
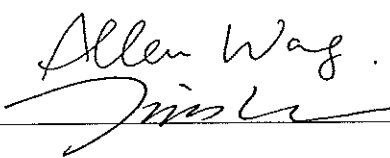




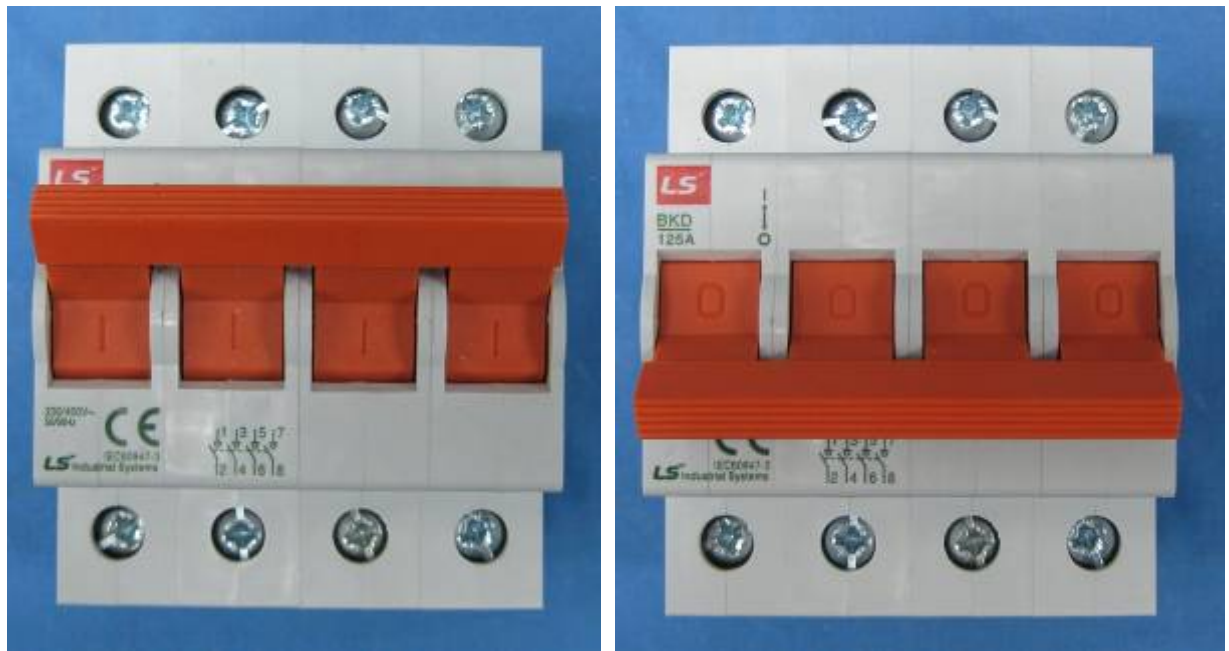
Test Report issued under the responsibility of:



TEST REPORT IEC/EN 60947-3 Low-voltage switchgear and controlgear Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	
Report Reference No.	SH12040006-013
Date of issue	April 27, 2012
Total number of pages	30
CB Testing Laboratory	Intertek Testing Services Shanghai
Address	Building No.86, 1198 Qinzhou Road (North), Shanghai 200233, China
Applicant's name	LSIS Co., Ltd.
Address	Beakbong-ro 95, Heung deok-gu, Cheongju-si, Chungcheongbuk-do, Korea
Test specification:	
Standard	<input checked="" type="checkbox"/> IEC 60947-3: 3 rd Edition (2008) in conjunction with IEC 60947-1: 5 th Edition (2007)
Test procedure	Type test
Non-standard test method	N/A
Test Report Form No.	IEC60947_3B
Test Report Form(s) Originator	OVE
Master TRF	Dated 2009-08
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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
Test item description	Switch-disconnectors
Trade Mark	
Manufacturer	Shanghai Yongji Electrical Co., Ltd / No.2239 Jianshi South RD., Jinshan District, Shanghai
Model/Type reference	BKD
Ratings	230/400V~, 63A, 80A, 100A, 125A AC-22A

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory:	Intertek Testing Services Shanghai
Testing location/ address.....:	Building No.86, 1198 Qinzhou Road (North), Shanghai 200233, China
<input checked="" type="checkbox"/> Associated CB Test Laboratory:	Inspection Center of Products' Quality of Low Voltage Electric Apparatus in Zhejiang Province
Testing location/ address.....:	West Zhonghuan Road, Jiaxing City, Zhejiang Province, P.R.China
Tested by (name + signature).....:	Allen Wang 
Approved by (+ signature)	Jim Hua
<input type="checkbox"/> Testing procedure: TMP	
Testing location/ address.....:	
Tested by (name + signature).....:	
Approved by (+ signature)	
<input type="checkbox"/> Testing procedure: WMT	
Testing location/ address.....:	
Tested by (name + signature).....:	
Witnessed by (+ signature).....:	
Approved by (+ signature)	
<input type="checkbox"/> Testing procedure: SMT	
Testing location/ address.....:	
Tested by (name + signature).....:	
Approved by (+ signature)	
Supervised by (+ signature).....:	
<input type="checkbox"/> Testing procedure: RMT	
Testing location/ address.....:	
Tested by (name + signature).....:	
Approved by (+ signature)	
Supervised by (+ signature).....:	

Summary of testing:		
Clause	Tests performed (name of test and test clause):	Testing location
5.2	Marking	CBTL
7.1	Construction	CBTL
8.3.3.1	Temperature-rise	ACTL
8.3.3.2	Dielectric properties	ACTL
8.3.3.3	Making and breaking capacity	ACTL
8.3.3.4	Dielectric verification	ACTL
8.3.3.5	Leakage current	ACTL
8.3.3.6	Temperature-rise verification	ACTL
8.3.3.7	Strength of actuator mechanism	ACTL
8.3.4.1	Operational performance test	ACTL
8.3.4.2	Dielectric verification	ACTL
8.3.4.3	Leakage current	ACTL
8.3.4.4	Temperature-rise verification	ACTL
8.3.5.1	Short-time withstand current	ACTL
8.3.5.2	Short-circuit making capacity	ACTL
8.3.5.3	Dielectric verification	ACTL
8.3.5.4	Leakage current	ACTL
8.3.5.5	Temperature-rise verification	ACTL
8.3.6.1	Fuse protected short-circuit withstand	N/A
8.3.6.3	Dielectric verification	N/A
8.3.6.4	Leakage current	N/A
8.3.6.5	Temperature-rise verification	N/A
8.3.7.1	Overload test	N/A
8.3.7.2	Dielectric verification	N/A
8.3.7.3	Leakage current	N/A
8.3.7.4	Temperature-rise verification	N/A
Summary of compliance with National Differences:		

Copy of marking plate**Summary of testing:**

Number of tests for test procedure, according to clause 8.3.2.1.3, table 11, 13, 14, 15 and 16

Test report ref. No.	No. of poles	I_e (A)	Test sequence and number of samples				
			I	II	III ^{b)}	IV ^{c)}	V ^{d)}
SH12040006-010	1P	125	1	1	1	-	-
	1P	63	-	-	1	-	-
SH12040006-011	2P	125	1	1	1	-	-
	2P	63	-	-	1	-	-
SH12040006-012 ^{a)}	3P	-	-	-	-	-	-
SH12040006-013	4P	125	1	1	1	-	-
	4P	63	-	-	1	-	-

Notes:

- a) The tests of three-pole switch are omitted when four-pole switch has been tested according to clause 8.3.2.1.3 of IEC 60 947-3
- b) Test sequence III is not mandatory if test sequence IV is carried out.
- c) Test sequence IV is not mandatory if test sequence III is carried out.
- d) Not required for switches, disconnectors and switch-disconnectors.

Test item particulars	
- method of operation	independent manual operation
- suitability for isolation	suitable / not suitable
- degree of protection	IP20
- number of poles	4
- kind of current.....	a.c.
- number of positions of the main contacts.....	2
Rated and limiting values, main circuit	
- rated operational voltage Ue (V).....	230/400
- rated insulation voltage Ui (V).....	600
- rated impulse withstand voltage Uimp (kV).....	6
- conventional free air thermal current Ith (A)	63A, 80A, 100A, 125
- conventional enclosed thermal current Ithe (A)	N/A
- rated operational current Ie (A).....	63A, 80A, 100A, 125
- rated uninterrupted current Iu (A)	63A, 80A, 100A, 125
- rated frequency (Hz)	50/60
- utilization category	AC-22A
Short-circuit characteristic.....	
- rated short-time withstand current Icw (kA).....	12I _e , 1s
- rated short-time making capacity Icm (A).....	28,4I _e
- rated conditional short-circuit current	N/A
Control circuits.....	N/A
Auxiliary circuits.....	N/A
Relays and releases.....	N/A
Co-ordination of short-circuit protective devices	N/A
- kind of protective device	N/A
Possible test case verdicts:	
- test case does not apply to the test object	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)
Testing	
Date of receipt of test item	April 08, 2012
Date (s) of performance of tests	From April 08, 2012 to April 20, 2012

General remarks:

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

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"(see Enclosure #)" refers to additional information appended to the report.

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

Note: EN Group Differences together with National Differences and Special National Conditions, if any, are in the Appendix to the main body of this TRF.

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


This test report is valid only being read together with the test reports of SH12040006-010, -011, -012.

General product information:

$U_e = 230/400V \sim (1P, 2P, 3P, 4P)$


$I_e = 63A, 80A, 100A, 125A$

$I_{cw} = 12I_e / 1s, I_{cm} = 28,4I_e, U_i = 600V, U_{imp} = 6kV, Cat.: AC-22A$

IEC / EN 60947-3			
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" and "O"	P
	- suitability for isolation		P
	- disconnectors AC-20 and DC-20 only: marked "Do not operate under load"		N/A
	Marking on equipment not needed to be visible after mounting:		
	- manufacturer's name or trademark		P
	- type designation or serial number	BKD	P
	- rated operational currents	63A, 80A, 100A, 125A	P
	- rated operational voltage	230/400V~	P
	- utilization category	AC-22A	P
	- rated frequency	50/60Hz	P
	- manufacturer's claim for compliance with IEC 60947-3	IEC 60947-3	P
	- degree of protection		N/A
	Marking on fuse-combination units:		
	- fuse type		N/A
	- maximum rated current		N/A
	- power loss of the fuse-link		N/A
	Identification of terminals:		
	- line terminals, unless connection is immaterial	"1,3,5,7"	P
	- load terminals, unless connection is immaterial	"2,4,6,8"	P
	- neutral pole terminal		N/A
	- protective earth terminal		N/A
	Data in the manufacturer's published information:		
	- rated insulation voltage	600V~	P
	- rated impulse withstand voltage for equipment suitable for isolation or when determined	6kV	P
	- pollution degree, if different from 3		N/A
	- rated duty	Uninterrupted duty	P
	- rated short-time withstand current and duration	12I _e , 1s	P
	- rated short-circuit making capacity	28,4I _e	P
	- rated conditional short-circuit current		N/A

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
5.3	Instructions for installation, operation and maintenance		N/A
6	Normal service, mounting and transport conditions		N/A

7.1	CONSTRUCTIONAL AND PERFORMANCE REQUIREMENTS		
7.1.2	Materials		
7.1.2.2	Resistance to abnormal heat and fire		
	Test performed on	- the equipment - sections taken from the equipment - samples of identical material	P
	Glow-wire test according to IEC 60695-2-10 and IEC 60695-2-11		
	Parts made of insulating material necessary to retain current-carrying parts in position: test temperature 960 °C		
	No visible flame and no sustained glowing		N/A
	Flames and glowing extinguish within 30 s	1,8s	P
	No ignition of the tissue paper		P
	Parts of insulating material not necessary to retain current-carrying parts in position, even though in contact with them: test temperature 650 °C		
	No visible flame and no sustained glowing	No visible flame	P
	Flames and glowing extinguish within 30 s		N/A
	No ignition of the tissue paper		P
7.1.3 of Part 1	Current-carrying parts and their connection	Copper alloy	P
7.1.4	Clearances	see appended table 7.1.4	P
	Creepage distances	see appended table 7.1.4	P
	Pollution degree	3	
	Comparative tracking index (V)	175(the shaft holding movable contactors)	
	Material group	IIIa	
7.1.5 of Part 1	Actuator		
7.1.5.1	Insulation		
	Actuator insulated from live parts for		
	- rated insulation voltage	600V~	P
	- rated impulse withstand voltage	6kV	P
	Actuator made of metal		

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- connected to a protective conductor or provided with an additional insulation		N/A
	Actuator made of or covered by insulating material:		
	- internal metal parts, which might become accessible in the event of an insulation failure, are also insulated from live parts for the rated insulation voltage		P
7.1.5.2	Direction of movement		
	The direction of operation for actuators shall where applicable conform to IEC 60447		P
	There is no doubt of the "I" and "O" position and the direction of operation	O and I	P
7.1.6 of Part 1	Indication of contact position		
7.1.6.1	Indicating means		P
7.1.6.2	Indication by the actuator		P
7.1.7	Additional safety requirements for equipment suitable for isolation		
7.1.7.1	Additional constructional requirements		
	- marking according to 5.2.1b		P
	- indication of the position of the contacts	"I" & "O"	P
	- construction of the actuating mechanism		P
	- minimum clearances across open contacts (see Table 13, Part 1) (mm)	2,0	
	- measured clearances (mm)	5,1	P
	- test Uimp across gap (kV)	9,8(sea level)	P
7.1.7.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		
	Auxiliary switch is rated according to IEC 60947-5-1 (unless the equipment is rated AC-23)		N/A
	Time interval between opening of the contacts of the auxiliary contact and the contacts of the main poles: ≥ 20 ms		
	Measured time interval (ms)		N/A
	During the closing operation the contacts of the auxiliary switch closes after or simultaneously with the contacts of the main poles		N/A
7.1.7.3	Supplementary requirements for equipment provided with means for padlocking the open position:		
	The locking means is so designed that it cannot be removed with the appropriate padlock(s) installed		N/A

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
7.1.8 of Part 1	Terminals		
7.1.8.1	All parts of terminals which maintain contact and carry current are of metal having adequate mechanical strength	(see 8.2.4 below)	P
	Terminal connections are such that necessary contact pressure is maintained	(see 8.2.4 below)	P
	Terminals are so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	(see 8.2.4 below)	P
	Terminals do 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 is not reduced below the rated value	(see 8.2.4 below)	P
8.2.4	Mechanical properties of terminals		
	Mechanical strength of terminals		
	Maximum cross-sectional area of conductor (mm ²)	70	
	Diameter of thread (mm)	5,8	
	Torque (Nm)	2,5	
	5 times on 2 separate clamping units		P
	Testing for damage to and accidental loosening of conductor (flexion test)		
	Conductor of the smallest cross-sectional area (mm ²)	4,0	
	Number of conductor of the smallest cross section :	2	
	Diameter of bushing hole (mm)	9,5	
	Height between the equipment and the platen	280	
	Mass at the conductor(s) (kg)	0,9	
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		P
	Pull-out test		
	Force (N), applied for 1 min.	60	
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conductor of the largest cross-sectional area (mm ²)	70	
	Number of conductor of the largest cross section ..	1	
	Diameter of bushing hole (mm)	19,1	
	Height between the equipment and the platen	368	
	Mass at the conductor(s) (kg)	10,4	
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		P
	Pull-out test		
	Force (N), applied for 1 min.	285	
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		P
	Conductor of the largest and smallest cross-sectional area (mm ²)	70 / 4,0	
	Number of conductor of the smallest cross section, number of conductor of the largest cross section ..	1 / 2	
	Diameter of bushing hole (mm)	19,1 / 9,5	
	Height between the equipment and the platen	368 / 280	
	Mass at the conductor(s) (kg)	10,4 / 0,9	
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		P
	Pull-out test		
	Force (N), applied for 1 min.....	285 / 60	
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		P
7.1.8.2	Connection capacity		
	Type of conductors	Solid or rigid (stranded)	
	Minimum cross-sectional area of conductor (mm ²) :	4,0	
	Maximum cross-sectional area of conductor (mm ²)	70	
	Number of conductors simultaneously connectable to the terminal	1(70mm ²), 2(4,0mm ²)	
7.1.8.3	Connection		
	Terminals for connection to external conductors are readily accessible during installation		P
	Clamping screws and nuts do not serve to fix any other component		P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.8.4	Terminal identification and marking		
	Terminal intended exclusively for the neutral conductor		N/A
	Protective earth terminal		N/A
	Other terminals		P
7.1.9	Additional requirements for equipment provided with a neutral pole		
	Equipment provided with a pole intended for the connection of neutral, this pole shall be clearly marked by the letter "N"		N/A
	The switched neutral pole does not break before and does not make after the other poles except		N/A
	- a pole having the appropriate short-circuit breaking and making capacity is used as neutral pole, all poles may operate together		N/A
	Conventional thermal current of neutral pole		N/A
7.1.10	Provisions for protective earthing		
7.1.10.1	The exposed conductive parts are electrically interconnected and connected to a protective earth terminal		N/A
7.1.10.2	Protective earth terminal is readily accessible		N/A
	Protective earth terminal is suitably protected against corrosion		N/A
	Electrical continuity between the exposed conductive parts of the protective earth terminal and the metal sheathing of connecting conductors		N/A
	Protective earth terminal has no other functions		N/A
7.1.10.3	Protective earth terminal marking and identification		N/A
7.1.11	Enclosure for equipment		
7.1.11.1	Design		
	When the enclosure is opened, all parts requiring access for installation and maintenance are readily accessible	No enclosure	N/A
	Sufficient space is provided inside the enclosure		N/A
	The fixed parts of a metal enclosure are electrically connected to the other exposed conductive parts of the equipment and connected to a terminal which enables them to be earthed or connected to a protective conductor		N/A
	Under no circumstances a removable metal part of the enclosure is insulated from the part carrying the earth terminal when the removable part is in place		N/A

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	The removable parts of the enclosure are firmly secured to the fixed parts by a device such that they cannot be accidentally loosened or detached owing to the effects of operation of the equipment or vibrations		N/A
	When an enclosure is so designed as to allow the covers to be opened without the use of tools, means is provided to prevent loss of the fastening devices		N/A
	If the enclosure is used for mounting push-buttons, it is not possible to remove the buttons from the outside of the enclosure		N/A
7.1.11.2	Insulation		
	If, in order to prevent accidental contact between a metallic enclosure and live parts, the enclosure is partly or completely lined with insulating material, then this lining is securely fixed to the enclosure		N/A
7.1.12	Degree of protection of enclosed equipment		
	Degree of protection: IP20		P
7.1.13	Conduit pull-out, torque and bending with metallic conduits		
	Withstand the stress occurring during its installation: IP		N/A
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS -1 sample: 4 poles, 125A		
8.3.3.1	Temperature-rise		
	ambient temperature 10-40 °C: 22		
	test enclosure W x H x D (mm x mm x mm): No enclosure		
	material of enclosure:		
	Main circuits, test conditions:		
	- rated operational current I _e (A): 125		
	- cable/busbar cross-section (mm ²) / length (mm)..: 50 / 2		
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark: -		
	- manufacturer's model or type reference: -		
	- rated current (A): -		
	- power loss (W): -		
	- rated breaking capacity (kA): -		
	Measured temperature-rise: see appended table 8.3.3.1 on page 26		P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Auxiliary circuits, test conditions:		
	- rated operation current (A)	-	
	- cable cross-section (mm ²)	-	
	Measured temperature-rise	see appended table 8.3.3.1 on page __	N/A
8.3.3.2	Test of dielectric properties		
	Rated impulse withstand voltage (kV)	6	
	- test Uimp main circuits (kV)	7,4	P
	- test Uimp auxiliary circuits (kV)		N/A
	- test Uimp on open main contacts (equipment suitable for isolation) (kV)	9,8	P
	Power-frequency withstand voltage (V)		
	- main circuits, test voltage for 5 sec. (V)	1890	P
	- control and auxiliary circuits, test voltage for 5 sec. (V)		N/A
	Devices, which have been disconnected for the power-frequency withstand voltage test.....		N/A
	Equipment suitable for isolation, leakage current not exceed 0,5 mA		
	Test voltage 1,1 Ue (V).....	440	
	Measured leakage current (mA).....	12,7x10 ⁻³ mA	P
8.3.3.3	Making and breaking capacity		
	- utilization category	AC-22A	
	- rated operational voltage Ue (V)	230/400	
	- rated operational current Ie (A) or power (kW)	125	
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	-	
	- manufacturer's model or type reference	-	
	- rated current (A)	-	
	- power loss (W)	-	
	- rated breaking capacity (kA)	-	
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		
	- test voltage, U = 1,05 Ue..... (V):	L1: L2: L3:	N/A

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- test current, $I = 10 \dots \dots \dots \times I_e$ (A):	L1: L2: L3:	N/A
	- power factor $\dots \dots \dots$:	L1: L2: L3:	N/A
	Conditions for break operation, AC-23A and AC-23B only:		
	- test voltage, $U = 1,05 U_e \dots \dots \dots$ (V):	L1: L2: L3:	N/A
	- test current, $I = 8 \dots \dots \dots \times I_e$ (A):	L1: L2: L3:	N/A
	- power factor $\dots \dots \dots$:	L1: L2: L3:	N/A
	Conditions for make/break operations, other than AC-23A/B:		
	- test voltage, $U = 1,05 U_e \dots \dots \dots$ (V):	L1: 426 L2: 426 L3: 426	P
	- test current, $I = 3 \dots \dots \dots \times I_e$ (A):	L1: 380 L2: 380 L3: 380	P
	- power factor/ time constant $\dots \dots \dots$:	L1: 0,64 L2: 0,64 L3: 0,64	P
	Number of make/break or make and break operations $\dots \dots \dots$:	5	P
	- recovery voltage duration (≥ 50 ms)	>50ms	P
	- current duration (ms) $\dots \dots \dots$:	>50ms	P
	- time interval between operations $\dots \dots \dots$:	30	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	- oscillatory frequency (kHz) $\dots \dots \dots$:	54,2	
	- measured oscillatory frequency (kHz) $\dots \dots \dots$:	L1: 54,4 L2: 54,4 L3: 54,4	P
	- factor $\gamma \dots \dots \dots$:	L1: 1,12 L2: 1,12 L3: 1,12	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		
	Test performed without:		
	- endanger to the operator		P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- cause damage to adjacent equipment		P
	No permanent arcing		P
	No flash over between poles and poles and frame		P
	No melting of the fuse in the detection circuit		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		
	Immediately after the test equipment must work satisfactorily		
	- required opening force not greater than the test force of 8.2.5.2 and table 8		P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.3.4	Dielectric verification		
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1000V~	
	No flashover or breakdown		P
8.3.3.5	Leakage current		
	test voltage (1,1 U_e) (V)	440	
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole)	$11,8 \times 10^{-3}$ mA (Maximum)	P
8.3.3.6	Temperature-rise verification		
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	-	
	- manufacturer's model or type reference	-	
	- rated current (A)	-	
	- power loss (W)	-	
	- rated breaking capacity (kA)	-	
	- conductor cross-section (mm ²)	50	
	- test current I_e (A)	125	
	Measured temperature-rise	see appended table 8.3.3.6 on page 26	P
8.3.3.7	Strength of actuator mechanism		
8.2.5	Verification of the strength of actuator mechanism and position indicating device		
	- actuator type (fig.)	Figure 1d	
8.2.5.2.1	Dependent and independent manual operation		
	- actuating force for opening (N)	57,5	

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- test force with blocked main contacts (N)	172,5	
	- used method to keep the contact closed		
	During and after the test, open position not indicated		P
	Equipment with locking mean, no locking in the open position while test force is applied		P
8.2.5.2.2	Dependent power operation		
	- main contacts fixed together in the closed position		N/A
	- used method to keep the contact closed		N/A
	- 110% of the rated supply voltage applied to the equipment (3 times)		N/A
	During and after the test, open position not indicated		N/A
	Equipment show no damage impairing its normal operation		N/A
	Equipment with locking mean, no locking in the open position while test force is applied		N/A
8.2.5.2.3	Independent power operation		
	- main contacts fixed together in the closed position		N/A
	- used method to keep the contact closed		N/A
	- stored energy of the power operator released (3 times)		N/A
	During and after the test, open position not indicated		N/A
	Equipment show no damage impairing its normal operation		N/A
	Equipment with locking mean, no locking in the open position while test force is applied		N/A
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY		
	- 1 sample: 4 poles, 125A		
8.3.4.1	Operational performance test		
	- utilization category	AC-22A	
	- rated operational voltage (V)	230/400	
	- rated operational current (A)	125	
	Test conditions for electrical operation cycles:		

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- test voltage (V)	L1: 405 L2: 405 L3: 405	P
	- test current (A)	L1: 125 L2: 125 L3: 125	P
	- power factor/ time constant	L1: 0,78 L2: 0,78 L3: 0,78	P
	Number of cycles with current	1000	P
	Number of cycles without current	7000	P
	First test sequence (with /without current)	With current	P
	Second test sequence (with/ without current)	Without current	P
	- time interval between first and second test sequence	60s	P
8.3.4.1.5	Behaviour of the equipment during the operational performance test		
	Test performed without:		
	- endanger to the operator		P
	- cause damage to adjacent equipment		P
	No permanent arcing		P
	No flash over between poles and poles and frame		P
	No melting of the fuse in the detection circuit		P
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		
	Immediately after the test equipment must work satisfactorily		
	- required opening force not greater than the test force of 8.2.5.2 and table 8		P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1000V~	
	No breakdown or flashover		P
8.3.4.3	Leakage current		
	test voltage (1,1 U_e) (V)	440	
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	$11,3 \times 10^{-3}$ mA(Maximum)	P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.4	Temperature-rise verification		
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	-	
	- manufacturer's model or type reference	-	
	- rated current (A)	-	
	- power loss (W)	-	
	- rated breaking capacity (kA)	-	
	- conductor cross-section (mm ²)	50	
	- test current I _e (A)	125	
	Measured temperature-rise	see appended table 8.3.4.4 on page 26	P
8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY - 1 sample: 4 poles, 125A		
8.3.5.1	Short-time withstand current test		
	Rated short-time withstand current I _{cw} (A) (>12.I _e max)	12I _e	
	test voltage (V)	L1: 408 L2: 408 L3: 408	P
	r.m.s. test current (A)	L1: 1,52x10 ³ L2: 1,52x10 ³ L3: 1,52x10 ³	P
	peak test current (A)	L1: 2,04x10 ³ L2: 2,07x10 ³ L3: 2,04x10 ³	P
	power factor/time constant	L1: 0,93 L2: 0,93 L3: 0,93	P
	test duration (s)	1,02	P
8.3.5.1.5	Behaviour of the equipment during the test		
	Test performed without:		
	- endanger to the operator		P
	- cause damage to adjacent equipment		P
	No permanent arcing		P
	No flash over between poles and poles and frame		P
	No melting of the fuse in the detection circuit		P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.5.1.6	Condition of the equipment after making and breaking capacity tests		
	Immediately after the test equipment must work satisfactorily		
	- required opening force not greater than the test force of 8.2.5.2 and table 8		P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.5.2	Short-circuit making capacity		
	Rated short-circuit making capacity I _{cm} (A):	28,4I _e	
	test voltage (U _e) (V):	L1: 408 L2: 408 L3: 408	P
	r.m.s. test current (A):	L1: 2,43x10 ³ L2: 2,43x10 ³ L3: 2,44x10 ³	P
	maximum peak test current (factor n)	3,41x10 ³ A(1,42)	P
	power factor/time constant:	L1: 0,86 L2: 0,86 L3: 0,86	P
	current duration (s):	0,18s	P
	Time interval between the cycles	3min	P
8.3.5.2.5	Behaviour of the equipment during the test		
	Test performed without:		
	- endanger to the operator		P
	-cause damage to adjacent equipment		P
	No permanent arcing		P
	No flash over between poles and poles and frame		P
	No melting of the fuse in the detection circuit		P
8.3.5.2.6	Condition of the equipment after making and breaking capacity tests		
	Immediately after the test equipment must work satisfactorily		
	- required opening force not greater than the test force of 8.2.5.2 and table 8		P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.5.3	Dielectric verification		
	test voltage: 2*U _e with a minimum of 1000V~.....:	1000V~	
	No flashover or breakdown		P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.5.4	Leakage current		
	test voltage (1,1 Ue) (V):	440	
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	$10,7 \times 10^{-3}$ mA (Maximum)	P
8.3.5.5	Temperature-rise verification		
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	-	
	- manufacturer's model or type reference	-	
	- rated current (A)	-	
	- power loss (W)	-	
	- rated breaking capacity (kA)	-	
	- conductor cross-section (mm ²)	50	
	- test current I _e (A)	125	
	Measured temperature-rise	see appended table 8.3.5.5 on page 26	P
8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY - 1 sample: 4 poles, 63A		
8.3.5.1	Short-time withstand current test		
	Rated short-time withstand current I _{cw} (A) ($>12 \cdot I_e$ max)	12I _e	
	test voltage (V)	L1: 408 L2: 408 L3: 408	P
	r.m.s. test current (A)	L1: 762 L2: 774 L3: 770	P
	peak test current (A)	L1: $1,06 \times 10^3$ L2: $1,05 \times 10^3$ L3: $1,06 \times 10^3$	P
	power factor/time-constant	L1: 0,93 L2: 0,93 L3: 0,93	P
	test duration (s)	1,02	P
8.3.5.1.5	Behaviour of the equipment during the test		
	Test performed without:		
	- endanger to the operator		P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- cause damage to adjacent equipment		P
	No permanent arcing		P
	No flash over between poles and poles and frame		P
	No melting of the fuse in the detection circuit		P
8.3.5.1.6	Condition of the equipment after making and breaking capacity tests		
	Immediately after the test equipment must work satisfactorily		
	- required opening force not greater than the test force of 8.2.5.2 and table 8		P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.5.2	Short-circuit making capacity		
	Rated short-circuit making capacity I _{cm} (A):	28,4le	
	test voltage (U _e) (V):	L1: 408 L2: 408 L3: 408	P
	r.m.s. test current (A):	L1: 1,27 x10 ³ A L2: 1,27 x10 ³ A L3: 1,27 x10 ³ A	P
	maximum peak test current (factor n)	1,71 x10 ³ A(1,41)	P
	power factor/ time constant:	L1: 0,95 L2: 0,95 L3: 0,95	P
	current duration (s):	0,18s	P
	Time interval between the cycles	3min	P
8.3.5.2.5	Behaviour of the equipment during the test		
	Test performed without:		
	- endanger to the operator		P
	-cause damage to adjacent equipment		P
	No permanent arcing		P
	No flash over between poles and poles and frame		P
	No melting of the fuse in the detection circuit		P
8.3.5.2.6	Condition of the equipment after making and breaking capacity tests		
	Immediately after the test equipment must work satisfactorily		
	- required opening force not greater than the test force of 8.2.5.2 and table 8		P

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- equipment is able to carry its rated current after normal closing operation		P
8.3.5.3	Dielectric verification		
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1000V~	
	No flashover or breakdown		P
8.3.5.4	Leakage current		
	test voltage (1,1 U_e) (V)	440	
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	$10,7 \times 10^{-3}$ mA (Maximum)	P
8.3.5.5	Temperature-rise verification		
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	-	
	- manufacturer's model or type reference	-	
	- rated current (A)	-	
	- power loss (W)	-	
	- rated breaking capacity (kA)	-	
	- conductor cross-section (mm ²)	-	
	- test current I_e (A)	-	
	Measured temperature-rise	see appended table 8.3.5.5 page __	N/A

IEC / EN 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT		N/A
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8.3.7	TEST SEQUENCE V: OVERLOAD PERFORMANCE CAPABILITY		N/A
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8.4	ELECTROMAGNETIC COMPATIBILITY TESTS		N/A
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Annex A (normative)			
A	Equipment for direct switching of a single motor		N/A

Annex C (normative)			
C	Single pole operated three pole switches		N/A

7.1.4	TABLE: Clearance and creepage distance measurements					P
clearance cl and creepage distance dcr at/of:	Uimp (V)	Ui (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Across open contacts	6000	600	2,0	5,1	>cl	7,6
supplementary information:						

Appended table:

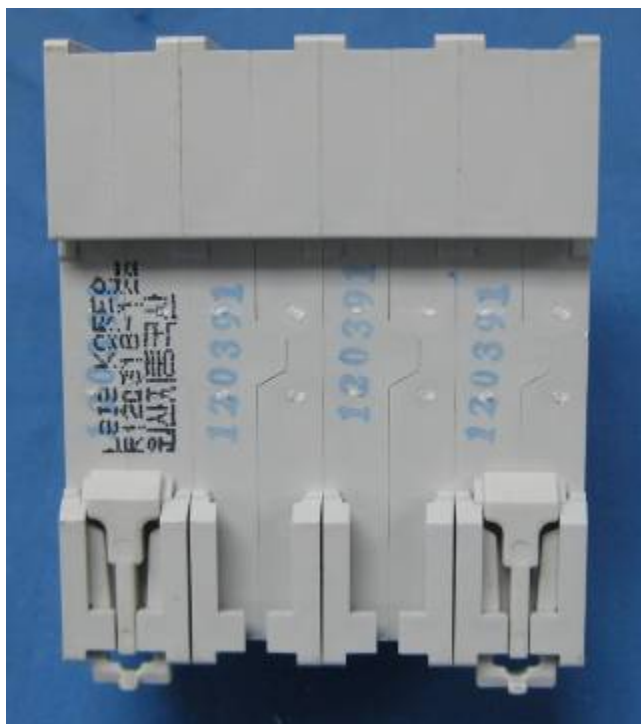
8.3.3.1	TABLE: Temperature-rise (measurements)		
Temperature rise dT of part: 1 pole, 125A		dT (K) measured	dT (K) required
Terminals		52	70
Manual operating means: metallic / non-metallic		11	25
Parts intended to be touched but not hand-held: metallic / non-metallic		36	40
Parts which need not be touched during normal operation		36	50
supplementary information:			
8.3.3.6	TABLE: Temperature-rise (measurements)		
Temperature rise dT of part: 1 pole, 125A		dT (K) measured	dT (K) required
Terminals		53	80
Manual operating means: metallic / non-metallic		11	35
Parts intended to be touched but not hand-held: metallic / non-metallic		37	50
Parts which need not be touched during normal operation		37	60
supplementary information:			
8.3.4.4	TABLE: Temperature-rise (measurements)		
Temperature rise dT of part: 1 pole, 125A		dT (K) measured	dT (K) required
Terminals		58	80
Manual operating means: metallic / non-metallic		5	35
Parts intended to be touched but not hand-held: metallic / non-metallic		45	50
Parts which need not be touched during normal operation		45	60
supplementary information:			
8.3.5.5	TABLE: Temperature-rise (measurements)		
Temperature rise dT of part: 1 pole, 125A		dT (K) measured	dT (K) required
Terminals		58	80
Manual operating means: metallic / non-metallic		4	35
Parts intended to be touched but not hand-held: metallic / non-metallic		44	50
Parts which need not be touched during normal operation		44	60
supplementary information:			

TABLE: Resistance to heat (Ball pressure test)						
no.	Specimen					Verdict
	Description	Colour	Temp. °C	Impress diam. mm	Result diam. mm	
1	Enclosure	French gery	125	2,0	1,0	P
2	Insulation mechanical parts	White	125	2,0	1,2	P
3	Handle	Saffron	125	2,0	1,0	P

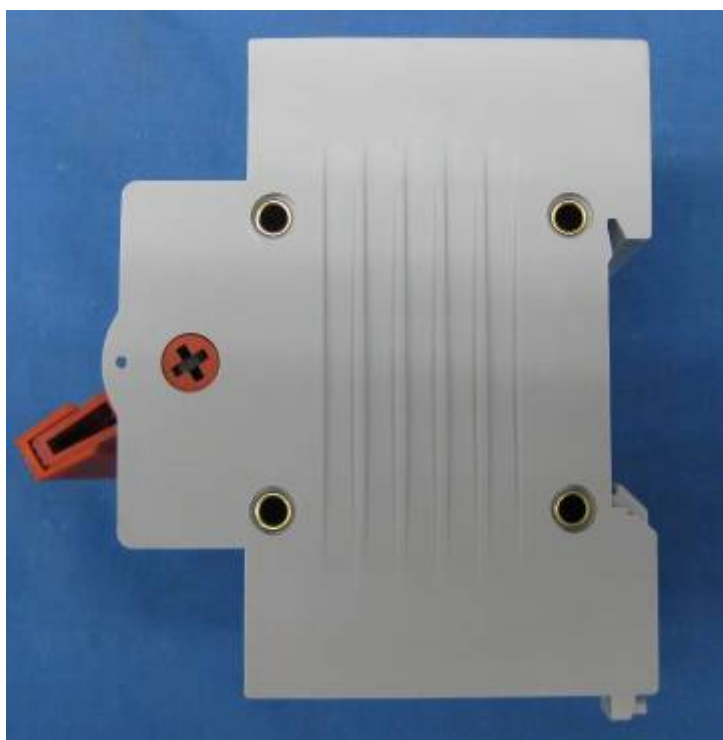
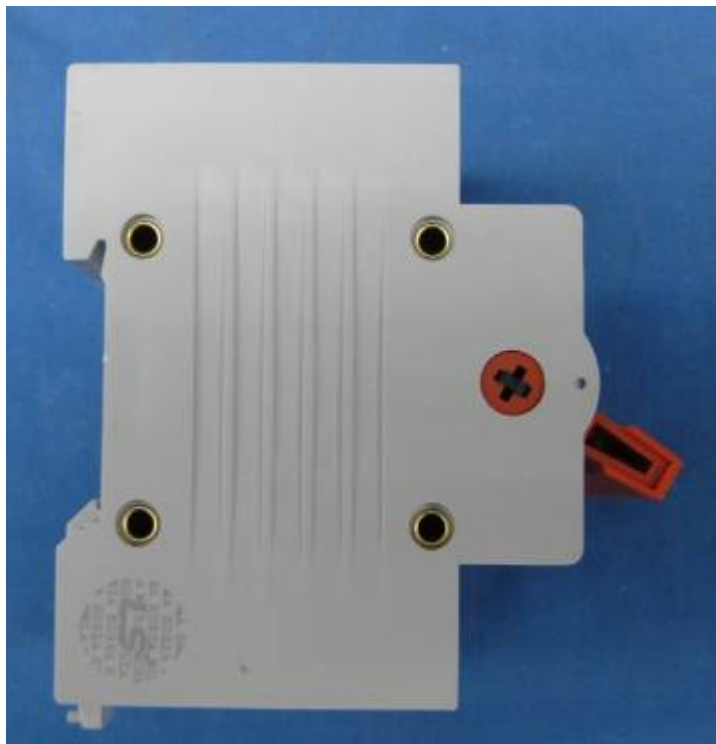
TABLE 7.1.1.1: Resistance to fire (Glow wire test)								
no.	Specimen							Verdict
	Description	Colour	Thick (mm)	Temp. °C	burning after t (s)	drops	support burning	
1	Enclosure	French gery	2,5	960	1,6	No	No	P
2	Insulation mechanical parts	White	2,5	960	1,8	No	No	P
3	Handle	Saffron	2,5	650	-	No	No	P

TABLE: Resistance to tracking (tracking test)								
no.	Specimen							Verdict
	Description	Colour	Drops (no.)	Voltage (V)	Burning	Current (A)	Result	
1	Enclosure	French gery	>50	175	-	-	No flashovers	P
2	Insulation mechanical parts	White	>50	175	-	-	No flashovers	P
3	Handle	Saffron	>50	175	-	-	No flashovers	P

Photos of sample:



Photos of sample:



Photos of sample:

