

Измерени стойности за трансформатор №1

Токова грешка в проценти и фазово изместване в минути за стойности от ном. ток

Намотка/ Ip/кл. на точност	Мощ ност, %	1% In		5% In		20% In		100% In		120% In	
		т. гр. %	ф.изм [min]								
S1-S2/ 30 A кл. 0,2 S	100	-0,43	+22,8	-0,15	+8,3	-0,04	+3,9	+0,01	+2,4	-0,01	+2,7
	25	-0,17	+18,1	-0,01	+7,5	+0,06	+3,1	+0,07	+1,9	+0,05	+2,2

Измерени стойности за трансформатор №2

Токова грешка в проценти и фазово изместване в минути за стойности от ном. ток

Намотка/ Ip/кл. на точност	Мощ ност, %	1% In		5% In		20% In		100% In		120% In	
		т. гр. %	ф.изм [min]								
S1-S2/ 150 A кл. 0,2 S	100	-0,27	+16,4	-0,13	+7,1	-0,03	+3,5	0,0	+2,8	-0,01	+3,0
	25	-0,09	+12,4	-0,01	+6,3	+0,04	+2,7	+0,05	+2,3	+0,03	+2,5

Измерени стойности за трансформатор №3

Токова грешка в проценти и фазово изместване в минути за стойности от ном. ток

Намотка/ Ip/кл. на точност	Мощ ност, %	1% In		5% In		20% In		100% In		120% In	
		т. гр. %	ф.изм [min]								
S1-S2/ 600 A кл. 0,2 S	100	-0,44	+11,9	-0,26	+3,9	-0,18	+2,1	-0,13	+1,8	-0,12	+1,8
	25	-0,23	+10,9	-0,16	+3,9	-0,10	+1,8	-0,07	+1,7	-0,07	+1,7

Измерени стойности за трансформатор №4

Токова грешка в проценти и фазово изместване в минути за стойности от ном. ток

Намотка/ Ip/кл. на точност	Мощ ност, %	1% In		5% In		20% In		100% In		120% In	
		т. гр. %	ф.изм [min]								
S1-S2/ 3000 A кл. 0,2 S	100	-0,04	+9,5	+0,04	+4,0	+0,09	+2,4	+0,11	+1,2	+0,12	+1,0
	25	+0,01	+8,3	+0,07	+3,7	+0,11	+2,0	+0,12	+1,2	+0,12	+1,1

Протоколът от изпитване може да бъде възпроизвеждан само машинно и само с писмено разрешение на началник отдел „Изпитване на средства за измерване“.

ВРЕМЕ
СИГНАЛА

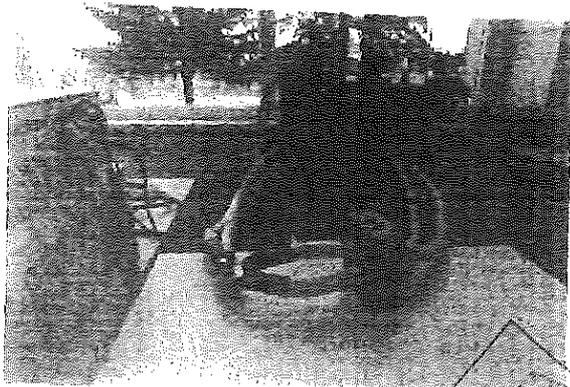
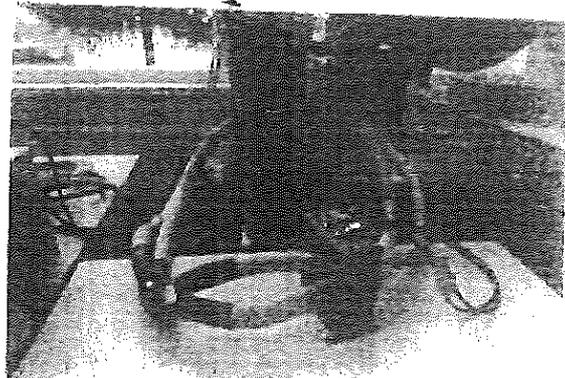
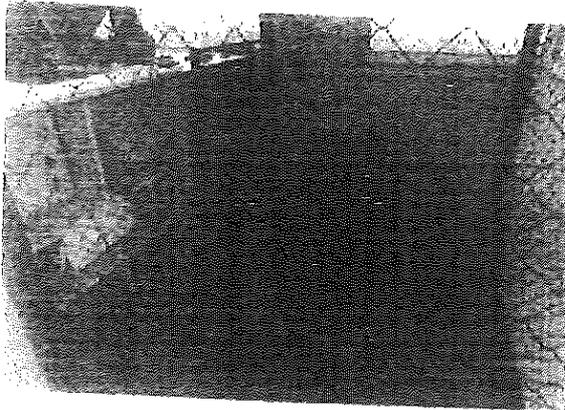
Нормативни стойности за трансформатор ГРЭС

Средна грешка в проценти и фазово изместване в минути за стойности от ном. ток

Средна грешка в проценти и фазово изместване в минути за стойности от ном. ток	Моцност, %	1% I _n		5% I _n		20% I _n		100% I _n		Т. гр. %
		Т. гр. %	Ф.изм [min]	Т. гр. %	Ф.изм [min]	Т. гр. %	Ф.изм [min]	Т. гр. %	Ф.изм [min]	
Средна грешка в проценти и фазово изместване в минути за стойности от ном. ток	100	-0,04	+7,2	+0,04	+3,1	+0,09	+1,7	+0,11	+1,3	+0,11
	25	+0,01	+6,7	+0,07	+2,9	+0,10	+1,6	+0,12	+0,8	+0,12

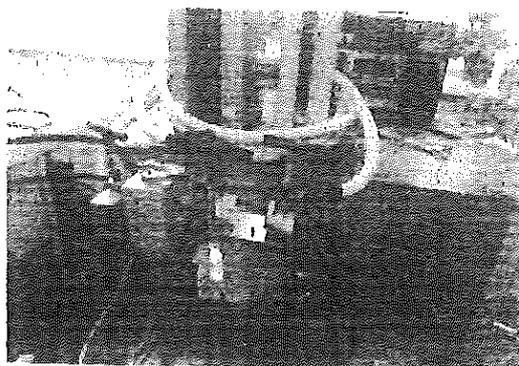
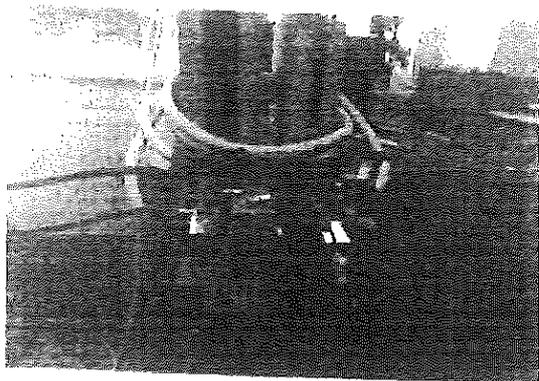
Трансформаторите преминаха успешно изпитването.

Снимки от проведените изпитвания

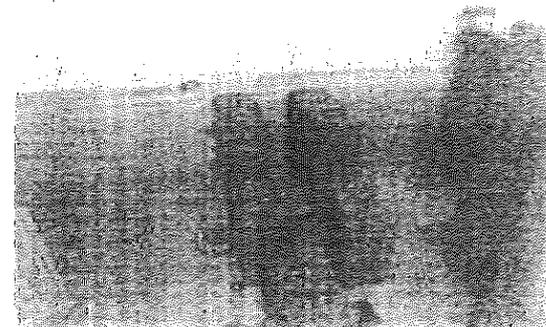
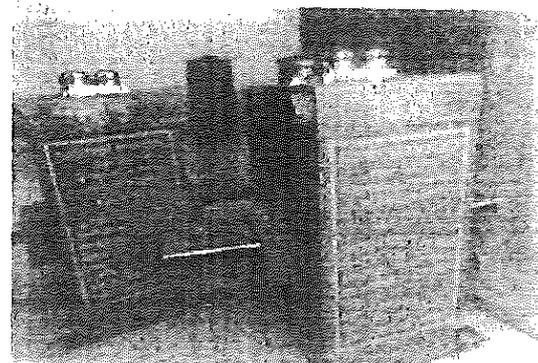


СРЕДНА ГРЕШКА В ПРОЦЕНТИ И ФАЗОВО ИЗМЕСТВАНЕ В МИНУТИ ЗА СТОЙНОСТИ ОТ НОМ. ТОК

Средна грешка в проценти и фазово изместване в минути за стойности от ном. ток



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МАРИНОВ

на основание чл. 36а, ал. 3
от ЗОП

от 12.07.2017 г. в 14:00 ч.

г-н Р. Маринов от комисията

МАРИНОВ
ПЛОВДИВ
ОТДЕЛ ЗА ПОСРЕДСТВО

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...от 12.07.2017 г. в 14:00 ч. ...

ЕЛПРОМ ЕМЗ ООД ГРАД ШАБЛА

ПАСПОРТ - СЕРТИФИКАТ

ПРИНТИТЕЛЕН ПРОТОКОЛ

за трансформатор след извършен инспекционен

Изп. СТ - 3 обхват 400kVA, 500kVA, 600kVA

Заводска № ТЭМ2005.....

1. Назвение на действо: Проверка трансформатора високо напрежение се извършва на зарплата и температурата на въздуха в средата е +55 °C до +45 °C в зависимост на местоположението на обекта.

II Технически характеристики:

- 1. Номинално напрежение - 0,72 kV
- 2. Честота - 50 Hz
- 3. Номинален ток при - 400 : 500 : 600 A
- 4. Номинален ток при - 3 A
- 5. Клас на точност - 0,5
- 6. Номинална мощност - 5 VA
- 7. Тип на връзка на вторичен - 60 x 100
- 8. Тип на първична вторична - 2,5 x 100
- 9. Маса - 0,700 kg
- 10. Производител - ФУА, клас на точност на измерване II

III Съставящата част: Издването отговаря на ВД, EN 61868-2:2012; IEC 61868-2:2012.

IV Изпълнение от инспекционните институции

1. Проверка на състоянието: Отговаря на данни за състояние - 9,5

2. Изпитване на издръжливост: всички параметри и връзки: издържа с предельно издръжливост 3 kV в 1 минути издръжливост

V Качеството на материал: Изпитаният сертифициран е качество на данни от завода за материал - предельно качество изпитан материал
 ЗАВОДЪТ ЕМЗ ООД ГРАД ШАБЛА
 ОТ ДАННИ СЪСТОЯНИЕ № 5100 от 14.03.2016 година

VI Съвместимост на устройството: Устройството е съвместимо с всички параметри

**ИНСТРУКЦИЯ ЗА МОНТАЖ И ЕКСПЛУАТАЦИЯ НА
 ПАСПОРТНО-ТЕСТИРНИ ТРАНСФОРМАТОРИ ПИИ СТ-3**

- 1. Изпитан материал: издръжливост
- 2. Изпитан материал: Изпитан материал на всички трансформатори се проверява в зависимост от материалите, използвани за изпитване, в зависимост от материалите - материалите на материалите
- 3. Изпитан материал: Изпитан материал: При изпитване на всички трансформатори трябва да се вземат предвид всички параметри.
- 4. Изпитан материал: Изпитан материал: Изпитан материал

VI Съвместимост на материалите: Изпитаните материали са съвместими с всички параметри и връзки на данни от завода за материал - предельно качество изпитан материал

В. Изпитан материал: Изпитан материал: Изпитан материал

Г. Изпитан материал: Изпитан материал: Изпитан материал

**ПРИ ВЪВЕЖДАНЕ ВЪВ ВЕРИГА НА ПЪРВИЧНА НАМОЛКА
 ВТОРИЧНАТА НАМОЛКА НА ТРАНСФОРМАТОРА
 НЕ ТРЯБВА ДА ОСТАВА ОТВОРЕНА!**

Когато се извършва проверка на вторичната верига, вторичните намотки на трансформатора трябва да се свържат на място с първичната, със всички 2,5 mm или 3mm вторични вериги на трансформатора, предпазителят не се поставя.

Г. При работата на трансформатора единият проводник на вторичната намотка се свързва с необходимите напрежения на вторичната намотка.

А. Електрическият проводник на вторичната намотка не се свързва с първичната намотка.

Б. При включването на вторичната намотка в веригата, вторичната намотка не трябва да бъде свързана с първичната намотка.

В. След извършването на проверка на трансформатора, вторичните намотки на трансформатора трябва да се свържат на място с първичната намотка, със всички 2,5 mm или 3mm вторични вериги на трансформатора, предпазителят не се поставя.

Д. При работата на трансформатора единият проводник на вторичната намотка се свързва с необходимите напрежения на вторичната намотка.

Е. При работата на трансформатора единият проводник на вторичната намотка се свързва с необходимите напрежения на вторичната намотка.

Ж. При работата на трансформатора единият проводник на вторичната намотка се свързва с необходимите напрежения на вторичната намотка.

З. При работата на трансформатора единият проводник на вторичната намотка се свързва с необходимите напрежения на вторичната намотка.

И. При работата на трансформатора единият проводник на вторичната намотка се свързва с необходимите напрежения на вторичната намотка.

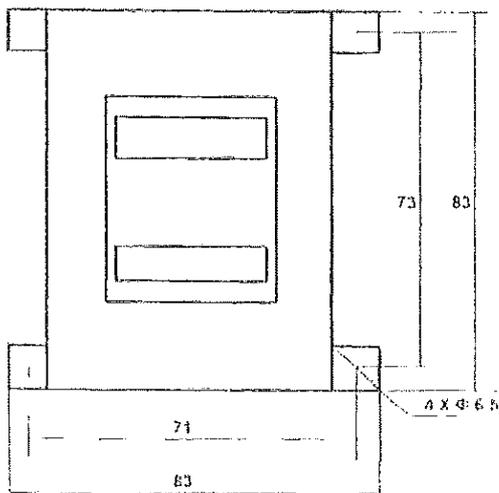
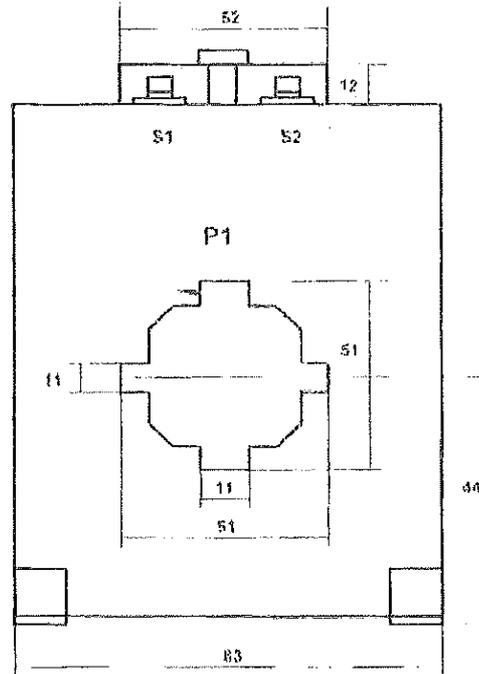
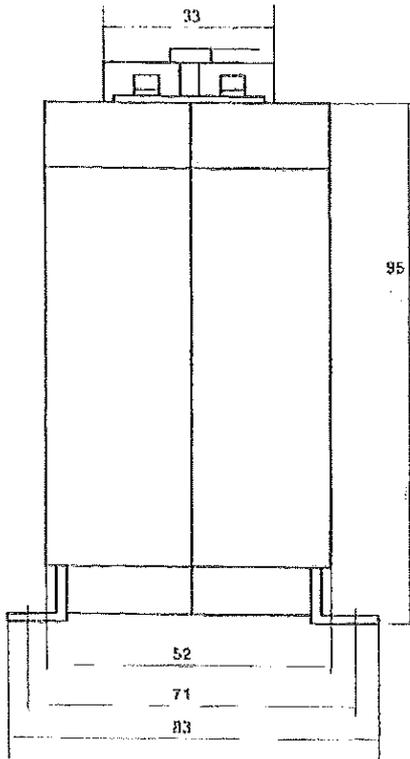
К. При работата на трансформатора единият проводник на вторичната намотка се свързва с необходимите напрежения на вторичната намотка.

Л. При работата на трансформатора единият проводник на вторичната намотка се свързва с необходимите напрежения на вторичната намотка.



ПРИЛОЖЕНИЕ № 7

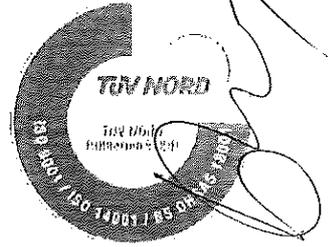
ПРИСЪЕДИНИТЕЛНИ РАЗМЕРИ ЗА ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ
тип СТ - 3 включващи преводните отношения 500/5А и 600/5А



ПРОЕКТИРОВАНО И ИЗПЪЛНЕНО
ВЪВЕДЕНИЕ



“ЕЛПРОМ ЕМЗ” ООД град ШАБЛА



ИНСТРУКЦИЯ ЗА МОНТАЖ И ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ НА ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОРИ за НН за тип СТ-2, СТ-3, СТ-4 ,

1. Място на монтаж : на закрито.

2. Начин на свързване : Первичната намотка на токовите трансформатори се свързва последователно към захранващите проводници на мрежата, а вторичната и апаратите последователно на вторичната намотка.

3. Експлоатационни условия на работа : При ползване на токовите трансформатори трябва да се спазват следните условия :

- A/ Трансформаторите да се монтират в закрити помещения.
- B/ Съединителните проводници да са свързани добре към металните вентилатори. Когато изводите са на винтове, следващелните проводници трябва да се затегнат здраво между две месингови шайби или кабелна обувка.
- B/ Токият, който се черпи от трансформатора, по специално мощността на трансформатора, да не е по-голяма от мощността, посочена на табелката. Претоварването на трансформаторите се ограничава от допустимите температури на затряване на изолациите.
- B/ Токовите трансформатори трябва да работят при непрекънат изпитателен контрол.
- D/ При обслужване на токовите трансформатори е задължително да се спазва следното условие:

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

Когато се налага прекъсване на първичната верига, вторичните изводи на трансформаторите трябва да се свързват на кратък проводник с сечение 2,5 кв. мм. Във вторичната верига на токов трансформатор трябва да има изводи на достатъчно.

При работа на трансформатор единият извод на вторичната намотка е свързан с земята.

4. Безопасност и хигиена на труда : За обслужване на токовите трансформатори са необходими персонални предпазни средства и динни калемки:

A/ Единият извод на вторичната намотка да се свързва с земята.

ЕЛПРОМ ЕМЗ

в) При извършване на превозната работа при горещото време работниците трябва да използват подходящи средства.

б) При извършване на монтаж на трансформаторите към линията и раздалките, върху кармите ПУ на трансформатора вметена да се поставят предпазни вложки и да се заключат.

г) При ревизия на трансформаторите, същите да се поставят на опрелките.

д) При проверка на трансформаторите откъм налягане строните се служат само

персонал да работи с лични предпазни средства.

При добри условия на работа и при равномерно натоварване трансформаторите могат да работят продължително време без повреда.

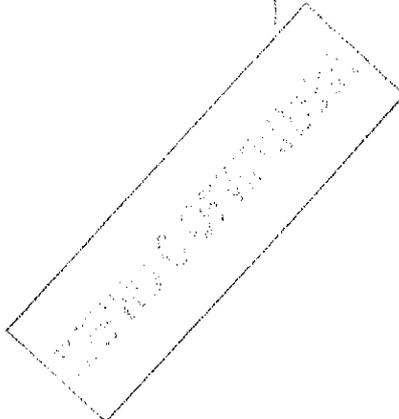
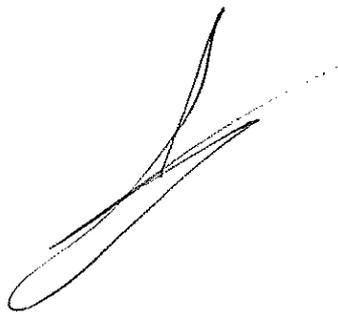
4. Опаковка, транспорт и съхранение : Трансформаторите се поставят в специални кутии от картон - вълнапе. Транспортират се във вана за горещи и транспортни средства.

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

на основание чл. 36а, ал. 3
от ЗОП

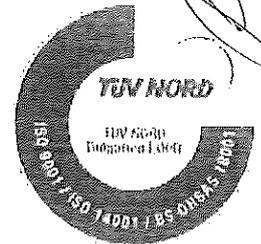
ПОДПИС И ПЕЧАТ:
УПРАВИТЕЛ (инж. ДИМИТЪР АРНАУДОВ)

Дата: 23.11.2017 година



ПРИЛОЖЕНИЕ

“ ЕЛПРОМ ЕМЗ ” ООД град ШАБЛА



ИНСТРУКЦИЯ ЗА СЪХРАНЕНИЕ И ТРАНСПОРТ НА
ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОРИ за НН за тип СТ-2, СТ-3, СТ-4 ,

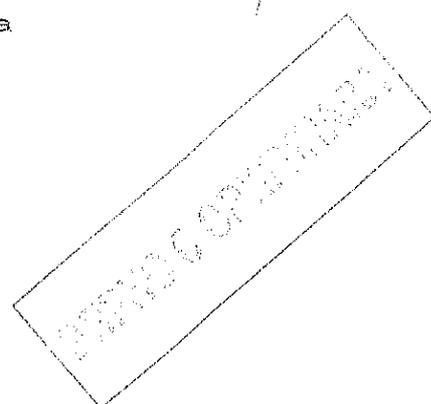
1. Опаковка: токовете измервателни трансформатори тип СТ-2, тип СТ-3 и тип СТ-4 се поставят в специални кашони от картон - велпапе по 12/дванадесет/ броя трансформатори в кашон, 56/петдесет и шест/ кашона подредени върху европалет правят една транспортна единица.
2. Съхранение : токовете измервателни трансформатори трябва да се съхраняват в закрити помещения и складове.
3. Транспорт: токовете измервателни трансформатори се транспортират във всякакъв вид закрити транспортни средства.

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

на основание чл. 36а, ал. 3
от ЗОП

ПОДПИС И ПЕЧАТ:
УПРАВИТЕЛ (ИНЖ. ДИМИТЪР АРНАУДОВ)

Дата: 23.11.2017 година

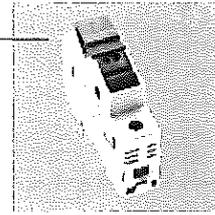


wöhner

PRODUCT MANUAL
2015

ALLES MIT SPANNUNG

AMBUS® Panel
Holder for cylindrical fuses 10 x 38, 14 x 51, 22 x 58



1, 2- and 3-pole, 1 and 3-pole + N as required
LED: 12 - 72V AC/DC resp. 110 - 690V AC/DC resp. 400 - 1000V DC

Pilot switch:
1 changeover switch 250V AC (5A), 30V DC (4A)
Flat lug 2.8 x 0.5mm (e.g. DIN 46 245)

Clip-on mounting on EN 60715 mounting rail

Conductor terminals:

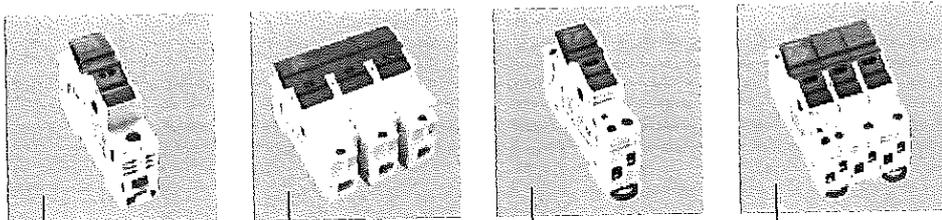
Size	Conductor terminals according to IEC		Conductor terminals according to IEC UL / CSA	
10x38	1x Cu 0.75 - 25mm ²	f, f+AE	1x AWG 18 - AWG 4	str
	2x Cu 0.75 - 10mm ² *	f, f+AE	2x AWG 18 - AWG 6 *	str
Integrated N-pole	1x Cu 1.5 - 10mm ²	f, f+AE		
14x51	1x Cu 1.5 - 35mm ²	f, f+AE	1x AWG 14 - AWG 2	str
22x58	1x Cu 4 - 50mm ²	f, f+AE	1x AWG 10 - AWG 1/0	str

* 2 identical conductors next to each other in the contact position

Overall size		10 x 38 PV	10 x 38	14 x 51	22 x 58
According to standard	IEC/EN	IEC 60269-2	IEC 60947-3, EN 60947-3, VDE 0660 part 107		
	UL/CSA	UL 4248-1, 4248-18	UL 4248-1		
Current type		DC	AC (50/60Hz)/DC	AC (50/60Hz)/DC	AC (50/60Hz)/DC
Maximum rated operating voltage (U _e)	IEC/EN	1000V DC	690V AC	690V AC	690V AC
	UL/CSA	1000V DC	600V AC / DC	600V AC / DC	600V AC / DC
Rated insulation voltage (U _i)	IEC/EN	1000V DC	800V	800V	800V
Rated surge withstand capacity (U _{imp})	IEC/EN	6kV	6kV	6kV	6kV
Rated operating current (I _e)	IEC/EN	30A	32A	50A	100A /
	UL/CSA	30A	30A	50A / 40A	80A
Application category, version 1P, 1P+N, 2P	IEC/EN	-	AC-22B (400V)	AC-22B (400V)	AC-20B (690V)
	UL/CSA		only applicable as fuse holder		
Application category, version 3P, 3P+N	IEC/EN	-	AC-22B (690V)	AC-21B (690V)	AC-20B (690V)
	UL/CSA		only applicable as fuse holder		
Conditional rated short-circuit current (AC) version 1P, 1P+N, 2P	IEC/EN	20kA**	100kA (500V)*	100kA (400V)*	100kA (500V)*
	UL/CSA	33kA	100kA (600V)	100kA (600V)	100kA (600V)
Conditional rated short-circuit current (AC) version 3P, 3P+N	IEC/EN	-	100kA (500V)*	100kA (400V)*	100kA (500V)*
	UL/CSA	-	100kA (600V)	100kA (600V)	100kA (600V)
Allowable power dissipation for each fuse, standard version		-	3W (gG)	5W (gG)	9.5W (gG)
Allowable power dissipation for each fuse, semi-conductor protection version		4.0W (gPV)	4.3W (aR/gR) (10mm ² , 25A)	6.5W (aR/gR) (25mm ² , 40A)	11W (aR/gR) (50mm ² , 80A)

* Type tested with fuses of characteristic gL/gG (IEC 60269-2)

** Type tested with fuses of characteristic gPV (IEC 60269-6)



31 110	31 123	31 273	31 274
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AMBUS®Panel

IEC-compatible holder for cylindrical fuses

with box terminals, clip-on mounting, contact protection in accordance with DIN 50274

AMBUS®Panel, holder for cylindrical fuses, standard model, without neutral conductor

Size	Rated current	Type	Width	Connection	Pack size	Weight kg/100 u.	Part no.	
10x38	32A	1-pole	18	0.75 - 25mm ² / AWG 18 - 4	12	5.2	31 110	17
		2-pole	36	0.75 - 25mm ² / AWG 18 - 4	6	10.3	31 112	17
		3-pole	54	0.75 - 25mm ² / AWG 18 - 4	4	15.5	31 113	17
14x51	50A	1-pole	27	1.5 - 35mm ² / AWG 14 - 2	6	9.7	31 115	17
		2-pole	54	1.5 - 35mm ² / AWG 14 - 2	3	20.2	31 117	17
		3-pole	81	1.5 - 35mm ² / AWG 14 - 2	2	30.4	31 118	17
22x58	100A	1-pole	36	4 - 50mm ² / AWG 10 - 1/0	6	15.8	31 120	17
		2-pole	72	4 - 50mm ² / AWG 10 - 1/0	3	32.2	31 122	17
		3-pole	108	4 - 50mm ² / AWG 10 - 1/0	2	48.6	31 123	17

AMBUS®Panel, holder for cylindrical fuses, standard model, neutral conductor on the right

10x38	32A	1-pole+N	36	0.75 - 25mm ² / AWG 18 - 4	6	11.3	31 111	17
		3-pole+N	72	0.75 - 25mm ² / AWG 18 - 4	3	21.7	31 114	17
14x51	50A	1-pole+N	54	1.5 - 35mm ² / AWG 14 - 2	3	21.8	31 116	17
		3-pole+N	108	1.5 - 35mm ² / AWG 14 - 2	1	42.7	31 119	17
22x58	100A	1-pole+N	72	4 - 50mm ² / AWG 10 - 1/0	3	35.8	31 121	17
		3-pole+N	144	4 - 50mm ² / AWG 10 - 1/0	1	67.5	31 122	17

AMBUS®Panel, holder for cylindrical fuses, standard model, neutral conductor on the left

14x51	50A	3-pole+N	108	1.5 - 35mm ² / AWG 14 - 2	1	42.7	31 163	17
22x58	100A	3-pole+N	144	4 - 50mm ² / AWG 10 - 1/0	1	67.5	31 171	17

AMBUS®Panel, holder for cylindrical fuses, N-module

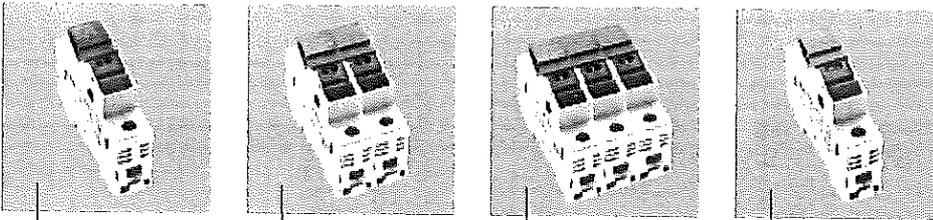
10x38	32A	N	18	0.75 - 25mm ² / AWG 18 - 4	12	6.2	31 253	17
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AMBUS®Panel, holder for cylindrical fuses, standard model, with integrated neutral conductor (on the left)

10x38	32A	1-pole+N	18	1.5 - 10mm ²	12	9.0	31 273	17
		3-pole+N	54	1.5 - 10mm ²	4	22.0	31 274	17

wöhner

Disposal information	Accessories	7 15-17	→
Approvals	8 61-71	Technical data	8 24 →
		Dimensions	9 41,42 →



31 295	31 296	31 297	31 298
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AMBUS®Panel, class CC

Fuse holder class CC, contact protection, clip-on mounting
for fuses as per UL 248-4

AMBUS®Panel, class CC, holder for cylindrical fuses, standard model

Rated current / Rated voltage	Type	Width	Connection	Pack size	Weight kg/100 u.	Part no.
30A / 600V	1-pole	18	0.75 - 25mm ² / AWG 18 - 4	12	5.5	31 295 17
	2-pole	36		6	11.3	31 296 17
	3-pole	54		4	17.0	31 297 17

AMBUS®Panel, class CC, holder for cylindrical fuses, model with LED 110-600V AC/DC

Rated current / Rated voltage	Type	Width	Connection	Pack size	Weight kg/100 u.	Part no.
30A / 600V	1-pole	18	0.75 - 25mm ² / AWG 18 - 4	12	6.2	31 298 17
	2-pole	36		6	12.3	31 299 17
	3-pole	54		4	18.5	31 300 17

AMBUS®Panel, class CC, holder for cylindrical fuses, model with LED 12-72V AC/DC

Rated current / Rated voltage	Type	Width	Connection	Pack size	Weight kg/100 u.	Part no.
30A / 12 - 72V	1-pole	18	0.75 - 25mm ² / AWG 18 - 4	12	6.2	31 929 17

Accessories

for AMBUS®Panel, holder for cylindrical fuses

Comb-type busbar, insulated, bridge, length 1m

Type	Side supply	Centre supply	Cross section	Pack size	Weight kg/100 u.	Part no.
1-pole, pitch 18mm	100A	200A	25	10	47.5	31 548 06
2-pole, pitch 18mm	100A	200A	25	10	81.0	31 561 06
3-pole, pitch 18mm	100A	200A	25	10	113.3	31 549 06

Connecting terminal, for comb-type busbars

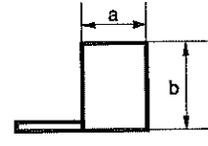
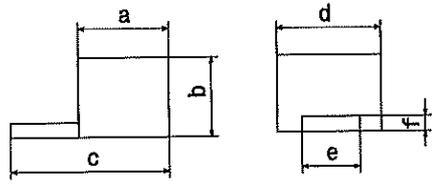
Type	Connection	Pack size	Weight kg/100 u.	Part no.
for 31 548	6 - 35	10	3.0	31 039 07
for 31 549 and 31 561	6 - 35	10	3.5	31 350 07

End cap, for comb-type busbars

Type	Pack size	Weight kg/100 u.	Part no.
for 31 548	20	0.1	31 042 06
for 31 549 and 31 561	20	0.2	31 352 06

	a	b	c	d	e	f
01 198	42	32	68	23	6.5	4
01 228	42	32	91	23	6.5	4
31 028	17	26	37	20	6	2
31 029	17	26	49	20	6	2
31 039	21	29	42	16	6.5	3
31 085	20	26	53	17	6	2
31 103	13	18	45	17	4	2
31 157	13	17	50	13	4	2
31 550	21	29	60	16	6.5	3

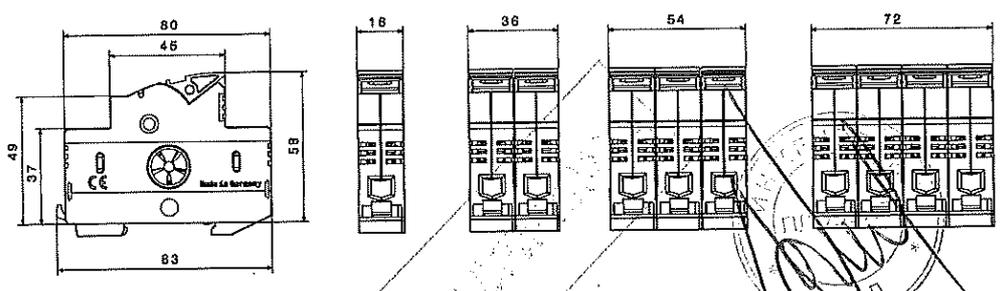
	a	b	Poles	Division
31 012	17	16	3	27
31 014	5	15	1	27
31 024	5	15	1	27
31 056	30	15	3	27
31 057	6	26	1	27
31 101	5	15	1	18
31 102	18	16	3	18
31 309	5	15	1	40
31 310	17	16	3	40
31 311	5	15	1	50
31 312	17	16	3	50
31 548	5	15	1	18
31 549	23	22	3	18
31 561	23	22	2	18



31 555

	a
31 570	30
31 572	20

- 31 110 - 31 114
- 31 130 - 31 133
- 31 258
- 31 273 - 31 277
- 31 295 - 31 300
- 31 929 - 31 930
- 31 971
- 31 973
- 31 974



EC Conformity Declaration

wöhner
Sales/Marketing

Manufacturer: Wöhner GmbH & Co. KG
Address: Mönchrödener Str. 10
D - 96472 Rödental

Product designation: **NH fuse-switch disconnectors**
Switch disconnectors with fuses D0 or 10x38
Fuse-switch disconnectors for cylindrical fuses

The designated product(s) conform(s) to the provisions of the following European directive:

Number: 73/23/EWG

Text: Directive of the Council for Adapting the Legislative Provisions of the member states concerning electric equipment for application within determined voltage limits modified by RL 93/68/EWG

For further information about compliance with this directive, see annex.

Attachment of the CE-marking: 96

Issuer: **Wöhner GmbH & Co. KG**

Place, date: Rödental, 15.05.2003

Legally binding signature:

на основание чл. 36а, ал. 3
от ЗОП

Alex Büttner
Managing Director

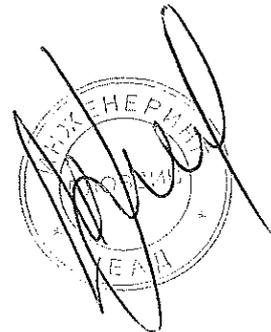
на основание чл. 36а, ал. 3
от ЗОП

Holger Schulte
Marketing & Sales

The annex is part of this declaration.

This declaration certifies the conformance with the mentioned directives, but it does not include any assurances of definite properties.

Please pay special attention to the safety regulations of the delivered product documentation.



Декларация за съответствие

Производител: WÖHNER GmbH и Co KG

Адрес: ул. Mönchrödener 10

D-96472 Rödental

Обозначение на продукта: NH предпазител-разединител

Разединител със предпазители D0 или 10x38

Разединител с цилиндрични предпазители

Конструираният продукт(и) отговаря на разпоредбите на следната европейска директива:

Номер: 73/23/EWG

Текст: Директива на Съвета за адаптиране на законовите разпоредби на държавите-членки относно електрическото оборудване за прилагане в определени граници на напрежение модифициран от RL 93/68/EWG

За допълнителна информация съгласно тази директива , виж анекс.

Прикрепване на маркировката "CE" 96

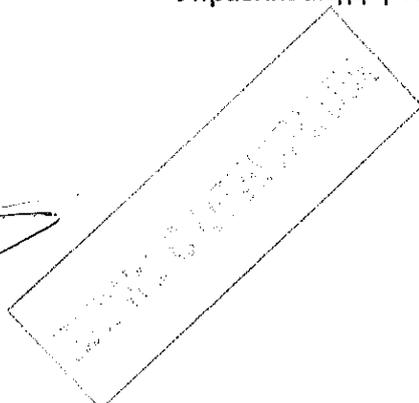
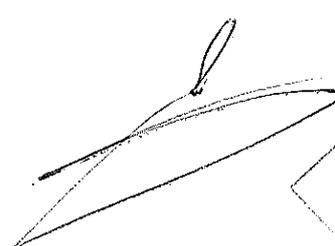
Емитент: **WÖHNER GmbH и Co KG**

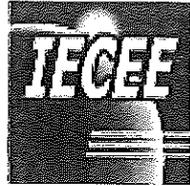
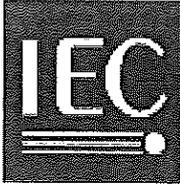
Място, дата: Rödental, 15.05.2003

Правно обвързващ подпис:

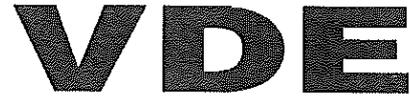
Alex Büttner
Управляващ директор

Holger Schulte
Маркетинг и продажби





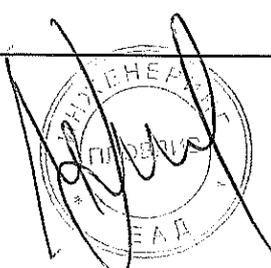
Test Report issued under the responsibility of:



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: 3 rd Edition (2008) in conjunction with IEC 60947-1: 5 th 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
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If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.	
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

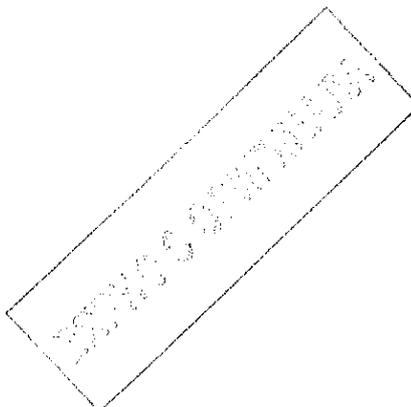
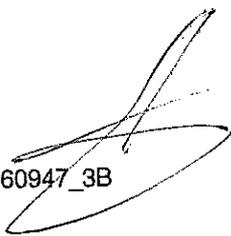
Testreport-FG32-2-152633.DOC

2012-01-15 15:51



Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory:	VDE Prüf- und Zertifizierungsinstitut GmbH VDE Testing and Certification Institute
Testing location/ address	Merianstraße 28 , 63069 Offenbach , Germany
<input checked="" type="checkbox"/> 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
<div style="border: 1px solid black; padding: 2px; display: inline-block;">на основании чл. 36а, ап. 3 от ЗОП</div>	
<input type="checkbox"/> Testing procedure: TMP	
Testing location/ address	
Tested by (name + signature)	
Approved by (+ signature)	
<input type="checkbox"/> Testing procedure: WMT	
Testing location/ address	
Tested by (name + signature)	
Witnessed by (+ signature)	
Approved by (+ signature)	
<input type="checkbox"/> Testing procedure: SMT	
Testing location/ address	
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	
<input type="checkbox"/> Testing procedure: RMT	
Testing location/ address	
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	

TRF No. IEC60947_3B



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

TRF No. IEC60947 3B



Summary of testing: (Continuation)

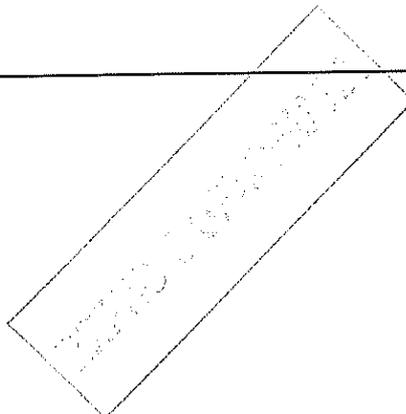
The tests are carried-out according to IEC 60947-1 (ed.5);am1:2010-12 and IEC 60947-3 (ed.3).

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

TRF No. IEC60947-3B



Copy of marking plate

Front printing: (for example a single pole device)

wöhner

AES10x38

32A 10x38

31 110 1P

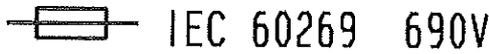


Side printing:

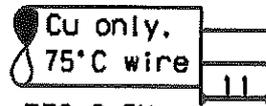
IEC 60947-3 AC-22B 32A 400V 50/60Hz Ui:AC800V

 RU [®] US 30A 600V Do not operate under load	gG	32A	6 □	3.0W
	aM	32A	6 □	1.2W
	aR/gR	consult		

gG	32A	6 □	3.0W
aM	32A	6 □	1.2W
aR/gR	consult		



18...4AWG
0.75...25mm²

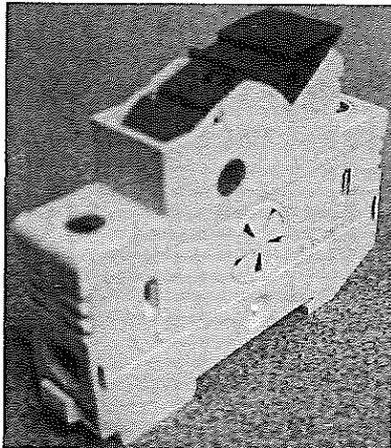


Cu only,
75°C wire

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

TRF No. IEC60947_3B

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
		25 **)	2; 3; 3+N
	500	32 *)	3; 3+N
		10 *)	2
690	10 *)	2	
	32 *)	3; 3+N	

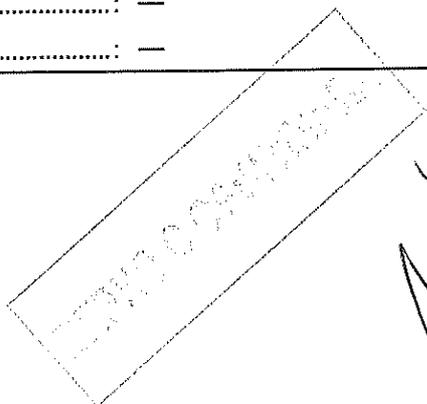
*) Corresponding short circuit current: 50 kA
 **) Corresponding short circuit current: 100 kA

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.....: —

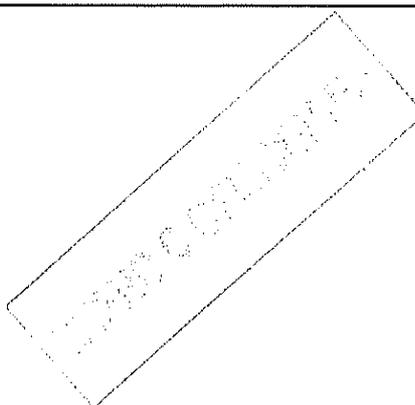
TRF No. IEC60947_3B



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 0,75mm ² and 25mm ² . 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.

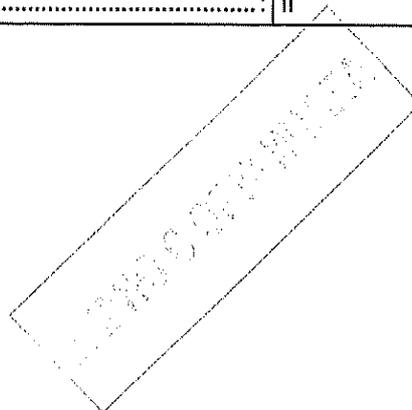
TRF No. IEC60947_3B



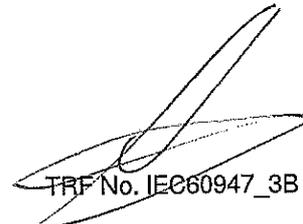
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
5.2	MARKING		P
	Marking on equipment itself or on nameplate or nameplates attached to the equipment and legible from the front after mounting		—
	- indication of the open and closed position		P
	- suitability for isolation		P
	- disconnectors 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

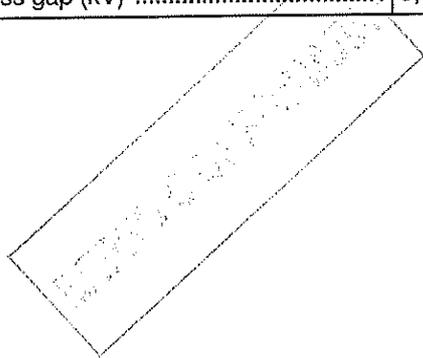
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- rated conditional short-circuit current	50 kA, 100 kA	P
5.3	Instructions for installation, operation and maintenance		P
6	Normal service, mounting and transport conditions		P
7.1	CONSTRUCTIONAL AND PERFORMANCE REQUIREMENTS		R
7.1.2	Materials		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	—

TRF No. IEC60947_3B



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

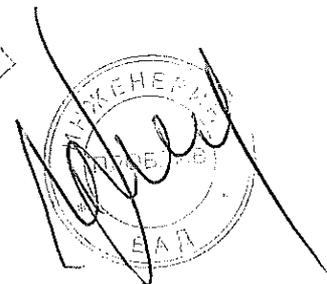
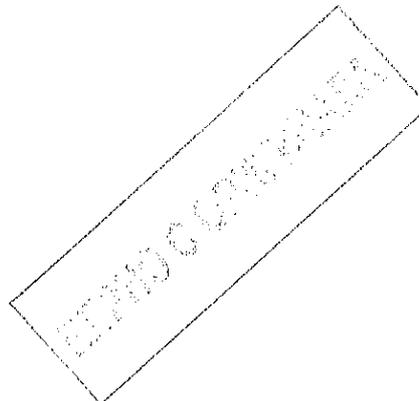

TRF No. IEC60947_3B





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

TRF No. IEC60947-3B



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 (mm ²):		—
	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 (mm ²)	0,75 mm ²	—
	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 (mm ²)	25 mm ²	—
	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

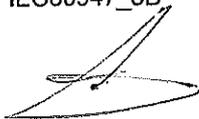
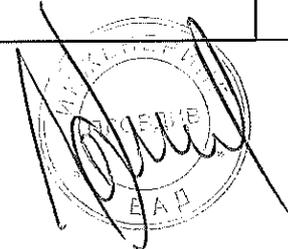
TRF No. IEC60947_3B

IEC 60947-3

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conductor of the largest and smallest cross-sectional area (mm ²)		+
	Number of conductor of the smallest cross section, number of conductor of the largest cross section ..		—
	Diameter of bushing hole (mm)		—
	Height between the equipment and the platen		—
	Mass at the conductor(s) (kg)		—
	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 (mm ²) :	0,75 mm ²	—
	Maximum cross-sectional area of conductor (mm ²)	25 mm ²	—
	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

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

TRF No. IEC60947_3B

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 I_e (A)	25 A	—
	- cable/busbar cross-section (mm ²) / length (mm) ..	4 mm ² 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 (mm ²)		—
	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 U_{imp} main circuits (kV)	7,3 kV	P
	- test U_{imp} auxiliary circuits (kV)		N/A
	- test U_{imp} 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

TRF No. IEC60947/3B

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	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	L1: L2: L3:	—
	- test current, I = x Ie (A):	L1: L2: L3:	—
	- power factor	L1: L2: L3:	—

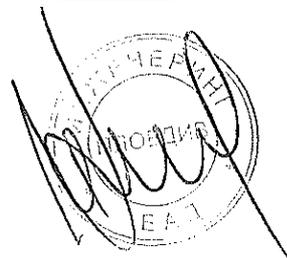
TRF No. IEC60947_3B

ПРОЦЕДУРА

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, $U = 1,05 U_e$ (V):	L1: 525 V L2: — L3: —	—
	- test current, $I =$ $1,5 \times I_e$ (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

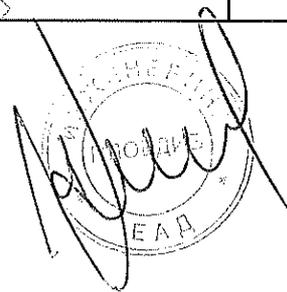
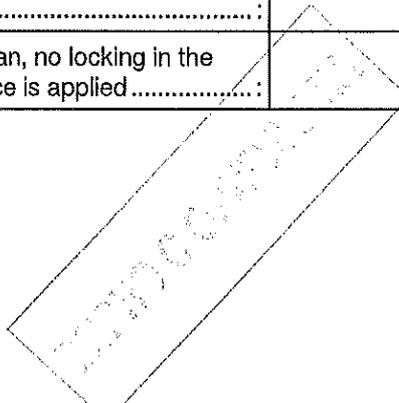
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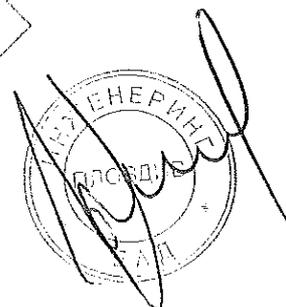
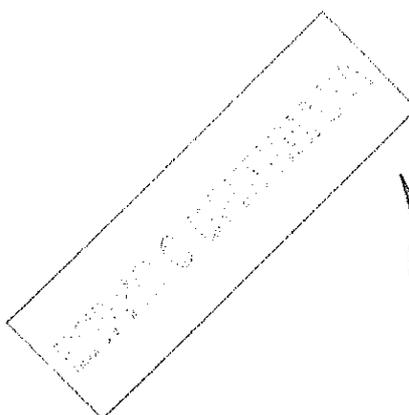
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~	1000 V (tested with 1380 V)	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V)	550 V (tested with 759 V)	—
	Leakage current (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

TRF No. IEC60947-3B



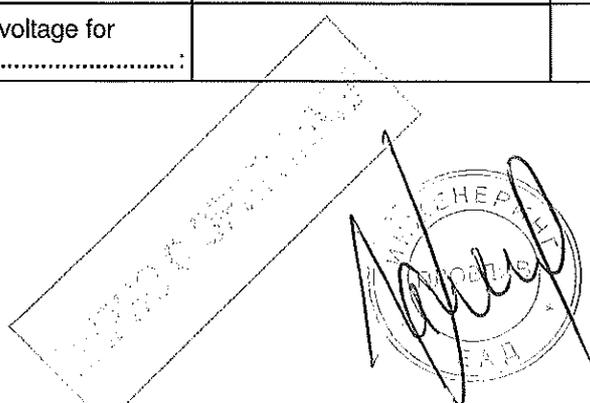
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- main contacts fixed together in the closed position:		N/A
	- used method to keep the contact closed		N/A
	- 110% of the rated supply voltage applied to the equipment (3 times)		N/A
	During and 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

TRF No. IEC60947 3B



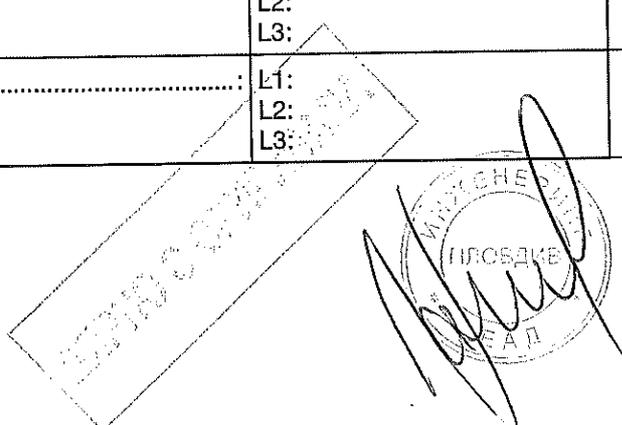
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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 2: AC-21B, 690 V, 10 A, 1-pole)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm)		—
	material of enclosure		—
	Main circuits, test conditions:		—
	- rated operational current I _e (A)	10 A	—
	- cable/busbar cross-section (mm ²) / length (mm) ..	1,5 mm ² 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 (mm ²)		—
	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 U _{imp} main circuits (kV)	7,3 kV	P
	- test U _{imp} auxiliary circuits (kV)		N/A
	- test U _{imp} 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

TRF No. IEC60947_3B



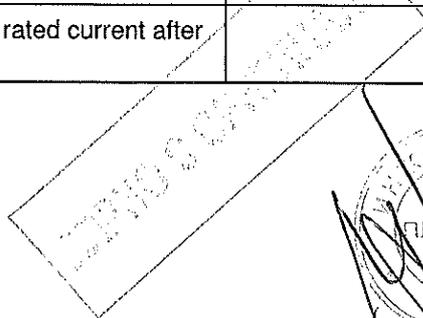
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Devices, which have been disconnected for the power-frequency withstand voltage test		N/A
	Equipment suitable for isolation, leakage current not exceed 0,5 mA		—
	Test voltage 1,1 Ue (V)	759 V	—
	Measured leakage current (mA)	0,001 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category	AC-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	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	L1: L2: L3:	—
	- test current, I = x Ie (A):	L1: L2: L3:	—
	- power factor	L1: L2: L3:	—

TRF No. IEC60947-3B



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, $U = 1,05 U_e$ (V):	L1: 725 V L2: — L3: —	—
	- test current, $I =$ $1,5 \times I_e$ (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

TRF No. IEC60947_3B

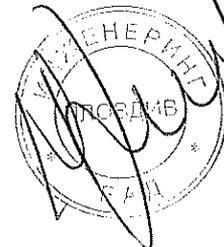


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage ($1,1 U_e$) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole)	< 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 (mm ²)	1,5 mm ²	—
	- test current I_e (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

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

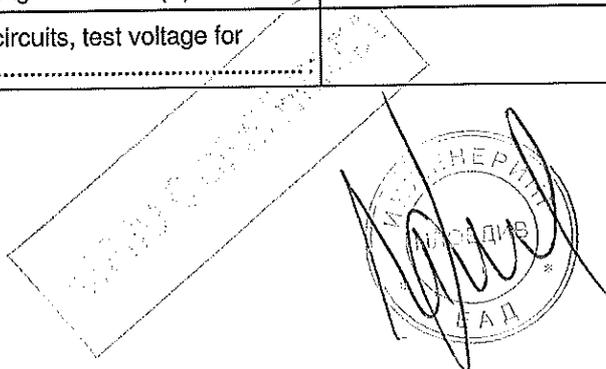
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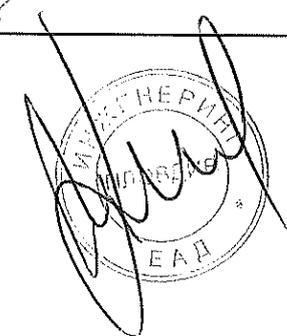
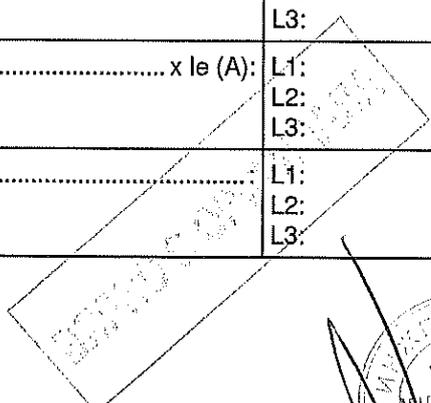
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 3: AC-22B, 400 V, 32 A, 1-pole)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm)		—
	material of enclosure		—
	Main circuits, test conditions:		—
	- rated operational current I _e (A)	32 A	—
	- cable/busbar cross-section (mm ²) / length (mm) ..	6 mm ² 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 (mm ²)		—
	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 U _{imp} main circuits (kV)	7,3 kV	P
	- test U _{imp} auxiliary circuits (kV)		N/A
	- test U _{imp} 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

TRF No. IEC60947_3B



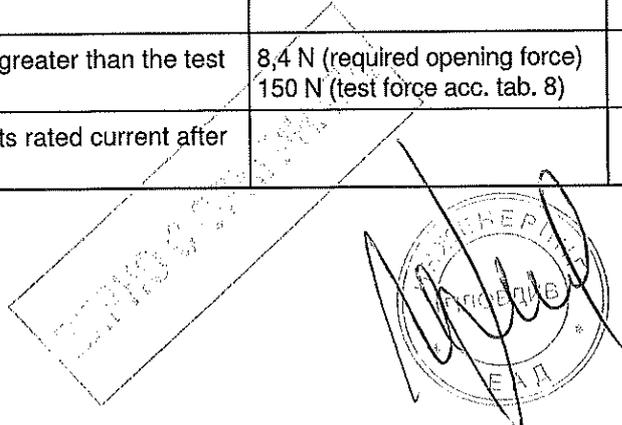
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Clause	Requirement + Test	Result - Remark	Verdict
	Devices, which have been disconnected for the power-frequency withstand voltage test		N/A
	Equipment suitable for isolation, leakage current not exceed 0,5 mA		—
	Test voltage 1,1 Ue (V)	440 V (tested 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	Busmann	—
	- 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	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	L1: L2: L3:	—
	- test current, I = x Ie (A):	L1: L2: L3:	—
	- power factor	L1: L2: L3:	—

TRF No. IEC60947_3B



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, $U = 1,05 U_e$ (V):	L1: 420 V L2: — L3: —	—
	- test current, $I =$ $3 \times I_e$ (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

TRF No. IEC60947-3B



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: $2 \cdot U_e$ 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 U_e) (V)	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole)	< 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 (mm ²)	6 mm ²	—
	- test current I_e (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

TRF No. IEC60947_3B

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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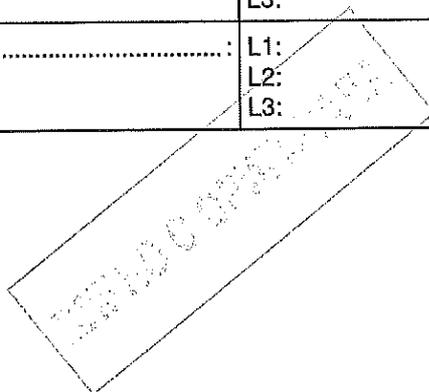
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 4: AC-22B, 400 V, 32 A, 2-poles)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm)		—
	material of enclosure		—
	Main circuits, test conditions:		—
	- rated operational current I _e (A)	32 A	—
	- cable/busbar cross-section (mm ²) / length (mm) ..	6 mm ² 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 (mm ²)		—
	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 U _{imp} main circuits (kV)	7,3 kV	P
	- test U _{imp} auxiliary circuits (kV)		N/A
	- test U _{imp} 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)	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:	—

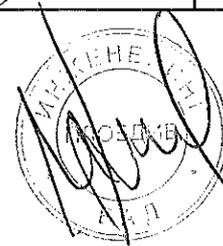
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, $U = 1,05 U_e$ (V):	L1: 420 V ($242,5 V \times \sqrt{3}$) L2: 420 V ($242,5 V \times \sqrt{3}$) L3: —	—
	- test current, $I =$ $3 \times I_e$ (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

TRF No. IEC60947_3B

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: $2 \cdot U_e$ 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 ($1,1 U_e$) (V)	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole)	< 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 (mm ²)	6 mm ²	—
	- test current I_e (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

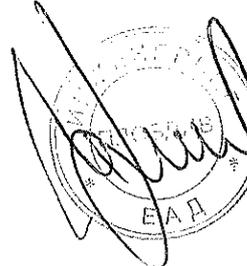
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.2.5.2.2	Dependent power operation		N/A
	- main contacts fixed together in the closed position:		N/A
	- used method to keep the contact closed		N/A
	- 110% of the rated supply voltage 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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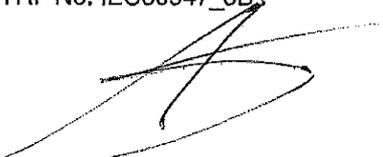
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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS (Sample No. 5: AC-22B, 500 V, 25 A, 2-pole)		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C	22,7 °C	—
	test enclosure W x H x D (mm x mm x mm)		—
	material of enclosure		—
	Main circuits, test conditions:		—
	- rated operational current I _e (A)	25 A	—
	- cable/busbar cross-section (mm ²) / length (mm) ..	4 mm ² 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 (mm ²)		—
	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 U _{imp} main circuits (kV)	7,3 kV	P
	- test U _{imp} auxiliary circuits (kV)		N/A
	- test U _{imp} 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

TRF No. IEC60947_3B

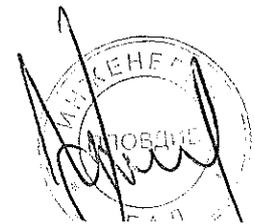


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Clause	Requirement + Test	Result - Remark	Verdict
	Devices, which have been disconnected for the power-frequency withstand voltage test		N/A
	Equipment suitable for isolation, leakage current not exceed 0,5 mA		—
	Test voltage 1,1 Ue (V)	550 V (tested 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	Busmann	—
	- 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	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	L1: L2: L3:	—
	- test current, I = x Ie (A):	L1: L2: L3:	—
	- power factor	L1: L2: L3:	—

TRF No. IEC60947_3B



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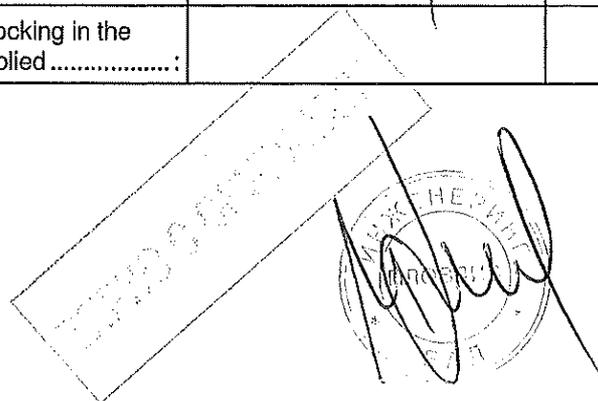
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		
	- test voltage, $U = 1,05 U_e$ (V):	L1: 525 V ($303 V \times \sqrt{3}$) L2: 525 V ($303 V \times \sqrt{3}$) L3: —	—
	- test current, $I =$ $3 \times I_e$ (A):	L1: 78 A L2: 78 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

TRF No. IEC60947_3B

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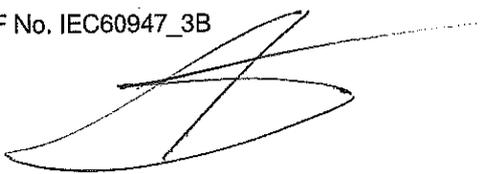
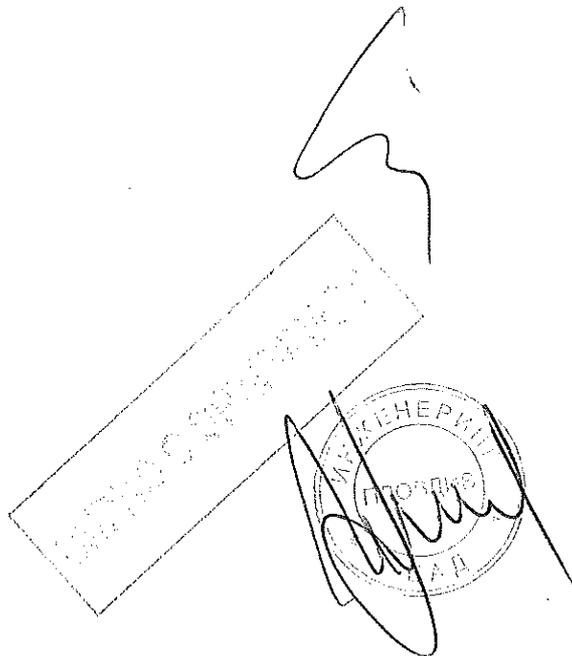
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1000 V (tested with 1380 V)	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 U_e) (V)	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole)	< 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 (mm ²)	4 mm ²	—
	- test current I_e (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

TRF No. IEC60947-3B



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

TRF No. IEC60947_3B

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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 I _e (A)	10 A	—
	- cable/busbar cross-section (mm ²) / length (mm) ...	1,5 mm ² 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 (mm ²)		—
	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 U _{imp} main circuits (kV)	7,3 kV	P
	- test U _{imp} auxiliary circuits (kV)		N/A
	- test U _{imp} 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

TRF No. IEC60947_3B



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	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	L1: L2: L3:	—
	- test current, I = x Ie (A):	L1: L2: L3:	—
	- power factor	L1: L2: L3:	—

TRF No. IEC60947-3B



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		
	- test voltage, $U = 1,05 U_e$ (V):	L1: 725 V (418,5 V x $\sqrt{3}$) L2: 725 V (418,5 V x $\sqrt{3}$) L3: —	—
	- test current, $I =$ 3x I_e (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

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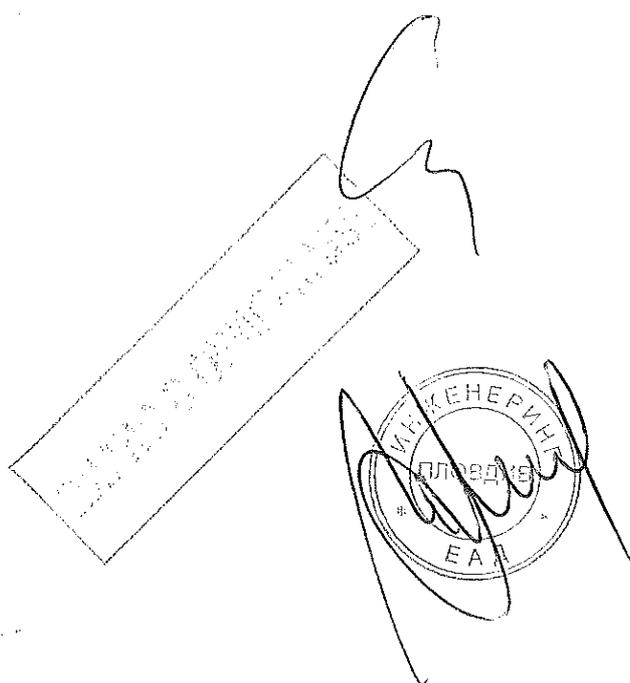
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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 Ue) (V)	759 V	—
	Leakage current (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 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

TRF No. IEC60947_3B

IEC 60947-3

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



TRF No. IEC60947_3B

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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 I _e (A)	32 A	—
	- cable/busbar cross-section (mm ²) / length (mm)	6 mm ² 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 (mm ²)		—
	Measured temperature-rise	see appended table 8.3.3.1 on page 107	N/A
8.3.3.2	Test of dielectric properties		P
	Rated impulse withstand voltage (kV)	6 kV	—
	- test U _{imp} main circuits (kV)	7,3 kV	P
	- test U _{imp} auxiliary circuits (kV)		N/A
	- test U _{imp} 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

TRF No. IEC60947 3B

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)	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	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	L1: L2: L3:	—
	- test current, I = x Ie (A):	L1: L2: L3:	—
	- power factor	L1: L2: L3:	—

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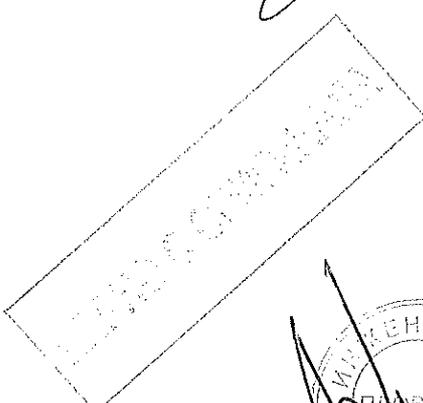
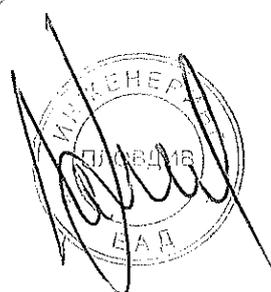
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Clause	Requirement + Test	Result - Remark	Verdict
	Conditions for make/break operations, other than AC-23A/B:		
	- test voltage, $U = 1,05 U_e$ (V):	L1: 725 V ($418,5 V \times \sqrt{3}$) L2: 725 V ($418,5 V \times \sqrt{3}$) L3: 725 V ($418,5 V \times \sqrt{3}$)	—
	- test current, $I =$ $3 \times I_e$ (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

TRF No. IEC60947_3B

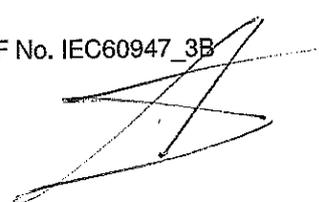
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Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.4	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	test voltage (1,1 U_e) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole)	< 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 (mm ²)	6 mm ²	—
	- test current I_e (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

TRF No. IEC60947_3B

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

TRF No. IEC60947_3B



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



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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: $2 \cdot U_e$ 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 U_e) (V)	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	< 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 (mm ²)	4 mm ²	—
	- test current I_e (A)	25 A	—
	Measured temperature-rise	see appended table 8.3.4.4 on page 108	P

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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

IEC 60947-3



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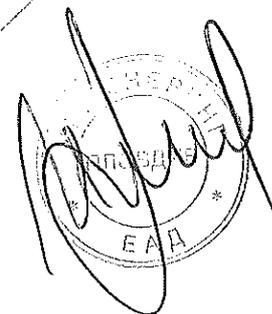
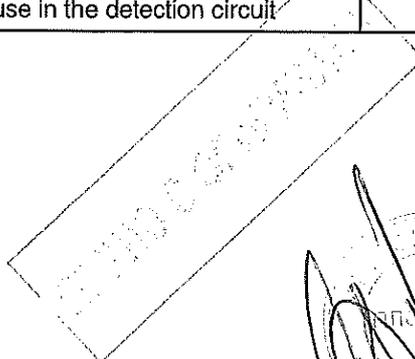
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	8,0 N (required 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: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 U_e) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	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 (mm ²)	1,5 mm ²	—
	- test current I_e (A)	10 A	—
	Measured temperature-rise	see appended table 8.3.4.4 on page 108	P

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

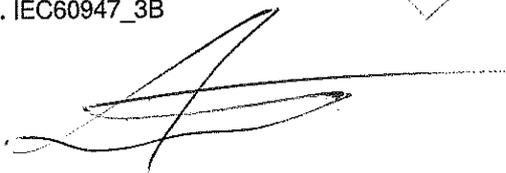
TEST REPORT

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: $2 \cdot U_e$ 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 U_e) (V)	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	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 (mm ²)	6 mm ²	—
	- test current I_e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.4.4 on page 408	P

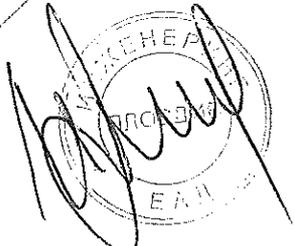
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Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 11: AC-22B, 400 V, 32 A, 2-poles)		P
8.3.4.1	Operational performance test		P
	- utilization category	AC-22B	—
	- rated operational 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 $\sqrt{3}$) L2: 414 V (239 V x $\sqrt{3}$) 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



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 (mm ²)	6 mm ²	—
	- test current Ie (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.4.4 on page 109	P



VDE 249800-4402-0705/152633



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

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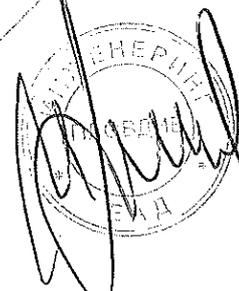
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Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test 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: $2 \cdot U_e$ 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 U_e) (V)	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	< 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 (mm ²)	4 mm ²	—
	- test current I_e (A)	25 A	—
	Measured temperature-rise	see appended table 8.3.4.4 on page 109	P

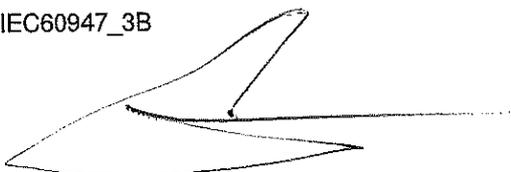
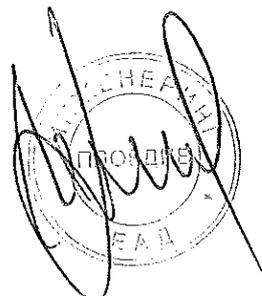
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Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY (Sample No. 13: AC-22B, 690 V, 10 A, 2-poles)		P
8.3.4.1	Operational performance test		P
	- utilization category	AC-22B	—
	- rated operational 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

TRF No. IEC60947_3B

IEC 60947-3
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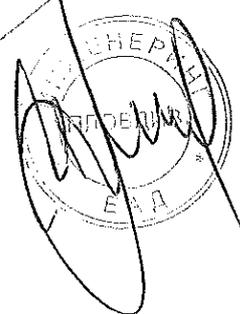


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	21,8 N (required 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: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 U_e) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	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 (mm ²)	1,5 mm ²	—
	- test current I_e (A)	10 A	—
	Measured temperature-rise	see appended table 8.3.4.4 on page 109	P

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

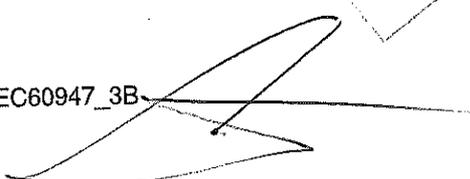
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.1.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater 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: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 U_e) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	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 (mm ²)	6 mm ²	—
	- test current I_e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.4.4 on page 110	P

VDE 249800-4402-0705/152633

TRF No. IEC60947_3B



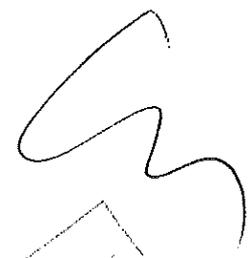

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY		N/A
8.3.5.1	Short-time withstand current test		N/A
	Rated short-time withstand current I _{cw} (A) (>12.I _e max)		N/A
	test voltage (V)	L1: L2: L3:	—
	r.m.s. test current (A)	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

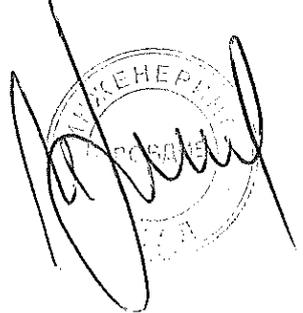
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.5.2	Short-circuit making capacity		N/A
	Rated short-circuit making capacity I _{cm} (A)		N/A
	test voltage (1.05xU _e)(V):	L1: L2: L3:	—
	r.m.s. test current (A)	L1: L2: L3:	—
	maximum 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*U _e with a minimum of 1000V~		—
	No flashover or breakdown		N/A

TRF No. IEC60947_3B

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) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ 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 (mm ²)		—
	- test current I _e (A)		—
	Measured temperature-rise	see appended table 8.3.5.5 on page __	N/A

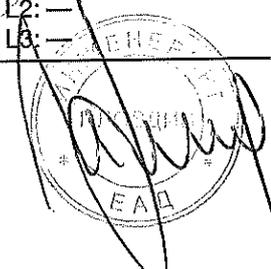

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 15: 400 V, 32 A, 1-pole)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark	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 ² dt (A ² s)	L1: 7000 A ² s 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 ² dt (A ² s)	L1: 5000 A ² s L2: — L3: —	—

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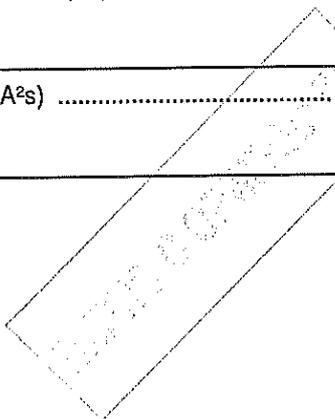
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.2.5	Behaviour of the equipment during the test		P
	Test performed without:		—
	- endanger to the operator		P
	- cause damage to adjacent equipment		P
	No permanent arcing		P
	No 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: $2 \cdot U_e$ 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 ($1,1 U_e$) (V)	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	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	Busmann	—
	- 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 (mm ²)	6 mm ²	—
	- test current I_e (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 ² dt (A ² s)	L1: 7000 A ² s 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 ² dt (A ² s)	L1: 4000 A ² s L2: — L3: —	—

TRF No. IEC60947_3B



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: $2 \cdot U_e$ 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 U_e) (V)	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	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 (mm ²)	6 mm ²	—
	- test current I_e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 111	P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 17: 400 V, 32 A, 2-poles)		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 (242,5 V x √3) L2: 420 V (242,5 V x √3) L3: —	—
	test current (kA)	L1: 101 kA L2: 101 kA 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: 6,35 kA L2: — L3: —	—
	- Joule integral I²dt (A²s)	L1: 5000 A²s 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: 6,15 kA L2: — L3: —	—
	- Joule integral I²dt (A²s)	L1: 5000 A²s L2: — L3: —	—

TRF No. IEC60947_3B

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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	22 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: $2 \cdot U_e$ 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 U_e) (V)	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	0,001 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 (mm ²)	6 mm ²	—
	- test current I_e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 111	P

TRF No. IEC60947-3B

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 18: 400 V, 32 A, 3-poles+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 (242,5 V x √3) L2: 420 V (242,5 V x √3) L3: 420 V (242,5 V x √3)	—
	test current (kA)	L1: 103 kA L2: 100 kA L3: 101 kA	—
	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: 0,4 kA L2: 4,8 kA L3: 4,8 kA	—
	- Joule integral I²dt (A²s)	L1: 0 A²s L2: 4000 A²s L3: 4000 A²s	—
	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: 1,6 kA L2: 4,2 kA L3: 4,4 kA	—
	- Joule integral I²dt (A²s)	L1: 0 A²s L2: 4000 A²s L3: 4000 A²s	—

TRF No. IEC60947_3B



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	49,1 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: $2 \cdot U_e$ 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 U_e) (V)	440 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	0,001 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	G10G32	—
	- rated current (A)	32 A (gG)	—
	- power loss (W)	2,9 W	—
	- rated breaking capacity (kA)	120 kA	—
	- conductor cross-section (mm ²)	6 mm ²	—
	- test current I_e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 111	P

TRF No. IEC60947_3B

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 19: 500 V, 25 A, 1-pole)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- manufacturer's model or type reference	C10G25	—
	- rated voltage (V)	500 V	—
	- rated current (A)	25 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: 537 V L2: — L3: —	—
	test current (kA)	L1: 107 kA L2: — L3: —	—
	rated frequency (Hz)	50 Hz	—
	power factor	0,2	—
	Time constant (ms)	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 2,59 kA L2: — L3: —	—
	- Joule integral I ² dt (A ² s)	L1: 1000 A ² s 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: 3,56 kA L2: — L3: —	—
	- Joule integral I ² dt (A ² s)	L1: 2000 A ² s L2: — L3: —	—

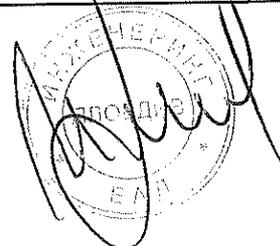
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.2.5	Behaviour of the equipment during the test		P
	Test performed without:		—
	- endanger to the operator		P
	- cause damage to adjacent equipment		P
	No permanent arcing		P
	No 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	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
8.3.6.3	Dielectric verification		P
	test voltage: $2 \cdot U_e$ 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 U_e) (V)	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	0,001 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	C10G25	—
	- rated current (A)	25 A (gG)	—
	- power loss (W)	2,6 W	—
	- rated breaking capacity (kA)	120 kA	—
	- conductor cross-section (mm ²)	4 mm ²	—
	- test current I_e (A)	25 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 112	P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 20: 500 V, 25 A, 1-pole+N)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- manufacturer's model or type reference	C10G25	—
	- rated voltage (V)	500 V	—
	- rated current (A)	25 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: 537 V L2: — L3: —	—
	test current (kA)	L1: 107 kA L2: — L3: —	—
	rated frequency (Hz)	50 Hz	—
	power factor	0,2	—
	Time constant (ms)	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 3,8 kA L2: — L3: —	—
	- Joule integral I ² dt (A ² s)	L1: 2000 A ² s 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: 2,22 kA L2: — L3: —	—
	- Joule integral I ² dt (A ² s)	L1: 1000 A ² s L2: — L3: —	—

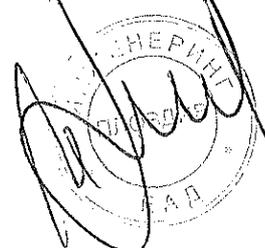
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.2.5	Behaviour of the equipment during the test		P
	Test performed without:		—
	- endanger to the operator		P
	- cause damage to adjacent equipment		P
	No permanent arcing		P
	No 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		R
	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	20,6 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
8.3.6.3	Dielectric verification		P
	test voltage: $2 \cdot U_e$ 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 U_e) (V)	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	0,001 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	C10G25	—
	- rated current (A)	25 A (gG)	—
	- power loss (W)	2,6 W	—
	- rated breaking capacity (kA)	120 kA	—
	- conductor cross-section (mm ²)	4 mm ²	—
	- test current I_e (A)	25 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 112	P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 21: 500 V, 25 A, 2-poles)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- manufacturer's model or type reference	C10G25	—
	- rated voltage (V)	500 V	—
	- rated current (A)	25 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: 537 V (310 V x √3) L2: 537 V (310 V x √3) L3: —	—
	test current (kA)	L1: 107 kA L2: 107 kA L3: —	—
	rated frequency (Hz)	50 Hz	—
	power factor	0,2	—
	Time constant (ms)	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 3,71 kA L2: — L3: —	—
	- Joule integral I²dt (A²s)	L1: 1000 A²s 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: 3,64 kA L2: — L3: —	—
	- Joule integral I²dt (A²s)	L1: 1000 A²s L2: — L3: —	—

TRF No. IEC60947_3B



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:		P
	- 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	31,2 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
8.3.6.3	Dielectric verification		P
	test voltage: $2 \cdot U_e$ 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 U_e) (V)	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	0,005 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	C10G25	—
	- rated current (A)	25 A (gG)	—
	- power loss (W)	2,6 W	—
	- rated breaking capacity (kA)	120 kA	—
	- conductor cross-section (mm ²)	4 mm ²	—
	- test current I_e (A)	25 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 112	P

TRF No. IEC60947_3B

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 22: 500 V, 25 A, 3-poles+N)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- manufacturer's model or type reference	C10G25	—
	- rated voltage (V)	500 V	—
	- rated current (A)	25 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: 730 V (421,5 V x $\sqrt{3}$) L2: 730 V (421,5 V x $\sqrt{3}$) L3: 730 V (421,5 V x $\sqrt{3}$)	—
	test current (kA)	L1: 102 kA L2: 102 kA L3: 101 kA	—
	rated frequency (Hz)	50 Hz	—
	power factor	0,2	—
	Time constant (ms)	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 1,9 kA L2: 3,8 kA L3: 2,0 kA	—
	- Joule integral I ² dt (A ² s)	L1: 1000 A ² s L2: 2000 A ² s L3: 1000 A ² s	—
	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)	1,4 m/s	—
	- max. let-through current (kA)	L1: 0 kA L2: 3,16 kA L3: 3,16 kA	—
	- Joule integral I ² dt (A ² s)	L1: 0 A ² s L2: 1000 A ² s L3: 1000 A ² s	—

TRF No. IEC60947_3B



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	46,4 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
8.3.6.3	Dielectric verification		P
	test voltage: $2 \cdot U_e$ 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 U_e) (V)	550 V (tested with 759 V)	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	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	C10G25	—
	- rated current (A)	25 A (gG)	—
	- power loss (W)	2,6 W	—
	- rated breaking capacity (kA)	120 kA	—
	- conductor cross-section (mm ²)	4 mm ²	—
	- test current I_e (A)	25 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 113	P

TRF No. IEC60947_3B



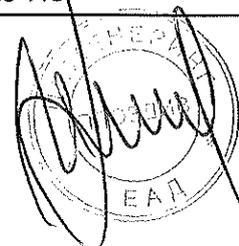
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 23: 690 V, 10 A, 1-pole)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark	SIBA	—
	- manufacturer's model or type reference	50 179 06.10	—
	- rated voltage (V)	690 V	—
	- rated current (A)	10 A (gR)	—
	- rated breaking capacity (kA)	200 kA	—
8.3.6.2	Fuse protected short-circuit withstand		P
	test voltage (1,05 Ue) (V)	L1: 725 V L2: — L3: —	—
	test current (kA)	L1: 52,7 kA L2: — L3: —	—
	rated frequency (Hz)	50 Hz	—
	power factor	0,13	—
	Time constant (ms)	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 2,0 kA L2: — L3: —	—
	- Joule integral I ² dt (A ² s)	L1: 0 A ² s 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: 0,77 kA L2: — L3: —	—
	- Joule integral I ² dt (A ² s)	L1: 0 A ² s L2: — L3: —	—

TRF No. IEC60947_3B



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	18,8 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: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 U_e) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	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	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 (mm ²)	1,5 mm ²	—
	- test current I_e (A)	10 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 113	P

TRF No. IEC60947_3B



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 24: 690 V, 10 A, 1-pole+N)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark	SIBA	—
	- manufacturer's model or type reference	50 179 06.10	—
	- rated voltage (V)	690 V	—
	- rated current (A)	10 A (gR)	—
	- rated breaking capacity (kA)	200 kA	—
8.3.6.2	Fuse protected short-circuit withstand		P
	test voltage (1,05 Ue) (V)	L1: 726 V L2: — L3: —	—
	test current (kA)	L1: 52,7 kA L2: — L3: —	—
	rated frequency (Hz)	50 Hz	—
	power factor	0,13	—
	Time constant (ms)	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 1,02 kA L2: — L3: —	—
	- Joule integral I ² dt (A ² s)	L1: 0 A ² s 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: 0,78 kA L2: — L3: —	—
	- Joule integral I ² dt (A ² s)	L1: 0 A ² s L2: — L3: —	—

TRF No. IEC60947_3B

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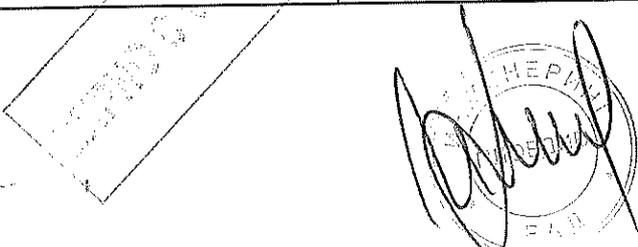


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.2.5	Behaviour of the equipment during the test		P
	Test performed without:		—
	- endanger to the operator		P
	- cause damage to adjacent equipment		P
	No permanent arcing		P
	No flash over between poles and poles and frame		P
	No 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	25,4 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
8.3.6.3	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 U_e) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	0,001 mA	P
8.3.6.5	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 (mm ²)	1,5 mm ²	—
	- test current I_e (A)	10 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 113	P

TRF No. IEC60947_3B

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 25: 690 V, 10 A, 2-poles)		P
	Protective device details:		P
	- manufacturer's name, trademark or identification mark	SIBA	—
	- manufacturer's model or type reference	50 179 06.10	—
	- rated voltage (V)	690 V	—
	- rated current (A)	10 A (gR)	—
	- rated breaking capacity (kA)	200 kA	—
8.3.6.2	Fuse protected short-circuit withstand		P
	test voltage (1,05 Ue) (V)	L1: 726 V (419,16 V x √3) L2: 726 V (419,16 V x √3) L3: —	—
	test current (kA)	L1: 52,7 kA L2: 52,7 kA L3: —	—
	rated frequency (Hz)	50 Hz	—
	power factor	0,13	—
	Time constant (ms)	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 0,61 kA L2: — L3: —	—
	- Joule integral I²dt (A²s)	L1: 0 A²s 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: 0,55 kA L2: — L3: —	—
	- Joule integral I²dt (A²s)	L1: 0 A²s L2: — L3: —	—

TRF No. IEC60947_3B



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	34,2 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
8.3.6.3	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 U_e) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	0,003 mA	P
8.3.6.5	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 (mm ²)	1,5 mm ²	—
	- test current I_e (A)	10 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 14	P

TRF No. IEC60947-3B

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT (Sample No. 26: 690 V, 32 A, 3-poles+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: 726 V (419,16 V x √3) L2: 726 V (419,16 V x √3) L3: 726 V (419,16 V x √3)	—
	test current (kA)	L1: 50,9 kA L2: 52,2 kA L3: 51,0 kA	—
	rated frequency (Hz)	50 Hz	—
	power factor	0,23	—
	Time constant (ms)	—	—
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 0,9 kA L2: 5,6 kA L3: 5,6 kA	—
	- Joule integral I²dt (A²s)	L1: 2000 A²s L2: 8000 A²s L3: 6000 A²s	—
	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)	1,4 m/s	—
	- max. let-through current (kA)	L1: 5,3 kA L2: 5,3 kA L3: 0 kA	—
	- Joule integral I²dt (A²s)	L1: 5000 A²s L2: 5000 A²s L3: 0 A²s	—

TRF No. IEC60947_3B

IEC 60947-3

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	51,6 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
8.3.6.3	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 U_e) (V)	759 V	—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) $\leq 2,0$ mA/pole	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 (mm ²)	6 mm ²	—
	- test current I_e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.6.5 on page 114	P

TRF No. IEC60947_3B

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.7	TEST SEQUENCE V: OVERLOAD PERFORMANCE CAPABILITY (Sample No. 27: 690 V, 32 A, 1-pole)		P
8.3.7.1	Overload test		P
	ambient temperature 10-40 °C	25,6 °C	—
	test enclosure W x H x D (mm x mm x mm)	—	—
	material of enclosure	—	—
	test current 1,6xI _{th} or 1,6xI _{th} (A)	52	—
	cable/busbar cross-section (mm ²) / length (mm)	6 mm ² cable / 1000 mm long	—
	Fuse-link details:		P
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- rated current (A)	32 A (gG)	—
	- power loss (W)	2,9 W	—
	- rated breaking capacity (kA)	120 kA	—
	- time duration of the overload test (s)	824 s	—
	Within 3 to 5 min after the fuse(s) has(have) operated (or 1 h), the equipment has been operated once, i.e. opened and closed		P
	Required opening force not greater than the test force of 8.2.5.2 and table 8	14 N (required opening force) 150 N (test force acc. tab. 8)	P
	The equipment has not undergone any impairment hindering such operation		P
8.3.7.2	Dielectric verification		P
	test voltage: 2*U _e with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.7.3	Leakage current		P
	test voltage (1,1 U _e) (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	0,002 mA	P

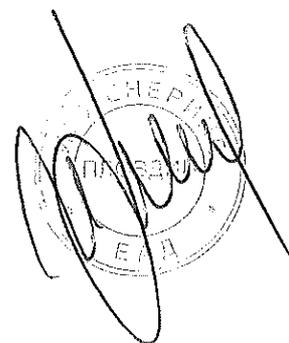
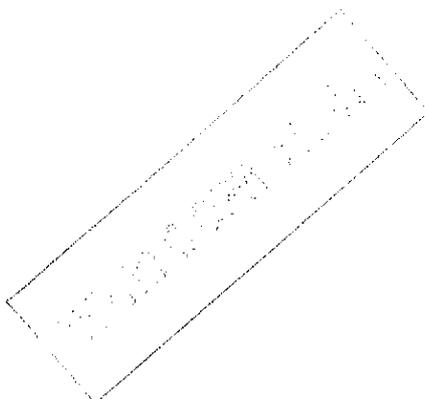
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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.7.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- manufacturer's model or type reference	C10G32	—
	- rated current (A)	32 A (gG)	—
	- power loss (W)	2,9 W	—
	- rated breaking capacity (kA)	120 kA	—
	Fuse links aged during the overload test are replaced by new fuse-links		P
	- conductor cross-section (mm ²)	6 mm ²	—
	- test current I _e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.7.4 on page 114	P

TRF No. IEC60947_3B

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.7	TEST SEQUENCE V: OVERLOAD PERFORMANCE CAPABILITY (Sample No. 28: 690 V, 32 A, 2-poles)		P
8.3.7.1	Overload test		P
	ambient temperature 10-40 °C	23,6 °C	—
	test enclosure W x H x D (mm x mm x mm)	—	—
	material of enclosure	—	—
	test current 1,6xI _{th} e or 1,6xI _{th} h (A)	52	—
	cable/busbar cross-section (mm ²) / length (mm) ...	6 mm ² cable / 1000 mm long	—
	Fuse-link details:		P
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- rated current (A)	32 A (gG)	—
	- power loss (W)	2,9 W	—
	- rated breaking capacity (kA)	120 kA	—
	- time duration of the overload test (s)	573 s	—
	Within 3 to 5 min after the fuse(s) has(have) operated (or 1 h), the equipment has been operated once, i.e. opened and closed		P
	Required opening force not greater than the test force of 8.2.5.2 and table 8	17,2 N (required opening force) 150 N (test force acc. tab. 8)	P
	The equipment has not undergone any impairment hindering such operation		P
8.3.7.2	Dielectric verification		P
	test voltage: 2*U _e with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.7.3	Leakage current		P
	test voltage (1,1 U _e) (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	0,001 mA	P

TRF No. IEC60947_3B

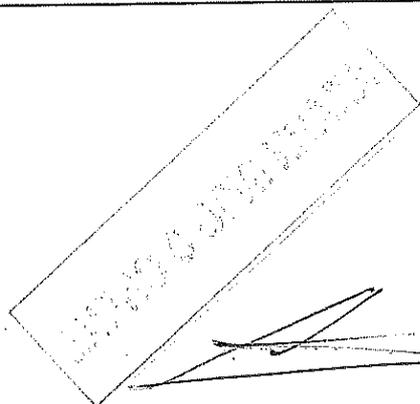


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.7.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- manufacturer's model or type reference	C10G32	—
	- rated current (A)	32 A (gG)	—
	- power loss (W)	2,9 W	—
	- rated breaking capacity (kA)	120 kA	—
	Fuse links aged during the overload test are replaced by new fuse-links		P
	- conductor cross-section (mm ²)	6 mm ²	—
	- test current I _e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.7.4 on page 115	P

TRF No. IEC60947_3B

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.7	TEST SEQUENCE V: OVERLOAD PERFORMANCE CAPABILITY (Sample No. 29: 690 V, 32 A, 3-poles+N)		P
8.3.7.1	Overload test		P
	ambient temperature 10-40 °C	23,6 °C	—
	test enclosure W x H x D (mm x mm x mm)	—	—
	material of enclosure	—	—
	test current 1,6xI _{th} e or 1,6xI _{th} (A)	52	—
	cable/busbar cross-section (mm ²) / length (mm)	6 mm ² cable / 1000 mm long	—
	Fuse-link details:		P
	- manufacturer's name, trademark or identification mark	Bussmann	—
	- rated current (A)	32 A (gG)	—
	- power loss (W)	2,9 W	—
	- rated breaking capacity (kA)	120 kA	—
	- time duration of the overload test (s)	540 s	—
	Within 3 to 5 min after the fuse(s) has(have) operated (or 1 h), the equipment has been operated once, i.e. opened and closed		P
	Required opening force not greater than the test force of 8.2.5.2 and table 8	35,2 N (required opening force) 150 N (test force acc. tab. 8)	P
	The equipment has not undergone any impairment hindering such operation		P
8.3.7.2	Dielectric verification		P
	test voltage: 2*U _e with a minimum of 1000V~	1380 V	—
	No flashover or breakdown		P
8.3.7.3	Leakage current		P
	test voltage (1,1 U _e) (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	0,001 mA	P

TRF No. IEC60947_3B



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.7.4	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		—
	- manufacturer's name, trademark or identification mark	Busmann	—
	- 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	—
	Fuse links aged during the overload test are replaced by new fuse-links		P
	- conductor cross-section (mm ²)	6 mm ²	—
	- test current I _e (A)	32 A	—
	Measured temperature-rise	see appended table 8.3.7.4 on page 115	P

8.4	ELECTROMAGNETIC COMPATIBILITY TESTS		N/A
8.4.1	Immunity		N/A
8.4.1.1	Equipment not incorporating electronic circuits: no tests necessary		N/A
8.4.1.2	Equipment incorporating electronic circuits:		N/A
	Equipment utilizing circuits in which all components are passive are not required to be tested		N/A
	All other equipment, requirements according to 7.3.3.2 and limits according table 6 apply		N/A
	Performed tests.....	see _____	N/A
	No unintentional separation or closing of contacts has occurred during these tests		N/A
8.4.2	Emission		N/A
8.4.2.1	Equipment not incorporating electronic circuits: no tests necessary		N/A
8.4.2.2	Equipment incorporating electronic circuits:		N/A
	Equipment utilizing circuits in which all components are passive are not required to be tested		N/A
	All other equipment, requirements according to 7.3.3.2 and limits according table 7 apply		N/A
	Performed tests.....	see _____	N/A

TRF No. IEC60947_3B



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
Annex A (normative)			N/A
A	Equipment for direct switching of a single motor		N/A
A.1	Additional rated duties.....:		N/A
A.1.1	- intermittent periodic duty		N/A
	- intermittent duty		N/A
A.1.1.1	Classes of intermittent duty		N/A
	-class 1: up to 1 operating cycle per hour		N/A
	-class 3: up to 3 operating cycle per hour		N/A
	-class 12: up to 12 operating cycles per hour		N/A
	-class 30: up to 30 operating cycles per hour		N/A
	-class 120: up to 120 operating cycles per hour		N/A
A.1.2	Temporary duty		N/A
A.5	Mechanical durability:		N/A
	Equipment mounted according to manufacturer's instruction		N/A
	Preferred number of no-load operating cycles expressed in millions.....:		N/A
	0,001 – 0,003 – 0,01 – 0,03 – 0,1 – 0,3 - 1		N/A
	If no mechanical endurance is stated by the manufacturer, a minimum mechanical endurance according to the class of intermittent duty shall be tested.	Class of intermittent duty:	N/A
	Number of no-load operating cycles performed.....:		N/A
A.6	Electrical durability:		N/A
	- test according to manufacturer's instruction		N/A
A.7	Verification of making and breaking capacities:		N/A
	- utilization category		—
	- rated operational voltage U_e (V)		—
	- rated operational current I_e (A) or power (kW)		—
	Conditions for make/break operations or make operations:		—
	- test voltage, $U = 1,05 U_e$ (V):	L1: L2: L3:	—
	- test current, $I =$ x I_e (A):	L1: L2: L3:	—

TRF No. IEC60947_3B

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- power factor	L1: L2: L3:	—
	Conditions for make/break operations:		N/A
	- test voltage, $U = 1,05 U_e$ (V):	L1: L2: L3:	—
	- test current, $I =$ x I_e (A):	L1: L2: L3:	—
	- power factor/ time constant	L1: L2: L3:	—
	Number of make/break or make and break operations		N/A
	- recovery voltage duration (≥ 50 ms)		N/A
	- current duration (ms)		—
	- time interval between operations		N/A
	Characteristic of transient recovery voltage if necessary:		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		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

TRF No. IEC60947_3B

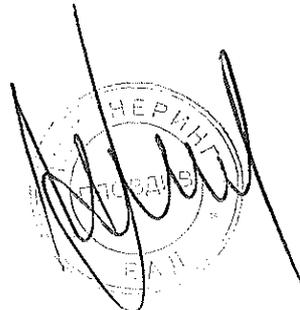
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		N/A
	Immediately after the test equipment must work satisfactorily		N/A
	- required opening force not greater than the test force of 8.2.5.2 and table 8		N/A
	- equipment is able to carry its rated current after normal closing operation		N/A
8.3.3.4	Dielectric verification		N/A
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~		N/A
	No flashover or breakdown		N/A
8.3.3.5	Leakage current		N/A
	test voltage (1,1 U_e) (V)		—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole)		N/A
8.3.3.6	Temperature-rise verification		N/A
	- conductor cross-section (mm ²)		—
	- test current I_e (A)		—
	Measured temperature-rise	see ___	N/A
A.8	Operational performance test:		N/A
	- utilization category		—
	- rated operational voltage (V)		—
	- rated operational current (A)		—
	Test conditions for electrical operation cycles:		N/A
	- test voltage (V)	L1: L2: L3:	—
	- test current (A)	L1: L2: L3:	—
	- power factor/time constant	L1: L2: L3:	—
	Number of cycles with current		N/A
	Number of cycles without current		N/A

TRF No. IEC60947-3B

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IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	First test sequence (with/without current)		—
	Second test sequence (with/without current)		—
	- time interval between first and second test sequence		—
8.3.4.1.5	Behaviour of the equipment during the operational performance 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
8.3.4.1.6	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
8.3.4.2	Dielectric verification		N/A
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~		—
	No breakdown or flashover		N/A
8.3.4.3	Leakage current		N/A
	test voltage (1,1 U_e) (V)		—
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole		N/A
8.3.4.4	Temperature-rise verification		N/A
	- conductor cross-section (mm ²)		—
	- test current I_e (A)		—
	Measured temperature-rise	see ___	N/A
A.9	Special tests:	see ___	N/A

TRF No. IEC60947_3B



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
Annex C (normative)			N/A
C	Single pole operated three pole switches		N/A
C.1	Three pole operated switches of fundamentally the same design, already successfully tested are deemed to satisfy the requirements of individually operated three pole devices.		N/A
C.2	Additional-tests to be performed on single pole operated three pole switches		N/A
	Test "8.3.3.3 Making and breaking capacities" according to test sequence I with following modifications		N/A
	L1 and L2 are closed, L3 is subjected to the required make-break operation cycle		N/A
	L2 closed and L3 opened, L1 is subjected to the required make-break operation cycle		N/A
	Test performed in a three phase circuit		N/A
	Test "8.3.4.1 Operational performance" according to test sequence II with following modifications		N/A
	L1 and L2 are closed, L3 is subjected to the required make-break operation cycle		N/A
	L2 closed and L3 opened, L1 is subjected to the required make-break operation cycle		N/A
	Test performed in a three phase circuit		N/A
	Test "8.3.6.2 Fuse protected short circuit test" according to test sequence IV with following modifications		N/A
	For the making test L1 shall be open and L2 closed, L3 is subjected to the required make operation cycle		N/A
	L2 closed and L3 opened, L1 is subjected to the required make-break operation cycle		N/A
	Test performed in a three phase circuit		N/A
C.5	Instruction for use		N/A
	The product literature includes following statement :		N/A
	These devices are intended for power distribution systems where switching and/or isolating of an individual phase may be necessary and shall not be used for the switching of the primary circuit of three-phase equipment.		N/A

TRF No. IEC60947_3B

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

7.1.4	TABLE: Clearance and creepage distance measurements						
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)	
Between active parts and parts intended to be touched	7300	800	2	>5,5	11	>11	
Between active parts and enclosure	7300	800	2	>5,5	11	>11	
Between active parts and fuse-link with the contacts in open position	9800	800	2	>5,5	11	>11	
supplementary information:							

8.3.3.1	TABLE: Temperature-rise (measurements) (Sample No. 1: I _e = 25 A)		P
Temperature rise dT of part:	dT (K) measured	dT (K) required	
Above terminals (cable connection)	39,3	70	
Below terminals (cable connection)	35,3	70	
Manual operating means: metallie / non-metallic	4,3	25	
Parts intended to be touched but not hand-held: metallie / non-metallic	8,5	40	
Parts which need not be touched during normal operation: metallie / non-metallic	12,8	50	
supplementary information: Ambient temperature:			22,7 °C

8.3.3.6	TABLE: Temperature-rise (measurements) (Sample No. 1: I _e = 25 A)		P
Temperature rise dT of part:	dT (K) measured	dT (K) required	
Terminals	37,2	80	
Manual operating means: metallie / non-metallic	4,6	35	
Parts intended to be touched but not hand-held: metallie / non-metallic	6,1	50	
Parts which need not be touched during normal operation: metallie / non-metallic	17,0	60	
supplementary information: Ambient temperature:			22,9 °C

TRF No. IEC60947_3B

249800-4402-0705/152633

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

8.3.3.1	TABLE: Temperature-rise (measurements) (Sample No. 2: $I_e = 10\text{ A}$)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Above terminals (cable connection)		31,7	70
Below terminals (cable connection)		29,8	70
Manual operating means: metallie / non-metallic		5,0	25
Parts intended to be touched but not hand-held: metallie / non-metallic		8,8	40
Parts which need not be touched during normal operation: metallie / non-metallic		15,3	50
supplementary information:		Ambient temperature:	22,7 °C

8.3.3.6	TABLE: Temperature-rise (measurements) (Sample No. 2: $I_e = 10\text{ A}$)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		32,9	80
Manual operating means: metallie / non-metallic		3,7	35
Parts intended to be touched but not hand-held: metallie / non-metallic		5,4	50
Parts which need not be touched during normal operation: metallie / non-metallic		19,4	60
supplementary information:		Ambient temperature:	23,8 °C

8.3.3.1	TABLE: Temperature-rise (measurements) (Sample No. 3: $I_e = 32\text{ A}$)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Above terminals (cable connection)		45,0	70
Below terminals (cable connection)		37,5	70
Manual operating means: metallie / non-metallic		5,5	25
Parts intended to be touched but not hand-held: metallie / non-metallic		13,8	40
Parts which need not be touched during normal operation: metallie / non-metallic		12,0	50
supplementary information:		Ambient temperature:	22,7 °C

TRF No. IEC60947_3B

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

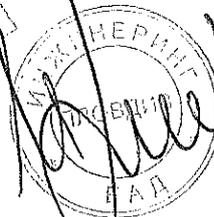
8.3.3.6	TABLE: Temperature-rise (measurements) (Sample No. 3: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		39,0	80
Manual operating means: metallie / non-metallic		4,8	35
Parts intended to be touched but not hand-held: metallie / non-metallic		5,4	50
Parts which need not be touched during normal operation: metallie / non-metallic		21,1	60
supplementary information:		Ambient temperature: 24,3 °C	

8.3.3.1	TABLE: Temperature-rise (measurements) (Sample No. 4: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Above terminals (cable connection)		48,5	70
Below terminals (cable connection)		47,3	70
Manual operating means: metallie / non-metallic		7,8	25
Parts intended to be touched but not hand-held: metallie / non-metallic		21,8	40
Parts which need not be touched during normal operation: metallie / non-metallic		14,5	50
supplementary information:		Ambient temperature: 22,7 °C	

8.3.3.6	TABLE: Temperature-rise (measurements) (Sample No. 4: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		49,0	80
Manual operating means: metallie / non-metallic		8,8	35
Parts intended to be touched but not hand-held: metallie / non-metallic		12,9	50
Parts which need not be touched during normal operation: metallie / non-metallic		26,9	60
supplementary information:		Ambient temperature: 24,4 °C	

TRF No. IEC60947_3B

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

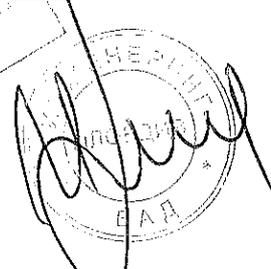
8.3.3.1	TABLE: Temperature-rise (measurements) (Sample No. 5: $I_b = 25$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Above terminals (cable connection)		44,3	70
Below terminals (cable connection)		42,9	70
Manual operating means: metallie / non-metallic		10,6	25
Parts intended to be touched but not hand-held: metallie / non-metallic		13,3	40
Parts which need not be touched during normal operation: metallie / non-metallic		15,2	50
supplementary information:		Ambient temperature:	22,7 °C

8.3.3.6	TABLE: Temperature-rise (measurements) (Sample No. 5: $I_b = 25$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		47,5	80
Manual operating means: metallie / non-metallic		8,9	35
Parts intended to be touched but not hand-held: metallie / non-metallic		16,2	50
Parts which need not be touched during normal operation: metallie / non-metallic		22,8	60
supplementary information:		Ambient temperature:	22,9 °C

8.3.3.1	TABLE: Temperature-rise (measurements) (Sample No. 6: $I_b = 10$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Above terminals (cable connection)		44,5	70
Below terminals (cable connection)		40,8	70
Manual operating means: metallie / non-metallic		9,3	25
Parts intended to be touched but not hand-held: metallie / non-metallic		19,5	40
Parts which need not be touched during normal operation: metallie / non-metallic		14,8	50
supplementary information:		Ambient temperature:	22,7 °C

TRF No. IEC60947_3B

VDE 249800-4402-0705/152633



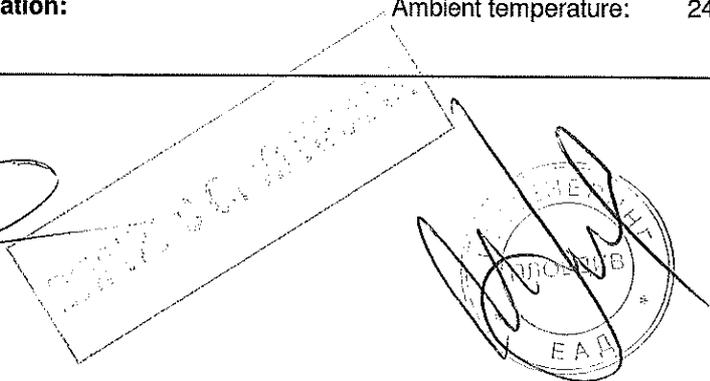
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Clause	Requirement + Test	Result - Remark	Verdict

8.3.3.6	TABLE: Temperature-rise (measurements) (Sample No. 6: I _e = 10 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		50,4	80
Manual operating means: metallie / non-metallic		6,3	35
Parts intended to be touched but not hand-held: metallie / non-metallic		13,8	50
Parts which need not be touched during normal operation: metallie / non-metallic		27,0	60
supplementary information:		Ambient temperature:	23,8 °C

8.3.3.1	TABLE: Temperature-rise (measurements) (Sample No. 7: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Above terminals (cable connection)		63,8	70
Below terminals (cable connection)		63,9	70
Manual operating means: metallie / non-metallic		16,9	25
Parts intended to be touched but not hand-held: metallie / non-metallic		32,8	40
Parts which need not be touched during normal operation: metallie / non-metallic		22,3	50
supplementary information:		Ambient temperature:	22,7 °C

8.3.3.6	TABLE: Temperature-rise (measurements) (Sample No. 7: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		59,9	80
Manual operating means: metallie / non-metallic		11,2	35
Parts intended to be touched but not hand-held: metallie / non-metallic		23,7	50
Parts which need not be touched during normal operation: metallie / non-metallic		27,6	60
supplementary information:		Ambient temperature:	24,4 °C

TRF No. IEC60947_3B



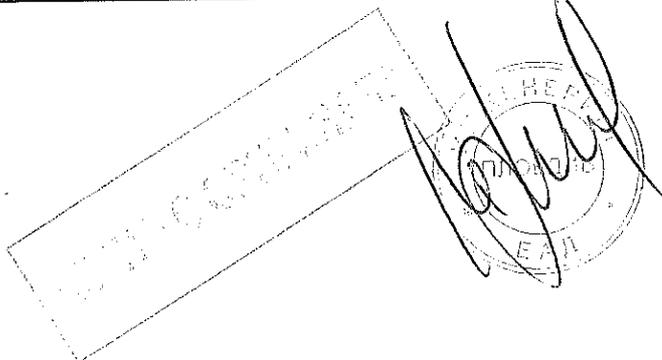
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Clause	Requirement + Test	Result - Remark	Verdict

8.3.4.4	TABLE: Temperature-rise (measurements) (Sample No. 8: $I_e = 25\text{ A}$)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		39,6	80
Manual operating means: metallie / non-metallic		5,5	35
Parts intended to be touched but not hand-held: metallie / non-metallic		17,6	50
Parts which need not be touched during normal operation: metallie / non-metallic		25,9	60
supplementary information:		Ambient temperature:	25,3 °C

8.3.4.4	TABLE: Temperature-rise (measurements) (Sample No. 9: $I_e = 10\text{ A}$)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		43,1	80
Manual operating means: metallie / non-metallic		3,3	35
Parts intended to be touched but not hand-held: metallie / non-metallic		14,0	50
Parts which need not be touched during normal operation: metallie / non-metallic		20,3	60
supplementary information:		Ambient temperature:	25,3 °C

8.3.4.4	TABLE: Temperature-rise (measurements) (Sample No. 10: $I_e = 32\text{ A}$)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		47,5	80
Manual operating means: metallie / non-metallic		10,8	35
Parts intended to be touched but not hand-held: metallie / non-metallic		24,4	50
Parts which need not be touched during normal operation: metallie / non-metallic		26,1	60
supplementary information:		Ambient temperature:	25,3 °C

TRF No. IEC60947_3B



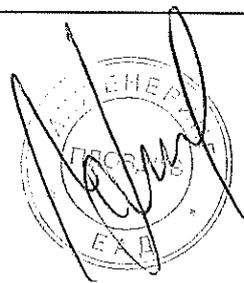
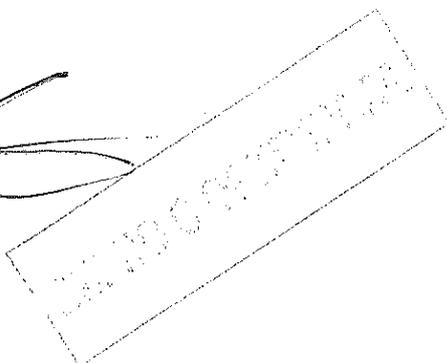
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Clause	Requirement + Test	Result - Remark	Verdict

8.3.4.4	TABLE: Temperature-rise (measurements) (Sample No. 11: $I_e = 32$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		42,5	80
Manual operating means: metallie / non-metallic		9,2	35
Parts intended to be touched but not hand-held: metallie / non-metallic		22,1	50
Parts which need not be touched during normal operation: metallie / non-metallic		22,5	60
supplementary information:		Ambient temperature:	25,3 °C

8.3.4.4	TABLE: Temperature-rise (measurements) (Sample No. 12: $I_e = 25$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		48,9	80
Manual operating means: metallie / non-metallic		8,4	35
Parts intended to be touched but not hand-held: metallie / non-metallic		28,8	50
Parts which need not be touched during normal operation: metallie / non-metallic		30,4	60
supplementary information:		Ambient temperature:	25,3 °C

8.3.4.4	TABLE: Temperature-rise (measurements) (Sample No. 13: $I_e = 10$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		43,8	80
Manual operating means: metallie / non-metallic		9,3	35
Parts intended to be touched but not hand-held: metallie / non-metallic		28,5	50
Parts which need not be touched during normal operation: metallie / non-metallic		28,7	60
supplementary information:		Ambient temperature:	25,3 °C

TRF No. IEC60947_3B



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

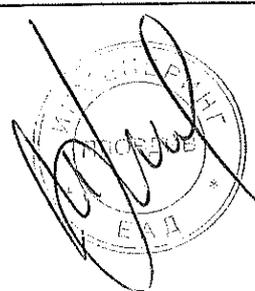
8.3.4.4	TABLE: Temperature-rise (measurements) (Sample No. 14: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		44,1	80
Manual operating means: metallie / non-metallic		14,5	35
Parts intended to be touched but not hand-held: metallie / non-metallic		34,0	50
Parts which need not be touched during normal operation: metallie / non-metallic		23,3	60
supplementary information:		Ambient temperature:	25,3 °C

8.3.5.5	TABLE: Temperature-rise (measurements)		N/A
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals			
Manual operating means: metallic / non-metallic			
Parts intended to be touched but not hand-held: metallic / non-metallic			
Parts which need not be touched during normal operation: metallic / non-metallic			
supplementary information:			

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 15: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		53,5	80
Manual operating means: metallie / non-metallic		6,0	35
Parts intended to be touched but not hand-held: metallie / non-metallic		16,8	50
Parts which need not be touched during normal operation: metallie / non-metallic		26,3	60
supplementary information:		Ambient temperature:	23,5 °C

TRF No. IEC60947_3B

2013.07.10.10.10.10

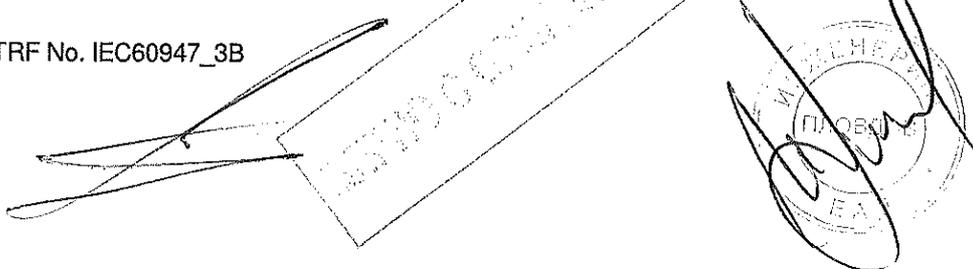


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 16: $I_b = 32$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		58,5	80
Manual operating means: metallie / non-metallic		10,2	35
Parts intended to be touched but not hand-held: metallie / non-metallic		21,8	50
Parts which need not be touched during normal operation: metallie / non-metallic		40,5	60
supplementary information:		Ambient temperature:	24,9 °C

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 17: $I_b = 32$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		65,9	80
Manual operating means: metallie / non-metallic		14,1	35
Parts intended to be touched but not hand-held: metallie / non-metallic		28,4	50
Parts which need not be touched during normal operation: metallie / non-metallic		44,7	60
supplementary information:		Ambient temperature:	24,6 °C

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 18: $I_b = 32$ A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		60,3	80
Manual operating means: metallie / non-metallic		16,6	35
Parts intended to be touched but not hand-held: metallie / non-metallic		35,0	50
Parts which need not be touched during normal operation: metallie / non-metallic		33,5	60
supplementary information:		Ambient temperature:	24,2 °C

TRF No. IEC60947_3B



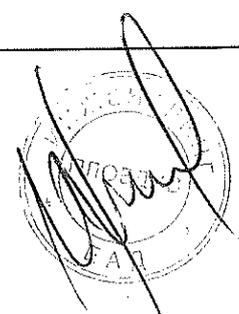
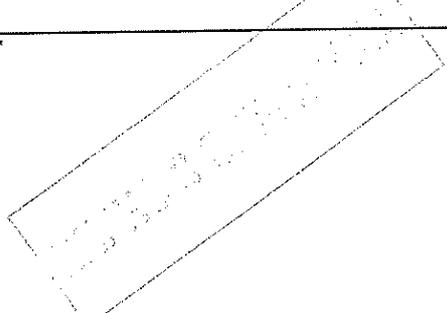
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 19: I _e = 25 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		35,6	80
Manual operating means: metallic / non-metallic		6,5	35
Parts intended to be touched but not hand-held: metallic / non-metallic		15,7	50
Parts which need not be touched during normal operation: metallic / non-metallic		22,0	60
supplementary information:		Ambient temperature:	24,6 °C

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 20: I _e = 25 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		42,1	80
Manual operating means: metallic / non-metallic		8,6	35
Parts intended to be touched but not hand-held: metallic / non-metallic		19,1	50
Parts which need not be touched during normal operation: metallic / non-metallic		24,3	60
supplementary information:		Ambient temperature:	24,6 °C

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 21: I _e = 25 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		46,6	80
Manual operating means: metallic / non-metallic		12,9	35
Parts intended to be touched but not hand-held: metallic / non-metallic		26,5	50
Parts which need not be touched during normal operation: metallic / non-metallic		28,2	60
supplementary information:		Ambient temperature:	24,6 °C

TRF No. IEC60947_3B



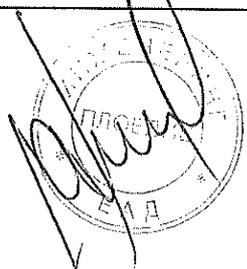
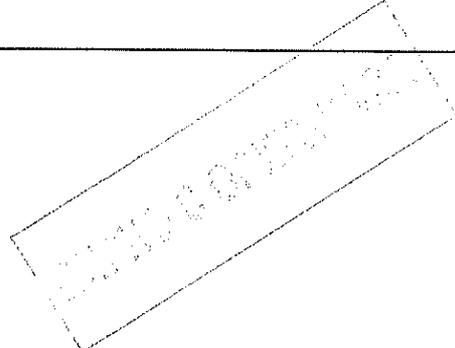
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 22: I _e = 25 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		57,7	80
Manual operating means: metallie / non-metallic		16,8	35
Parts intended to be touched but not hand-held: metallie / non-metallic		33,8	50
Parts which need not be touched during normal operation: metallie / non-metallic		30,6	60
supplementary information:		Ambient temperature:	24,6 °C

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 23: I _e = 10 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		33,5	80
Manual operating means: metallie / non-metallic		3,5	35
Parts intended to be touched but not hand-held: metallie / non-metallic		13,0	50
Parts which need not be touched during normal operation: metallie / non-metallic		19,0	60
supplementary information:		Ambient temperature:	23,3 °C

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 24: I _e = 10 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		31,9	80
Manual operating means: metallie / non-metallic		6,1	35
Parts intended to be touched but not hand-held: metallie / non-metallic		17,1	50
Parts which need not be touched during normal operation: metallie / non-metallic		19,3	60
supplementary information:		Ambient temperature:	23,3 °C

TRF No. IEC60947_3B



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

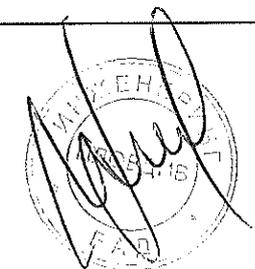
8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 25: I _e = 10 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		45,7	80
Manual operating means: metallie / non-metallic		8,4	35
Parts intended to be touched but not hand-held: metallie / non-metallic		24,1	50
Parts which need not be touched during normal operation: metallie / non-metallic		25,3	60
supplementary information:		Ambient temperature:	23,3 °C

8.3.6.5	TABLE: Temperature-rise (measurements) (Sample No. 26: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		56,8	80
Manual operating means: metallie / non-metallic		13,5	35
Parts intended to be touched but not hand-held: metallie / non-metallic		33,0	50
Parts which need not be touched during normal operation: metallie / non-metallic		30,8	60
supplementary information:		Ambient temperature:	24,6 °C

8.3.7.4	TABLE: Temperature-rise (measurements) (Sample No. 27: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		42,5	80
Manual operating means: metallie / non-metallic		2,8	35
Parts intended to be touched but not hand-held: metallie / non-metallic		14,0	50
Parts which need not be touched during normal operation: metallie / non-metallic		21,6	60
supplementary information:		Ambient temperature:	22,6 °C

TRF No. IEC60947_3B

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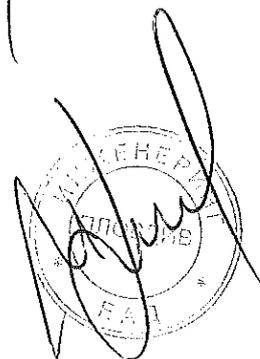
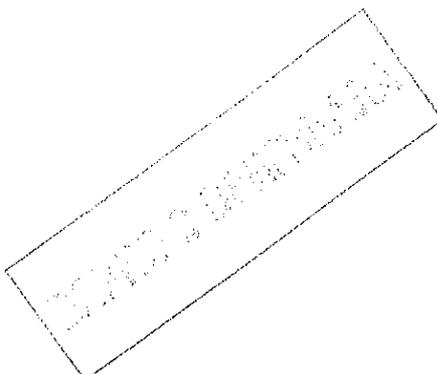


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.7.4	TABLE: Temperature-rise (measurements) (Sample No. 28: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		46,8	80
Manual operating means: metallie / non-metallic		11,7	35
Parts intended to be touched but not hand-held: metallie / non-metallic		31,8	50
Parts which need not be touched during normal operation: metallie / non-metallic		35,4	60
supplementary information:		Ambient temperature:	23,4 °C

8.3.7.4	TABLE: Temperature-rise (measurements) (Sample No. 29: I _e = 32 A)		P
Temperature rise dT of part:		dT (K) measured	dT (K) required
Terminals		53,6	80
Manual operating means: metallie / non-metallic		17,5	35
Parts intended to be touched but not hand-held: metallie / non-metallic		33,4	50
Parts which need not be touched during normal operation: metallie / non-metallic		41,5	60
supplementary information:		Ambient temperature:	23,8 °C

TRF No. IEC60947_35



Списък на отделните изпитвания на български език

Изследван образец:

Разединител с цилиндрични предпазители н.н. 32А ,10х38 , еднополюсен и триполюсен, тип AES 10х38

Производител:

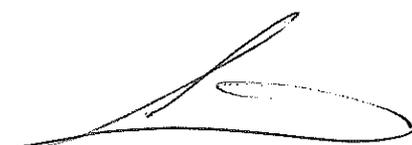
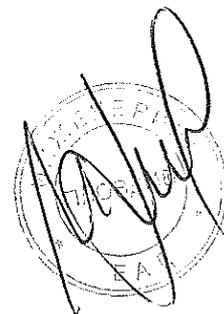
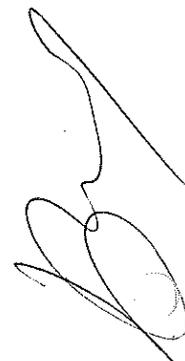
WÖHNER GmbH, Германия

Изпълнени тестове съгласно IEC/EN 60947-3

- 1) Маркировка на апаратурата
- 2) Инструкция за монтаж и експлоатация
- 3) Материали и конструкция
- 4) Устойчивост на топлина и огън
- 5) Минимални разстояния
- 6) Задвижващо устройство
- 7) Изолация
- 8) Посока на задвижване
- 9) Индикация на позицията на контакта
- 10) Допълнителни изисквания за безопасност
- 11) Допълнителни конструктивни изисквания
- 12) Клеми , проверка за мех. якост
- 13) Възможност за присъединяване
- 14) Идентификация и маркировка на клемите

Тест глава I: Общи експлоатационни характеристики

- 1) Покачване на температурата
- 2) Проверка на диелектричните свойства
- 3) Включваща и изключваща способност
- 4) Поведение на апаратурата по време включване и изключване
- 5) Състояние след теста за включване и изключване
- 6) Ток на утечка
- 7) Зависими и независими ръчни операции
- 8) Сила на задвижващия механизъм



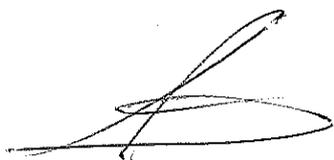
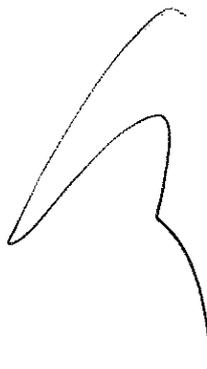
Тест глава II: Способност за оперативна дейност

- 1) Тест –оперативна ефективност
- 2) Включване и изключване без товар
- 3) Включване и изключване с товар
- 4) Поведение на апаратурата по време тест за оперативна ефективност
- 5) Състояние на апаратурата след теста за включвателна и изключвателна способност.
- 6) Ток на утечка
- 7) Проверка на диелектричните характеристики
- 8) Тест -повишаване на температурата

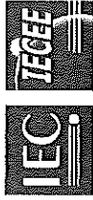
Тест глава III: Не се използва

Тест глава IV: Условен ток на късо съединение

- 1) Защита с предпазител от късо съединение
- 2) Поведение на апарата по време теста
- 3) Състояние на апарата след тестове на включване и изключване
- 4) Диелектрични свойства
- 5) Ток на утечка
- 6) Проверка на температурата



International Electrotechnical
Commission



IEC System of Conformity Assessment
Schemes for Electrotechnical
Equipment and Components (IECEE)

CERTIFICATE OF ACCEPTANCE

TO PARTICIPATE IN THE IECEE CB-SCHEME AND FACTORY SURVEILLANCE SERVICE

VDE Testing and Certification Institute

Merianstrasse 28 D - 63069 Offenbach / Main, Germany

has been assessed and determined to fully comply with the requirements of ISO/IEC 17065: 2012, The Basic Rules, IECEE 01: 2014-11 and Rules of Procedure IECEE 02: 2015-06, and the relevant IECEE CB-Scheme Operational Documents.

VDE Testing and Certification Institute

is therefore entitled to operate as a German Issuing and Recognising National Certification Body within the IECEE CB Scheme for the Scope (Product Category(ies) and Standard(s)) as listed in the relevant part of the IECEE Web Site at www.iecee.org, and is subject to all other terms as set forth in the IECEE Basic Rules and Rules of Procedure.

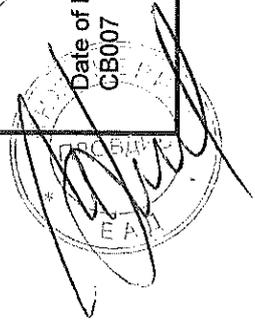
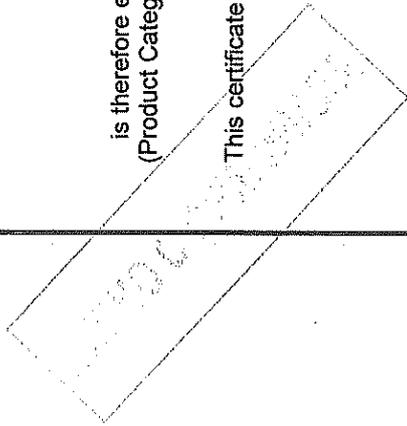
This certificate remains valid until April 9th 2018, at which time it will be reissued by the IECEE Executive Secretary upon successful completion of the normally scheduled 3-year Reassessment Programme administered by the IECEE CB Scheme.

Date of Issue: 2015-11-17
CE007

Signed by:

На
ОСНОВАН
Ие чл.
36а, ал.
3 ОТ
30П

Kerry McMANAMA
IECEE EXECUTIVE SECRETARY AND COO



ТЕХНИЧЕСКО ОПИСАНИЕ

на

ГЛАВНО ТРАНСФОРМАТОРНО ТАБЛО - 1250 А

Характеристика на ГТТ 1250 А:

Комплектно комутационно устройство за ниско напрежение с обявен ток на входа 1250 А, от стоящ тип за неподвижно монтиране на бетонов под в закрити разпределителни уредби, с едностранно обслужване от лицевата страна, затворено отпред и странично от отляво или отдясно, при което активните части на електрическите апарати и съоръжения са достъпни отзад и отгоре, с горно свързване на трансформаторното присъединение, с възможност за свързване на разпределителни табла в лява и в дясна посока.

Носещата конструкция на главното трансформаторно табло е изградена от метални профили. Главното трансформаторно табло представлява съвкупност от триполюсен автоматичен прекъсвач на входа, шинна система, 3 бр. проходни токови измервателни трансформатори, трифазен кондензатор за компенсирание на празния ход на трансформатора, устройства/апарати за аналогово измерване на ток и напрежение, защитни съоръжения на помощните вериги и клеморед за монтиране на индиректен трифазен четирипроводен електромер със съответното опроводяване.

Главното трансформаторно табло се доставя напълно сглобено, като всички вътрешни електрически и механични връзки и конструктивни части са свързани.

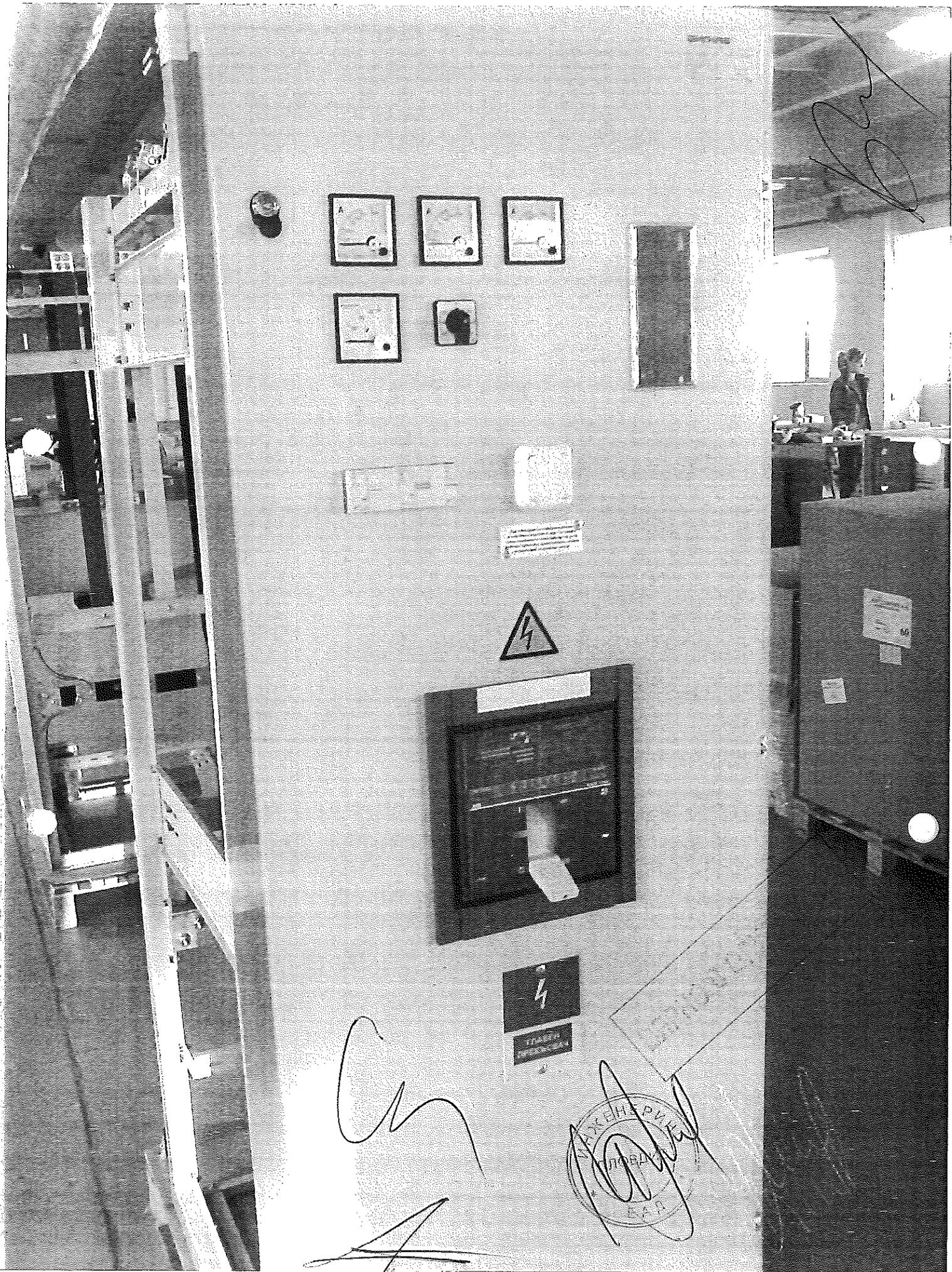
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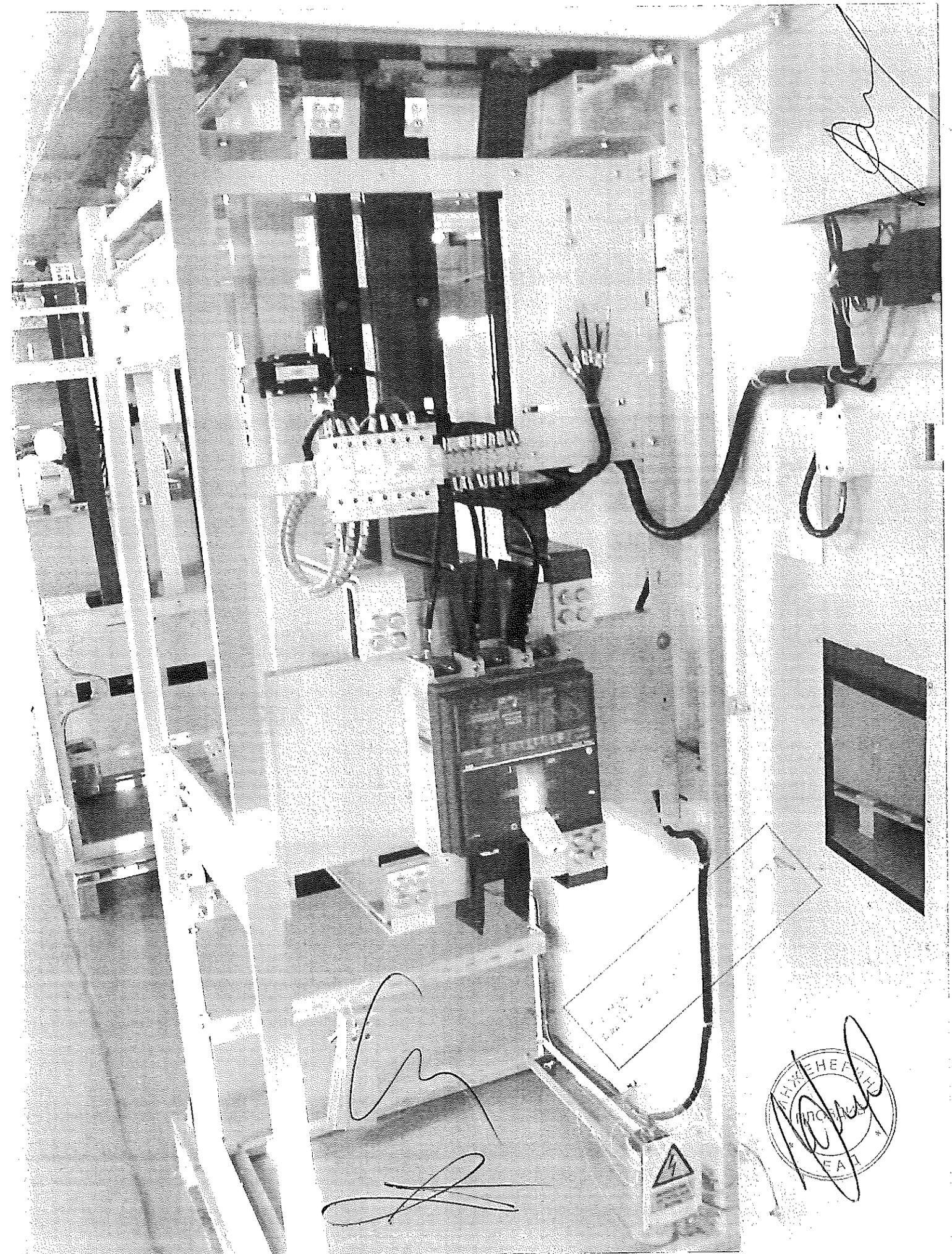
Главното трансформаторно табло се използва за пренасяне на електрическата енергия от трансформаторите в трансформаторни постове в сгради с мощност 800 kVA или 630 kVA към разпределителните табла НН.

Съответствие с нормативно-техническите документи:

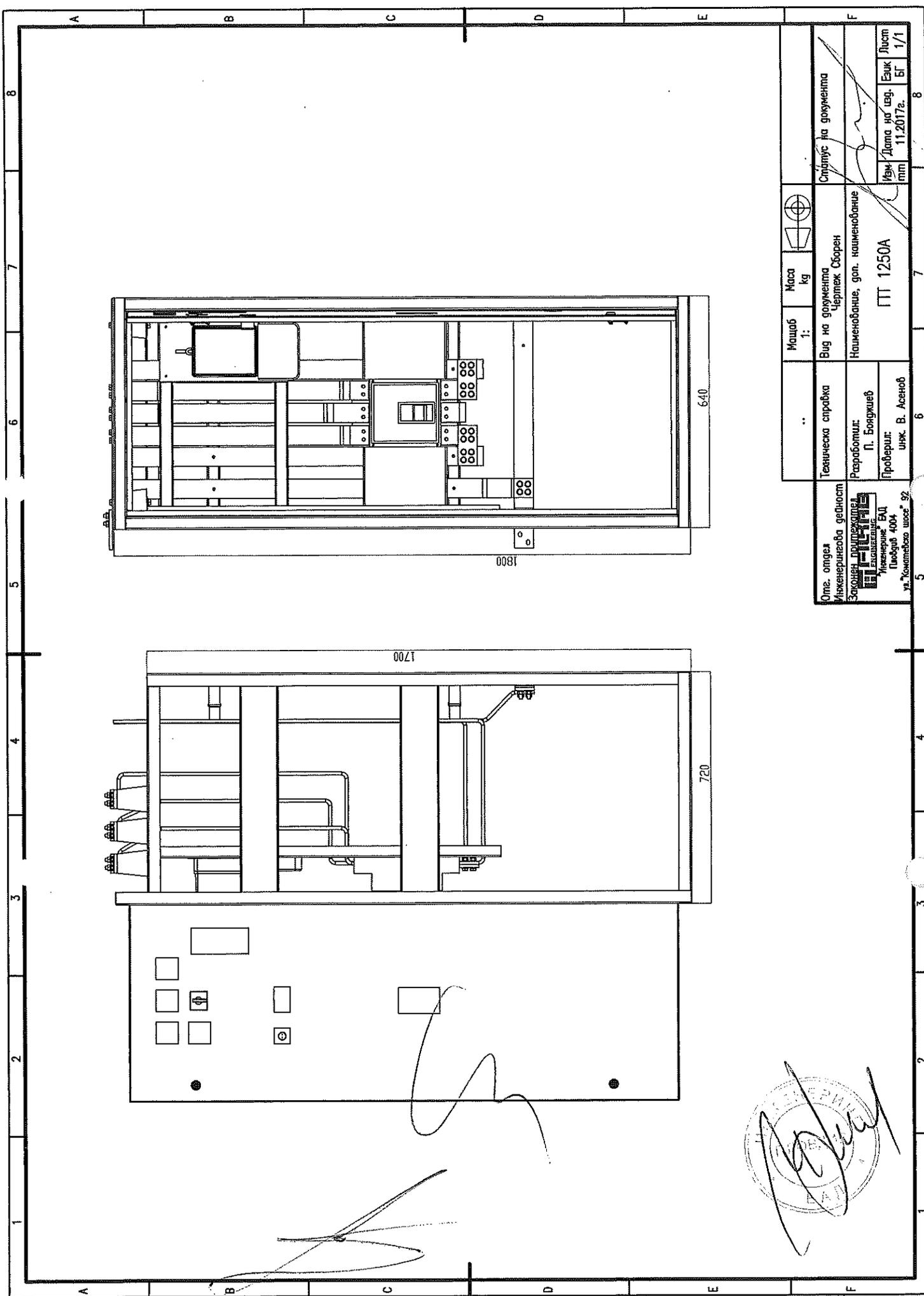
Главното трансформаторно табло за трансформаторни постове в сгради с мощност 800 kVA или 630 kVA отговаря на приложимите български и международни стандарти и нормативно-техническите документи, включително на посочените по-долу и на техните валидни изменения и поправки:

- БДС EN 61439-1:2011 „Комплектни комутационни устройства за ниско напрежение. Част 1: Типово изпитани и частично типово изпитани комплектни комутационни устройства (IEC 60439-1:2011)“; и
- Наредба № 3 от 9 юни 2004 г. за устройството на електрическите уредби и електропроводните линии, издадена от министъра на енергетиката и енергийните ресурси (Наредба № 3 УЕУЕЛ).

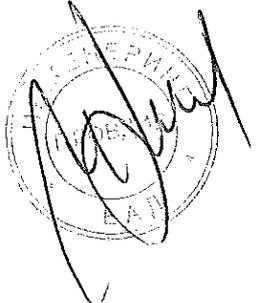




КВХЕХЕФАЛ
ПРОМ
ЕАН

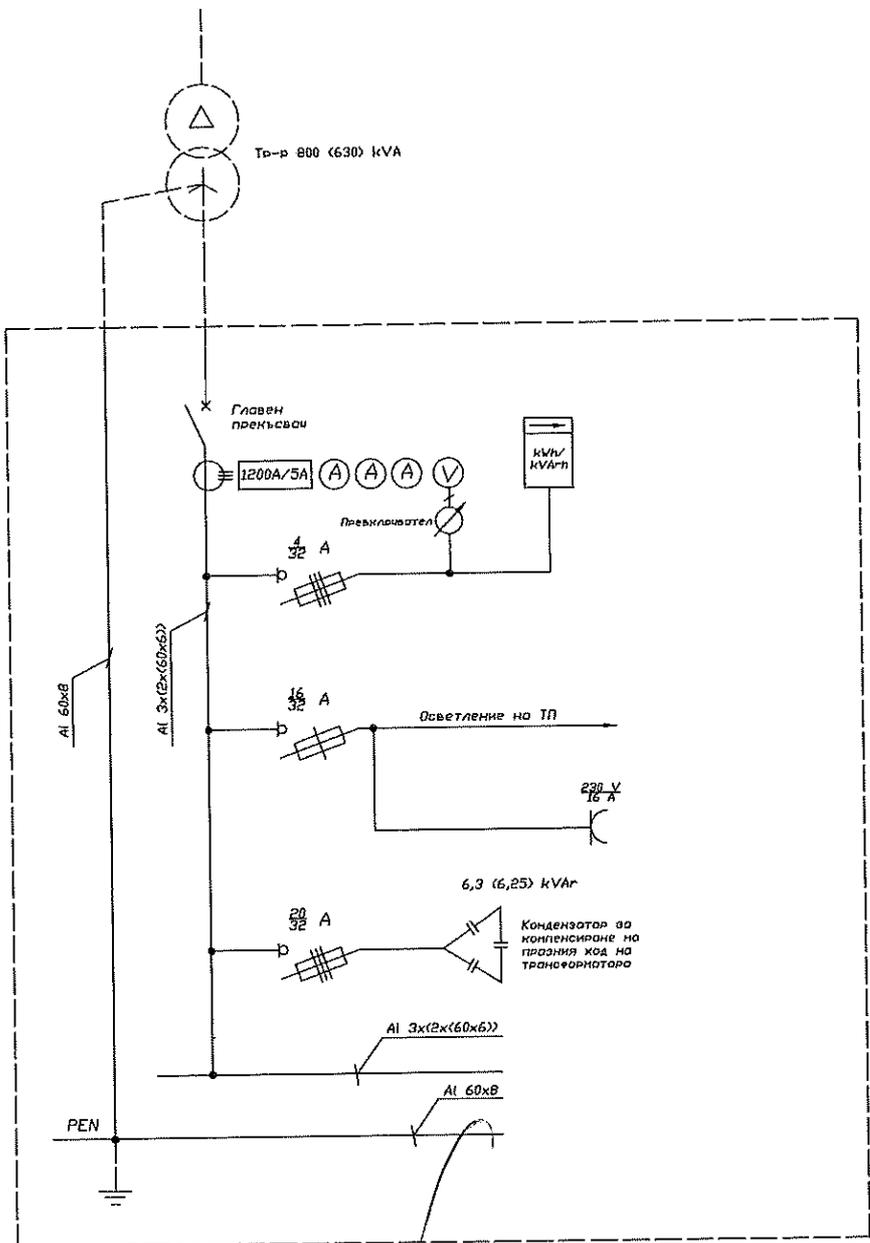
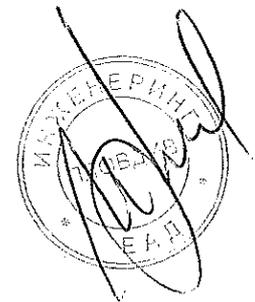


Отг. орган
Инженерска дейност
Законен притежител
ИНЖЕНЕРИ ЕАД
Инженеринг ЕАД
Плодуб 4004
ул. "Кочанево шосе" 92



Итаб	Маса kg	Статус на документа
1:	Чертеж Сборен	Имя / Дата на изд. / Език / Лист mm / 11.2017г. / БГ / 1/1
Техническа справка	Наименование, дол. наименование	
Разработил: П. Богданов	ГТТ 1250А	
Проверил: инж. В. Асенов		

Еднолинейна схема ГТТ 1250 А

Инструкция за съхранение, транспортиране, монтиране и експлоатация на ГТТ-1250А

Главните трансформаторни табла са изработени съгласно изискванията на БДС EN 61439-1. Таблата са със степен на защита IP20 и са разработени за ном. напрежение 400 /230 V AC 50 Hz.

ГТТ 1250А се съхраняват в закрити помещения с нормална пожарна безопасност и без активни газове и пари.. При съхранението таблата да бъдат в положението , при което ще се монтират.

За предпазване от вредни въздействия по време на съхранение и транспортиране ГТТ-1250А са закрепени върху дървена основа/рамка добре опаковани с вълнообразен картон и полиетиленово фолио.

Монтажът на таблата, аксесоарите към тях и свързването им към електрическата мрежа да се извършва само от правоспособни лица, притежаващи удостоверение за съответната квалификационна група за работа с уредби до 1000 V.

При монтажа да се спазват всички изисквания на Правилника за техническа безопасност и охрана на труда, както и всички действащи в момента нормативни документи за извършване на такъв род дейности.

ГТТ-1250А са предназначени за монтаж върху твърди и равни повърхности. При монтажа таблата трябва да бъдат нивелирани. Монтажа към пода да става посредством предвидените за целта 4 отвора ϕ 12 намиращи се в основата на таблото към закрепени преди това в пода шпилки или анкерни болтове М 10.

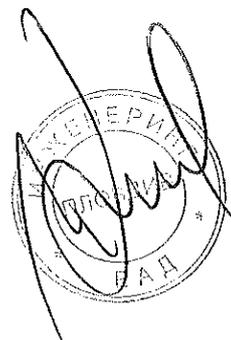
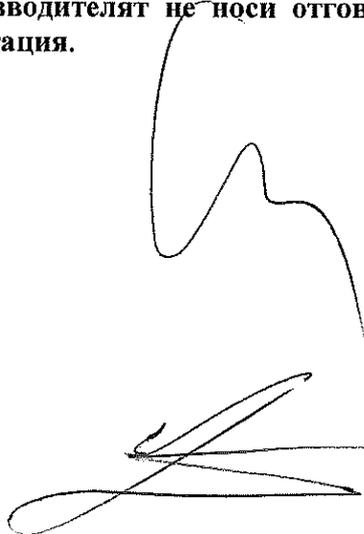
Монтажът на ГТТ-1250А към трансформатора се извършва посредством вертикални алуминиеви шини изпълнени с две ленти (шини) 60x6 mm на полюс в горната част на таблото Връзката към РТ се осъществява чрез алуминиеви планки изпълнени с две ленти (шини) 60x6 mm на полюс за фазите в горната част на таблото и една със сечение 60x8 за неутралата /в долната част на таблото/ чрез болтове М10x40 -8.8 ,шайби,федер шайби и гайки М10 , които се стягат с момент 50 Nm.

Кабелите да се превържат към хоризонталната стоманена шина с кабелни превръзки.

Препоръчват се регулярни технически проверки.

Преди пускане в експлоатация да се проверят и притегнат всички електрически връзки.

Производителят не носи отговорност за щети, причинени от неправилен монтаж и експлоатация.



ДЕКЛАРАЦИЯ

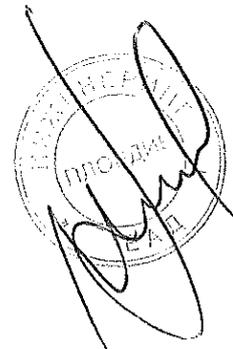
Долуподписаният **Ивелин Трендафилов Дончев** с ЕГН на основание чл. 36а, ал. 3 от ЗОП
на основание чл. 36а, ал. 3 от ЗОП
настоящ адрес - в качеството си на
Изпълнителен Директор и представляващ **ИНЖЕНЕРИНГ** ЕАД

ДЕКЛАРИРАМ, ЧЕ :

Предлаганите от "Инженеринг" ЕАД ел. табла н.н. ГТТ 630А и ГТТ 1250А са изцяло в съответствие с изискванията на техническата спецификация на стандартите за материала , включително на параграфи „Характеристика на материала“ и “Съответствие на предложеното изпълнение с нормативно – техническите документи” по процедура № PPD 18-073.

07.01.2019 г.
гр.Пловдив

на основание чл. 36а, ал. 3 от ЗОП
Подпис
Ивелин Дончев



ДЕКЛАРАЦИЯ

за възможностите за рециклиране на ГТТ

При демонтиране и изваждане от употреба на ГТТ препоръчваме същите да се предадат в лицензирани предприятия за вторични суровини. След разглобяване металните елементи като шинни системи, корпуси на табла и проводници се претопяват и преработват за повторно използване. Неметалните отпадъци се могат да използват повторно като добавъчен материал в циментовата промишленост или при строежите на пътища и магистрали.

Друг начин за ликвидиране на изведените от употреба ел. табла е като се предадат в предприятия, занимаващи се професионално с изгаряне на промишлени отпадъци.

07.01.2019г.

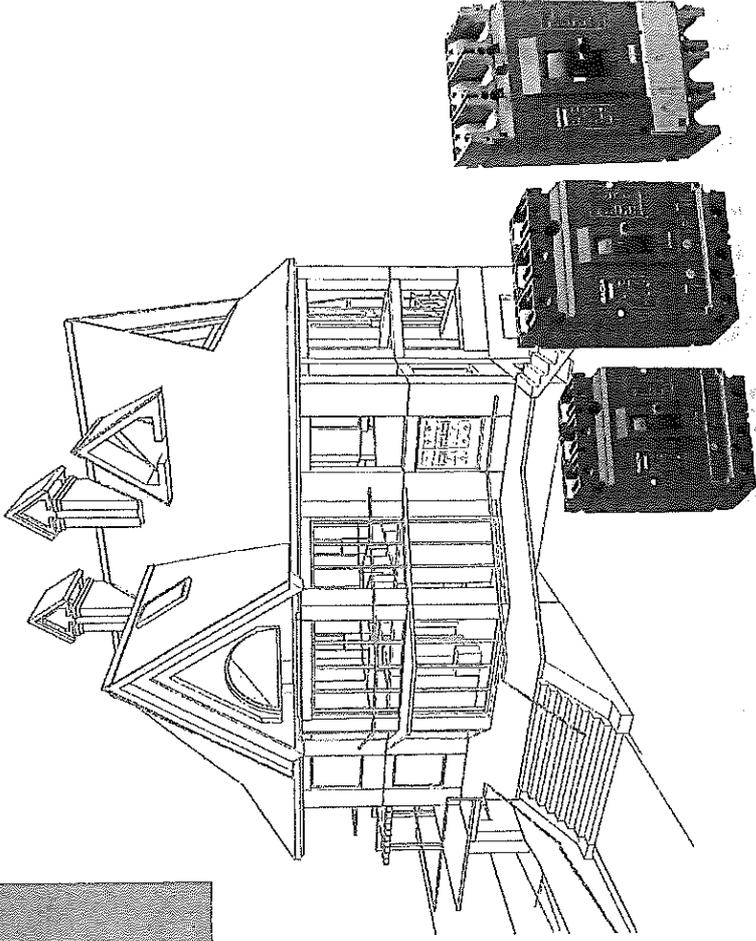
Подпис: .
Ивелин Дончев, Изп. Директор

на основание чл. 36а, ал. 3
от ЗОП

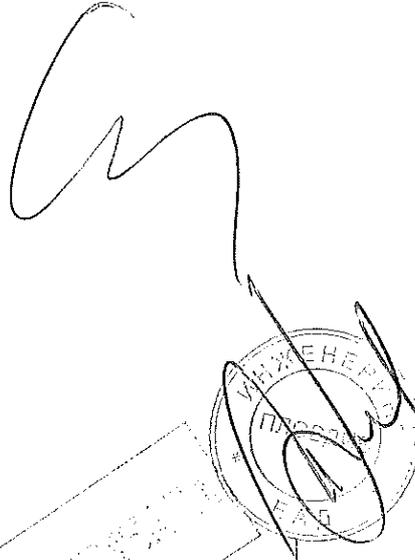
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MGBD PN SERIES



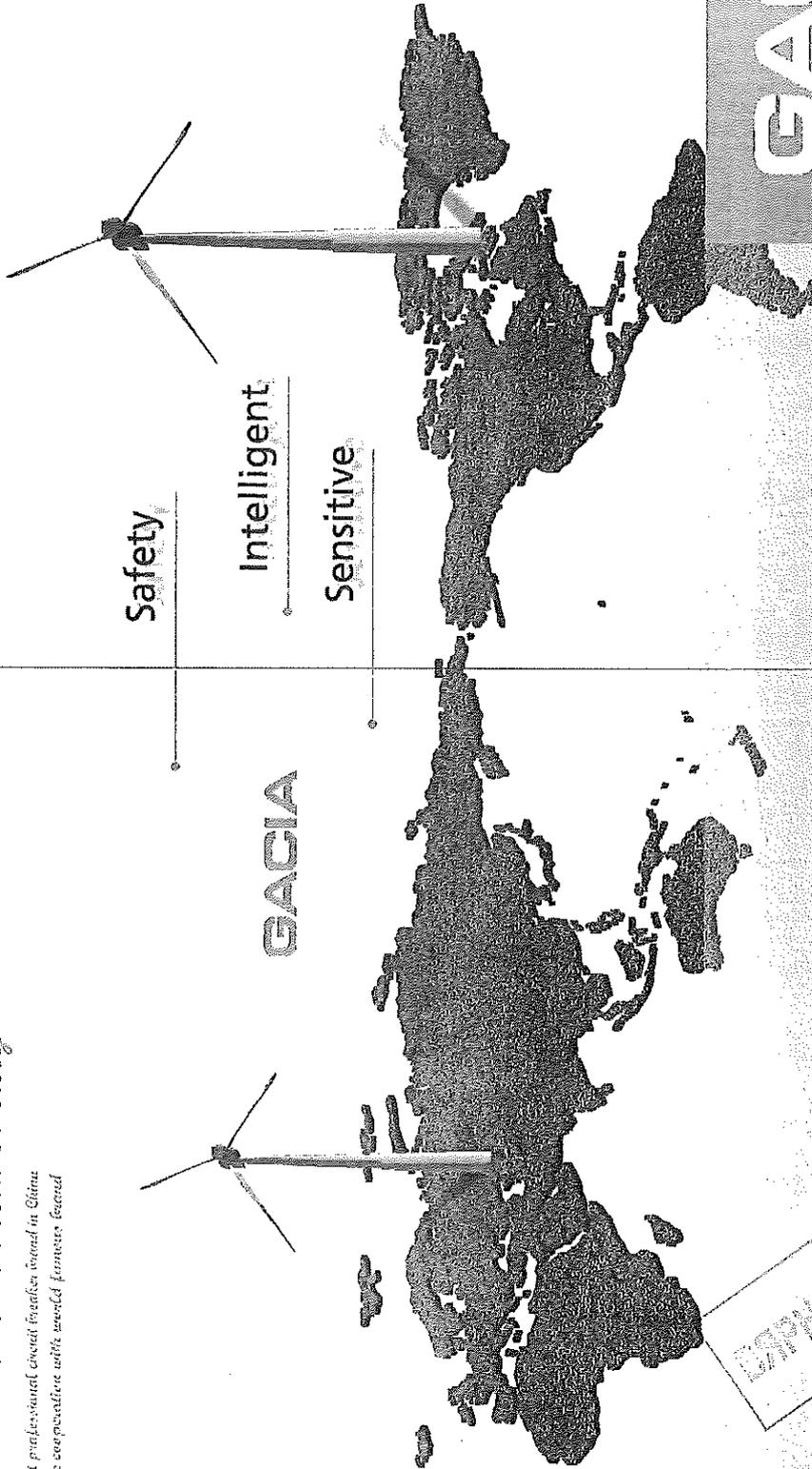
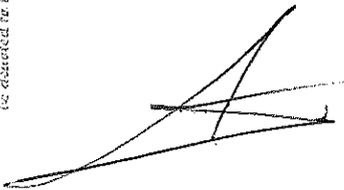
We produce circuit breaker only



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GACIA ELECTRICAL APPLIANCE CO.,LTD.

We produce circuit breaker only

*Built by the most professional circuit breaker brand in China
to devoted to the cooperative with world famous brand*



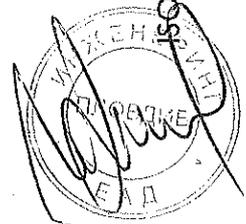
Safety

Intelligent

Sensitive

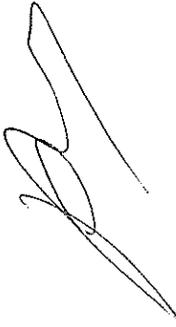
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ISO 9001 ISO 14001 OHSAS18001 SA8000



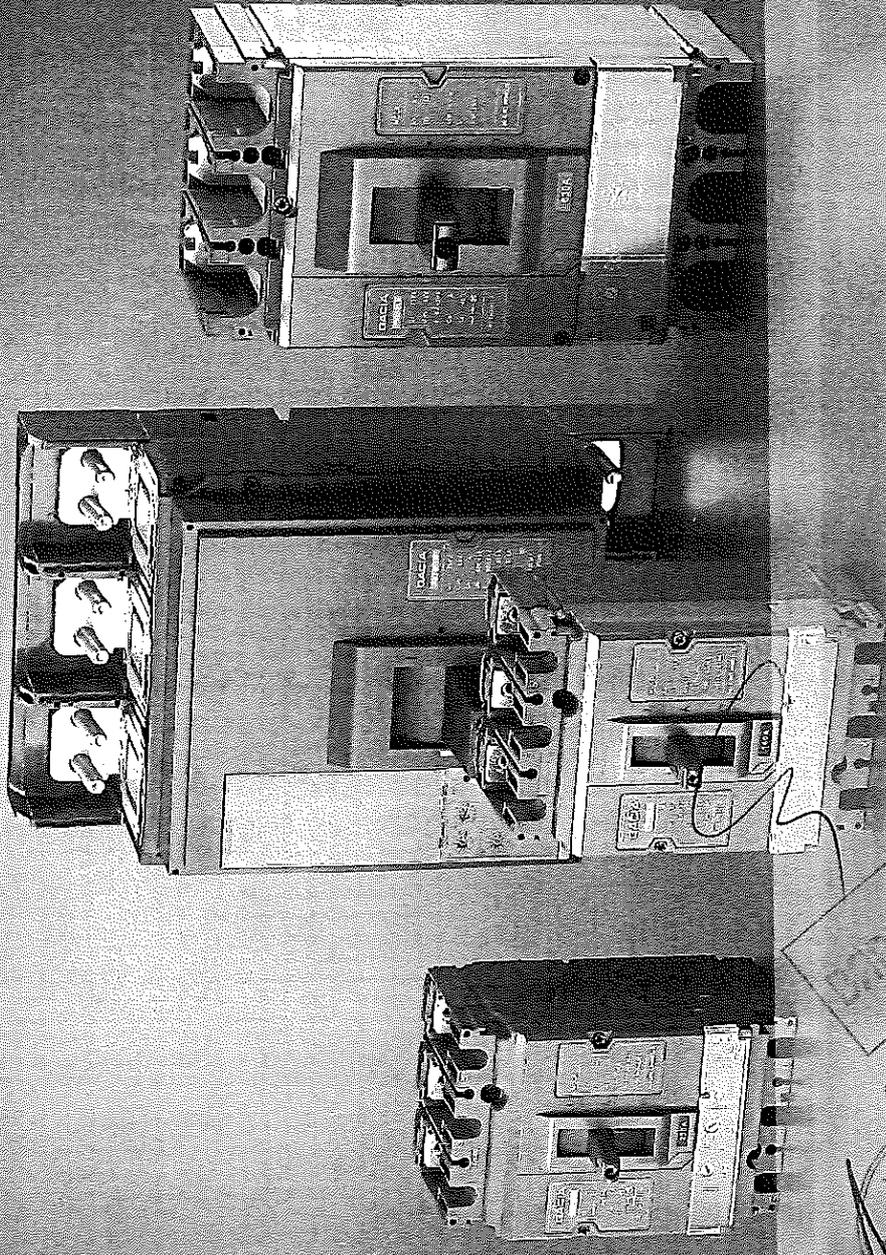
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More Professional



Safer



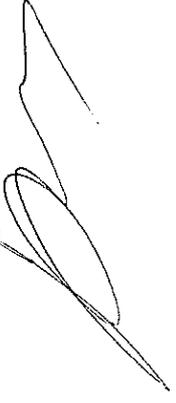
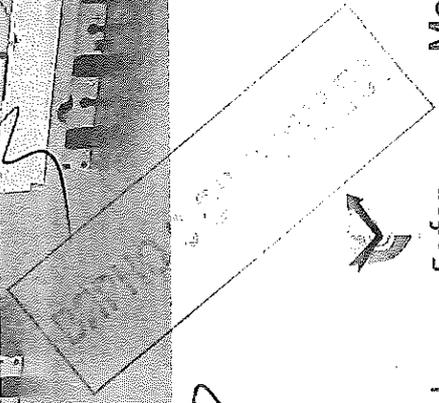
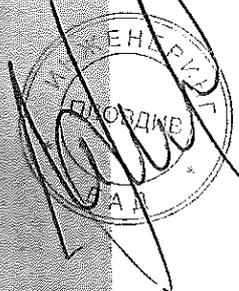
More Sensitive

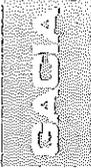


More Intelligent



Higher Cost-Performance





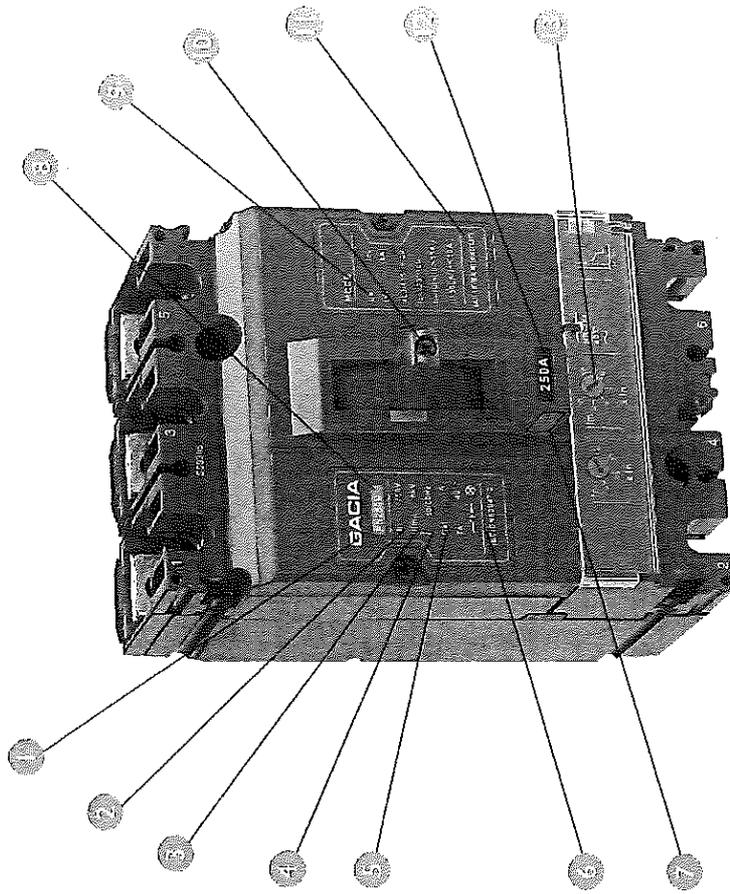
CONTENTS

Product Selection Guide

PN Moulded Case Circuit Breaker

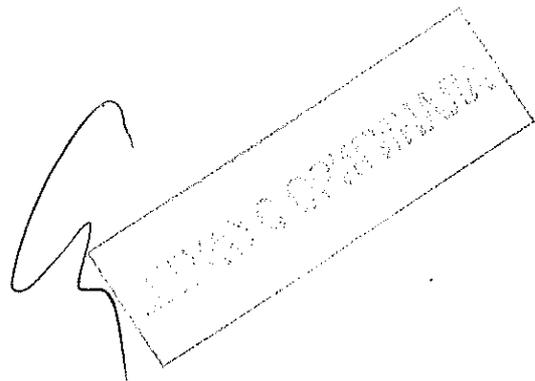
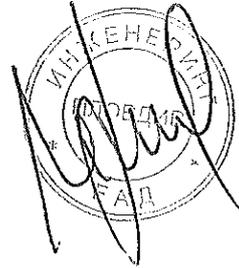
Panel Diagram	01
Model Implication	02
Use and Range of Application	02
Use and Application Range	03
Function and Attached Device	03
Trip Unit Method and Accessories Code	03
Technical parameters	04-05
Low Voltage Power Distribution Protection PN100-630	06
Technical Parameter	07
External Auxiliary Device	08
The characteristics and installation of Accessory devices	08
Alarm Contact	09
Auxiliary Contact	09
Inside and Outside Accessory	10
PN Series MCCB Accessory order Code List	11-12
Product and installation dimension	13-20

Panel Diagram



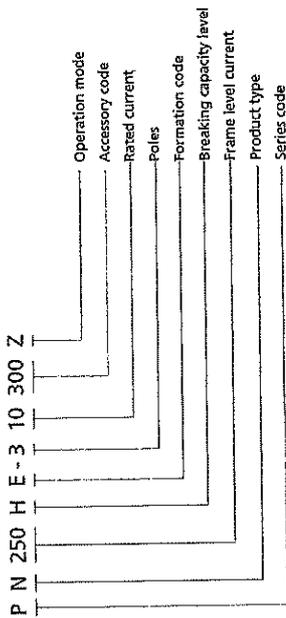
1. Gacia company brand
2. Insulation voltage
3. Rated impulse withstand voltage
4. Rated frequency
5. Product category
6. Insulation sign
7. Testing button

8. Product code
9. Working voltage
10. Handle
11. Company name
12. Rated current
13. Adjustable button



PN Moulded Case Circuit Breaker
IEC/EN 60947-2,GB14048.2

Model Implication



- ☑ According to the application range: Power distribution protection and motor protection.
- ☑ According to the wiring method: front-wiring, back-wiring, plug-in wiring, draw-out wiring.
- ☑ According to the operation type: Direct handle operation, external rotary handle operation, motor operation.
- ☑ According to the tripping device type: only instantaneous tripping device (electro-magnetic tripping device), thermo-electro-magnetic tripping device (compound tripping device), intelligence tripping device (electronic tripping device)
- ☑ According to pole classification: Three poles and four poles
- ☑ According to the frame level rated current: PN100, PN160, PN250, PN400, PN630, PN1250, Attached device, with several wiring methods including front-wiring, back-wiring, plug-in wiring, draw-out wiring etc., adopts modularization plug-in and protective cover to assure the safety and reliability and has functional adjusting button which can adjust the tripping current and tripping time according to different requirements.

Use and Range of Application

The design of PN series moulded case circuit breaker (hereinafter circuit breaker) indicates the newest current-limiting principle and manufacturing technology with the characteristics of compact structure, modularization, high breaking capacity, no flashover. It is used for infrequent exchange and startup of motor in the circuit AC 50Hz, of which rated insulation voltage is 750V, rated working voltage 690V or less, rated working current up to 1250A. Circuit-breaker has the overload, short-circuit, and undervoltage protection device, which can protect the circuit and power-supply device from damages.

Circuit Breaker can be devided into N,S,H type.

This circuit breaker can be installed vertically (Erect), and horizontally (Installed Level). The line of this circuit breaker can not be connected reversely, that is, 1,3,5 line connected to power line, 2,4,6 connected to the load line.

This circuit breaker has isolation function, using the mark to refer to.

- ☑ This circuit breaker conforms to the standard below:
- ☑ IEC/EN 60947-2 General Principle
- ☑ IEC/EN 60947-2 Low Voltage Circuit Breaker
- ☑ IEC/EN 60947-2 Contactor and Motor Starter
- ☑ IEC/EN 60947-2 Electromechanical Controlling Circuit Appliance



Use and Application Range

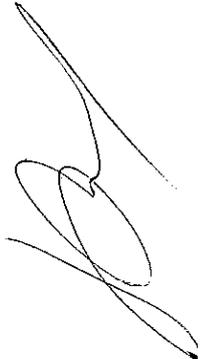
- ☑ Height above Sea Level: ≤ 2000m
- ☑ Ambient Medium Temperature: ≤ +40°C ≥ -5°C
- ☑ It can endure the effect of humid air and the effect of salt mist, oil mist and fog bacteria.
- ☑ In the place within the medium without danger of explosion and without corrosion of metal box, damage of insulation gases and conductive dust.
- ☑ No damage of rain and snow
- ☑ Pollution degree: 3

Function and Attached Device

	PN100			PN160			PN250			PN400			PN630			PN1250		
	Control	Connection	Motor operation															
Manual operation	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Direct rotary handle and outspread rotary handle	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Motor operation			☑			☑			☑			☑			☑			☑
Fixed		☑			☑			☑		☑			☑		☑		☑	
Plug-in wiring		☑			☑			☑		☑			☑		☑		☑	
Draw-out wirih		☑			☑			☑		☑			☑		☑		☑	

Trip Unit Method and Accessories Code

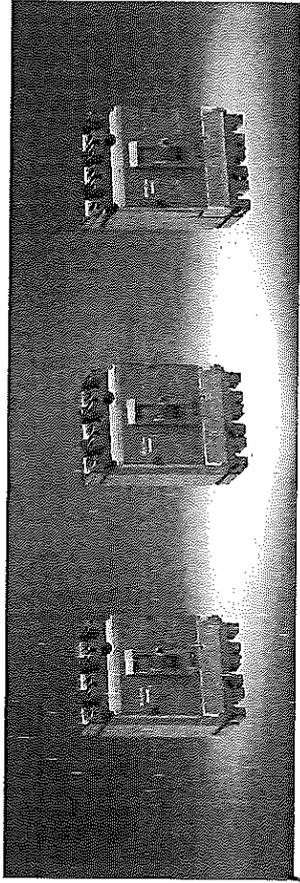
Trip Unit Method	No Attached Devic	Alarm Contact	Shunt Release Trip Unit	Auxiliary Contact	Undervoltage Trip Unit	Shunt Release Auxiliary Contact	Two Groups Auxiliary Contact	Undervoltage Release Alarm Contact	Auxiliary Alarm Contact	Shunt Release Auxiliary Alarm Contact	Two Groups Auxiliary Alarm Contact	Undervoltage Release Auxiliary Alarm Contact
Instantaneous Trip Unit	200	208	210	220	230	240	260	238	228	248	268	278
Complex Trip Unit	300	308	310	320	330	340	360	338	328	348	368	378
Electrical Trip Unit	400	408	410	420	430	440	460	438	428	448	468	478



PN Moulded Case Circuit Breaker
IEC/EN 60947-2, GB14048.2



Technical parameters



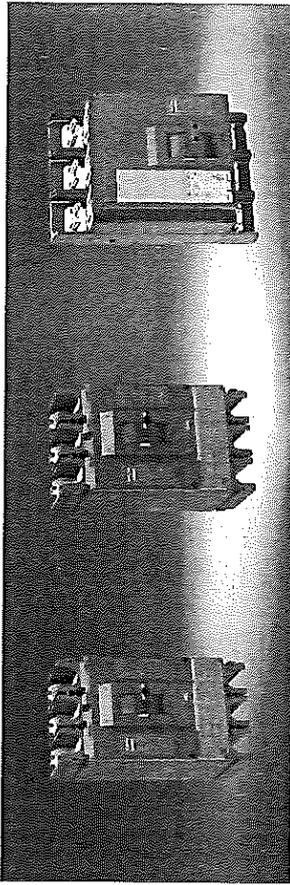
	PN100	PN160	PN250
Rated current of frame size Inm(A)	100	160	250
Rated current In(A)	16,20,25,32,40,50,63,80,100	125,160	200,225,250
Rated insulation voltage Ui	750V	750V	750V
Rated operational voltage Ue	690V	690V	690V
Number of poles	3 / 4	3 / 4	3 / 4
AC400V/50Hz O-CO(Icu) Rated ultimate short-circuit breaking capacity (kA)	35 50 65 80	35 50 65 80	35 50 65
AC400V/50Hz O-CO-CO(Ics) Rated service short-circuit breaking capacity (kA)	Ics=75% Icu		
(Uimp) Rated impulse withstand voltage (V)	8000	8000	8000
Dielectric property (V)	3000	3000	3000
Total cycles	10000	8000	8000
Electrical life	1500	1000	1000
Mechanical life	8500	7000	7000
Flashover distance (mm)	≤50	≤50	≤50
Main circuit	A	A	A
Auxiliary circuit	AC-15	AC-15	AC-15
Outline dimensions	105/140	105/140	105/140
W(mm)	161/161	161/161	161/161
L(mm)	125/125	125/125	125/125
H(mm)			

PN 3000

PN Moulded Case Circuit Breaker
IEC/EN 60947-2, GB14048.2



Technical parameters



	PN400	PN630	PN1250
Rated current of frame size Inm(A)	400	630	1500
Rated current In(A)	350,400	500,630	800,1000,1250,1600
Rated insulation voltage Ui	750V	750V	750V
Rated operational voltage Ue	690V	690V	690V
Number of poles	3 / 4	3 / 4	3 / 4
AC400V/50Hz O-CO(Icu) Rated ultimate short-circuit breaking capacity (kA)	35 50 70 80	35 50 70 80	50 70 80
AC400V/50Hz O-CO-CO(Ics) Rated service short-circuit breaking capacity (kA)	Ics=75% Icu		
(Uimp) Rated impulse withstand voltage (V)	8000	8000	8000
Dielectric property (V)	3000	3000	3000
Total cycles	5000	5000	3000
Electrical life	1000	1000	500
Mechanical life	4000	4000	2500
Flashover distance (mm)	≤50	≤50	≤100
Main circuit	A/B	A/B	A/B
Auxiliary circuit	AC-15	AC-15	AC-15
Outline dimensions	140/185	140/185	210/280
W(mm)	256/256	256/256	330/230
L(mm)	170/170	170/170	206/206
H(mm)			

PN 3000

PN Moulded Case Circuit Breaker
IEC/EN 60947-2,GB14048.2



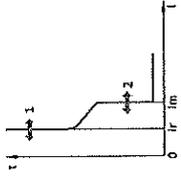
Low Voltage Power Distribution Protection PN100-630

PN100-250 circuit breaker is attached with electro-magnetic or electronic tripping device(PN100, PN160 and PN250N, N,S,H type). With a mechanical structure, it can prevent the mismatching between tripper and circuit breaker from happening.



1. Protection function can be realized through adjusting the knob.
2. Overload protection thermal protection can be adjusted.
3. Short-circuit protection: It can be divided into fixed and adjustable types according to current specification magnetic protection.
4. Neutral line protection:

- ☑ 4P circuit breaker can be divided into;
- ☑ 4P 3d type (neutral line without protection)
- ☑ 4P 3d +N/2 type (neutral line protection 0.5In) or 4P 4d type(neutral line protection In).



- ☑ Overload Thermal Protection Adjustable Value(I)
- ☑ Protection Setting Value Adjustable or Fixed Short-circuit Fault

Circuit Breaker	Adjustable range 0.7~1 × In									
	190	300	400	500	500	500	640	800	1000	1250
PN100	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
PN160	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
PN250	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
Overload Protection(Thermal Protection)	Fixed									
Tripping Current Value(A)	190	300	400	500	500	500	640	800	1000	1250
Short-circuit Current Protection(Electro-magnetic Tripper)	Adjustable range 0.7~1 × In									
In	190	300	400	500	500	500	640	800	1000	1250
PN160/250	190	300	400	500	500	500	640	800	1000	1250
Neutral Line Protection	No protection									
4P 3d	No protection									
Neutral Line Protection 0.5In	No protection									
4P 3d+N/2	No protection									
Neutral Line Protection In	1xIr									
4P 4d	1xIr									
Circuit Breaker	PN100, PN160, PN250									
Overload Protection(Thermal Protection)	Adjustable range 0.7~1 × In									
Tripping Current Value(A)	Fixed									
Short-circuit Current Protection(Electro-magnetic Tripper)	Adjustable									
In	190	300	400	500	500	500	63	80	80	125
PN100	190	300	400	500	500	500	63	80	80	125
PN160/250	190	300	400	500	500	500	63	80	80	125
Neutral Line Protection	No protection									
4P 3d	No protection									
Neutral Line Protection 0.5In	No protection									
4P 3d+N/2	No protection									
Neutral Line Protection In	1xIr									
4P 4d	1xIr									

PN Moulded Case Circuit Breaker
IEC/EN 60947-2,GB14048.2



Technical Parameter

Electrical Trip Unit Protection

- LT (Long Time Delay) Overload protection Adjustable Ir Setting Value
- ST (Short Time Delay) short-circuit Current Protection:
 1. Im Operating Value Adjustable
 2. Have Fixed Time Delay(t)

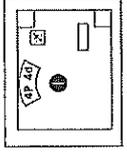


INST(Instantaneous) Short-circuit Current Protection, operating value(I) fixed 4 pole Circuit Breaker with Neutral line protection adopts a sealed 3 grades setting:
 4P 3d (No Neutral Line Protection) 4P 3d+N/2(Neutral Line Protection Operating Value, 0.5Ir),
 4P 4d (Neutral Line Protection Operating Value Ir) Neutral Line Overload Protection (0.5In), used for 4 pole circuit breaker, three times systematic protection of higher content of harmonic wave.
 At the 4P 4d position, neutral line protection adjusting knob can be set to 1.5XIr.

Indication

1. Load(LED) Indicator light(I) on the front side
2. The indicator light will be turned on brightly when setting value is bigger than 90%Ir.
3. Indicator Light twinkles when setting value is bigger than 105% Ir.

There is a test hole on the front side from which small testing appliance or calibration testing box can be connected, and working state of circuit breaker can be checked.



Neutral Line protection

1. Long Time Delay Protection Setting Value
2. Long Time Delay Protection Delaying Time
3. Short-circuit Protection Setting Value
4. Short-circuit Protection Delaying Time
5. Instantaneous Short-circuit Protection
6. Warning Indicator Light
7. Testing Hole

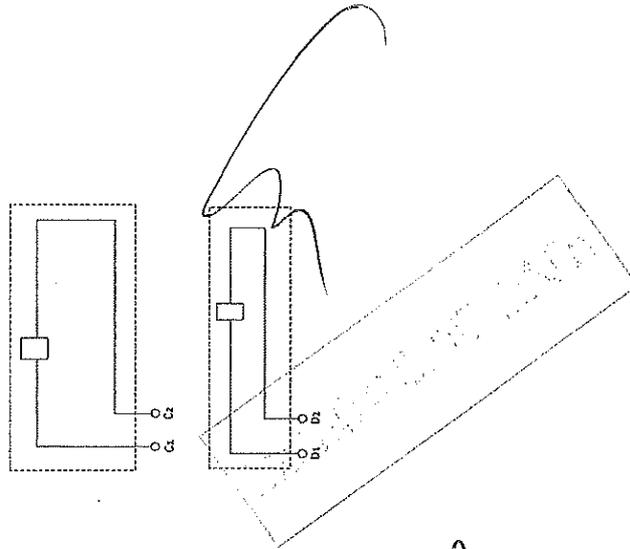
Circuit Breaker	Adjustable range 0.4...1 Adjustable(48 Points)									
	PN100	PN160	PN260	PN400	PN630	Ir=In ×...	0.4...1 Adjustable(48 Points)	0.4...1 Adjustable(48 Points)	0.4...1 Adjustable(48 Points)	0.4...1 Adjustable(48 Points)
Tripping Current Setting Value(A)(Ir)	☑	☑	☑	☑	☑	at 1.5 × Ir	90...180	90...180	90...180	90...180
Tripping Time (t)(min...max)	☑	☑	☑	☑	☑	at 1.6 × Ir	5...7.5	5...7.5	5...7.5	5...7.5
Tripping current setting value Ibd=Ir ×...	☑	☑	☑	☑	☑	at 7.2 × Ir	3.2...5.0	3.2...5.0	3.2...5.0	3.2...5.0
Accurate Assurance ± 15%	☑	☑	☑	☑	☑	Ir=In ×...	2...10	2...10	2...10	2...10
Delaying Time (ms)	Fixed									
The highest overcurrent tripping time	≤40									
Total Breaking Time	≤60									
Tripping Current Value (A) Ir	Fixed: 11 × In									
Neutral line protection	No protection									
4P 3d	No protection									
Neutral line protection 0.5In	0.5 × Ir									
4P 3d+N/2	0.5 × Ir									
Neutral line protection In	1 × Ir									
4P 4d	1 × Ir									

PN Moulded Case Circuit Breaker
IEC/EN 60947-2, GB 14048.2



The characteristics and installation of Accessory devices
Shunt release tripping unit wiring diagram (it is the internal attached device of switch in the inner box)

- a. When the controlling voltage reaches 70%-100%, the circuit breaker can break reliably.
 - b. Long time power is forbidden(≤ 5s)
Response time: impulse mode ≥ 20ms, ≤ 50ms
 - a. When the controlling voltage is lowered to 35%-70%, undervoltage tripping unit should trip and circuit breaker should break reliably.
 - b. When the controlling voltage reaches more than or equal to 85%, the switching on of circuit breaker should be assumed.
 - c. When the controlling voltage reaches less than 35%, switching on of circuit breaker should be prevented.
- Attention: As for circuit breaker attached with undervoltage trip unit, the circuit breaker can be switched on or off normally when its controlling voltage reaches more than or equal to 85%.
- ⊠ Never: The attached undervoltage module is PN(125, 160); Other type without undervoltage module can be connected with lead wire; when it reaches the 70%-85% of the rated working voltage, undervoltage trip unit should let circuit breaker trip reliably.
 - ⊠ Warning: Undervoltage tripping unit should be electrified on first. Then the circuit breaker can be reset and switched on, or the switch will be damaged.
- User Warning: After the internal attached device of circuit breaker is installed, it can be adjusted and tested in order to assure the quality when products are transported out of the factory. If user purchases the internal attached device from the outside by his own, user should bear the bad results.



PN Moulded Case Circuit Breaker
IEC/EN 60947-2, GB 14048.2



Alarm Contact

Contact Position of circuit breaker at the state of "on" or "off"



Contact Position of circuit breaker at the state of tripping (Alarm)



- ⊠ When circuit breaker normally switches on or off, alarm contact doesn't trip. Only when free tripping (or fault tripping) happens, it will alarm.
- ⊠ Contact position changes from "on" to "off" or "off" to "on". When circuit breaker has already been reset, alarm contact returns to original state.

Auxiliary Contact

Contact Position of Circuit Breaker at the "off" state

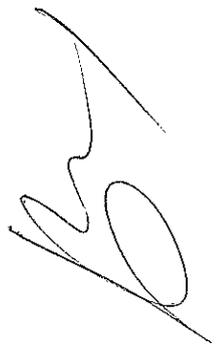


Contact Position of Circuit Breaker at the "on" state



Auxiliary Contact Rated Current

Rated Current (A)	Number of Poles	Rated Voltage (V)
< 250	3	0.3
> 400	6	0.4

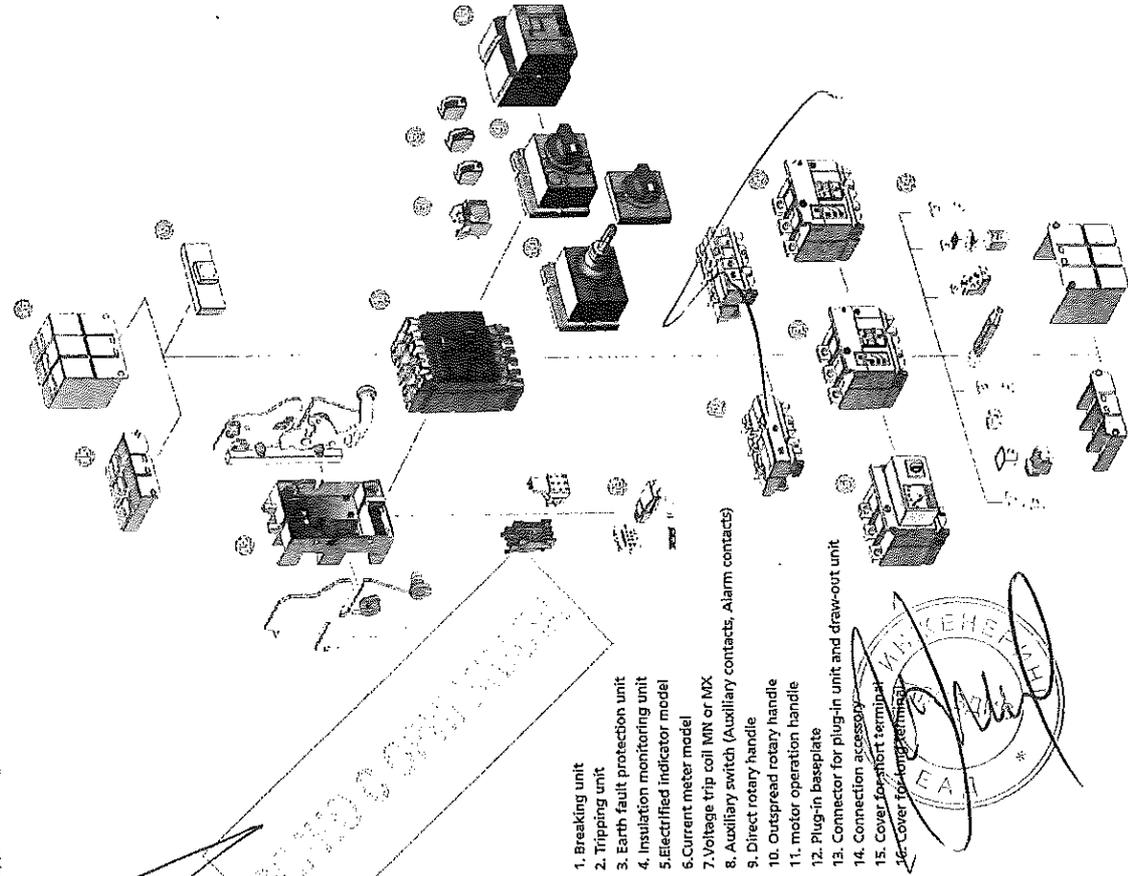


PN Moulded Case Circuit Breaker
IEC/EN 60947-2,GB14048.2



Inside and Outside Accessory

PN series circuit breaker adopts all-module structure, with the characteristics of easy and convenient installation, and wide application range. Several elements can be applied in all similar products. Its structure system picture is below:



PN Series

PN Moulded Case Circuit Breaker
IEC/EN 60947-2,GB14048.2



PN Series MCCB Accessory order Code List

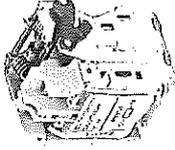
PN Shunt release

GACIA		
3P/4P		
Applicable frame	AC230V	AV400V
PN160N/5/H	PN160FT.230.001	PN160FT.400.001
PN250N/5/H	PN250FT.230.002	PN250FT.400.002
PN400N/5/H	PN400FT.230.003	PN400FT.400.003
PN630N/5/H	PN630FT.230.004	PN630FT.400.004
PN1600S/H	PN1600FT.230.005	PN1600FT.400.005



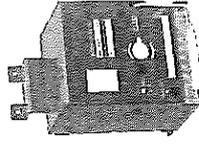
PN Under voltage release

GACIA		
3P/4P		
Applicable frame	AC230V	AV400V
PN160N/5/H	PN160QT.230.001	PN160QT.400.001
PN250N/5/H	PN250QT.230.002	PN250QT.400.002
PN400N/5/H	PN400QT.230.003	PN400QT.400.003
PN630N/5/H	PN630QT.230.004	PN630QT.400.004
PN1600S/H	PN1600QT.230.005	PN1600QT.400.005



PN Electric operating mechanism

GACIA		
3P/4P		
Applicable frame	AC230V	AV400V
PN160N/5/H	PN160CD.230.001	PN160CD.400.001
PN250N/5/H	PN250CD.230.002	PN250CD.400.002
PN400N/5/H	PN400CD.230.003	PN400CD.400.003
PN630N/5/H	PN630CD.230.004	PN630CD.400.004
PN1600S/H	PN1600CD.230.005	PN1600CD.400.005





PN Series MCCB Accessory order Code List

PN Auxiliary contacts

ORDER CODE	
Applicable frame	3P/4P
Single auxiliary	Double auxiliary
PN160N/SH	PN160SFC.400.001
PN250N/SH	PN250SFC.400.002
PN400N/SH	PN400SFC.400.003
PN630N/SH	PN630SFC.400.004
PN1600S/H	PN1600SFC.400.005

PN Alarm contacts

ORDER CODE	
Applicable frame	3P/4P
PN160N/SH	PN160BC.001
PN250N/SH	PN250BC.002
PN400N/SH	PN400BC.003
PN630N/SH	PN630BC.004
PN1600S/H	PN1600BC.005

PN Auxiliary alarm contacts

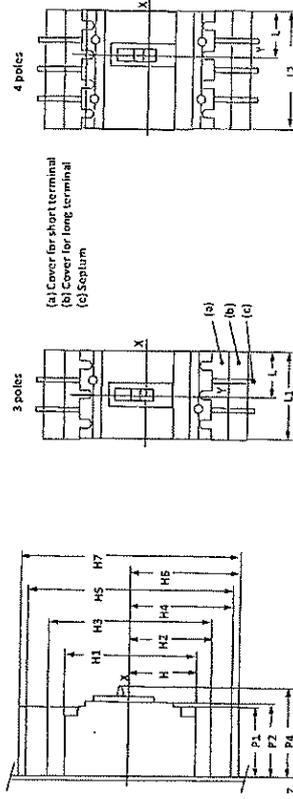
ORDER CODE	
Applicable frame	3P/4P
PN160N/SH	PN160FB.001
PN250N/SH	PN250FB.002
PN400N/SH	PN400FB.003
PN630N/SH	PN630FB.004
PN1600S/H	PN1600FB.005

PN Handle operation

ORDER CODE	
Applicable frame	3P/4P
PN160N/SH	PN160SC.001
PN250N/SH	PN250SC.002
PN400N/SH	PN400SC.003
PN630N/SH	PN630SC.004
PN1600S/H	PN1600SC.005

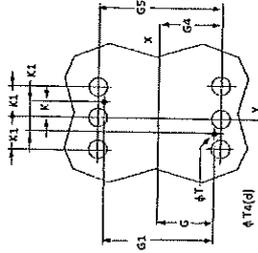
Product and installation dimension

Frame 10-630

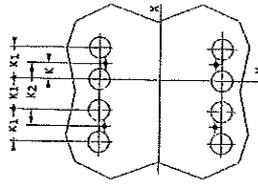


Baseboard installation dimension

3 poles

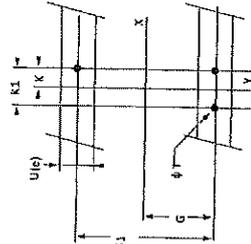


4 poles

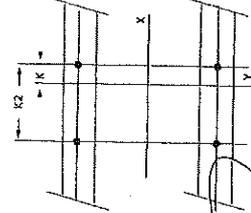


DIN rail installation dimension

3 poles



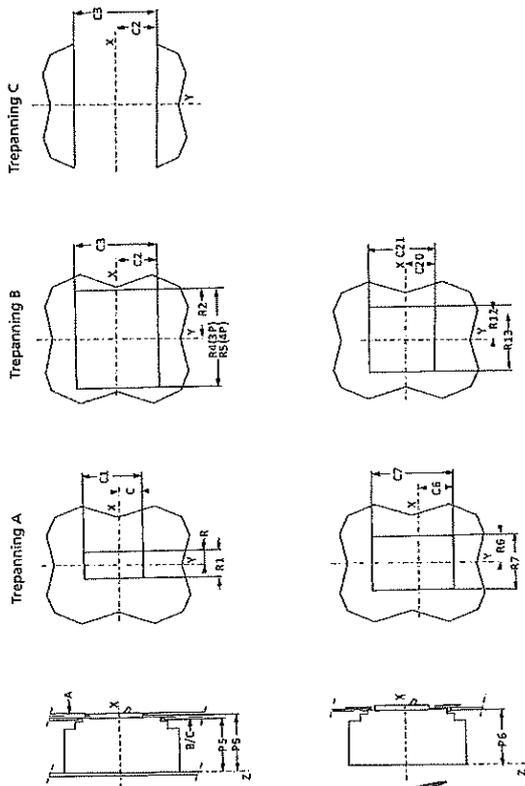
4 poles



PN Moulded Case Circuit Breaker
IEC/EN 60947-2, GB14048.2



Product cover dimension



Measurement (mm)

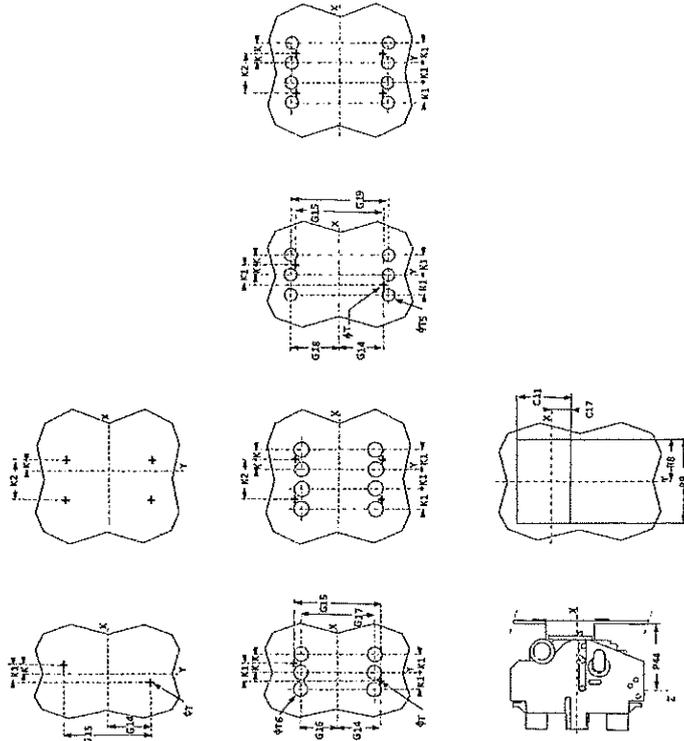
Model	29	41.5	76	54	108	43	104	34	86	62.5	125	70
PN-100/160/250N/H/L	29	41.5	76	54	108	43	104	34	86	62.5	125	70
PN-400/630N/H/L	41.5	76	116	92.5	184	56.5	146	46.5	126	100	200	113.5
PN-100/160/250N/H/L	140	95	75	13.5	23	17.5	30.5	161	94	138	160.5	86
PN-400/630N/H/L	227	140	237	474	227.5	256	127.5	256	140	185	285	240
PN-100/160/250N/H/L	321	178.5	357	17.5	35	70	52.5	105	140	81	86	86
PN-400/630N/H/L	480	237	474	22.5	45	90	70	140	185	95.5	110	110
PN-100/160/250N/H/L	111 ^(e)	63	88	14.5	29	54	108	143	29	58	43	43
PN-400/630N/H/L	168	107	112	31.5	63	71.5	143	188	46.5	93	63	63
PN-100/160/250N/H/L	123	74	148	532	6	24	30					
PN-400/630N/H/L	147	90	180	532	6	33	33					

(e): if use automatic auxiliary connector, U20mm(NS100-250)

PN Moulded Case Circuit Breaker
IEC/EN 60947-2, GB14048.2



Hole-Making position dimension for plug-in and draw-out wire connection in the base panel



Measurement (mm)

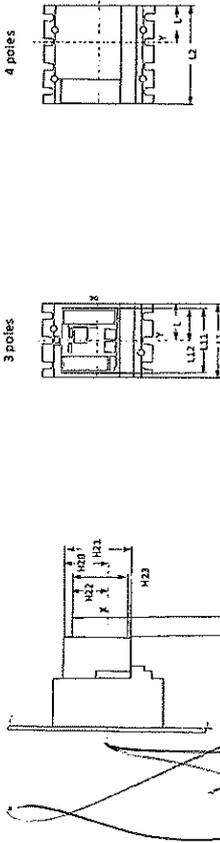
Model	155	56	150	300	137	274	125	230	101	202	126	252	75	150	170.5	341	283
PN-100/160/250N/H/L	103	42.5	95	190	87	174	71.5	155	61	122	79	158	37.5	75	111	222	190
PN-400/630N/H/L	155	56	150	300	137	274	125	230	101	202	126	252	75	150	170.5	341	283
PN-100/160/250N/H/L	380	208	416	102.5	205	103.5	210	17.5	35	70	54.5	109	144	74	148	183	35
PN-400/630N/H/L	567	318.5	637	157.5	315	140	280	22.5	45	90	71.5	143	188	91.5	183	228	50
PN-100/160/250N/H/L	70	105	52.5	105	140	92.5	185	216	220	251	86	111 ^(e)	27	45	75	64	32
PN-400/630N/H/L	100	145	70	140	185	110	220	250	365	295	110	168	27	45	100	86	32
PN-100/160/250N/H/L	123	74	148	532	6	24	30										
PN-400/630N/H/L	147	90	180	532	6	33	33										

(1): P4=126mm, use for Compact NS250N/H/L
(e): if use automatic auxiliary connector, U20mm(NS100-250)

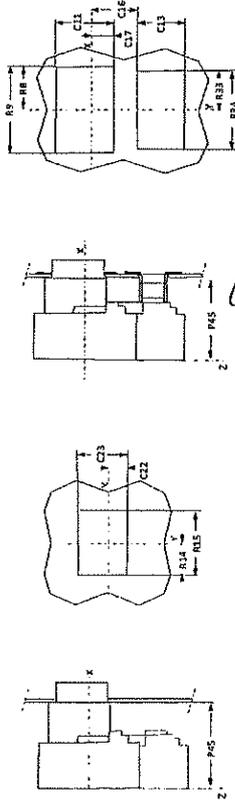
PN Moulded Case Circuit Breaker
IEC/EN 60947-2, GB14048.2



Motor operation handle dimension

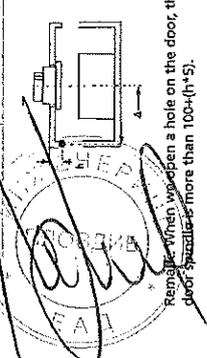


Motor operation handle installation dimension



Measurement (mm)

Model	103	155	140	185	103	155	140	185	103	155	140	185
PN-100/160Z50N/H/L	82.5	82.5	91	123	42.5	56	45.5	178	48.5	61.5	48.5	97
PN-400/630N/H/L	82.5	82.5	91	123	42.5	56	45.5	178	48.5	61.5	48.5	97
PN-100/160Z50N/H/L	103	155	140	185	29	76	62.5	145	74	148	48.5	74
PN-400/630N/H/L	103	155	140	185	29	76	62.5	145	74	148	48.5	74
PN-100/160Z50N/H/L	155	155	140	185	47.5	126	100	152	83	123	70	140
PN-400/630N/H/L	155	155	140	185	47.5	126	100	152	83	123	70	140

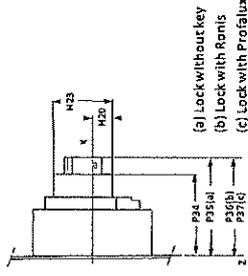


Remember when you open a hole on the door, the distance between the center of circuit breaker and door spacers more than 100+(1+5).

PN Moulded Case Circuit Breaker
IEC/EN 60947-2, GB14048.2

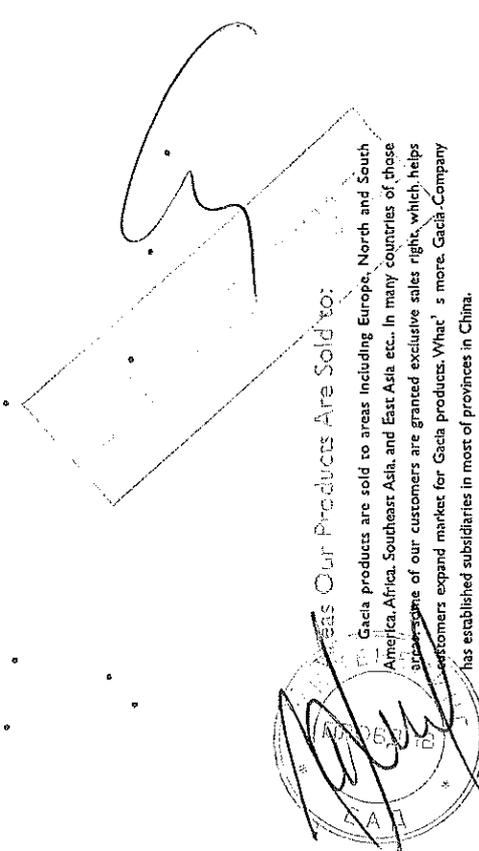
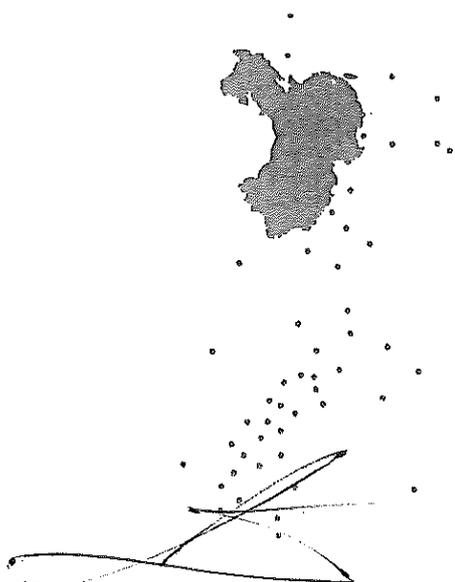
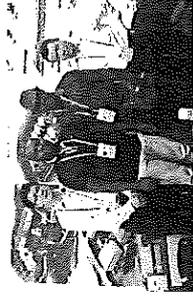
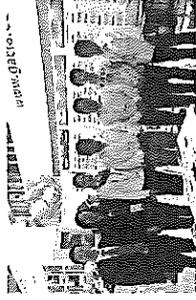
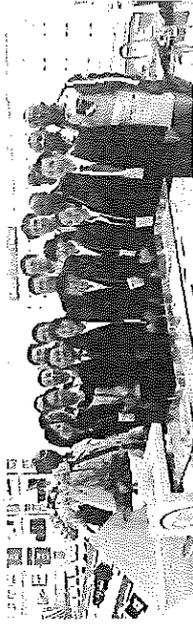


Direct rotary handle dimension



BRAND MARKETING

Gaoh Company is constantly strengthening its capacity of product technology research and development and after-sale service. In 2011, our company was awarded Zhejiang High-tech Enterprise, Zhejiang Patent Demonstration Enterprise, and Provincial High-tech Enterprise Research Center. "Customer is God" is always our principle.



Our Products Are Sold to:
 Gaoh products are sold to areas including Europe, North and South America, Africa, Southeast Asia, and East Asia etc... In many countries of those areas, some of our customers are granted exclusive sales rights, which helps our customers expand market for Gaoh products. What's more, Gaoh Company has established subsidiaries in most of provinces in China.



Enterprise Spirit

- Concentration
- Devotion
- Innovation
- Win-Win

LEADER CARE

Gacia has complete independent research & development capacity, investing 1 million dollars in setting up a standardization electrical appliance laboratory and purchasing 10 million dollars of professional electrical production equipment, and is now one of a few professional electrical production enterprises owning the same design ideas as that of world top electrical companies such as European Schneider, ABB, Legrand, Eaton, and invests over 7 million dollars in total in developing 7 series including S, P, Y, G, L, N, M and new products with 100 kinds of specifications and models. In 2012, the total output reaches 90 million dollars.

Gacia is one of the three biggest export electrical manufacturers including Chint in the first China domestic low voltage electrical manufacture base in Yueqing, Wenzhou.

Gacia, with near 100 customers in over 50 countries in the World, has set up Gacia brand agents in 29 countries and established cooperation with some of the world fortune 500 enterprises and world famous electrical brands such as Korea Hyundai, US GE Electric.

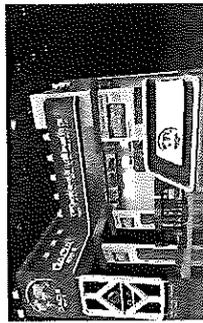
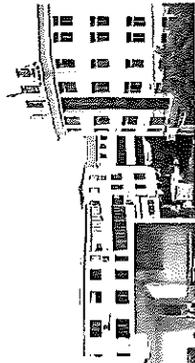
Gacia has spent 1.8 million dollars in total in acquiring market admittance certification qualifications of over 30 countries, such as KEMA, VDE, TUV, SEMKO, PCT, CE, CCC, ROHS, and four systems certification: ISO9001, ISO14001, OHSAS18001, SAB8000 which have achieved remarkable market effects.

Warmly welcome customers from all over the world to visit Gacia.

100 000 000



President *Shenhuai Chen*
Gacia Electrical Appliance Co., Ltd



Enterprise Goal

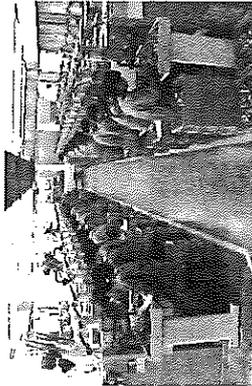
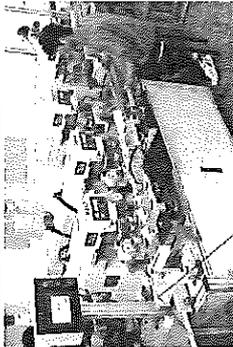
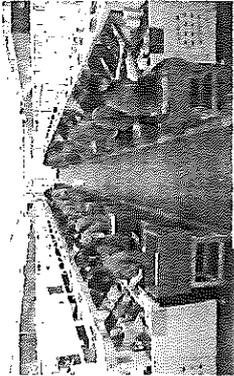
Build up the most professional circuit breaker brand in China, be devoted to the cooperation with world famous brands.

World fortune 500 cooperation customers



BRAND STORY

100 years ago, a war broke out between America and Spain. A US army Lieutenant Rowen underwent great hardships and sent a secret letter from US President McKinley to Cuba's Revolution Army leader General Gacia. Thus, the whole war situation was finally changed. Rowen's story of loyalty, devotion to responsibility and pursuit for success became widely known. "A message to Gacia" becomes a symbol of pursuit for success from generation to generation.

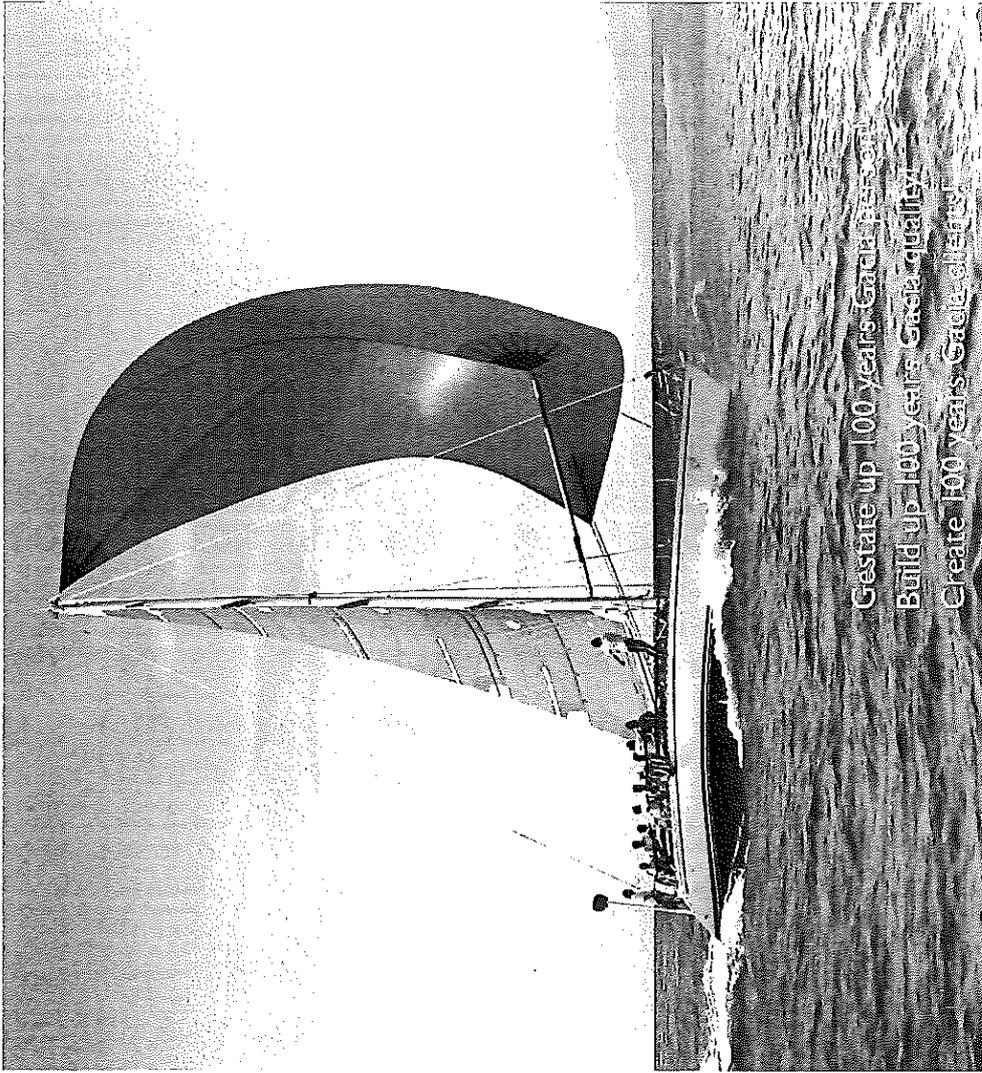


COMPANY INTRODUCTION

Gacia Electrical Appliance Co., Ltd is a national high-tech enterprise and professional circuit breaker manufacturer which is involved in research&development, manufacture, China Chamber of Commerce for Machinery and Electronic Products Import and Export(CCCME), specializes in production and export of MCB, RCCB, RCD/RCBO, MCCB. During the past years, Gacia established three circuit breaker manufacture bases in Shanghai, Zhejiang and Jiangxi, with total plant area 160000 M2, 1750 workers, technical research&development team of over 100 staffs, international marketing team of 35 staffs, and annual output of 65 million circuit breakers.



Operation Idea



Gestate up 100 years Gacia person
Build up 100 years Gacia quality
Create 100 years Gacia client

Recent Management Goal (management idea)

Standardization
Normalization
Systematization
Institutionalization

GACIA
加吉亞

加吉亞電器有限公司
GACIA ELECTRICAL APPLIANCE CO., LTD.
NO. 545 DONGDAJIE
BAITAWANG INDUSTRY ZONE
BEIBAIXIANG YUEQING CITY
WENZHOU CITY ZHEJIANG
325603 CHINA

To: Tender procedure of CEZ - Electro Distribution Company of Bulgaria

LETTER-CONFIRMATION

GACIA ELECTRICAL APPLIANCE CO., LTD, with address No545, Dongdajie, Baitawang Industry Zone, Beibaixiang, Yueqing City,, Wenzhou City, Zhejiang, 325603 China,

give the following values of parameters I_{cu} and I_{cs} ($I_{cu}=I_{cs}$) at AC 500V/50Hz, as follow:

	Series PN1600S-1250A
AC500V/50Hz O-CO (I_{cu}) Rated ultimate short-circuit breaking capacity (kA)	60 kA
AC500V/50Hz O-CO-CO (I_{cs}) Rated service short-circuit breaking capacity (kA)	60 kA

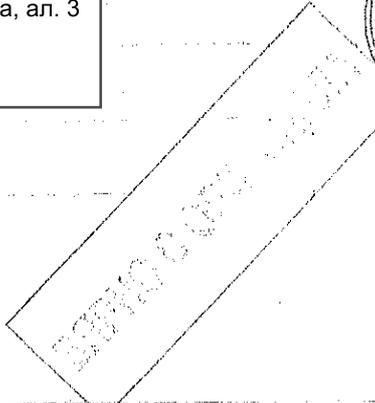
We also explicitly confirm that for tender procedure of CEZ - Electrodistribution company of Bulgaria we will produce and deliver the product PN with rated operational voltage of $U_e=690V$ which is a product of our range of manufacturing.

Date: 27 of November 2017

Name: Jody

Stamp and Signature:

на основание чл. 36а, ал. 3
от ЗОП



第 页/共 页

Превод от английски език

Бланка на ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙАНС, ООД
0577-62982555
0577-62983555
e-mail: gacia@gacia.com.cn
<http://www.gacia.com.cn>

За: Тръжна процедура на ЧЕЗ – Електроразпределително дружество на България

ПИСМО-ПОТВЪРЖДЕНИЕ

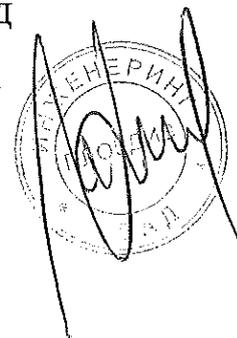
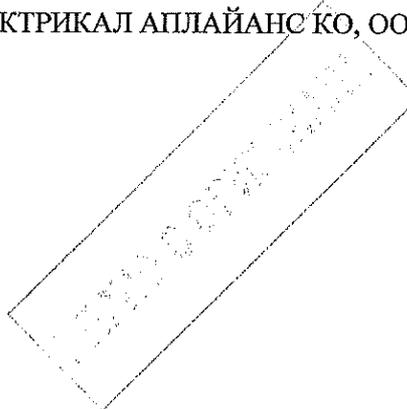
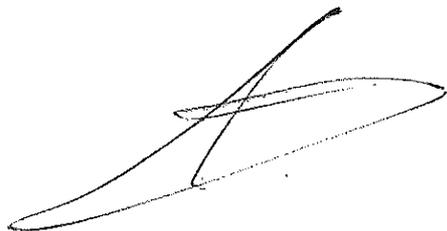
ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙАНС КО, ООД, с адрес: 545# Дондажие, Бейбаксианг, Байтауанг Индустриал Зоун, Уенджоу Джейджанг, 325603 Китай, даваме следните стойности на параметрите I_{cu} и I_{cs} ($I_{cu}=I_{cs}$) при АС 500V/50Hz, както следва:

	Серия PN1600S-1250A
АС500V/50Hz O-CO (I_{cu}) Обявена максимална изключвателна възможност при к.с. (kA)	60
АС500V/50Hz O-CO-CO (I_{cs}) Работна изключвателна възможност при късо съединение (kA)	60

Ние също изрично потвърждаваме, че за тръжната процедура на ЧЕЗ – Електроразпределително дружество на България, ние ще произведем и доставим продукт PN с обявено работно напрежение $U_e=690V$, който продукт е от обхвата ни на производство.

Дата: 17 Ноември 2017

Име, подпис и кръгъл печат на ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙАНС КО, ООД



GACIA
加吉亚

加吉亚电气设备有限公司
GACIA ELECTRICAL APPLIANCE CO., LTD.
地址: 浙江省温州市乐清市白象镇东大垟545号
电话: 0577-22881100 传真: 0577-22881101
邮编: 325603 网址: http://www.gacia.com.cn
E-mail: info@www.gacia.com.cn

CE

DECLARATION OF CONFORMITY

We, **GACIA ELECTRICAL APPLIANCE CO., LTD.**,
with address: **No 545, Dongdajie, Baitawang Industry Zone, Beibaixiang, Yueqing**
City, Wenzhou City, Zhejiang, 325603 China

declare that our product

MOULDED CASE CIRCUIT BREAKER

Type: PN series

to which this declaration relates is in conformity with the following standard (s) or other
normative document(s)

IEC/EN 60947-1

IEC/EN 60947-2

IEC/EN 60529

The products are satisfied the provisions for CE marking according to the Low Voltage
directive 2014/35/EC.

Date: 27 of November 2017

Name: Jody

Stamp and Signature

на основании чл. 36а, ал. 3
от ЗОП

Бланка на ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙАНС, ООД
0577-62982555
0577-62983555
e-mail: gacia@gacia.com.cn
<http://www.gacia.com.cn>

ЕС ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСВИЕ

Ние, ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙАНС КО, ООД
Адрес: 545# Дондажие, Бейбаксианг, Байтаунг Индустриал Зоун, Уенджоу
Джейджанг, 325603 Китай

Декларираме, че нашият продукт

АВТОМАТИЧЕН ПРЕКЪСВАЧ ЛЯТ КОРПУС
ТИП: PN серия

за които се отнася тази декларация са в съответствие с долните стандарти или други
нормативни документи:

IEC/EN 60947-1

IEC/EN 60947-2

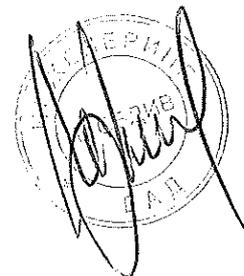
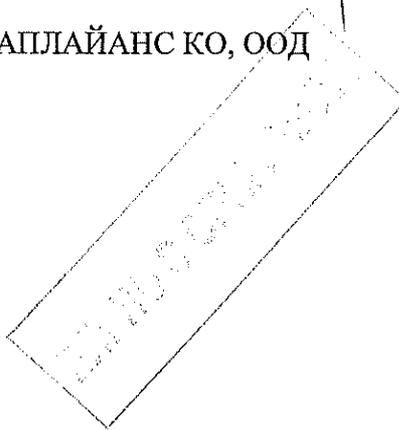
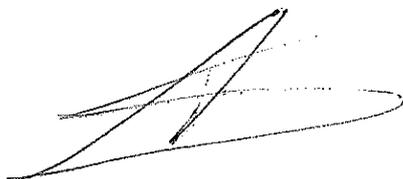
IEC/EN 60529

Продуктите изпълняват изискванията за СЕ маркировка според Ниско волтовата
директива 2014/35/ЕС

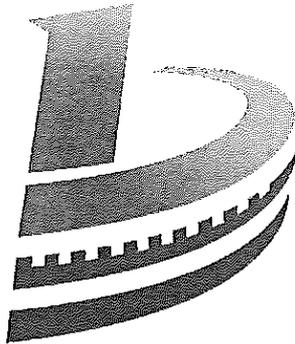
Дата: 27 Ноември 2017

Име и подпис: Джоди

кръгъл печат на ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙАНС КО, ООД



Report No.: MA-JO-20151117-LVD



MAMBO
Testing & certification centre

TEST REPORT

REPORT NO.: MA-JO-20151117-LVD

Category of Directive: 2006/95/EC Low Voltage Directive

Name of Equipment: MCCB

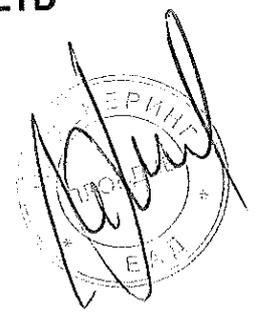
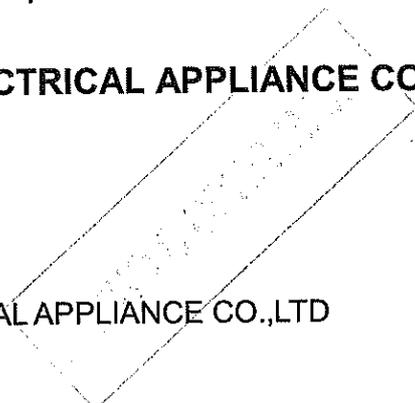
Test Model: PN1600HE

Test Standard: EN 60947-2:2006/A2:2013

Applicant: GACIA ELECTRICAL APPLIANCE CO.,LTD

Manufacturer: GACIA ELECTRICAL APPLIANCE CO.,LTD

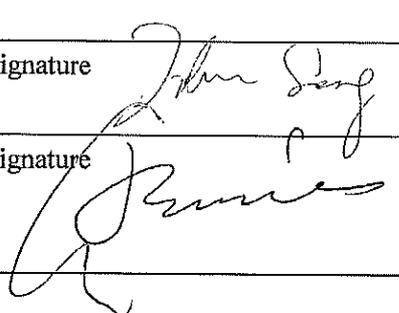
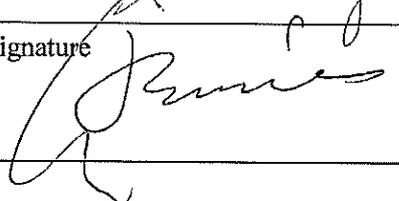
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MAMBOCERT

EN 60947-2:2006/A2:2013

Safety of machinery — Electrical equipment of machines — Part 1: General requirements

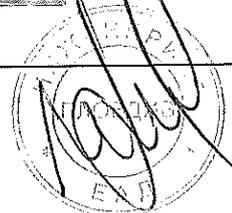
Name and address of the testing laboratory	MamboCERT (shanghai) Technology Co., Ltd.		Tel:021-51695369		Fax:021-60319657			
Name and address of the applicant	GACIA ELECTRICAL APPLIANCE CO.,LTD No.545 Dongdajie,Baitawang Industrial Zone Beibaixiang,Wenzhou,325603,China							
Name and address of the manufacturer	GACIA ELECTRICAL APPLIANCE CO.,LTD No.545 Dongdajie,Baitawang Industrial Zone Beibaixiang,Wenzhou,325603,China							
Product Name	MCCB							
Model/type reference	PN1600SE , PN1600HE, LN1600SE, LN1600HE							
Application model	PN1600SE , PN1600HE, LN1600SE, LN1600HE							
Tested according to	EN 60947-2:2006/A2:2013							
Test report no.	MA-JO-20151117-LVD							
Work carried out by	John Song		Signature 					
	Director							
Work verified by	Bowien		Signature 					
	Manager							
Date of issue	Nov, 17,2015							
Summary of testing								
Type No	Rated current	Number of poles	Use classes	Rated Voltage (Ue)	Rated insulation voltage(Ui)	Rated impulse voltage(Uimp)	Rated frequency	Limit segmentati on capability
PN1600	800A,100A,1250A, 1600A	3P,4P	A	400/415V 690V	690V 750V	8kV 8kV	50/60Hz 50/60Hz	80kA 40kA

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Test Report Content

This test report consists of:

1. EN 60947-2:2006/A2:2013
2. Test Record
3. Test Equipment
4. Product's Electrical Equipment List

General information:

The test results presented in this report relate only to the object tested and information given from applicant or manufacturer.

Test case verdicts:

Pass = Pass, Fail = Fail, N.A. = Not applicable. Placed in the column marked "Verdict".

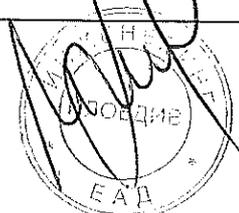
This is a Computer generated Test Report.

× Information written in "Italic" or "Italic and bold" font style is written by project Engineer during testing. All other information in "Regular" or "Regular and bold" font style is a part of this "Test Report Form".

EN 60947-2:2006/A2:2013

1	Scope	-
	This part of EN 60947 applies to the application of electrical and electronic equipment and systems to machines not portable by hand while working. Including a group of machines working higher level system aspects	Pass. This product is within this scope.
	This part is applicable to the electrical equipment or parts of the electrical equipment that operate with nominal supply voltages not exceeding 1000V for alternating current and not exceeding 1500V for direct current, and with nominal frequencies not exceeding 200Hz	Pass. The nominal supply voltage for these machines is AC 220V.
2	Normative references	-
3	Definitions	-
4	General requirements	-
4.1	The risks associated with the hazards relevant to the electrical equipment shall be assess as part of the overall requirements for risk assessment of the machine	Pass. See the risk assessment report in detail.
4.2	Selection of equipment	-
	Electrical components and devices shall be suitable for their intended use and shall conform to relevant IEC	Pass.

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	standards where such exist	
4.3	Electrical supply	-
	The electrical equipment shall be designed to operate correctly with the relevant conditions of supply	Pass. They can be operated correctly with the relevant conditions of supply.
4.4	Physical environment and operating conditions	-
	Shall be suitable for use as specified: - Electromagnetic compatibility - Ambient air temperature - Humidity - Altitude - Contaminants - Ionizing and non-ionizing radiation - Vibration, shock and bump	Pass. This machine is suitable for use as specified in this clause.
4.5	Transportation and storage	-
	-2.5 °C to + 55 °C And short periods not exceeding 24 h at up to + 70 °C	Pass. This requirement is complied with.
4.6	Provisions for handling	-
	Heavy and bulky equipment shall be moved by cranes or similar equipment	Pass. Appropriate equipments are provided.
4.7	Installation and operation	-
	According to supplier's instructions	Pass. All the related information is stated in the instruction manual.
5	Incoming supply conductors terminations and devices for disconnecting and switching off	-
5.1	Incoming supply conductor terminations	-
	Single or multiple power supply	Pass. Single power supply.
	The supply conductors are terminated at the supply disconnection device if not, the separate terminals shall be provided	Pass. Terminated at the supply disconnection device.
	If a neutral conductor is used, it shall be indicated clearly in the technical documentation	Pass. See circuit diagram in details.

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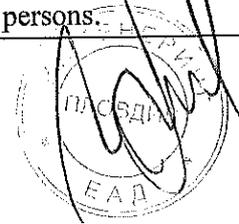
	Labelled N shall be provided for the neutral conductor	Pass. Appropriate label has been provided.
	No connection between the protective bonding circuit and the neutral conductor	Pass. This requirement has been taken into account during the design.
	All terminals for the incoming supply connection shall be identified clearly	Pass. All of them have been identified clearly.
5.2	Terminal for connection to the external protective earthing system	-
	Shall be in the vicinity of the associated phase conductor terminals	Pass.
	Cross-sectional area of the external protective copper conductor according to table 1	Pass. The cross-sectional area of the external protective copper conductor is selected according to table 1.
	Marking of the external protective conductor with the letters "PE"	Pass. 'PE' is marked.
	Other protective terminals shall be marked with the symbol \perp	Pass.
	All protective terminals shall be coloured by use of the bicolor combination Green-And-Yellow	Pass.
5.3	Supply disconnecting (isolating) device	-
5.3.1	General	-
	Shall disconnect (isolate) the electrical equipment of the machine from supply when required	Pass. Disconnect the electrical equipment of the machine from supply.
	If two or more supply disconnecting devices are provided, protective interlocks shall be used	Not applicable.
5.3.2	Type	-
	a) Switch-disconnector according to en60947-3 b) A disconnector with auxiliary contact c) Circuit breaker according to EN 60947-2 d) Plug/ socket combination for a machine with a rated current not exceeding 16 A and a total power rating	Pass. Circuit breaker is provided

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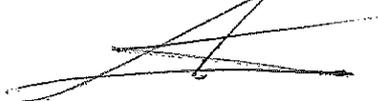
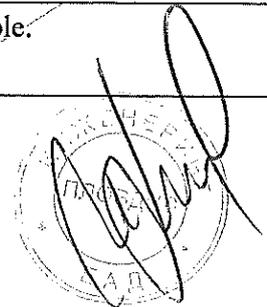
	not exceeding 3 kW	
5.3.3	Requirements	-
	Have one OFF and one ON position only	Pass.
	Marked clearly with "I" and "O"	Pass.
	Have a reset(tripped) position between "O" and "I"	Not applicable
	Have an external operating handle	Not applicable
	The handle should be Black or Grey	Not applicable
	Could be locked in the OFF position	Not applicable
	Disconnect all live conductors of its power supply circuit	Pass.
	Sufficient breaking capacity	Pass.
5.3.4	Operating handle	-
	Shall be easily accessible and located:0.6 m~1.9 m	Not applicable
5.3.5	Excepted circuits	-
	Have their own disconnecting device (Recommended)	Not applicable.
	If no disconnecting device, the relevant safety requirements shall be complied with	Not applicable.
5.4	Devices for switching off for prevention of unexpected start-up	-
	Unexpected start-up shall be prevented (Devices described in 5.3.2 may fulfil this function)	Not applicable.
5.5	Devices shall be provided for disconnecting (isolating) electrical equipment to enable work to be carried out without a risk from electric shock or burn	Pass. Appropriate devices are provided.
5.6	Protection against unauthorized, inadvertent and/or mistaken connection	-
	The devices described in 5.4 and 5.5 shall be equipped with such function	Not applicable.
6	Protection against electric shock	-
6.1	General	See the relevant clauses.
6.2	Protection against direct contact	-
6.2.1	General	-
	Either 6.2.2 or 6.2.3 and, where applicable, 6.2.4 shall be applied	See the relevant clauses.
	When the equipment is located in places open to all persons, measures of either 6.2.3 or 6.2.2 with a min. degree of protection against direct contact corresponding to IP4X or IPXXD shall be applied	Not applicable. This machine shall be located in the factory, and be operated by the authorized persons.

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6.2.2	Protection by enclosures	-
	Min protection degree for live parts: IP2X or IPXXB	Pass. IP2X.
	Min. protection degree for top surface:IP4X or IPXXD	Pass. IP4X.
	Opening an enclosure shall only be possible under one of the following conditions:	-
a)	The use of a key or tool is necessary by skilled or instructed persons	Pass.
	Min. protection degree for live parts on the inside of doors:IP1X or IPXXA	Pass. IP2X.
	Min. protection degree for live parts inside the enclosure:IP2X or IPXXB	Pass. IP2X.
b)	The disconnection of live parts inside the enclosure before the enclosure may be opened (Use of the supply disconnecting device)	Pass.
	Min. protection degree for all parts are still have live after switching off the disconnecting device:IP2X or IPXXB	Not applicable.
	Such parts shall be marked with a warning sign: 	Not applicable.
c)	Opening without the use of a key or a tool and without disconnection of live parts shall be possible only when the min. protection degree is IP2X or IPXXB	No this kind of situation.
6.2.3	Protection by insulation of live parts	-
	Live parts shall be covered by insulation which can only be removed by destruction	Pass.
	Such insulation shall withstand the mechanical, chemical, electrical and thermal stresses under normal service conditions	Pass.
6.2.4	Protection against residual voltages	-
	After disconnecting, any exposed conductive part having a residual voltage that shall be discharged to 60V or less within 5 seconds	Pass. This requirement is complied with.
	If mentioned above is not possible, a warning notice drawing shall be provided	Not applicable.
	If the withdrawal of plugs or similar devices would make the exposure of the conductors (e.g. pins),the discharge.	Not applicable.

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	time shall not exceed 1 second such conductor shall have the protection degree at least IP2X or IPXXB	
6.2.5	Protection by barriers	-
	For protection by barriers, see 412.2 of IEC 60947-4-1	Not applicable.
6.2.6	Protection by placing out of reach or protection by obstacles	-
	For protection by placing out of reach see 412.4 of IEC 60947-4-1	Not applicable.
	For protection by obstacles see 412.3 of IEC 60947-1	Not applicable.
	For collector wire systems or collector bar systems with a degree of protection less than IP2X see 13.8.1	Not applicable.
6.3	Protection against indirect contact	-
6.3.1	General	-
	For each circuit or part, at least one of the measures in accordance with 6.3.2 to 6.3.3 shall be applied	See the following descriptions.
6.3.2	Measure to prevent the occurrence of a hazardous touch voltage	-
6.3.2.1	General	-
6.3.2.2	Protection by use of class II equipment or by equivalent insulation	-
	Application of class II equipment or equivalent insulation	Pass. Appropriate insulations have been provided.
6.3.2.3	Protection by electrical separation	-
	Application of electrical separation	Pass.
6.3.2.4	Supply system design	-
	Application of a supply system designed with its neutral point either insulated from or having a high impedance to earth	Not applicable.
6.3.3	Protection by automatic disconnection of supply	-
	Use of the automatic disconnection of supply	Not applicable.
6.4	Protection by the use of PELV	-
6.4.1	General requirements	-
	PELV (protective extra-low voltage) circuits shall satisfy all of the conditions specified in this clause	Not applicable.
6.4.2	Sources for PELV	-
	The sources for PELV shall be one of the conditions	Not applicable.

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	specified in this clause	
7	Protection of equipment	-
7.1	General	-
7.2	Over current protection	Pass
7.2.1	General	-
7.2.2	Supply conductors	-
	The supplier is not responsible for providing the over current device for the supply conductors	Pass.
	Installation diagram with data necessary for selection of the over current protective device	Pass. Related information is stated in the installation diagram.
7.2.3	Power circuits	-
	All conductors shall be protected against over current (except earthed neutral conductor)	Pass. Appropriate devices against over current are provided.
	Cross-section area of neutral conductor	Pass
	For neutral conductors smaller than phase conductors then IEC 60947-1 shall apply	Pass
	In IT-systems, it is recommended that the neutral conductor is not used	Not applicable.
7.2.4	Control circuits	-
	Conductors of control circuits connected to the supply voltage and of circuits feeding control circuit transformers shall be protected against over current in accordance with 7.2.3	Pass. Appropriate devices against over current are provided.
7.2.5	Socket outlets and their associated conductors	-
	Over current protection devices shall be provided in the unearthed live conductors	Pass. Appropriate devices against over current are provided
7.2.6	Lighting circuits	-
	All unearthed conductors of circuits supplying lighting shall be protected against the effects of short circuits by the provision of over current devices separate from those protecting other circuits	Not applicable
7.2.7	Transformers	-
	Transformers shall be protected against Over current in accordance with IEC 60076-5 and IEC	Not applicable

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	60947-1 appropriate	
	The type and setting of the overcurrent protective device should be in accordance with the recommendations of the transformer supplier	Not applicable
7.2.8	Location of over current protective device	-
	Over current protective device shall be located at the point where the conductors to be protected are connected to their supply	Pass. Over current protective devices are installed correctly.
7.2.9	Over current protective devices	-
	Sufficient breaking capacity	Pass.
	Where fuses are used, a type readily available in the country of use shall be selected, or arrangement shall be made with the use for the supply of spare parts	Pass. Spare parts are readily available.
7.2.10	Rating and setting of over current protective devices	-
	The rated current of fuses or the setting current of other over current protective devices shall be selected as low as possible but adequate for the anticipated over currents	Pass. The rated current of fuses are correctly selected.
	The rated current or setting of an over current protective device is determined by the current carrying capacity of the conductors to be protected by that device in accordance with 13.4	Pass. Please see the related clause.
7.3	Overload protection of motors	-
	Overload protection of motors shall be provided for each motor rated at more than 0.5kW	Not applicable.
	In applications where an automatic interruption of the motor operation is unacceptable, the overload detection shall give a warning signal to which the operator can respond	Not applicable.
	Detection of overload shall be provided in each live conductor excepted for the neutral conductor	Not applicable.
	For motors having single-phase or d.c. power supplies. Detection in only one unearthed live conductor is permitted	Not applicable.
	Automatic restarting of any motor after the operation of overload protection shall be prevented	Not applicable.
7.4	Abnormal temperature protection	-
	Use of abnormal temperature protection	Not applicable.

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7.5	Protection against supply interruption or voltage reduction and subsequent restoration	-
	Where a voltage drop or a supply interruption can cause a hazardous condition, damage to the machine, or to the work in progress, under voltage protection shall be provided	Not applicable.
	The operation of the under voltage device shall not impair the operation of any stopping control of the machine	Not applicable.
	Upon restoration of the voltage or upon switching on the incoming supply, automatic or unexpected restarting of the machine shall be prevented	Pass. Automatic of unexpected restarting of the machine can be prevented.
	Where only a part of the machine or of the group of machines working together in a coordinated manner is affected by the voltage reduction or supply interruption, the under voltage protection shall initiate appropriate control responses to ensure co-ordination	Not applicable.
7.6	Motor over speed protection	-
	Use of the motor over speed protection	Not applicable.
7.7	Earth fault/residual current protection	-
	Use of earth fault/residual current protection for automatic disconnection	Not applicable.
7.8	Phase sequence protection	-
	Where an incorrect sequence of the supply voltage can cause a hazardous condition or damage to the machine, protection shall be provided	Not applicable.
7.9	Protection against over voltage due to lightning and to switching surges	-
	Protection devices can be provided to protect against the effects of over voltages due to lightning or to switching surges	Not applicable.
8	Equipotential bonding	-
8.1	General	-
8.2	Protective bonding circuit	-
8.2.1	General	-
	On mobile machines with on-board power supplies, it	Not applicable.

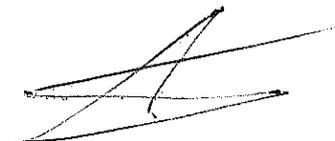
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	shall be connected to a protective bonding terminal to provide protection against electric shock	
	When a mobile machine is also capable of being connected to an external incoming supply, the protective bonding terminal shall be the connection point for the external protective conductor	Not applicable.
	All parts of the protective bonding circuit shall be so designed that they are capable of withstanding the highest thermal and mechanical stresses	This requirement has been complied with.
	Any structural part of the electrical equipment or of the machine may be used as part of protective bonding circuit	Pass. They have been used as part of protective bonding circuit.
	If an IT distribution system is used, the machine structure shall be used as part of the protective bonding circuit in conjunction with an earth fault supervision system	Not applicable.
	The structural bonding is not required where all the equipment provided is in accordance with 6.3.2.2	Pass.
8.2.2	Protective conductors	-
	Protective conductors shall be identified according to 14.2.2	Pass. See clause 14.2.2 in detail.
	Copper conductors should be used	Pass.
	Where a conductors material other than copper is used, its electrical resistance per unit length shall not exceed that of the allowable copper conductor and such conductors shall not be less than 16 mm ² in cross-sectional area	Only copper conductors are used.
	The cross-sectional area of protective conductors shall be determined according to the requirements of: -543 of IEC 60947-2 -7.4.3.1.7 of IEC 60947-2 appropriate	Pass. They have been used according to these requirements.
8.2.3	Continuity of the protective bonding circuit	-
	All exposed conductive parts shall be connected to the protective bonding circuit	Pass. All the parts have been connected.
	Where a part is removed for any reason, the protective bonding circuit for the remaining parts shall not be interrupted	Pass. This requirement is taken into account during design.

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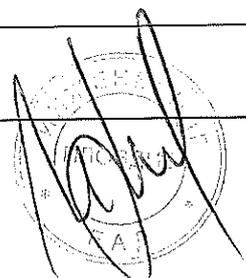
	Connection and bonding points shall be so designed that their current-carrying capacity is not impaired by mechanical, chemical, or electrochemical influence	Pass. This requirement is taken into account during design.
	Metal ducts of flexible or rigid construction and metallic cable sheathes shall not be used as protective bonding conductors	Pass.
	Nevertheless such metal ducts and the metal sheathing of all connecting cables shall be connected to the protective bonding circuit	Not applicable.
	Where the electrical equipment is mounted on lids, doors, or cover plates, continuity of the protective bonding circuit shall be ensured and it is recommended that a protective conductor is used	Pass.
	Otherwise fastenings, hinges or sliding contacts designed to have a low resistance shall be used	Pass.
	The continuity of the protective conductor in cables that are exposed to damage shall be ensured by appropriated measures	Pass.
	For requirements for the continuity of the protective conductor using collector wires, collector bars and slip-ring assemblies (see 13.8.2)	Not applicable,
8.2.4	Exclusion of switching devices from the protective bonding circuit	-
	Shall not incorporate a switching device, an over current protective device nor a means for current detection for such devices	Not applicable,
	The only means permitted for interruption shall be carried out by instructed or skilled persons by using a tool	Not applicable,
8.2.5	Parts that need not to be connected to the protective bonding circuit	-
	Screws, rivets, and nameplates and to parts inside an enclosure, are not necessary to connect to the protective bonding circuit	Pass
8.2.6	Interruption of the protective bonding circuits	-
	The protective bonding circuit shall be interrupted only after the live conductors have been interrupted, and shall	Pass. This requirement is taken into

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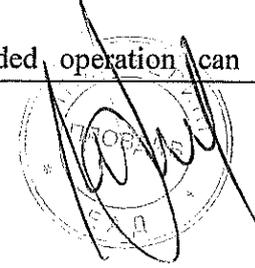
	be re-established before any live conductor is reconnected	account during design.
	Metallic housings of plug/socket combinations shall be connected to the protective bonding circuit except where used for PELV	Pass. All the related devices are connected to the protective bonding circuit.
8.2.7	Protective conductor connecting points	-
	All protective conductors shall be terminated in accordance with 14.1.1	Pass. Please see the related clause.
	Shall have no other function and shall not be used to attach or connect appliances or parts	Pass.
	Use of earthing symbol \perp	Pass. Earthing symbol is used.
	By the bicolor combination GREEN-AND-YELLOW	Pass. The color is correct.
8.3	Bonding for operational purposes	-
	Use of bonding for operational purpose	See the following descriptions.
8.3.1	General	-
8.3.2	Bonding to the protective circuit	-
	One method for protection against unintended operation as a result of insulation failure is achieved by connection one side of a control circuit fed by a transformer to the protective bonding circuit	Pass. The measure described in this clause has been used.
8.3.3	Bonding to a common reference potential	-
	Use of bonding to a common reference potential	Pass.
9	Control circuits and control functions	-
9.1	Control circuits	-
9.1.1	Control circuit supply	-
	Transformers shall be used for supplying the control circuits	Not applicable.
	Transformers are not mandatory for machines with a single motor starter and a maximum of two control devices	Not applicable.
9.1.2	Control circuit voltages	-
	The nominal voltage shall not exceed 277 V when supplied from a transformer	Pass.

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9.1.3	Protection	-
	Over current protection shall be provided according to 7.2.4 and 7.2.10	Pass.
9.1.4	Connection of control devices	-
	Appropriate connection for control devices	Pass. Appropriate connection have been provided.
9.2	Control functions	-
9.2.1	Start functions	-
	Start functions shall operate by energizing the relevant circuit	Pass. This requirement is taken into account during design.
9.2.2	Stop functions	-
	Each machine shall be equipped with appropriate stop functions	Pass. Appropriate stops are provided.
9.2.3	Operating modes	-
	When hazardous conditions can arise from mode selection, such selection shall be prevented by suitable means	Pass.
	Mode selection by itself shall not initiate machine operation (A separate action by the operator shall be required)	Not applicable.
	Safeguarding shall remain effective for all operating modes	Pass.
	Indication of the selected operating mode shall be provided	Pass. Appropriate indication is provided.
9.2.4	Suspensions of safeguarding	-
	Where it is necessary to suspend safeguarding, a secure provision shall be provided to prevent automatic operation	Pass. Provisions for preventing automatic operation are provided.
9.2.5	Operation	-
9.2.5.1	General	-
	The necessary interlocks (see 9.3) shall be provided for safe operation	Pass. Please see the related clause.
	Measures shall be taken to prevent movement of the machine in an unintended manner after any stopping of	Pass. No unintended, operation can be

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	the machine	occurred after any stopping of the machine.
9.2.5.2	Start	-
	The start of an operation shall be possible only when all the safeguards are in place and functional (except described in 9.2.4)	Pass. Appropriate interlocks are provided.
	Hold-to-run control shall be used for the others machines, as appropriate	Not applicable.
	Suitable interlocks shall be provided to secure correct sequential starting	Not applicable.
	The use of more than one control station to initiate a start	Not applicable.
9.2.5.3	Stop	-
	Category 0, category 1 and/or category 2 stops shall be provided where indicated by the risk assessment and the functional requirements of the machines	Pass. category 1 stops are provided.
	Stop functions shall override related start functions	Pass. Stop functions have priorities over start functions.
9.2.5.4	Emergency operations (emergency stop, emergency switching off)	-
9.2.5.4.1	General	-
9.2.5.4.2	Emergency stop	-
	Shall function either as a category 0 stop or as a category 1 stop	Pass.
	The choice of the emergency stop shall be determined by the risk assessment of the machine	Pass. According to the result of risk assessment of the machine.
	Where a category 0 stop is used for emergency stop function, it shall have only hard-wired electromechanical components	Not applicable.
	The operation of emergency stop shall not depend on electronic logic or on the transmission of commands over a communications network or link	Pass.
	Where a category 1 stop is used for the emergency stop function, final removal of power to the machine actuators shall be ensured and carried out by means of	Pass.

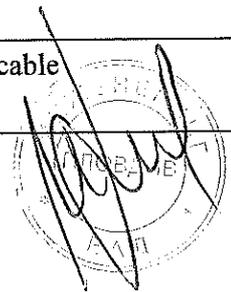
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	electromechanical components	
9.2.5.4.3	Emergency switching off	-
	Use of emergency switching off	Pass. Identical to that of emergency stop.
9.2.5.5	Monitoring of command actions	-
	Movement or action of a machine or part of a machine that can result in a hazardous condition shall be monitored	Not applicable
9.2.5.6	Hold-to-run controls	-
	Hold-to run controls shall require continuous actuation of the control devices to achieve operation	Not applicable..
9.2.5.7	Two-hand control	-
	Three types of two-hand control are available, the selection of which is determined by the assessment	Not applicable.
9.2.5.8	Enabling device	-
	It shall be designed to allow motion when actuated in one position only (In any other position motion shall be stopped)	Pass. These machines have been designed to allow motion when actuated in one position only.
9.2.6	Combined start and stop controls	-
	Push-buttons and similar devices that, when operated, alternately initiate and stop motion shall only be used for functions which cannot result in a hazardous condition	Not applicable.
9.2.7	Cableless control	-
9.2.7.1	General	-
	Means shall be provided to readily remove or disconnect the power supply of the operator control station	Not applicable.
	Means shall be provided, as necessary, to prevent unauthorized use of the operator control station	Not applicable.
	Each operator control station shall carry an unambiguous indication of which machine is intended to be controlled by that operator control station	Not applicable.
9.2.7.2	Control limitation	-
	Measures shall be taken to prevent the machine from responding to signals other than those from the intended operator control station	Not applicable.
	Where necessary, means shall be provided so that the	Not applicable.

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	machine can only be controlled from operator control station in one or more predetermined zones or locations	
9.2.7.3	Stop	-
	Operator control stations shall include a separate and clearly identifiable means to initiate the stop function of the machine or of all the motions that can cause a hazardous condition	Not applicable.
	The actuating means to initiate this stop function shall not be marked or labeled as an emergency stop device	Not applicable.
	A machine which is equipped with cableless control shall have a means of automatically initiating the stopping of the machine and of preventing a potentially hazardous operation	Not applicable
9.2.7.4	Series data communication	-
	In a machine where the control of safety-related functions relies on series data transfer, correct communications shall be ensured by using an error detection method that is able to cope with up to three error bits in any command sequence	Not applicable
9.2.7.5	Use of more than one operator control station	-
	Where a machine has more than one operator control station, measures shall be taken to ensure that only one control station can be enabled at a given time	Not applicable
	An indication of which operator control station is in control of the machine shall be provided at suitable locations as determined by the risk assessment of the machine	Not applicable
9.2.7.6	Battery-powered operator control stations	-
	A variation in the battery voltage shall not cause a hazardous condition	Not applicable
	If one or more potentially hazardous motions are controlled using a battery-powered operator control station, a clear warning shall be given to the operator when a variation in battery voltage exceeds specified limits	Not applicable
	Under those circumstances, the operator control station shall remain functional long enough to put the machine	Not applicable

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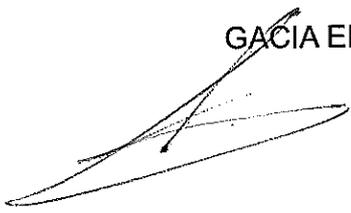


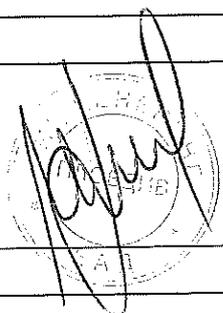
	into a non-hazardous condition	
9.3	Protective interlocks	-
9.3.1	Reclosing or resetting of an interlocking safeguard	-
	The reclosing or resetting of an interlocking safeguard shall not initiate machine motion or operation	Pass
9.3.2	Over travel limits	-
	Use of a position sensor or limit switch	Not applicable
9.3.3	Operation of auxiliary functions	-
	The correct operation of auxiliary functions shall be checked by appropriate devices	Not applicable.
	Use of appropriate interlocking	Not applicable.
9.3.4	Interlocks between different operations and for contrary motions	-
	Interlocking shall be provided against incorrect operation	Pass.
9.3.5	Reverse current braking	-
	Use of reverse current braking	Not applicable.
9.4	Control functions in the event of failure	-
9.4.1	General requirements	-
	Provision of control functions in case of failure according to the level of risk assessment	Pass. According to the risk assessment.
9.4.2	Measures to minimize risk in the event of failure	-
9.4.2.1	Use of proven circuit techniques and components	-
	Use of proven circuit techniques and components	Pass. Appropriate components have been used.
9.4.2.2	Provisions for redundancy	-
	Provisions for redundancy	Not applicable.
9.4.2.3	Use of diversity	-
	Use of diversity	Not applicable.
9.4.2.4	Functional tests	-
	Carried out automatically by the control system or manually by inspection	Pass.
9.4.3	Protection against maloperation due to earth faults, voltage interruptions and loss of circuit continuity	-
9.4.3.1	Earth faults	-
	Bonding to the protective bonding circuit may be provided according to 8.2 and the devices may be	Pass.

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	connected as described in 9.1.4	
9.4.3.2	Voltage interruptions	-
	Where a memory device is used, proper functioning in the event of power failure shall be ensured to prevent any loss of memory that can result in a hazardous condition	Not applicable
9.4.3.3	Loss of circuit continuity	-
	Where the loss of continuity of safety-related control circuits depending upon sliding contacts can result in hazardous condition, appropriate measures shall be taken	Not applicable.
10	Operator interface and machine-mounted control devices	-
10.1	General	-
10.1.1	General device requirements	-
	As far as is practicable, those devices shall be selected, mounted, and identified or coded according to IEC 60073 and IEC 60447	Pass.
10.1.2	Location and mounting	-
	Appropriate location mounting for machine-mounted and hand-operated control devices	Pass
10.1.3	Protection	-
	Operator and machine mounted control devices shall withstand the stress of expected use	Pass. They can withstand the stress of expected use.
	The operator interface control devices shall have a min. degree of protection: IPXXD	Pass.
10.1.4	Position sensors	-
	Position sensors shall not be damaged in the event of over travel	Not applicable
	Position sensors used in circuits with safety-related functions either shall have positive opening operation or shall provide similar reliability	Not applicable
10.1.5	Portable and pendant control stations	-
	Portable and pendant control stations and their control devices shall be so selected and arranged as to minimize the possibility of inadvertent machine operations caused by shocks and vibrations	Pass.
10.2	Push-buttons	-

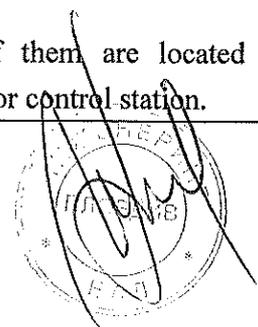
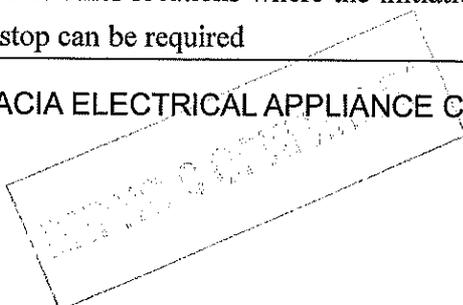
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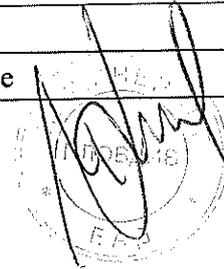
10.2.1	Colors	-
	Push-button actuators shall be color -coded according to table 2	Pass. Their colors are according to table 2.
10.2.2	Markings	-
1.2.3	Use of adequate markings for push-buttons	Pass. Adequate markings are used.
10.3	Indicator lights and displays	-
10.3.1	Modes of use	-
	Indication and /or confirmation	Pass
10.3.2	Colors	-
	Color-coded according to table 3 (Unless otherwise agree between the supplier and the user)	Pass. Their colors are according to table 3.
10.3.3	Flashing lights	-
	Use of flashing lights	Not applicable
10.4	Illuminated push-buttons	-
	Color-coded according to table 2 and 3	Pass. Their colors are according to table 3.
10.5	Rotary control devices	-
	Devices having a rotational member shall be mounted to prevent rotation of the stationary member (Friction alone shall not be sufficient)	Pass. Appropriate measure has been provided to prevent rotation of the stationary member.
10.6	Start devices	-
	Shall be constructed and mounted to minimise inadvertent operation	Pass. Flat type start push -buttons are used to prevent inadvertent operation.
10.7	Devices for emergency stop	-
10.7.1	Location	-
	Devices for emergency stop shall be readily accessible	Pass. It is readily accessible.
	Emergency stop devices shall be located at each operator control station and at other locations where the initiation of an emergency stop can be required	Pass. All of them are located at each operator control station.

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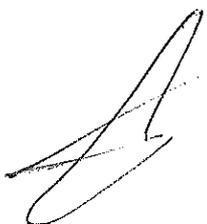


10.7.2	Types	-
	Use of type - a push-button operated switch - a pull-cord operated switch - a pedal-operated switch without a mechanical guard	Pass. a pedal-operated switch without a mechanical guard
	Shall be of the self-latching type and shall have positive opening operation	Pass.
10.7.3	Restoration of normal function after emergency stop	-
	It shall not be possible to restore an emergency stop circuit until all emergency stop devices have been manually reset	Pass. This requirement has been complied with.
10.8.5	Local operation of the supply disconnecting device to effect emergency switching off	-
	Where the supply disconnecting device is to be locally operated for emergency switching off, it shall be readily accessible and should meet the colour requirements of 10.8.4	Not applicable
10.9	Displays	-
11	Electronic equipment	-
11.1	General	-
11.2	Basic requirements	-
11.2.1	Inputs and outputs	-
	Status indication of all digital inputs and outputs should be provided	Pass. This function has been provided.
11.2.2	Equipotential bonding	-
	Electrically bonded together according to the supplier's specifications	Pass.
11.3	Programmable equipment	-
11.3.1	Programmable controllers	Not applicable
	Programmable controllers shall conform to relevant IEC standards	Not applicable
11.3.2	Memory retention and protection	-
	Means shall be provided to prevent memory alteration by unauthorized persons and the requirements detailed in 9.4.3.2 shall apply	Not applicable
11.3.3	Software verification	-
	Shall have means for verifying	Not applicable

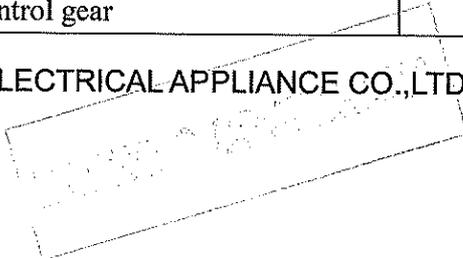
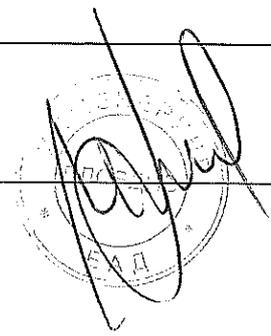
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11.3.4	Use in safety-related functions	-
	Programming electronic equipment shall not be used for category 0 emergency stop functions.	Pass. This requirement has been complied with.
12	Control gear: location, mounting, and enclosures	-
12.1	General requirements	-
12.2	Location and mounting	-
12.2.1	Accessibility and maintenance	-
	All control gears can be identified without moving or the wiring	Not applicable
	Replacement without dismantling other equipment or parts of the machine	Not applicable
	Terminals not associated with control gear shall also comply with the requirements mentioned above	Not applicable
	Facilitate operation and maintenance from the front	Not applicable
	Use of special tools (if necessary)	Not applicable
	If access is required for regular maintenance or adjustment, the devices shall be located between 0.4 m and 2.0 m above the severing level	Not applicable
	It is recommended that terminals be at least 0.2m above the servicing level and so placed that connectors and cables can be easily connected to them	Not applicable
	Except those for operating, indicating, measuring and cooling, no devices shall be mounted on doors, and normally removable access covers, of enclosures	Not applicable
	If control devices are connected through plug-in arrangements, their association shall be made clear by type (shape), marking or designation, singly or in combination.	Not applicable.
	Plug in devices shall be provided with non-interchangeable features	Not applicable.
	Use of plug/socket combinations shall be unobstructed access	Not applicable.
12.2.2	Physical separation or grouping	-
	Non-electrical parts and devices not directly associated with the electrical equipment shall not be located within enclosures containing control gear	Pass.

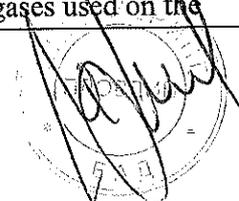


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	Devices such as solenoid valves should be separated from the other electrical equipment	Pass.
	Control devices mounted in the same location and connected to the supply voltage, or to both supply and control voltages, shall be grouped separately from those connected only to the control voltages	Pass.
	Terminals shall be separated into groups for : - power circuits; - associated control circuits - other control circuits, fed from external sources	Pass.
	The clearances and creep distances specified for the devices shall be maintained	Pass.
12.2.3	Heating effects	-
	Heat generating components shall be located so that the temperature of each component in the vicinity remains within the permitted limit	Pass
12.3	Degrees of protection	-
	Enclosures of control gear: at least IP 22	Pass.
12.4	Enclosures, doors and openings	-
	Enclosure shall be constructed using materials capable of withstanding the mechanical, electrical and thermal stresses	Pass.
	Fasteners used to secure doors and covers should be of the captive type	Pass.
	Windows provided for viewing internally mounted indicating devices shall be of a material suitable to withstand mechanical stress and chemical attack	Not applicable.
	It is recommended that enclosures doors shall have: - Not wider than 0.9 m - Vertical hinges - Lift-off type - Angle of opening at least 95°	Pass. These requirements have been taken into account during the design.
	If enclosures which readily allow a person fully to enter, the relevant requirements specified in this clause shall be comply	No this kind of situation.
	The joints or gaskets of doors, lids, covers and enclosures shall withstand the chemical effects of the aggressive liquids, vapours, or gases used on the machine	Pass. They can withstand the chemical effects of the aggressive liquids, vapors, or gases used on the

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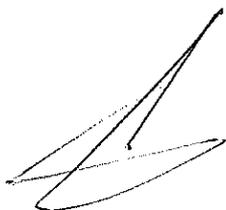
		machine.
	The means used to maintain the degree of protection of an enclosure on doors, lids and covers that require opening or removal for operation or maintenance shall be secured	Pass. They can be secured firmly.
	The degree of protection for all openings in the enclosures shall be secured	Pass.
	Openings for cable shall be easily re-opened on site	Pass. They can be re-opened easily.
	There shall be no opening between enclosures containing electrical equipment and compartments containing coolant, lubricating or hydraulic fluids, or those into which oil, other liquids, or dust can penetrate	No this kind of opening has been found.
	The requirement mentioned above does not apply to electrical devices specially designed to operate in oil nor to electrical equipment in which coolants are used	Not applicable.
	Where there are holes in an enclosure for mounting purpose, the degree of protection for the enclosure shall be secured	Pass. Appropriate protection degree can be secured.
	Equipment that, can attain a surface temperature sufficient to cause a risk of fire or harmful effect to an enclosure material, the relevant requirements shall be complied	Not applicable.
12.5	Access to control gear	-
	The min. dimensions of gangways in front of and between control gear shall be according to 481.2.4 of IEC 60364-4-481	Not applicable.
	Doors in gangways and for access to electrical operating areas shall: - be at least 0.7 m wide and 2.0 m high; - open outward; - have a device to allow opening from the inside without the use of a key or tool	Not applicable.
13	Conductors and cables	-
13.1	General requirements	-
	Conductors and cables shall be selected so as to be suitable for the operating conditions and external	Pass. All of conductors and cables used

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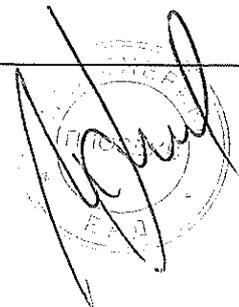
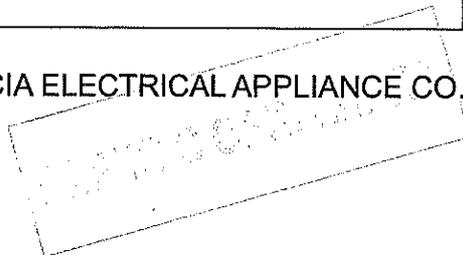
	influences	on these machines are suitable for the operating conditions and external influences.
13.2	Conductors	-
	Conductors shall be of copper	Pass. Copper.
	Conductors of any other material shall have a nominal cross-sectional area such that, carrying the same current, the max. temperature shall not exceed the value given in table 4	Not applicable.
	If aluminium is used, the cross-sectional area shall be at least 16mm ²	Not applicable.
	All conductors that are subject to frequent movement shall have flexible stranding of class 5 or class 6 (see table C.4)	Pass.
13.3	Insulation	-
	Dielectric strength test for insulation conductors and cables: - 2000 V a.c. for a duration of 5 min (for operating voltage higher than 50 V a.c. or 120 V d.c.) - 500 V a.c. for duration of 5 min. (for separate PELV circuit)	Pass.
	The mechanical strength and thickness of the insulation shall not be damaged in operation of during laying, especially for cables pulled into ducts	Pass. Appropriate insulation with sufficient mechanical strength and thickness is provided.
13.4	Current-carrying capacity in normal service	-
	Max. allowable temperature of conductors shall not exceed the values given in table 4	Pass. According to table 4.
13.5	Conductor and cable voltage drop	-
	The voltage drop for conductors and cables shall not exceed 5% of the nominal voltage	Pass. Not exceed 5%.
13.6	Minimum cross-section area	-
	To ensure adequate mechanical strength, the cross-sectional area of conductors should be less than as shown in table 6	Pass.
13.7	Flexible cables	-

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13.7.1	General	-
	Flexible cables shall have class 5 or class 6 conductors	Not applicable.
	Cables that are subjected to severe duties shall be of adequate construction	Not applicable.
13.7.2	Mechanical rating	-
	The tensile stress for copper conductors shall not exceed 15 N/mm ² of the copper cross-sectional area	Pass. Not exceed 15 N/mm ²
	If the demands of the application exceed the tensile stress, it of 15 N/mm ² , cables with special construction features should be used and the allowed max. tensile stress strength should be agree with the cable manufacturer	Not applicable.
13.7.3	Current-carry capacity of cables wound on drums	-
	Cables to be wound on drums shall be selected with conductors having a cross-sectional area such that, when fully wound on the drum and carrying the normal service load, the max. Allowable conductor temperature is not exceeded	Not applicable.
	For cables of circular cross-sectional area installed on drums, the max. current-carrying capacity in free air should be derated according to table 7	Not applicable.
13.8	Collector wires, collector bars and slip-ring assemblies	-
13.8.1	Protection against direct contact	-
	Collector wires, collector bars and slip-ring assemblies shall be installed or enclosed by the application of one of the following protective measures: -by partial insulation of live parts -by enclosures or barriers of at least IP2X	Not applicable.
	Min. protector degree of horizontal top surface of barriers or enclosures that are readily accessible: IP4X	Not applicable.
	If the required degree of protection is not achieved, protection by placing live parts out of reach in combination with emergency switching off according to 9.2.5.4.3 shall be applied	Not applicable.
	Collector wires and collector bars shall be so placed and/or protected as to: - prevent contact	Not applicable.



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	-prevent damage from a swinging load	
13.8.2	Protective conductor circuit	
	Where collector wires, collector bars and slip-ring assemblies are installed as part of the protective bonding circuit, they shall not carry current in normal operation	Not applicable.
	The continuity of the protective conductor circuit using sliding contacts shall ensured by taking appropriate measures	Not applicable.
13.8.3	Protective conductor current collectors	
	Not interchangeable with the other current collectors	Not applicable.
	Not interchangeable with the other current collectors	Not applicable.
	Such current collectors shall be of the sliding contact type	Not applicable.
13.8.4	Removable current collectors with a disconnect function	
	Shall be so designed that the protective conductor circuit is interrupted only after the live conductors have been disconnected, and the continuity of the protective conductor circuit is re-established before any live conductor is reconnected	Not applicable.
13.8.5	Clearance in air	
	Shall be suitable for operation in pollution degree 3 conditions	Pass
13.8.6	Creepage distances	
	Shall be suitable for operation in pollution degree 3 conditions	Pass
13.8.7	Conductor system sectioning	
	If collector wires or collector bars can be divided into isolated sections, suitable design measures shall be employed to prevent the energization of adjacent sections by the current collectors themselves	Not applicable.
13.8.8	Construction and installation of collector wire, collector bar systems and slip-ring assemblies	Not applicable.
	Used for power circuits shall be grouped separately from those used for control circuit	Not applicable.
	Shall be capable of withstanding, without damage, the mechanical forces and thermal effects of short-circuit currents	Not applicable.
	Removable covers shall not be opened by one person	Not applicable.

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	without the aid of a tool	
	If collector bars are installed in a common metal enclosure, the individual sections of the enclosure shall be bonded together and earthed at several points depending upon their length	Not applicable.
	Metal covers of collector bar laid underground or underflow shall also be bonded together and earthed	Not applicable.
	Underground and underflow collector bar ducts shall have drainage facilities	Not applicable.
14	Wiring practices	-
14.1	Connections and routing	-
14.1.1	General requirements	-
	All connections shall be secured against accidental loosening	Pass. All connections can be secured against accidental loosening.
	The means of connection shall be suitable for the cross-sectional areas and neutral of the conductors being terminated	Pass. The means of connection is suitable.
	The connection of two or more conductors to one terminal is permitted (only when the terminal is designed for that purpose)	Pass. No terminal has been connected with three or more conductors.
	One protective bonding circuit conductor shall be connected to one terminal connecting point	Pass. One conductor connected to one terminal.
	Soldered connections shall only be permitted if terminals are suitable for soldering	Not applicable.
	Terminals on terminal blocks shall be plainly identified to correspond with markings on the diagrams	Pass. All of them have been marked corresponding to markings on the diagrams.
	The installation of flexible conduits and cables shall be such that liquids shall drain away from the fittings	Pass. Liquids can drain away from the fittings.
	Means of retaining conductor strands shall be provided (Solder shall not be used for that purpose)	Pass. By appropriate terminals.
	Shielded conductors shall be so terminated as to prevent fraying of strands and to permit easy disconnection	Pass. Appropriate termination is taken.

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	Identification tags shall be legible, permanent, and appropriate for the physical environment	Pass. They are legible, permanent, and appropriate for the physical environment.
	Terminal blocks shall be so mounted and wired, that the internal and external wiring does not cross over the terminals	Pass. No conductor cross over the terminals.
14.1.2	Conductor and cable runs	-
	Shall be run from terminal to terminal without splices or joints	Pass. All of them are run from terminal to terminal without splices or joints.
	If it is necessary to connect and disconnect cables assemblies, a sufficient extra length shall be provided	Pass.
	The terminations of cables shall be adequately supported to prevent mechanical stresses at the terminations of the conductors	Pass. Adequate support measure has been taken.
14.1.3	Conductors of different circuits	-
	Suitable arrangement for conductors of different circuits	Pass, Suitable arrangement is provided.
14.2	Identification of conductors	-
14.2.1	General requirements	-
	Conductors shall be identifiable at each termination according to the technical documentation (see clause 18)	Pass. Make reference to clause 18.
	Use of color-coding for identification of conductors	Pass. Color-coding for identification is used.
	Color GREEN or YELLOW should not be used	Pass. No GREEN or YELLOW conductor is used.
14.2.2	Identification of the protective conductor	-
	Shall be really distinguishable by shape, location, marking or color	Pass By marking and color.
	When identification is by color alone, the bicolor combination GREEN-AND YELLOW shall be used	Pass. By GREEN-AND-YELLOW.
	For the bicolor combination GREEN-AND YELLOW : one of the color covers at least 30% and not more than 70% of the surface of the conductor, the other color	Pass.

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	covering the remainder of the surface	
	Use of graphical symbol 	Pass. The earthing symbol has been used.
14.2.3	Identification of the neutral conductor	-
	The color shall be Light Blue	Pass
	Requirements for bare conductors used as neutral conductors	Pass
14.2.4	Identification of other conductors	-
	Identification of other conductors shall be by color, number, alphanumeric, or a combination of color and numbers or alphanumeric	Pass. By a combination of color and numbers or alphanumeric.
14.3	Wiring inside enclosures	-
	Panel conductors shall be supported where necessary to keep them in place	Pass. Appropriate supports is provided.
	Non-Metallic ducts shall be permitted only when they are made with a flame-retardant insulating material	Pass. Some non-metallic ducts are used with a flame-retardant insulating material.
	Connections to devices mounted on doors or to other movable parts shall be made using flexible conductors according to 13.2	Pass. Connections according to 13.2.
	The conductors shall be anchored to the fixed part and to the movable part independently of the electrical connection	Pass. Adequate anchored measures have been taken.
	Conductors and cables that do not run in ducts shall be adequately supported	Pass. All of them have been supported adequately.
	Terminal blocks or plug-socket combinations shall be used for control wiring that extends beyond the enclosure	Pass. This application has been taken.
14.4	Wiring outside enclosures	-
14.4.1	General requirements	-
	The protection degree shall be ensured when cables or ducts are introduced into the enclosure	Pass. The protection degree can be secured.
14.4.2	External ducts	-
	Shall be enclosed in suitable ducts as described in 14.5	Pass

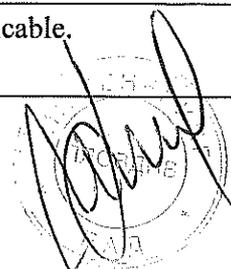
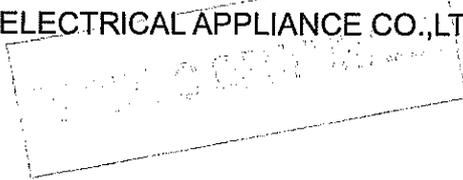
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	except for suitably protected cables	
	Fittings used with ducts or multiconductor cable shall be suitable for the physical environment	Pass
	Flexible conduit or flexible multiconductor cable shall be used where it is necessary to employ flexible connections to pendant push-button stations	Pass
	The weight of the pendant stations shall be supported by means other than the flexible conduit or the flexible multiconductor cable	Pass
	Flexible conduit or flexible multiconductor cable shall be used for connections involving small or infrequent movements	Pass
14.4.3	Connection to moving elements of the machine	
	Connection to frequently moving parts shall be made using conductors according to 13.2	Not applicable.
	Flexible cable and flexible conduit shall be so installed as to avoid excess flexing and straining, particularly at the fittings	Not applicable.
	Cables subject to movement shall be supported in such a way that there is no mechanical strain on the connection points nor any sharp flexing	Not applicable.
	If the requirement mentioned above is achieved by using of a loop, it shall have sufficient length to provide for a bending radius of the cable of at least 10 times the diameter of the cable	Not applicable.
	Flexible cables of machines shall be protected to minimize the possibility of external damage	Not applicable.
	The cable sheath shall be resistant to the normal wear that can be expected from movement and to the effects of atmospheric contaminants	Not applicable.
	If cables subject to movement are close to moving parts, it shall have a space of at least 25 mm between the moving parts and the cables	Not applicable.
	Where the distance mentioned above is not practicable, fixed barriers shall be provided between the cables and the moving parts	Not applicable.
	The cable handling system shall be so designed that the lateral cable angles do not exceed 5°, avoiding torsion in	Not applicable.

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	the cable	
	Measures shall be taken to ensure that at least two turns of flexible cables always remain on a drum	Not applicable.
	Min. permitted bending radii for the forced guiding of flexible cables shall not less than the values given in table 8	Not applicable.
	The strength section between section between two bends in an S-shaped length or a bend into another plane shall be at least 20 times the diameter of the cable	Not applicable.
	Where flexible conduit is adjacent to moving parts, the construction and supporting means shall prevent damage to the flexile conduit under all conditions of operation	Not applicable.
	Flexible metallic conduit shall not be used for rapid of frequent movements	Not applicable.
14.4.4	Interconnection of devices on the machine	-
	The connections shall be conveniently placed, adequately protected, and shown on the relevant diagrams	Pass. Through terminals.
	Such terminals shall be conveniently placed, adequately protected, and shown on the relevant diagrams	Pass. These requirements have been complied with.
14.4.5	Plug/socket combinations	-
	Shall be of adequate size and shall have sufficient contact pressure and a wiping action to ensure electrical continuity	Not applicable
	Clearances between contacts shall e adequate for the voltages used and shall be maintained during insertion and removal of the connectors	Not applicable.
	Prevent unintentional contact with live parts at any time	Not applicable.
	Protective bonding circuit connection shall be made before any live connections are made, and shall not disconnected until all live connections in the plug are disconnected	Not applicable.
	Rated at more than 16 A or that remain connected during normal service shall be of a remaining type to prevent unintended disconnection	Not applicable.
	Rated at 63 A or above shall be of an interlocked type with a switch, so that connection and disconnection is	Not applicable.

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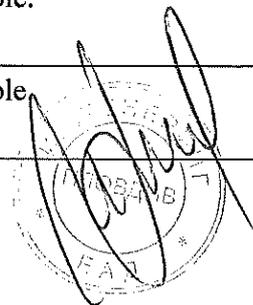


	possible only when the switch is in the OFF position	
	If more than one plug-socket combination is used in the same electrical equipment, they shall be clearly identifiable	Not applicable.
	It is recommended that mechanical coding be used to prevent incorrect insertion	Not applicable.
	According to IEC 60309-1 or of a type used for domestic application shall not be used for control circuits	Not applicable.
14.4.6	Dismantling for shipment	-
	Terminals shall be suitably enclosed and plug/socket combinations shall be protected from the physical environment during transportation and storage	Pass. All of them are enclosed suitably.
14.4.7	Additional conductors	-
	Spare conductors shall be connected to spare terminals or isolated to prevent contact with live parts	Pass. All spare conductors are connected to spare terminals or isolated to prevent contact with live parts.
14.5	Ducts, connection boxes and other boxes	-
14.5.1	General requirements	-
	Min. protection degree for ducts: IP 33	Pass.
	Appropriate protection for conductors insulation	Pass. Suitable protection is taken.
	Drain holes of 6 mm diameter are permitted	Pass.
	Ducts and cables trays shall be rigidly supported and positioned at a sufficient distance from moving parts	Pass. Suitable support and sufficient distance have been taken.
	In areas where human passage is required, the ducts and cable trays shall be mounted at least 2 m above the working surface	Not applicable.
	Ducts shall be provided only for mechanical protection	Pass.
	Cable trays that are partially covered should not be considered to be ducts or cable trunking system, and the cables used shall be suitable for installation on cable trays	Not applicable.
14.5.2	Percentage fill of ducts	-
	The dimensions and arrangement of the ducts be such as	Pass.

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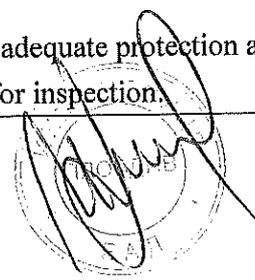
	to facilitate the insertion of the conductors and cables	This requirement has been complied with.
14.5.3	Rigid metal conduit and fittings	-
	Shall be of galvanized steel or of a corrosion-resistant material	Not applicable.
	Conduits shall be securely held in place and supported at each end	Not applicable.
	Fitting shall be threaded	Not applicable.
	Where threadless fittings are used, the conduit shall be securely fastened to the equipment	Not applicable
	The conduit shall not be damaged and the internal diameter of the conduit shall not be effectively reduced when it is bent	Not applicable.
14.5.4	Flexible metal conduit and fittings	-
	Flexible metal tubing and suitable for the expected physical environment	Pass.
14.5.5	Flexible non-metal conduit and fittings	-
	Shall be resistant to kinking and suitable for the expected physical environment	Not applicable.
14.5.6	Cable trunking systems	-
	Shall be rigidly supported and clear of all moving or contaminating portions of the machine	Not applicable.
	Covers shall be shaped to overlap the sides; gasket shall be permitted	Not applicable.
	Covers shall be attached to cable trunking systems by hinges or chain and held closed by means of captive screws or other suitable fasteners	Not applicable.
	On horizontal cable trunking systems, the cover shall not be on the bottom	Not applicable.
	Where the cable trunking system is furnished in sections, the joints between sections shall fit tightly but need not be gasketed	Not applicable.
	The only openings permitted shall be those required for wiring or for drainage	Not applicable.
	Cable trunking systems shall not have opened but unused knockouts	Not applicable.

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14.5.7	Machines compartments and cable trunking systems	-
	Are isolated from coolant or oil reservoirs and are entirely enclosed	Not applicable.
	Conductors run in enclosed compartment and cable trunking systems shall be so secured and arranged that they are not subject to damage	Not applicable.
14.5.8	Connection boxes and other boxes	-
	Shall be readily accessible for maintenance	Pass. They are readily accessible for maintenance.
	Shall provide protection against the ingress of solid bodies and liquids	Pass. Adequate protection is provided.
	Shall not have opened but unused knockouts nor any other opening and shall be so constructed as to exclude materials such as dust, flying, oil, and coolant	Pass. These requirements have been complied with.
14.5.9	Motor connection boxes	-
	Shall enclose only connections to the motor and motor-mounted devices	Not applicable.
15	Electric motors and associated equipment	-
15.1	General requirements	-
	Electric motor should conform to the requirements of IEC 60034-1	Pass.
	Motor control equipment shall be located and mounted according to clause 12	Pass.
15.2	Motor enclosures	-
	Protection degree shall be at least IP 23	Pass. At least IP23.
15.3	Motor dimensions	-
	As far as is practicable, the dimensions of the motors shall comply with IEC 60072-1 and IEC 60072-2	Pass. It is in compliance with IEC 60072-1 and IEC 60072-2.
15.4	Motor mounting and compartments	-
	Each motor and its associated couplings, belts and pulleys, or chains, shall be so mounted that they are adequately protected and are easily for inspection	Pass. They have adequate protection and are easily for inspection.

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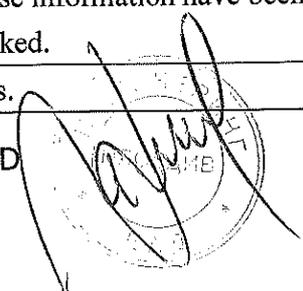


	Shall be such that all motor hold-down means can be removed and all terminal boxes are accessible	Pass. This requirement has been complied with.
	The proper cooling shall be ensured and the temperature rise remains within the limits of the insulation class	Pass. This requirement has been complied with.
	Motor compartment should be clean and dry, and shall be ventilated directly to the exterior of the machine	Not applicable. No motor compartment is found.
	The vents shall be such that ingress of swarf, dust, or water spray is at an acceptable level	Pass. Adequate vents are provided.
	There shall be no opening between the motor compartment and any other compartment that does not meet the motor compartment requirements	Pass. No this kind of opening.
	If a conduit or pipe is run into the motor compartment from another compartment not meet the motor compartment requirements, any clearance around the conduit or pipe shall e sealed	Not applicable.
15.5	Criteria for motor selection	-
	Shall be selected according to the anticipated service and physical environment conditions	Pass. They are selected according to the anticipated service and physical environment conditions.
15.6	Protective devices for mechanical brakes	-
	Operation of the overload and over current protective devices for mechanical brake actuators shall initiate the simultaneous de-energization (release) of the associated machine actuators	Not applicable.
16	Accessories and lightning	-
16.1	Accessories	-
	Socket-outlets for accessory equipment shall comply:	-
	Should conform to IEC 60309-1 (if this is not possible, they should be clearly marked with the voltage and current ratings)	Pass. Marked with the voltage and current ratings.
	The continuity of the protective bonding circuit to the socket-outlet shall be ensured	Pass. It can be ensured.
	All unearthed conductors: Over current or overload protection according to 7.2 and 7.3 separately from the	Pass. Over current protection is provided.

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	protection of other circuits	
	If the power supply to the socket outlet is not disconnected by the supply disconnecting device, the clause 5.3.5 shall apply	Pass. Please see the related clause.
16.2	Local lighting of the machine and equipment	-
16.2.1	General	-
	Connections to the protective bonding circuit according to 8.2.2	Pass. Please see the related clause.
	The ON-OFF switch shall not be incorporated in the lamp holder or in the flexible connecting cords	Pass. This requirement is complied with.
	Stroboscopic effects from lights shall be avoided	Pass. Stroboscopic effects from lights has been avoided
16.2.2	Supply	-
	The nominal voltage of the local lighting circuit shall not exceed 250 V	Pass. This requirement is complied with.
	Lighting circuits shall be supplied from one of the sources specified in this clause	Pass. Please see the related clause.
16.2.3	Protection	-
	Local lighting shall be protected according to 7.2.6	Pass. Please see the related clause.
16.2.4	Fittings	-
	Adjustable lighting fittings shall be suitable for the physical environment	Pass.
	The lamp holders shall be: - According to the relevant IEC publication; - Constructed with an insulating material protection the lamp cap so as to prevent unintended contact	Pass. This requirement has been taken into account during design.
	Reflectors shall be supported by a bracket and not by the lamp holder	Pass. Reflectors are supported by a bracket.
17	Marking, warning signs and reference designations	-
17.1	General	-
	The electrical equipment shall be marked with the supplier's name, trade mark, or other identifying symbol and, when required, with a certification mark	Pass. These information have been marked.
	Shall be of sufficient durability to withstand the physical	Pass.

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	environment involved	They can withstand the physical environment involved.
17.2	Warning signs	-
	Enclosures shall be marked with the warning sign 	Pass. This warning sign has been used.
	The warning sign shall be plainly visible on the enclosure door or cover	Pass. It is plainly visible on the enclosure door.
17.3	Functional identification	-
	Control devices, visual indicators and displays, used in man-machine interface shall be clearly and durably marked with regard to their functions either on or adjacent to the item	Pass. Appropriate markings have been provided for these devices.
	Preference should be given to the use of standard symbols give in IEC 60417 and ISO 7000	Pass. These relevant requirements appropriate for this machine have been used.
17.4	Marking of control equipment	-
	Control equipment shall be legibly and durably marked in a way that is plain ⁶ visible after the equipment is installed	Pass. They have been marked legibly and durably.
	A nameplate giving the relevant information specified in this clause shall be attached to the enclosure	Pass. A nameplate is used.
	The full-load current shown on the nameplate shall be sufficient	Pass.
17.5	Reference designations	-
	All enclosures, assemblies, control devices, and components shall be plainly identified with the same reference designations as shown in the technical documentation	Pass. These information have been provided within the instruction manual.
	Where size or location preclude the use of an individual reference designation, group reference designation shall be used	Pass. Make reference to the instruction manual.
18	Technical documentation	-
18.1	General	-
	The information necessary for installation, operation, and maintenance of the electrical equipment of a	Pass. All the information have been

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	machine shall be supplied in the form of drawings, diagrams, charts, tales and instructions	provided by many forms.
	The information shall be in an agreed language	Pass. In English.
	The supplier shall be ensure that the technical documentation in this clause is provided with each machine	Pass. The instruction manual is equipped with each machine.
18.2	Information to be provided	-
	The information provided with the electrical equipment shall include the requirements specified in this clause	Pass. Please see the related clause.
18.3	Requirements applicable to all documentation	-
	Relevant requirements according to 18.4 to 18.10 shall be complied	Pass. Please see the related clause.
18.4	Basic information	-
	Min. requirements for he technical documentation shall be contained	Pass.
18.5	Installation diagram	-
	Use and requirements for installation diagram	Pass. Installation diagrams are provided.
18.6	Block (system) diagrams and function diagrams	-
	Use and requirements for system (block) diagram	Pass. System diagrams are provided.
18.7	Circuit diagrams	-
	Use and requirements for circuit diagrams	Pass. Circuit diagrams are provided.
18.8	Operating manual	-
	Use and requirements for operating manual	Pass. Operating manual is provided.
18.9	Maintenance manual	-
	Use and requirements for maintenance manual	Pass. Maintenance manual is provided.
18.10	Parts list	-
	Use and requirements for parts list	Pass. Parts list is provided in manual book
19	Testing and verification	-
19.1	General	-

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	When these tests are performed, it is recommended that they follow the sequence listed	Pass. All tests have been carried out according to the following sequence.
	When the electrical equipment is modified, the requirements stated in 19.7 shall apply	Pass.
19.2	Continuity of the protective bonding circuit	-
	Test conditions: a current of at least 10 A at 50 Hz or 60 Hz	Pass.
	The measured voltage shall not exceed the values given in table 9	Pass. See the test report in detail.
19.3	Insulation resistance tests	-
	Test conditions : 500 V d.c.	Pass.
	The measured values shall not less than 1 MΩ	Pass. See the test report in detail.
19.4	Voltage tests	-
	Test conditions : - at least 1 second - test voltage is twice the raged supply voltage of the equipment or 1000 V, whichever is greater - frequency of 50/60 Hz - supplied from a transformer with a min. rating of 500 VA	Pass.
	Shall not breakdown	Pass. See the test report in detail.
19.5	Protection against residual voltages	-
	Tests shall be preformed to ensure complacence with 6.2.4	Not applicable.
19.6	Functional test	-
	The functions of electrical equipment shall be tested (particularly those related to safety and safeguarding)	Pass. All functions equipped with this machine have been tested.
19.7	Retesting	-
	Where a portion of the machine and its associated equipment is changed or modified, that portion shall verified and retested, as is appropriate	Not applicable.

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2. Test Record:

• Manufacturer	: Dongguan Hongya Machinery Co., Ltd.
• EUT	: Hardcover book back-gluing machine
• Test model	: HY618
• application model	: HY618
• Ratings	: 220VAC 26KW
• Test Equipment	: Extech Electronics
Withstanding Voltage/Arc/Insulation/Grounding Tester	
Model	: 7740
Date of Calibration : September 30 , 2012	
• Test according to	: Chapter 19 of EN 60204-1
• Test conditions	: 10A / 50Hz
• Date	: 05/08/2013

(1) Grounding continuous test

The test record:

Test Points	Test Result (mΩ)	Test current (A)	Voltage Drop (V)
PE – Enclosure	2	10	0.02

Result: pass

(2) Insulation Resistance test

The test record:

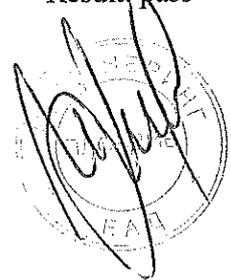
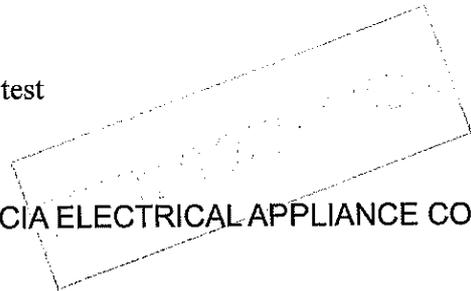
Test Points	Test Result (MΩ)	Required value no less than 1MΩ
PE – L1	>380	pass
PE – L2		

Result: pass

(3) Withstanding Voltage test

The test record:

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Test Points	Applicable voltage	Test period in sec	Breakdown?
PE - L	440V	1s	No

Result: pass

3. List of test equipment used

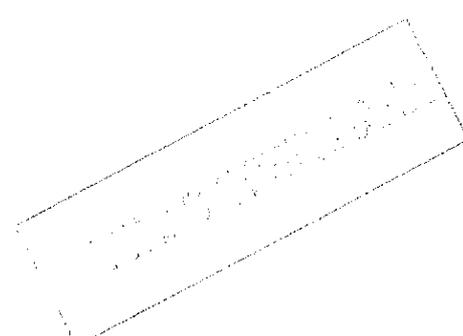
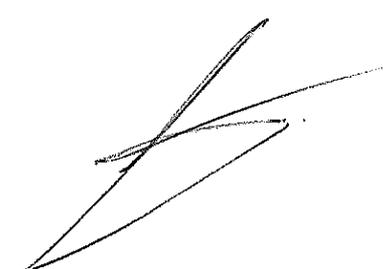
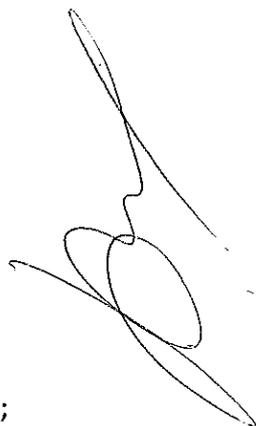
Clause	Measurement / testing	Testing / measuring equipment / material used	Manufacturer	Range used	Model/Specification	S/N	Calibration Date	Calibration Due
4.4.6	IP	accessible conductive parts probe / Ø1mm., Hand sprayer serial number (IP protection test probe)	Shenzhen Chuangxin Precious Measuring Tool Mfgr. Co., Ltd	Ø1	GTS-01	30295	01-08-2013	01-07-2014
6.2.2	IP	accessible conductive parts probe / Ø1mm., Hand sprayer serial number (IP protection test probe)	Shenzhen Chuangxin Precious Measuring Tool Mfgr. Co., Ltd	Ø1	GTS-01	30295	01-08-2013	01-07-2014
10.1.3	IP	accessible conductive parts probe / Ø1mm., Hand sprayer serial number (IP protection test probe)	Shenzhen Chuangxin Precious Measuring Tool Mfgr. Co., Ltd	Ø1	GTS-01	30295	01-08-2013	01-07-2014
11.3	IP	accessible conductive parts probe / Ø1mm., Hand sprayer serial number (IP protection test probe)	Shenzhen Chuangxin Precious Measuring Tool Mfgr. Co., Ltd	Ø1	GTS-01	30295	01-08-2013	01-07-2014
11.4	L	Protractor	Zhejiang Lishui Nanguang Measuring Tool Co., Ltd	L°	0-360°	NG1303820	02-08-2013	02-07-2014
11.4	m	Roulette Tape	Yucheng County Mingzhi Measuring Tool Co., Ltd	0-2 m	0832	06	02-08-2013	02-07-2014
12.3	V	multifunctional handheld device serial	Clare Electronic Co., Ltd	10000V	A252	A8.51.5	02-08-2013	02-07-2014
18.3	MΩ	multifunctional handheld device serial	Clare Electronic Co., Ltd	MΩ	A252	A8.51.5	02-08-2013	02-07-2014
18.4	V	multifunctional handheld device serial	Clare Electronic Co., Ltd	10000V	A252	A8.51.5	02-08-2013	02-07-2014

End

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Списък на отделните изпитания:

1. Обхват;
2. Нормативни референции;
3. Дефиниции;
4. Общи изисквания;
5. Входящи проводници за захранване и устройства за разединяване и изключване;
6. Защита срещу електрически удар;
7. Защита на оборудването;
8. Изравняване на потенциали;
9. Контролни вериги и контролни функции;
10. Оперативен интерфейс и устройство за контрол на машините;
11. Електрическо оборудване;
12. Контролен механизъм: местоположение, монтаж и приложения;
13. Проводници и кабели;
14. Практики за окабеляване;
15. Електрически мотори и свързано оборудване;
16. Аксесоари и осветление;
17. Маркиране, предупредителни знаци и референтни обозначения;
18. Техническа документация;
19. Тестване и верификация;



Certificate of Compliance



No. 0P151117.GEAQU50

Certificate's Holder:

GACIA ELECTRICAL APPLIANCE CO.,LTD.
 No. 545 Dongdajie, Baitawang Industrial Zone
 Beibaixiang, Wenzhou, 325603, China

Certification ECM Mark:



Product:
 Model(s):

MCCB
 PN1600SE, PN1600HE, LN1600SE, LN1600HE

Verification to:

Standard:
 EN 60947-2:2006/A2:2013

related to CE Directive(s):
 2014/35/EU (Low Voltage)

Remark: The product(s) has been verified on a voluntary basis. The product(s) satisfies the requirements of the Certification Mark of ECM, in reference to the above listed Standard(s). The above Certification Mark can be affixed on the product(s) accordingly to the ECM regulation about its release and its use. Regulation can be found at www.entecerma.it.
 Whereas the Manufacturer is responsible of the CE certification of the product(s) and not exempted to perform all the necessary activities before placing the product(s) on the market.
 The Manufacturer is also responsible to maintain efficient the internal production control to ensure the product(s) are in compliance with the Certification ECM Mark.
 This certificate can be checked for validity at www.entecerma.it

Date of issue 17 November 2015

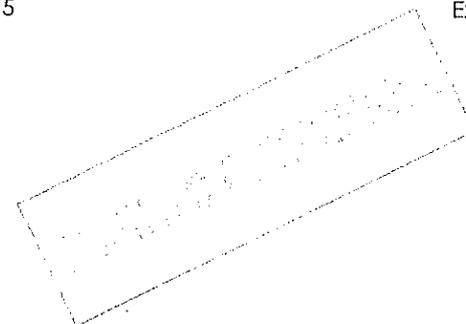
Expiry date 16 November 2020

Chief Manager
 Tim Mahan

на основании чл. 36а, ал. 3
 от ЗОП

Deputy Manager
 Viola Miller

на основании чл. 36а, ал. 3
 от ЗОП



Ente Certificazione Macchine Srl

Via Ca' Bella, 243 - Loc. Castello di Serravalle - 40053 Valsamoggia (BO) - ITALY

+39 051 6705141 ☎ +39 051 6705156 ✉ info@entecerma.it 🌐 www.entecerma.it

CERTIFICATO DI ACCREDITAMENTO

Accreditation Certificate

Accreditamento n°
Accreditation n°

1515

Rev. **0**

Si dichiara che
We declare that

ECM - Ente Certificazione Macchine srl - Divisione Laboratorio Prove

Appartenente all'ente:
ECM - Ente Certificazione Macchine srl
Sede:
Via Ca'Bella, 243 Loc.Castello di Serravalle - 40053 Valsamoggia BO

è conforme ai requisiti
della norma

UNI CEI EN ISO/IEC 17025:2005 "Requisiti generali per la competenza dei Laboratori di prova e taratura"

meets the requirements
of the standard

EN ISO/IEC 17025:2005 "General Requirements for the Competence of Testing and Calibration Laboratories" standard

quale

Laboratorio di Prova

as

Testing Laboratory

L'accREDITAMENTO attesta la competenza tecnica del Laboratorio relativamente allo scopo riportato nelle schede allegate al presente certificato. Le schede possono variare nel tempo. I requisiti gestionali della ISO/IEC 17025:2005 (sezione 4) sono scritti in un linguaggio idoneo all'attività dei Laboratori di Prova, sono conformi ai principi della ISO 9001:2008 ed allineati con i suoi requisiti applicabili. Il presente certificato non è da ritenersi valido se non accompagnato dalle schede allegate e può essere sospeso o revocato in qualsiasi momento nel caso di inadempienza accertata da parte di ACCREDIA. La vigenza dell'accREDITAMENTO può essere verificata sul sito WEB (www.accredia.it) o richiesta direttamente ai singoli Dipartimenti.

The accreditation certifies the technical competence of the laboratory limited to the scope detailed in the attached Enclosure. The scope may vary in the time. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in a language relevant to Testing Laboratories operations and meet the principles of ISO 9001:2008 and are aligned with its pertinent requirements. The present certificate is valid only if associated to the annexed schedule, and can be suspended or withdrawn at any time in the event of non fulfilment as ascertained by ACCREDIA. The in force status of the accreditation may be checked in the WEB site (www.accredia.it) or on direct request to appointed Department.

Data di 1^a emissione
1st issue date
2015-04-20

Data di modifica
Modification date
2015-04-20

Data di scadenza
Expiring date
2019-04-19

на основание чл. 36а, ал. 3
от ЗОП

на основание чл. 36а, ал. 3
от ЗОП

на основание чл. 36а, ал. 3
от ЗОП

Il Direttore Generale
The General Director
(Dr. Filippo Trifiletti)

Il Direttore di Dipartimento
Department Director
(Dr.ssa Silvia Tramontin)

Il Presidente
The President
(Cav. del Lav. Federico Grazioli)

Превод от английски език

Лого на АКРЕДИА
Лого на Пас-MRA

АКРЕДИТИРАЩ СЕРТИФИКАТ

Акредитация № 1515

Рев. 0

Ние декларираме, че
ЕСМ – Енте Сертификационе Машине Срл – Дивизионе Лабораторио Прове
адрес: Виа Ка'Белла, 243, Лок. Кастело Ди Серавал – 40053 Валсамоджа БО

изпълнява изискванията на стандарт
EN ISO/IEC 17025:2005 "Главни Изисквания за Компетенция на Лаборатория за Тестване и
Калибрация" стандарт

като
Тестваща Лаборатория

Акредитацията сертифицира техническата компетенция на лабораторията, ограничена до обхвата
детайлизиран в прикаченото приложение. Обхвата може да варира във времето. Изискванията за
системата за управление в ISO/IEC 17025:2005 (раздел 4) са написани на език релевантен на работата
на Тестващата лаборатория и отговаря на принципите на ISO 9001:2008 и са приведени в
съответствие със съответните му изисквания.

Настоящият сертификат е валиден само ако е асоцииран към анексираната таблица, и може да бъде
отложен или прекратен по всяко време в случай на неизпълнение, съгласно уверението на
АКРЕДИА.

Валидността на акредитацията може да бъде проверена в уеб сайта (www.accredia.it) или чрез
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Др. Силвия Грамонтин

Подпис: (не се чете)
Президент
Федерицо Гразиоли

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Бланка на АКРЕДИА с адресна и контактна информация



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China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(No. CNAS L3258)

China National Accreditation Service for Conformity Assessment has accredited

Mambocert (shanghai)

Technology Co., Ltd

No. 520 Yishan Road Xuhui District

Shanghai

to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

The scope of accreditation is detailed in the attached schedule bearing the same accreditation number as above. The schedule forms an integral part of this certificate.

Date of Issue: 2013-12-18

Date of Expiry: 2017-12-11

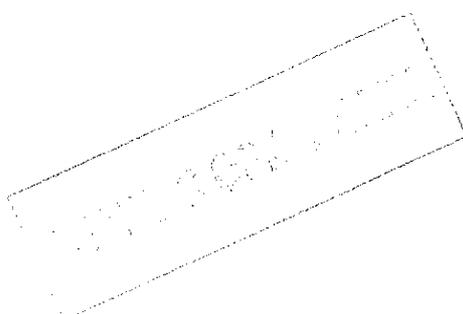
Date of Initial Accreditation: 2012-12-12

на основании чл. 36а, ал. 3
от ЗОП

Signed on behalf of China National Accreditation Service
for Conformity Assessment

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation system for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA), and the signatory to Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).

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Превод от английски език

лого на IAC-MRA
лого на CNAS

Китайската национална служба за акредитация за оценка на съответствието

СЕРТИФИКАТ ЗА АКРЕДИТАЦИЯ НА ЛАБОРАТОРИЯ

(Регистрационен No. CNAS L3258)

Китайската национална служба за акредитация за оценка на съответствието е акредитирала

Мамбосерт (Шанхай) Технолоджи Ко., Лтд

бул. Йишан № 520, квартал Ксухуи, Шанхай

към ISO/IEC 17025:2005 Основни изисквания към системата за компетентност на лаборатории за тестване и калибрация (CNAS-CL01 критерии за акредитация за компетентност на лаборатории за тестване и калибрация) за компетентност в областта на тестване.

Обхвата на акредитация е описан в приложението, носейки същия номер за акредитация както горния. Формулярите в списъка са неразделна част от този сертификат.

Дата на издаване: 2013-12-15

Дата на изтичане: 2017-12-11

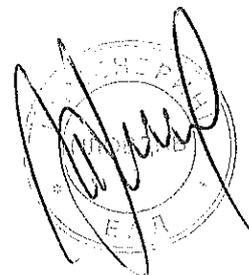
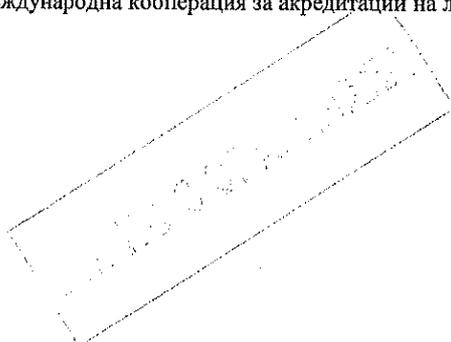
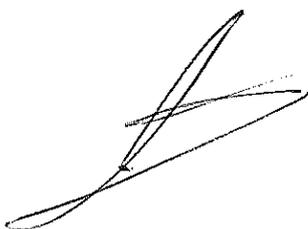
Дата на първоначална акредитация: 2012-12-12

Подпис: (не се чете)

Подписан от страна на Китайската национална служба за акредитация за оценка на съответствието

Китайската национална служба за акредитация за оценка на съответствието (CNAS) е оторизирана от Сертифицираща и Акредитираща Администрация на Народна република Китай (CNCA) да оперира националните системи за акредитация за оценка на съответствието.

CNAS е подписваща страна към Международната кооперация за акредитации на лаборатории (ILACMRA) и подписваща страна към Азия Пасифик Международна кооперация за акредитации на лаборатории (APLAC MRA).



ИНСТРУКЦИИ ЗА ТРАНСПОРТ, СКЛАДИРАНЕ, МОНТИРАНЕ, ПОДДЪРЖАНЕ И ЕКСПЛОАТАЦИЯ

МЕХАНИЧНО НАТОВАРВАНЕ НА КЛЕМОВИТЕ СЪЕДИНЕНИЯ

Транспортиране и складиране:

Автоматичните прекъсвачи лят корпус трябва да се транспортират в заводската си опаковка, добре застопорени, за избягване на наранявания на корпуса, механични повреди и в следствие отклонения от характеристиките и създаване на нежелани условия за нарушаване безопасността на електрическата верига и работа. Прекъсвачите трябва да се съхраняват в сухи помещения и нормална температура.

1. Инсталиране и обслужване.

1.1. Инсталиране

1.1.1. Проверете маркировката за да се убедите, че е в съответствие с нормалните работни условия.

1.1.2. Превключете ръчно няколко пъти автоматичния прекъсвач за да няма задържане. Проверете го и се убедете, че няма видими повреди по него и тогава го инсталирайте.

1.1.3. Фиксирайте автоматичния прекъсвач на монтажната шина и натиснете застопоряващия механизъм нагоре. По този начин той няма да може да се освободи от монтажната шина. Натиснете надолу застопоряващия механизъм за да извадите автоматичния прекъсвач.

1.1.4. Схемата е включена и символа „ON“ ще се покаже, когато ръкохватката е в затворено положение. Схемата е изключена и символа „OFF“ ще се покаже, когато ръкохватката е в отворено положение.

1.1.5. Входящата линия се свързва в горната страна на автоматичния прекъсвач, а изходящата линия се свързва в долната страна на прекъсвача. Не разменяйте страните на свързване. Напречното сечение на медните проводници е дадено в таблица 3. Поставете проводниците в отворите за свързване, след това завийте винта. Проводниците не би трябвало да са хлабави и да не се местят. Не оставяйте оголени проводници извън терминала за връзка.

1.1.6. Автоматичният прекъсвач би трябвало да се превключи няколко пъти преди да се свърже към схемата. Механизмът трябва да бъде подвижен, заслужаващ доверие и без задържане.

1.2. Обслужване

1.2.1. Проверете автоматичния прекъсвач по разписание по време на неговата работа. Според експлоатационния режим определете контролния период.

1.2.2. След прекъсване на ток на претоварване или ток на късо съединение, би трябвало първо да се отстрани дефекта преди да се включи прекъсвача, иначе това може да въздейства злополучно на издръжливостта на прекъсвача.

1.2.3. Не трябва да има вода и продукта не трябва да се поврежда по време на работа, когато е на склад или при транспортиране.

2. Предупреждения за безопасност.

2.1. Не тествайте функцията на продукта, като свързвате проводник под напрежение непосредствено към земята или към нулата, иначе това ще въздейства на личната безопасност.

2.2. Завийте винта до края така, че проводниците да не са хлабави и да не се местят, когато ги свързвате към автоматичния прекъсвач. Не оставяйте

оголени проводници извън отворите на връзката.

3. Често срещани неизправности повреди и начини за отстраняване то им.

Често срещаните неизправности и начините за отстраняването им са показани в

Неизправност	Причина	Метод за отстраняване	Забележка
Прекъсвача не може да затвори	Късо съединение в защитаваната верига.	Елиминирайте късото съединение	
	Дефект в механизма	Заменете продукта.	
	Номиналният ток на прекъсвача не съответства на тока на товара.	Променете спецификацията на продукта.	
Загриване в горната част.	Винта не притиска плътно проводника или е хлабав.	Стегнете винта!	
	Напречното сечение на проводника е малко.	Променете спецификацията на проводника.	
Прекъсвача не може да изключи при условие на късо съединение.	Прекъсвача е в несъответствие с работните условия на товара.	Променете спецификацията на продукта	
Прекъсвача не осъществява верига.	Оголени проводник е твърде къс.	Оголете проводника отново	
	Винта не притиска плътно проводника или е хлабав.	Стегнете винта!	

Механично натоварване на клемовите съединения:

За автоматични прекъсвачи лят корпус 100A, 160A, 250A:

Макс. напречно сечение на проводник (mm^2):

120 mm^2 , Готови проводници (кабели с обувка)

диаметър на резба (мм): 8мм

въртящ момент (Nm): 6Nm

5 пъти по 2 отделни единици затягане: Готови проводници (кабели с обувка)

За автоматични прекъсвачи лят корпус 630A:

Макс. напречно сечение на проводник (mm^2):

2 x 240 mm^2 , Готови проводници (кабели с обувка)

диаметър на резба (мм): 10мм на клемова връзка към кабел,

6 мм на клемова връзка към прекъсвач

въртящ момент (Nm): 10Nm на клемова връзка към кабел,

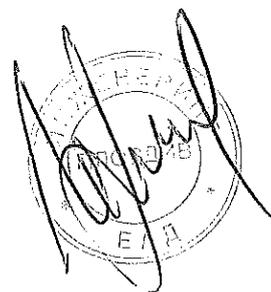
3Nm на клемова връзка към прекъсвач;

5 пъти по 2 отделни единици затягане: Готови проводници (кабели с обувка)

За автоматични прекъсвачи лят корпус 1000A, 1250A:

Мин. напречно сечение на проводник (mm^2): 16 mm^2

въртящ момент (N/mm^2): $\leq 15 \text{ N/mm}^2$ на напречно сечение на проводника



ИНСТАЛАЦИЯ, РАБОТА И РЕМОНТ НА АВТОМАТИЧНИ ПРЕКЪСВАЧИ ЛЯТ КОРПУС

Инсталация и работа

За безопасността на лицето и електрическо оборудване, трябва да се спазват следните инструкции, преди да пуснете в експлоатация автоматичните прекъсвачи лят корпус:

- Моля, прочетете тази инструкция за експлоатация внимателно преди инсталиране на автоматични прекъсвачи.

- Автоматичните прекъсвачи лят корпус трябва да се използват при нормални условия на експлоатация.

- Проверете възможностите на прекъсвач за точното му приложение, преди инсталацията.

- Измерете изолационното съпротивление с помощта на 500V мегом метра преди инсталацията. Измерената стойност не трябва да бъде по-ниска от 10M при стайна температура 20 ± 5 , и относителна влажност 50% до 70%. В противен случай, прекъсвачът трябва да се изсуши, и не може да се използва, докато не подобри съпротивление на изолацията съгласно изискванията.

- Инсталацията на прекъсвач в избрана позиция е възможно, без влияние върху неговата ефективност. Но определеното разстояние отгоре, отдолу, отстрани и отпред, както и от другите прекъсвачи следва да бъде спазено за безопасна работа.

- Прекъсвача може да се монтира на неподвижна опора или плоча-база със стандартни винтове.

- Трябва да се внимава да не попаднат чужди проводими предмети в прекъсвача, когато го инсталирате.

- Кабелите, използвани за свързване на прекъсвач трябва да бъде гладки, ненаранени и да не са пречупени при инсталацията на прекъсвача за предотвратяване на повреди на прекъсвач и отклонения от неговите стандартни характеристики.

- След като инсталирате прекъсвача, следните оперативни тестове се провеждат преди да се пусне веригата. Тя не може да бъде пусната в експлоатация докато всички условия не са коректни и точни:

1) Проверете внимателно дали няма да има чужди частици в трифазовите проводници и кабели. Премахнете, ако има такива. Прекъсвачът трябва да се пази в чиста състояние.

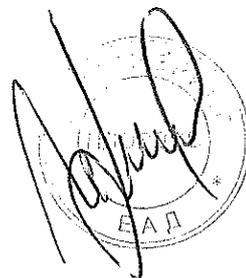
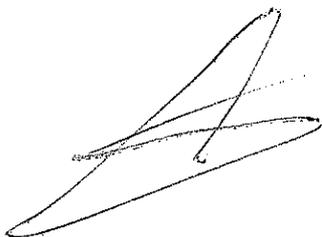
2) Ако прекъсвачът е оборудван с електрически аксесоари или електрически работен механизъм, трябва да се свърже с допълнителна верига с тях в съответствие с диаграмата в техническия каталог, а след това проверка на съответствието на номинално работно напрежение от напрежение освобождаване, шунт и мотор със захранващото напрежение.

3) Проверка на текущите настройки на защитите от претоварване и късо съединение.

4) След всички проверки и инспекции, допълнителната верига може да бъде пусната. Само в този случай, прекъсвачът може да бъде затворен, след като защитата е затворен.

5) Ръчен тест на работа на прекъсвача: Ръчно включване и ръчно изключване няколко пъти. Прекъсвачът трябва да се държи нормално.

6) Електрически тест на работа на прекъсвача: включване от електрически работен механизъм, а след това изключване от него няколко пъти Прекъсвачът трябва да се държи нормално

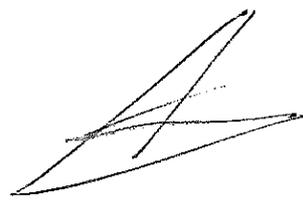
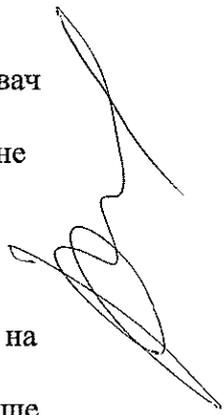


Поддръжка

- По време на работа, прекъсвачът се проверява периодично в съответствие с посочените по-горе процедури.
- Почистете всяко прекомерно натрупване на прах, за да бъде изолацията на прекъсвач в добро състояние.
- Проверка на условията за експлоатация на прекъсвача след всяко кратко прекъсване на прекъсвача, сменете нов, ако не е в състояние да бъде използван.

Ремонт

Проблеми могат да възникнат по време на инсталация, настройка или експлоатация на прекъсвача. Решаването на проблемите се извършва от квалифицирани лица или можете да се свържете с офис на дистрибутора, където инженери ще ви помогнат и ще предоставят допълнителни услуги.



" ЕЛПРОМ ЕМЗ " ООД ГРАД ШАБЛА

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

ИД. ИДЕНТИФИКАЦИОННИ

Управител 05743 / 45 - 08

Главен счетоводител 05743 / 42 - 84

Тел. Факс 05743 / 41 - 84

Факс/телекс/факс/тел 05743 / 50 - 20

Е-МАЙЛ : elpromemz@mblox.intel.bg

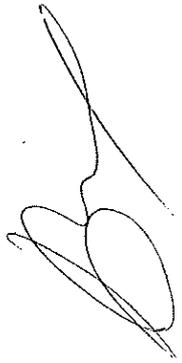
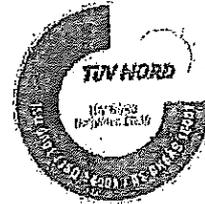
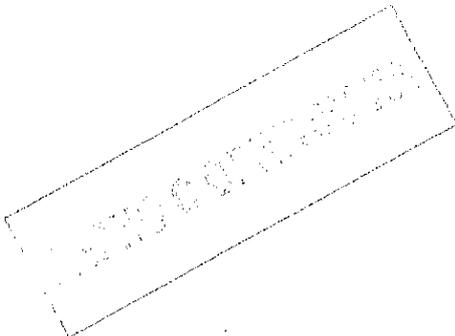
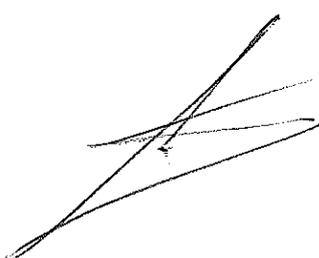
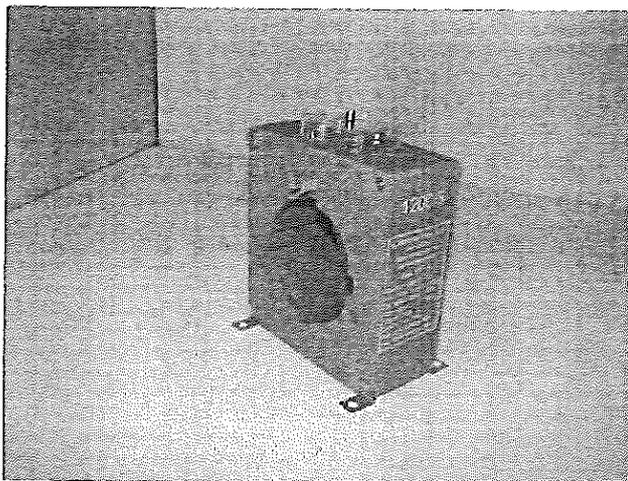
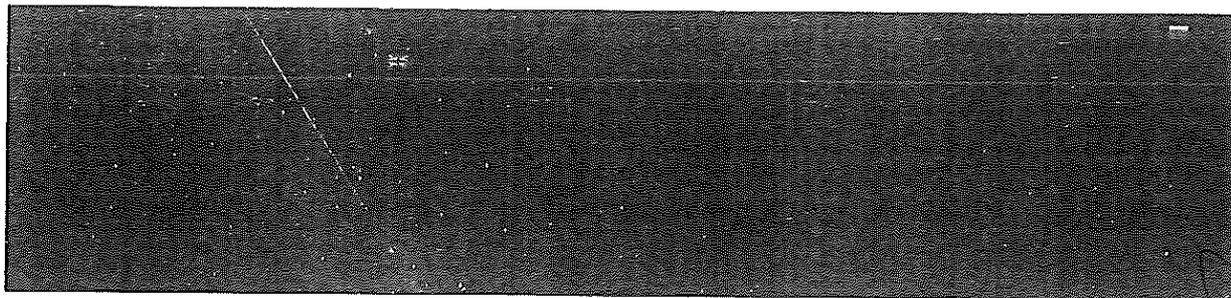


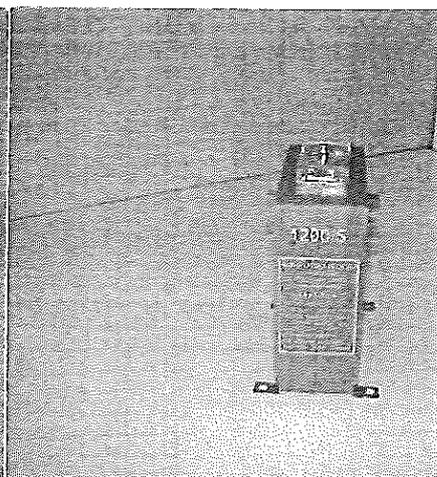
Таблица 1.

Тип Type	Преводно отношение Ipn/Isp Rated current ratio A / A	Най-високо работно напрежение Rated voltage power network kV	Клас на точност Class of accuracy %	Номинална мощност Sn Rated power VA	Номинален ток на терм. устойчивост Rated short-time thermal stability Ith, kA	Номинален ток на дин. устойчивост Rated short-time dynamic stability Idyn, kA	Номинален коэффициент на безоп. Security factor for apparatus Fs	Заводски шифър Serial number
1	2	3	4	5	6	7	8	9
СТ - 1 лъвенч и вторич	30 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1210302 - XXXX
	50 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1210502 - XXXX
	75 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1210752 - XXXX
	100 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1211002 - XXXX
	150 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1211502 - XXXX
СТ - 2 шина 30x10 40x10 кабел ф36	150 / 5	0,72	0,5	5	60 Ipn	2,5 Ith	5; 10	1221505 - XXXX
	200 / 5	0,72	0,5	5	60 Ipn	2,5 Ith	5; 10	1222005 - XXXX
	250 / 5	0,72	0,5	5	60 Ipn	2,5 Ith	5; 10	1222505 - XXXX
	300 / 5	0,72	0,5	5	60 Ipn	2,5 Ith	5; 10	1223005 - XXXX
СТ - 3 шина 30x10 40x10 ф36	300 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1233005 - XXXX
	400 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1234005 - XXXX
	600 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1235005 - XXXX
	800 / 5	0,72	0,2; 0,5; 0,5S	5; 10	60 Ipn	2,5 Ith	5; 10	1236005 - XXXX
СТ - 3 шина 50x10 ф48	500 / 5	0,72	0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1236005 - XXXX
	600 / 5	0,72	0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1236005 - XXXX
	750 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1237505 - XXXX
	800 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1238005 - XXXX
СТ - 4 за шина 80x10 или кабел ф73	300 / 5	0,72	0,5; 0,5S	5	60 Ipn	2,5 Ith	5; 10	1243005 - XXXX
	400 / 5	0,72	0,5; 0,5S	5	60 Ipn	2,5 Ith	5; 10	1244005 - XXXX
	500 / 5	0,72	0,5; 0,5S	5	60 Ipn	2,5 Ith	5; 10	1245005 - XXXX
	600 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1246005 - XXXX
	750 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1247505 - XXXX
	800 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1248005 - XXXX
	1000 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1249005 - XXXX
	1200 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1241205 - XXXX
	1250 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	12412505 - XXXX
	1500 / 5	0,72	0,2; 0,5; 0,5S	5; 10; 15	60 Ipn	2,5 Ith	5; 10	1241505 - XXXX





(http://elpromemz.bg/wp-content/uploads/2015/09/DS_22.jpg)



(http://elpromemz.bg/wp-content/uploads/2015/09/DS_12.jpg)

SHARE IT ([HTTP://WWW.FACEBOOK.COM/SHARE.PHP?U=<URL>](http://www.facebook.com/share.php?u=<URL>))

TWEET IT ([HTTP://TWITTER.COM/HOME/?STATUS=ТИП СТ-4 - HTTP://ELPROMEMZ.BG/PORTFOLIO/%D1%82%D0%B8%D0%BF-%D1%81%D1](http://twitter.com/home/?status=ТИП СТ-4 - HTTP://ELPROMEMZ.BG/PORTFOLIO/%D1%82%D0%B8%D0%BF-%D1%81%D1))

ТИП СТ-4

Категория: НН (<http://elpromemz.bg/portfolio-category/hh2/>)

ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ НН

Токови измервателни трансформатори за НН тип СТ-4

са проходни трансформатори за вътрешен монтаж с една вторична намотка с клас на точност 0.2, 0.5, 0.5S и номинална мощност от 5 VA, 10 VA и 15 VA в диапазона на номинални токове от 750/5, 800/5, 1000/5, 1200/5, 1250/5 и 1500/5 A и максимално работно напрежение 0.72KV.

Отговарят на изискванията на БДС EN 61869-2:2012; БДС EN 60044-1:2001

Одобрени от БИС с удостоверения за одобрен тип средство за измерване №06.04.4547 от 03.04.2006 година

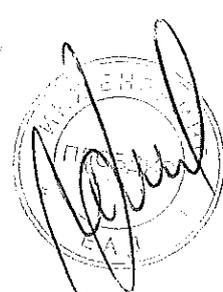
Скрий

Технически характеристики на Тип СТ - 4

обхват 750/5A, 800/5A, 1000/5A, 1200/5A, 1250/5A, 1500/5A

1. Номинално напрежение - 0.72 KV
2. Честота - 50 Hz
3. Номинален първичен ток I_{pn} - 750, 800, 1000, 1200, 1250, 1500 A
4. Номинален вторичен ток I_{сп} - 5 A
5. Клас на точност - 0.2, 0.5, 0.5S
6. Номинална мощност - 5, 10, 15 VA
7. Ток на термична устойчивост - 60 x I_{pn}
8. Ток на динамична устойчивост - 2.5 x I_{th}
9. Маса - 0.920 до 1.00 кг
10. Изолация - суха, клас на топлоустойчивост B

Условия на работа





РЕПУБЛИКА БЪЛГАРИЯ
Български институт по метрология
REPUBLIC OF BULGARIA
Bulgarian Institute of Metrology



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

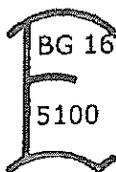
№ 16.03.5100

Издадено на производител: „ЕЛПРОМ ЕМЗ“ ООД, гр. Шабла, ул. Нефтяник № 38
Issued to manufacturer:

На основание на: чл. 32, ал. 1 от Закона за измерванията (ДВ, бр. 46 от 2002 г., изм. бр. 88 от 05 г., изм. и доп. бр. 95 от 2005 г.)
In Accordance with:

Относно: измервателен токов трансформатор тип СТ-х
In Respect of:

Знак за одобрен тип:
Type Approval Mark:



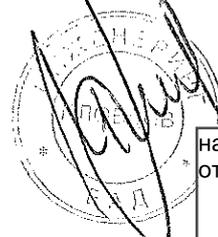
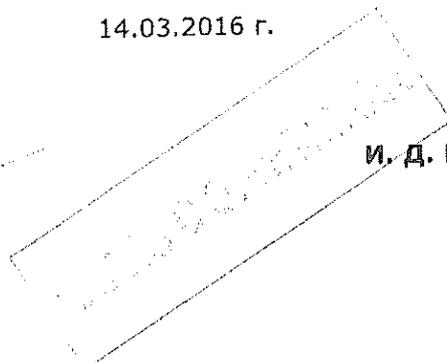
Технически и метрологични характеристики:
Technical and metrological characteristics:

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

Срок на валидност: 14.03.2026 г.
Valid until:

Вписва се в регистъра на одобрените за използване типове средства за измерване под №: 5100
Reference №:

Дата на издаване на удостоверението за одобрен тип: 14.03.2016 г.
Date:



И. Д. ПРЕДСЕДАТЕЛ

Паун Илчев

на основание чл. 36а, ал. 3 от ЗОП

страница 1 от 3

Приложение към удостоверение за одобрен тип № 16.03.5100

Издадено на производител: „ЕЛПРОМ ЕМЗ“ ООД; гр. Шабла, ул. Нефтяник № 38

Относно: измервателен токов трансформатор тип СТ-х

1. Описание на типа:

Измервателните токови трансформатори тип СТ-х се използват за измерване и защита на електрически мрежи с максимално работно напрежение 0,72 kV.

Измервателните токови трансформатори тип СТ-1 се състоят от тороидален магнетопровод с първична и вторична намотки, поместени в кутия от пластмаса. Магнетопровода е направен от силициева ламарина, Ми-метал или пермалой. Върху магнетопровода е намотана вторичната намотка равномерно по целия обем. Това осигурява ефективното магнитно взаимодействие на първичната и вторичната намотки. Броят на навивките на вторичната намотка се определя от отношението между първичния и вторичния номинален ток. Първична и вторична намотки са поместени в кутията от пластмаса, изработена от пластмаса тип Tecomid NB40 NL E с клас на възпламеняемост съгласно IEC 707-V-0. Началото и края на вторичната намотка са изведени на клемите разположени в горната част на трансформатора и са защитени с прозрачна пластмасова капачка, която е отваряема и има възможност за plombиране.

Измервателните токови трансформатори тип СТ-2, тип СТ-3 и тип СТ-4 са проходен тип, пригодени за монтаж за шина или за кабел. Състоят се от магнетопровод с вторична намотка и са поместени в пластмасова кутия, изработена от пластмаса тип Tecomid NB40 NL E с клас на възпламеняемост съгласно IEC 707-V-0.

Измервателните токови трансформатори тип СТ-х са предназначени за експлоатация на закрито, при надморска височина до 1000 m, температура на околната среда от минус 35 °C до 45 °C и относителна влажност до 70 %. Изолацията спрямо магнетопровода и намотките е суха, с клас на топлоустойчивост В.

При измервателните токови трансформатори тип СТ-х има възможност да се plombира кутията на трансформатора с цел предотвратяване на неправилен достъп до магнетопровода и намотките. Има възможност да се plombира и капачката, която предпазва клемите на вторичната намотка на трансформатора.

2. Технически и метрологични характеристики:

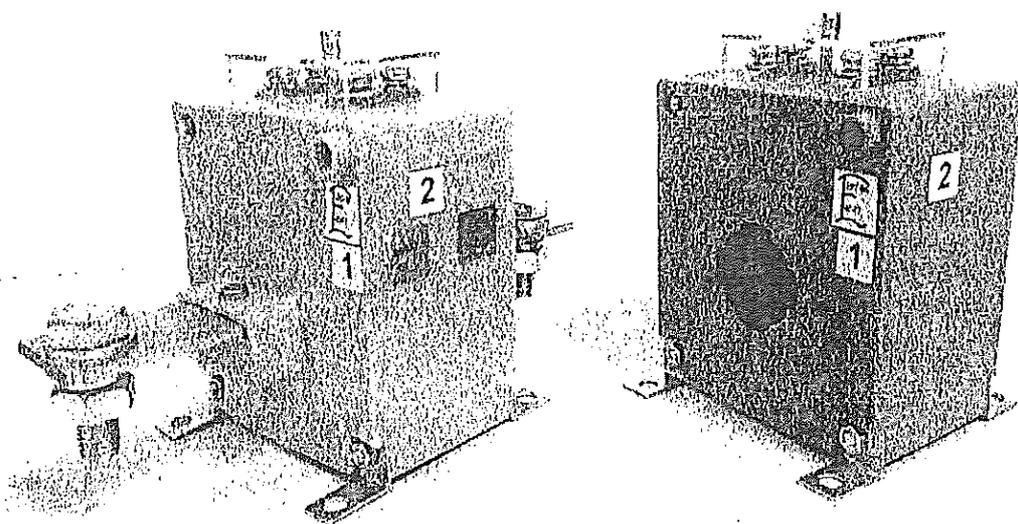
Характеристики	Тип на трансформатора			
	СТ-1	СТ-2	СТ-3	СТ-4
Максимално работно напрежение, kV	0,72			
Честота, Hz	50			
Номинален първичен ток, A	30; 50; 75; 100; 150	100; 150; 200; 250; 300	400; 500; 600	750; 800; 1000; 1200; 1250; 1500; 1600; 2000; 2500; 3000
Клас на точност	0,2; 0,2S; 0,5; 0,5S	0,5; 0,5S	0,2; 0,2S; 0,5 0,5S	0,2; 0,2S; 0,5; 0,5S
Номинален вторичен ток, A	5			
Мощност, VA	5; 10	5; 10	5; 10; 15	5; 10; 15
Коефициент на сигурност, FS	FS5; FS10			

Приложение към удостоверение за одобрен тип № 16.03.5100

3. Типово означение: СТ-х (СТ-1; СТ-2; СТ-3; СТ-4)

4. Описание на местата, предназначени за поставяне на знаци от метрологичен контрол:

- 1 - Знак за одобрен тип;
- 2 - Знак за първоначална проверка (марка за залепване).



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РЕПУБЛИКА БЪЛГАРИЯ
Български институт по метрология
REPUBLIC OF BULGARIA
Bulgarian Institute of Metrology



ДОПЪЛНЕНИЕ № 17.11.5100.1

КЪМ УДОСТОВЕРЕНИЕ
ЗА ОДОБРЕН ТИП СРЕДСТВО ЗА ИЗМЕРВАНЕ № 16.03.5100
Measuring Instrument Type-approval Certificate-Revision 1

Издадено на
производител: „ЕЛПРОМ ЕМЗ“ ООД, гр. Шабла, ул. Нефтяник № 38
Issued to manufacturer:

На основание на: чл. 32, ал.1 от Закона за измерванията
In Accordance with:

Относно: измервателни токови трансформатори тип СТ-х
In Respect of:

Технически и метрологични характеристики: приложение, неразделна част от настоящото удостоверение за одобрен тип средство за измерване
Technical and metrological characteristics:

Срок на валидност: 14.03.2026 г.
Valid until:

Средството за измерване е вписано в регистъра на одобрените за използване типове средства за измерване под №: 5100
Reference №:

Дата на издаване на допълнението към удостоверението за одобрен тип: 21.11.2017 г.
Date:

на основание чл. 36а, ал. 3
от ЗОП

И.Д. ПРЕДСЕДАТЕЛ

Пайн ИОН-АРИЯ

Издадено на производител: „ЕЛПРОМ ЕМЗ“ ООД, гр. Шабла, ул. Нефтяник № 38

Относно: измервателни токови трансформатори тип СТ-х

Описание на допълнението към удостоверение за одобрен тип № 16.03.5100:

• Към т.1 Описание на типа се добавя:

„Три броя измервателни токови трансформатори тип СТ-х (СТ-2, СТ-3 и СТ-4) могат да се монтират в обща пластмасова кутия. Тези трансформатори са с еднакви метрологични характеристики, с изведени начало и край на вторичната намотка (на трите отделни токови трансформатора), съответно в долният или горният край на общата кутия“.

• Към т.4 Описание на местата, предназначени за поставяне на знаци от метрологичен контрол се добавят местата за знаци върху общата пластмасова кутия при монтаж на 3 броя трансформатора:

При монтаж на 3 трансформатори в обща пластмасова кутия описанието на типа и местата, предназначени за поставяне на знаци от метрологичен контрол се допълват и добиват следният вид:

1. Описание на типа:

Измервателните токови трансформатори тип СТ-х се използват за измерване и защита на електрически мрежи с максимално работно напрежение 0,72 кV.

Измервателните токови трансформатори тип СТ-1 се състоят от тороидален магнитопровод с първична и вторична намотки, поместени в кутия от пластмаса.

Магнитопроводът е направен от силициева ламарина, Ми-метал или пермалой. Върху магнитопровода е намотана вторичната намотка равномерно по целия обем. Това осигурява ефективното магнитно взаимодействие на първичната и вторичната намотки. Броят на навивките на вторичната намотка се определя от отношението между първичния и вторичния номинален ток.

Първична и вторична намотки са поместени в кутийка от пластмаса, изработена от пластмаса тип Tecomid NB40 NL E с клас на възпламеняемост съгласно IEC 707-V-0.

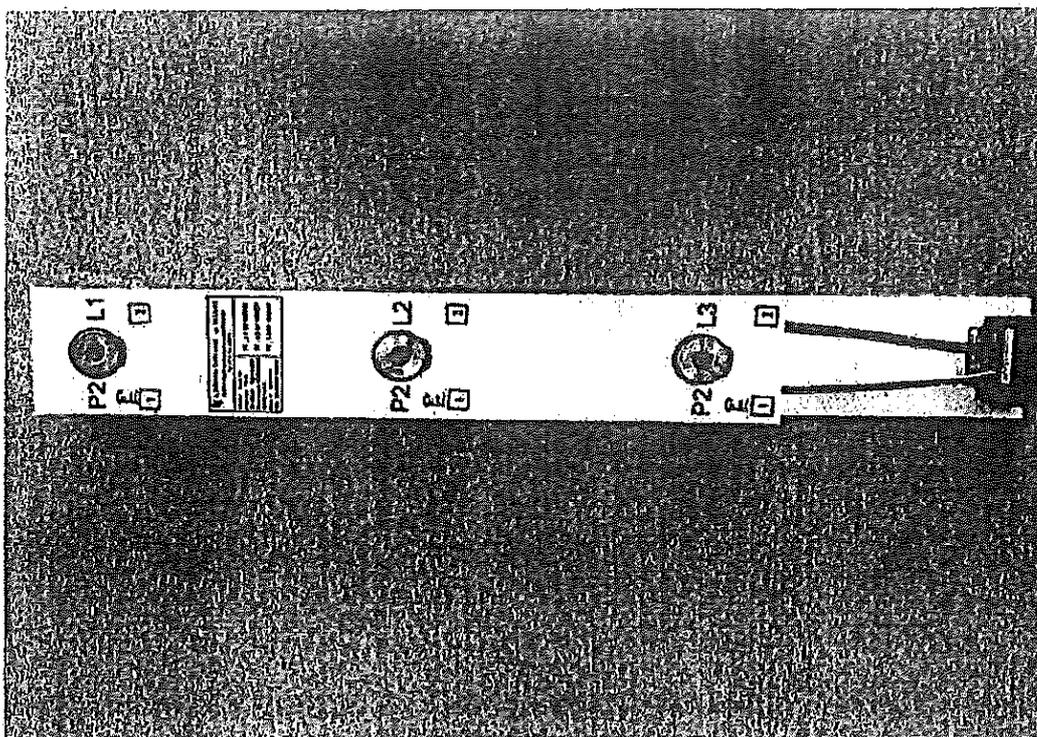
Началото и края на вторичната намотка са изведени на клеми разположени в горната част на трансформатора и са защитени с прозрачна пластмасова капачка, която е отваряема и има възможност за пломбиране.

Измервателните токови трансформатори тип СТ-2, тип СТ-3 и тип СТ-4 са проходен тип, пригодени за монтаж за шина или за кабел. Състоят се от магнитопровод с вторична намотка и са поместени в пластмасова кутия, изработена от пластмаса тип Tecomid NB40 NL E с клас на възпламеняемост съгласно IEC 707-V-0.

Измервателните токови трансформатори тип СТ-х са предназначени за експлоатация на закрито, при надморска височина до 1000 m, температура на околната среда от минус 35°C до 45°C и относителна влажност до 70%. Изолацията спрямо магнитопровода и намотките е суха, с клас на топлоустойчивост В.

При измервателните токови трансформатори тип СТ-х има възможност да се пломбират, както кутията на трансформатора, с цел предотвратяване на неправомерен достъп до магнитопровода и намотките, така и пломбиране на капачката, която предпазва клемите на вторичната намотка на трансформатора.

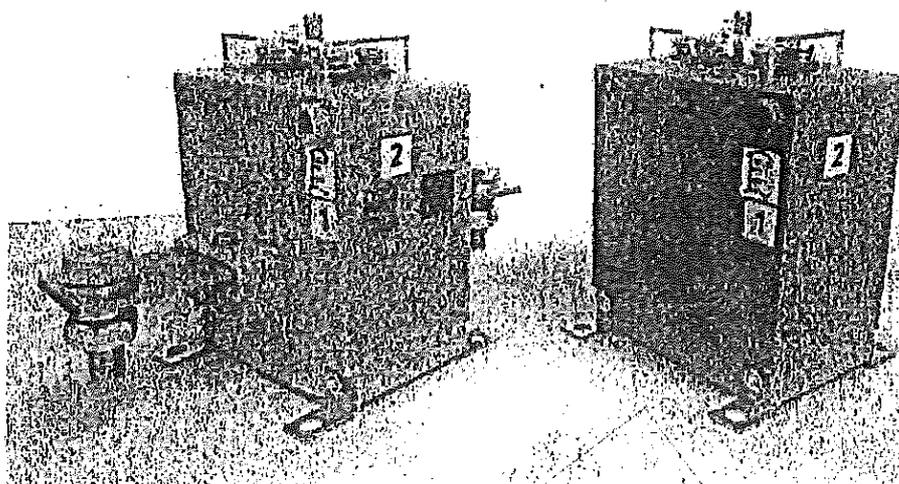
Три броя измервателните токови трансформатори тип СТ-х (СТ-2, СТ-3 и СТ-4) могат да се монтират в обща пластмасова кутия. Тези трансформатори са с еднакви метрологични характеристики, с изведени начало и край на вторичната намотка (на трите отделни токови трансформатора), съответно в долният или горният край на общата кутия - фиг. 1



Фиг. 1

Върху общата кутия се поставят табелката с метрологичните характеристики на трите трансформатора и фабричните им номера.

4. Описание на местата, предназначени за поставяне на знаци от метрологичен контрол:



- 1 - Знак за одобрен тип;
- 2 - Знак за първоначална проверка (марка за залепване).

“ЕЛПРОМ ЕМЗ” ООД град ШАБЛА



ТЕЛЕФОНИ ЗА КОНТАКТИ:

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

ТЕХНИЧЕСКО ОПИСАНИЕ

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

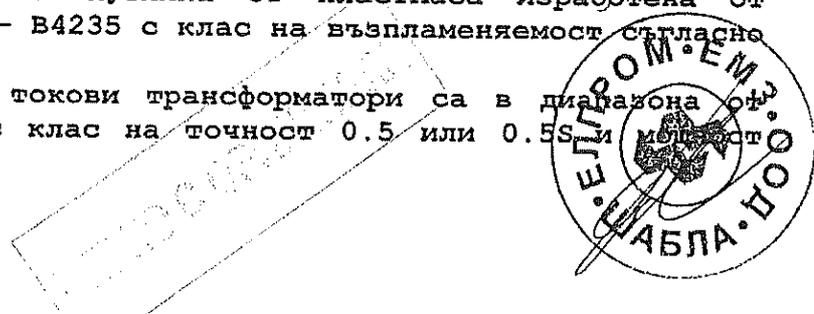
Токови измервателни трансформатори тип СТ-1; тип СТ-2, тип СТ-3 и тип СТ-4 са за ниско напрежение до 1000V за вътрешен монтаж с клас на точност 0.2; 0.5 или 0.5S и номинална мощност до 50VA в диапазона от номинални токове до 3000A съгласно БДС EN 60044-1:2001 и IEC 60044-1:1999.

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

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

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

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



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

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

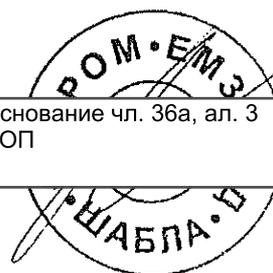
- | | |
|--|------------------|
| 1. Номинално напрежение | - до 0,75 kV |
| 2. Честота | - 50 Hz |
| 3. Номинален първичен ток I_{pn} | - до 2000 A |
| 4. Номинален вторичен ток I_{sn} | - 5 A |
| 5. Клас на точност на ядрото за мерене | - 0.2, 0.5, 0.5S |
| 6. Номинална мощност | - 5, 10, 15VA |
|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

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

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

УПРАВИТЕЛ : _____

на основание чл. 36а, ал. 3
от ЗОП



Тригланчев: А.

БЪЛГАРСКИ ИНСТИТУТ ПО МЕТРОЛОГИЯ

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

ПРОТОКОЛ ОТ ИЗПИТВАНЕ

№ 19-ЕВ / 13.07.2006 г.

- 1. Обект на изпитването:** Токов измервателен трансформатор тип СТ-Х
- 2. Номер и дата на заявката:** АУ-03-654/27.06.2006 г.
- 3. Заявител:** "ЕЛПРОМ - ЕМЗ" ООД гр. Шабла
- 4. Производител:** "ЕЛПРОМ - ЕМЗ" ООД гр. Шабла
- 5. Метод на изпитване:** БДС EN 60044-1 Измервателни трансформатори
Част 1: Токови трансформатори.
- 6. Период на изпитване:** 07.07.2006 г. до 14.07.2006 г.
- 7. Изпитани образци:** ф. № 20218, 33063, 29967, 29477, 34805, 32820
- 8. Описание на типа:**
Гамата измервателни токови трансформатори тип СТ-х са за мрежи ниско напрежение.
Токовете трансформатори тип СТ-1 се състоят от тороидален магнитопровод с първична и вторична намотка, а тип СТ-2, тип СТ-3 и тип СТ-4 са проходен тип трансформатори, пригодени за шина или кабел, с вторична намотка.

Резултатите в протокола се отнасят само за изпитваните образци.

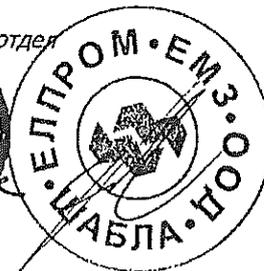
Началник отдел ИТСИ:

на основание чл. 36а, ал. 3
от ЗОП

/ИНЖ. Х. СОКОЛОВА/

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

Върне с оригинала.



Приложение: 4

9. Технически и метрологични характеристики:

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

10. Технически средства използвани при изпитването:

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

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

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

11. Резултати от изпитванията:

11.1. Проверка на маркировката

11.1.1. Маркировка на изводите –

БДС EN 60044-1
т. 10.1.1 и 10.1.2

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

11.1.2 Означение на полярностите –

БДС EN 60044-1
т. 10.1.3

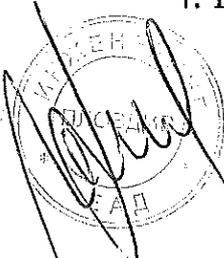
Протоколи № 01÷ 03 /10.07.2006 г.
Протоколи № 04÷ 06 /11.07.2006 г.
Протокол № 12/12.07.2006 г.

11.2. Маркировка на табелките с технически данни –

БДС EN 60044-1
т. 10.2 и т. 11.7

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

Съгласно с оригинала



Приложение: Ч.

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

БДС EN 60044-1
т. 5.1.4

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

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

БДС EN 60044-1
т. 5.1.4

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

11.5. Определяне грешките на трансформаторите –

БДС EN 60044-1
т.11.2

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

11.6. Проверка – коефициент на безопасност -

БДС EN 60044-1
т.11.6

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

Присъствали на изпитването:

Младши експерт

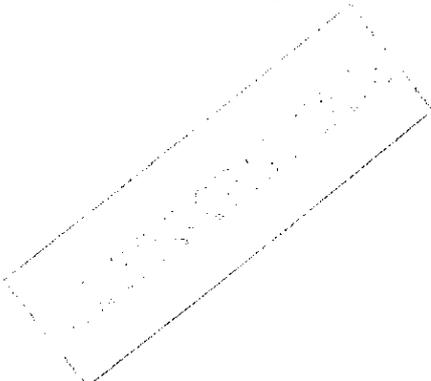
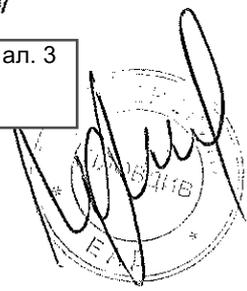
на основание чл. 36а, ал. 3
от ЗОП

/инж. Р. Малинова/

Началник сект

на основание чл. 36а, ал. 3
от ЗОП

/инж.Л. Сотирова/



Всичко е оригинално

“ЕЛПРОМ ЕМЗ” ООД град ШАБЛА

ПАСПОРТ - СЕРТИФИКАТ

ИЗПИТАТЕЛЕН ПРОТОКОЛ

За трансформатор токов измерителен инесо напрежение

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

Заводски № 12410005 - xxxxx

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

II. Технически характеристики:

1. Номинално напрежение - 0.72 KV
2. Честота - 50 Hz
3. Номинален първичен ток I_п - 800 - 1000 : 1200 А
4. Номинален вторичен ток I_в - 5 А
5. Клас на точност - 0.5
6. Номинална мощност - 5 VA
7. Ток на термична устойчивост - 60 x I_п
8. Ток на динамична устойчивост - 2.5 x I_п
9. Маса - 0.9 : 1.0 : 1.1 kg
10. Изолация - суха, клас на топлоустойчивост В

III. Стандартирани документи: Изделието отговаря на БДС EN 60044-1:2001; IEC 60044-1:1999.

IV. Резултати от първично-предавателните изпитвания

1. Проверка клас на точност: Отговаря на клас на точност - 0.5
2. Изпитване на изолацията между първичната и вторичната намотка с променливо напрежение 3 KV за 1 минута: издържал

V. Сертификат за качество

Настоящият сертификат за качество се дава въз основа на приемно - предавателните заводски изпитвания от 2012 година. НАСТОЯЩИЯ ТИП ТОКОВ ИЗМЕРИТЕЛЕН ТРАНСФОРМАТОР Е ОДОБРЕН ОТ ДАМТН С УДОСТОВЕРЕНИЕ № 4547 от 05.04.2006 година.

VI. Компактност на доставката: Запасни части към изделието не се предоставят.

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

1. Място на монтаж : на закрито.
2. Начин на съхранение : Първичната намотка на токовите трансформатори се свързва последователно към захранващите проводници на монтажа, а релетата и апаратите – последователно на вторичната намотка.

Експлоатационни условия на работа: При ползване на токовите трансформатори трябва да се спазват следните условия:

1. Трансформаторите да се монтират в защитна помещениа.

ПРИЛОЖЕНИЕ №5

В/ Съединителните проводници да са свързани добре към източника и консуматора. Когато изходите са на винтове, съединителните проводници трябва да се затегнат здраво между две месингови шаблн или кабелна обулка.

В/ Токът, който се черпи от трансформатора, по специално мощността на трансформаторите, да не е по-голяма от мощността, посочена на табелката. Претоварването на трансформаторите се ограничава от допустимите температури на загряване на изолациите.

Г/ Токовете трансформатори трябва да работят при непрекъснат или периодичен контрол.

Д/ При обслужване на токовите трансформатори е задължително да се спазва следното условие:

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

Когато се налага прекъсване на вторичната верига, вторичните класни на трансформаторите трябва да се свързват на късо с проводник със сечение 2,5 кв. мм. Във вторичната верига на токов трансформатор предпазители не се поставят.

Е/ При работа на трансформатора единият извод на вторичната намотка се заземлява.

4. **Безопасност и здравна не тужба:** За осигуряване на безопасна работа на обслужващия персонал е необходимо да се спазват следните условия:

А/ Единият извод на вторичната намотка да се заземи.

Б/ При включване на първичната намотка във веригата, вторичната намотка да не се оставя отворена.

В/ След извършване на монтажа на трансформаторите към таблата и уредите, върху клемите НН на първичната намотка, да се постави предпазна капачка и да се пломбира.

Г/ При ревизия на трансформаторите, същите да не са под напрежение.

Д/ При проверка на трансформаторите откъм високата страна обслужващия персонал да работи с лични предпазни средства.

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

5. **Опаковка, транспорт и съхранение:** Трансформаторите се поставят в специални кутии от картон впапакс. Транспортният се във всякаква вид транспортни средства.

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

ГАРАНЦИОННА КАРТА

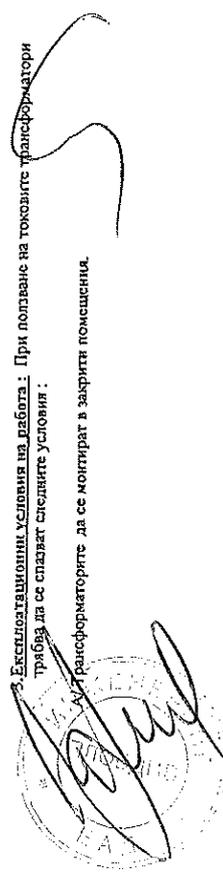
“ЕЛПРОМ ЕМЗ” ООД град Шабла се задължава да замени или ремонтира безвъзмездно токови измерителни трансформатори, които в продължение на 36 месеца от датата на продажбата им от завода, са показали дефекти или потребителът е констатирал несъответствия на трансформатора с изискванията на съответния стандарт.

Заканята или ремонтът се извършва при условие, че са спазени изискванията за транспорт, съхранение, монтаж и експлоатация, дадени от производителя - производителя в придружаващата документация и е запазен оригиналният паспорт - сертификат с гаранционната карта на свързания трансформатор.

На основание чл. 36а, ал. 3 от ЗОП

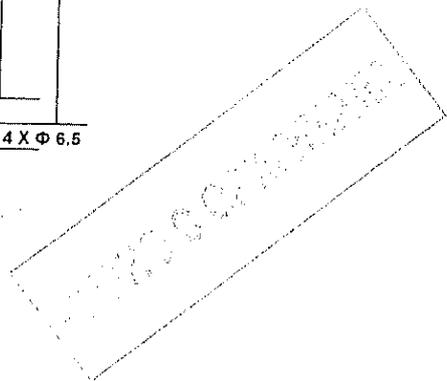
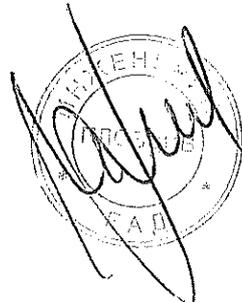
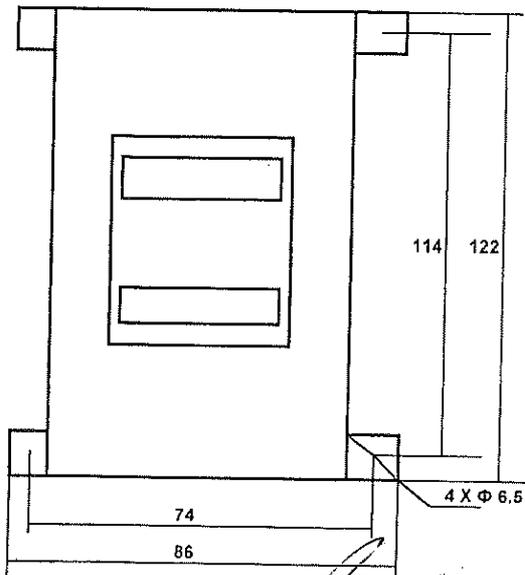
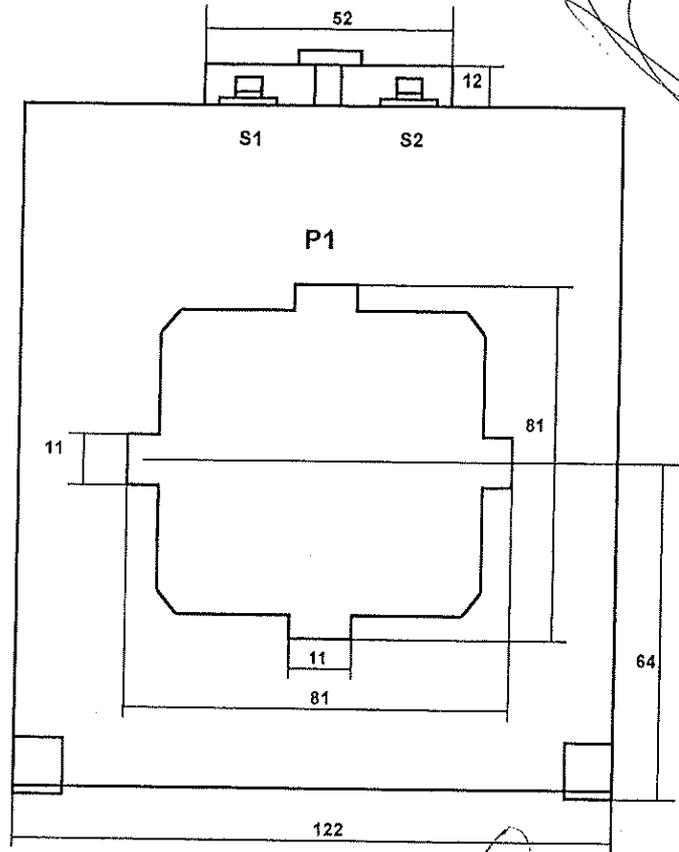
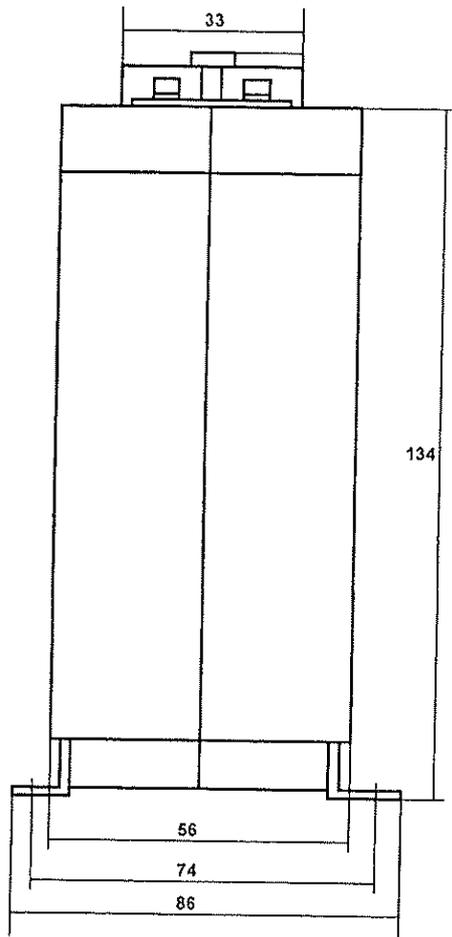
Дата на продажба

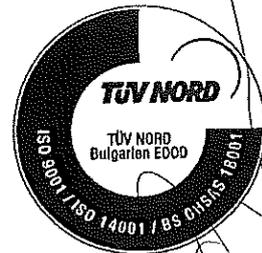
“ЕЛПРОМ ЕМЗ” ООД



ПРИСЪЕДИНИТЕЛНИ РАЗМЕРИ ЗА ТОКОВИ ИЗМЕРВАТЕЛНИ ТРАНСФОРМАТОРИ

тип СТ-4 включващи преводните отношения 800/5А, 1000/5А, и 1200/5А





‘ЕЛПРОМ ЕМЗ’ ООД град ШАБЛА

ИНСТРУКЦИЯ ЗА МОНТАЖ И ВЪВЕЖДАНЕ В ЕКСПЛОАТАЦИЯ НА ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОРИ за НН за тип СТ-2, СТ-3, СТ-4 ,

1. **Място на монтаж :** на закрито.
2. **Начин на свързване :** Първичната намотка на токовете трансформатори се свързва последователно към захранващите проводници на монтажа, а релетата и апаратите – последователно на вторичната намотка.
3. **Експлоатационни условия на работа :** При ползване на токовете трансформатори трябва да се спазват следните условия :

- А/ Трансформаторите да се монтират в закрити помещения.
- Б/ Съединителните проводници да са свързани добре към източника и консуматора. Когато изводите са на винтове, съединителните проводници трябва да се затегнат здраво между две месингови шайби или кабелна обувка.
- В/ Токът, който се черпи от трансформатора, по специално мощността на трансформатора, да не е по-голяма от мощността, посочена на табелката. Претоварването на трансформаторите се ограничава от допустимите температури на загряване на изоляциите.
- Г/ Токовете трансформатори трябва да работят при непрекъснат или периодичен контрол.
- Д/ При обслужване на токовете трансформатори е задължително да се спазва следното условие:

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

Когато се налага прекъсване на вторичната верига, вторичните клеми на трансформаторите трябва да се свързват на късо с проводник със сечение 2,5 кв. мм. Във вторичната верига на токов трансформатор предпазители не се поставят.

Е/ При работа на трансформатора единият извод на вторичната намотка се заземява.

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

- А/ Единият извод на вторичната намотка да се заземи.

Взрито с оригинал



Б/ При включване на първичната намотка във веригата, вторичната намотка да не се оставя отворена.

В/ След извършване на монтажа на трансформаторите към таблата и уредите, върху клемите НН на първичната намотка, да се постави предпазна капачка и да се пломбира.

Г/ При ревизия на трансформаторите, същите да не са под напрежение.

Д/ При проверка на трансформаторите откъм ниската страна обслужващия

персонал да работи с лични предпазни средства.

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

5. Опаковка, транспорт и съхранение : Трансформаторите се поставят в специални кутии от картон – велпапе. Транспортират се във всякакъв вид транспортни средства.

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



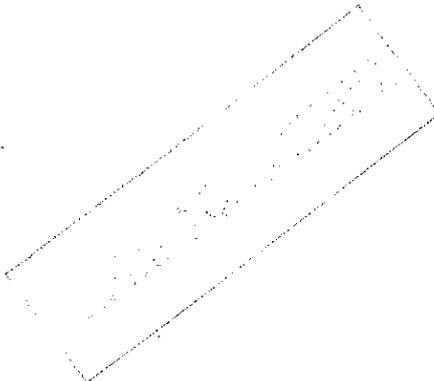
на основание чл. 36а, ал. 3
от ЗОП

ПОДПИС и ПЕЧАТ:

УПРАВИТЕЛ (инж. ДИМИТЪР ПЕНАУДОВ)

Дата: 09.02.2012 година

Вярно с оригинал



„ЕЛПРОМ ЕМЗ“ ООД град ШАБЛА



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**ИНСТРУКЦИЯ ЗА СЪХРАНЕНИЕ И ТРАНСПОРТ НА
ТОКОВИ ИЗМЕРИТЕЛНИ ТРАНСФОРМАТОРИ за НН за тип СТ-2, СТ-3, СТ-4 ,**

- 1. Опаковка:** токовете измервателни трансформатори тип СТ-2, тип СТ-3 и тип СТ-4 се поставят в специални кашони от картон – велпапе по 12/дванадесет/ броя трансформатори в кашон, 56/петдесет и шест/ кашона подредени върху европалет правят една транспортна единица.
- 2. Съхранение :** токовете измервателни трансформатори трябва да се съхраняват в закрити помещения и складове.
- 3. Транспорт:** токовете измервателни трансформатори се транспортират във всякакъв вид закрити транспортни средства.

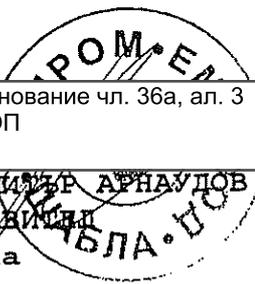
ПРИ НЕСПАЗВАНЕ НА НАСТАВЛЕНИЯТА, ДАДЕНИ В НАСТОЯЩАТА ИНСТРУКЦИЯ, ЗАВОДЪТ ПРОИЗВОДИТЕЛ НЕ ПРИЕМА РЕКЛАМАЦИИ, НАПРАВЕНИ В ГАРАНЦИОННИЯ СРОК НА ИЗДЕЛИЕТО.

ПОДПИС И ПЕЧАТ:

на основание чл. 36а, ал. 3
от ЗОП

(инж. ДИМИТЪР АРНАУДОВ)
УПРАВЛЕНИЕ

Дата: 09.02.2012 година



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Приложение 3 към Техническо предложение

За Обособена позиция 1

СРОКОВЕ ЗА ДОСТАВКА

№	Наименование	Мярка	Количество със срок на доставка до 7 кал. дни	Количество със срок на доставка до 30 кал. дни
1	2	3	4	5
1	ГТТ НН 630 А	бр.	1	2
2	ГТТ НН 1250 А	бр.	2	5

Забележки:

1/ Срокът на доставките започва да тече от датата на изпращане на поръчката.
2/ Количествата в колона 4, със срок на доставка до 7 /седем/ календарни дни, се доставят след SAP поръчка до посочените в обявлението складове на Възложителя за покриване на спешни нужди на Възложителя.

Възложителят може да поръчва посоченото спешно количество веднъж месечно.

3/ В случай, че крайният срок на доставката съвпада с празничен или неработен ден, то доставката се извършва не по-късно от първия работен ден след изтичането на срока.

4/ При поръчки на Възложителя на количества в рамките на потвърдените от Изпълнителя и недоставени в посочените срокове, ще бъдат налагани неустойки, съгласно условията на договора.

5/ Възложителят може да поръчва количества по-малки от посочените в колони 4 и 5.

6/ Възложителят може да поръчва количества по-високи от посочените в колони 4 и 5, като това обстоятелство ще бъде посочено текстово в съответната поръчка изпратена към Изпълнителя. С потвърждението на поръчката, Изпълнителят вписва в същата очаквана дата за доставка на количествата надвишаващи посочените в колони 4 и 5.

7/ Възложителят може да поръчва количества до 10 пъти по-високи от посочените в колона 5. Срокът за доставка на надвишените количества не може да бъде по-дълъг от 180 дни от датата на изпращане на поръчката. При доставка на поръчаните по-високи количества след този срок, Изпълнителят дължи неустойка съгласно условията на договора.

8/ Количествата за доставка в колони 4 и 5 са отделни и независими едно от друго.

9/ Количествата за доставка в колона 5 не включват в себе си количествата за доставка в колона 4.

10/ Възложителят има право да направи едновременно поръчки за доставка на количества от колони 4 и 5.

11/ Възложителят има право да анулира направена поръчка, ако тя е в закъснение с повече от 180 дни от очакваната дата за доставка. Анулирането на поръчка не спира налагането на неустойки към Изпълнителя съгласно условията на договора.

Дата: 08.01.2019 г.

ПОДПИС И ПЕЧАТ:

Ивелин Дончев
Изпълнителен Директор

на основание чл. 36а, ал. 3
от ЗОП

ДЕКЛАРАЦИЯ

за приемане на условията в проекта на рамково споразумение и проекта на договор

Долуподписаният Ивелин Трендафилов Дончев в качеството ми на представляващ "Инженеринг" ЕАД участник в обществена поръчка с предмет: „Доставка на разпределителни табла за ниско напрежение“, реф. № PPD 18-073,

Обособена позиция №1 Доставка на главно трансформаторна табло
(посочва се № и наименование на обособената позиция)

ДЕКЛАРИРАМ, ЧЕ:

Приемам условията в проекта на рамково споразумение и проекта на договор, приложени в документацията за участие.

Информиран съм, че Възложителят (включително чрез неговия помощен орган, а именно назначената за провеждане на поръчката оценителна комисия) ще обработва и съхранява личните ми данни, посочени в настоящата декларация, за целите на провеждане на обществената поръчка, като за целта ще предприеме всички необходими според действащата нормативна уредба мерки за защита на личните ми данни.

Дата: 08.01.2019 г.

Декларатор:

на основание чл. 36а, ал. 3
от ЗОП

/Име, подпис и печат/

Забележка:

Може да бъде изготвена, подписана и подадена само една декларация (според образеца от документацията), и когато съответният участник участва за повече от една обособена позиция, но на съответното място в декларацията задължително се отбелязват номерата на всички обособени позиции, за които участникът участва. Възможно е по преценка на участника, когато същият участва за повече от една обособена позиция, да изготви и подпише отделни декларации (съобразно образеца от документацията) за всяка отделна обособена позиция, за която участва.

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