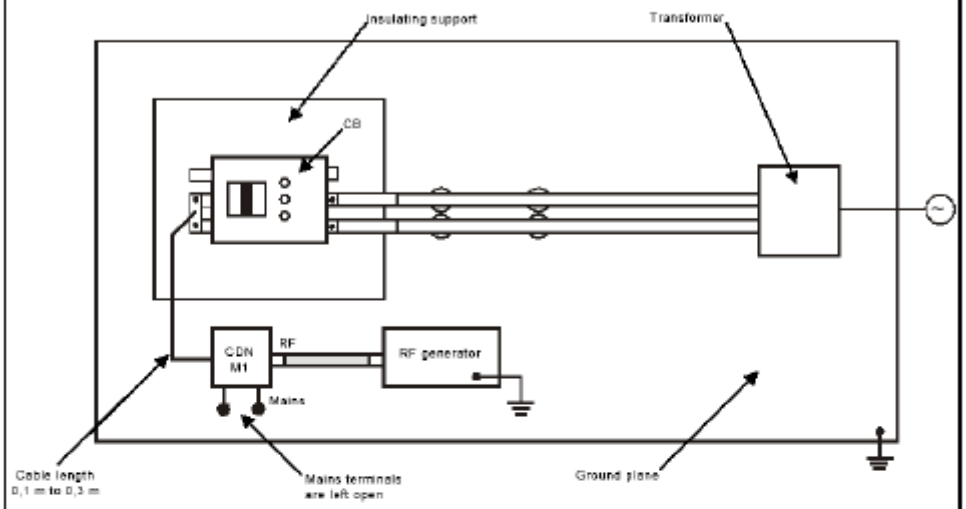
Figure F.20 – General test set-up for the verification of immunity to conducted disturbances induced by r.f. fields (common mode)

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 225

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 45 / 59
Type test according to: IEC 60947-2; Annex F	Type: DPX^3 250 4P Electronic



Key

CB circuit-breaker

CDN M1 coupling-decoupling network M1

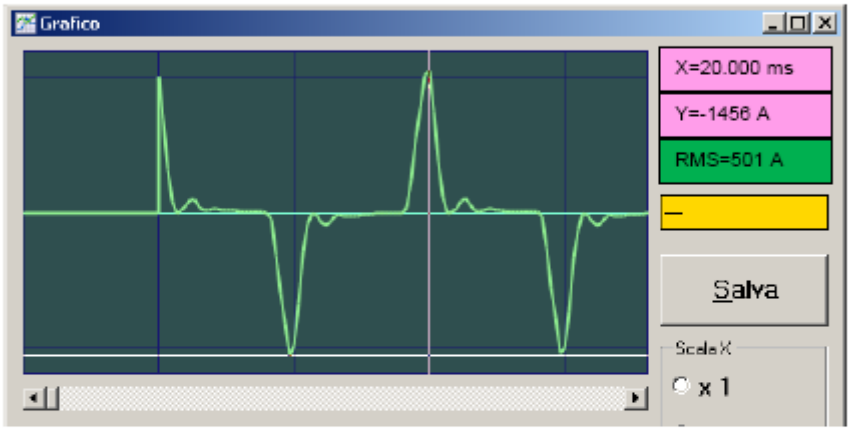
Figure F.21 – Arrangement of connections for the verification of immunity to conducted disturbances induced by r.f. fields (common mode) – Two phase poles in series configuration

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 226

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 46 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic



Harmonic content:

- third harmonic	83 %
- fifth harmonic	71 %
- seventh harmonic	45 %

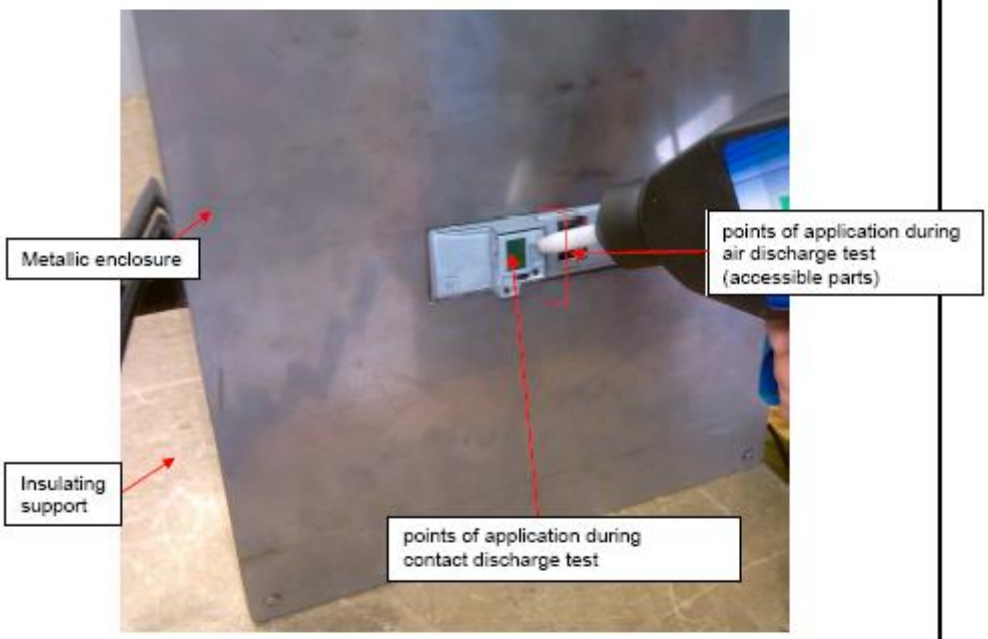
Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 47 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Set up for electrostatic discharge



Points of application for air discharge (application of the discharge after removing plastic cover)

1	selector +
2	selector +
3	selector +
4	selector Δ
5	selector Δ
6	selector Δ
7	USB port
8	USB port
9	LCD display
10	LCD display

Test laboratory: IB 01

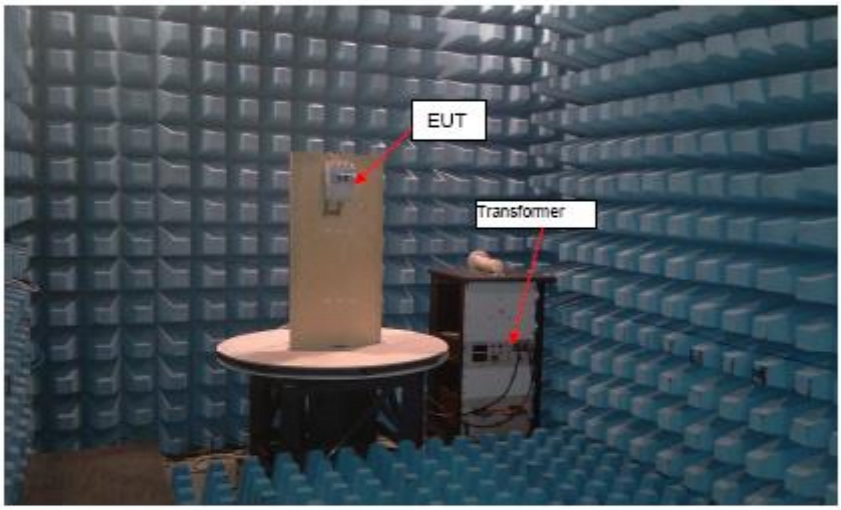
TRF IEC/EN 60947-2 Ed. 4.1 form 266

IEC 60947-2

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 48 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Set up for immunity to radiated radio frequency electromagnetic field



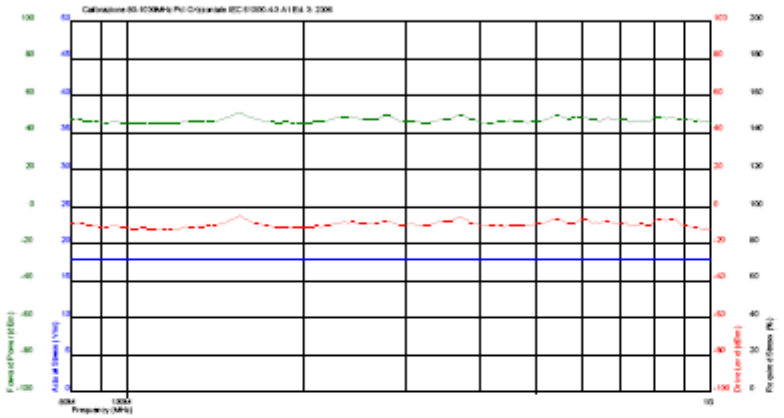
Note: **Distance from EUT to aerial: 3 m**
Height of the EUT from the ground: 1,5 m

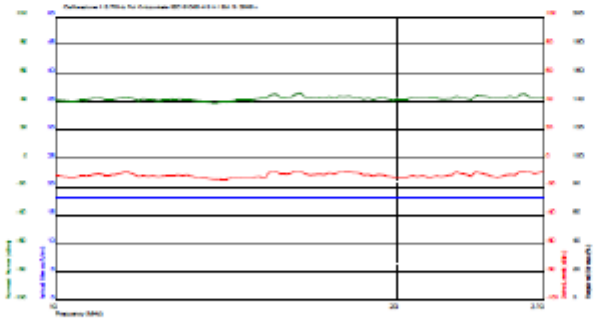
Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 49 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Calibration files for immunity radiated radio frequency electromagnetic field





Test laboratory:
IB 01

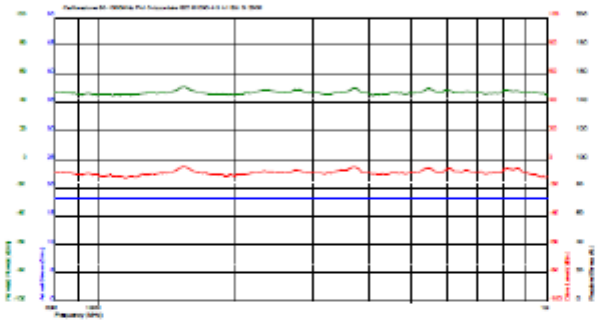
TRF IEC/EN 60947-2
Ed. 4.1 form 266

IEC 60947-2

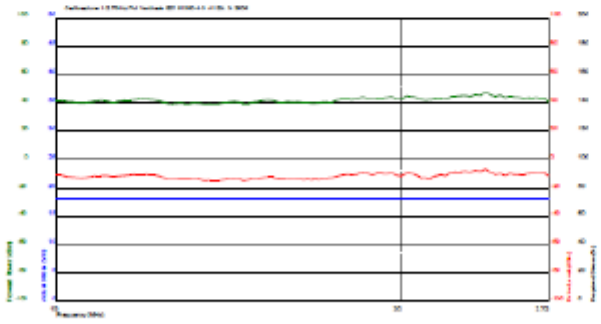
LOVAG	Test report N°.: 11.258 Page 50 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Calibration files for immunity radiated radio frequency electromagnetic field

Vertical (80 MHz-1GHz)



Horizontal (1 GHz-2,7 GHz)

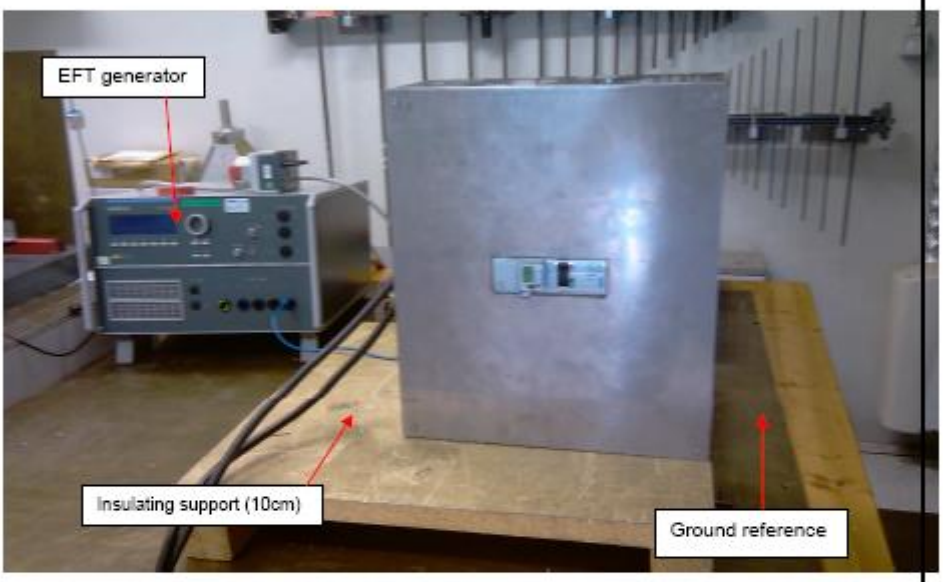


Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 51 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Set up for electrical fast transients /bursts



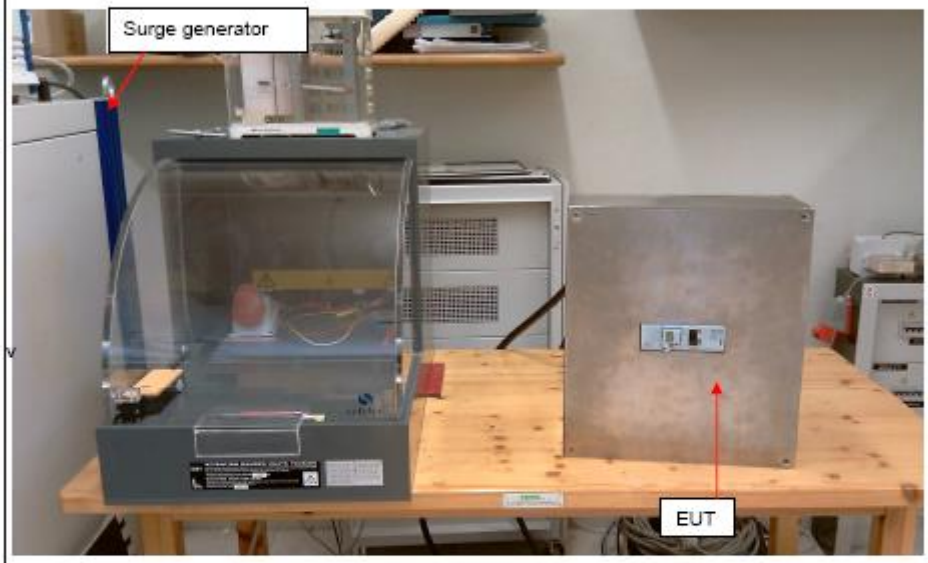
Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 52 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Set up for surge tests

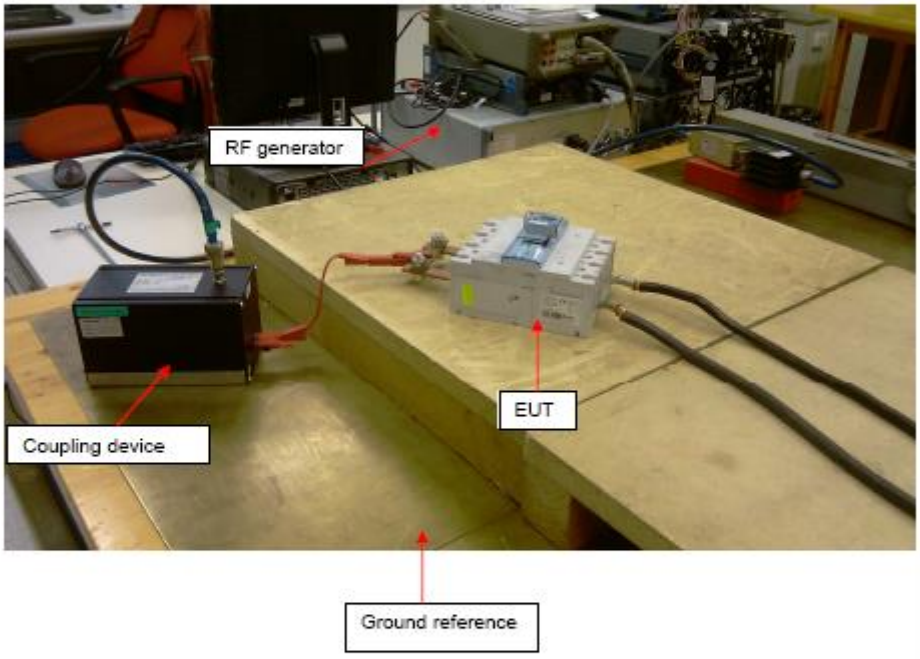


Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N° .: 11.258 Page 53 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Set up for conducted disturbances induced by radio-frequency fields

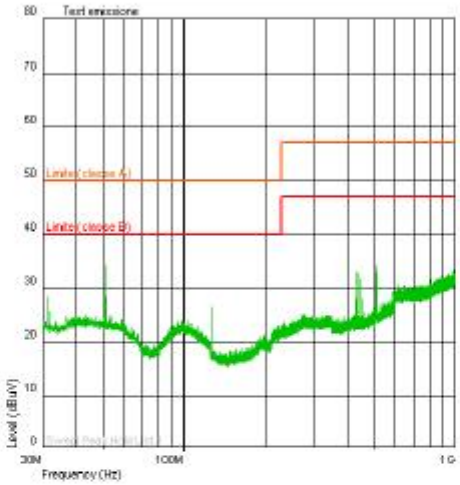


Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N° : 11.258 Page 54 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Emission test values



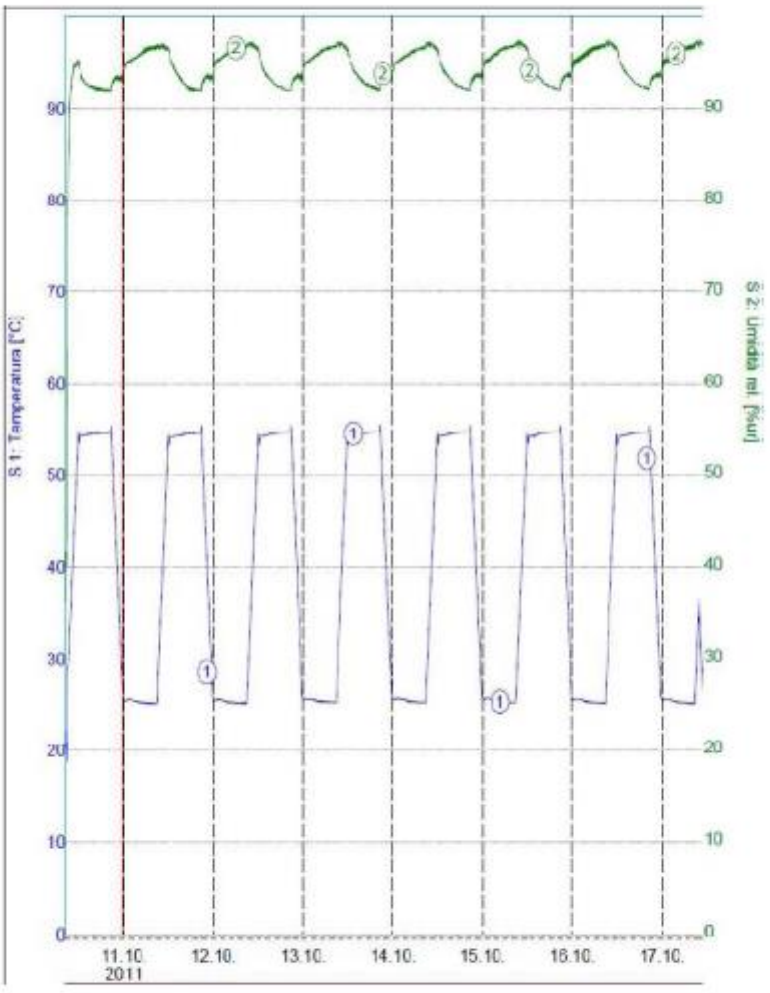
Set up for emission test

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 266

IEC 60947-2

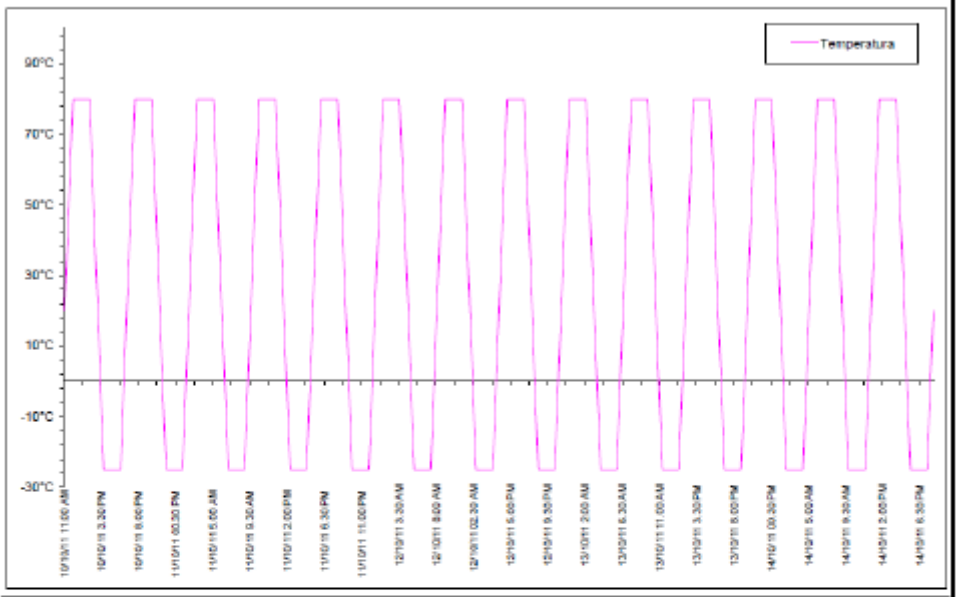
LOVAG	Test report N°.: 11.258 Page 55 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

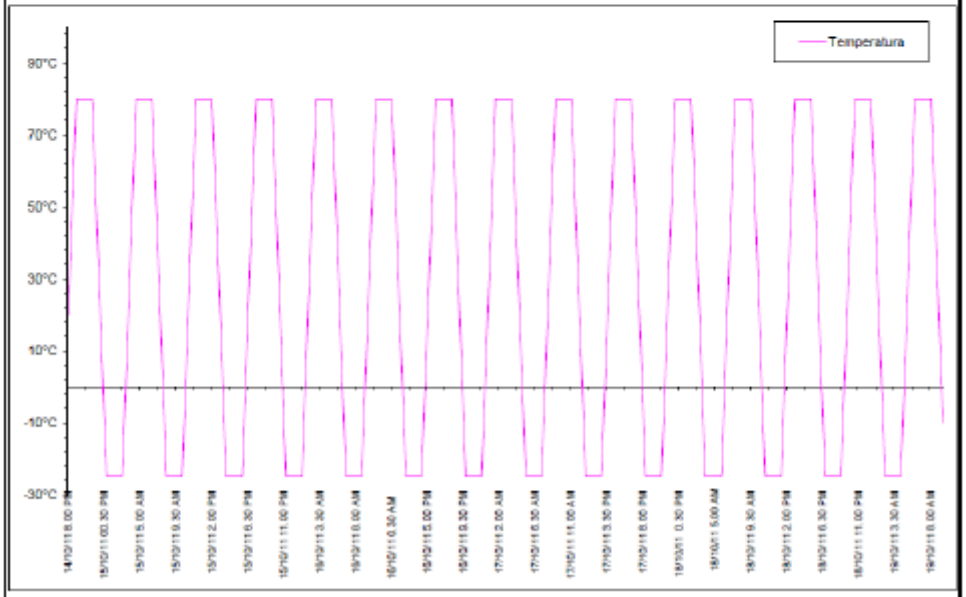


Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 56 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic





Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 57 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Drawing n°	Description	Revision	Date
Y1707BEL	Cover	B02	08/10/2010
Y1596BBT	Cover	B02	22/11/2010
Y1375A	Tripping shaft's spring	A01	12/06/2007
Y1589A	Case	A02	07/09/2009
Y3086A	Crossbar reinforcement	A02	16/10/2009
Y5128BIN	Operating handle	B01	28/07/2010
Y3817A	Magnet Fix	A01	11/11/2010
Y3819A	magnetic's spring	A01	01/02/2011
Y3284B	Magnet	B01	24/11/2010
Z0873A	Switching compartment	A01	23/06/2009
Y1562B	Support switching compartment	B01	26/01/2009
Y1583A	Iron Leaf	A01	19/01/2009
Z0935ARE	Support	A02	19/10/2009
Y1573B	Arcing contacts	B02	08/10/2010
Y3438A	Main Contact's Plate	A01	14/01/2009
Z1671ASX	Electronic release	A03	13/01/2011
Y0434D	Hook	D02	10/09/2008
Y1549B	Left Support	B02	23/08/2010
Y1548B	Right Support	B01	24/06/2010
Y1574A	Main Lever	A06	26/11/2009
Y1883B	Crossbar for Mobile Contacts 4P	B01	29/10/2010
Y1727A	Insert	A02	26/10/2010
Y1728A	Insert	A02	26/10/2010
Y3707A	Hook's spring	A02	08/07/2010
Y2305A	Lever	02	21/04/2009
Z2039A	Tripping shaft	A01	10/12/2010
Z1668AQA	Current transformer and rogowsky	A02	10/09/2010
Z1669ADC	Current transformer and rogowsky	A02	10/09/2010
Y1715AQA	Electronic's rogowsky case	A01	04/08/2010
Y1715ADC	Electronic's rogowsky case	A01	04/08/2010
Y3922AQA	Electronic's rogowsky cover	A01	04/08/2010
Y3922ADC	Electronic's rogowsky cover	A01	05/08/2010
Y3756A	Connection	A01	05/08/2010
Y0428A	Mobile Contact's Plate	A02	14/12/2005
Y1856C	Mobile contact	C01	09/11/2010
Y2815A	Mobile contact's protection	A03	29/09/2010
CT82/85C	Protection's electronic board		
	Protection's firmware	1.2.0	
CT38/80B	Display's electronic board		
	Display's firmware	1.0.8	
CT52/22A	Measure's electronic board		
	Measure's firmware	1.0.0	
LG-420678	MCCB's technical datas		
LG-420675	MCCB's technical datas		

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 58 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Instruments list	serial number
RF generator	SP961/97
Power meter	SP963/97
RF amplifier	SP1252/01-SP962/97
RF attenuator	SP1225/01
Anechoic chamber	SP773/94
Aerials	SP965/97-SP1301/02
Burst generator and clamp unit	SP862/96-SP1097/98
Surge generator and CDN	SP1320/03-SP1310/03-SP1317/03
Harmonic and dips current generator	SP1362/05
Power amplifier	SP695/93
RF generator	SP694/93
Power meter	SP938/97
RF attenuator	SP1127/98
CDN M2 and clamp unit	SP809/95-SP696/93
EMI receiver	SP1368/05
Electrostatic discharge	SP1408/07
Temperature/humidity	SP993/92
Current meter	SP1360/03
Climatic chamber	SP1312/03
Recording temperature cycles	SP1308/03
Recording Temperature/humidity	SP1179/00
Torque meter	B609700019
Climatic chamber	B504700190

Test laboratory: IB 01	TRF IEC/EN 60947-2 Ed. 4.1 form 266

IEC 60947-2

LOVAG	Test report N°.: 11.258 Page 59 / 59
Type test according to: IEC 60947-2	Type: DPX^3 250 4P Electronic

Quantity	Uncertainty
Current for harmonic and dips tests	±2,5%
Voltage for electrostatic discharge test	±5%
Voltage for bursts test	±10%
Voltage for surge test	±10%
Radiated immunity test	-0dB;+6dB
Emission tests	±3,4dB
Conducted disturbances	±2,5dB
Temperature	±2°C
Humidity	±3%
Current	±1,5%
Torque	±10%
Time	±1%

Test laboratory:
IB 01

TRF IEC/EN 60947-2
Ed. 4.1 form 266

IEC 60947-2

Attached 4 to the report 1909324STO-001
Instrumental measurement uncertainty

Laboratories:

Test sequence I, II/III, Annex C, Annex H, Annex F

Characteristic	Range 1	Range 2	Range 3	Range 4
Voltage	±2mV up to 150mV	±1.5% from 150mV to 100V	±3% from100V to 20kV	
Current	±1.5% up to 5A	±2.5% over 5A		
Time	±5% from 10ms to 200ms	±10ms from 200ms up to 1s	±1% over 1s	
Joule's integral	±15%			
Angle	±1 centi grade			
Power factor	±0.05			
Frequency	±0.2% up to 10kHz			
Force	±2%			
Torque	±10%			
Resistance	±1% from 100mΩ to 1MΩ	±5% all other values		
Temperature	±2°C up to 100°C	±2% from 100°C to 500°C		
Linear dimension	±0.05mm up to 25mm	±0.25% over 25mm		
Humidity	±5% RH from 30% to 95%			
Mass	±1% from 10g to 100g	±2% from 100g		

Constructional requirement, Annex F

The declared uncertainty of the measures in this document are expressed as two times the standard deviation, corresponding, in case a normal distribution, to a level of confidence of 95%

Measured parameter	Uncertainty
Measure of temperature	±2°C
Measure of time of application	±1%
Measure of glow-wire temperature	±3%
Measure of distances	±0,2mm
Measure of voltage	±1.5%

Test sequence II/III, Annex C, Annex H

Measured parameter	Uncertainty
Voltage measurement during short-circuit test:	0.30%
Current measurement during short-circuit test:	1.20%

IEC 60947-2

Attached 5 to the report 1909324STO-001
List of drawings

Numero Disegno / Documento *(Drawing n°)*	**Descrizione *(Description)***	**Indice di modifica *(Revision)***	**Data modifica *(Revision date)***
Y1589B	Case 4P	05	2018/09/19
EB00885AB	Cover 4P	02	2013/11/08
Z0673A	Arch chamber	02	2018/07/31
Y3172B	Main springs	01	2011/02/08
CG00319AB	Mobile contact springs	02	2015/05/06
A008288AA	Tripping shaft	01	2013/09/30
Y1663D	Crossbar 4P	01	2013/03/04
Y2974ARE	Fixed contact	09	2017/09/11
A008011AA	Mobile contact	05	2016/02/09
Z1669ADC	CT-Rogowski sensors	03	2013/06/18
LASLG420419	File laser		
LASLG420449	File laser		
LASLG420479	File laser		
LASLG420679	File laser		