

NOTIFICATION OF TEST RESULTS

Product fuse-switch-disconnectors

Tested by request of Jean Müller GmbH, Friedrichstrasse 21,
D-65343 Eltville am Rhein, Germany

Manufactured at (name and place) Jean Müller GmbH, Friedrichstrasse 21,
D-65343 Eltville am Rhein, Germany

Rating and principal characteristics Ui 1000V, Ith 722 A/1000 A

Pre-licence factory inspection carried out by VDE

Trade mark (if any) JEAN MÜLLER

Model/Type Ref. SL 3-3x/1000 and SL 3-3x3/1000

Additional information (if any) _____

A sample of product has been tested and found to be in conformity with the current HD/EN and equivalent national standard, (number and edition) BN 60947-3:1999

as shown in the Test Report (ref.No.) 2001980.54 (36 pages)

This Notification of Test Results is the result of testing a sample of the product submitted, in accordance with the provisions of the relevant specific standard.

This Notification of Test Results has been established by a body which participates in the CENELEC Certification Agreement (CCA) of 11th September 1973 as amended on 29th March 1983. Any other body participating in the CCA will take this Notification as a basis for granting a national mark of conformity or a national approval as specified in the CCA, as long as the standard referred to above is still in force in the country of that body.

N.V. KEMA

Arnhem

Date: December 6, 2000

Internal ref: HLS/SCO

Signature:

на основании чл. 2 от ЗЗЛД

B.T.M. Holrus

ВЯРНІС
ОРИГИНАЛА



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TEST REPORT

EN 60 947-3

Low-voltage switchgear and controlgear

Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

Report

на основание чл. 2 от ЗЗЛД

Reference No. : **2001980.54**
 Tested by (+ signature) : **H.L. Schendstok**
 Approved by (+ signature) : **L.J.W. van Megen**
 Date of issue : **2000-11-30**
 Contents : **36 pages**

This report is based on a blank test report that was prepared by KEMA using information obtained from the TRF originator (see below).

Testing laboratory

Name : **KEMA Registered Quality B.V.**
 Address : **Utrechtseweg 310, 6812 AR Arnhem, The Netherlands**
 Testing location : **as above and**
 : **Holec Laagspanning B.V., Hengelo, The Netherlands**
All tests were observed by compiler

Client

Name : **Jean Müller GmbH**
 Address : **Friedrichstrasse 21**
 : **D-65343 ELTVILLE am Rhein, Germany**

Test specification

Standard : **EN 60 947-3:99**
 Test procedure : **CCA-scheme**
 Procedure deviation : **N.A.**
 Non-standard test method : **N.A.**

Test Report Form/blank test report

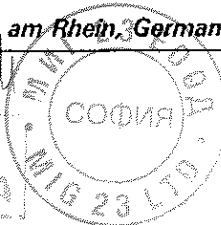
Test Report Form No. : **60947-3B/98-09**
 TRF originator : **KEMA**
 Master TRF : **dated 98-05**

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Test item

Description : **fuse-switch-disconnector**
 Trademark : **Jean Müller**
 Model and/or type reference : **SL 3-3x/1000 and SL 3-3x3/1000**
 Manufacturer : **Jean Müller GmbH, Eltville am Rhein, Germany**

ВЯРНО
ОРИГИНАЛ



Rating(s) : *Ui 1000 V, Ith 722 A / 1000 A*

Particulars: test item vs. test requirements

- method of operation : *dependent manual operation*
- switching positions : *2 (on and off)*
- number of poles : *3-poles*
- kind of current : *AC*
- number of phases : *3*
- rated frequency (Hz) : *50 Hz*
- number of positions of the main contacts : *2 (on and off)*

Rated and limiting values, main circuit

- rated operational voltage U_e (V) : *400 V, 500 V and 690 V*
- rated insulation voltage U_i (V) : *1000 V*
- rated impulse withstand voltage U_{imp} (kV) : *12 kV*
- conventional free air thermal current I_{th} (A) : *fuse: 722 A*

disconnect knife: 1000 A

- conventional enclosed thermal current I_{the} (A)

- rated operational current I_e (A) : *fuse: 722 A*

disconnect knife: 1000 A

- rated uninterrupted current I_u (A) : *fuse: 722 A*

disconnect knife: 1000 A

- utilization category : *with disconnect knife:*

AC-21B 630 A 690 V

AC-22B 1000 A 400 V

AC-22B 800 A 500 V

with fuse:

AC-21B 630 A 690 V

AC-22B 722 A 400 V

AC-22B 630 A 500 V

Short-circuit characteristic

- rated short-time withstand current I_{cw} (kA) : -
- rated short-time making capacity I_{cm} (kA) : -
- rated conditional short-circuit current : *50 kA at 400 V*

Rated and limiting values, auxiliary circuits

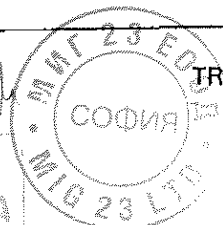
- rated operational voltage (V)
- rated frequency (Hz)

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ВЯРНО
ОРИГИНАЛ



- number of circuits :
- number and kind of contact elements :
Co-ordination of short-circuit protective devices :
- kind of protective device : *fuse-link, M3gTr722 NH3 500 kVA (722 A)*

Test case verdicts

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

Testing

Date of receipt of test item : *2000-02-24*
Date(s) of performance of test : *2000-03 and 2000-05*
..... :

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General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

The making and breaking tests and short-circuit tests were carried out with a metallic screen placed at 165 mm at the top and 150 mm from the side of the fuse-switch-disconnector, with the cable terminals at the top.

The fuse-switch-disconnector type SL 3-3x/1000 were tested as follows:

Test sequence I and II: tests were done on phase L2, the load circuit was connected to phase L2, phases L1 and L3 were connected to the supply.

Test sequence IV: tests were done with a 3-phase supply, in the 'O-test' the load circuit was connected to all phases, in the 'CO-test' the load circuit was connected to L1 and L2.

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



Copy of marking plate

JEAN MULLER  CE

IEC/EN 60947-3 50Hz
400V -1000A - AC-22B





 max. 1000A 51W 

SL3-3X/1000 L3021300
TM3-1000A NH3-722A

JEAN MULLER  CE

IEC/EN 60947-3 50Hz
400V -1000A - AC-22B



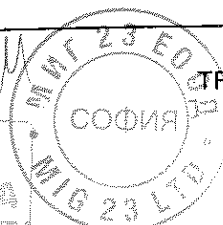
 max. 1000A 51W 

SL3-3X/1000 L3921300
TM3-1000A NH3-722A

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TRF originator: KEMA

ВЯРНО
ОРЪДИНАЦИЯ



EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict

5.2	MARKING		
	Marking on equipment itself or on nameplate or nameplates attached to the equipment and legible from the front after mounting		
	- indication of the open and closed position	<i>main contacts are visible in the open position</i>	P
	- suitability for isolation		P
	- disconnectors AC-20 and DC-20 only: marked "Do not open under load"		N
	Marking on equipment not needed to be visible after mounting:		
	- manufacturer's name or trademark	<i>JEAN MÜLLER</i>	P
	- type designation or serial number	<i>SL 3-3x/1000 and SL 3-3x3/1000</i>	P
	- rated operational current	<i>1000 A AC-22B 400 V</i>	P
	- rated operational voltage	<i>400 V</i>	P
	- utilization category	<i>AC-22B</i>	P
	- rated frequency	<i>50 Hz</i>	P
	- manufacturer's claim for compliance with IEC 60 947-3	<i>IEC/EN 60947-3</i>	P
	- degree of protection	<i>IP</i>	N
	Marking on fuse-combination units:		
	- fuse type	<i>NH3-722A</i>	P
	- maximum rated current	<i>722 A</i>	P
	- power loss of the fuse-link	<i>51 W</i>	P
	Identification of terminals:		
	- line terminals	<i>immaterial</i>	P
	- load terminals	<i>L1, L2, L3</i>	P
	- neutral pole terminal		N
	- protective earth terminal		N
	Data in the manufacturer's published information:		
	- rated insulation voltage	<i>1000 V</i>	P
	- rated impulse withstand voltage for equipment suitable for isolation or when determined	<i>12 kV</i>	P
	- pollution degree, if different from 3	<i>3</i>	P
	- rated duty	<i>uninterrupted duty</i>	P

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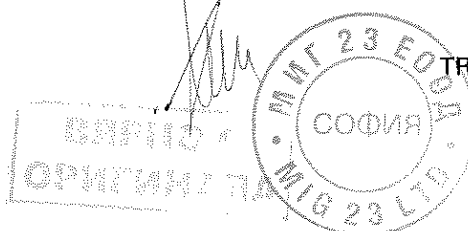


EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	- rated short-time withstand current and duration		N
	- rated short-circuit making capacity		N
	- rated conditional short-circuit current	50 kA	P

7.1	CONSTRUCTION		
7.1.2	Current-carrying parts and their connection	<i>no contact pressure through insulation material</i>	P
7.1.3	Clearances		
	Rated impulse withstand voltage	(see test sequence I)	P
	Creepage distances		
	Pollution degree	3	-
	Comparative tracking index (V)	600 V, 450 V, 375 V	-
	Material group	I, II, IIIa	-
	Rated insulation voltage Ui (V)	1000 V	-
	Minimum creepage distances (mm)	16 mm	-
	Measured creepage distances (mm)	> 16 mm	P
	In case Uimp is not indicated		N
7.1.4	Actuator		
7.1.4.1	Insulation		
7.1.4.2	Direction of movement	(IEC 447)	P
7.1.5	Indication of contact position		
7.1.5.1.	Indicating means	<i>by actuator</i>	P
7.1.5.2	Indication by the actuator	<i>all main contacts are visible in the open position</i>	P
7.1.6	Additional safety requirements for equipment suitable for isolation		
7.1.6.1	Additional constructional requirements for equipment suitable for isolation (Ue > 50 V):		
	- marking according to 5.2b		P
	- indication of the position of the contacts	<i>all main contacts are visible in the open position</i>	P
	- construction of the actuating mechanism		P
	- minimum clearances across open contacts (see Table XIII, Part 1) (mm)	14 mm	-
	- measured clearances (mm)	> 14 mm	P
	- test Uimp across gap (kV)	18,5 kV	P

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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
7.1.6.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		N
	auxiliary switch shall be rated according to IEC 60 947-5-1		
	minimum time interval between opening of the contacts of the auxiliary contact and the contacts of the main poles (ms)		-
	measured time interval (ms)		-
	During the closing operation the contacts of the auxiliary switch shall close after or simultaneously with the contacts of the main poles		
7.1.6.3	Supplementary requirements for equipment provided with means for padlocking the open position:		N
	the locking means shall be designed in such a way that it cannot be removed with the appropriate padlock(s) installed		
	test force F applied to the actuator in an attempt to operate to the closed position (N)		-
	rated impulse withstand voltage (kV)		-
	test Uimp on open main contacts at the test force		
7.1.7	Terminals		
7.1.7.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength	(see 8.2.4 below)	P
	Terminal connections shall be such that necessary contact pressure is maintained	(see 8.2.4 below)	P
	Terminals shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	(see 8.2.4 below)	P
	Terminal shall not allow the conductor to be displaced or to be displaced themselves in a manner detrimental to the operator of equipment and the insulation voltage shall not be reduced below the rated value	(see 8.2.4 below)	P
8.2.4	Mechanical properties of terminals		P
	Mechanical strength of terminals		
	maximum cross-sectional area of conductor (mm ²)	(cable lugs or bushbars)	
	diameter of thread (mm)	M12	
	torque (Nm)	40 Nm x 110% = 44 Nm	

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	5 times on 2 separate clamping units		P
	Testing for damage to and accidental loosening of conductor (flexion test)		N
	conductor of the smallest cross-sectional area (mm ²)		-
	number of conductor of the smallest cross section		-
	diameter of bushing hole (mm)		-
	height between the equipment and the platen ..		-
	mass at the conductor(s) (kg)		-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		N
	Pull-out test		N
	force (N)		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		N
	conductor of the largest cross-sectional area (mm ²)		-
	number of conductor of the largest cross section		-
	diameter of bushing hole (mm)		-
	height between the equipment and the platen ..		-
	mass at the conductor(s) (kg)		-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		N
	Pull-out test		N
	force (N)		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		N
	conductor of the largest and smallest cross-sectional area (mm ²)		-
	number of conductor of the smallest cross section, number of conductor of the largest cross section		-
	diameter of bushing hole (mm)		-
	height between the equipment and the platen ..		-
	mass at the conductor(s) (kg)		-

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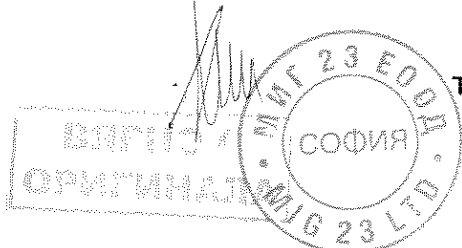
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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		N
	Pull-out test		N
	force (N)		-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		N
7.1.7.2	Connection capacity		
	type of conductors : <i>(cable lugs or busbars)</i>		-
	minimum cross-sectional area of conductor (mm ²)		-
	maximum cross-sectional area of conductor (mm ²)		-
	number of conductors simultaneously connectable to the terminal		-
7.1.7.3	Connection		
	terminals for connection to external conductors shall be readily accessible during installation		P
	clamping screws and nuts shall not serve to fix any other component		P
7.1.7.4	Terminal identification and marking		
	terminal intended exclusively for the neutral conductor		N
	protective earth terminal		N
	other terminals	L1, L2, L3	P
7.1.8	Additional requirements for equipment provided with a neutral pole		N
	Marking of neutral pole		N
	The switched neutral pole shall not break before and shall not make after the other poles		N
	Conventional thermal current of neutral pole		N
7.1.9	Provisions for protective earthing		N
7.1.9.1	The exposed conductive parts shall be electrically interconnected and connected to a protective earth terminal		N
7.1.9.2	The protective earth terminal shall be readily accessible		N
	The protective earth terminal shall be suitably protected against corrosion		N

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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	The electrical continuity between the exposed conductive parts of the protective earth terminal and the metal sheathing of connecting conductors		N
	The protective earth terminal shall have no other functions		N
7.1.9.3	Protective earth terminal marking and identification		N
7.1.10	Enclosure for equipment		N
7.1.10.1	Design		N
	The enclosure, when it is opened: all parts requiring access for installation and maintenance are readily accessible		N
	Sufficient space shall be provided inside the enclosure		N
	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
	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
	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
	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
	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
7.1.10.2	Insulation		N
	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
7.1.11	Degree of protection of enclosed equipment		N

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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	Degree of protection	IP	N

8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS		
8.3.3.1	Temperature-rise		
	ambient temperature 10-40 °C	23 °C	-
	test enclosure W x H x D (mm x mm x mm)	-	-
	material of enclosure	-	-
	Main circuits, test conditions:		
	- conventional thermal current I _{th} (A)	722 A with fuse-links 1000 A with disconnect knives	-
	- conventional enclosed thermal current I _{the} (A) :		-
	- cable/busbar cross-section (mm ²) / (mm)	fuse-links: 50 x 10 mm busbar and 2 x 240 mm ² cable disconnect knives: 60 x 10 mm horizontal busbar and 2 x 60 x 5 mm outgoing terminals	-
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	Jean Müller	-
	- manufacturer's model or type reference	M3gTr722 NH3	-
	- rated current (A)	500 kVA (722 A)	-
	- power loss (W)	51 W	-
	- rated breaking capacity (kA)	100 kA	-
	Temperature-rise	(see appended table)	P
	Auxiliary circuits: temperature rise of connecting terminals (K)		N
	idem, requirement (K)	≤	-
	rated operation current (A)		-
	cross-section (mm ²)		-
8.3.3.2	Test of dielectric properties, impulse withstand voltage (U _{imp} indicated):		
	- rated impulse withstand voltage (kV)	12 kV	-
	- test U _{imp} main circuits (kV)	14,8 kV	P

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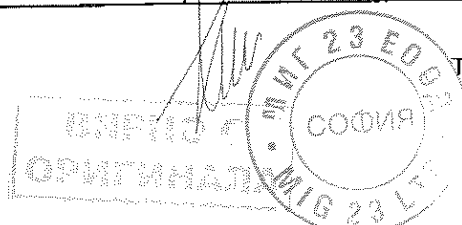
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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	- test Uimp auxiliary circuits (kV)		N
	- test Uimp on open main contacts (equipment suitable for isolating) (kV)	18,5 kV	P
	Test of dielectric properties, dielectric withstand voltage (Uimp not indicated):		N
	- rated insulation voltage (V)		—
	- main circuits, test voltage for 1 min (V)		
	- control and auxiliary circuits, test voltage for 1 min (V)		

8.3.3.3	Making and breaking capacity	<i>fuse-switch-disconnector type</i> <i>SL 3-3x3/1000</i>	
	utilization category	AC-22B	—
	rated operational voltage Ue (V)	400 V	—
	rated operational current Ie (A) or power (kW) ..	1000 A	—
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: 421 V L2: 421 V L3: 420 V	—
	- test current I/Ie = (A)	L1: 3800 A L2: 3830 A L3: 3860 A	—
	- power factor/time constant	L1: 0,64 L2: 0,64 L3: 0,64	—
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: L2: L3:	—
	- test current I/Ie = (A)	L1: L2: L3:	—
	- power factor	L1: L2: L3:	—
	transient recovery voltage (V)	L1: 421 V L2: 421 V L3: 420 V	—
	current duration (ms)	440 ms	—
	time interval between operations	180 s	—

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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	Number of make/break or make and break operations	5 x make/break	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	oscillatory frequency (kHz)	86,3 kHz	-
	Measured oscillatory frequency (kHz)	L1: 87,1 kHz L2: 87,1 kHz L3: 87,1 kHz	P
	Factor γ	L1: 1,11 L2: 1,11 L3: 1,11	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
8.3.3.4	Dielectric verification		
	test voltage (2 U_i) for 1 min (V)	2000 V	-
	No flashover or breakdown		P
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA		N
	Leakage current (other utilization categories) ≤ 2 mA)	< 5 μ A	P
	test voltage (1,1 U_e) (V)	440 V	-
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	fuse-links: 38 K - 60 K disconnect knives: 52 K - 80 K	P
	conductor cross-sectional area (mm ²)	fuse-links: 50 x 10 mm busbar and 2 x 240 mm ² cable disconnect knives: 60 x 10 mm busbar and 4 x 150 mm ² cable	-
	test current I_e (A)	fuse-links: 722 A disconnect knives 1000 A	-
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and $U_e > 50$ V only)		
	actuator type (fig.)	one-hand operated (e)	-

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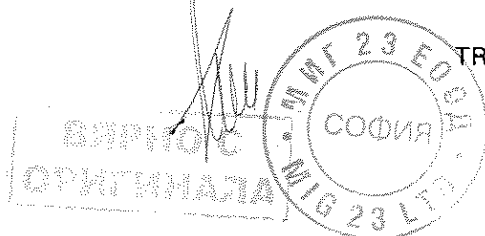
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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	actuating force for opening (N)	275 N	-
	test force with blocked main contacts (N)	400 N	-
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts		N
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P

8.3.3.3	Making and breaking capacity	<i>fuse-switch-disconnector type</i> <i>SL 3-3x/1000</i>	
	utilization category	AC-22B	-
	rated operational voltage Ue (V)	400 V	-
	rated operational current Ie (A) or power (kW) ..	1000 A	-
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: L2: 426 V L3:	-
	- test current I/Ie = (A)	L1: L2: 3768 A L3:	-
	- power factor/time constant	L1: L2: 0,64 L3:	-
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: L2: L3:	-
	- test current I/Ie = (A)	L1: L2: L3:	-
	- power factor	L1: L2: L3:	-
	transient recovery voltage (V)	L1: L2: 426 V L3:	-
	current duration (ms)	600 ms	-
	time interval between operations	180 s	-
	Number of make/break or make and break operations	5 x make/break	P

TRF No.: 60947-3B

TRF originator: KEMA



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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	oscillatory frequency (kHz)	85,9 kHz	-
	Measured oscillatory frequency (kHz)	L1: L2: 89,6 kHz L3:	P
	Factor γ	L1: L2: 1,11 L3:	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
8.3.3.4	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	2000 V	-
	No flashover or breakdown		P
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA		N
	Leakage current (other utilization categories) ≤ 2 mA)	4,0 μ A - 8,3 μ A	P
	test voltage (1,1 Ue) (V)	440 V, tested with 800 V	-
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	<i>fuse-links: 49 K - 72 K</i> <i>disconnect knives: 51 K - 74 K</i>	P
	conductor cross-sectional area (mm ²)	<i>fuse-links: 50 x 10 mm busbar and 2 x 240 mm² cable</i> <i>disconnect knives: 60 x 10 mm horizontal busbar and 2 x 60 x 5 mm outgoing terminals</i>	-
	test current Ie (A)	<i>fuse-links: 722 A</i> <i>disconnect knives 1000 A</i>	-
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.)	<i>one-hand operated (e)</i>	-
	actuating force for opening (N)	181 N	-

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Clause	Requirement - Test	Result - Remark	Verdict
	test force with blocked main contacts (N)	400 N	-
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts		N
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P

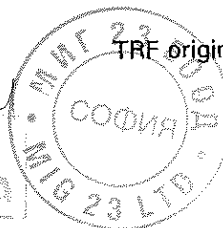
8.3.3.3	Making and breaking capacity	<i>fuse-switch-disconnector type</i> <i>SL 3-3x3/1000</i>	
	utilization category	AC-21B	-
	rated operational voltage Ue (V)	690 V	-
	rated operational current Ie (A) or power (kW) ..	630 A	-
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: 747 V L2: 747 V L3: 747 V	-
	- test current I/Ie = (A)	L1: 974 A L2: 986 A L3: 985 A	-
	- power factor/time constant	L1: 0,95 L2: 0,95 L3: 0,95	-
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: L2: L3:	-
	- test current I/Ie = (A)	L1: L2: L3:	-
	- power factor	L1: L2: L3:	-
	transient recovery voltage (V)	L1: 741 V L2: 747 V L3: 748 V	-
	current duration (ms)	460 ms	-
	time interval between operations	60 s	-
	Number of make/break or make and break operations	5 x make/break	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		

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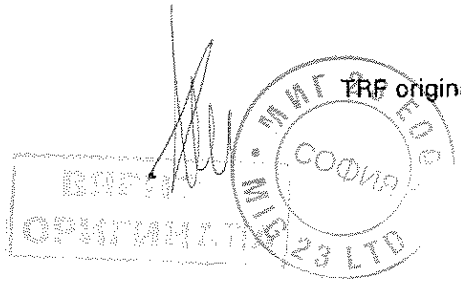
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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	oscillatory frequency (kHz)	kHz	—
	Measured oscillatory frequency (kHz)	L1: L2: L3:	N
	Factor γ	L1: L2: L3:	N
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
8.3.3.4	Dielectric verification		—
	test voltage (2 U_i) for 1 min (V)	2000 V	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA		N
	Leakage current (other utilization categories) ≤ 2 mA)	4,6 μ A - 8,2 μ A	P
	test voltage (1,1 U_e) (V)	759 V, tested with 800 V	—
8.3.3.6	Temperature-rise verification		—
	Temperature rise of main circuit terminals ≤ 80 K	fuse-links: 57 K - 74 K	P
	conductor cross-sectional area (mm ²)	fuse-links: 40 x 10 mm busbar and 2 x 185 mm ² cable	—
	test current I_e (A)	fuse-links: 630 A	—
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and $U_e > 50$ V only)		—
	actuator type (fig.)	one-hand operated (e)	—
	actuating force for opening (N)	215 N	—
	test force with blocked main contacts (N)	400 N	—
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts		N
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P

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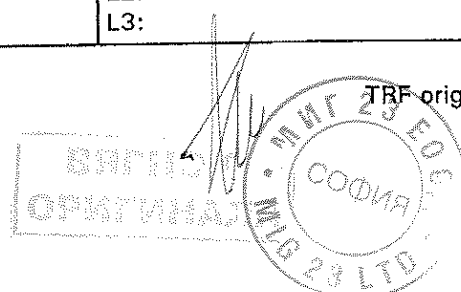


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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.3.3	Making and breaking capacity	<i>fuse-switch-disconnector type SL 3-3x/1000</i>	
	utilization category	<i>AC-21B</i>	-
	rated operational voltage Ue (V)	<i>690 V</i>	-
	rated operational current Ie (A) or power (kW) ..	<i>630 A</i>	-
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: L2: <i>747 V</i> L3:	-
	- test current I/Ie = (A)	L1: L2: <i>991 A</i> L3:	-
	- power factor/time constant	L1: L2: <i>0,94</i> L3:	-
	Conditions, break operation AC-23A and AC-23B only:		
	- test voltage U/Ue = 1,05 (V)	L1: L2: L3:	-
	- test current I/Ie = (A)	L1: L2: L3:	-
	- power factor	L1: L2: L3:	-
	transient recovery voltage (V)	L1: L2: <i>744 V</i> L3:	-
	current duration (ms)	<i>360 ms</i>	-
	time interval between operations	<i>60 s</i>	-
	Number of make/break or make and break operations	<i>5 x make/break</i>	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	oscillatory frequency (kHz)	kHz	-
	Measured oscillatory frequency (kHz)	L1: L2: L3:	N
	Factor y	L1: L2: L3:	N

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
8.3.3.4	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	2000 V	–
	No flashover or breakdown		P
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		N
	Leakage current (other utilization categories) ≤ 2 mA)	4,4 µA – 8,1 µA	P
	test voltage (1,1 Ue) (V)	759 V, tested with 800 V	–
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	fuse-links: 58 K – 73 K	P
	conductor cross-sectional area (mm ²)	fuse-links: 40 x 10 mm busbar and 2 x 185 mm ² cable	–
	test current Ie (A)	fuse-links: 630 A	–
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.)	one-hand operated (e)	–
	actuating force for opening (N)	181 N	–
	test force with blocked main contacts (N)	400 N	–
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts		N
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P
8.3.3.3	Making and breaking capacity	fuse-switch-disconnector type SL 3-3x3/1000	
	utilization category	AC-22B	–
	rated operational voltage Ue (V)	500 V	–
	rated operational current Ie (A) or power (kW) ..	800 A	–
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		

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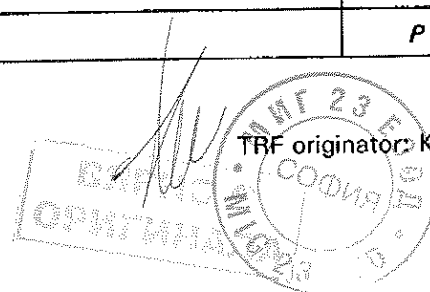
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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	- test voltage $U/U_e = 1,05$ (V)	L1: 528 V L2: 532 V L3: 533 V	-
	- test current $I/I_e =$ (A)	L1: 2466 A L2: 2456 A L3: 2410 A	-
	- power factor/time constant	L1: 0,65 L2: 0,65 L3: 0,65	-
Conditions, break operation AC-23A and AC-23B only:			
	- test voltage $U/U_e = 1,05$ (V)	L1: L2: L3:	-
	- test current $I/I_e =$ (A)	L1: L2: L3:	-
	- power factor	L1: L2: L3:	-
	transient recovery voltage (V)	L1: 528 V L2: 532 V L3: 533 V	-
	current duration (ms)	360 ms	-
	time interval between operations	60 s	-
	Number of make/break or make and break operations	5 x make/break	P
Characteristic of transient recovery voltage for AC-22 and AC-23 only			
	oscillatory frequency (kHz)	65,75 kHz	-
	Measured oscillatory frequency (kHz)	L1: 66,7 kHz L2: 67,6 kHz L3: 65,8 kHz	P
	Factor γ	L1: 1,12 L2: 1,11 L3: 1,11	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
8.3.3.4	Dielectric verification		
	test voltage ($2 U_i$) for 1 min (V)	2000 V	-
	No flashover or breakdown		P

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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA		N
	Leakage current (other utilization categories) ≤ 2 mA)	3,9 μ A - 8,4 μ A	P
	test voltage (1,1 Ue) (V)	550 V, tested with 800 V	-
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	<i>fuse-links: 61 K - 78 K</i> <i>disconnect knives: 48 K - 61 K</i>	P
	conductor cross-sectional area (mm ²)	<i>fuse-links: 40 x 10 mm busbar and 2 x 185 mm² cable</i> <i>disconnect knives: 50 x 10 mm busbar and 2 x 240 mm² cable</i>	-
	test current Ie (A)	<i>fuse-links: 630 A</i> <i>disconnect knives 800 A</i>	-
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.)	<i>one-hand operated (e)</i>	-
	actuating force for opening (N)	215 N	-
	test force with blocked main contacts (N)	400 N	-
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts		N
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P
8.3.3.3	Making and breaking capacity	<i>fuse-switch-disconnector type SL 3-3x/1000</i>	
	utilization category	AC-22B	-
	rated operational voltage Ue (V)	500 V	-
	rated operational current Ie (A) or power (kW) ..	800 A	-
	Conditions, make/break operations or make operation AC-23A and AC-23B only:		

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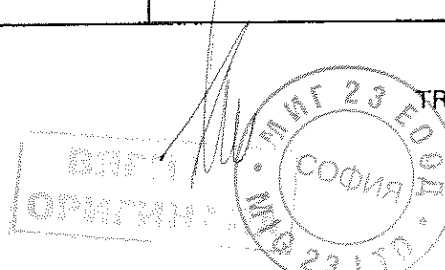
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Clause	Requirement - Test	Result - Remark	Verdict
	- test voltage $U/U_e = 1,05$ (V)	L1: L2: 528 V L3:	-
	- test current $I/I_e =$ (A)	L1: L2: 2414 A L3:	-
	- power factor/time constant	L1: L2: 0,66 L3:	-
Conditions, break operation AC-23A and AC-23B only:			
	- test voltage $U/U_e = 1,05$ (V)	L1: L2: L3:	-
	- test current $I/I_e =$ (A)	L1: L2: L3:	-
	- power factor	L1: L2: L3:	-
	transient recovery voltage (V)	L1: L2: 532 V L3:	-
	current duration (ms)	480 ms	-
	time interval between operations	60 s	-
	Number of make/break or make and break operations	5 x make/break	P
Characteristic of transient recovery voltage for AC-22 and AC-23 only			
	oscillatory frequency (kHz)	65,75 kHz	-
	Measured oscillatory frequency (kHz)	L1: L2: 66,7 kHz L3:	P
	Factor γ	L1: L2: 1,12 L3:	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
8.3.3.4	Dielectric verification		
	test voltage ($2 U_i$) for 1 min (V)	2000 V	-
	No flashover or breakdown		P

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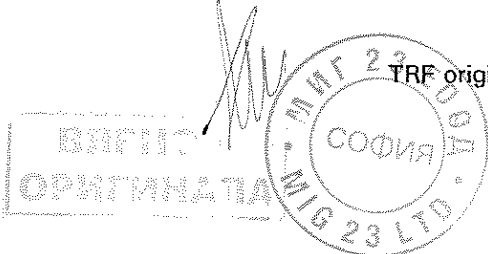
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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.3.5	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA		N
	Leakage current (other utilization categories) ≤ 2 mA)	4,7 μ A - 8,3 μ A	P
	test voltage (1,1 Ue) (V)	550 V, tested with 800 V	-
8.3.3.6	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	<i>fuse-links: 55 K - 73 K</i> <i>disconnect knives: 52 K - 60 K</i>	P
	conductor cross-sectional area (mm ²)	<i>fuse-links: 40 x 10 mm busbar and 2 x 185 mm² cable</i> <i>disconnect knives: 50 x 10 mm busbar and 2 x 240 mm² cable</i>	-
	test current Ie (A)	<i>fuse-links: 630 A</i> <i>disconnect knives 800 A</i>	-
8.3.3.7	Strength of actuator mechanism (switch-disconnectors and Ue > 50 V only)		
	actuator type (fig.)	<i>one-hand operated (e)</i>	-
	actuating force for opening (N)	181 N	-
	test force with blocked main contacts (N)	400 N	-
	Lockability of driving mechanism in OFF-position at test force and blocked main contacts		N
	Position indicator does not show OFF-position after capture of test force at blocked main contacts		P

8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY <i>fuse-switch-disconnector type SL3-3x/1000</i>		
8.3.4.1	Operational performance test		
	utilization category	AC-22B	-
	rated operational voltage (V)	400 V	-
	rated operational current (A)	1000 A	-
	Test conditions electrical operation cycles:		

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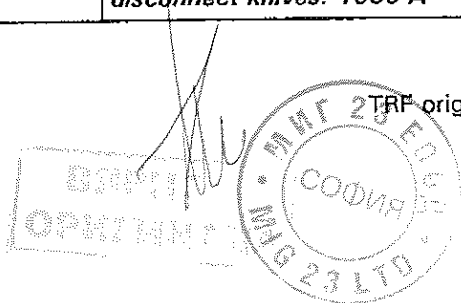
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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	test voltage (V)	L1: - L2: 413 V L3: -	—
	test current (A)	L1: - L2: 1003 A L3: -	—
	power factor/time constant	L1: - L2: 0,81 L3: -	—
	Number of cycles with current	100	P
	Number of cycles without current	500	P
	First test sequence (with/without current)	with current	—
	Second test sequence (with/without current) ...	without current	—
	time interval between first and second test sequence	1 hour	—
8.3.4.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	2000 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		N
	Leakage current (other utilization categories) ≤ 2 mA	5,7 µA – 7,1 µA	P
	test voltage (1,1 Ue) (V)	440 V, tested with 800 V	—
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	fuse-links: 59 K – 71 K disconnect knives: 47 K – 57 K	P
	conductor cross-sectional area (mm ²)	fuse-links: 50 x 10 mm busbar and 2 x 240 mm² cable disconnect knives: 60 x 10 mm horizontal busbar and 2 x 60 x 5 mm outgoing terminals	—
	test current Ie (A)	fuse-links: 722 A disconnect knives: 1000 A	—

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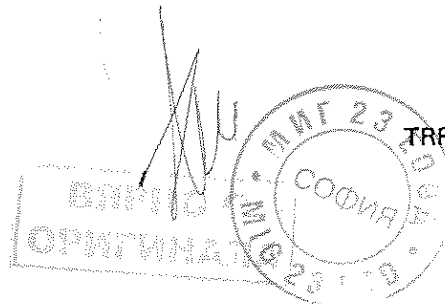
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Clause	Requirement – Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY <i>fuse-switch-disconnector type SL3-3x/1000</i>		
8.3.4.1	Operational performance test		
	utilization category	AC-22B	—
	rated operational voltage (V)	500 V	—
	rated operational current (A)	800 A	—
	Test conditions electrical operation cycles:		
	test voltage (V)	L1: - L2: 510 V L3: -	—
	test current (A)	L1: - L2: 814 A L3: -	—
	power factor/time constant	L1: - L2: 0,80 L3: -	—
	Number of cycles with current	200	P
	Number of cycles without current	800	P
	First test sequence (with/without current)	with current	—
	Second test sequence (with/without current)	without current	—
	time interval between first and second test sequence	1 hour	—
8.3.4.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	2000 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		N
	Leakage current (other utilization categories) ≤ 2 mA	4,8 μA – 7,3 μA	P
	test voltage (1,1 Ue) (V)	550 V, tested with 800 V	—
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	fuse-links: 56 K – 72 K disconnect knives: 45 K – 60 K	P

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Clause	Requirement - Test	Result - Remark	Verdict
	conductor cross-sectional area (mm ²)	<i>fuse-links: 40 x 10 mm busbar and 2 x 185 mm² cable</i> <i>disconnect knives: 50 x 10 mm busbar and 2 x 240 mm² cable</i>	—
	test current I _e (A)	<i>fuse-links: 630 A</i> <i>disconnect knives: 800 A</i>	—

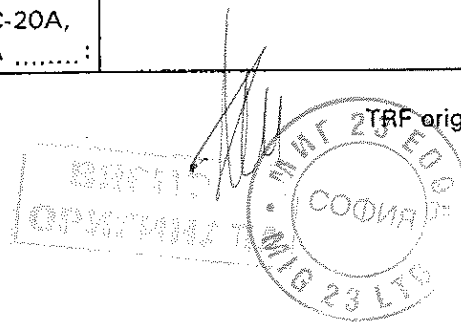
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY <i>fuse-switch-disconnector type SL3-3x/1000</i>		
8.3.4.1	Operational performance test		
	utilization category	<i>AC-21B</i>	—
	rated operational voltage (V)	<i>690 V</i>	—
	rated operational current (A)	<i>630 A</i>	—
	Test conditions electrical operation cycles:		
	test voltage (V)	L1: - L2: <i>689 V</i> L3: -	—
	test current (A)	L1: - L2: <i>632 A</i> L3: -	—
	power factor/time constant	L1: - L2: <i>0,95</i> L3: -	—
	Number of cycles with current	<i>200</i>	<i>P</i>
	Number of cycles without current	<i>800</i>	<i>P</i>
	First test sequence (with/without current)	<i>with current</i>	—
	Second test sequence (with/without current) ...	<i>without current</i>	—
	time interval between first and second test sequence	<i>1 hour</i>	—
8.3.4.2	Dielectric verification		
	test voltage (2 U _i) for 1 min (V)	<i>2000 V</i>	—
	No breakdown or flashover		<i>P</i>
8.3.4.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		<i>N</i>

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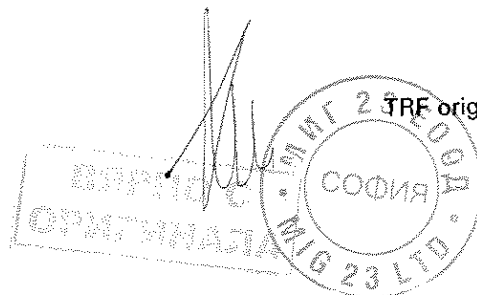
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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	Leakage current (other utilization categories) ≤ 2 mA	5,6 μ A – 7,8 μ A	P
	test voltage (1,1 Ue) (V)	759 V, tested with 800 V	–
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	fuse-links: 55 K – 76 K	P
	conductor cross-sectional area (mm ²)	fuse-links: 40 x 10 mm busbar and 2 x 185 mm ² cable	–
	test current Ie (A)	fuse-links: 630 A	–

8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY <i>fuse-switch-disconnector type SL3-3x3/1000 only without current</i>		
8.3.4.1	Operational performance test		
	utilization category	AC-22B	–
	rated operational voltage (V)	400 V	–
	rated operational current (A)	1000 A	–
	Test conditions electrical operation cycles:		
	test voltage (V)	L1: - L2: - L3: -	–
	test current (A)	L1: - L2: - L3: -	–
	power factor/time constant	L1: - L2: - L3: -	–
	Number of cycles with current		P
	Number of cycles without current	500 + 100	P
	First test sequence (with/without current)	without current	–
	Second test sequence (with/without current) ...		–
	time interval between first and second test sequence		–
8.3.4.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	2000 V	–
	No breakdown or flashover		P
8.3.4.3	Leakage current		

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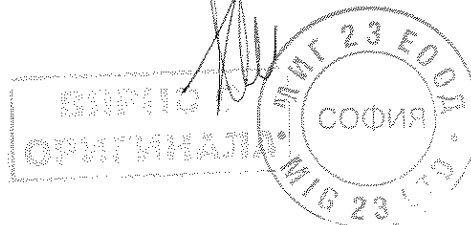
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Clause	Requirement - Test	Result - Remark	Verdict
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA		N
	Leakage current (other utilization categories) ≤ 2 mA	4,8 μ A - 7,3 μ A	P
	test voltage (1,1 Ue) (V)	440 V, tested with 800 V	-
8.3.4.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	<i>fuse-links: 51 K - 68 K</i> <i>disconnect knives: 51 K - 74 K</i>	P
	conductor cross-sectional area (mm ²)	<i>fuse-links: 50 x 10 mm busbar and 2 x 240 mm² cable</i> <i>disconnect knives: 60 x 10 mm horizontal busbar and 2 x 60 x 5 mm outgoing terminals</i>	-
	test current Ie (A)	<i>fuse-links: 722 A</i> <i>disconnect knives: 1000 A</i>	-

8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY		N
8.3.5.1	Short-time withstand current test		
	Rated short-time withstand current I _{cw} (A)		
	test voltage (V)	L1: L2: L3:	-
	r.m.s. test current (A)	L1: L2: L3:	-
	peak test current (A)	L1: L2: L3:	-
	power factor/time constant	L1: L2: L3:	-
	test duration (s)		-
	Equivalent with		
8.3.5.1.5	Behaviour of the equipment during the test		

TRF No.: 60947-3B

TRF originator: KEMA

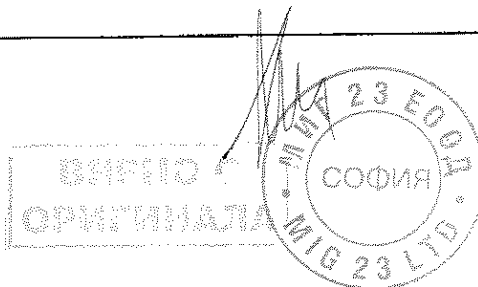


EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
8.3.5.1.6	Conditions of the equipment after the test		
8.3.5.2	Short-circuit making capacity		
	Rated short-circuit making capacity I _{cm} (A)		
	test voltage (V)	L1: L2: L3:	
	r.m.s. test current (A)	L1: L2: L3:	
	peak test current (A)	L1: L2: L3:	
	power factor/time constant	L1: L2: L3:	
	current duration (s)		
	number of making cycles		
8.3.5.2.5	Behaviour of the equipment during the test		
8.3.5.2.6	Conditions of the equipment after the test		
8.3.5.3	Dielectric verification		
	test voltage (2 U _i) for 1 min (V)		
	No flashover or breakdown		
8.3.5.4	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		
	Leakage current (other utilization categories) ≤ 2,0 mA		
	test voltage (1,1 U _e) (V)		
8.3.5.5	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K		
	cross-sectional area (mm ²)		
	test current I _e (A)		

8.3.6	TEST SEQUENCE IV; CONDITIONAL SHORT-CIRCUIT CURRENT <i>fuse-switch-disconnector type SL 3-3x3/1000</i>		
	Protective device details:		

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TRF originator: KEMA



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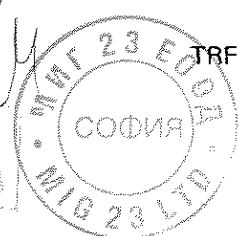
EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	- manufacturer's name, trademark or identification mark	<i>Jean Müller</i>	-
	- manufacturer's model or type reference	<i>M3gTr722 NH3</i>	-
	- rated voltage (V)	<i>400 V</i>	-
	- rated current (A)	<i>500 kVA (722 A)</i>	-
	- rated breaking capacity (kA)	<i>100 kA</i>	-
8.3.6.2	Fuse protected short-circuit withstand		
	test voltage (1,05 Ue) (V)	L1: <i>420 V</i> L2: <i>420 V</i> L3: <i>420 V</i>	-
	test current (kA)	L1: <i>50,4 kA</i> L2: <i>51,8 kA</i> L3: <i>50,0 kA</i>	-
	rated frequency (Hz)	<i>50 Hz</i>	-
	power factor	<i>0,22</i>	-
	Fuse protected short-circuit withstand		
	- max. let-through current (kA)	L1: <i>40,4 kA</i> L2: <i>48,8 kA</i> L3: <i>40,4 kA</i>	-
	- Joule integral I ² dt (A ² s)	L1: <i>3690 kA²s</i> L2: <i>3970 kA²s</i> L3: <i>3710 kA²s</i>	-
	Fuse protected short-circuit making		
	- mean velocity of 15 manually under no-load conditions operations (m/s)	<i>1,77 m/s</i>	-
	- point at which the measurement is made		-
	- test speed during the fuse protected short-circuit making (m/s)	<i>0,65 m/s</i>	-
	- max. let-through current (kA)	L1: <i>42,7 kA</i> L2: <i>42,7 kA</i> L3: <i>5,50 kA</i>	-
	- Joule integral I ² dt (A ² s)	L1: <i>3390 kA²s</i> L2: <i>3240 kA²s</i> L3: <i>88,2 kA²s</i>	-
8.3.6.2.5	Behaviour of the equipment during the test		<i>P</i>
8.3.6.2.6	Conditions of the equipment after the test		<i>P</i>
8.3.6.3	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	<i>2000 V</i>	-
	No flashover or breakdown		<i>P</i>

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TRF originator: KEMA

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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.6.4	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA		
	Leakage current (other utilization categories) $\leq 2,0$ mA	4,2 μ A - 9,3 μ A	P
	test voltage (1,1 Ue) (V)	440 V, tested with 800 V	-
8.3.6.5	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	50 K - 69 K	P
	cross-sectional area (mm ²)	50 x 10 mm busbar and 2 x 240 mm ² cable	-
	test current Ie (A)	fuse-links: 722 A	-

8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT <i>fuse-switch-disconnector type SL 3-3x/1000</i>		
	Protective device details:		
	- manufacturer's name, trademark or identification mark	Jean Müller	-
	- manufacturer's model or type reference	M3gT722 NH3	-
	- rated voltage (V)	400 V	-
	- rated current (A)	722 A	-
	- rated breaking capacity (kA)	100 kA	-
8.3.6.2	Fuse protected short-circuit withstand		
	test voltage (1,05 Ue) (V)	L1: 420 V L2: 420 V L3: 420 V	-
	test current (kA)	L1: 50,4 kA L2: 51,8 kA L3: 50,0 kA	-
	rated frequency (Hz)	50 Hz	-
	power factor	0,22	-
	Fuse protected short-circuit withstand		
	- max. let-through current (kA)	L1: 38,1 kA L2: 50,2 kA L3: 38,1 kA	-
	- Joule integral I ² dt (A ² s)	L1: 3840 kA ² s L2: 4160 kA ² s L3: 3300 kA ² s	-

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TRF originator: KEMA



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EN 60 947-3			
Clause	Requirement - Test	Result - Remark	Verdict
	Fuse protected short-circuit making		
	- mean velocity of 15 manually under no-load conditions operations (m/s)	1,15 m/s	-
	- point at which the measurement is made		-
	- test speed during the fuse protected short-circuit making (m/s)	0,65 m/s	-
	- max. let-through current (kA)	L1: 39,7 kA L2: 39,7 kA L3:	-
	- Joule integral I ² dt (A ² s)	L1: 2960 kA ² s L2: 2960 kA ² s L3:	-
8.3.6.2.5	Behaviour of the equipment during the test		P
8.3.6.2.6	Conditions of the equipment after the test		P
8.3.6.3	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	2000 V	-
	No flashover or breakdown		P
8.3.6.4	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		
	Leakage current (other utilization categories) ≤ 2,0 mA	4,0 μA - 8,7 μA	P
	test voltage (1,1 Ue) (V)	440 V, tested with 800 V	-
8.3.6.5	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K	51 K - 74 K	P
	cross-sectional area (mm ²)	50 x 10 mm busbar and 2 x 240 mm ² cable	-
	test current Ie (A)	fuse-links: 722 A	-

8.3.7	TEST SEQUENCE V: OVERLOAD PERFORMANCE CAPABILITY		
8.3.7.1	Overload test		
	ambient temperature 10-40 °C	23 °C	-
	test enclosure W x H x D (mm x mm x mm)	-	-
	material of enclosure		-
	test current 1,6 Ithe or 1,6 Ith (A)	1155 A	-

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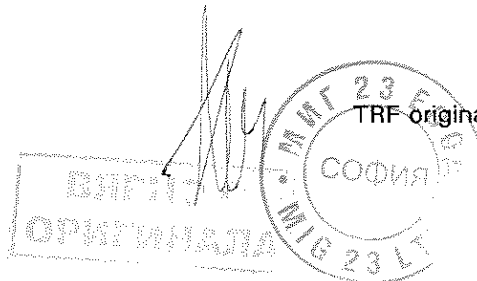
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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	cable/busbar cross-section (mm ²) / (mm)	<i>busbar 50 x 10 mm cable 2 x 240 mm²</i>	–
	Fuse-link details:		
	- manufacturer's name, trademark or identification mark	<i>Jean Müller</i>	–
	- rated current (A)	<i>500kVA (722 A)</i>	–
	- power loss (W)	<i>51 W</i>	–
	- rated breaking capacity (kA)	<i>100 kA</i>	–
	- time duration of the overload test (s)	<i>1860 s</i>	–
	Within 3 min after the fuse(s) has(have) operated (or 1 h), the equipment shall be operated once, i.e. opened and closed		<i>P</i>
	The equipment shall not have undergo any impairment hindering such operation		<i>P</i>
8.3.7.2	Dielectric verification		
	test voltage (2 Ui) for 1 min (V)	<i>2000 V</i>	–
	No flashover or breakdown		<i>P</i>
8.3.7.3	Leakage current		
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA		
	Leakage current (other utilization categories) ≤ 2 mA)	<i>5,9 µA – 7,4 µA</i>	<i>P</i>
	test voltage (1,1 Ue) (V)	<i>440 V, tested with 800 V</i>	–
8.3.7.4	Temperature-rise verification		
	Temperature rise of main circuit terminals ≤ 80 K (K)	<i>53 K – 70 K</i>	<i>P</i>
	cross-sectional area (mm ²)	<i>50 x 10 mm busbar and 2 x 240 mm² cable</i>	–
	test current Ie (A)	<i>fuse-links: 722 A</i>	–

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EN 60 947-3			
Clause	Requirement – Test	Result - Remark	Verdict
	TABLE: temperature rise measurements with fuse-links		
	temperature rise dT of part:	phase	dT (K)
	<i>terminal to horizontal busbar system (line terminal)</i>	L1	48
		L2	53
		L3	62
	<i>terminal to cable(s) (load terminal)</i>	L1	66
		L2	66
		L3	58
	<i>internal busbar near insulation material</i>	L1	122
	<i>actuator</i>	-	3

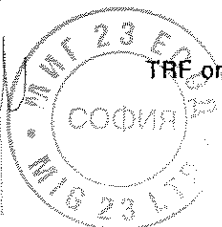
	TABLE: temperature rise measurements with contact knives		
	temperature rise dT of part:	phase	dT (K)
	<i>terminal to horizontal busbar system (line terminal)</i>	L1	53
		L2	49
		L3	47
	<i>terminal to cable(s) (load terminal)</i>	L1	62
		L2	64
		L3	61

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TRF No.: 60947-3B

TRF originator: KEMA

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Remarks

Additional test:

- Parts of insulation material necessary to retain current carrying parts were subjected to a glow-wire test according EN 60947-1, at 960 °C for the other insulation materials 650 °C.
These tests withstood the requirements.

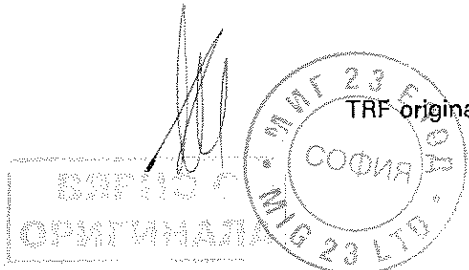
description:

- Type SL 3-3x/1000 : fuse-switch-disconnector, 3-poles, switching pole after pole
- Type SL 3-3x3/1000 : fuse-switch-disconnector, 3-poles, switching 3-poles

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TRF No.: 60947-3B

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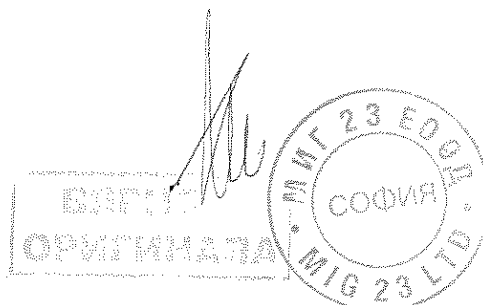
СПИСЪК

на типовите изпитвания, проведени от независима изпитвателна лаборатория, за предлаганите вертикални разединители, както следва:

Марка: Jean Muller
Продукт: вертикален предпазител-разединители
Серия: SL3

- 5.2 Маркировка
- 7.1 Конструкция
- 8.3.3 Основни характеристики
 - 8.3.3.1 Повишаване на температурата
 - 8.3.3.2 Диелектрични свойства
 - 8.3.3.3 Работна и гранична изключвателна възможност при късо съединение
 - 8.3.3.4 Проверка на диелектричните свойства
 - 8.3.3.5 Ток на утечка
 - 8.3.3.6 Проверка при повишаване на температурата
 - 8.3.3.7 Експлоатационна възможност на задвижващия механизъм
- 8.3.4 Работни характеристики
 - 8.3.4.1 Изпитване на експлоатационната възможност
 - 8.3.4.2 Проверка на диелектричните свойства на прекъсвач-разединителя
 - 8.3.4.3 Ток на утечка
 - 8.3.4.4 Проверка при повишаване на температурата
- 8.3.5 Характеристики при късо съединение
 - 8.3.5.1 Издържан импулсен ток
 - 8.3.5.2 Работна изключвателна възможност при късо съединение
 - 8.3.5.3 Проверка на диелектричните свойства
 - 8.3.5.4 Ток на утечка
 - 8.3.5.5 Проверка при повишаване на температурата
- 8.3.6 Условен ток на късо съединение
 - 8.3.6.2 Издържан ток на късо съединение със стопяем предпазител
 - 8.3.6.3 Проверка на диелектричните свойства
 - 8.3.6.4 Ток на утечка
 - 8.3.6.5 Проверка при повишаване на температурата
- 8.3.7 Характеристики при претоварване
 - 8.3.7.1 Изпитване на претоварване
 - 8.3.7.2 Проверка на диелектричните свойства
 - 8.3.7.3 Ток на утечка
 - 8.3.7.4 Проверка при повишаване на температурата

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Annex to declaration of accreditation (scope of accreditation)
Normative document: EN ISO/IEC 17025:2005
Registration number: L 218

of **DNV GL Netherlands B.V.**
KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018** to **30-11-2020**

Replaces annex dated: **20-03-2017**

Location(s) where activities are performed under accreditation

Head Office

Utrechtseweg 310, Building no. R11
6812 AR
Arnhem
The Netherlands

Location	Abbreviation/ location code
Utrechtseweg 310, Building no. R11 6812 AR Arnhem The Netherlands	ARN

No.	Material or product	Type of activity ¹	Internal reference number	Location
1	Coils and / or windings of rotating electrical machines	AC voltage test Lightning impulse voltage test	IEC 60034	ARN

¹ If there is a referral to a code starting with NAW, NAP, EA of IAF, this constitutes a scheme for which RvA-BR010 applies. The accepted version is mentioned on the list of schemes for which accreditation can be granted by the RvA.

This annex has been approved by the Board of the Dutch Accreditation Council, on its behalf,

J.A.W.M. de Haas
Director of Operations

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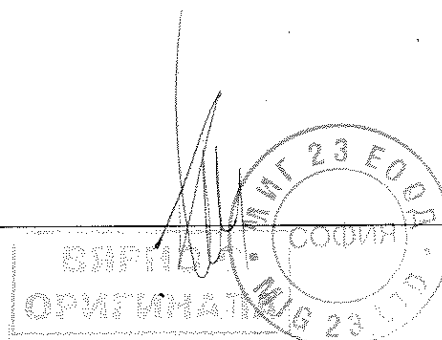
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KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018** to **30-11-2020**

Replaces annex dated: **20-03-2017**

No.	Material or product	Type of activity ¹	Internal reference number	Location
2	Power transformers	AC voltage test Lightning impulse voltage test Temperature-rise test Capacitance and tan δ measurement Power measurement DC resistance measurement Temperature measurement Sound level measurement R.I.V. measurement Partial discharge measurement SFRA measurement Verification of voltage ratio and phase displacement Low ambient test on dry-type transformer Thermal shock test on dry type transformer Condensation test on dry-type transformer Humidity penetration test on dry-type transformer Inspection of the active part	IEC 60076-1, -2, -3, -10, -11, -13, -15, -16, -18 CISPR 18.2 EN 50541-1 IEEE Std. C57.12.00 IEEE Std. C57.12.90 IEEE Std. C57.12.91	ARN
3	AC Metal-enclosed switchgear and controlgear above 1 kV and ≤ 52 kV and prefabricated substations	AC voltage test Lightning impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement Verification of degree of protection R.I.V. measurement	IEC 62271-200 IEC 62271-202 IEEE C37.20.2 IEEE C37.21 ANSI C37.54 ANSI C37.55 IEC 60529	ARN
4	AC Solid Insulation-enclosed switchgear and controlgear above 1 kV and ≤ 52 kV	AC voltage test Lightning impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement Verification of degree of protection R.I.V. measurement	IEC 62271-201 IEC 60529	ARN



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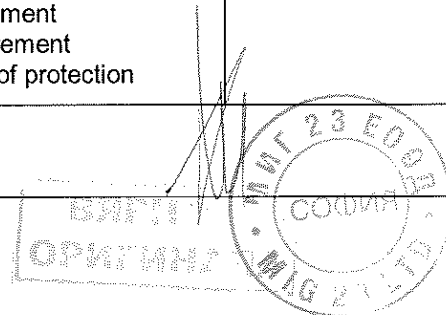
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of **DNV GL Netherlands B.V.**
KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018** to **30-11-2020**

Replaces annex dated: **20-03-2017**

No.	Material or product	Type of activity ¹	Internal reference number	Location
5	Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	AC voltage test Lightning impulse voltage test Switching impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement R.I.V. measurement	IEC 62271-203 IEEE Std C37.122	ARN
6	High-voltage AC circuit breakers	AC voltage test Lightning impulse voltage test Switching impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement R.I.V. measurement Test under wet conditions	IEC 62271-100 IEEE Std C37.09 IEEE Std C37.013 EN 50152-1	ARN
7	High-voltage AC disconnectors and earthing switches	AC voltage test Lightning impulse voltage test Switching impulse voltage test Temperature-rise test Partial discharge measurement DC resistance measurement R.I.V. measurement Test under wet conditions Temperature measurement	IEC 62271-102 IEEE Std C37.34 IEEE Std C37.41	ARN
8	High-voltage AC switches	AC voltage test Lightning impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement Verification of degree of protection	IEC 62271-103 IEC 62271-104 IEEE Std C37.74	ARN
9	High-voltage AC contactors	AC voltage test Lightning impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement Verification of degree of protection	IEC 62271-106	ARN



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Annex to declaration of accreditation (scope of accreditation)
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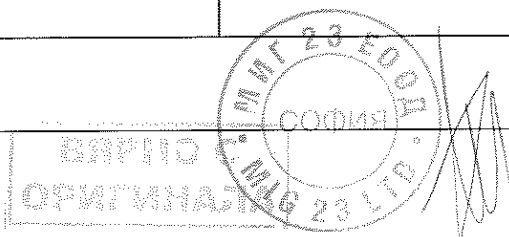
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KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018 to 30-11-2020**

Replaces annex dated: **20-03-2017**

No.	Material or product	Type of activity ¹	Internal reference number	Location
10	Automatic circuit reclosers and fault interrupters	AC voltage test Lightning impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement Verification of degree of protection	IEC 62271-111/ IEEE Std C37.60	ARN
11	Busducts	AC voltage test Lightning impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement Verification of degree of protection	IEEE Std C37.23	ARN
12	High-voltage AC switch-fuse combinations and high-voltage AC fuses	AC voltage test Lightning impulse voltage test Partial discharge measurement Temperature-rise test Temperature measurement DC resistance measurement Verification of degree of protection	IEC 62271-105 IEEE Std C37.41 IEEE Std C37.74 IEC 60282-1 IEC 60282-2	ARN
13	Insulators and insulated bushings	AC voltage test Lightning impulse voltage test Partial discharge measurement Test under wet conditions Thermal-mechanical performance test Electro-mechanical failing load test R.I.V. measurement Pollution tests Temperature measurement Visible corona test Steep front wave flashover test Porosity test Visual and dimensional test Galvanizing test Thermal shock test Thermal cycle test Water absorption test Impact test Test of housing: tracking and erosion tests	IEC 60137 IEEE Std C57.19.00 IEEE Std C57.19.01 IEC 60168 IEC 60383 IEC 60507 IEC 60660 IEC 61109 IEC 62217 IEC 62730 ANSI C29.1, -6, -7, -12 ANSI/NEMA C29.2, -13 CAN/CSA C411.1	ARN

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Annex to declaration of accreditation (scope of accreditation)
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 Registration number: L 218

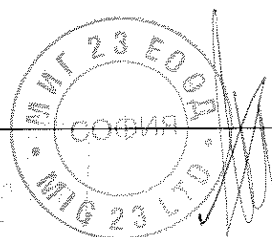
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KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018** to **30-11-2020**

Replaces annex dated: **20-03-2017**

No.	Material or product	Type of activity ¹	Internal reference number	Location
14	Cables	AC voltage test DC voltage test Lightning impulse test Heat cycle voltage test Capacitance and tan δ measurement Partial discharge measurement Insulation resistance measurement DC resistance measurement Temperature measurement Condition test of XLPE cable Water penetration test Bending test	IEC 60055 IEC 60141 IEC 60502 IEC 60840 IEC 62067 HD 620 HD 632 NEN 3619 BS 6622 BS 7835 BS 7870 BS 7912 BS 7970	ARN
15	Cable accessories	AC voltage test DC voltage test Lightning impulse voltage test Heat cycle voltage test Temperature measurement Partial discharge measurement Insulation resistance measurement Test under wet conditions Pollution tests R.I.V. measurement Water penetration test Impact test	IEC 60502-4 IEC 60055 IEC 60840 IEC 62067 HD 629-1 HD 629-2 HD 632 IEEE Std 48 IEEE Std 404	ARN
16	Current transformers	AC voltage test Lightning impulse voltage test Switching impulse voltage test Temperature-rise test Capacitance and tan δ measurement Partial discharge measurement Accuracy test Test under wet conditions Temperature measurement Inspection of active part	IEC 60044-8 IEC 61869-2 IEC 61869-1	ARN

ОПРЕДЕЛЕНИЕ



Annex to declaration of accreditation (scope of accreditation)
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of **DNV GL Netherlands B.V.**
KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018 to 30-11-2020**

Replaces annex dated: **20-03-2017**

No.	Material or product	Type of activity ¹	Internal reference number	Location
17	Voltage transformers	AC voltage test Lightning impulse voltage test Switching impulse voltage test Temperature-rise test Capacitance and tan δ measurement Partial discharge measurement Temperature measurement Accuracy test Test under wet conditions Leakage test Inspection of active part	IEC 61869-1 IEC 61869-3 IEC 61869-5 IEC 60044-7	ARN
18	Capacitors	AC voltage test Lightning impulse voltage test Capacitance and tan δ measurement Temperature measurement Test under wet conditions Thermal stability test Short-circuit discharge test Endurance test Sealing test Self-healing test Destruction test Ageing test	IEC 60358 IEC 60831 IEC 60871	ARN
19	Surge arresters	AC voltage test Lightning impulse voltage test Switching impulse voltage test Current impulse test Pollution tests Partial discharge measurement Temperature measurement Ageing test R.I.V. measurement	IEC 60099 IEEE Std C62.11	ARN
20	Reactors	AC voltage test Lightning impulse voltage test Switching impulse voltage test Temperature-rise test Impedance measurement AC resistance measurement Power measurement DC resistance measurement Temperature measurement Acoustic sound level measurement Verification of voltage ratio and phase displacement check	IEC 60076-6 IEEE Std C57.21	ARN

ВЕРИО С
 ОРИГИНАЛ
 МИГ 23 ЛТЕ
 СОФИЯ

Annex to declaration of accreditation (scope of accreditation)
 Normative document: EN ISO/IEC 17025:2005
 Registration number: L 218

of **DNV GL Netherlands B.V.**
KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018** to **30-11-2020**

Replaces annex dated: **20-03-2017**

No.	Material or product	Type of activity ¹	Internal reference number	Location
21	Compression and mechanical connectors	Temperature-rise test Temperature measurement DC resistance measurement Mechanical tests	IEC 61238-1	ARN
22	Protection relays & substation automation equipment	Functional requirements	IEC 60255-1 IEC 60255-149 IEC 60255-12 IEC 60255-13 IEC 60255-121 IEC 60255-127 IEC 60255-151 IEEE C37.112	ARN
		Product safety requirements	IEC 60255-1 IEC 60255-27	
		EMC requirements ¹⁾	IEC 60255-1 IEEE C37.90	
		Energizing quantities	IEC 60255-1	
		Climatic environmental tests	IEC 60255-1 IEC 60068-2-2 tests Bd, Bb IEC 60068-2-1 tests Ad, Ab IEC 60068-2-14 test Nb IEC 60068-2-78 test Cab IEC 60068-2-30 test Db	
		Mechanical environmental tests	IEC 60255-1 IEC 60255-21 series	
23	Electrical Energy Meters	Metrological Characteristics and Functionalities Accuracy Tests for disturbances of long duration Tests for electrical requirements Insulation tests EMC requirements ¹⁾ Overload test Climate tests Mechanical tests	In accordance with Directive 2014/32/EU annex I, annex III MI-003 IEC 62052-11, IEC 62053-11/21/22/23 and EN 50470-1/2/3	ARN

Remark

"in accordance with" is applicable for all standards.

1) The EMC tests needed for this scheme that are covered by the accreditation are specified below.



Annex to declaration of accreditation (scope of accreditation)
 Normative document: EN ISO/IEC 17025:2005
 Registration number: L 218

of **DNV GL Netherlands B.V.**
KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018** to **30-11-2020**

Replaces annex dated: **20-03-2017**

This part of the scope contains the new approach for the specification of EMC tests based on a source scope.

The tests needed for the above mentioned schemes 22) and 23) are specified below.

No.	Material or product	Type of activity ²	Internal reference number	Location
EMC.I		EMC Immunity tests		
EMC.I.21	As specified in the scheme 22 and 23	Electrostatic discharge immunity (ESD) Contact discharge up to 30 kV Air discharge up to 30 kV	IEC 60255-26 IEC 62052-11 EN 50470-1 IEEE C37.90.3 IEC 61000-4-2	ARN
EMC.I.22		Electrical fast transient / burst immunity (EFT) 1 and 3 phase 0,25 – 4 kV up to 1 MHz	IEC 60255-26 IEC 62052-11 EN 501470-1 IEEE C37.90.1 IEC 61000-4-4	ARN
EMC.I.23		Surge immunity 1 and 3 phase 0,25 – 8 kV	IEC 60255-26 IEC 62052-11 EN 50470-1 IEC 61000-4-5	ARN
EMC.I.07		Immunity to conducted disturbances, induced by radio-frequency fields 150 kHz – 80 MHz 3 V, 10 V	IEC 60255-26 IEC 62052-11 IEC 61000-4-6	ARN
EMC.I.09		Power frequency magnetic field immunity, 50/60 Hz up to 100 A/m (continuous) up to 1000 A/m (3 s)	IEC 60255-26 EN 50470-1 IEC 61000-4-8	ARN
EMC.I.26		AC Voltage dips, short interruptions immunity 1 and 3 phase Dips; up to 280 Vac/16 A, 50/60 Hz Variations; up to 280 Vac/5 A, 50/60 Hz	IEC 60255-26 EN 50470-1 IEC 61000-4-11	ARN

² If there is a referral to a code starting with NAW, NAP, EA of IAF, this constitutes a scheme for which RvA-BR012 applies. The accepted version is mentioned on the list of schemes for which accreditation can be granted by the RvA.

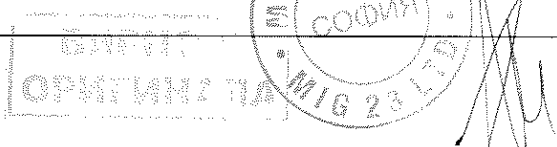
Annex to declaration of accreditation (scope of accreditation)
 Normative document: EN ISO/IEC 17025:2005
 Registration number: L 218

of **DNV GL Netherlands B.V.**
KEMA Laboratories - High-Voltage Laboratory

This annex is valid from: **24-05-2018 to 30-11-2020**

Replaces annex dated: **20-03-2017**

No.	Material or product	Type of activity ²	Internal reference number	Location
EMC.I.06	As specified in the scheme 22 and 23	Immunity to conducted common mode disturbances, DC, 16 2/3, 50 and 60 Hz 1 – 30 V (continues) 10 – 300 V (short duration) 15 Hz to 150 Hz 0,1 – 30 V	IEC 60255-26 IEC 61000-4-16	ARN
EMC.I.30		DC voltage ripple Immunity 0 – 20%, 100/120 Hz 0 – 300 Vdc	IEC 60255-26 IEC 61000-4-17	ARN
EMC.I.33		Damped oscillatory wave 100 kHz, 1 MHz; 0,25 – 2,5 kV 3 MHz, 10 MHz, 30 MHz; 0,5 kV – 4,0 kV	IEC 60255-26 IEEE C37.90.1 IEC 61000-4-18	ARN
EMC.I.30		DC Voltage dips, short interruptions, and voltage variations immunity 20 – 300 Vdc Up to 10 A	IEC 60255-26 IEC 61000-4-29	ARN
EMC.I.25		Pulsed magnetic field immunity 100 – 1000 A/m	IEC 61000-4-9	ARN
EMC.I.33		Damped oscillatory magnetic field immunity 10 – 100 A/m (100 kHz) 10 – 100 A/m (1 MHz)	IEC 61000-4-10	ARN



ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ

Долуподписаният Владимир Лазаров,

Управител на фирма "ВиВ Изоматик" ООД, София, ул.Пирин 40А

В качеството си на търговски представители на JEAN MULLER GMBH

Декларираме, че продуктът:

Марка:	JEAN MULLER
Продукт:	Разединител 1000А
Серия:	SLT3-3S

За който се отнася тази декларация, при условие, че е инсталиран, обслужван и използван за приложения, за които е предназначен, е в съответствие със следните стандарти, технически одобрения или други нормативни актове:

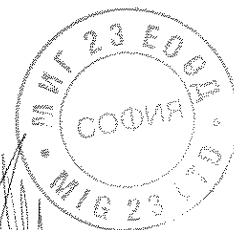
IEC/EN 60947-1
IEC/EN 60947-3

София, 14.08.2012

на основание чл. 2 от ЗЗЛД

Владимир Лазаров, управител
ВиВ Изоматик ООД

ВЕРНО
ОРИГИНАЛ



EG-Konformitätserklärung EC Conformity Declaration

Dok.-Nr. L_98_01
Doc. No.

Hersteller, Anschrift
Manufacturer, Address

Jean Müller GmbH Elektrotechnische Fabrik
H.J.-Müller-Straße 7, D-65343 Eltville am Rhein

Produktbezeichnung
Product designation

NH-Sicherungslastschaltleisten Baureihe SL, für Schalttafeleinbau und Schalttafelauflaufbau inklusive Zubehör.
LV HRC Strip type fuse switch disconnectors, series SL and accessories, for panel board building.
DIN-Size 00 (160A): SL00-3x3/100/; SL00-3x(3); SL00-3x/400A
DIN-Size 1 to 3 (250A/400A/630A); SL123-3x(3)
DIN-Size 3: SL3-3x(3)/1000A (NH-Trennleiste)
(LV HRC Busbar disconnect strip 1-and 3 pole switchable)
DIN-Size 3: SL3-3x2/1.250A or 1.600A
DIN-Size 3: SL3-3x(3)/910A
DIN-Size 3; SL3-3X6/2.000A
DIN-Size 3: SLT3-3SRSL/3x(3)/50 (NH-Stromschienen-Trennleiste)
(busbar disconnect strip)

Jahr der Anbringung der CE-Kennzeichnung : 1998

Affixing of the CE marking

Das bezeichnete Produkt stimmt mit den Vorschriften folgender EG-Richtlinie/n überein:

The designated product conforms to the provisions of the following European directives

2006/95/EG

Richtlinie des Rates vom 12. Dezember 2006 zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten betreffen elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen.

Directive of the European Parliament and of the council of 12. December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

Die Übereinstimmung des bezeichneten Produktes mit den Vorschriften der oben genannten Richtlinie/n wird nachgewiesen durch die Einhaltung folgender Normen:

The conformity of the designated product with the provisions of the above mentioned Directives is proved by full compliance with the following standards

Europäische Normen EN 60947-3

Harmonized European standards

IEC-Standards

IEC standards

Nationale Normen VDE 0660 Teil 107

National standards

Aussteller / Issuer

G / QM

Ort, Datum / Place, Date

Eltville, den 16. Jan. 2008

Rechtsverb. Unterschriften

Legally binding signature

на основание чл. 2 от ЗЗЛД

Dr. B. Müller

i.V. A. Göttert

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, beinhaltet jedoch keine Zusicherung von Eigenschaften. Mitgelieferte Sicherheitshinweise sind zu beachten.

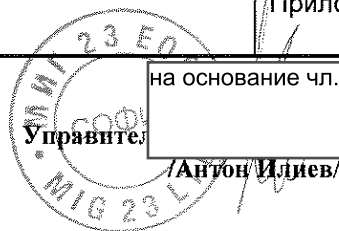
This declaration certifies compliance with the indicated directives but implies no warranty of properties. The safety instructions of the accompanying product documentation shall be observed.

Наименование на материала:

Токови измервателни трансформатори
НН X/5 А, проходен тип

№ по ред	Документ	Приложение № (или текст)
1.	Точно обозначение на типа на токовите измервателни трансформатори (ТИТ), производителя и страна на произход и последно издание на каталога на производителя	СТ-4 1200/5 А „Елпром ЕМЗ“ ООД България Приложение № 1
2.	Удостоверение за одобряване на типа на ТИТ, издадено по реда и при условията на Закона за измерванията	Приложение № 2
3.	Техническо описание на ТИТ, гарантирани параметри и характеристики, включително клас на изолацията, тегло и др.	Приложение № 3
4.	Протоколи от типови изпитвания на ТИТ на английски или български език, проведени от независима изпитвателна лаборатория с приложени резултати от изпитванията	Приложение № 4
5.	Сертификат/акредитация на независимата изпитвателна лаборатория, провела типовите изпитвания по т. 4.	Приложение № 5
6.	Информация за провежданите от производителя контролни (рутинни) изпитвания	Приложение № 4
7.	Чертежи с размери	Приложение № 6
8.	Инструкция за монтиране, въвеждане в експлоатация, изисквания за поддържане, включително изисквания за периодичност на необходимите контролни изпитвания по време на експлоатация и др.	Приложение № 7
9.	Изисквания за съхранение и транспортиране	Приложение № 7

на основание чл. 2 от ЗЗЛД



" ЕЛПРОМ ЕМЗ " ООД ГРАД ШАБЛА

ГАМА ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ НН ТИП СТ-1; СТ-2, СТ-3 И СТ-4

ТЕЛЕФОНИ ЗА КОНТАКТИ:

Управител: 05743 / 45 - 68
 Главен счетоводител: 05743 / 42 - 84
 Гл. Офис: 05743 / 41 - 84
 Факс/гл. секретар: 05743 / 50 - 20
 E-mail: elpromemz@mbox.intotel.bg

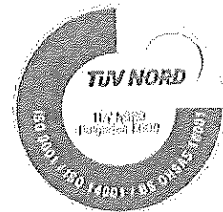


таблица 1.

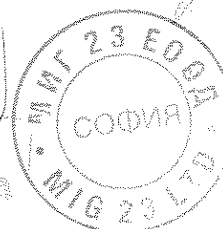
Тип Type	Проводно отношение Ipn/Isn Rated current ratio A/A	Най-високо работно напрежение Rated voltage network kV	Клас на точност Class of accuracy %	Номинална мощност Sn Rated power VA	Номинален ток на терм. устойчивост Rated short-time thermal stability Ith, kA	Номинален ток на дин. устойчивост Rated short-time dynamic stability Idyn, kA	Номинален коефициент на безоп. Security factor for apparatus Fs	Заводски шифър Serial number
1	2	3	4	5	6	7	8	9
СТ - 1 първич и вторич	30 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1210302 - XXXX
	50 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1210502 - XXXX
	75 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1210752 - XXXX
	100 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1211002 - XXXX
	150 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1211502 - XXXX
СТ - 2 шина 30x10 40x10 кабел ф36	150 / 5	0,72	0.5	5	60 Ipn	2,5 Ith	5 ; 10	1221505 - XXXX
	200 / 5	0,72	0.5	5	60 Ipn	2,5 Ith	5 ; 10	1222005 - XXXX
	250 / 5	0,72	0.5	5	60 Ipn	2,5 Ith	5 ; 10	1222505 - XXXX
	300 / 5	0,72	0.5	5	60 Ipn	2,5 Ith	5 ; 10	1223005 - XXXX
	300 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1233005 - XXXX
СТ - 3 шина 30x10 40x10 ф36	400 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1234005 - XXXX
	500 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1235005 - XXXX
	600 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1236005 - XXXX
	600 / 5	0,72	0.2; 0.5; 0.5S	5 ; 10	60 Ipn	2,5 Ith	5 ; 10	1236005 - XXXX
СТ - 3 шина 50x10 ф48	500 / 5	0,72	0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1235005 - XXXX
	600 / 5	0,72	0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1236005 - XXXX
	750 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1237505 - XXXX
	800 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1238005 - XXXX
СТ-4 за шина 80x10 или кабел ф73	300 / 5	0,72	0.5; 0.5S	5	60 Ipn	2,5 Ith	5 ; 10	1243005 - XXXX
	400 / 5	0,72	0.5; 0.5S	5	60 Ipn	2,5 Ith	5 ; 10	1244005 - XXXX
	500 / 5	0,72	0.5; 0.5S	5	60 Ipn	2,5 Ith	5 ; 10	1245005 - XXXX
	600 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1246005 - XXXX
	750 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1247505 - XXXX
	800 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	1248005 - XXXX
	1000 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	12410005 - XXXX
	1200 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	12412005 - XXXX
	1250 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	12412505 - XXXX
	1500 / 5	0,72	0.2; 0.5; 0.5S	5; 10; 15	60 Ipn	2,5 Ith	5 ; 10	12415005 - XXXX

на основание чл. 2 от ЗЗЛД

УПРАВИТЕЛ

Ганг Д. АРНАУДОВ

ВЯРИТЕ С
ОРИГИНАЛА

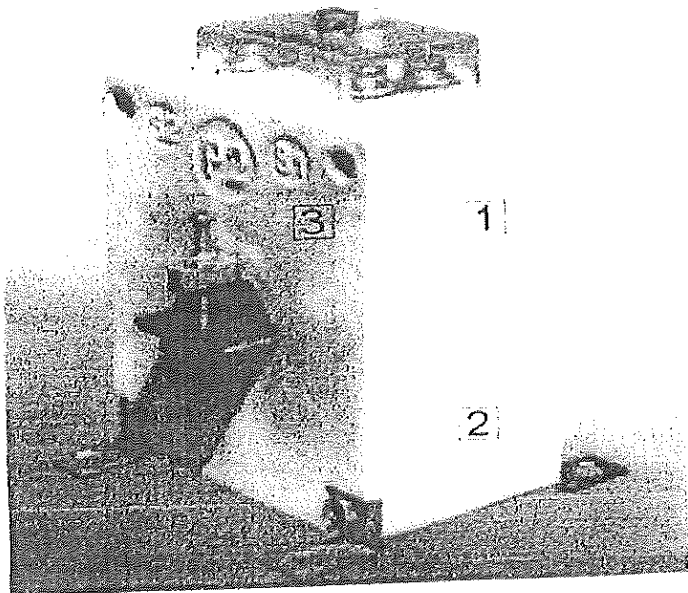


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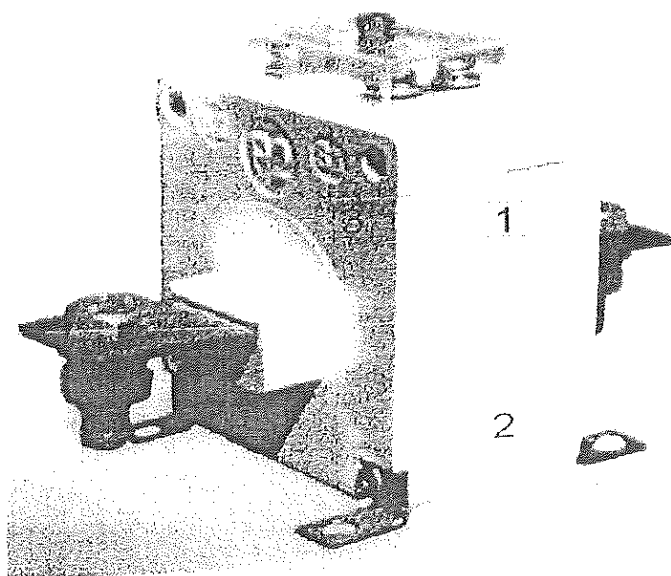
Приложение: К

Приложение към удостоверение за одобрен тип № 06.04.4547

2. Схеми на местата за поставяне на знаците, удостоверяващи резултатите от контрола и места за пломбиране.



- 1 – Знак за първоначална проверка (марка за залепване)
- 2 – Знак за последваща проверка (марка за залепване)
- 3 – Знак за одобрен тип



- 1 – Знак за първоначална проверка (марка за залепване)
- 2 – Знак за последваща проверка (марка за залепване)
- 3 – Знак за одобрен тип

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ВЯРНО С
ОРИГИНАЛА

с ВЯРНО С
ОРИГИНАЛА



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РЕПУБЛИКА
БЪЛГАРИЯ

ДЪРЖАВНА АГЕНЦИЯ
ЗА МЕТРОЛОГИЯ И
ТЕХНИЧЕСКИ НАДЗОР
STATE AGENCY FOR METROLOGY
AND TECHNICAL SURVEILLANCE



Аргументация: 2

УДОСТОВЕРЕНИЕ
ЗА ОДОБРЕН ТИП СРЕДСТВО ЗА ИЗМЕРВАНЕ
Measuring Instrument Type-approval Certificate

№ 06.04.4547

Издадено на:
Issued to:

“ЕЛПРОМ-ЕМЗ” ООД, 9680 Шабла,
обл. Добричка, ул. “Нефтяник” № 38

На основание на:
In Accordance with:

чл. 32, ал. 1 от Закона за измерванията
(ДВ, бр. 46 от 2002 г.)

Относно:
In Respect of:

гама токови измервателни трансформатори, тип СТ-х

Производител:
Manufacturer:

“ЕЛПРОМ-ЕМЗ” ООД, гр. Шабла

Знак за одобрен тип:
Type Approval Mark:



Технически и метрологични
характеристики:
*Technical and metrological
characteristics:*

приложение; неразделна част от настоящото удостоверение
за одобрен тип средство за измерване

Срок на валидност:
Valid until:

03.04.2016 г.

Вписва се в регистъра на
одобрените за използване
типове средства за
измерване под №:
Reference №:

4547

Дата на издаване на
удостоверението за одобрен
тип:
Date:

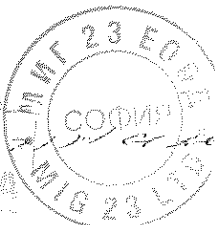
03.04.2006 г.



на основание чл. 2 от ЗЗЛД

ПРЕДСЕДАТЕЛ

ОРИГИНАЛ



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Приложение № 2

Приложение към удостоверение за одобрен тип № 06.04.4547

Издадено на: "ЕЛПРОМ-ЕМЗ" ООД, гр. Шабла

Относно: гама токови измервателни трансформатори, тип СТ-х

1. Описание на типа:

Токовете трансформатори тип СТ- х са предназначени за измерване на ток и за защита на разпределителни съоръжения (уредби) във вътрешно изпълнение.

Токовете трансформатори тип СТ- х се състоят от тороидален магнетопровод с първична и вторична намотка, поместени в кутия от пластмаса с клас на възпламеняемост съгласно IEC 707-V-0.

Изоляцията спрямо магнетопровода и намотките е суха с клас на топлоустойчивост В.

Трансформаторите тип СТ-х са предназначени за експлоатация при надморска височина до 1000 m за закрит монтаж при температура на въздуха от минус 5° С до + 40° С и относителна влажност на въздуха до 70 % за условия на умерен климат.

1.1. Технически и метрологични характеристики:

Номинален първичен ток, А	СТ - 1	30, 50, 75, 100, 150
	СТ - 2	200, 250, 300
	СТ - 3	400, 500, 600
Номинален вторичен ток, А		5
Клас на точност	СТ - 1	0,2; 0,5
	СТ - 2	0,5
	СТ - 3	0,5
Коефициент на безопасност - Fs		5, 10
Номинална мощност, VA	СТ - 1	5, 10
	СТ - 2	5, 10
	СТ - 3	5, 10, 15
Максимално работно напрежение, kV		0,72

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Забележка: * Номиналната мощност 10 VA не се отнася за трансформатори с токово отношение 150/5 А.

1.2. Означаване на типа:

Означението на типа е СТ-х (СТ-1, СТ-2 и СТ-3).

Параметрите като клас на точност, първичен ток, вторичен ток, номинално напрежение и коефициент на сигурност са посочени на табелката на трансформатора.

на основание чл. 2 от ЗЗЛД

Handwritten signatures and stamps

Stamp: МИГ 23 ЕВРО СОФИЯ

Stamp: МИГ 23

Stamp: ОРИГИНАЛ

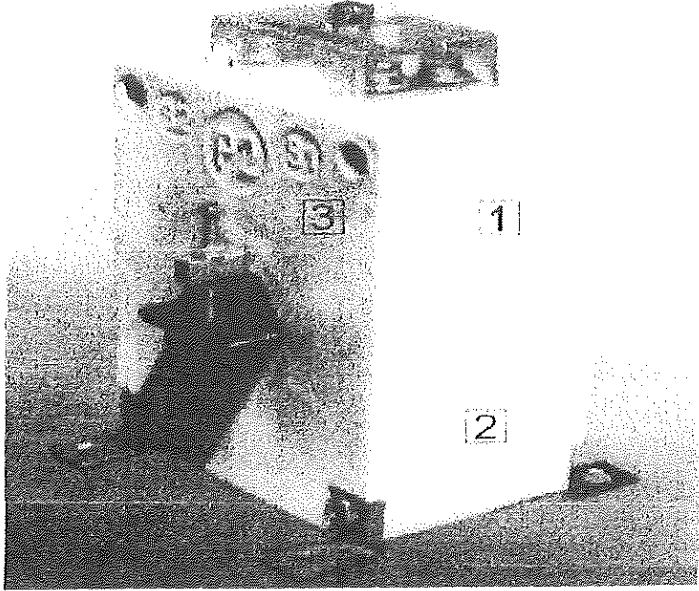
Stamp: страница 2 от 3

6

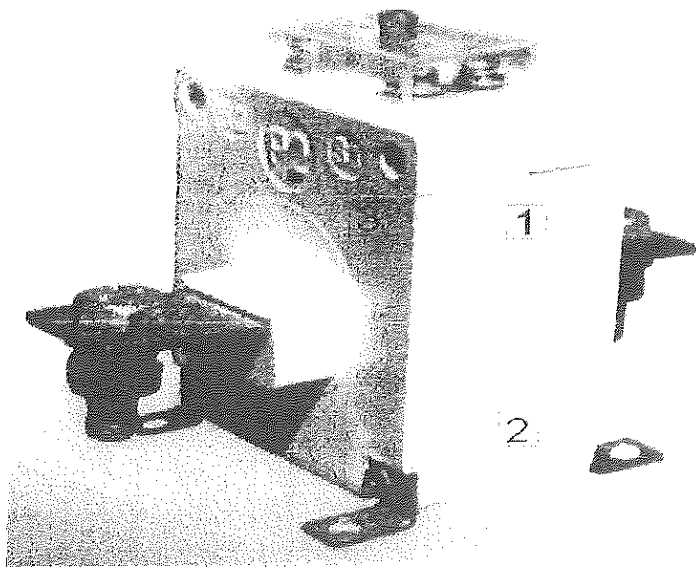
Сертификат: Р

Приложение към удостоверение за одобрен тип № 06.04.4547

2. Схеми на местата за поставяне на знаците, удостоверяващи резултатите от контрола и места за пломбиране.



- 1 – Знак за първоначална проверка (марка за залепване)
- 2 – Знак за последваща проверка (марка за залепване)
- 3 – Знак за одобрен тип



- 1 – Знак за първоначална проверка (марка за залепване)
- 2 – Знак за последваща проверка (марка за залепване)
- 3 – Знак за одобрен тип

A long, thin, handwritten mark or signature, possibly a stylized 'R' or a similar character, located on the right side of the page.

Handwritten signature: *Иван Върста*

Stamp: ВЪРСТА ИВАН

Stamp: ММГ 23 ЕООД СОФИЯ

Stamp: ЕЛПРОМ-ЕМЗ-ОП

Stamp: страница 3 от 3



РЕПУБЛИКА
БЪЛГАРИЯ

БЪЛГАРСКИ ИНСТИТУТ ПО МЕТРОЛОГИЯ

BULGARIAN INSTITUTE OF
METROLOGY

Примено №: 2

ДОПЪЛНЕНИЕ № 06.07.4547.1

КЪМ УДОСТОВЕРЕНИЕ

ЗА ОДОБРЕН ТИП СРЕДСТВО ЗА ИЗМЕРВАНЕ № 06.04.4547

Measuring Instrument Type-approval Certificate-Revision 1

Издадено на:
Issued to:

“ЕЛПРОМ-ЕМЗ” ООД, 9680 Шабла,
обл. Добричка, ул. “Нефтяник” № 38

На основание на:
In Accordance with:

чл. 32, ал. 1 от Закона за измерванията
(ДВ, бр. 46 от 2002 г.)

Относно:
In Respect of:

токов измервателен трансформатор, тип СТ-х

Производител:
Manufacturer:

“ЕЛПРОМ-ЕМЗ” ООД, гр. Шабла

Технически и метрологични
характеристики:
*Technical and metrological
characteristics:*

приложение, неразделна част от настоящото удостоверение
за одобрен тип средство за измерване.

Срок на валидност:
Valid until:

03.04.2016 г.

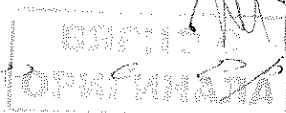
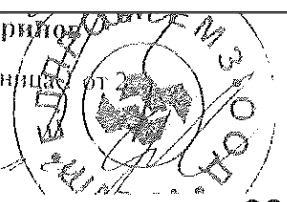
Средството за измерване е
вписано в регистъра на
одобрените за използване
типове средства за
измерване под №:
Reference №:

4547

Дата на издаване на
допълнението към
удостоверението за одобрен
тип:
Date:

17.07.2006 г.

на основание чл. 2 от ЗЗЛД



Handwritten signature

Приложение към Допълнение № 06.07.4547.1 към удостоверение № 06.04.4547

Издадено на: "ЕЛПРОМ-ЕМЗ" ООД, гр. Шабла

Относно: токов измервателен трансформатор, тип СТ-х

Описание на допълнението

1. Към т. 1 Описание на типа, се добавя:

Токовете трансформатори с клас на точност 0,5 S са за специални цели. Свързват се с електромери, които измерват стойности на тока между 50 mA и 6 A, което е от 1 % до 120 % от номиналния ток на трансформатора – 5 A.

Токовата и ъгловата грешка при 1 % от номиналния ток не превишават стойностите, посочени в стандарт БДС EN 60044-1:2001.

2. Към т. 1.1 Технически и метрологични характеристики:

2.1 Включва се токов измервателен трансформатор тип СТ-4 със следните метрологични характеристики:

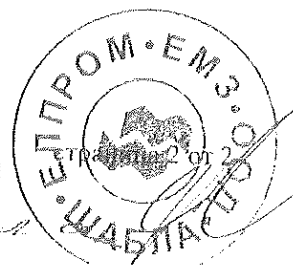
Номинален първичен ток, A	750, 800, 1000, 1200, 1250 и 1500
Номинален вторичен ток, A	5
Клас на точност	0,5 и 0,5 S
Коефициент на безопасност – Fs	5, 10
Номинална мощност, VA	5, 10 и 15
Максимално работно напрежение, kV	0,72

2.2 Включва се клас на точност 0,5 S за трансформатори тип СТ-1, тип СТ-2 и тип СТ-3;

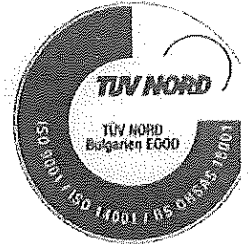
2.3 Отпада забележката.

Върно
mm

ОРИГИНАЛ



“ЕЛПРОМ ЕМЗ” ООД град ШАБЛА



ТЕЛЕФОНИ ЗА КОНТАКТИ:

Управител 05743 / 45 - 68
 Гл.счетоводител 05743 / 42 - 84
 Търг. Отдел 05743 / 41 - 84
 Факс/тел.секретар 05743 / 50 - 20
 E-mail : elpromemz@inbox.infotel.bg

ТЕХНИЧЕСКО ОПИСАНИЕ

ГАМА ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ тип СТ-1, СТ-2, СТ-3 и СТ-4 за НН до 1000V ПРОИЗВОДСТВО НА “ ЕЛПРОМ ЕМЗ ” ООД град ШАБЛА

Токови измервателни трансформатори тип СТ-1; тип СТ-2, тип СТ-3 и тип СТ-4 са за ниско напрежение до 1000V за вътрешен монтаж с клас на точност 0.2; 0.5 или 0.5S и номинална мощност до 50VA в диапазона от номинални токове до 3000A съгласно БДС EN 60044-1:2001 и IEC 60044-1:1999.

■ Тип СТ-1 се състои от тороидален магнитопровод с първична и вторична намотки, поместени в кутийка от пластмаса изработена от пластмаса тип Rosap - B4235 с клас на възпламеняемост съгласно IEC 707 - V-0.

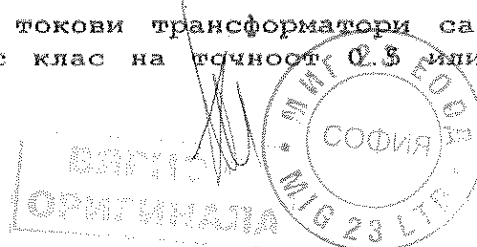
Произвежданите токови трансформатори са в диапазона от 30/5 A до 150/5 A с клас на точност 0.2, 0.5 или 0.5S с мощност 5VA и 10VA.

• Тип СТ-2 Тип, СТ-3 и Тип СТ-4 са проходни типове токови измервателни трансформатори пригодени съответно за шина или кабел - състоят се от тороидален магнитопровод с вторична намотка, поместени в кутийка от пластмаса изработена от пластмаса тип Rosap - B4235 с клас на възпламеняемост съгласно IEC 707 - V-0.

Произвежданите токови трансформатори са в диапазона от 150/5A до 2000/5A с клас на точност 0.5 или 0.5S и мощност 5VA; 10VA и 15VA.

07.2.2012 г.

Handwritten signature



b

ТЕХНИЧЕСКИ ДАННИ Тип СТ-1, Тип СТ-2, Тип СТ-3 и Тип СТ-4

Условия на работа: Токовете измервателни трансформатори за средно напрежение се монтират на закрито при температура на околната среда от -35С до +45С и височина над морското равнище до 1000м.

- | | |
|--|------------------|
| 1. Номинално напрежение | - до 0,75 KV |
| 2. Честота | - 50 Hz |
| 3. Номинален първичен ток I_{pn} | - до 2000 A |
| 4. Номинален вторичен ток I_{sn} | - 5 A |
| 5. Клас на точност на ядрото за мерене | - 0.2, 0.5, 0.5S |
| 6. Номинална мощност | - 5, 10, 15VA |
| 7. Номинален ток на термична устойчивост I_{th} , кА | - 60 I_{pn} |
| 8. Номинален ток на динамична устойчивост I_{dyn} , кА | - 2,5 I_{th} |
| 9. Номинален коефициент на безопасност F_s | - 5 или 10 |
| 10. Маса, в кг в зависимост от преводното отношение от | - 0.485 до 1,070 |
| 11. Изолация - суха, клас на топлоустойчивост | B |

Стандартизирани документи: Изделието отговаря на БДС EN 60044-1:2001 и IEC 60044-1:1999.

При всичките произведени от " ЕЛПРОМ ЕМЗ " ООД град Шабла токови измервателни трансформатори е предвидена възможност за пломбиране както на кутията на трансформатора с цел предотвратяване на неправилен достъп до магнитопровода и самите намотки, така и на предпазната капачка, която предпазва клемите на вторичната намотка на трансформатора.

на основание чл. 2 от ЗЗЛД

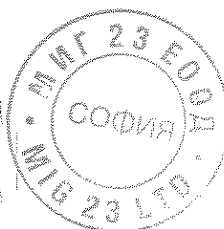
УПРАВИТЕЛ :

/ инж. Д. Димитров /



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ВЯРНО
ОРИГИНАЛ



БЪЛГАРСКИ ИНСТИТУТ ПО МЕТРОЛОГИЯ

Главна дирекция Мерки и измервателни уреди
отдел "Изследване на типа на средства за измерване"
сектор "Електрични величини"
София, бул. Г.М.Димитров 52 Б, тел. 873-52-98

ПРОТОКОЛ ОТ ИЗПИТВАНЕ

№ 19-ЕВ / 13.07.2006 г.

1. **Обект на изпитването:** Токов измервателен трансформатор тип СТ-Х
2. **Номер и дата на заявката:** АУ-03-654/27.06.2006 г.
3. **Заявител:** "ЕЛПРОМ - ЕМЗ" ООД гр. Шабла
4. **Производител:** "ЕЛПРОМ - ЕМЗ" ООД гр. Шабла
5. **Метод на изпитване:** БДС EN 60044-1 Измервателни трансформатори
Част 1: Токови трансформатори.
6. **Период на изпитване:** 07.07.2006 г. до 14.07.2006 г.
7. **Изпитани образци:** ф. № 20218, 33063, 29967, 29477, 34805, 32820

8. Описание на типа:

Гамата измервателни токови трансформатори тип СТ-х са за мрежи ниско напрежение.

Токовите трансформатори тип СТ-1 се състоят от тороидален магнитопровод с първична и вторична намотка, а тип СТ-2, тип СТ-3 и тип СТ-4 са проходен тип трансформатори, пригодени за шина или кабел, с вторична намотка.

Резултатите в протокола се отнасят само за изпитваните образци.

на основание чл. 2 от ЗЗЛД

Началник отдел ИТСИ:

/инж./Хр./Соколова/

Протокола може да бъде разпечатван единствено и само с разрешение на началник отдел "Изследване на типа на средствата за измерване"

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ВЕРНО С
ОРИГИНАЛА



9. Технически и метрологични характеристики:

Тип на трансформатора	СТ-1	СТ-2	СТ-3	СТ-4
Номинален първичен ток, А	30, 50, 75, 100,150	200, 250, 300	400, 500, 600	1200, 1250, 1500
Номинален вторичен ток, А	5			
Клас на точност	0,5 S			
Максимално работно напрежение, kV	0,72			
Честота, Hz	50			
Номинална мощност, VA	5, 10	5, 10	5, 10, 15	5, 10, 15

10. Технически средства използвани при изпитването:

10.1. Уредба за проверка на токови трансформатори тип АИТ ф. № 45/1972 с еталонен трансформатор тип ТТ 50 ф. № 7210453, свидетелство за калибриране № 037- ЕЕИ/ 16.03.2005 год.

10.2. Уредба за изпитване на диелектрична якост тип РЕО 3/50 ф. № 671897308

10.3. Мегаометър тип Ф 41/2, ф. № 62862.

11. Резултати от изпитванията:

11.1. Проверка на маркировката

11.1.1. Маркировка на изводите –

БДС EN 60044-1
т. 10.1.1 и 10.1.2

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.1.2 Означение на полярностите –

БДС EN 60044-1
т. 10.1.3

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.2. Маркировка на табелките с технически данни –

БДС EN 60044-1
т. 10.2 и т. 11.7

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

Всичко е оригинално

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Приложение: 4.

11.3. Проверка на диелектричната якост на първичната намотка – /3 kV за 60 s/

БДС EN 60044-1
т. 5.1.4

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.4. Проверка на диелектричната якост на вторичната намотка – /3 kV за 60 s/

БДС EN 60044-1
т. 5.1.4

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.5. Определяне грешките на трансформаторите –

БДС EN 60044-1
т.11.2

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.6. Проверка – коефициент на безопасност -

БДС EN 60044-1
т.11.6

Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.

Присъствали на изпитването:

на основание чл. 2 от ЗЗЛД

Младши експерт: .

/инж. Р. Малинова/

на основание чл. 2 от ЗЗЛД

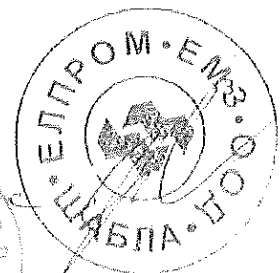
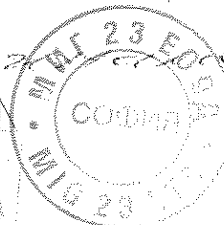
Началник сектор "ЕЕ"

/инж.Л. Сотирова/

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ВЕРНО С ОРИГИНАЛА



"ЕЛПРОМ ЕМЗ" ООД ГРАД ШАБЛА

ПАСТОРТ - СЕРТИФИКАТ

ИЗПИТАТЕЛЕН ПРОТОКОЛ

За трансформатор токов измерителен ниско напрежение

Тип СТ - 4 обхват 800/5А, 1000/5А, 1200/5А

Заводски № 12410005 - дххх

1. Условия на работа: Температурата на трансформатора ниско напрежение се измерват на въздуха при температура на околната среда от +20° С до +25° С и вълновия честотен диапазон 50 до 10000.

II. Технически характеристики:

1. Номинална напрежение - 0,72 KV
2. Честота - 50 Hz
3. Номинален ток при Ip - 800 ; 1000 ; 1200 А
4. Номинален оторичен ток I_н - 5 А
5. Клас на точност - 0,5
6. Номинална мощност - 5 VA
7. Ток на термична устойчивост - 60 х Ip
8. Ток на динамична устойчивост - 2,5 х Ip
9. Маса - 0,9 ; 1,0 ; 1,1 кг
10. Конструкция - суха, клас на токовустойчивост В

II. Стандартизирани документи: Номинален оторича на БДС EN 60044-12:2001; IEC 60044-1:1996.

IV. Резултати от приемо-приемателските изпитвания

1. Проверка класа на точност: Отговорна на клас на точност - 0,5
2. Изпитване на прехрана между първичната и вторичната намотка с професионално измерване 1 KV и 1 мВолта, одобрено

Съгласно изискванията на технически условия, настоящият сертификат за качество се издава във връзка на преминаване на изпитванията за качество на прехрана между първичната и вторичната намотка на трансформатора Е. ОДОБРЕН НАСТОЯЩЕ ОТ ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОР И ОДОБРЕН ОТ ДАМНИ СУХОСТОУПЕРИТЕЛНИ № 4547 от 05.04.2006 година

V. Комплаенсност на доставката при изпълнение: Изпълнеността към условията не се предприема

ИНСТРУКЦИЯ ЗА МОНТАЖ И ЕКСПЛОАТАЦИЯ НА ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОР ТИП СТ-4

1. Място на монтаж - на дадено
2. Начин на свързване: Параметрите намотки на токовите трансформатори се свързват последователно към измервателните прибори на монтаж, а резултат и изпитание - последователно на вторичната намотка

3. Материални изисквания на работата: При ползване на токовите трансформатори трябва да се спазват следните условия:

A. Трансформаторите да се монтират в подходящи помещения

ПРИЛОЖЕНИЕ №5.

B. Съдържателните условия да се свързват добре към източника и консуматора. Когато изходите са на вентиле, съединителните проводници трябва да се защитят добре между две месингови набиби или кобалдова обуха.

В. Тукът, който се черпи от трансформатора, по специално мощността на трансформатора, да не е по-голяма от мощността, посочена на табелката. Препоръчително на трансформаторите се отстранява от достъпността температура на захранване на изходите.

Г. Тукът трансформатори трябва да работят при изключително или периодичен контрол. Д. При обслужване на токовите трансформатори е задължително да се спазва следното условие

ПРИ ВКЛЮЧЕНА ВЪВ ВЕРИГАТА ПЪРВИЧНА НАМОТКА ВТОРИЧНАТА НАМОТКА НА ТРАНСФОРМАТОРА НЕ ТРЯБВА ДА ОСТАВА ОТВОРЕНА!

Когато се извършва преработване на вторичната верига, вторичните клемми на трансформаторите трябва да се свържат на място с проводник със сечение 2,5 кв. мм. Вторичната верига на този трансформатор прекъснати не се поуставят

Е. При работа на трансформатора единичен вход на вторичната намотка се изключва

4. Безопасност и хигиена на токула: За осигуряване на безопасна работа на обслужващия персонал е необходимо да се спазват следните условия:

A) Единичен вход на вторичната намотка да се заключи.

Б) При включване на първичната намотка във веригата, вторичната намотка да не се остави отворена.

В) След свързване на намотка на трансформаторите към таблата и уредите, върху клемите на първичната лам оток, да се постави предпазна капачка и да се заключи

Г) Персонала на трансформаторите, същите да не са под напрежение

Д) При проверка на трансформаторите откъм вторичната страна обслужващия персонал да работи с лични предпазни средства

При добри условия на работа и при периодичен контрол, трансформаторите могат да работят продължително време без повреда.

5. Опаковка, транспорт и съхранение: Трансформаторите се поставят в специални кутии от картон - вентиле. Транспортният се ева извършва под трансформатори средства

ПРИ НЕИЗПЪЛНЕНИЕ НА НАСТАВЛЕНИЯТА, ДАДЕНИ В НАСТОЯЩАТА ИНСТРУКЦИЯ, ЗАВОДЪТ ПРОИЗВОДИТЕЛ НЕ ПРИЕМА РЕКЛАМАЦИИ, НАПРАВЕНИ В ГАРАНЦИОННИЯ СРОК НА ИЗДЕЛИЕТО.

ГАРАНЦИОННА КАРТА

"ЕЛПРОМ ЕМЗ" ООД град Шабла се задължава да дадена или ремонтна безплатно токови измервателни трансформатори, които в продължение на 36 месеца от датата на продажбата им от завода, са показали дефекти или недостатък в конструктивна несъответствие на трансформатора с минималната из съществения стандарт

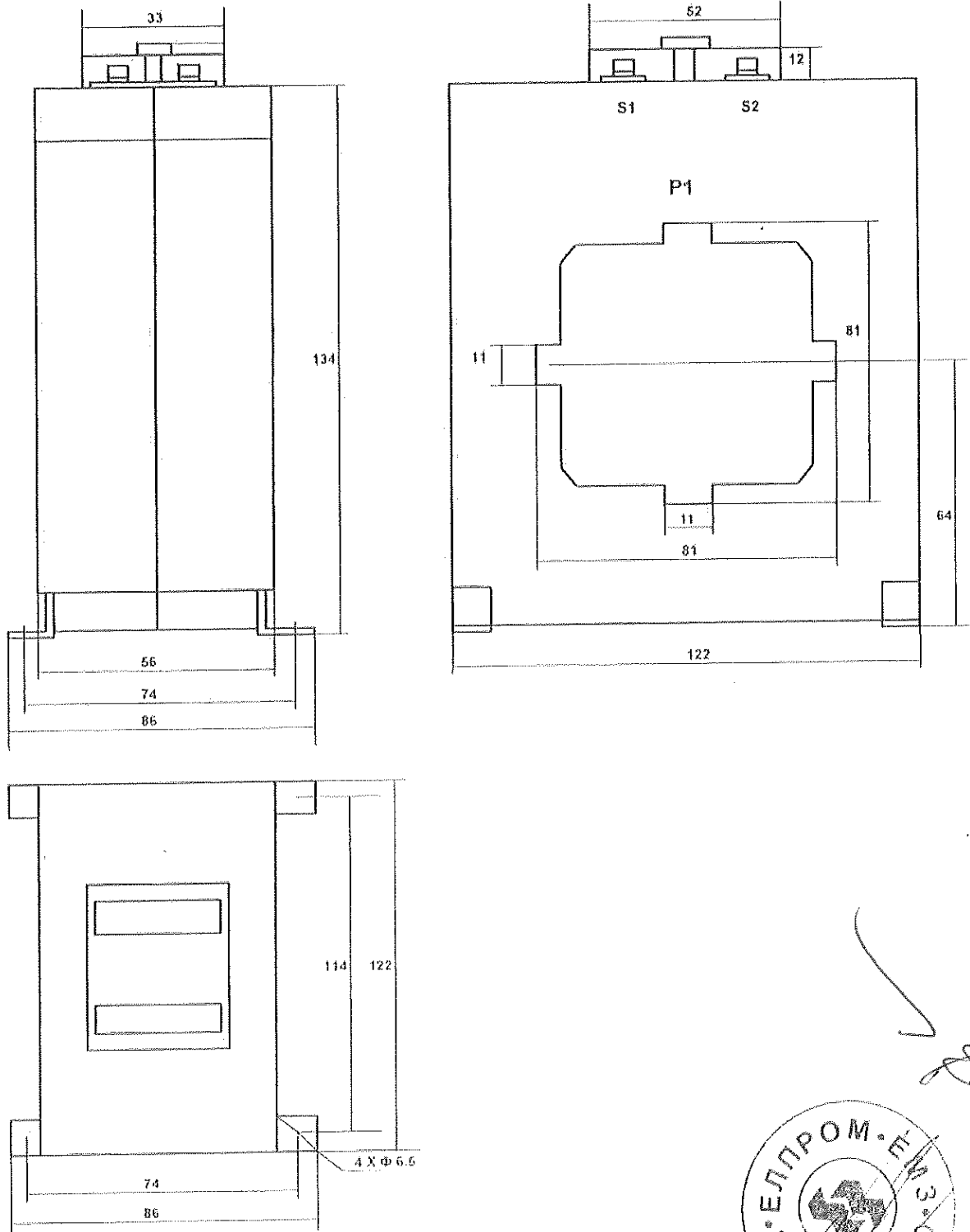
Земаната във ремонт се извършва при условие, че са спазени изискванията за транспорт, съхранение, монтаж и експлоатация, дадени от производителя - произведени в специалната документация и е извършен ориентировъчен паспорт - сертификат с гаранционна карта на съответния трансформатор.

На основание чл. 2 от ЗЗЛД

Дата на продажба

" ЕЛПРОМ ЕМЗ"

ПРИСЪЕДИНИТЕЛНИ РАЗМЕРИ ЗА ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ
тип СТ- 4 включващи преводните отношения 800/5А, 1000/5А, и 1200/5А



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ВЪРНО С
ОРИГИНАЛА

