INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
COMMISSION ELECTROTECHNIQUE INTERNATIONALE (CEI)

Ref. Certif. No.
AT 1060

IEC SYSTEM FOR CONFORMITY TESTING TO STANDARDS FOR SAFETY OF ELECTRICAL EQUIPMENT (IECEE)
CB SCHEME

SYSTEME CEI D'ESSAIS DE CONFORMITE AUX NORMES DE SECURITE DE L'EQUIPEMENT ELECTRIQUE (IECEE)
METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product *Produit*	Contactor relais
Name and address of the applicant *Nom et adresse du demandeur*	Benedikt & Jäger Hofmühlgasse 4 A-1061 Wien
Name and address of the manufacturer *Nom et adresse du fabricant*	Benedikt & Jäger Hofmühlgasse 4 A-1061 Wien
Name and address of the factory *Nom et adresse de l'usine*	Benedikt & Jäger Hofmühlgasse 4 A-1061 Wien
Rating and principal characteristics *Valeurs nominales et caractéristiques principales*	See relevant test report
Trade mark (if any) *Marque de fabrique (si elle existe)*	Benedikt & Jäger
Model/type Ref. *Ref. de type*	K6AxxSx,K6DxxSx,K1-07xxx,Kx2-07Axx,Kx2-07Dxx
Additional information (if necessary) *Information complémentaire (si nécessaire)*	**PUBLICATION** IEC 947-5-1/1990 **EDITION** 1st
A sample of the product was tested and found to be in conformity with *Un échantillon de ce produit a été essayé et a été considéré conforme à la*	
as shown in the Test Report Ref. No. which form part of this certificate *comme indiqué dans le Rapport d'essais numéro de référence qui constitue une partie de ce certificat*	E 3397-00 up to E 3397-04

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

Austrian Electrotechnical Association-ÖVE
A-1190 Wien, Kahlenbergerstraße 2b

Date 1996 01 17

Signature Dipl.-Ing. W. Martin
Head of Dept.Testing & Certification

Additional page to CB/AT 1060

Product	*Type Designation*	*Test Report Ref.No.*
Contactor relay	**K6AxxSx**	**E 3397-00**
Contactor relay	**K6DxxSx**	**E 3397-01**
Contactor relay	**K1-07xxx**	**E 3397-02**
Contactor relay	**Kx2-07Axx**	**E 3397-03**
Contactor relay	**Kx2-07Dxx**	**E 3397-04**

ÖSTERREICHISCHER VERBAND FÜR ELEKTROTECHNIK
Prüfwesen & Zertifizierung
ÖVE

TEST REPORT
IEC 947-5-1 / EN60947-5-1
Low-voltage switchgear and controlgear
Part 5-1: Control circuit devices and switching elements; Electromechanical control circuit devices

Report reference No. ...	: E 3397-02
Compiled by (+signature) ...	: F. Rosenberger
Approved by (+signature) ...	: H. Hauer
Date of issue ...	: 1995-12-07
Testing laboratory ...	: BFPZ - Arsenal
Address ...	: Faradaygasse 3, A - 1031 Vienna, AUSTRIA
Testing location ...	: see above
Applicant ...	: Benedikt & Jäger
Address ...	: Hofmühlgasse 4, A - 1061 Vienna, AUSTRIA
Standard ...	: IEC 947-5-1:1990
Test Report Form No. ...	: 947-5-1A
TRF date ...	: 95-09
TRF originator ...	: OVE
Copyright blank test report ...	: OVE
Test procedure ...	: CB-scheme, CCA-scheme
Procedure deviation ...	: None
Non-standard test method ...	: None
Type of test item ...	: CONTACTOR RELAY
Trademark ...	: Benedikt & Jäger
Model/type reference ...	: K1-07xxx see page 2
Manufacturer ...	: Benedikt & Jäger
Rating ...	: see below

Copy of marking plate

BENEDIKT & JÄGER Ω
K1-07xxx

IEC 947-5-1	AC15	3A	240V
IEC 947-4-1	AC1	10A	690V

TYPE REFERENCE CODE

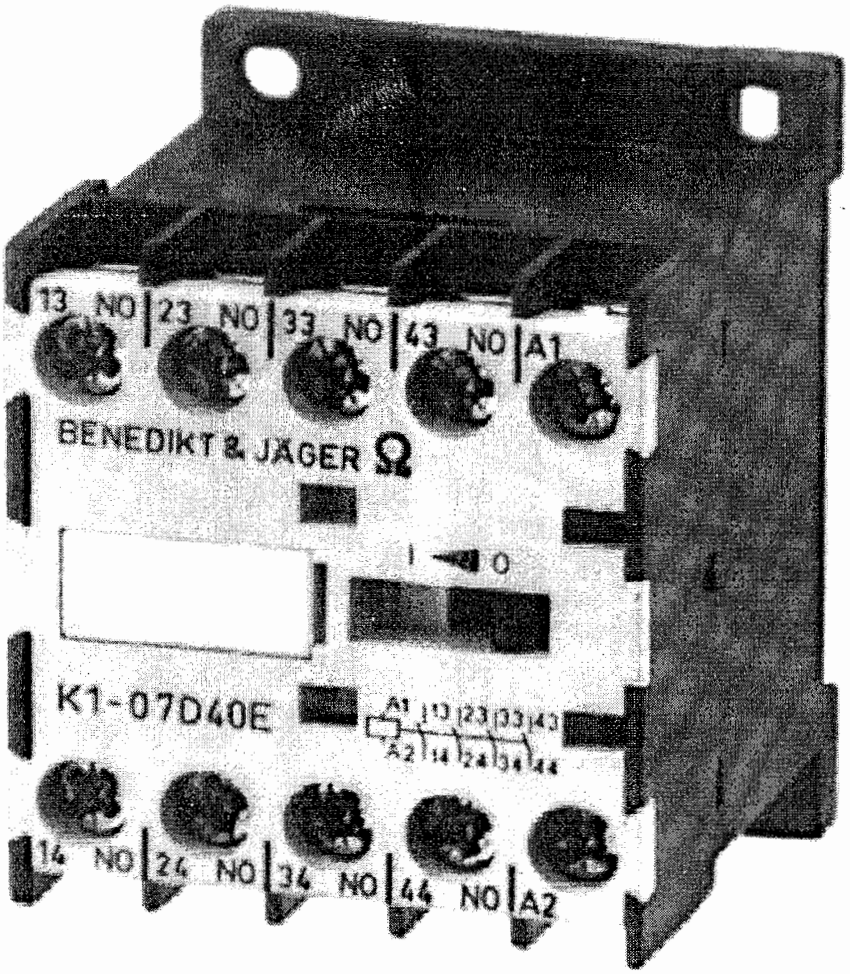
K 1 - 07 x x x

x	0...4	: Number of NC contacts
x	0...4	: Number of NO contacts
x	D	: Screw type terminals
	L	: Solder pins

Control Circuit Voltage:

6 - 550 V	50 Hz
6 - 600 V	60 Hz
12 - 250 V	DC

Based on decision of the applicant, some of the tests of Test Sequences I, II, III, may have been performed under more severe conditions than required in the standard. In case of, relevant values for equipment under test are statet in test report.


13 NO
23 NO
33 NO
43 NO
A1
BENEDIKT & JÄGER Ω
I
O
K1-07D40E
A1 13 23 33 43
A2 14 24 34 44
14 NO
24 NO
34 NO
44 NO
A2

Test item particulars:

- method of operation ...	:	MAGNETIC
- switching positions ...	:	ON-OFF
- number of circuits ...	:	4
- kind of current ..	:	AC
- number and kind of contact elements ...	:	MAX. 4 NO or 4 NC
- rated frequency (Hz) ...	:	50-60
- number of positions of main contacts ...	:	2
Rated and limiting values, main circuit ...	:	FOR AC1
- rated operational voltage Ue(V) ...	:	690
- rated insulation voltage Ui(V) ...	:	690
- rated impulse withstand voltage Uimp(kV) ...	:	8
- conventional free air thermal current Ith(A) ...	:	10
- conventional enclosed thermal current Ithe(A) ...:		10
- rated operational current Ie(A) ...	:	10
- rated uninterrupted current Iu(A) ...	:	10
- utilization category ...	:	AC1, AC15
Short circuit characteristic ...	:	
- rated conditional short-circuit current (kA)...	:	1
Co-ordination of short-circuit protective devices ...:		
- kind of protective device ...	:	FUSE

Possible test case verdicts:

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

General remarks:

„(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 seperator.

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

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

IEC 947-5-1 / EN 60947-5-1

Cl.	Requirement - Test	Result	Verdict
5.2	MARKING		P
	Data shall be preferably marked on the equipment:		P
a	- manufacturer`s name or trade mark	BENEDIKT & JÄGER	P
b	- type designation or serial number	K1-07 xxx	P
	Data shall be included on the nameplate, or on the equipment, or in the manufacturer's published literature:		
c	- number of this standard (EN 60 947-5-1)	IEC 947-5-1	P
d	- rated operational voltages	240V / 690V	P
e	- utilization category and rated operational currents at the rated operational voltages of the control circuit device	AC15 3A, 240V AC1 10A, 690V	P
f	- rated insulation voltage	690V	P
g	- rated impulse withstand voltage	8kV	P
h	- switching overvoltages, if applicable	≤ 8kV	P
i	- IP code, in case of enclosed control circuit device		N
j	- pollution degree	3	P
k	- type and maximum ratings of short-circuit protective device	FUSE gL (gG) 20A	P
l	- conditional short-circuit current if less than 1000A		N
m	- suitability for isolation, where applicable		N

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
7.1	CONSTRUCTION		P
7.1.1	Materials		P
7.1.2	Current-carrying parts and their connection		P
7.1.3	CLEARENCES		P
	Uimp is given as:	8kV	P
	- Max. value of rated operational voltage to earth	600 V	-
	- Nominal voltage of supply system	400 / 690 V	-
	- overvoltage category	IV	-
	- Pollution degree	3	-
	- Field in- or homogeneous	INHOMOGENEOUS	-
	- Minimum clearences (mm)	8	-
	- Measured clearences (mm)	≥ 10	P
	Uimp isn't given		N
	- Rated insulation voltage Ui (V)		-
	- Ie		-
	- Minimum clearences L-L / L-A (mm)		-
	- Measured clearences L-L / L-A (mm)		
	CREEPAGE DISTANCES		P
	Uimp is given as:	8kV	P
	- Material group / CTI	MIN. IIIb	-
	- Minimum creepage distances (mm)	10	-
	- Measured creepage distances (mm)	≥ 10	P
	Uimp isn't given		N
	- Material Column a or b		-
	- Minimum creepage distances (mm)		-
	- Measured creepage distances (mm)		
7.1.4	Actuator		N
7.1.4.1	Insulation		N
7.1.4.2	Direction		N
7.1.4.3	Actuating force (or moment)		N
7.1.4.4	Limitation of rotation (of rotary switch)		N
7.1.4.5	Emergency stop		N

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
7.1.5	Indication of the contact position		N
7.1.5.1	Indication means		N
7.1.5.2	Indication by the actuator		N
7.1.6	Conditions for control switches suitable for isolation		N

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
8.3.1.a	**Test sequence I** COIL AC:		P
8.3.3.3	Temperature-rise		P
	ambient temperature 10-40°C	25	-
	test enclosure W x H x D (mm x mm x mm)	175 x 115 x 115	-
	material of enclosure	METAL	-
	NO-contacts, test conditions:		P
	- rated operational current Ie (A)	10	-
	- cable cross-section (mm²)	1,5	-
	temperature-rise of NO terminals <=....65....K	MAX. 43	P
	NC-contacts, test conditions:		
	- rated operational current Ie (A)	10	-
	- cable cross-section (mm²)	1,5	-
	temperature-rise of NC terminals <=..65..K	MAX. 43	P
	coils and electromagnets, test conditions:		
	- rated control supply voltage Us (V)	240	-
	- Class of insulating material	F	-
	temperature-rise of coil and electromagnets <=..135...K	MAX. 68	P
8.3.3.2	Operating limits		P
8.3.3.2.1	Power-operated equipment		P
	Ambient temperature	25	-
	rated control supply voltage Us (V)	240	-
	Frequency (Hz)	50	-
	limits of close satisfactorily at any value between 85% and 110% of rated control supply voltage Us	80	P
	limits of drop out and open fully are 75% to 20% for a.c. and 75% to 10% for d.c.	36	P
8.3.3.4	Test of dielectric properties, impulse withstand voltage (Uimp indicated):		P
	- verification by measurement of Clearances instead of testing		N
	- rated impulse withstand voltage (V)	8000	-
	- test Uimp auxiliary circuits (kV)	9,8 / 7	P

IEC 947-5-1 / EN 60947-5-1				
Cl.	Requirement - Test	Result		Verdict
8.3.1.a	Test sequence I COIL DC:			P
8.3.3.3	Temperature-rise			P
	ambient temperature 10-40°C	25		-
	test enclosure W x H x D (mm x mm x mm)	175 x 115 x 115		-
	material of enclosure	METAL		-
	NO-contacts, test conditions:	KI-07D	KI-07L	P
	- rated operational current Ie (A)	10	10	-
	- cable cross-section (mm²)	1,5	1,5	-
	temperature-rise of NO terminals <= 65 K	MAX. 43	MAX. 22	P
	NC-contacts, test conditions:			P
	- rated operational current Ie (A)	10	10	-
	- cable cross-section (mm²)	1,5	1,5	-
	temperature-rise of NC terminals <= 65 K	MAX. 43	MAX. 22	P
	coils and electromagnets, test conditions:			P
	- rated control supply voltage Us (V)	24		-
	- Class of insulating material	F		-
	temperature-rise of coil and electromagnets <= 135 K	MAX. 58		P
8.3.3.2	Operating limits			P
8.3.3.2.1	Power-operated equipment			P
	Ambient temperature	25		-
	rated control supply voltage Us (V)	24		-
	Frequency (Hz)	DC		-
	limits of close satisfactorily at any value between 85% and 110% of rated control supply voltage Us	74		P
	limits of drop out and open fully are 75% to 20% for a.c. and 75% to 10% for d.c.	27		P
8.3.3.4	Test of dielectric properties, impulse withstand voltage (Uimp indicated):			P
	- verification by measurement of Clearances instead of testing			N
	- rated impulse withstand voltage (V)	8000		-
	- test Uimp auxiliary circuits (kV)	9,8 / 7		P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test of dielectric properties, dielectric withstand voltage (Uimp not indicated):		N
	- rated insulation voltage (V)		-
	- control and auxiliary circuits, test voltage for 1 min (V)		
8.2.4	Mechanical properties of terminals		P
8.2.4.2	Mechanical strength of terminals		P
	maximum cross-sectional area of conductor (mm^2)	2,5	-
	diameter of thread (mm)	3,5	-
	torque (Nm)	0,8	-
	5 times on 2 separate clamping units		P
3.2.4.3	Testing for damage to and accidental loosening of conductor (flexion test)		P
	conductor of the smallest cross-sectional area (mm^2)	0,5	-
	number of conductor of the smallest cross section	2	-
	diameter of bushing hole (mm)	6,4	-
	height between the equipment and the platen (mm)	260	-
	mass at the conductor(s) (kg)	0,3	-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		P
3.2.4.4	Pull-out test		P
	force (N)	30	-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		P
	Flexion test		P
	conductor of the largest cross-sectional area (mm^2)	2,5	-
	number of conductor of the largest cross section	2	-
	diameter of bushing hole (mm)	9,5	-
	height between the equipment and the platen (mm)	279	-
	mass at the conductor(s) (kg)	0,7	-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Pull-out test		P
	force (N)	50	-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		P
	flexion test		
	conductor of the largest and smallest cross sectional area (mm^2)	2,5 0,5	-
	number of conductor of the smallest cross sectional, number of conductor of the largest cross sectional	1 1	-
	diameter of bushing hole (mm)	9,5 6,4	-
	height between the equipment and the platen (mm)	279 260	-
	mass at the conductor(s) (kg)	0,7 0,3	-
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		P
	Pull-out test		P
	force (N)	50 30	-
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test sequence II		P
8.3.3.5	Making and breaking capacity		P
	utilization category	AC1 IEC 947-4-1	-
	rated operational voltage Ue (V)	690	-
	rated operational current Ie (A) or power (kW)	10	-
	Conditions, make/break operations AC1 only:		P
	- test voltage U/Ue = 1,05 (V) MIN. 724,5	L1: 730 L2: 729 L3: 729	-
	- test current I/Ie = (A) MIN. 15	L1: 16 L2: 16 L3: 16,5	-
	power factor / time constant	L1: 0,83 L2: 0,85 L3: 0,85	-
	on-time (ms)	160	-
	off-time (s)	9,8	-
	number of make/break operations	50	P
	Behaviour and condition during and after the test		P
	- no permanent arcing		P
	- no flash-over between poles		P
	- no blowing of the fusible element in the earth circuit		P
	- no welding of the contacts		P
	- the contacts shall operate when the contactor or starter is switched by the applicable method of control		P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
8.3.3.6	Operational performance capability		P
	utilization category	AC1 IEC 947-4-1	-
	rated operational voltage Ue (V)	690	-
	rated operational current Ie (A) or power (kW)	10	-
	Conditions, make/break operations AC1 only:		
	- test voltage U/Ue = 1,05 (V) MIN. 724,5	L1: 730 L2: 729 L3: 729	-
	- test current I/Ie = (A) MIN. 10	L1: 16 L2: 16 L3: 16,5	-
	power factor / time constant	L1: 0,83 L2: 0,83 L3: 0,85	-
	on-time (ms)	160	-
	off-time (s)	2,3	-
	number of make/break operations	6000	P
8.3.3.6.6	Behaviour and condition during and after the test		P
	- no permanent arcing		P
	- no flash-over between poles		P
	- no blowing of the fusible element in the earth circuit		P
	- no welding of the contacts		P
	- the contacts shall operate when the contactor or starter is switched by the applicable method of control		P
	dielectric verification		P
	test voltage (2xUe + 1000V) for 1min (V)	2380	P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
8.3.3.5.3	Making and breaking capacities of switching elements under abnormal conditions		P
	utilization category	AC15	-
	rated operational voltage Ue (V)	240	-
	rated operational current Ie (A) or power (kW)	3	-
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,1 (V) MIN. 264	L1: 266 ~~L2:~~ ~~L3:~~	-
	power factor / time constant	L1: 0,29 ~~L2:~~ ~~L3:~~	-
	- make operations test current I/Ie = ..10...(A) MIN. 30	L1: 61 ~~L2:~~ ~~L3:~~	-
	- break operations test current I/Ie = ..10...(A) MIN. 30	L1: 61 ~~L2:~~ ~~L3:~~	-
	on-time (ms)	300	-
	operating cycles per minute	6	-
	number of operating cycles	10	P
	Behaviour and condition during and after the test		P
	- no electrical or mechanical failures		P
	- no contact welding or prolonged arcing		P
	- no blowing of the fusible element in the earth circuit		P
	dielectric verfication		P
	dielectric test voltage (V)	2000	P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	utilization category		-
	rated operational voltage Ue (V)		-
	rated operational current Ie (A) or power (kW)		-
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,1 (V)	L1: L2: L3:	-
	power factor / time constant	L1: L2: L3:	-
	- make operations test current I/Ie = ...(A)	L1: L2: L3:	-
	- break operations test current I/Ie = ...(A)	L1: L2: L3:	-
	on-time (ms)		-
	operating cycles per minute		-
	number of operating cycles		
	Behaviour and condition during and after the test		
	- no electrical or mechanical failures		
	- no contact welding or prolonged arcing		
	- no blowing of the fusible element in the earth circuit		
	dielectric verfication		
	dielectric test voltage (V)		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test sequence III		P
8.3.3.5.2	Making and breaking capacities of switching elements under normal conditions		P
	utilization category	AC15	-
	rated operational voltage Ue (V)	240	-
	rated operational current Ie (A) ~~or power (kW)~~	3	-
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,1 (V) MIN. 264 *) 50 OPERATIONS AT 266 6000 —"— 242	L1: 266/242 * ~~L2:~~ ~~L3:~~	-
	power factor / time constant	L1: 0,29 ~~L2:~~ ~~L3:~~	-
	- make operations test current I/Ie = ...10....(A) MIN. 30	L1: 61 ~~L2:~~ ~~L3:~~	-
	- break operations test current I/Ie = ...1....(A) MIN. 3	L1: 6,5 ~~L2:~~ ~~L3:~~	-
	on-time (ms) *50 OPER. / **6000 OPER.	160 * / 300 **	-
	operating cycles per minute	15	-
	number of operating cycles	6050	P
	Behaviour and condition during and after the test		P
	- no electrical or mechanical failures		P
	- no contact welding or prolonged arcing		P
	- no blowing of the fusible element in the earth circuit		P
	dielectric verfication		P
	dielectric test voltage (V)	2000	P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	utilization category		-
	rated operational voltage Ue (V)		-
	rated operational current Ie (A) or power (kW)		-
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,1 (V)	L1: L2: L3:	-
	power factor / time constant	L1: L2: L3:	-
	- make operations test current I/Ie = ...(A)	L1: L2: L3:	-
	- break operations test current I/Ie = ...(A)	L1: L2: L3:	-
	on-time (ms)		-
	operating cycles per minute		-
	number of operating cycles		
	Behaviour and condition during and after the test		
	- no electrical or mechanical failures		
	- no contact welding or prolonged arcing		
	- no blowing of the fusible element in the earth circuit		
	dielectric verfication		
	dielectric test voltage (V)		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test sequence IV		P
8.3.4	Performance under conditional short-circuit current		P
	type of SCPD SIEMENS	DIAZED gL/gG	
	ratings of SCPD	20A/500V	-
	prospective current (kA)		-
	test voltage U/Ue = 1,1 (V)	L1: 277 L2: 275 L3: 276	
	r.m.s. test current (A)	L1: 1010 L2: 1050 L3: 1020	-
	power factor (max. 0,7)	0,7	-
	first making operation to closed switching elements	I_D[A] / I^2t_a[A²s]	
	L1:	760 / $10{,}1 \cdot 10^3$	
	L2:	760 / $10{,}1 \cdot 10^3$	
	L3:	880 / $9{,}5 \cdot 10^3$	P
	time intervall between test (min. 3min)		-
	second making operation to closed switching elements	I_D[A] / I^2t_a[A²s]	
	L1:	710 / $10{,}9 \cdot 10^3$	
	L2:	850 / $9{,}1 \cdot 10^3$	
	L3:	710 / $7{,}8 \cdot 10^3$	P
	time intervall between test (min. 3min)		-
	third making operation to closed switching elements	I_D[A] / I^2t_a[A²s]	
	L1:	780 / $8{,}7 \cdot 10^3$	
	L2:	465 / $1{,}7 \cdot 10^3$	
	L3:	790 / $8{,}8 \cdot 10^3$	P
	Behaviour of the equipment during the test		P
	switching elements open by the normal actuating system		P
	dielectric verfication		P
	dielectric test voltage (V)	2000	P

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
7.1.11	Degree of protection of enclosed equipment		N
	Degree of protection	IP	
	Test for first characteristic		
	Test for first numeral 1		
	Test for first numeral 2		
	Test for first numeral 3		
	Test for first numeral 4		
	Test for first numeral 5		
	Test for first numeral 6		

IEC 947-5-1 / EN 60947-5-1			
Cl.	Requirement - Test	Result	Verdict
	Test for second characteristic		N
	Test for second numeral 1		
	Test for second numeral 2		
	Test for second numeral 3		
	Test for second numeral 4		
	Test for second numeral 5		
	Test for second numeral 6		
	Test for second numeral 7		
	Test for second numeral 8		

	IEC 947-5-1 / EN 60947-5-1		
Cl.	Requirement - Test	Result	Verdict
	TABLE: temperature rise measurements		

temperature rise dT of part:		I (A)	U (V)	dT (K)	required dT(K)
TERMINALS :	13	10		35	65
	14	10		34	65
K1-07D	33	10		34	65
	34	10		35	65
	1	15(10)		20	65
K1-07L	3	15(10)		21	65
	4	15(10)		22	65
	5	15(10)		22	65
	6	15(10)		21	65
	13	10		19	65
	14	10		20	65
COIL : 240 V	50 Hz		240	68	135
24 V	DC		24	58	135

Remarks

Relevant tests have been performed with or without „snap on auxiliary contact block“ Typ „HK“ or „HKM“!