Наименование на материала:
Триполюсни и еднополюсни стопяем цилиндричен предпазител-прекъсвач-разединители, размер 10x38 mm

№ по ред	Документ	Приложение № или текст
1.	Точно означение на типа, производителя и страната на производство (произход) и последно издание на каталога на производителя	OPVP10-1 OPVP10-3 OEZ Чехия Приложение 1
2.	Техническо описание и чертежи с нанесени на тях размери	Приложение1
3.	ЕО декларация за съответствие	Приложение 2
4.	Протоколи от типови изпитвания на английски или български език, проведени от независима изпитвателна лаборатория – заверени копия, с приложен списък на отделните изпитвания на български език	Приложение 3
5.	Сертификат/акредитация на независимата изпитвателна лаборатория, провели типовите изпитвания по т. 4 – заверено копие	Приложение 4
6.	Инструкции за транспортиране, складиране, монтиране, вкл. въртящия момент на затягане на клемовите съединения, обслужване и поддържане	Приложение 5

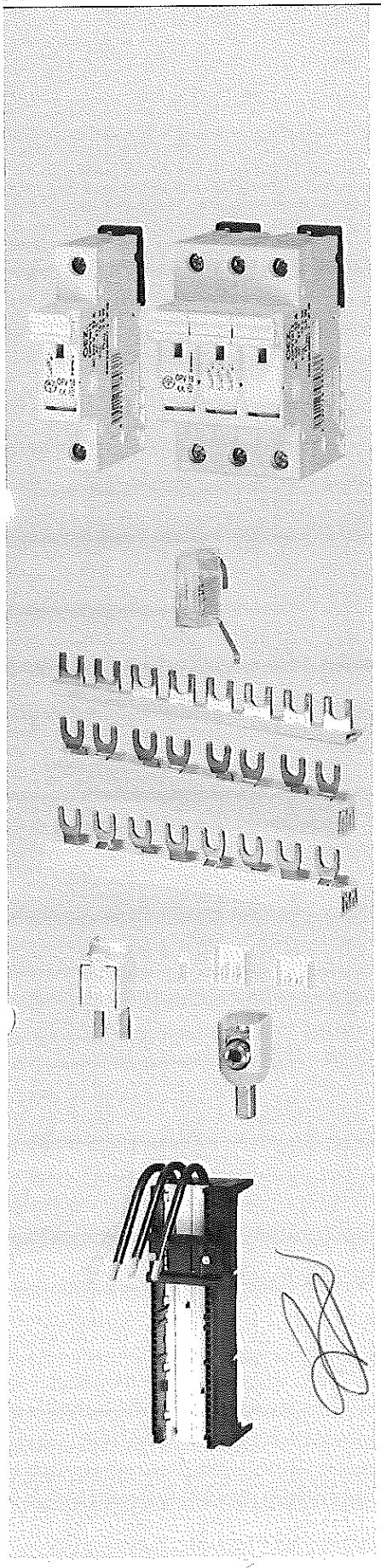
на основание чл. 2 от ЗЗЛД

МЕТ 23 ЕО СОФИЯ MIG 23 LTD

Управител

/Антон Илиев/

FUSE SWITCH-DISCONNECTORS FOR CYLINDRICAL FUSE-LINKS UP TO 32 A



Fuse switch-disconnectors OPV10 are intended for cylindrical fuse-links PV10 size 10x38. They can safely switch off rated current and overcurrent up to 1.5 rated current and meet the requirements for safe disconnection. Inverse connection is permissible and it affects neither the technical parameters nor the safety of the operator.

- Switch-disconnectors OPV can be sealed in the closed state.
- The devices are designed as modular for 45 mm cutout in the switchboard.
- Optional light indication of fuse state.
- Mounted on „U" rail of type TH35 according to EN 60715 or on the panel (steel rail recommended).
- Fuse-link state can be indicated by means of electronic signalling, see page D17.

Fuse switch-disconnectors

Type	Product code	I_n [A]	Number of poles	Weight [kg]	Package [pcs]
OPV10S-1	38819	32	1	0.100	12
OPV10-N	38825		N	0.107	12
OPV10S-1N	38820		1+N	0.187	6
OPV10S-2	38821		2	0.180	6
OPV10S-3	38822		3	0.280	4
OPV10S-3N	38823		3+N	0.360	3
OPV10S-4	38824		4	0.360	3

[1] OPV10-N design is without the possibility of signalling of fuse state.

Accessories

Description	Type	Product code	Weight [kg]	Package [pcs]
Light indication, operating voltage 100 ÷ 500 V a.c., d.c.	S - OPV10	08703	0.002	1
Light indication, operating voltage 12 ÷ 48 V d.c., a.c. (+ pole up)	S - OPV10/48	11812	0.002	1
Light indication, operating voltage 12 ÷ 48 V d.c., a.c. (+ pole down)	S - OPV10/48PD	18234	0.002	1
1-pole interconnecting busbar, cross-section 12 mm², max. current 65 A, rated operating voltage 415 V, max. operating voltage 500 V, length 1 m	G1L-1000-12	37355	0.300	1
2-pole interconnecting busbar, cross-section 16 mm², max. current 80 A rated operating voltage 415 V, max. operating voltage 500 V, length 1 m	G2L-1000-16	37361	0.477	20
3-pole interconnecting busbar, cross-section 10 mm², max. current 63 A, rated operating voltage 415 V, max. operating voltage 500 V, length 1 m	G3L-1000-10C	37365	0.300	1
End cap, for 1-pole busbars with diameter 10, 12, 16 mm²	EKC-1	37383	0.0005	10
End cap, for 3-pole busbars with diameter 10 mm²	EKC-3	37385	0.001	10
End cap, for 2-pole and 3-pole busbars with diameter 16 mm²	EKC-2+3	37384	0.001	10
Terminal extension, for connection of conductor of cross-section up to 25 mm²	AS-25-G	37390	0.012	10
Terminal extension, for connection of Cu/Al conductor of cross-section 2.5 ÷ 50 mm²	AS-50-S-AL01	38749	0.02	1
Adapter for busbars with spacing 60 mm, busbar thickness 5 or 10 mm, busbar width 12 ÷ 30 mm, cable outlet bottom, max. current 63 A	GA-60/63/54-1x7,5	11883	0.560	1

Specifications

Rated operating current	I_e		32 A
Rated operating voltage (a.c./d.c.)	U_e		690 V
Utilization category		690 V a.c.	AC-21B
		250 V d.c.	DC-21B
		700 V d.c.	DC-20B
Rated thermal current with fuse-link	I_{th}		32 A
Rated frequency	f		40 ÷ 60 Hz
Rated insulation voltage	U_i		800 V a.c.

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

FUSE SWITCH-DISCONNECTORS FOR CYLINDRICAL FUSE-LINKS UP TO 32 A

Specifications

Rated conditional short-circuit current with fuse-links PV (RMS)	I_{cc}	690 V	110 kA
Rated pulse withstand voltage	U_{imp}		4 kV
Fuse-link size	diameter x length		10x38
Max. rated current of the fuse-link	I_n		32 A
Max. power losses of the fuse-link**	P_v		3.5 W
Rated short-time withstand current	I_{cw} 1s		1.6 kA
Rated short-circuit making capacity at 400 V a.c.	I_{cm}		4 kA
Electrical endurance			300
Mechanical endurance			1700
Degree of protection, cover closed			IP20
Degree of protection, cover opened			IP20
Connection cross-section			Cu/0.5 ÷ 25 mm² (2x 16 mm²)
Torque			2 Nm
Operating ambient temperature	t		-25 ÷ +55 °C
Max. sea level			2000 m
Seismic resistance according to VE ŠKODA			3 g/8 ÷ 50 Hz
Overvoltage category/Rated voltage			I (II*)/690 V a.c., II (III*)/500 V a.c., III/400 V a.c.
Standards			IEC 60947-1, -3; EN 60947-1, -3
Approval marks			

* For underground cable distribution systems with overvoltage protection or for exposure to a low thunderstorm electricity (table H2 EN 60947-1, IEC 60947-1).

** Conditions for the use of fuse-links for semiconductor protection PV510 in chapter „Conditions for the use of fuse-links in fuse switch-disconnectors" see page H33.

EN 60947-3 ed. 2/A2, p. C.5 instructions for the use of 1-pole controlled devices states:
These devices are intended for distribution systems, with possible necessity of switching and/or safe disconnection of individual phases, and must not be used for switching a primary circuit of a three-phase equipment.

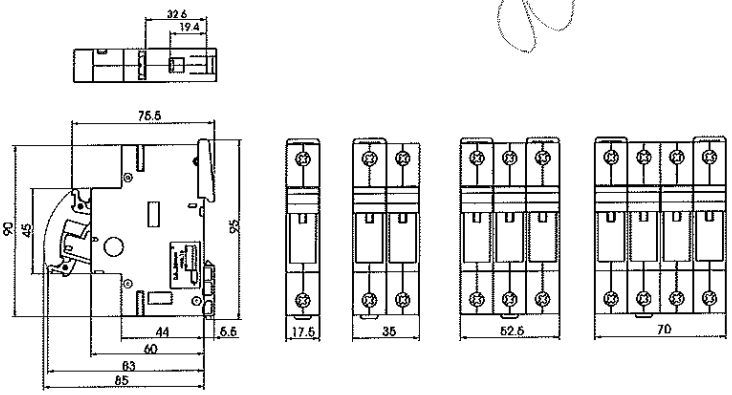
Reduction of rated current of fuse-links PV gG, aM according to the number of poles

Type	I_n [A]	Reduced rated current [A] (Number of poles) 1	3	5	7	10
OPV10	32	32	32	32	32	32

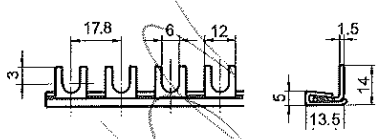
Neutral pole

		OPV10-N
Rated operating current	I_e	32 A
Thermal current with disconnecting link ZPV10	I_{th}	110 A/25 mm²
Utilization category of the neutral pole at I_e		AC-20B
Rated short-time withstand current	I_{cw} 1s	1.6 kA
Rated short-circuit making capacity at 690 V a.c.	I_{cm} [kA]	5 kA
Rated short-circuit making capacity at 250 V d.c.	I_{cm} [kA]	5.1 kA
Power losses with disconnecting link at I_e	P_v [W]	4.8 W
Connection cross-section		0.5 ÷ 25 mm²

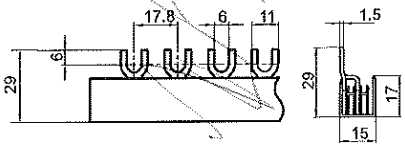
Dimensions



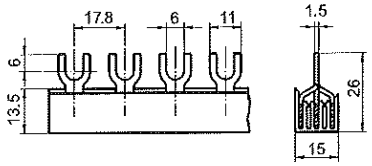
G1L-1000-12



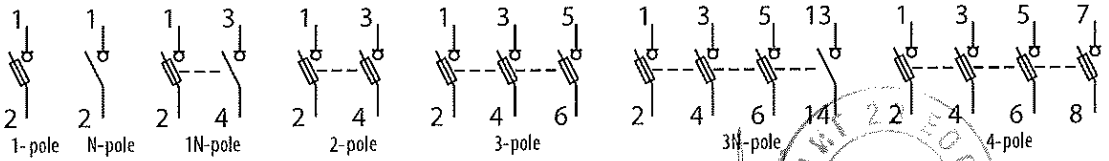
G2L-1000-16



G3L-1000-10C



Diagram



MINIMAL CONNECTING CROSS-SECTION OF FUSE SWITCH-DISCONNECTORS

Minimal connecting cross-section of cables of fuse switch-disconnectors for cylindrical fuse-links

Fuse-links I_n [A]	Fuse switch-disconnectors for cylindrical fuse-links			Cable S [mm²]	
	OPV10	OPV14	OPV22	Cu	Al
0.25	x	x		1	-
0.5	x	x		1	-
1	x	x		1	-
2	x	x		1	-
4	x	x		1	-
6	x	x		1	-
8	x	x		1	-
10	x	x		1.5	-
12	x	x		1.5	-
16	x	x	x	2.5	-
20	x	x	x	2.5	-
25	x	x	x	4	-
32	x	x	x	4	-
40		x	x	10	-
50		x	x	10	16
63		x	x	16	25
80			x	25	35
100			x	35	50
125			x	50	70

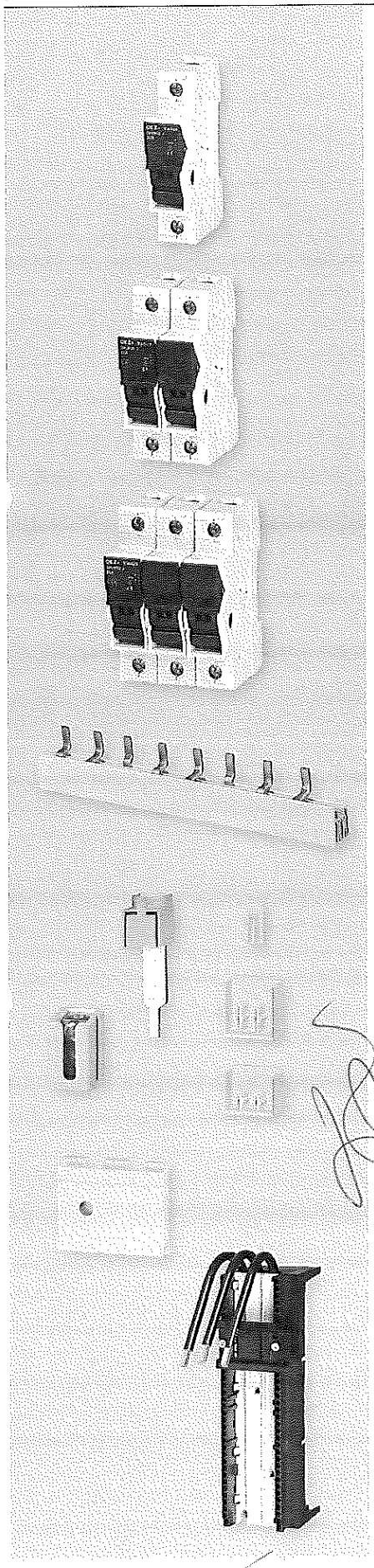
Notes:
1) Applies to ambient temperature of swich-disconnectors max. 40 °C
2) Applies to HRC fuse-links PV10, PV14, PV22

Minimal connecting cross-section of cables and busbars of fuse switch-disconnectors and fuse rails

Fuse-links I_n [A]	Fuse switch-disconnectors and fuse-rails									Cable S [mm²]		Busbar w x h	
	FH000	FH00	FH1	FH2	FH3	FD00 FR00	FD1 FR1	FD2 FR2	FD3 FR3	Cu	Al	Cu	Al
4	x	x				x				1	-	-	-
6	x	x	x			x	x			1	-	-	-
8	x	x	x			x	x			1	-	-	-
10	x	x	x			x	x			1.5	-	-	-
12	x	x	x			x	x			1.5	-	-	-
16	x	x	x			x	x			2.5	-	-	-
20	x	x	x			x	x			2.5	-	-	-
25	x	x	x			x	x			4	-	-	-
32	x	x	x	x		x	x	x		4	-	-	-
35	x	x	x	x		x	x	x		6	-	-	-
40	x	x	x	x		x	x	x		10	-	-	-
50	x	x	x	x		x	x	x		10	16	-	-
63	x	x	x	x		x	x	x		16	25	-	-
80	x	x	x	x	x	x	x	x	x	25	35	-	-
100	x	x	x	x	x	x	x	x	x	35	50	20 x 2	25 x 2
125	x	x	x	x	x	x	x	x	x	50	70	25 x 2	25 x 3
160	x	x	x	x	x	x	x	x	x	70	95	25 x 3	25 x 4
200			x	x	x		x	x	x	95	120	25 x 4	25 x 5
224			x	x	x		x	x	x	95	120	25 x 4	25 x 5
250			x	x	x		x	x	x	120	150	25 x 5	25 x 6
315				x	x			x	x	150	185	32 x 5	32 x 6
350				x	x			x	x	185	240	32 x 6	32 x 8
400				x	x			x	x	240	2x 150	32 x 8	40 x 8
500					x				x	2x 150	2x 185	2x 30 x 5	2x 40 x 5
630					x				x	2x 185	2x 240	2x 40 x 5	2x 40 x 8

Notes:
1) Applies to ambient temperature of swich-disconnectors max. 40 °C
2) Applies to HRC fuse-links PNA, PHNA

FUSE SWITCH-DISCONNECTORS OPVP10 UP TO 32 A



- Fuse switch-disconnectors OPVP10 are intended for cylindrical fuse-links size 10x38.
- They can safely switch off rated current and overcurrent. Devices meet the requirements for safe disconnection.
- Inverse connection is permissible and it affects neither the technical parameters nor the safety of the operator.
- Fuse switch-disconnectors OPVP10 can be sealed in the closed state.
- The devices are designed as modular for 45 mm cutout in the switchboard.
- Mounted on „U" rail of type TH35 according to EN 60715.
- Switch-Disconnector design ...-S features LED signalization of the state of fuse-link for each pole.
- Fuse-link state can also be indicated by means of MD-M3 electronic signalling.

Fuse switch-disconnectors

Type	Order code	I_n [A]	Number of poles	Weight [kg]	Package [pcs]
OPVP10-1	OEZ:41013	32	1	0.063	12
OPVP10-1-S	OEZ:43683		1	0.068	12
OPVP10-1N	OEZ:43686		1+N	0.133	6
OPVP10-2	OEZ:41014		2	0.128	6
OPVP10-2-S	OEZ:43684		2	0.137	6
OPVP10-3	OEZ:41015		3	0.193	4
OPVP10-3-S	OEZ:43685		3	0.193	4
OPVP10-3N	OEZ:43687		3+N	0.271	3

Accessories

Description	Type	Order code	Weight [kg]	Package [pcs]
1-pole interconnecting busbar, cross-section 10 mm², max. current 63 A rated operating voltage AC 690 V / DC 1 000 V, length 210 mm	S1L-210-10	OEZ:38475	0.047	50
1-pole interconnecting busbar, průřez 16 mm², max. current 80 A rated operating voltage AC 690 V / DC 1 000 V, length 1 m	S1L-1000-16	OEZ:37375	0.302	50
2-pole interconnecting busbar, cross-section 10 mm², max. current 63 A rated operating voltage AC 415 V, length 210 mm	S2L-210-10	OEZ:38476	0.110	20
2-pole interconnecting busbar, cross-section 16 mm², max. current 80 A rated operating voltage AC 415 V, length 1 m	S2L-1000-16	OEZ:37378	0.447	20
3-pole interconnecting busbar, cross-section 10 mm², max. current 63 A rated operating voltage AC 415 V, length 210 mm	S3L-210-10	OEZ:38482	0.110	25
3-pole interconnecting busbar, cross-section 16 mm², max. current 80 A rated operating voltage AC 415 V, length 1 m	S3L-1000-16	OEZ:37379	0.737	20
End cap, for single-pole busbars of cross-section 10, 16 mm²	EKC-1	OEZ:37383	0.0005	10
End cap, for 2-pole and 3-pole rails 16 mm²	EKC-2+3	OEZ:37384	0.001	10
End cap, for 3-pole rails of cross-section 10 mm²	EKC-3	OEZ:37385	0.001	10
Terminal extension, with long terminal, cross-section Cu 6 ÷ 50 mm²	AL-50-S-L	OEZ:63149	0.033	1
Connection block, enables power supply of interconnecting busbars by conductors of cross-section up to 35 mm², the use of the block extends the mounting with by additional N-poles	ES-35-GS	OEZ:37388	0.03	10
Adapter on „U" rail TH35, for OPVP10	OD-OPV-AD45	OEZ:43148	0.008	1
Adapter for busbar system with spacing 60 mm, busbar thickness 5 or 10 mm, busbar width 12 ÷ 30 mm, cable outlet bottom, max. current 63 A	GA-60/63/54-1x7,5	OEZ:11883	0.56	1

Specifications

Rated operating current	I_e		32 A
Rated operating voltage	U_e		AC 690 V / DC 440 V
LED signalling voltage range			AC/DC 110 ÷ 690 V
Utilization category		AC 400 V	AC-21B
		AC 690 V	AC-20B
		DC 250 V	DC-21B
Rated thermal current with fuse-link	I_{th}		32 A
Rated frequency	f_n		50 ÷ 60 Hz
Rated insulation voltage	U_i		AC 800 V
Rated conditional short-circuit current with fuse-links PV (RMS)	I_{cc}	AC 400 V	100 kA
		AC 690 V	50 kA
Rated impulse withstand voltage	U_{imp}		6 kV
Fuse-link size	diameter x length		10x38
Max. power losses of the fuse-link	P_v		4.3 W
Rated short-time withstand current	I_{cw} 1 s		1.6 kA
Rated short-circuit making capacity at DC 440 V	I_{cm}		3.5 kA

FUSE SWITCH-DISCONNECTORS OPVP10 UP TO 32 A

Specifications

Electrical endurance	operating cycles	300
Mechanical endurance	operating cycles	2 000
Degree of protection from front side, built-in device, cover closed		IP20
Connection cross-section		Cu / 0.75 ÷ 25 mm² 2x (6 ÷ 16) stranded in the same size
Torque		2 ÷ 2.5 Nm
Operating ambient temperature	t	-25 ÷ +55 °C
Max. sea level		2 000 m
Seismic resistance according to VE ŠKODA		3 g / 8 ÷ 50 Hz
Overvoltage category / Rated voltage		I(II*) / AC 690 V, II(III*) / AC 500 V, III / AC 400 V
Standards		IEC 60947-1, -3; EN 60947-1, -3
Approval marks		

* For underground cable distribution systems with overvoltage protection or for exposure to a low thunderstorm electricity (table H2 EN 60947-1, IEC 60947-1).

EN 60947-3 ed. 2/A2, p. C.5 Instructions for the use of 1-pole controlled devices states:
These devices are intended for distribution systems, with possible necessity of switching and/or safe disconnection of individual phases, and must not be used for switching a primary circuit of a three-phase equipment.

Reduction of rated current of fuse-links PV gG, aM according to the number of poles

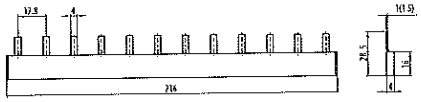
Type	I_n [A]	Reduced rated current [A] (number of poles)					
		1	2	3	5	7	10
OPVP10	32	32	32	32	32	32	32

Fuse switch-disconnector with disconnecting link

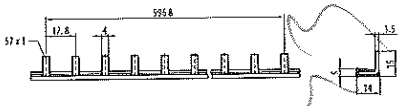
Rated operating current	I_e		32 A
Thermal current with disconnecting link ZPV10	I_{th}		100 / 25 mm²
Utilization category			AC-20B
Rated short-time withstand current	I_{cw} 1 s		1.6 kA
Rated short-circuit making capacity	I_{cm}	AC 690 V	3.5 kA
		DC 440 V	4 kA
Power losses with disconnecting link at I_e	P_v		4.5 W
Connection cross-section			0.75 ÷ 25 mm²

Interconnecting busbars

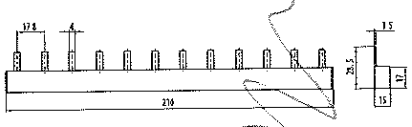
S1L-210-10



S1L-1000-16



S2L-210-10



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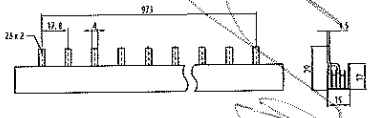

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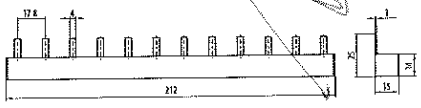

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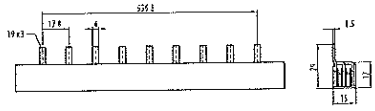
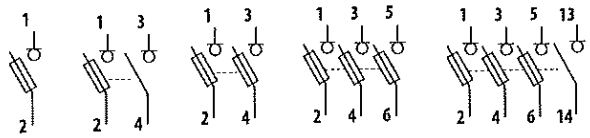
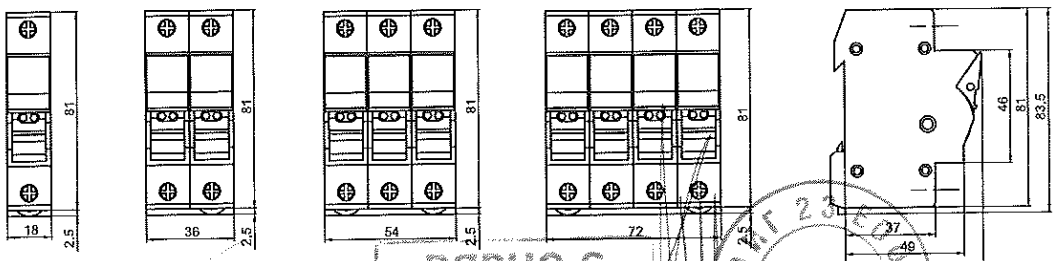


Diagram



1-pole 1N-pole 2-pole 3-pole 3N-pole

Dimensions



FUSE-LINKS PV

- Small dimensions.
- High limiting and breaking capacity.
- Low power losses.
- The fuse-links do not contain harmful substances according to the RoHS Regulation (cadmium, lead and other).
- Utilization category gG for protection of lines, cables and other equipment against overload and short- circuit.
- Utilization category aM for protection of motors, overcurrent relays, contactors and similar devices only against short-circuit.

Fuse-links PV

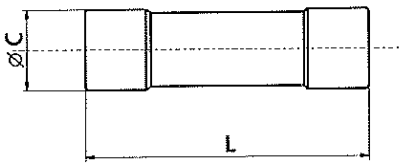
	I_n [A]	Utilization category gG: Type	U_n [V]	Product code	Power losses [W]	Utilization category aM: Type	U_n [V]	Product code	Power losses [W]	Weight [kg]	Package [pcs]
10 x 38	0,25	-	-	-	-	PV10 0,25A aM	500	06688	0.11	0.011	20
	0,5	-	-	-	-	PV10 0,5A aM	500	06689	0.17	0.011	20
	1	-	-	-	-	PV10 1A aM	500	06690	0.29	0.011	20
	2	PV10 2A gG	500	06691	0.72	PV10 2A aM	500	06692	0.92	0.011	20
	4	PV10 4A gG	500	06693	1.17	PV10 4A aM	500	06694	0.25	0.011	20
	6	PV10 6A gG	500	06695	0.88	PV10 6A aM	500	06696	0.31	0.011	20
	8	PV10 8A gG	500	06697	1.04	PV10 8A aM	500	06698	0.46	0.011	20
	10	PV10 10A gG	500	06699	1.29	PV10 10A aM	500	06700	0.46	0.011	20
	12	PV10 12A gG	500	06701	1.48	PV10 12A aM	500	06702	0.47	0.011	20
	16	PV10 16A gG	500	06703	1.86	PV10 16A aM	500	06704	0.67	0.011	20
	20	PV10 20A gG	500	06705	2.20	PV10 20A aM	400	06706	0.87	0.011	20
	25	PV10 25A gG	500	06707	2.58	PV10 25A aM	400	06708	1.05	0.011	20
	32	PV10 32A gG	500	06709	2.54	PV10 32A aM	400	06710	1.50	0.011	20
14 x 51	0,25	-	-	-	-	PV14 0,25A aM	690	06711	0.12	0.020	10
	0,5	-	-	-	-	PV14 0,5A aM	690	06712	0.18	0.020	10
	1	-	-	-	-	PV14 1A aM	690	06713	0.30	0.020	10
	2	PV14 2A gG	690	06714	0.95	PV14 2A aM	690	06715	0.99	0.020	10
	4	PV14 4A gG	690	06716	1.57	PV14 4A aM	690	06717	0.31	0.020	10
	6	PV14 6A gG	690	06718	2.24	PV14 6A aM	690	06719	0.34	0.020	10
	8	PV14 8A gG	690	06720	1.20	PV14 8A aM	690	06721	0.45	0.020	10
	10	PV14 10A gG	690	06722	1.58	PV14 10A aM	690	06723	0.56	0.020	10
	12	PV14 12A gG	690	06724	1.49	PV14 12A aM	690	06725	0.63	0.020	10
	16	PV14 16A gG	690	06726	2.0	PV14 16A aM	500	06727	1.01	0.020	10
	20	PV14 20A gG	690	06728	2.24	PV14 20A aM	500	06729	1.04	0.020	10
	25	PV14 25A gG	690	06730	2.70	PV14 25A aM	500	06731	1.30	0.020	10
	32	PV14 32A gG	690	06732	3.33	PV14 32A aM	500	06733	1.94	0.020	10
	40	PV14 40A gG	500	06734	3.86	PV14 40A aM	500	06735	2.04	0.020	10
	50	PV14 50A gG	500	06736	4.10	PV14 50A aM	400	06737	2.91	0.020	10
	63	PV14 63A gG	500	06738	5.35	PV14 63A aM	400	06739	3.69	0.020	10
22 x 58	16	PV22 16A gG	690	06740	2.23	PV22 16A aM	690	06741	0.92	0.060	10
	20	PV22 20A gG	690	06742	2.24	PV22 20A aM	690	06743	1.06	0.060	10
	25	PV22 25A gG	690	06744	2.90	PV22 25A aM	690	06745	1.43	0.060	10
	32	PV22 32A gG	690	06746	4.10	PV22 32A aM	690	06747	2.03	0.060	10
	40	PV22 40A gG	690	06748	4.52	PV22 40A aM	690	06749	2.50	0.060	10
	50	PV22 50A gG	690	06750	6.45	PV22 50A aM	690	06751	2.55	0.060	10
	63	PV22 63A gG	500	06752	5.82	PV22 63A aM	500	06753	4.05	0.060	10
	80	PV22 80A gG	500	06754	6.82	PV22 80A aM	500	06755	4.85	0.060	10
	100	PV22 100A gG	500	06756	7.81	PV22 100A aM	500	06757	5.59	0.060	10
	125	PV22 125A gG	500	18271	10.5	PV22 125A aM	400	06758	6.31	0.060	10

FUSE-LINKS PV

Parameters

Rated voltage	U_n	400 ÷ 690 V a.c. 250 V d.c.
Rated breaking capacity (rms)	I_1	120 kA/400 ÷ 690 V a.c. (100 kA/PV10 32A gG, 80 kA/PV14 63A gG) 50 kA/250 V d.c.
Utilization category		gG aM
Discrimination		1 : 1.6
Standards		IEC 60269 EN 60269
Approval marks		

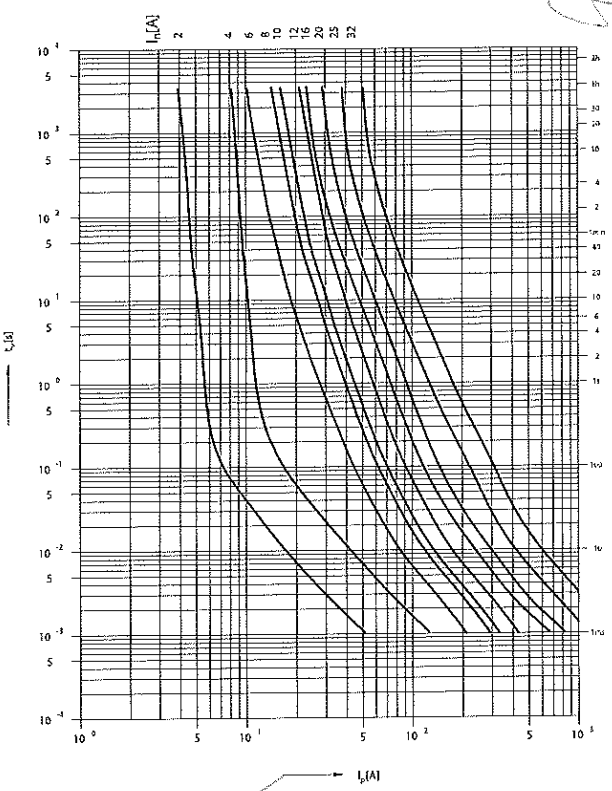
Dimensions



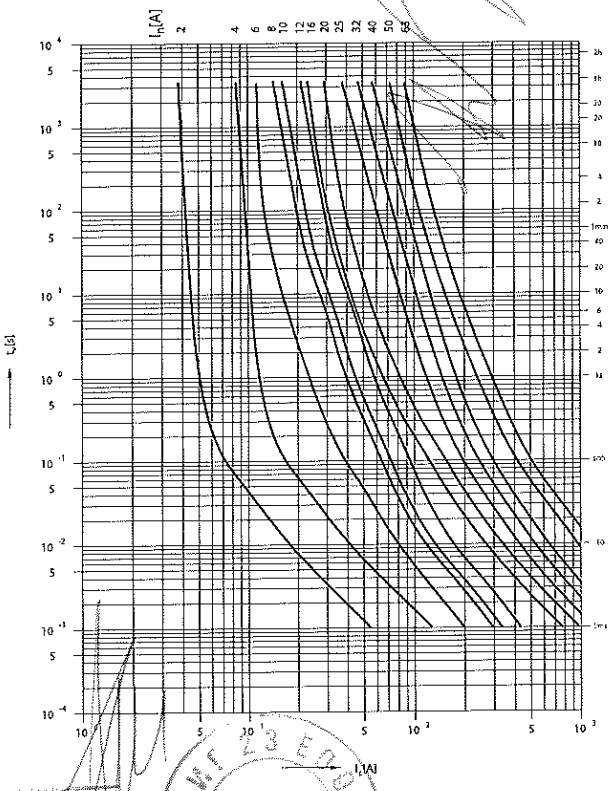
Type	ø C	L
PV10	10.3± 0.1	38± 0.6
PV14	14.3± 0.1	$51^{+0.6}_{-1}$
PV22	22.2± 1	$58^{+0.1}_{-2}$

Characteristics

Prearcing time/current characteristic
PV10 gG



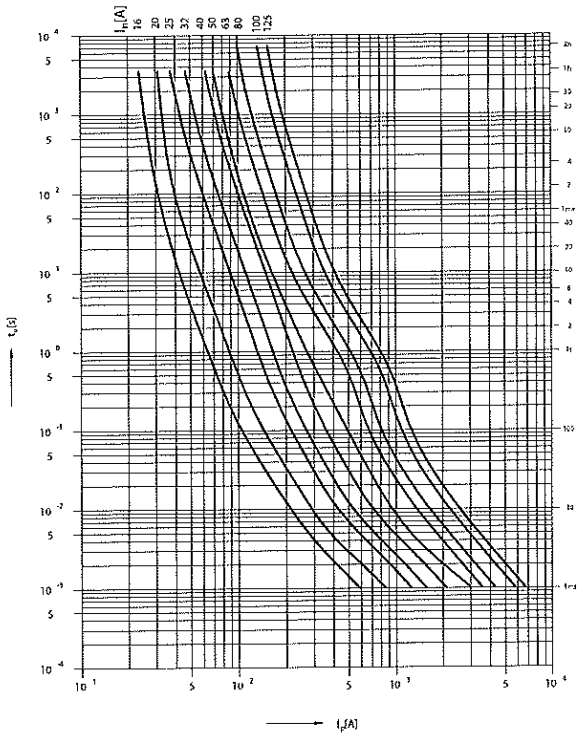
Prearcing time/current characteristic
PV14 gG



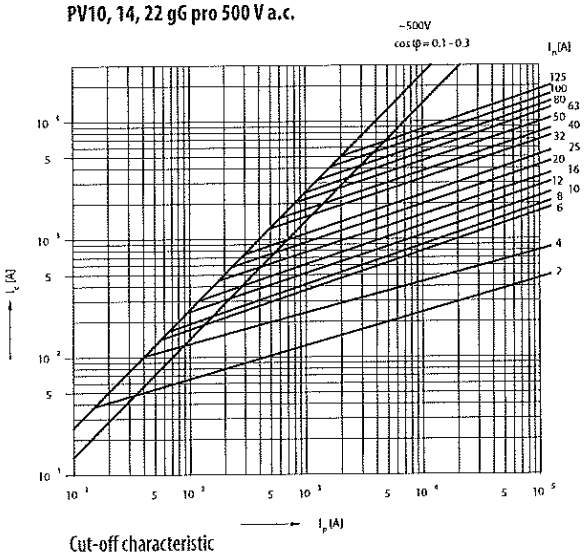
FUSE-LINKS PV

Characteristics

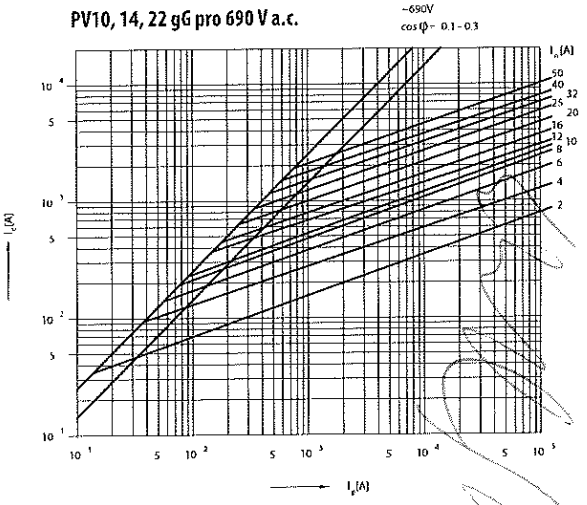
Prearcing time/current characteristic
PV22 gG



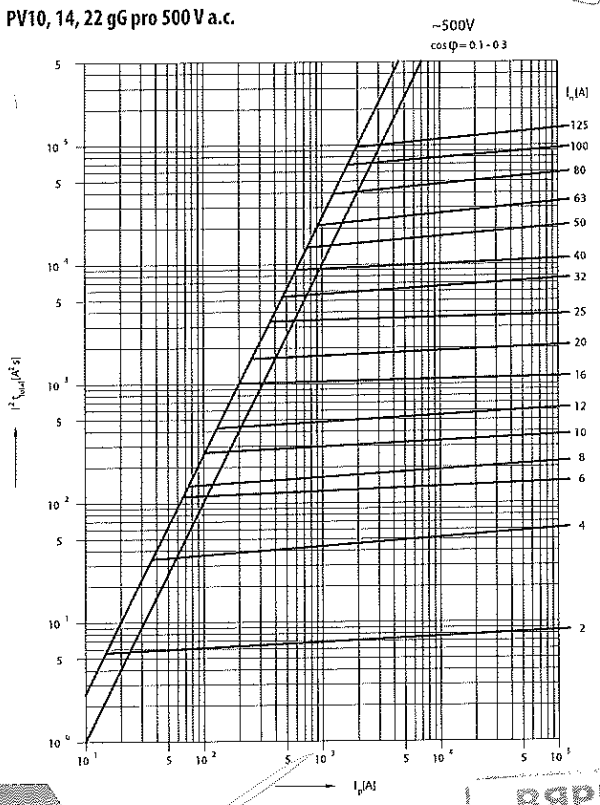
Cut-off characteristic
PV10, 14, 22 gG pro 500 V a.c.



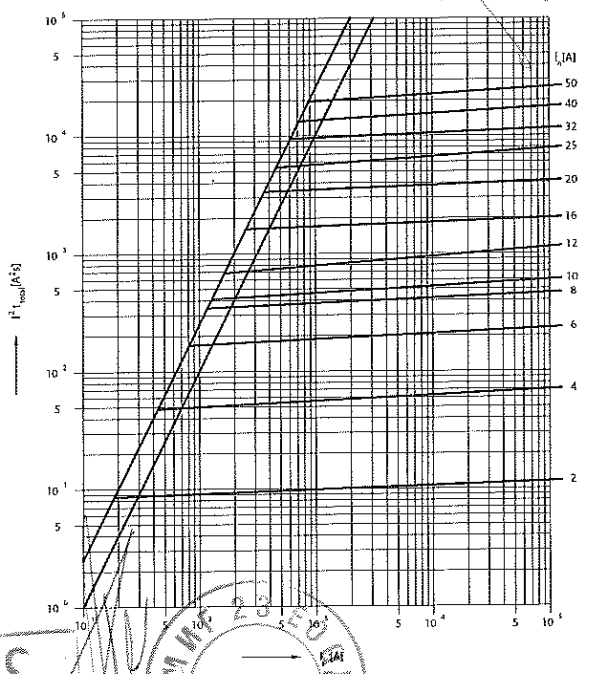
Cut-off characteristic
PV10, 14, 22 gG pro 690 V a.c.



I^2t characteristic
PV10, 14, 22 gG pro 500 V a.c.



I^2t characteristic
PV10, 14, 22 gG pro 690 V a.c.



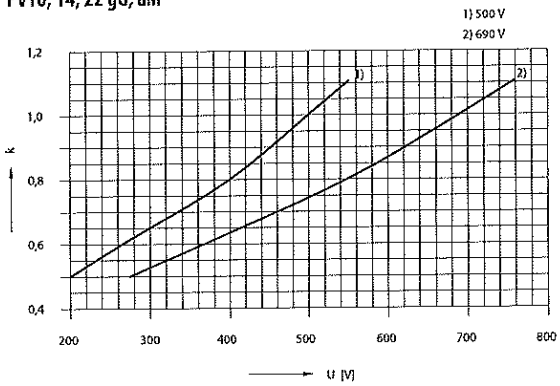
FUSE-LINKS PV

Characteristics

Correction factor „k" of I^2t dependence on operating voltage U

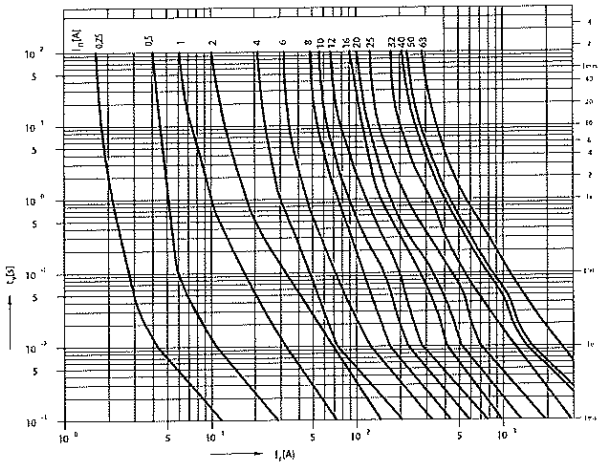
$(I^2t_{total})_{f(U)} = k \times I^2t_{total}$

PV10, 14, 22 gG, aM



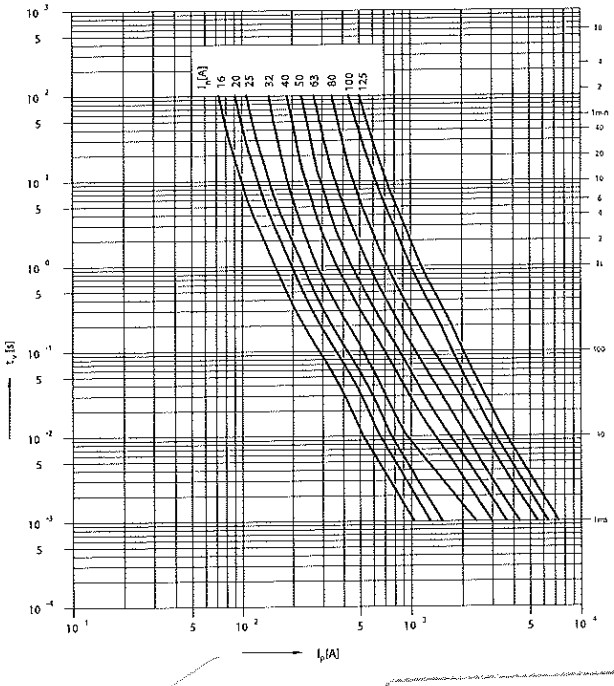
Prearcing time/current characteristic

PV14 aM



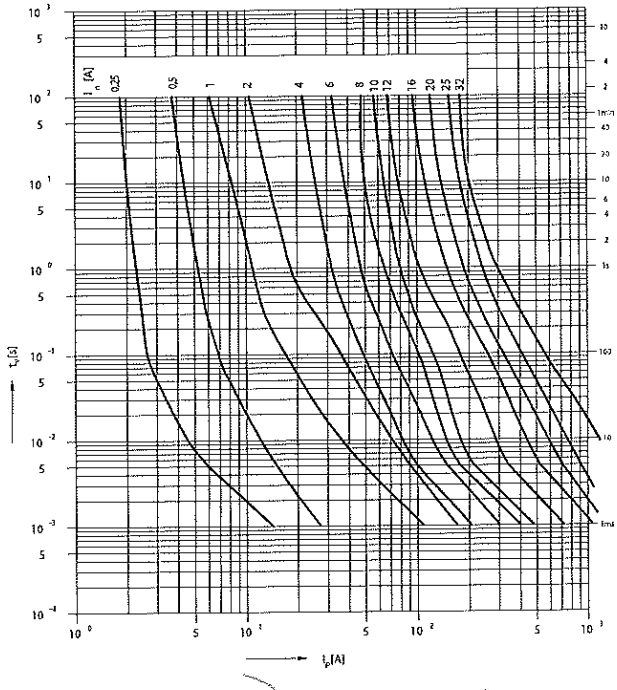
Prearcing time/current characteristic

PV22 aM



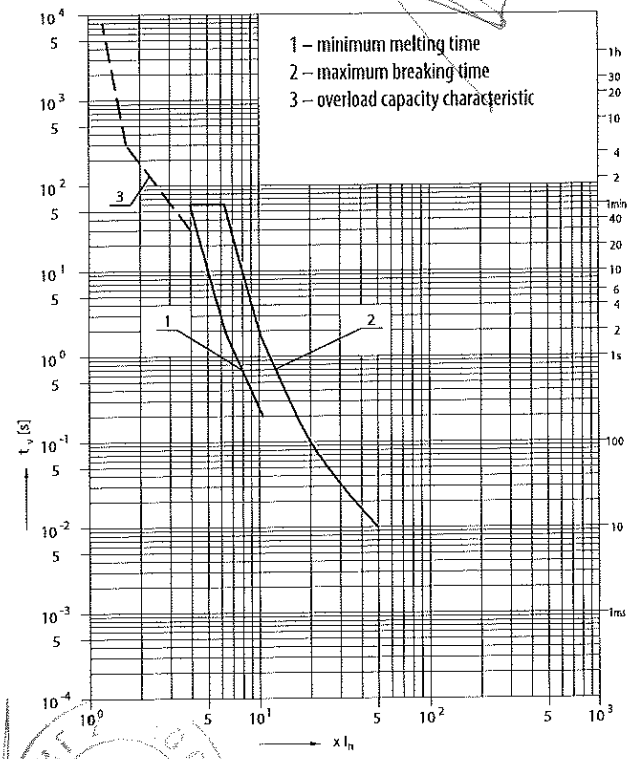
Prearcing time/current characteristic

PV10 aM



Time/current ranges

PV10, 14, 22 aM

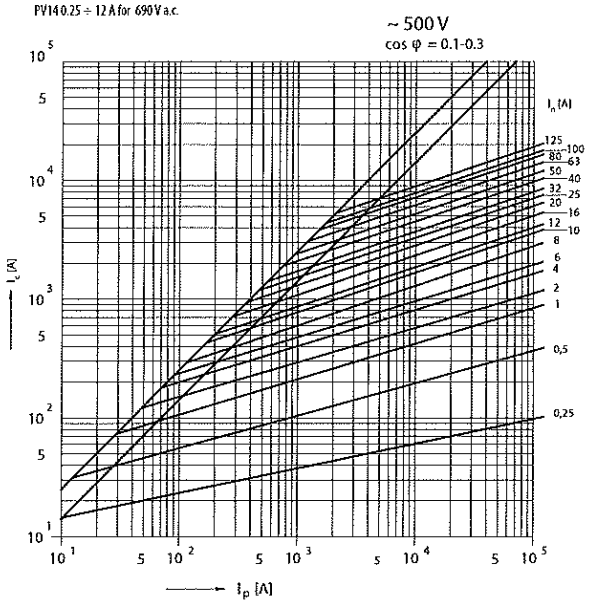


FUSE-LINKS PV

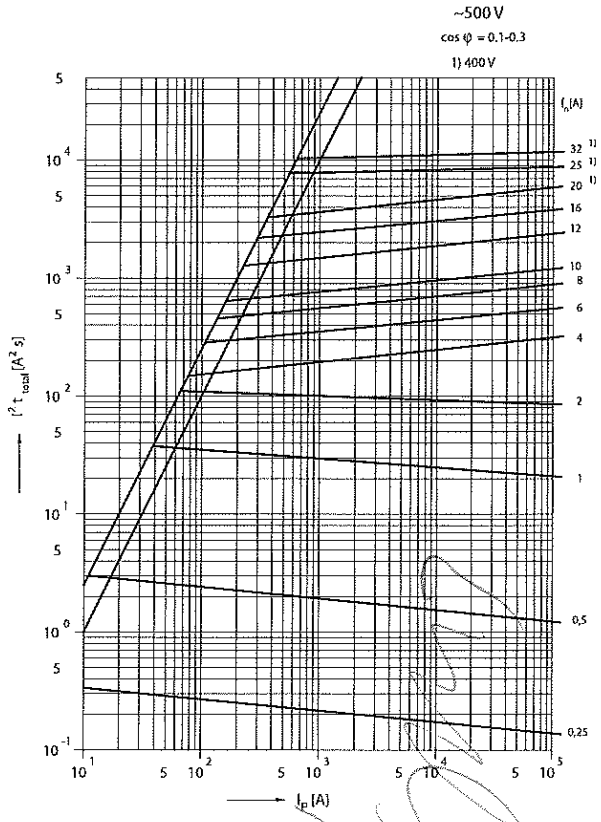
Characteristics

Cut-off characteristic
PV10, 14, 22 aM

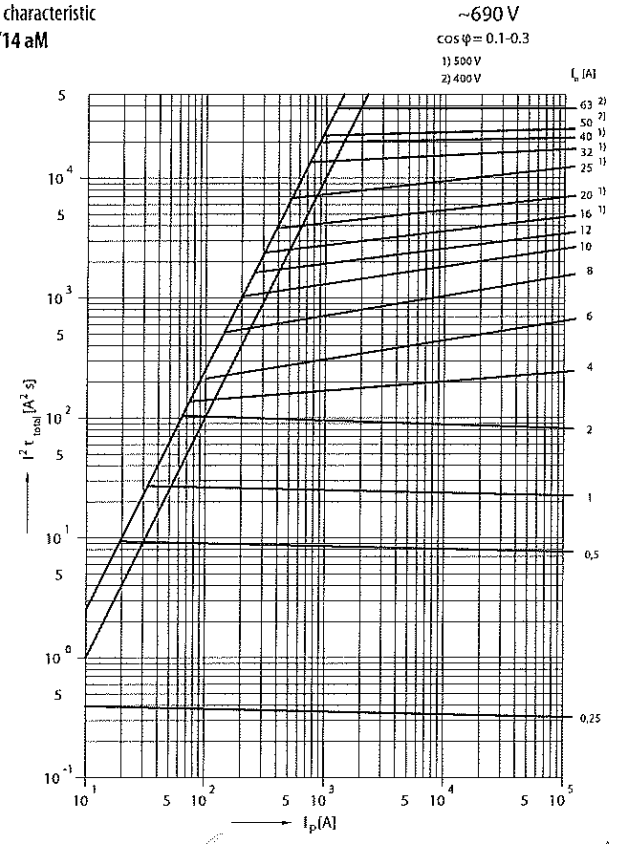
PV10 20 ÷ 32 A for 400 V a.c.
PV14 50 a 63 A for 400 V a.c.
PV14 0.25 ÷ 12 A for 690 V a.c.
PV22 125 A for 400 V a.c.
PV22 16 ÷ 50 A for 690 V a.c.



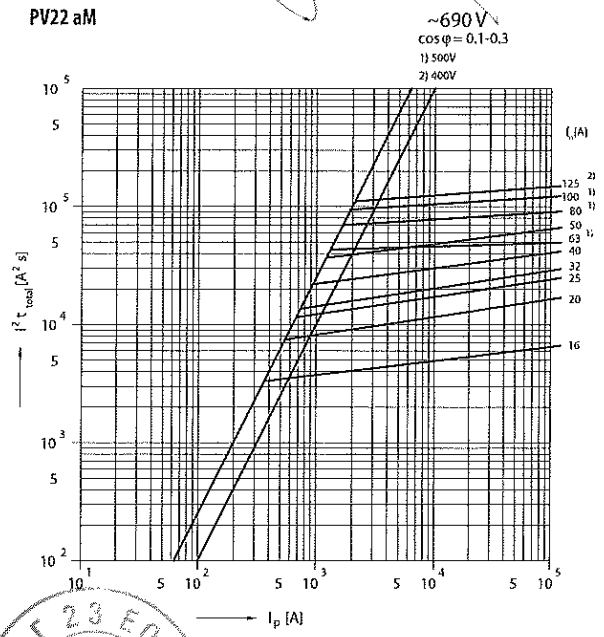
I^2t characteristic
PV10 aM



I^2t characteristic
PV14 aM



I^2t characteristic
PV22 aM



OEZ

ES PROHLÁŠENÍ O SHODĚ / *CE DECLARATION OF CONFORMITY*
EU PROHLÁŠENÍ O SHODĚ / *EU DECLARATION OF CONFORMITY*

Číslo / *No.*: 503002/1412

My / *We*, **OEZ s.r.o.**
Šedivská 339, 561 51 Letohrad, Česká republika

prohlašujeme na svou výlučnou odpovědnost, že
declare on our own responsibility that

Výrobek: Odpínače válcových pojistek velikosti 10x38
Product: Fuse switch-sdisconnectors for cylindrical fuse-links size 10x38

Typ / *Type*: OPVP10

Příslušenství / *Accessory*:

je ve shodě s následujícími normami:
complies with the following standards:

České normy / *Czech standards*	**Evropské normy** / *European standards*
ČSN EN 60947-1:08ed.4 +A1:11 ČSN EN 60947-3:10ed.3+A1:12	EN 60947-1:07 EN 60947-3:09

a následujícími nařízeními vlády, ve znění pozdějších předpisů (NV)
and the following government regulations (NV), as amended

NV 17/2003 Sb. v platném znění NV 481/2012 Sb. v platném znění	2006/95/ES - including amendments 2011/65/EU - including amendments

Elektrotechnický zkušební ústav, Pod Lisem 129, 171 02 Praha 71, Česká republika
zkoušel / certifikoval daný výrobek a vydal:
tested / certified the product and issued:

EZU Certifikát / *EZU Certificate*: 1140839 ze dne 7.10.2014
EZÚ zkušební protokol / *EZU test report*: 403929-01/01 ze dne 30.09.2014

Poslední dvojčíslí roku, v němž bylo označení CE na výrobek umístěno: 14
Last two digits of the year in which the CE mark was placed on the product:

Místo vydání: **Letohrad**
Place of issue:

Zástupce výrobce a podpis: **Ing. Roma**на основание чл. 2 от ЗЗЛД
Manufacturer's representative and signature:

Datum vydání: **04.12.2014**
Date of issue:

Funkce: **generální ředitel**
Position: *general director*

OEZ
OEZ s. r. o.
Šedivská 339, Letohrad 561 51
Česká republika
IČO: 49810146, DIČ: CZ49810146

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

1004

Превод от чешки език

CE Декларация за съответствие на
Cislo / No:. 209706/1407
Ние / Ние, OEZ s.r.o.

Šedivská 339, 561 51 Letohrad, Чехия

Декларирам, на нашата собствена отговорност, че

Продукт: На разединители за цилиндрични предпазители размер 10x38

Продукт: Fuse преминаване sdisconnectors за цилиндрични предпазител-връзки размер 10x38

Вид / Тип: OPVP10 Prfslusenstvf / аксесоари:

Тя е в съответствие със следните стандарти:

отговаря на стандарти:
Чешките стандарти / Чешките стандарти на европейските стандарти / Европейски стандарти
EN 60947-1: 08ed.4 + A1: 11 CSN EN 60947-3: 10ed.3 + A1: 12 EN 60947-1: 07 EN 60947-3: 09
и след narfzenfmi правителство, както е изменена (NV) и Правилника за държавен seuraavilla (NV), както е изменен
NV 17/2003 Coll. както е изменен, NV 481/2012 Coll. изменена 2006/95 / ЕО - включително изменения
2011/65 / ЕС - включително изменения

EZU, Pod Lisem 129, 171 02 Prague 71, Чешка република опитах / сертифициран продукт и издава:

тестван / сертифициран продукт и издава:

EZU Сертификат / Удостоверение EZU: 1140839 с дата 07.10.2014

/ Доклад за тест EZU тест протокол EZU: 403929-01 / 01 от 30 септември 2014

Последните две цифри на годината, в която маркировка CE: 14

Последните две цифри на годината, през която маркировката се поставя обект на продукта:
Място на издаване: Letohrad

Място на издаване:

подпис:

Дата на издаване: 04 Декември 2014

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

Ref. Certif. No.

DE1-49452

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

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC

Product Produit	Fuse-switch-disconnector
Name and address of the applicant Nom et adresse du demandeur	Wöhner GmbH & Co. KG Elektrotechnische Systeme Mönchrödener Straße 10, 96472 Rödental GERMANY
Name and address of the manufacturer Nom et adresse du fabricant	Wöhner GmbH & Co. KG Elektrotechnische Systeme Mönchrödener Straße 10, 96472 Rödental GERMANY
Name and address of the factory Nom et adresse de l'usine Note: *When more than one factory, please report on page 2* Note: *Lorsque il y plus d'une usine, veuillez utiliser la 2ème page*	Wöhner GmbH & Co. KG Elektrotechnische Systeme Mönchrödener Straße 10, 96472 Rödental GERMANY ☐ Additional Information on page 2
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Utilization category: AC-21B, AC-22B Rated voltage: 400 V, 500 V, 690 V a.c. Rated current: 10 A, 25 A, 32 A
Trademark (if any) Marque de fabrique (si elle existe)	wöhner
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	
Model / Type Ref. Ref. De type	AES 10x38
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page)	Numbers of poles: 1/2/3-pol. and 1/3-pol.+Neutral ☐ Additional Information on page 2
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	**PUBLICATION** **EDITION** IEC 60947-1(ed.5);am1:2010-12 IEC 60947-3(ed.3)
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	249800-4402-0705/152633

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

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE *Testing and Certification Institute*
Zertifizierungsstelle / *Certification*

на основание чл. 2 от ЗЗЛД

Date: 2011-12-13 Signature: M. Bausch

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

Issued 2007-04

1006

Test Report issued under the responsibility of:

VDE

TEST REPORT
IEC 60947-3
Low-voltage switchgear and controlgear
Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units

Report Reference No. ..... :	249800-4402-0705/152633
Date of issue..... :	2011-12-12
Total number of pages ..... :	116
CB Testing Laboratory..... :	**VDE Prüf- und Zertifizierungsinstitut GmbH** VDE Testing and Certification Institute
Address ..... :	Merianstraße 28 · 63069 Offenbach , Germany
Applicant's name..... :	Wöhner GmbH & Co. KG Elektrotechnische Systeme
Address ..... :	Mönchrödener Straße 10, 96472 Rödental, Germany
Test specification:	
Standard..... :	IEC 60947-3: 3rd Edition (2008) in conjunction with IEC 60947-1: 5th Edition (2007)
Test procedure ..... :	CB
Non-standard test method..... :	N/A
Test Report Form No. ..... :	IEC60947_3B
Test Report Form(s) Originator ..... :	OVE
Master TRF ..... :	Dated 2009-08

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 ..... :	Fuse-switch-disconnector
Trade Mark ..... :	**wöhner**
Manufacturer ..... :	Wöhner GmbH & Co. KG Elektrotechnische Systeme
Model/Type reference..... :	AES 10x38
Ratings ..... :	See page 6 and 7

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

Testing procedure and testing location:	
☒ **CB Testing Laboratory:**	**VDE Prüf- und Zertifizierungsinstitut GmbH** **VDE** Testing and Certification Institute
Testing location/ address ..... :	Merianstraße 28 , 63069 Offenbach , Germany
☒ **Associated CB Test Laboratory:**	**IPH Institut** "Prüffeld für elektrische Hochleistungstechnik" GmbH
Testing location/ address ..... :	Landsberger Allee 378 A , 12681 Berlin , Germany
Tested by (name + signature) ..... :	H. Schmidt
Approved by (+ signature) ..... :	T. Kohushölter
☐ Testing procedure: TMP	
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
Approved by (+ signature) ..... :	
☐ Testing procedure: WMT	
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
Witnessed by (+ signature) ..... :	
Approved by (+ signature) ..... :	
☐ Testing procedure: SMT	
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
Approved by (+ signature) ..... :	
Supervised by (+ signature) ..... :	
☐ Testing procedure: RMT	
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
Approved by (+ signature) ..... :	
Supervised by (+ signature) ..... :	

на основание чл. 2 от ЗЗЛД

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

Summary of testing:

The tests are carried-out according to IEC 60947-1 (ed.5);am1:2010-12 and IEC 60947-3 (ed.3).

Tests performed (name of test and test clause):	Testing location:
Clause 7.1 (Construction)	**VDE Testing and Certification Institute**
Test sequence I:	**IPH Institut**
Sample No.1: AC-21B, 500 V, 25 A, 1-pole	see page 16 - 20
Sample No.2: AC-21B, 690 V, 10 A, 1-pole	see page 21 - 25
Sample No.3: AC-22B, 400 V, 32 A, 1-pole	see page 26 - 30
Sample No.4: AC-22B, 400 V, 32 A, 2-pole	see page 31 - 35
Sample No.5: AC-22B, 500 V, 25 A, 2-pole	see page 36 - 40
Sample No.6: AC-22B, 690 V, 10 A, 2-pole	see page 41 - 45
Sample No.7: AC-22B, 690 V, 32 A, 3-pole+N	see page 46 - 50
Test sequence II:	**IPH Institut**
Sample No.8: AC-21B, 500 V, 25 A, 1-pole	see page 51 - 52
Sample No.9: AC-21B, 690 V, 10 A, 1-pole	see page 53 - 54
Sample No.10: AC-22B, 400 V, 32 A, 1-pole	see page 55 - 56
Sample No.11: AC-22B, 400 V, 32 A, 2-pole	see page 57 - 58
Sample No.12: AC-22B, 500 V, 25 A, 2-pole	see page 59 - 60
Sample No.13: AC-22B, 690 V, 10 A, 2-pole	see page 61 - 62
Sample No.14: AC-22B, 690 V, 32 A, 3-pole+N	see page 63 - 64
Test sequence IV:	**IPH Institut**
Sample No.15: 400 V a.c., 100 kA, 1-pole (with fuse-link 32 A / 400 V)	see page 68 - 69
Sample No.16: 400 V a.c., 100 kA, 1-pole+N (with fuse-link 32 A / 400 V)	see page 70 – 71
Sample No.17: 400 V a.c., 100 kA, 2-pole (with fuse-link 32 A / 400 V)	see page 72 - 73
Sample No.18: 400 V a.c., 100 kA, 3-pole+N (with fuse-link 32 A / 400 V)	see page 74 - 75

Summary of testing: (Continuation)

The tests are carried-out according to IEC 60947-1 (ed.5);am1:2010-12 and IEC 60947-3 (ed.3).

Tests performed (name of test and test clause):	Testing location:
Test sequence IV:	**IPH Institut**
Sample No.19: 500 V a.c., 100 kA, 1-pole (with fuse-link 25 A / 500 V)	see page 76 - 77
Sample No.20: 500 V a.c., 100 kA, 1-pole+N (with fuse-link 25 A / 500 V)	see page 78 - 79
Sample No.21: 500 V a.c., 100 kA, 2-pole (with fuse-link 25 A / 500 V)	see page 80 - 81
Sample No.22: 500 V a.c., 100 kA, 3-pole+N (with fuse-link 25 A / 500 V)	see page 82 - 83
Sample No.23: 690 V a.c., 50 kA, 1-pole (with fuse-link 10 A / 690 V)	see page 84 - 85
Sample No.24: 690 V a.c., 50 kA, 1-pole+N (with fuse-link 10 A / 690 V)	see page 86 - 87
Sample No.25: 690 V a.c., 50 kA, 2-pole (with fuse-link 10 A / 690 V)	see page 88 - 89
Sample No.26: 690 V a.c., 50 kA, 3-pole+N (with fuse-link 32 A / 400 V)	see page 90 - 91
Test sequence V:	**IPH Institut**
Sample No.27: 690 V, 32 A, 1-pole (with fuse-link 32 A / 400 V)	see page 92 - 93
Sample No.28: 690 V, 32 A, 2-pole (with fuse-link 32 A / 400 V)	see page 94 - 95
Sample No.29: 690 V, 32 A, 3-pole+N (with fuse-link 32 A / 400 V)	see page 96 - 97

Summary of compliance with National Differences:

Not applicable

ВЯРНО С ОРИГИНАЛА

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Copy of marking plate

Front printing: (for example a single pole device)

wöhner

AES10x38
32A 10x38
31 110 1P

Side printing:

IEC 60947-3 AC-22B 32A 400V 50/60Hz Ui:AC800V

c UL us
30A 600V
Do not operate under load

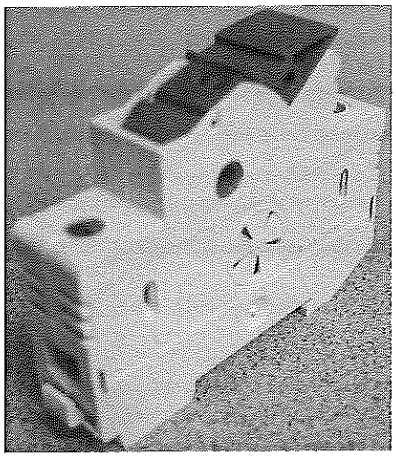
gG	32A	6 □	3,0W
aM	32A	6 □	1,2W
aR/gR	consult		

IEC 60269 690V

18..4AWG
0.75..25mm²
Cu only.
75°C wire
PZ2 2,5Nm
22lb-in

When two conductors per terminal are used, only stranded wires of the same size within the range of 18-6AWG, may be used

Picture of the fuse-switch-disconnector: (for example a single pole device)



TRF No. IEC60947_3B

ВЯРНО С ОРИГИНАЛА
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Test item particulars .....:

- method of operation .....: Dependent manual operation
- suitability for isolation .....: Suitable / ~~not suitable~~
- degree of protection .....: IP20
- number of poles.....: 1; 2; 3; 1+N; 3+N
- kind of current.....: a.c.
- number of positions of the main contacts.....: 2 (open and closed)

Rated and limiting values, main circuit:

- rated operational voltage Ue (V) .....: 400 V a.c.
500 V a.c.
690 V a.c.
- rated insulation voltage Ui (V) .....: 800 V
- rated impulse withstand voltage Uimp (kV) .....: 6 kV
- conventional free air thermal current Ith (A) .....: 32 A
- conventional enclosed thermal current Ithe (A).....: —
- rated operational current Ie (A) .....: See utilization category
- rated uninterrupted current Iu (A).....: See utilization category
- rated frequency (Hz).....: 50/60 Hz
- utilization category.....:

	Ue [V]	Ie [A]	Number of poles
AC-21B	500	25 **)	1; 1+N
	690	10 *)	1; 1+N
AC-22B	400	32 **)	1; 2; 3; 1+N; 3+N
	500	25 **)	2; 3; 3+N
		32 *)	3; 3+N
	690	10 *)	2
		32 *)	3; 3+N

*) Corresponding short circuit current: 50 kA
**) Corresponding short circuit current: 100 kA

Short-circuit characteristic:

- rated short-time withstand current Icw (kA).....: —
- rated short-time making capacity Icm (kA).....: —
- rated conditional short-circuit current.....: 50 kA; 100 kA (See utilization category)

Control circuits .....: —

Auxiliary circuits .....: —

Relays and releases .....: —

Co-ordination of short-circuit protective devices:	
- kind of protective device.....:	Fuse-links with cylindrical contact caps for fuse system F (size 10,3 x 38) Rated currents: 10 A (gR), 25 A (gG) and 32 A (gG)
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 .....:	2011-06
Date (s) of performance of tests .....:	2011-06 up to 2011-11

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

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

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

General product information:

The fuse-switch-disconnectors of type AES10x38 are available for DIN-rail mounting with cable connection on the line and load side.

The cable connection is possible by screw terminals (box terminal connection).
The box terminal connection is suitable for cable cross-sections between 0,75mm² and 25mm².

Upon the tests of the making and breaking capacities and the performance under short-circuit conditions the distances between the metallic screen and the test items were 0 mm to the sides and 0 mm to the top.

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
5.2	MARKING		P
	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		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	**wöhner**	P
	- type designation or serial number	AES 10x38	P
	- rated operational currents	10 A, 25 A, 32 A	P
	- rated operational voltage	400 V, 500 V, 690 V a.c.	P
	- utilization category	See page 6	P
	- rated frequency	50/60 Hz	P
	- manufacturer's claim for compliance with IEC 60947-3		P
	- degree of protection	IP20	P
	Marking on fuse-combination units:		—
	- fuse type	Fuse System F (size 10,3x38)	P
	- maximum rated current	32 A	P
	- power loss of the fuse-link	< 3 W	P
	Identification of terminals:		—
	- line terminals, unless connection is immaterial	Not labelled, free line and load connection choice	P
	- load terminals, unless connection is immaterial		P
	- neutral pole terminal		N/A
	- protective earth terminal		N/A
	Data in the manufacturer's published information:		—
	- rated insulation voltage	800 V	P
	- rated impulse withstand voltage for equipment suitable for isolation or when determined	6 kV	P
	- pollution degree, if different from 3	3	P
	- rated duty	uninterrupted	P
	- rated short-time withstand current and duration		N/A
	- rated short-circuit making capacity		N/A

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- rated conditional short-circuit current	50 kA, 100 kA	P
5.3	Instructions for installation, operation and maintenance		P
6	Normal service, mounting and transport conditions		P
7.1	CONSTRUCTIONAL AND PERFORMANCE REQUIREMENTS		P
7.1.2	Materials		P
7.1.2.2	Resistance to abnormal heat and fire		P
	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		P
	No visible flame and no sustained glowing		P
	Flames and glowing extinguish within 30 s		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		P
	No visible flame and no sustained glowing		P
	Flames and glowing extinguish within 30 s		P
	No ignition of the tissue paper		P
7.1.3 of Part 1	Current-carrying parts and their connection		P
7.1.4	Clearances .....:	see appended table 7.1.4 on page 103	P
	Creepage distances .....:	see appended table 7.1.4 on page 103	P
	Pollution degree .....:	3	—
	Comparative tracking index (V) .....:	CTI 600 (housing) CTI 575 (actuator)	—
	Material group .....:	II	—

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.5 of Part 1	Actuator		P
7.1.5.1	Insulation		—
	Actuator insulated from live parts for		—
	- rated insulation voltage	800 V	P
	- rated impulse withstand voltage	6 kV	P
	Actuator made of metal		—
	- connected to a protective conductor or provided with an additional insulation		P
	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		P
	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		P
7.1.6 of Part 1	Indication of contact position		P
7.1.6.1	Indicating means		N/A
7.1.6.2	Indication by the actuator		P
7.1.7	Additional safety requirements for equipment suitable for isolation		P
7.1.7.1	Additional constructional requirements		P
	- marking according to 5.2.1b		P
	- indication of the position of the contacts		N/A
	- construction of the actuating mechanism		P
	- minimum clearances across open contacts (see Table 13, Part 1) (mm) .....:	2 mm	—
	- measured clearances (mm) .....:	> 5,5 mm	P
	- test Uimp across gap (kV) .....:	9,8 kV	P

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.7.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		N/A
	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:		N/A
	The locking means is so designed that it cannot be removed with the appropriate padlock(s) installed		N/A
	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		P
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

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.2.4	Mechanical properties of terminals (box terminal connection)		P
	Mechanical strength of terminals		P
	Maximum cross-sectional area of conductor (mm²) .....:		—
	Diameter of thread (mm) .....:	Screw M5	—
	Torque (Nm) .....:	2,75 Nm (manufacturer indicates: 2 – 2,5 Nm)	—
	5 times on 2 separate clamping units		P
	Testing for damage to and accidental loosening of conductor (flexion test)		P
	Conductor of the smallest cross-sectional area (mm²) .....:	0,75 mm²	—
	Number of conductor of the smallest cross section :	1	—
	Diameter of bushing hole (mm) .....:	6,5 mm	—
	Height between the equipment and the platen .....:	260 mm	—
	Mass at the conductor(s) (kg) .....:	0,4 kg	—
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		P
	Pull-out test		P
	Force (N), applied for 1 min. .....:	30 N	—
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		P
	Conductor of the largest cross-sectional area (mm²) .....:	25 mm²	—
	Number of conductor of the largest cross section .:	1	—
	Diameter of bushing hole (mm) .....:	13 mm	—
	Height between the equipment and the platen .....:	300 mm	—
	Mass at the conductor(s) (kg) .....:	4,5 kg	—
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		P
	Pull-out test		P
	Force (N), applied for 1 min. .....:	135 N	—
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conductor of the largest and smallest cross-sectional area (mm²) .....:		—
	Number of conductor of the smallest cross section, number of conductor of the largest cross section ..:		—
	Diameter of bushing hole (mm) .....:		—
	Height between the equipment and the platen .....:		—
	Mass at the conductor(s) (kg) .....:		—
	135 continuous revolutions: the conductor neither slips out of the terminal nor breaks near the clamping unit		N/A
	Pull-out test		N/A
	Force (N), applied for 1 min. .....:		—
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		N/A
7.1.8.2	Connection capacity		P
	Type of conductors .....:	Rigid, stranded or flexible	—
	Minimum cross-sectional area of conductor (mm²) :	0,75 mm²	—
	Maximum cross-sectional area of conductor (mm²) .....:	25 mm²	—
	Number of conductors simultaneously connectable to the terminal .....:		—
7.1.8.3	Connection		P
	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
7.1.8.4	Terminal identification and marking		P
	Terminal intended exclusively for the neutral conductor	Only if applicable	P
	Protective earth terminal		N/A
	Other terminals		P

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.9	Additional requirements for equipment provided with a neutral pole		P
	Equipment provided with a pole intended for the connection of neutral, this pole shall be clearly marked by the letter "N"		P
	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	The connection is given by a dummy (piece of copper), which is inside the actuator.	P
	Conventional thermal current of neutral pole	32 A	P
7.1.10	Provisions for protective earthing		N/A
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		N/A
7.1.11.1	Design		N/A
	When the enclosure is opened, all parts requiring access for installation and maintenance are readily accessible		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
	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

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	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		N/A
	Degree of protection .....:	IP	N/A
7.1.13	Conduit pull-out, torque and bending with metallic conduits		N/A
	Withstand the stress occurring during its installation .....:	IP	N/A

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 1: AC-21B, 500 V, 25 A, 1-pole)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C .....:	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm) .....:		—
	material of enclosure .....:		—
	Main circuits, test conditions:		—
	- rated operational current Ie (A) .....:	25 A	—
	- cable/busbar cross-section (mm²) / length (mm)..:	4 mm² cables / 1000 mm long	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G25	—
	- rated current (A) .....:	25A (gG)	—
	- power loss (W) .....:	2,6 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	Measured temperature-rise .....:	see appended table 8.3.3.1 on page 103	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A) .....:		—
	- cable cross-section (mm²).....:		—
	Measured temperature-rise .....:	see appended table 8.3.3.1 on page ___	N/A
8.3.3.2	Test of dielectric properties		P
	Rated impulse withstand voltage (kV) .....:	6 kV	—
	- test Uimp main circuits (kV) .....:	7,3 kV	P
	- test Uimp auxiliary circuits (kV) .....:		N/A
	- test Uimp on open main contacts (equipment suitable for isolation) (kV) .....:	9,8 kV	P
	Power-frequency withstand voltage (V) .....:	800 V	—
	- main circuits, test voltage for 5 sec. (V) .....:	2000 V	P
	- control and auxiliary circuits, test voltage for 5 sec. (V) .....:		N/A

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	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) ..... :	550 V (tested with 759 V)	—
	Measured leakage current (mA) ..... :	0,001 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category ..... :	AC-21B	—
	- rated operational voltage Ue (V) ..... :	500 V	—
	- rated operational current Ie (A) or power (kW) .... :	25 A	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	Bussmann	—
	- manufacturer's model or type reference ..... :	C10G25	—
	- rated current (A) ..... :	25 A (gG)	—
	- power loss (W) ..... :	2,6 W	—
	- rated breaking capacity (kA) ..... :	120 kA	—
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—
	Conditions for break operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, U = 1,05 Ue ..... (V):	L1: 525 V L2: — L3: —	—
	- test current, I = ... 1,5 x Ie (A):	L1: 38 A L2: — L3: —	—
	- power factor/ ~~time constant~~ .....:	0,91	—
	Number of make/break or make and break operations .....:	5	P
	- recovery voltage duration (≥ 50 ms)	> 50 ms	P
	- current duration (ms) .....:	70 ms	—
	- time interval between operations .....:	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		N/A
	- oscillatory frequency (kHz) .....:		—
	- measured oscillatory frequency (kHz) .....:	L1: L2: L3:	N/A
	- factor γ .....:	L1: L2: L3:	N/A
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
	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
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	13,2 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole) .....:	< 2 mA	P
8.3.3.6	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G25	—
	- rated current (A) .....:	25 A (gG)	—
	- power loss (W) .....:	2,6 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	4 mm²	—
	- test current Ie (A) .....:	25 A	—
	Measured temperature-rise .....:	see appended table 8.3.3.6 on page 103	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		
	- actuator type (fig.) .....:	figure 1b (one-finger operated)	—
8.2.5.2.1	Dependent and independent manual operation	dependent manual operation	P
	- actuating force for opening (N) .....:	10,2 N	—
	- test force with blocked main contacts (N) .....:	50 N	—
	- used method to keep the contact closed .....:	Fuse-links were held tight with a piece of wire	—
	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

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- 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		N/A
	- 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

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 2: AC-21B, 690 V, 10 A, 1-pole)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C ..... :	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm) ..... :		—
	material of enclosure ..... :		—
	Main circuits, test conditions:		—
	- rated operational current Ie (A) ..... :	10 A	—
	- cable/busbar cross-section (mm²) / length (mm).. :	1,5 mm² cables / 1000mm long	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	SIBA	—
	- manufacturer's model or type reference ..... :	50 179 06.10	—
	- rated current (A) ..... :	10 A (gR)	—
	- power loss (W) ..... :	2,3 W	—
	- rated breaking capacity (kA) ..... :	200 kA	—
	Measured temperature-rise ..... :	see appended table 8.3.3.1 on page 104	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A) ..... :		—
	- cable cross-section (mm²) ..... :		—
	Measured temperature-rise ..... :	see appended table 8.3.3.1 on page __	N/A
8.3.3.2	Test of dielectric properties		P
	Rated impulse withstand voltage (kV) ..... :	6 kV	—
	- test Uimp main circuits (kV) ..... :	7,3 kV	P
	- test Uimp auxiliary circuits (kV) ..... :		N/A
	- test Uimp on open main contacts (equipment suitable for isolation) (kV) ..... :	9,8 kV	P
	Power-frequency withstand voltage (V) ..... :	800 V	—
	- main circuits, test voltage for 5 sec. (V) ..... :	2000 V	P
	- control and auxiliary circuits, test voltage for 5 sec. (V) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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) ..... :	759 V	—
	Measured leakage current (mA) ..... :	0,001 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category ..... :	AC-21B	—
	- rated operational voltage Ue (V) ..... :	690 V	—
	- rated operational current Ie (A) or power (kW) .... :	10 A	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	SIBA	—
	- manufacturer's model or type reference ..... :	50 179 06.10	—
	- rated current (A) ..... :	10 A (gR)	—
	- power loss (W) ..... :	2,3 W	—
	- rated breaking capacity (kA) ..... :	200 kA	—
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—
	Conditions for break operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, U = 1,05 Ue ..... (V):	L1: 725 V L2: — L3: —	—
	- test current, I = ... 1,5 x Ie (A):	L1: 15,3 A L2: — L3: —	—
	- power factor/ ~~time constant~~ .....:	0,95	—
	Number of make/break or make and break operations .....:	5	P
	- recovery voltage duration (≥ 50 ms)	> 50 ms	P
	- current duration (ms) .....:	70 ms	—
	- time interval between operations .....:	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		N/A
	- oscillatory frequency (kHz) .....:		—
	- measured oscillatory frequency (kHz) .....:	L1: L2: L3:	N/A
	- factor γ .....:	L1: L2: L3:	N/A
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
	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
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	17,6 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1380 V	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole) .....:	< 2 mA	P
8.3.3.6	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	SIBA	—
	- manufacturer's model or type reference .....:	50 179 06.10	—
	- rated current (A) .....:	10 A (gR)	—
	- power loss (W) .....:	2,3 W	—
	- rated breaking capacity (kA) .....:	200 kA	—
	- conductor cross-section (mm²) .....:	1,5 mm²	—
	- test current Ie (A) .....:	10 A	—
	Measured temperature-rise .....:	see appended table 8.3.3.6 on page 104	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		
	- actuator type (fig.) .....:	figure 1b (one-finger operated)	—
8.2.5.2.1	Dependent and independent manual operation	dependent manual operation	P
	- actuating force for opening (N) .....:	11 N	—
	- test force with blocked main contacts (N) .....:	50 N	—
	- used method to keep the contact closed .....:	Fuse-links were held tight with a piece of wire	—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- 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		N/A
	- 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

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 3: AC-22B, 400 V, 32 A, 1-pole)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C .....:	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm) .....:		—
	material of enclosure .....:		—
	Main circuits, test conditions:		—
	- rated operational current Ie (A) .....:	32 A	—
	- cable/busbar cross-section (mm²) / length (mm)..:	6 mm² cables / 1000mm long	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	Measured temperature-rise .....:	see appended table 8.3.3.1 on page 104	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A) .....:		—
	- cable cross-section (mm²).....:		—
	Measured temperature-rise .....:	see appended table 8.3.3.1 on page __	N/A
8.3.3.2	Test of dielectric properties		P
	Rated impulse withstand voltage (kV) .....:	6 kV	—
	- test Uimp main circuits (kV) .....:	7,3 kV	P
	- test Uimp auxiliary circuits (kV) .....:		N/A
	- test Uimp on open main contacts (equipment suitable for isolation) (kV) .....:	9,8 kV	P
	Power-frequency withstand voltage (V) .....:	800 V	—
	- main circuits, test voltage for 5 sec. (V) .....:	2000 V	P
	- control and auxiliary circuits, test voltage for 5 sec. (V) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 V (tested with 759 V)	—
	Measured leakage current (mA) ..... :	0,001 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category ..... :	AC-22B	—
	- rated operational voltage Ue (V) ..... :	400 V	—
	- rated operational current Ie (A) or power (kW) .... :	32 A	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	Bussmann	—
	- manufacturer's model or type reference ..... :	C10G32	—
	- rated current (A) ..... :	32 A (gG)	—
	- power loss (W) ..... :	2,9 W	—
	- rated breaking capacity (kA) ..... :	120 kA	—
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—
	Conditions for break operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, U = 1,05 Ue ..... (V):	L1: 420 V L2: — L3: —	—
	- test current, I = ... 3 x Ie (A):	L1: 98 A L2: — L3: —	—
	- power factor/ ~~time constant~~ .....:	0,66	—
	Number of make/break or make and break operations .....:	5	P
	- recovery voltage duration (≥ 50 ms)	> 50 ms	P
	- current duration (ms) .....:	90 ms	—
	- time interval between operations .....:	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		P
	- oscillatory frequency (kHz) .....:	41,29 kHz	—
	- measured oscillatory frequency (kHz) .....:	L1: 40,5 kHz L2: — L3: —	P
	- factor γ .....:	L1: 1,1 L2: — L3: —	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
	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
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	8,4 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole) .....:	< 2 mA	P
8.3.3.6	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	6 mm²	—
	- test current Ie (A) .....:	32 A	—
	Measured temperature-rise .....:	see appended table 8.3.3.6 on page 105	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		
	- actuator type (fig.) .....:	figure 1b (one-finger operated)	—
8.2.5.2.1	Dependent and independent manual operation	dependent manual operation	P
	- actuating force for opening (N) .....:	10,4 N	—
	- test force with blocked main contacts (N) .....:	50 N	—
	- used method to keep the contact closed .....:	Fuse-links were held tight with a piece of wire	—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- 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		N/A
	- 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

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 4: AC-22B, 400 V, 32 A, 2-poles)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C .....:	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm) .....:		—
	material of enclosure .....:		—
	Main circuits, test conditions:		—
	- rated operational current Ie (A) .....:	32 A	—
	- cable/busbar cross-section (mm²) / length (mm)..:	6 mm² cables / 1000mm long	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	Measured temperature-rise .....:	see appended table 8.3.3.1 on page 105	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A) .....:		—
	- cable cross-section (mm²).....:		—
	Measured temperature-rise .....:	see appended table 8.3.3.1 on page __	N/A
8.3.3.2	Test of dielectric properties		P
	Rated impulse withstand voltage (kV) .....:	6 kV	—
	- test Uimp main circuits (kV) .....:	7,3 kV	P
	- test Uimp auxiliary circuits (kV) .....:		N/A
	- test Uimp on open main contacts (equipment suitable for isolation) (kV) .....:	9,8 kV	P
	Power-frequency withstand voltage (V) .....:	800 V	—
	- main circuits, test voltage for 5 sec. (V) .....:	2000 V	P
	- control and auxiliary circuits, test voltage for 5 sec. (V) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 V (tested with 759 V)	—
	Measured leakage current (mA) ..... :	0,001 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category ..... :	AC-22B	—
	- rated operational voltage Ue (V) ..... :	400 V	—
	- rated operational current Ie (A) or power (kW) .... :	32 A	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	Bussmann	—
	- manufacturer's model or type reference ..... :	C10G32	—
	- rated current (A) ..... :	32 A (gG)	—
	- power loss (W) ..... :	2,9 W	—
	- rated breaking capacity (kA) ..... :	120 kA	—
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—
	Conditions for break operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, U = 1,05 Ue ..... (V):	L1: 420 V (242,5 V x √3) L2: 420 V (242,5 V x √3) L3: —	—
	- test current, I = ... 3 x Ie (A):	L1: 98 A L2: 98 A L3: —	—
	- power factor/ ~~time constant~~ ..... :	0,66	—
	Number of make/break or make and break operations ..... :	5	P
	- recovery voltage duration (≥ 50 ms)	> 50 ms	P
	- current duration (ms) ..... :	70 ms	—
	- time interval between operations ..... :	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		P
	- oscillatory frequency (kHz) ..... :	41,29 kHz	—
	- measured oscillatory frequency (kHz) ..... :	L1: 40,5 kHz L2: 40,5 kHz L3: —	P
	- factor γ ..... :	L1: 1,1 L2: 1,1 L3: —	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
	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
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	17,8 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole) .....:	< 2 mA	P
8.3.3.6	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	6 mm²	—
	- test current Ie (A) .....:	32 A	—
	Measured temperature-rise .....:	see appended table 8.3.3.6 on page 105	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		
	- actuator type (fig.) .....:	figure 1b (one-finger operated)	—
8.2.5.2.1	Dependent and independent manual operation	dependent manual operation	P
	- actuating force for opening (N) .....:	22 N	—
	- test force with blocked main contacts (N) .....:	66 N	—
	- used method to keep the contact closed .....:	Fuse-links were held tight with a piece of wire	—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- 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		N/A
	- 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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 5: AC-22B, 500 V, 25 A, 2-pole)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C ..... :	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm) ..... :		—
	material of enclosure ..... :		—
	Main circuits, test conditions:		—
	- rated operational current Ie (A) ..... :	25 A	—
	- cable/busbar cross-section (mm²) / length (mm).. :	4 mm² cables / 1000 mm long	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	Bussmann	—
	- manufacturer's model or type reference ..... :	C10G25	—
	- rated current (A) ..... :	25 A (gG)	—
	- power loss (W) ..... :	2,6 W	—
	- rated breaking capacity (kA) ..... :	120 kA	—
	Measured temperature-rise ..... :	see appended table 8.3.3.1 on page 106	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A) ..... :		—
	- cable cross-section (mm²) ..... :		—
	Measured temperature-rise ..... :	see appended table 8.3.3.1 on page __	N/A
8.3.3.2	Test of dielectric properties		P
	Rated impulse withstand voltage (kV) ..... :	6 kV	—
	- test Uimp main circuits (kV) ..... :	7,3 kV	P
	- test Uimp auxiliary circuits (kV) ..... :		N/A
	- test Uimp on open main contacts (equipment suitable for isolation) (kV) ..... :	9,8 kV	P
	Power-frequency withstand voltage (V) ..... :	800 V	—
	- main circuits, test voltage for 5 sec. (V) ..... :	2000 V	P
	- control and auxiliary circuits, test voltage for 5 sec. (V) ..... :		N/A

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	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) ..... :	550 V (tested with 759 V)	—
	Measured leakage current (mA) ..... :	0,001 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category ..... :	AC-22B	—
	- rated operational voltage Ue (V) ..... :	500 V	—
	- rated operational current Ie (A) or power (kW) .... :	25 A	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	Bussmann	—
	- manufacturer's model or type reference ..... :	C10G25	—
	- rated current (A) ..... :	25 A	—
	- power loss (W) ..... :	2,6 W	—
	- rated breaking capacity (kA) ..... :	120 kA	—
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—
	Conditions for break operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		
	- test voltage, U = 1,05 Ue ..... (V):	L1: 525 V (303 V x √3) L2: 525 V (303 V x √3) L3: —	—
	- test current, I = ... 3 x Ie (A):	L1: 78 A L2: 78 A L3: —	—
	- power factor/ ~~time constant~~ .....:	0,68	—
	Number of make/break or make and break operations .....:	5	P
	- recovery voltage duration (≥ 50 ms)	> 50 ms	P
	- current duration (ms) .....:	70 ms	—
	- time interval between operations .....:	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		P
	- oscillatory frequency (kHz) .....:	32,88 kHz	—
	- measured oscillatory frequency (kHz) .....:	L1: 32,2 kHz L2: 32,2 kHz L3: —	P
	- factor γ .....:	L1: 1,1 L2: 1,1 L3: —	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
	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
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	20,4 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole) .....:	< 2 mA	P
8.3.3.6	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G25	—
	- rated current (A) .....:	25 A (gG)	—
	- power loss (W) .....:	2,6 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	4 mm²	—
	- test current Ie (A) .....:	25 A	—
	Measured temperature-rise .....:	see appended table 8.3.3.6 on page 106	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		
	- actuator type (fig.) .....:	figure 1b (one-finger operated)	—
8.2.5.2.1	Dependent and independent manual operation	dependent manual operation	P
	- actuating force for opening (N) .....:	22,6 N	—
	- test force with blocked main contacts (N) .....:	67,8 N	—
	- used method to keep the contact closed .....:	Fuse-links were held tight with a piece of wire	—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- 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		N/A
	- 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

ВЯРНО С ОРИГИНАЛА

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 6: AC-22B, 690 V, 10 A, 2-pole)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C ....:	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm) ....:		—
	material of enclosure ....:		—
	Main circuits, test conditions:		—
	- rated operational current Ie (A) ....:	10 A	—
	- cable/busbar cross-section (mm²) / length (mm)..:	1,5 mm² cables / 1000mm long	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ....:	SIBA	—
	- manufacturer's model or type reference ....:	50 179 06.10	—
	- rated current (A) ....:	10 A (gR)	—
	- power loss (W) ....:	2,3 W	—
	- rated breaking capacity (kA) ....:	200 kA	—
	Measured temperature-rise ....:	see appended table 8.3.3.1 on page 106	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A) ....:		—
	- cable cross-section (mm²) ....:		—
	Measured temperature-rise ....:	see appended table 8.3.3.1 on page __	N/A
8.3.3.2	Test of dielectric properties		P
	Rated impulse withstand voltage (kV) ....:	6 kV	—
	- test Uimp main circuits (kV) ....:	7,3 kV	P
	- test Uimp auxiliary circuits (kV) ....:		N/A
	- test Uimp on open main contacts (equipment suitable for isolation) (kV) ....:	9,8 kV	P
	Power-frequency withstand voltage (V) ....:	800 V	—
	- main circuits, test voltage for 5 sec. (V) ....:	2000 V	P
	- control and auxiliary circuits, test voltage for 5 sec. (V) ....:		N/A

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МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	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) ..... :	759 V	—
	Measured leakage current (mA) ..... :	0,001 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category ..... :	AC-22B	—
	- rated operational voltage Ue (V) ..... :	690 V	—
	- rated operational current Ie (A) or power (kW) .... :	10 A	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	SIBA	—
	- manufacturer's model or type reference ..... :	50 179 06.10	—
	- rated current (A) ..... :	10 A (gR)	—
	- power loss (W) ..... :	2,3 W	—
	- rated breaking capacity (kA) ..... :	200 kA	—
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—
	Conditions for break operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		
	- test voltage, U = 1,05 Ue ..... (V):	L1: 725 V (418,5 V x √3) L2: 725 V (418,5 V x √3) L3: —	—
	- test current, I = ... 3x Ie (A):	L1: 31 A L2: 31 A L3: —	—
	- power factor/ ~~time constant~~ .....:	0,65	—
	Number of make/break or make and break operations .....:	5	P
	- recovery voltage duration (≥ 50 ms)	> 50 ms	P
	- current duration (ms) .....:	80 ms	—
	- time interval between operations .....:	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		P
	- oscillatory frequency (kHz) .....:	21,15 kHz	—
	- measured oscillatory frequency (kHz) .....:	L1: 21,0 kHz L2: 21,0 kHz L3:	P
	- factor γ .....:	L1: 1,1 L2: 1,1 L3:	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
	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
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	22,5 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1380 V	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole) .....:	< 2 mA	P
8.3.3.6	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	SIBA	—
	- manufacturer's model or type reference .....:	50 179 06.10	—
	- rated current (A) .....:	10 A (gR)	—
	- power loss (W) .....:	2,3 W	—
	- rated breaking capacity (kA) .....:	200 kA	—
	- conductor cross-section (mm²) .....:	1,5 mm²	—
	- test current Ie (A) .....:	10 A	—
	Measured temperature-rise .....:	see appended table 8.3.3.6 on page 107	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		
	- actuator type (fig.) .....:	figure 1b (one-finger operated)	—
8.2.5.2.1	Dependent and independent manual operation	dependent manual operation	P
	- actuating force for opening (N) .....:	24,4 N	—
	- test force with blocked main contacts (N) .....:	73,2 N	—
	- used method to keep the contact closed .....:	Fuse-links were held tight with a piece of wire	—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- 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		N/A
	- 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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 7: AC-22B, 690 V, 32 A, 3-pole+N)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C ..... :	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm) ..... :		—
	material of enclosure ..... :		—
	Main circuits, test conditions:		—
	- rated operational current Ie (A) ..... :	32 A	—
	- cable/busbar cross-section (mm²) / length (mm).. :	6 mm² cables / 1000mm long	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	Bussmann	—
	- manufacturer's model or type reference ..... :	C10G32	—
	- rated current (A) ..... :	32 A (gG)	—
	- power loss (W) ..... :	2,9 W	—
	- rated breaking capacity (kA) ..... :	120 kA	—
	Measured temperature-rise ..... :	see appended table 8.3.3.1 on page 107	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A) ..... :		—
	- cable cross-section (mm²) ..... :		—
	Measured temperature-rise ..... :	see appended table 8.3.3.1 on page __	N/A
8.3.3.2	Test of dielectric properties		P
	Rated impulse withstand voltage (kV) ..... :	6 kV	—
	- test Uimp main circuits (kV) ..... :	7,3 kV	P
	- test Uimp auxiliary circuits (kV) ..... :		N/A
	- test Uimp on open main contacts (equipment suitable for isolation) (kV) ..... :	9,8 kV	P
	Power-frequency withstand voltage (V) ..... :	800 V	—
	- main circuits, test voltage for 5 sec. (V) ..... :	2000 V	P
	- control and auxiliary circuits, test voltage for 5 sec. (V) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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) ..... :	759 V	—
	Measured leakage current (mA) ..... :	0,001 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category ..... :	AC-22B	—
	- rated operational voltage Ue (V) ..... :	690 V	—
	- rated operational current Ie (A) or power (kW) .... :	32 A	—
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark ..... :	Bussmann	—
	- manufacturer's model or type reference ..... :	C10G32	—
	- rated current (A) ..... :	32 A (gG)	—
	- power loss (W) ..... :	2,9 W	—
	- rated breaking capacity (kA) ..... :	120 kA	—
	Conditions for make/break operations or make operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—
	Conditions for break operation, AC-23A and AC-23B only:		N/A
	- test voltage, U = 1,05 Ue ..... (V):	L1: L2: L3:	—
	- test current, I = ... x Ie (A):	L1: L2: L3:	—
	- power factor ..... :	L1: L2: L3:	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		
	- test voltage, U = 1,05 Ue ..... (V):	L1: 725 V (418,5 V x √3) L2: 725 V (418,5 V x √3) L3: 725 V (418,5 V x √3)	—
	- test current, I = ... 3 x Ie (A):	L1: 99 A L2: 98 A L3: 100 A	—
	- power factor/ ~~time constant~~ .....:	0,63	—
	Number of make/break or make and break operations .....:	5	P
	- recovery voltage duration (≥ 50 ms)	> 50 ms	P
	- current duration (ms) .....:	70 ms	—
	- time interval between operations .....:	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		P
	- oscillatory frequency (kHz) .....:	26,69 kHz	—
	- measured oscillatory frequency (kHz) .....:	L1: 27,5 kHz L2: 27,5 kHz L3: 27,5 kHz	P
	- factor γ .....:	L1: 1,1 L2: 1,1 L3: 1,1	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
	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
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	46,2 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1380 V	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole) .....:	< 2 mA	P
8.3.3.6	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	6 mm²	—
	- test current Ie (A) .....:	32 A	—
	Measured temperature-rise .....:	see appended table 8.3.3.6 on page 107	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		
	- actuator type (fig.) .....:	figure 1b (one-finger operated)	—
8.2.5.2.1	Dependent and independent manual operation	dependent manual operation	P
	- actuating force for opening (N) .....:	41,2 N	—
	- test force with blocked main contacts (N) .....:	123,6 N	—
	- used method to keep the contact closed .....:	Fuse-links were held tight with a piece of wire	—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- 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		N/A
	- 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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 8: AC-21B, 500 V, 25 A, 1-pole)		P
8.3.4.1	Operational performance test		P
	- utilization category ....:	AC-21B	—
	- rated operational voltage (V) ....:	500 V	—
	- rated operational current (A) ....:	25 A	—
	Test conditions for electrical operation cycles:		
	- test voltage (V) ....:	L1: 506 V L2: — L3: —	—
	- test current (A) ....:	L1: 25,6 A L2: — L3: —	—
	- power factor/~~time constant~~ ....:	L1: 0,95 L2: — L3: —	—
	Number of cycles with current ....:	300	P
	Number of cycles without current ....:	1700	P
	First test sequence (with/without current) ....:	Without current	—
	Second test sequence (with/without current) ....:	With current	—
	- time interval between first and second test sequence ....:	515 minutes	—
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
	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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	11,2 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole .....:	< 2 mA	P
8.3.4.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G25	—
	- rated current (A) .....:	25 A (gG)	—
	- power loss (W) .....:	2,6 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	4 mm²	—
	- test current Ie (A) .....:	25 A	—
	Measured temperature-rise .....:	see appended table 8.3.4.4 on page 108	P

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 9: AC-21B, 690 V, 10 A, 1-pole)		P
8.3.4.1	Operational performance test		P
	- utilization category .....:	AC-21B	—
	- rated operational voltage (V) .....:	690 V	—
	- rated operational current (A) .....:	10 A	—
	Test conditions for electrical operation cycles:		
	- test voltage (V) .....:	L1: 690 V L2: — L3: —	—
	- test current (A) .....:	L1: 10,2 A L2: — L3: —	—
	- power factor/~~time constant~~ .....:	L1: 0,95 L2: — L3: —	—
	Number of cycles with current .....:	300	P
	Number of cycles without current .....:	1700	P
	First test sequence (with/without current) .....:	Without current	—
	Second test sequence (with/without current) .....:	With current	—
	- time interval between first and second test sequence .....:	1125 minutes	—
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
	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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	8,0 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1380 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole .....:	0,005 mA	P
8.3.4.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	SIBA	—
	- manufacturer's model or type reference .....:	50 179 06.10	—
	- rated current (A) .....:	10 A (gR)	—
	- power loss (W) .....:	2,3 W	—
	- rated breaking capacity (kA) .....:	200 kA	—
	- conductor cross-section (mm²) .....:	1,5 mm²	—
	- test current Ie (A) .....:	10 A	—
	Measured temperature-rise .....:	see appended table 8.3.4.4 on page 108	P

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 10: AC-22B, 400 V, 32 A, 1-pole)		P
8.3.4.1	Operational performance test		P
	- utilization category ....:	AC-22B	—
	- rated operational voltage (V) ....:	400 V	—
	- rated operational current (A) ....:	32 A	—
	Test conditions for electrical operation cycles:		
	- test voltage (V) ....:	L1: 414 V L2: L3: —	—
	- test current (A) ....:	L1: 32,1 A L2: L3: —	—
	- power factor/~~time constant~~ ....:	L1: 0,79 L2: L3: —	—
	Number of cycles with current ....:	300	P
	Number of cycles without current ....:	1700	P
	First test sequence (with/without current) ....:	Without current	—
	Second test sequence (with/without current) ....:	With current	—
	- time interval between first and second test sequence ....:	315 minutes	—
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
	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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	11,4 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole .....:	0,006 mA	P
8.3.4.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	6 mm²	—
	- test current Ie (A) .....:	32 A	—
	Measured temperature-rise .....:	see appended table 8.3.4.4 on page 108	P

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 11: AC-22B, 400 V, 32 A, 2-poles)		P
8.3.4.1	Operational performance test		P
	- utilization category ....:	AC-22B	—
	- rated operational voltage (V) ....:	400 V	—
	- rated operational current (A) ....:	32 A	—
	Test conditions for electrical operation cycles:		
	- test voltage (V) ....:	L1: 414 V (239 V x √3) L2: 414 V (239 V x √3) L3: —	—
	- test current (A) ....:	L1: 32,2 A L2: 32,2 A L3: —	—
	- power factor/~~time constant~~ ....:	L1: 0,8 L2: 0,8 L3: —	—
	Number of cycles with current ....:	300	P
	Number of cycles without current ....:	1700	P
	First test sequence (with/without current) ....:	Without current	—
	Second test sequence (with/without current) ....:	With current	—
	- time interval between first and second test sequence ....:	315 minutes	—
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
	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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	21,4 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole .....:	0,006 mA	P
8.3.4.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	6 mm²	—
	- test current Ie (A) .....:	32 A	—
	Measured temperature-rise .....:	see appended table 8.3.4.4 on page 109	P

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 12: AC-22B, 500 V, 25 A, 2-poles)		P
8.3.4.1	Operational performance test		P
	- utilization category ....:	AC-22B	—
	- rated operational voltage (V) ....:	500 V	—
	- rated operational current (A) ....:	25 A	—
	Test conditions for electrical operation cycles:		
	- test voltage (V) ....:	L1: 510 V (294,4 V x √3) L2: 510 V (294,4 V x √3) L3:—	—
	- test current (A) ....:	L1: 24,9 A L2: 24,9 A L3: —	—
	- power factor/~~time constant~~ ....:	L1: 0,78 L2: 0,78 L3: —	—
	Number of cycles with current ....:	300	P
	Number of cycles without current ....:	1700	P
	First test sequence (with/without current) ....:	Without current	—
	Second test sequence (with/without current) ....:	With current	—
	- time interval between first and second test sequence ....:	315 minutes	—
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
	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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	21,6 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole .....:	< 2 mA	P
8.3.4.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G25	—
	- rated current (A) .....:	25 A (gG)	—
	- power loss (W) .....:	2,6 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	4 mm²	—
	- test current Ie (A) .....:	25 A	—
	Measured temperature-rise .....:	see appended table 8.3.4.4 on page 109	P

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 13: AC-22B, 690 V, 10 A, 2-poles)		P
8.3.4.1	Operational performance test		P
	- utilization category ....:	AC-22B	—
	- rated operational voltage (V) ....:	690 V	—
	- rated operational current (A) ....:	10 A	—
	Test conditions for electrical operation cycles:		
	- test voltage (V) ....:	L1: 690 V (398,4 V x √3) L2: 690 V (398,4 V x √3) L3:—	—
	- test current (A) ....:	L1: 10 A L2: 10 A L3: —	—
	- power factor/~~time constant~~ ....:	L1: 0,78 L2: 0,78 L3: —	—
	Number of cycles with current ....:	300	P
	Number of cycles without current ....:	1700	P
	First test sequence (with/without current) ....:	Without current	—
	Second test sequence (with/without current) ....:	With current	—
	- time interval between first and second test sequence ....:	315 minutes	—
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
	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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	21,8 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1380 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole .....:	0,008 mA	P
8.3.4.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	SIBA	—
	- manufacturer's model or type reference .....:	50 179 06.10	—
	- rated current (A) .....:	10 A (gR)	—
	- power loss (W) .....:	2,3 W	—
	- rated breaking capacity (kA) .....:	200 kA	—
	- conductor cross-section (mm²) .....:	1,5 mm²	—
	- test current Ie (A) .....:	10 A	—
	Measured temperature-rise .....:	see appended table 8.3.4.4 on page 109	P

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МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 14: AC-22B, 690 V, 32 A, 3-poles+N)		P
8.3.4.1	Operational performance test		P
	- utilization category .....:	AC-22B	—
	- rated operational voltage (V) .....:	690 V	—
	- rated operational current (A) .....:	32 A	—
	Test conditions for electrical operation cycles:		
	- test voltage (V) .....:	L1: 690 V (398,4 V x √3) L2: 690 V (398,4 V x √3) L3: 690 V (398,4 V x √3)	—
	- test current (A) .....:	L1: 33 A L2: 33 A L3: 33 A	—
	- power factor/~~time constant~~ .....:	L1: 0,8 L2: 0,8 L3: 0,8	—
	Number of cycles with current .....:	300	P
	Number of cycles without current .....:	1700	P
	First test sequence (with/without current) .....:	Without current	—
	Second test sequence (with/without current) .....:	With current	—
	- time interval between first and second test sequence .....:	315 minutes	—
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
	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

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	44,6 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1380 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole .....:	0,01 mA	P
8.3.4.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	6 mm²	—
	- test current Ie (A) .....:	32 A	—
	Measured temperature-rise .....:	see appended table 8.3.4.4 on page 110	P

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МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY		N/A
8.3.5.1	Short-time withstand current test		N/A
	Rated short-time withstand current Icw (A) (>12.Ie max) .....:		N/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) .....:		—
8.3.5.1.5	Behaviour of the equipment during the test		N/A
	Test performed without:		—
	- endanger to the operator		N/A
	- cause damage to adjacent equipment		N/A
	No permanent arcing		N/A
	No flash over between poles and poles and frame		N/A
	No melting of the fuse in the detection circuit		N/A
8.3.5.1.6	Condition of the equipment after making and breaking capacity tests		N/A
	Immediately after the test equipment must work satisfactorily		N/A
	- required opening force not greater than the test force of 8.2.5.2 and table 8		N/A
	- equipment is able to carry its rated current after normal closing operation		N/A

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.5.2	Short-circuit making capacity		N/A
	Rated short-circuit making capacity Icm (A) .....:		N/A
	test voltage (1.05xUe) ..... (V):	L1: L2: L3:	—
	r.m.s. test current (A) .....:	L1: L2: L3:	—
	maximum peak test current (factor n)		N/A
	power factor/time constant .....:	L1: L2: L3:	N/A
	current duration (s) .....:		—
	Time interval between the cycles		—
8.3.5.2.5	Behaviour of the equipment during the test		N/A
	Test performed without:		—
	- endanger to the operator		N/A
	-cause damage to adjacent equipment		N/A
	No permanent arcing		N/A
	No flash over between poles and poles and frame		N/A
	No melting of the fuse in the detection circuit		N/A
8.3.5.2.6	Condition of the equipment after making and breaking capacity tests		N/A
	Immediately after the test equipment must work satisfactorily		N/A
	- required opening force not greater than the test force of 8.2.5.2 and table 8		N/A
	- equipment is able to carry its rated current after normal closing operation		N/A
8.3.5.3	Dielectric verification		N/A
	test voltage: 2*Ue with a minimum of 1000V~ .....:		—
	No flashover or breakdown		N/A

ВЯРНО С ОРИГИНАЛА

МИТ 23 ЕООД СОФИЯ LTD.

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.5.4	Leakage current		N/A
	test voltage (1,1 Ue) (V) .....:		—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2,0 mA/pole .....:		N/A
8.3.5.5	Temperature-rise verification		N/A
	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 (mm²) .....:		—
	- test current Ie (A) .....:		—
	Measured temperature-rise .....:	see appended table 8.3.5.5 on page __	N/A

ВЯРНО С ОРИГИНАЛА

МИГ 23 ЕООД СОФИЯ MIG 23 LTD

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 15: 400 V, 32 A, 1-pole)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated voltage (V) .....:	400 V	—
	- rated current (A) .....:	32 A (gG)	—
	- rated breaking capacity (kA) .....:	120 kA	—
8.3.6.2	Fuse protected short-circuit withstand		P
	test voltage (1,05 Ue) (V) .....:	L1: 420 V L2: — L3: —	—
	test current (kA) .....:	L1: 101 kA L2: — L3: —	—
	rated frequency (Hz) .....:	50 Hz	—
	power factor .....:	0,19	—
	Time constant (ms).....:	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA) .....:	L1: 6,5 kA L2: — L3: —	—
	- Joule integral I^2dt (A^2s) .....:	L1: 7000 A^2s L2: — L3: —	—
	Fuse protected short-circuit making		P
	- mean velocity of 15 manually under no-load conditions operations (m/s) .....:	1,6 m/s	—
	- point at which the measurement is made .....:	point of rotation	—
	- test speed during the fuse protected short-circuit making (m/s) .....:	1,5 m/s	—
	- max. let-through current (kA) .....:	L1: 4,94 kA L2: — L3: —	—
	- Joule integral I^2dt (A^2s) .....:	L1: 5000 A^2s L2: — L3: —	—

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.2.5	Behaviour of the equipment during the test		P
	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
8.3.6.2.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	8,7 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.6.3	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2,0 mA/pole .....:	0,008 mA	P
8.3.6.5	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	6 mm²	—
	- test current Ie (A) .....:	32 A	—
	Measured temperature-rise .....:	see appended table 8.3.6.5 on page 110	P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 16: 400 V, 32 A, 1-pole+N)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated voltage (V) .....:	400 V	—
	- rated current (A) .....:	32 A (gG)	—
	- rated breaking capacity (kA) .....:	120 kA	—
8.3.6.2	Fuse protected short-circuit withstand		P
	test voltage (1,05 Ue) (V) .....:	L1: 420 V L2: — L3: —	—
	test current (kA) .....:	L1: 101 kA L2: — L3: —	—
	rated frequency (Hz) .....:	50 Hz	—
	power factor .....:	0,19	—
	Time constant (ms).....:	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA) .....:	L1: 6,54 kA L2: — L3: —	—
	- Joule integral I^2dt (A^2s) .....:	L1: 7000 A^2s L2: — L3: —	—
	Fuse protected short-circuit making		P
	- mean velocity of 15 manually under no-load conditions operations (m/s) .....:	1,6 m/s	—
	- point at which the measurement is made .....:	point of rotation	—
	- test speed during the fuse protected short-circuit making (m/s) .....:	1,5 m/s	—
	- max. let-through current (kA) .....:	L1: 3,7 kA L2: — L3: —	—
	- Joule integral I^2dt (A^2s) .....:	L1: 4000 A^2s L2: — L3: —	—

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.2.5	Behaviour of the equipment during the test		P
	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
8.3.6.2.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	24,8 N (required opening force) 150 N (test force acc. tab. 8)	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.6.3	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~ .....:	1000 V (tested with 1380 V)	—
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 Ue) (V) .....:	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) ≤ 0,5 mA/pole .....:		N/A
	Leakage current (other utilization categories) ≤ 2,0 mA/pole .....:	0,002 mA	P
8.3.6.5	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark .....:	Bussmann	—
	- manufacturer's model or type reference .....:	C10G32	—
	- rated current (A) .....:	32 A (gG)	—
	- power loss (W) .....:	2,9 W	—
	- rated breaking capacity (kA) .....:	120 kA	—
	- conductor cross-section (mm²) .....:	6 mm²	—
	- test current Ie (A) .....:	32 A	—
	Measured temperature-rise .....:	see appended table 8.3.6.5 on page 111	P