

IV.3. ТЕХНИЧЕСКИ ИЗИСКВАНИЯ И СПЕЦИФИКАЦИИ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА ЗА ОБОСОБЕНА ПОЗИЦИЯ 3

Наименование на материала: Еднополюсни и триполюсни миниатюрни товари прекъсвач-разединители 63 А, ширина на полюс 18 mm

Кратко наименование на материала: Мини тов. прек. 63 А, шир. 18 mm

Област: G – Инсталации
(Електромерни табла)

Категория: 17–Комутационни апарати НН



Мерна единица: Брой

Аварийни запаси: Да

Характеристика на материала:

Миниатюрните товари прекъсвач-разединители представляват механични комутационни апарати, способни да провеждат и да включват/изключват ръчно електрически ток 63 А във вериги при нормални условия и да провеждат за определено време токове във вериги при условията на претоварване и късо съединение.

Тялото на миниатюрните товари прекъсвач-разединители е изработено чрез формоване на устойчив на нагряване, на огън и на механични удари изолационен материал с максимална ширина на един полюс 18 mm. В монтирано състояние съгласно инструкциите на производителя и след опроводяване активните части на миниатюрните товари прекъсвач-разединители не са достъпни.

Средството (лостът) за управление при вертикално монтиране на миниатюрните товари прекъсвач-разединители се движи в направление „нагоре – надолу“, при което контактите се затварят при движение „нагоре“. Миниатюрните товари прекъсвач-разединители са снабдени с ясно видимо от челната страна средство за указване на затвореното и отвореното положение на контактната система.

Стойностите на прегряването на частите на миниатюрните товари прекъсвач-разединители при нормален работен режим при температура до 40°C не трябва да надвишават посочените в таблица 2 и таблица 3 от БДС EN 60947-1:2007 стойности.

За свързване на проводниците от външната верига се използват винтови клеми с притискаща пластина с обхват на номиналните напречни сечения на проводниците от 6 mm² до 25 mm². Конструкцията на винтовите клеми трябва да позволява лесно въвеждане на проводниците, при което не се освобождават напълно съставните им части, както и лесно освобождаване на проводниците в експлоатационни условия.

Миниатюрните товари прекъсвач-разединители конструктивно са приспособени за закрепване на монтажна шина с DIN – профил с размери 35x7,5 mm съгласно БДС EN 60715:2003 "Размери на комутационни апарати за ниско напрежение. Стандартизирано монтиране върху релси за механична опора на електрически устройства в уредби с комутационни апарати за ниско напрежение (IEC 60715:1981 +A1:1995) или еквивалентно.

Миниатюрните товари прекъсвач-разединители са маркирани с информацията съгласно т. 5.2 от БДС EN 60947-3:2009 и CE маркировка за съответствие.

Миниатюрните товари прекъсвач-разединители са пакетирани в картонени кутии, на които е залепен етикет с наименование на материала „Миниатюрен товар прекъсвач-разединител“, техническите данни и броя на миниатюрните товари прекъсвач-разединители, годината на производство, партидните номера и стандарта, в съответствие с който са произведени и изпитани - БДС EN 60947-3:2009.

Използване:

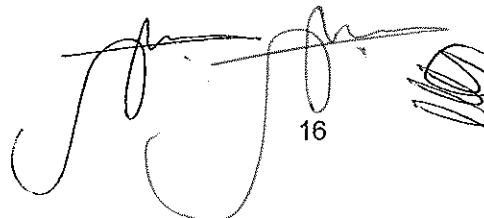
Миниатюрните товари прекъсвач-разединители са предназначени за монтиране в електромерни табла за директно измерване на електрическата енергия и се използват за ръчно включване и изключване на вериги, захранващи битови и други подобни уреди.

Съответствие на предлаганото изпълнение с нормативно-техническите документи:

Триполюсните и еднополюсните стопяем цилиндричен предпазител-прекъсвач-разединители трябва да отговарят най-малко на посочените по-долу стандарти или еквиваленти:

- БДС EN 60947-1:2007 „Комутационни апарати за ниско напрежение. Част 1: Общи правила (IEC 60947-1:2007)“;
- БДС EN 60947-1:2007/A1:2011 „Комутационни апарати за ниско напрежение. Част 1: Общи правила (IEC 60947-1:2007/A1:2010)“; и
- БДС EN 60947-3:2009 „Комутационни апарати за ниско напрежение. Част 3: Товари прекъсвачи, разединители, товар прекъсвач-разединители и апарати, комбинирани с предпазител (IEC 60947-3:2008)“

и



да бъдат оценени положително по реда и при условията на Наредбата за съществените изисквания и оценяване на съответствието на електрически съоръжения, предназначени за използване в определени граници на напрежението (Приета с ПМС № 182 от 6.07.2001 г., обн., ДВ, бр. 62 от 13.07.2001 г., в сила от 14.01.2003 г., изм. и доп., бр. 74 от 22.08.2003 г., бр. 24 от 21.03.2006 г., в сила от 21.03.2006 г., изм., бр. 40 от 16.05.2006 г., в сила от 5.05.2006 г., изм. и доп., бр. 37 от 8.05.2007 г., изм., бр. 50 от 17.06.2014 г.).

Изискване към документацията и изпитванията

№ по ред	Документ	Приложение № или текст
1.	Точно означение на типа, производителя и страната на производство (произход) и последно издание на каталога на производителя	Озн.: HISD125; HYUNDAI; каталог „Miniature Series“ от 2010 год., стр. 27 - Приложение 1
2.	Техническо описание и чертежи с нанесени на тях размери	Приложение 2
3.	ЕО декларация за съответствие	Приложение 3
4.	Протоколи от типови изпитвания на английски или български език, проведени от независима изпитвателна лаборатория – заверени копия, с приложен списък на отделните изпитвания на български език	Приложение 4
5.	Сертификат/акредитация на независимата изпитвателна лаборатория, провела типовите изпитвания по т. 4 – заверено копие	Приложение 5
6.	Инструкции за транспортиране, складиране, монтиране, вкл. въртящия момент на затягане на клемовите съединения, обслужване и поддържане	Приложение 7

Технически данни

1. Работна среда:

№ по ред	Наименование	Стойност
1.1	Място на монтиране	На закрито
1.2	Максимална околна температура	+ 40°C
1.3	Минимална околна температура	Минус 5°C
1.4	Максимална средна околна температура за период от 24 ч.	+ 35°C
1.5	Относителна влажност (при 20 ° C)	До 90 %
1.6	Степен на замърсяване	3
1.7	Надморска височина	До 2000 m

2. Параметри на електроразпределителната мрежа НН:

№ по ред	Наименование	Стойност
2.1	Номинално напрежение	400 / 230 V
2.2	Максимално напрежение	440 / 253 V
2.3	Номинална честота	50 Hz
2.4	Брой проводници в разпределителната мрежа	4 проводна мрежа (L ₁ , L ₂ , L ₃ , PEN)
2.5	Схема на разпределителната мрежа	TN-C

3. Технически параметри и други данни

№ по ред	Характеристика	Изискване	Гарантирано предложение
3.1	Обявен ток (I_e)	63 A	63A
3.2	Обявено работно напрежение (U_e)	-	-
3.2.1	Еднополюсни прекъсвачи	230/400 V	240/415V
3.2.2	Триполюсни прекъсвачи	400 V	415V
3.3	Обявена честота (f_n)	50 Hz	50/60Hz
3.4	Обявено издържано импулсно напрежение (U_{imp})	min 6 kV	6kV
3.5	Обявено напрежение на изолацията (U_i)	min. 440 V	500V
3.6	Изпитване на включвателната и изключвателната способност съгл. т. т. 4.3.5.2 и 4.3.5.3 от БДС EN 60947-3:2009	min 189 A ($1,05 U_e \cos\phi=0,65$)	189 A
3.7	Обявен краткотрайно издържан ток (I_{cw}) съгл. т. 4.3.6.1 от БДС EN 60947-3:2009	min 756 A / 1 s	756 A / 1 s
3.8	Категория на приложение (при 400V AC)	AC 22 В или по-висока	AC 22A
3.9	Степен на защита от проникване на твърди тела и вода	min IP20	IP20
3.10	Износоустойчивост	-	-
3.10.1	Електрическа (брой к.ц.)	min 200 бр.	10 000
3.10.2	Механична (брой к.ц.)	min 800 бр.	20 000
3.11	Монтажна ширина на един полюс	max 18 mm	18mm
3.12	Експлоатационна дълготрайност	min 30 години	30

4. Миниатюрни товари прекъсвач-разединители 63 A, ширина на полюс 18 mm

№ на стандарта	Брой на полюсите	Съкратено наименование	Обявен ток, А	Тегло, g
20 17 1881	1	Мини тов. прек. 63 А, шир. 18 mm, 1P	63	70
20 17 1883	3	Мини тов. прек. 63 А, шир. 18 mm, 3P	63	280

Наименование на материала: Еднополюсни и триполюсни миниатюрни товари прекъсвач-разединители 125 А, ширина на полюс 27 mm

Съкратено наименование на материала: Мини тов. прек. 125 А, шир. 27 mm

Област на приложение: G – Инсталации
(Електромерни табла)

Категория: 17–Комутационни апарати НН

Мерна единица: Брой

Аварийни запаси: Да

Характеристика на материала:

Миниатюрните товари прекъсвач-разединители представляват механични комутационни апарати, способни да провеждат и да включват/изключват ръчно електрически ток 125 А във вериги при нормални условия и да провеждат за определено време токове във вериги при условията на претоварване и късо съединение.

Тялото на миниатюрните товари прекъсвач-разединители е изработено чрез формоване на устойчив на нагряване, на огън и на механични удари изолационен материал с максимална ширина на един полюс 27 mm. В монтирано състояние съгласно инструкциите на производителя и след опроводяване активните части на миниатюрните товари прекъсвач-разединители не са достъпни.

Средството (лостът) за управление при вертикално монтиране на миниатюрните товари прекъсвач-разединители се движи в направление „нагоре – надолу“, при което контактите се затварят при движение

„нагоре“. Миниатюрните товари прекъсвач-разединители са снабдени с ясно видимо от челната страна средство за указване на затвореното и отвореното положение на контактната система.

Стойностите на прегряването на частите на миниатюрните товари прекъсвач-разединители при нормален работен режим при температура до 40°C не трябва да надвишават посочените в таблица 2 и таблица 3 от БДС EN 60947-1 стойности.

За свързване на проводниците от външната верига се използват винтови клеми с притискаща пластина с обхват на номиналните напречни сечения на проводниците от 6 mm² до 25 mm². Конструкцията на винтовите клеми трябва да позволява лесно въвеждане на проводниците, при което не се освобождават напълно съставните им части, както и лесно освобождаване на проводниците в експлоатационни условия.

Миниатюрните товари прекъсвач-разединители конструктивно са приспособени за закрепване на монтажна шина с DIN – профил с размери 35x7,5 mm съгласно БДС EN 60715 или еквивалентно.

Миниатюрните товари прекъсвач-разединители са маркирани с информацията съгласно т. 5.2 от БДС EN 60947-3 и SE маркировка за съответствие.

Миниатюрните товари прекъсвач-разединители са пакетирани в картонени кутии, на които е залепен етикет с наименование на материала „Миниатюрен товар прекъсвач-разединител“, техническите данни и броя на миниатюрните товари прекъсвач-разединители, годината на производство, партидните номера и стандарта, в съответствие с който са произведени и изпитани - БДС EN 60947-3.

Използване:

Миниатюрните товари прекъсвач-разединители са предназначени за монтиране в електромерни табла за директно измерване на електрическата енергия и се използват за ръчно включване и изключване на вериги, захранващи битови и други подобни уреди.

Съответствие на предлаганото изпълнение с нормативно-техническите документи:

Миниатюрните товари прекъсвач-разединители трябва да отговарят най-малко на посочените по-долу стандарти или еквиваленти:

- БДС EN 60947-1:2007 „Комутационни апарати за ниско напрежение. Част 1: Общи правила (IEC 60947-1:2007)“; и
- БДС EN 60947-3: 2009 „Комутационни апарати за ниско напрежение. Част 3: Товари прекъсвачи, разединители, товари прекъсвач-разединители и апарати комбинирани със стопяеми предпазители (IEC 60947-3:2008)“; и

да бъдат оценени положително по реда и при условията на Наредбата за съществените изисквания и оценяване на съответствието на електрически съоръжения, предназначени за използване в определени граници на напрежението (приета с ПМС № 182 от 6.07.2001 г., обн., ДВ, бр. 62 от 13.07.2001 г., в сила от 14.01.2003 г., изм. и доп., бр. 74 от 22.08.2003 г., бр. 24 от 21.03.2006 г., в сила от 21.03.2006 г., изм., бр. 40 от 16.05.2006 г., в сила от 5.05.2006 г., изм. и доп., бр. 37 от 8.05.2007 г., изм., бр. 50 от 17.06.2014 г.).

Изискване към документацията и изпитванията:

№ по ред	Документ	Приложение № (или текст)
1.	Точно означение на типа, производителя и страната на производство (произход) и последно издание на каталога на производителя	Озн.: HISD125; HYUNDAI; каталог „Miniature Series“ от 2010 год., стр. 27 - Приложение 1
2.	Техническо описание и чертежи с нанесени на тях размери	Приложение 2
3.	ЕО декларация за съответствие	Приложение 3
4.	Протоколи от типови изпитвания на английски или български език, проведени от независима изпитвателна лаборатория – заверени копия, с приложен списък на отделните изпитвания на български език	Приложение 4
5.	Сертификат/акредитация на независимата изпитвателна лаборатория, провела типовите изпитвания по т. 4 – заверено копие	Приложение 5
6.	Инструкции за транспортиране, складиране, монтиране, вкл. въртящия момент на затягане на клемовите съединения, обслужване и поддържане	Приложение 7

Забележка: Всички оригинални документи трябва да бъдат на български език или с превод на български език. (Каталозите и протоколите от проверките и изпитванията могат да бъдат и само на английски език.)

Технически данни:

1. Характеристики на работната среда

№ по ред	Характеристика	Стойност
1.1	Място на монтиране	На закрито
1.2	Максимална околна температура	+ 40°C
1.3	Минимална околна температура	Минус 5°C
1.4	Максимална средна околна температура за период от 24 ч.	+ 35°C
1.5	Относителна влажност (при 20° C)	До 90 %
1.6	Степен на замърсяване	3
1.7	Надморска височина	До 2000 m

2. Параметри на електрическата разпределителна мрежа

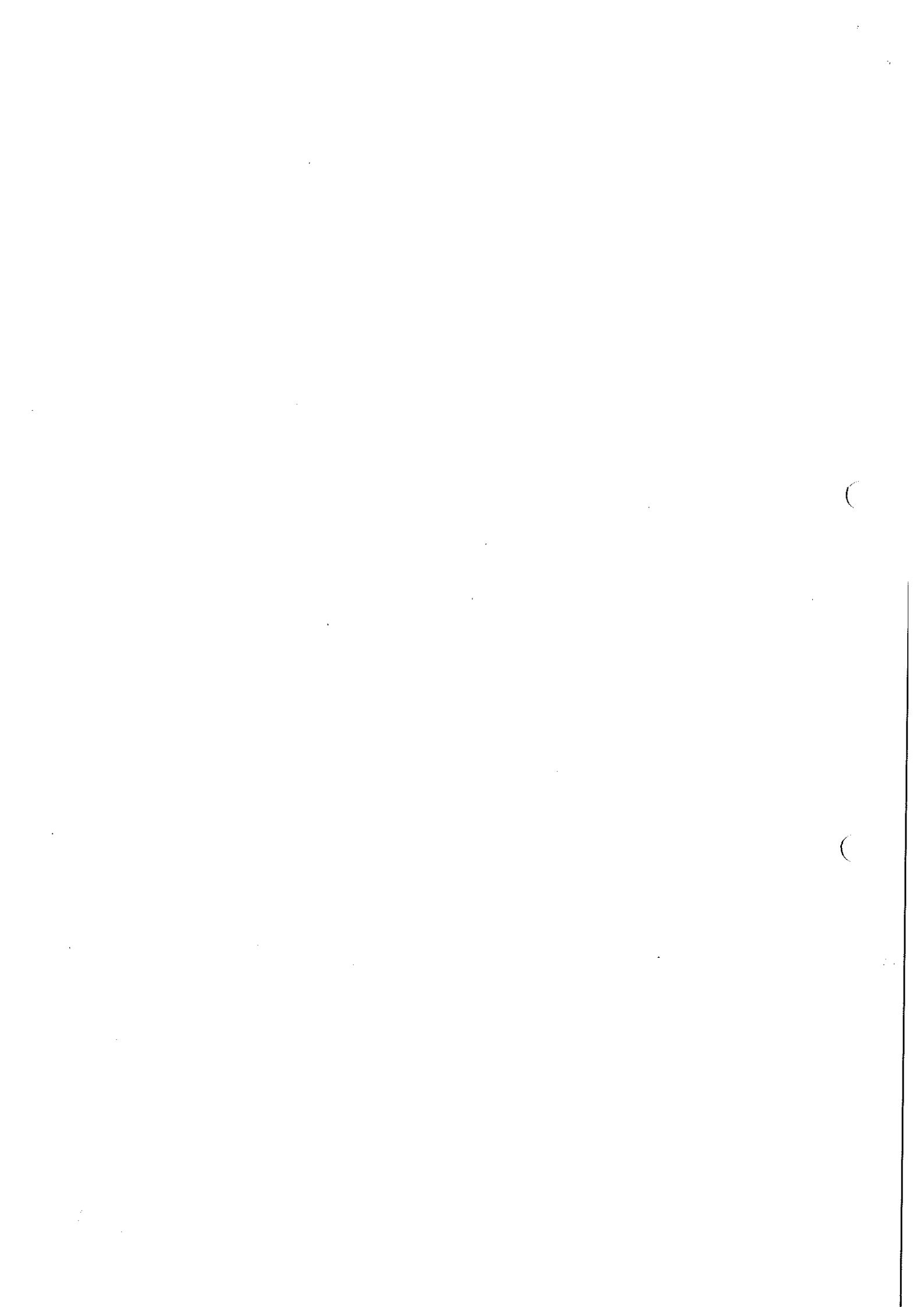
№	Параметър	Стойност
2.1	Номинално напрежение	400 / 230 V
2.2	Максимално напрежение	440 / 253 V
2.3	Номинална честота	50 Hz
2.4	Брой проводници в разпределителната мрежа	4 проводна мрежа (L ₁ , L ₂ , L ₃ , PEN)
2.5	Схема на разпределителната мрежа	TN-C

3. Общи технически характеристики и други данни

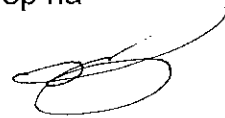
№	Характеристика	Изискване	Гарантирано предложение
3.1	Обявен ток (I_e)	125 A	125A
3.2	Обявено работно напрежение (U_e)	-	-
3.2.1	Еднополюсни прекъсвачи	230 V	240/415V
3.2.2	Триполюсни прекъсвачи	230/400 V	415V
3.3	Обявена честота (f_n)	50 Hz	50/60Hz
3.4	Обявено издържано импулсно напрежение (U_{imp})	min 6 kV	6kV
3.5	Обявено напрежение на изолацията (U_i)	min. 440 V	500V
3.6	Изпитване на включвателната и изключвателната способност съгл. т. т. 4.3.5.2 и 4.3.5.3 от БДС EN 60947-3	min 375 A (1,05 $U_e \cos\phi = 0,65$)	375A
3.7	Обявен краткотрайно издържан ток (I_{cw}) съгл. т. 4.3.6.1 от БДС EN 60947-3	min 1500 A / 1 s	1500A
3.8	Категория на приложение (при 400V AC)	AC 22 B или по-висока	AC 22A
3.9	Степен на защита от проникване на твърди тела и вода	min IP20	IP20
3.10	Износоустойчивост	-	-
3.10.1	Електрическа (брой к.ц.)	min 200 бр.	10.000
3.10.2	Механична (брой к.ц.)	min 1400 бр.	20.000
3.11	Монтажна ширина на един полюс	max 27 mm	18mm
3.12	Експлоатационна дълготрайност	min 30 години	30

4. Миниатюрни товари прекъсвач-разединители 125 A, ширина на полюс 27 mm

№ на стандарта	Брой на полюсите	Обявен ток, A	Тегло, g
20 17 2793	3	125	280



Списък с отделните тестови изпитвания за минатюрни товари прекъсвач-
разединители HiSD125, проведени от KEMA с референтен номер на
сертификата 3301900.50.



Съдържание на тест рапорта:

- Обобщение на изпитванията, основни данни, визия на маркировката и др.: Стр. 1-7/55

Изпитване „А” на мостра:

- 5.2. Маркировка и друга информация. Стр. 7/55;
- 7.1 Конструкция - отнася се до рапорт 3304506.50. Стр. 8/55;
- 7.1.2.1 Устойчивост при ненормална топлина и огън. Стр. 8/55;
- 7.1.3 Тоководещи части и техните връзки. Стр. 8/55;
- 7.1.5 Задвижващ механизъм; Стр. 8/55;
- 7.1.5.1 Изолация. Стр. 8/55;
- 7.1.5.2 Посока на движение. Стр. 9/55;
- 7.1.6 Индикация на контактната позиция. Стр. 9/55;
- 7.1.7 Допълнителни изисквания на оборудване за изолация. Стр. 9/55;
- 7.1.8 Клеми. Стр. 10/55;
- 8.2.4 Механични свойства на клемите. Стр. 10/55;
- 8.3.3 Капацитет на включване и изключване ($I_{cu}=I_{cs}$). Стр. 16/55;

ТАБЛИЦА 1. Стр. 44 Междуполюсни разстояния;

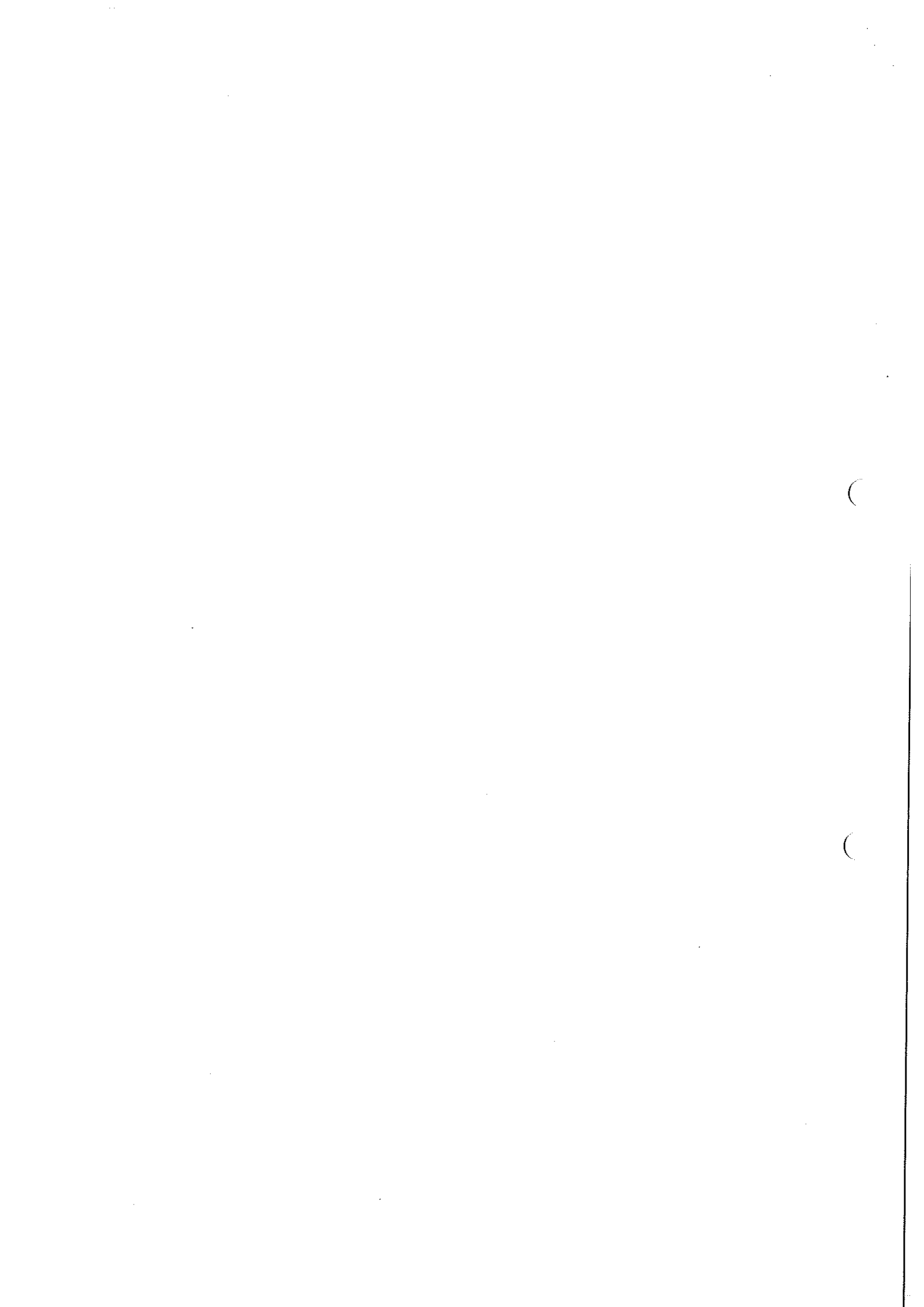
ТАБЛИЦА 2. Стр. 44 Устойчивост на огън;

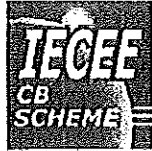
ТАБЛИЦА 3. Стр. 44 Устойчивост на вибрации;

ТАБЛИЦИ 1-15: Стр. 44-50

СТР. 51/55 Снимки на мострите;







CB TEST CERTIFICATE

Ref. Certificate No.

NL-21109

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

Issued by:	DEKRA Certification B.V.		
Product:	Switch-disconnector		
Applicant:	HYUNDAI HEAVY INDUSTRIES CO., LTD	1, JEONHA-DONG, DONG-GU,	Korea, Republic of ULSAN,
Manufacturer:	HYUNDAI HEAVY INDUSTRIES CO., LTD	1, JEONHA-DONG, DONG-GU,	Korea, Republic of ULSAN,
Factory:	HYUNDAI HEAVY INDUSTRIES (CHINA) ELECTRIC CO., LTD	No.9, Hyundai Road, Xinba Scientific and Technologic Zone, Yangzhong Jiangsu,	China
Rating and principal characteristics:	Ue: 240 / 415 Vac for 1P, 415 Vac for 2P, 3P, 4P 50 / 60 Hz Ie: 16 A, 32 A, 40 A, 63 A, 100 A, 125 A Ui: 415 V Uimp: 6 kV 1P, 2P, 3P, 4P AC-22A		
Trade mark (if any):	HYUNDAI		
Model/Type reference:	HISD125		
Additional information:	N/A		
Sample of product tested to be in conformity with IEC:	60947-3(ed.3)		
Test Report Ref. No:	3301900.50 (54 pages)		

This CB Test Certificate is issued by the National Certification Body: --

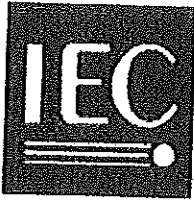
DEKRA Certification B.V.
Utrechtseweg 310
P.O. Box 5185
6802 ED Arnhem
The Netherlands

Signed by: F.S.Strikwerda

Date of issue: 2011-07-01



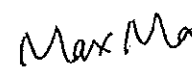
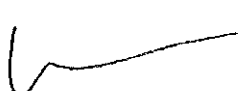
DEKRA Certification is former KEMA Quality

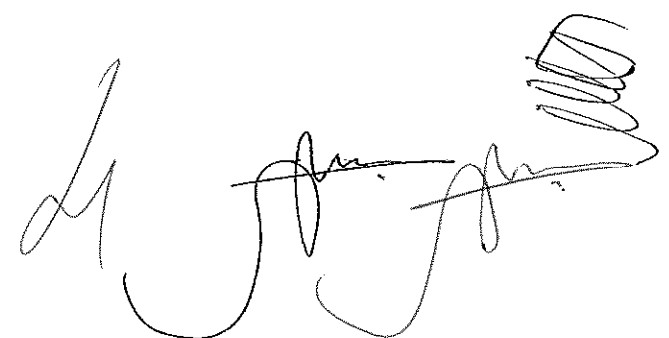


Test Report issued under the responsibility of:



TEST REPORT	
IEC 60947-3	
Low-voltage switchgear and controlgear	
Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units	
Report Reference No.	3301900.50
Date of issue	2011-06-10
Total number of pages	54
CB Testing Laboratory	DEKRA Testing Services (Zhejiang) Co., Ltd.
Address	No.5, Changjiang Road, Great Bridge Industrial Park, North Baixiang, Wenzhou 325603, P.R. China
Applicant's name	HYUNDAI HEAVY INDUSTRIES CO., LTD.
Address	1, JEONHA-DONG, DONG-GU, ULSAN, KOREA
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
Copyright © 2009 Worldwide System for Conformity Testing and Certification of Electrical Equipment and Components (IECEE), Geneva, Switzerland. All rights reserved.	
This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.	
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	Switch-disconnector
Trade Mark	HYUNDAI
Manufacturer	HYUNDAI HEAVY INDUSTRIES CO., LTD. 1, JEONHA-DONG, DONG-GU, ULSAN, KOREA
Model/Type reference	HISD125
Ratings	AC-22A, 16, 32, 40, 63, 100, 125 A, 240 / 415 V for 1P, 415 V for 2P, 3P, 4P, Uimp=6 kV, Ui=415 V, rated conditional short-circuit current: 10 kA

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory:	DEKRA Testing Services (Zhejiang) Co., Ltd.
Testing location/ address.....:	No.5, Changjiang Road, Great Bridge Industrial Park, North Baixiang, Wenzhou 325603, P.R. China
<input type="checkbox"/> Associated CB Test Laboratory:	N/A
Testing location/ address.....:	N/A
Tested by (name + signature).....:	Max Ma 
Approved by (+ signature)	Eric Wang 
<input type="checkbox"/> Testing procedure: TMP	N/A
Testing location/ address.....:	N/A
Tested by (name + signature).....:	N/A
Approved by (+ signature)	N/A
<input type="checkbox"/> Testing procedure: WMT	N/A
Testing location/ address.....:	N/A
Tested by (name + signature).....:	N/A
Witnessed by (+ signature).....:	N/A
Approved by (+ signature)	N/A
<input type="checkbox"/> Testing procedure: SMT	N/A
Testing location/ address.....:	N/A
Tested by (name + signature).....:	N/A
Approved by (+ signature)	N/A
Supervised by (+ signature).....:	N/A
<input type="checkbox"/> Testing procedure: RMT	N/A
Testing location/ address.....:	N/A
Tested by (name + signature).....:	N/A
Approved by (+ signature)	N/A
Supervised by (+ signature).....:	N/A

Summary of testing:

Tests performed (name of test and test clause):

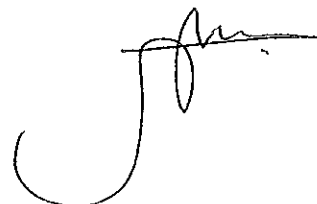
Test Sequence	Sub-clause No.	Test	Sample No. / Type
Test sequence I	8.3.3.1	Temperature-rise	1# / 1P, 16 A, 415 V 2# / 2P, 16 A, 415 V 3# / 4P, 16 A, 415 V
	8.3.3.2	Dielectric properties	
	8.3.3.3	Making and breaking capacities	
	8.3.3.4	Dielectric verification	
	8.3.3.5	Leakage current	
	8.3.3.6	Temperature-rise verification	
	8.3.3.7	Strength of actuator mechanism	
Test sequence II	8.3.4.1	Operational performance	4# / 1P, 16 A, 415 V 5# / 2P, 16 A, 415 V 6# / 4P, 16 A, 415 V
	8.3.4.2	Dielectric verification	
	8.3.4.3	Leakage current	
	8.4.3.4	Temperature-rise verification	
Test sequence IV	8.3.6.2	Fuse protected short-time withstand	7# / 1P, 16 A, 415 V 8# / 2P, 16 A, 415 V 9# / 4P, 16 A, 415 V
	8.3.6.2	Fuse protected short-circuit making	
	8.3.6.3	Dielectric verification	
	8.3.6.4	Leakage current	
	8.3.6.5	Temperature-rise verification	

Note:

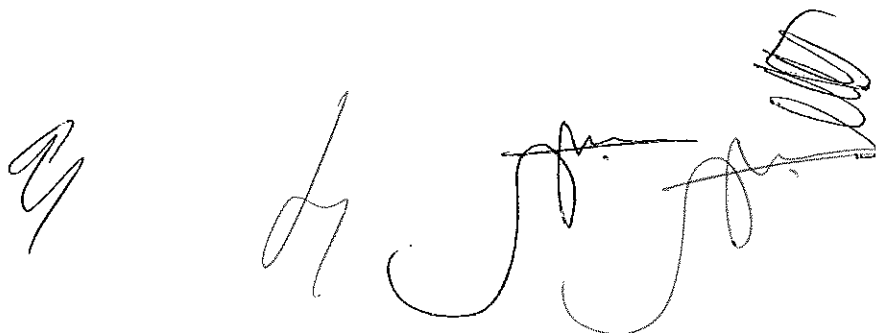
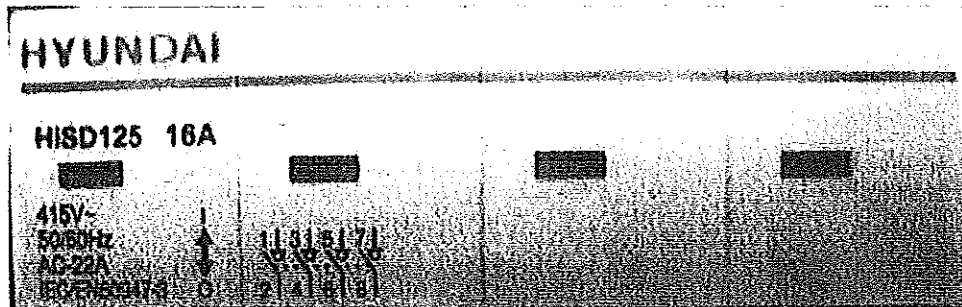
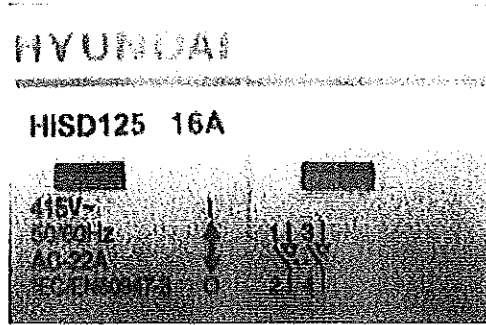
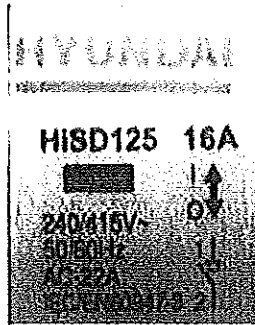
- The switch HiSD125 series are identical except the marking on the label. Therefore, the following tests were conducted on samples with rating 16 A under requirement for sample with rating 125 A. These tests on 16 A are deemed to cover the tests on 32 A, 40 A, 63 A, 100 A, 125 A
- The test on 4P switch-disconnectors is deemed to cover 3P switch-disconnectors.
- Although it is not mentioned on first page, the following standards were also taken into consideration, no deviation was found:
IEC 60947-1: 2007
EN 60947-1: 2007
EN 60947-3: 2009

Summary of compliance with National Differences:

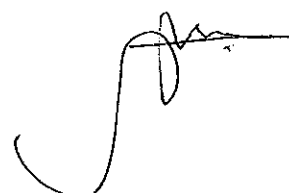
The switch-disconnectors comply with EN Group Differences.



Copy of marking plate



Test item particulars	Switch-disconnector
- method of operation.....	Independent manual operation
- suitability for isolation.....	Suitable
- degree of protection.....	IP20 for front side
- number of poles.....	1, 2, 3, 4
- kind of current.....	AC
- number of positions of the main contacts.....	2 (on position and off position)
Rated and limiting values, main circuit:	
- rated operational voltage U_e (V).....	240 / 415 V for 1P, 415 V for 2P, 3P, 4P
- rated insulation voltage U_i (V).....	415 V
- rated impulse withstand voltage U_{imp} (kV).....	6 kV
- conventional free air thermal current I_{th} (A).....	125 A
- conventional enclosed thermal current I_{the} (A).....	N/A
- rated operational current I_e (A).....	16, 32, 40, 63, 100, 125 A
- rated uninterrupted current I_u (A).....	Equal to I_e
- rated frequency (Hz).....	50 / 60 Hz
- utilization category.....	AC-22A
Short-circuit characteristic:	
- rated short-time withstand current I_{cw} (kA).....	N/A
- rated short-time making capacity I_{cm} (kA).....	N/A
- rated conditional short-circuit current.....	10 kA
Control circuits.....	N/A
Auxiliary circuits.....	N/A
Relays and releases.....	N/A
Co-ordination of short-circuit protective devices.....	FUSE
- kind of protective device.....	RS17, 125 A, 500 V~, 100 kA
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.....	2011-02
Date (s) of performance of tests.....	2011-04 to 2011-05



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 is used as the decimal separator.

General product information:

Ue: 240 / 415 V for 1P, 415 V for 2P, 3P, 4P, Ie: 16, 32, 40, 63, 100, 125 A, Ui: 415 V, Uimp: 6000 V, AC-22A,

Rated conditional short-circuit current: 10 kA

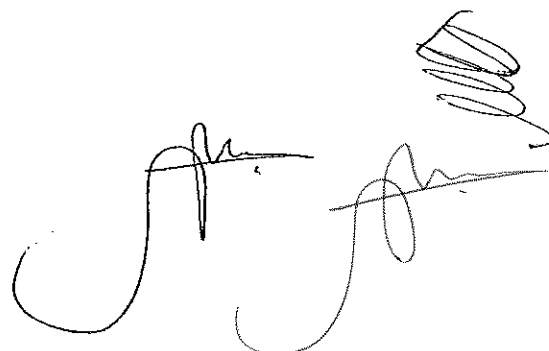
Co-ordination of short-circuit protective devices: fuse, RS17, 125 A, 500 V, 50 kA


Products of 16 A, 32 A, 40 A, 63 A, 100 A and 125 A are identical expect the rated current on the label.

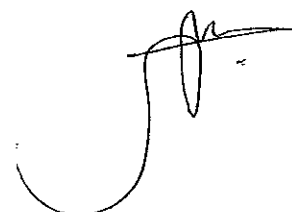
Name and address of factory:

HYUNDAI HEAVY INDUSTRIES (CHINA) ELECTRIC CO., LTD

No.9, Hyundai Road, Xinba Scientific and Technologic Zone, Yangzhong Jiangsu, P.R. China




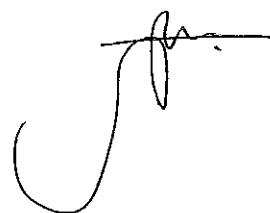
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
5.2	MARKING		P
	Marking on equipment itself or on nameplate or nameplates attached to the equipment and legible from the front after mounting		P
	- indication of the open and closed position	"I", "O"	P
	- suitability for isolation		P
	- disconnectors AC-20 and DC-20 only: marked "Do not operate under load"	AC-22A	N/A
	Marking on equipment not needed to be visible after mounting:		P
	- manufacturer's name or trademark	HYUNDAI	P
	- type designation or serial number	HISD125	P
	- rated operational currents	16, 32, 40, 63, 100, 125 A	P
	- rated operational voltage	240 / 415 V for 1P, 415 V for 2P, 3P, 4P	P
	- utilization category	AC-22A	P
	- rated frequency	50 / 60 Hz	P
	- manufacturer's claim for compliance with IEC 60947-3		P
	- degree of protection	IP20	N/A
	Marking on fuse-combination units:		N/A
	- fuse type		N/A
	- maximum rated current		N/A
	- power loss of the fuse-link		N/A
	Identification of terminals:		N/A
	- line terminals, unless connection is immaterial		N/A
	- load terminals, unless connection is immaterial		N/A
	- neutral pole terminal		N/A
	- protective earth terminal		N/A
	Data in the manufacturer's published information:		P
	- rated insulation voltage	415 V	P
	- rated impulse withstand voltage for equipment suitable for isolation or when determined	6 kV	P



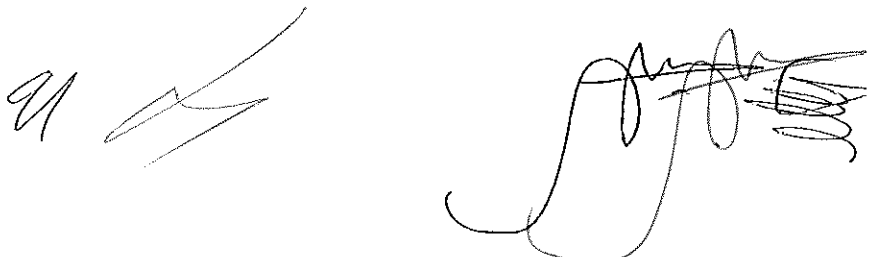
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- pollution degree, if different from 3	3	P
	- rated duty	Uninterrupted duty	P
	- rated short-time withstand current and duration		N/A
	- rated short-circuit making capacity		N/A
	- rated conditional short-circuit current	10 kA	P
5.3	Instructions for installation, operation and maintenance		P
6	Normal service, mounting and transport conditions		P
7.1	CONSTRUCTIONAL AND PERFORMANCE REQUIREMENTS		P
7.1.2	Materials		P
7.1.2.2	Resistance to abnormal heat and fire		P
	Test performed on	See table 2	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		N/A
	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		N/A
	No visible flame and no sustained glowing		N/A
	Flames and glowing extinguish within 30 s		N/A
	No ignition of the tissue paper		N/A
7.1.3 of Part 1	Current-carrying parts and their connection		P
7.1.4	Clearances.....	see appended table 7.1.4	P
	Creepage distances	see appended table 7.1.4	P
	Pollution degree	3	
	Comparative tracking index (V)	200 V	
	Material group	IIIa	
7.1.5 of Part 1	Actuator		P
7.1.5.1	Insulation		



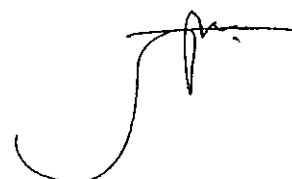
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Actuator insulated from live parts for		
	- rated insulation voltage	415 V	P
	- rated impulse withstand voltage	6 kV	P
	Actuator made of metal		
	- connected to a protective conductor or provided with an additional insulation		N/A
	Actuator made of or covered by insulating material :		
	- internal metal parts, which might become accessible in the event of an insulation failure, are also insulated from live parts for the rated insulation voltage		P
7.1.5.2	Direction of movement		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		P
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	Separated indicator red window: on green window: off	P
	- construction of the actuating mechanism		P
	- minimum clearances across open contacts (see Table 13, Part 1) (mm)	5,5 mm	
	- measured clearances (mm)	8 mm	P
	- test Uimp across gap (kV)	9,8 kV	P
7.1.7.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		N/A



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	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
8.2.4	Mechanical properties of terminals		P
	Mechanical strength of terminals		P
	Maximum cross-sectional area of conductor (mm ²)	50 mm ²	
	Diameter of thread (mm)	6 mm	



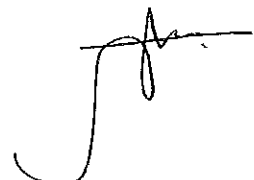
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Torque (Nm)	2,5 Nm	
	5 times on 2 separate clamping units		P
	Testing for damage to and accidental loosening of conductor (flexion test)		N/A
	Conductor of the smallest cross-sectional area (mm ²)	1 mm ²	
	Number of conductor of the smallest 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.	35 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)	50 mm ²	
	Number of conductor of the largest cross section . :	1	
	Diameter of bushing hole (mm)	15,9 mm	
	Height between the equipment and the platen	343 mm	
	Mass at the conductor(s) (kg)	9,5	
	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.	236 N	
	During the test, the conductor neither slips out of the terminal nor breaks near the clamping unit		P
	Conductor of the largest and smallest cross-sectional area (mm ²)		
	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		



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	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	Solid, stranded and flexible	
	Minimum cross-sectional area of conductor (mm ²) :	1 mm ²	
	Maximum cross-sectional area of conductor (mm ²)	50 mm ²	
	Number of conductors simultaneously connectable to the terminal	1	
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		N/A
	Terminal intended exclusively for the neutral conductor		N/A
	Protective earth terminal		N/A
	Other terminals		N/A
7.1.9	Additional requirements for equipment provided with a neutral pole		N/A
	Equipment provided with a pole intended for the connection of neutral, this pole shall be clearly marked by the letter "N"		N/A
	The switched neutral pole does not break before and does not make after the other poles except		N/A
	- a pole having the appropriate short-circuit breaking and making capacity is used as neutral pole, all poles may operate together		N/A
	Conventional thermal current of neutral pole		N/A
7.1.10	Provisions for protective earthing		N/A

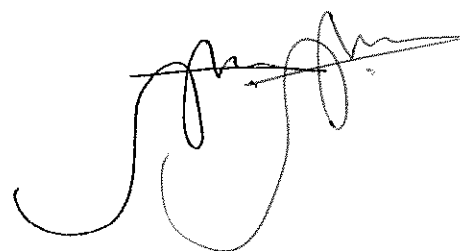


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.10.1	The exposed conductive parts are electrically interconnected and connected to a protective earth terminal		N/A
7.1.10.2	Protective earth terminal is readily accessible		N/A
	Protective earth terminal is suitably protected against 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
	When an enclosure is so designed as to allow the covers to be opened without the use of tools, means is provided to prevent loss of the fastening devices		N/A
	If the enclosure is used for mounting push-buttons, it is not possible to remove the buttons from the outside of the enclosure		N/A
7.1.11.2	Insulation		N/A



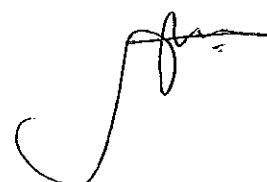
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	If, in order to prevent accidental contact between a metallic enclosure and live parts, the enclosure is partly or completely lined with insulating material, then this lining is securely fixed to the enclosure		N/A
7.1.12	Degree of protection of enclosed equipment		P
	Degree of protection	IP20 for front side	P
7.1.13	Conduit pull-out, torque and bending with metallic conduits		N/A
	Withstand the stress occurring during its installation		N/A



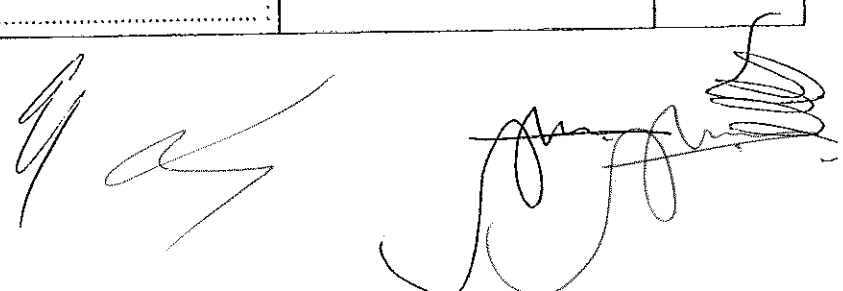



IEC 60947-3

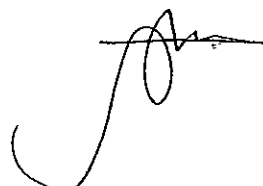
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS Sample 1#: 16 A, 1P		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C	22,0 °C	
	test enclosure W x H x D (mm x mm x mm)	N/A	
	material of enclosure	N/A	
	Main circuits, test conditions:		
	- conventional thermal current I _{th} (A)	125 A	
	- conventional enclosed thermal current I _{the} (A) ...	N/A	
	- cable/busbar cross-section (mm ²) / length (mm) ..	50 mm ²	
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	N/A	
	- manufacturer's model or type reference	N/A	
	- rated current (A)	N/A	
	- power loss (W)	N/A	
	- rated breaking capacity (kA)	N/A	
	Measured temperature-rise	see appended table 8.3.3.1	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A)		
	- cable cross-section (mm ²)		
	Measured temperature-rise		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)	1890 V	
	- main circuits, test voltage for 5 sec. (V)	5 s	P
	- control and auxiliary circuits, test voltage for 5 sec. (V)		N/A



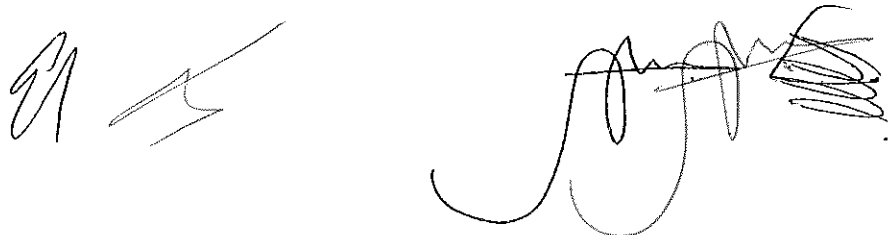
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Devices, which have been disconnected for the power-frequency withstand voltage test.....		N/A
	Equipment suitable for isolation, leakage current not exceed 0,5 mA		
	Test voltage 1,1 Ue (V)	456,5 V	
	Measured leakage current (mA)	0,005 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category	AC-22A	
	- rated operational voltage Ue (V)	415 V	
	- rated operational current Ie (A) or power (kW)	125 A	
	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:	
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, U = 1,05 Ue.....(V):	L1-N: 435,9 V	
	- test current, I =x 3 Ie (A):	L1: 301,2 A	
	- power factor/ time constant	0,65	
	Number of make/break or make and break operations	5	P



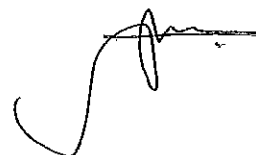
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- recovery voltage duration (≥ 50 ms)		P
	- current duration (ms)	min. 935,0 ms	
	- time interval between operations	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		P
	- oscillatory frequency (kHz)	50,35 ±10% kHz	
	- measured oscillatory frequency (kHz)	50,10 kHz	P
	- factor γ	1,09	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	12 N	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~.....	1000 V	
	No flashover or breakdown		P
8.3.3.5	Leakage current		
	test voltage (1,1 Ue) (V)	456,5 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)	L1: 0,005 mA L1 to frame: 0,005 mA	P
8.3.3.6	Temperature-rise verification		P
	- conductor cross-section (mm ²)	50 mm ²	



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- test current Ie (A)	125 A	
	Measured temperature-rise.....	see appended table 8.3.3.6	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		P
	- actuator type (fig.)	Fig 1b	
8.2.5.2.1	Dependent and independent manual operation	Independent manual operation	P
	- actuating force for opening (N)	12 N	
	- test force with blocked main contacts (N)	50 N	
	- used method to keep the contact closed.....	welding	
	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.....		N/A
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



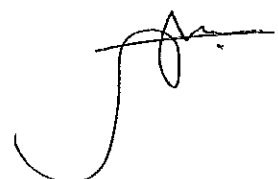
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS Sample 2#: 16-A, 2P		P
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C	22,0 °C	
	test enclosure W x H x D (mm x mm x mm)	N/A	
	material of enclosure	N/A	
	Main circuits, test conditions:		
	- conventional thermal current I _{th} (A)	125 A	
	- conventional enclosed thermal current I _{the} (A) ...	N/A	
	- cable/busbar cross-section (mm ²) / length (mm) ..	50 mm ²	
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	N/A	
	- manufacturer's model or type reference	N/A	
	- rated current (A)	N/A	
	- power loss (W)	N/A	
	- rated breaking capacity (kA)	N/A	
	Measured temperature-rise.....	see appended table 8.3.3.1	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A)		
	- cable cross-section (mm ²)		
	Measured temperature-rise.....		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)		P
	- test U _{imp} on open main contacts (equipment suitable for isolation) (kV)	9,8 kV	P
	Power-frequency withstand voltage (V)	1890 V	
	- main circuits, test voltage for 5 sec. (V)	5 s	P
	- control and auxiliary circuits, test voltage for 5 sec. (V)		N/A



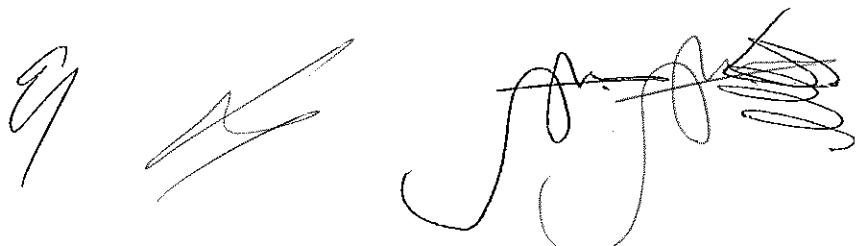
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Devices, which have been disconnected for the power-frequency withstand voltage test.....		N/A
	Equipment suitable for isolation, leakage current not exceed 0,5 mA		
	Test voltage 1,1 Ue (V)	456,5 V	
	Measured leakage current (mA)	L1: 0,005 mA L2: 0,005 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category	AC-22A	
	- rated operational voltage Ue (V)	415 V	
	- rated operational current Ie (A) or power (kW)	125 A	
	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:	
	Conditions for make/break operations, other than AC-23A/B:		P
	- test voltage, U = 1,05 Ue.....(V):	L1-L2: 438,9 V	
	- test current, I =x 3 Ie (A):	L1: 303,4 A L2: 303,4A	
	- power factor/ time constant	0,65	



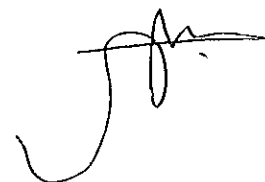
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of make/break or make and break operations	5	P
	- recovery voltage duration (≥ 50 ms)		P
	- current duration (ms)	min. 935,0 ms	
	- time interval between operations	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	- oscillatory frequency (kHz)	50,35 ±10% kHz	
	- measured oscillatory frequency (kHz)	50,86 kHz	P
	- factor γ	1,10	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	18 N	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.3.4	Dielectric verification		P
	test voltage: 2*Ue with a minimum of 1000V~	1000 V	
	No flashover or breakdown		P
8.3.3.5	Leakage current		
	test voltage (1,1 Ue) (V)	456,5 V	
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): ≤ 0,5 mA/pole		N/A



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Leakage current (other utilization categories): ≤ 2 mA/pole)	L1: 0,005 mA L2: 0,005 mA L1 to frame: 0,005 mA L2 to frame: 0,005 mA	P
8.3.3.6	Temperature-rise verification		P
	- conductor cross-section (mm ²)	50 mm ²	
	- test current I _e (A)	125 A	
	Measured temperature-rise.....	see appended table 8.3.3.6	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		P
	- actuator type (fig.)	Fig 1b	
8.2.5.2.1	Dependent and independent manual operation	Independent manual operation	P
	- actuating force for opening (N)	18 N	
	- test force with blocked main contacts (N)	54 N	
	- used method to keep the contact closed	welding	
	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.....		N/A
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

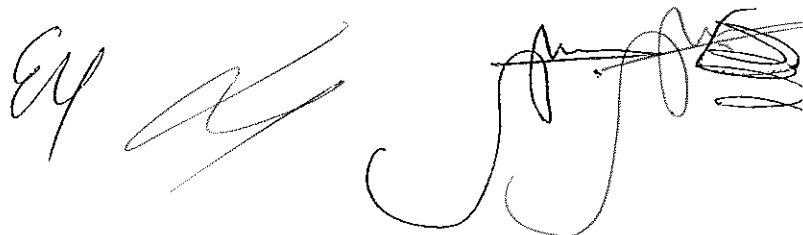


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- stored energy of the power operator released (3 times)..... :		N/A
	During and after the test, open position not indicated..... :		N/A
	Equipment show no damage impairing its normal operation..... :		N/A
	Equipment with locking mean, no locking in the open position while test force is applied..... :		N/A

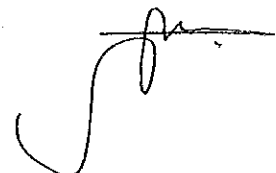


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS		P
	Sample 3#: 16 A, 4P		
8.3.3.1	Temperature-rise		P
	ambient temperature 10-40 °C	22,0 °C	
	test enclosure W x H x D (mm x mm x mm)	N/A	
	material of enclosure	N/A	
	Main circuits, test conditions:		
	- conventional thermal current I _{th} (A)	125 A	
	- conventional enclosed thermal current I _{the} (A) ...	N/A	
	- cable/busbar cross-section (mm ²) / length (mm) .	50 mm ²	
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark	N/A	
	- manufacturer's model or type reference	N/A	
	- rated current (A)	N/A	
	- power loss (W)	N/A	
	- rated breaking capacity (kA)	N/A	
	Measured temperature-rise.....	see appended table 8.3.3.1	P
	Auxiliary circuits, test conditions:		N/A
	- rated operation current (A)		
	- cable cross-section (mm ²)		
	Measured temperature-rise.....		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)		P
	- test U _{imp} on open main contacts (equipment suitable for isolation) (kV)	9,8 kV	P
	Power-frequency withstand voltage (V)	1890 V	
	- main circuits, test voltage for 5 sec. (V)	5 s	P



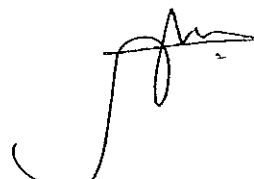
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- control and auxiliary circuits, test voltage for 5 sec. (V)		N/A
	Devices, which have been disconnected for the power-frequency withstand voltage test.....		N/A
	Equipment suitable for isolation, leakage current not exceed 0,5 mA		
	Test voltage 1,1 Ue (V)	456,5 V	
	Measured leakage current (mA)	L1: 0,005 mA L2: 0,005 mA L3: 0,005 mA 4th pole: 0,005 mA	P
8.3.3.3	Making and breaking capacity		P
	- utilization category	AC-22A	
	- rated operational voltage Ue (V)	415 V	
	- rated operational current Ie (A) or power (kW)	125 A	
	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:	
	Conditions for make/break operations, other than AC-23A/B:		P



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- test voltage, $U = 1,05 U_e$(V):	L1-L2: 439,3 V L2-L3: 439,2 V L3-L1: 439,2 V	
	- test current, $I =$x 3 I_e (A):	L1: 305,9 A L2: 305,9 A L3: 306,1 A	
	- power factor/ time constant	0,65	
	Number of make/break or make and break operations	5	P
	- recovery voltage duration (≥ 50 ms)		P
	- current duration (ms)	min. 538,1 ms	
	- time interval between operations	30 s	P
	Characteristic of transient recovery voltage for AC-22 and AC-23 only		
	- oscillatory frequency (kHz)	50,35 $\pm 10\%$ kHz	
	- measured oscillatory frequency (kHz)	50,86 kHz	P
	- factor γ	1,10	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	39 N	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.3.4	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~..... :	1000 V	
	No flashover or breakdown		P



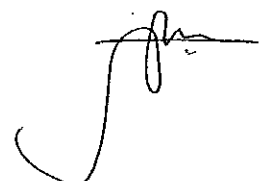
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.5	Leakage current		
	test voltage (1,1 Ue) (V)	456,5 V	
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B): $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories): ≤ 2 mA/pole)	L1: 0,005 mA L2: 0,005 mA L3: 0,005 mA L1 to frame: 0,005 mA L2 to frame: 0,005 mA L3 to frame: 0,005 mA	P
8.3.3.6	Temperature-rise verification		P
	- conductor cross-section (mm ²)	50 mm ²	
	- test current I _e (A)	125 A	
	Measured temperature-rise.....	see appended table 8.3.3.6	P
8.3.3.7	Strength of actuator mechanism		P
8.2.5	Verification of the strength of actuator mechanism and position indicating device		P
	- actuator type (fig.)	Fig 1b	
8.2.5.2.1	Dependent and independent manual operation	Independent manual operation	P
	- actuating force for opening (N)	39 N	
	- test force with blocked main contacts (N)	117 N	
	- used method to keep the contact closed.....	welding	
	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.....		N/A
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



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

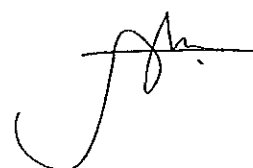


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY Sample 4#: 16 A, 1P		P
8.3.4.1	Operational performance test		P
	- utilization category	AC-22A	
	- rated operational voltage (V)	415 V	
	- rated operational current (A)	125 A	
	Test conditions for electrical operation cycles:		
	- test voltage (V)	L1-N: 415,6 V	
	- test current (A)	L1: 100,2 A	
	- power factor/time constant	0,81	
	Number of cycles with current	1500	P
	Number of cycles without current	8500	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	30 s	
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
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	9 N	P
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P



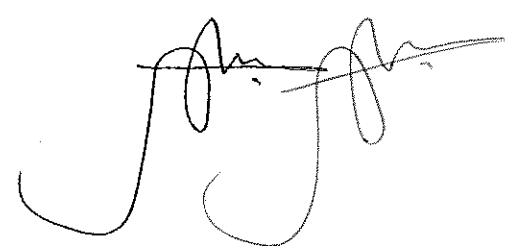
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~	1000 V	
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 U_e) (V)	456,5 V	
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	L1: 0,005 mA L1 to frame: 0,006 mA	P
8.3.4.4	Temperature-rise verification		P
	- conductor cross-section (mm ²)	50 mm ²	
	- test current I_e (A)	125 A	
	Measured temperature-rise.....	see appended table 8.3.4.4	P

IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY Sample 5#: 16 A, 2P		P
8.3.4.1	Operational performance test		P
	- utilization category	AC-22A	
	- rated operational voltage (V)	415 V	
	- rated operational current (A)	125 A	
	Test conditions for electrical operation cycles:		
	- test voltage (V)	L1-L2: 415,6 V	
	- test current (A)	L1: 100,3 A L2: 100,3 A	
	- power factor/time constant	0,80	
	Number of cycles with current	1500	P
	Number of cycles without current	8500	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	30 s	
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
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	23 N	P
	- equipment is able to carry its rated current after normal closing operation		P

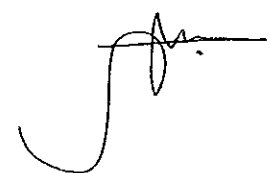


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.2	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~ :	1000 V	
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 U_e) (V)	456,5 V	
	Leakage current (utilization categories AC-20A, AC-20B, DC-20A and DC-20B) $\leq 0,5$ mA/pole		N/A
	Leakage current (other utilization categories) ≤ 2 mA/pole	L1: 0,006 mA L2: 0,006 mA L1 to frame: 0,006 mA L2 to frame: 0,006 mA	P
8.3.4.4	Temperature-rise verification		P
	- conductor cross-section (mm ²)	50 mm ²	
	- test current I_e (A)	125 A	
	Measured temperature-rise.....	see appended table 8.3.4.4	P

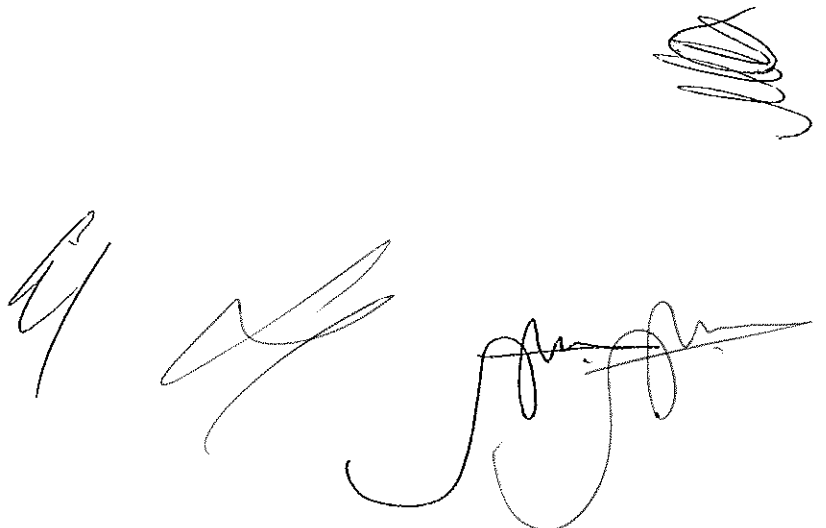


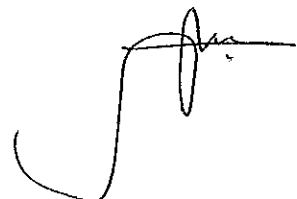
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY Sample 6#: 16 A, 4P		P
8.3.4.1	Operational performance test		P
	- utilization category	AC-22A	
	- rated operational voltage (V)	415 V	
	- rated operational current (A)	125 A	
	Test conditions for electrical operation cycles:		
	- test voltage (V)	L1-L2: 416,6 V L2-L3: 416,6 V L3-L1: 416,6 V	
	- test current (A)	L1: 103,2 A L2: 103,2 A L3: 103,2 A	
	- power factor/time constant	0,84	
	Number of cycles with current	1500	P
	Number of cycles without current	8500	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	30 s	
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
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	28 N	P



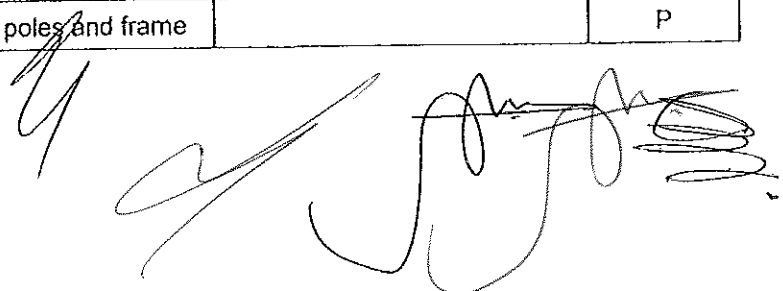
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- equipment is able to carry its rated current after normal closing operation		P
8.3.4.2	Dielectric verification		P
	test voltage: $2 \cdot U_e$ with a minimum of 1000V~ :	1000 V	
	No breakdown or flashover		P
8.3.4.3	Leakage current		P
	test voltage (1,1 U_e) (V)	456,5 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	L1: 0,006 mA L2: 0,006 mA L3: 0,006 mA L1 to frame: 0,005 mA L2 to frame: 0,006 mA L3 to frame: 0,006 mA	P
8.3.4.4	Temperature-rise verification		P
	- conductor cross-section (mm ²)	50 mm ²	
	- test current I_e (A)	125 A	
	Measured temperature-rise	see appended table 8.3.4.4	P



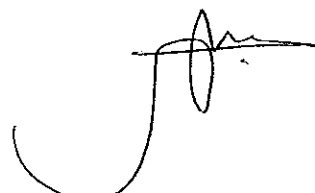
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.5	TEST SEQUENCE III: SHORT-CIRCUIT PERFORMANCE CAPABILITY		N/A



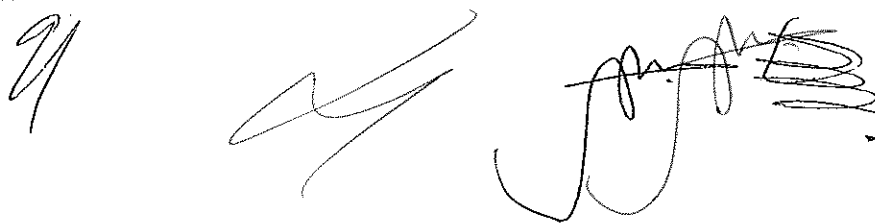
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT Sample 7#: 16 A, 1P		P
	Protective device details:	Fuse	P
	- manufacturer's name, trademark or identification mark	MIRO GROUP CO. MRO	
	- manufacturer's model or type reference	RS17	
	- rated voltage (V)	500 V	
	- rated current (A)	125 A	
	- rated breaking capacity (kA)	100 kA	
8.3.6.2	Fuse protected short-circuit withstand		P
	test voltage (1,05 U _e) (V)	L1-N: 436,4 V	
	test current (kA)	L1: 10,1 kA	
	rated frequency (Hz)	50 Hz	
	power factor	0,48	
	Time constant (ms)		
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 2207,95 A	
	- Joule integral I ² dt (A ² s)	L1: 2887,1 A ² s	
	Fuse protected short-circuit making		P
	- mean velocity of 15 manually under no-load conditions operations (m/s)		
	- point at which the measurement is made		
	- test speed during the fuse protected short-circuit making (m/s)		
	- max. let-through current (kA)	L1: 2507,0 A	
	- Joule integral I ² dt (A ² s)	L1: 3801,5 A ² s	
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



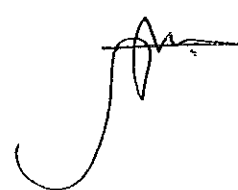
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	No melting of the fuse in the detection circuit		P
8.3.6.2.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	11 N	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	
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 U_e) (V) :	456,5 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 :	L1: 0,006 mA, L1- frame: 0,006 mA	P
8.3.6.5	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark :		
	- manufacturer's model or type reference :		
	- rated current (A) :		
	- power loss (W) :		
	- rated breaking capacity (kA) :		
	- conductor cross-section (mm ²) :	50 mm ²	
	- test current I_e (A) :	125 A	
	Measured temperature-rise..... :	see appended table 8.3.6.5	P



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT Sample 8#: 16 A, 2P		P
	Protective device details:	Fuse	P
	- manufacturer's name, trademark or identification mark	MIRO GROUP CO. MRO	
	- manufacturer's model or type reference	RS17	
	- rated voltage (V)	500 V	
	- rated current (A)	125 A	
	- rated breaking capacity (kA)	100 kA	
8.3.6.2	Fuse protected short-circuit withstand		P
	test voltage (1,05 Ue) (V)	L1-L1: 436,3 V	
	test current (kA)	L1: 10,1 kA L2: 10,1 kA	
	rated frequency (Hz)	50 Hz	
	power factor	0,47	
	Time constant (ms)		
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 2499,05 A L2: 2499,05 A	
	- Joule integral I ² dt (A ² s)	L1: 3670,8 A ² s L2: 3670,8 A ² s	
	Fuse protected short-circuit making		P
	- mean velocity of 15 manually under no-load conditions operations (m/s)		
	- point at which the measurement is made		
	- test speed during the fuse protected short-circuit making (m/s)		
	- max. let-through current (kA)	L1: 2464,64 A L2: 2464,64 A	
	- Joule integral I ² dt (A ² s)	L1: 3032,0 A ² s L2: 3032,0 A ² s	
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

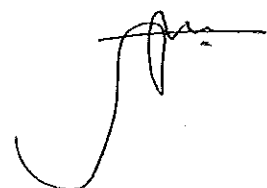


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	No permanent arcing		P
	No flash over between poles and poles and frame		P
	No melting of the fuse in the detection circuit		P
8.3.6.2.6	Condition of the equipment after making and breaking capacity tests		P
	Immediately after the test equipment must work satisfactorily		P
	- required opening force not greater than the test force of 8.2.5.2 and table 8	19 N	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	
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 U_e) (V)	456,5 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	L1: 0,006 mA L2: 0,006 mA L1 to frame: 0,006 mA L2 to frame: 0,006 mA	P
8.3.6.5	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		
	- manufacturer's name, trademark or identification mark		
	- manufacturer's model or type reference		
	- rated current (A)		
	- power loss (W)		
	- rated breaking capacity (kA)		
	- conductor cross-section (mm ²)	50 mm ²	
	- test current I_e (A)	125 A	
	Measured temperature-rise.....	see appended table 8.3.6.5	P

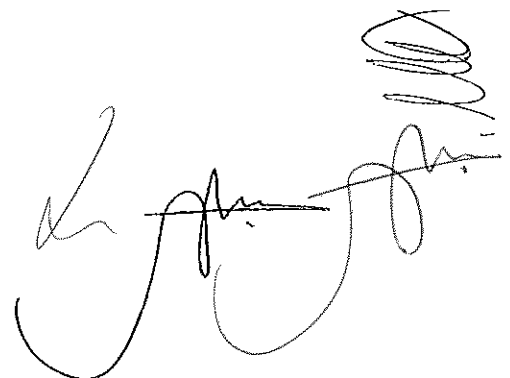


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6	TEST SEQUENCE IV: CONDITIONAL SHORT-CIRCUIT CURRENT Sample 9#: 16 A, 4P		P
	Protective device details:	Fuse	P
	- manufacturer's name, trademark or identification mark	MIRO GROUP CO. MRO	
	- manufacturer's model or type reference	RS17	
	- rated voltage (V)	500 V	
	- rated current (A)	125 A	
	- rated breaking capacity (kA)	100 kA	
8.3.6.2	Fuse protected short-circuit withstand		P
	test voltage (1,05 Ue) (V)	L1-L1: 436,7 V L2-L3: 436,7 V L3-L1: 436,9 V	
	test current (kA)	L1: 10,1 kA L2: 10,1 kA L3: 10,1 kA	
	rated frequency (Hz)	50 Hz	
	power factor	0,47	
	Time constant (ms)		
	Fuse protected short-circuit withstand (equipment in closed position)		
	- max. let-through current (kA)	L1: 934,50 A L2: 2276,21 A L3: 3183,16 A	
	- Joule integral I ² dt (A ² s)	L1: 2548,7 A ² s L2: 6034,8 A ² s L3: 6342,8 A ² s	
	Fuse protected short-circuit making		P
	- mean velocity of 15 manually under no-load conditions operations (m/s)		
	- point at which the measurement is made		
	- test speed during the fuse protected short-circuit making (m/s)		
	- max. let-through current (kA)	L1: 1903,41 A L2: 947,54 A L3: 2314,30 A	

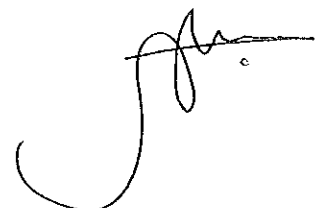
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- Joule integral I^2dt (A ² s)	L1: 4488,4 A ² s L2: 1812,5 A ² s L3: 8042,8 A ² s	
8.3.6.2.5	Behaviour of the equipment during the test		P
	Test performed without:		
	- endanger to the operator		P
	- cause damage to adjacent equipment		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	30 N	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	
	No flashover or breakdown		P
8.3.6.4	Leakage current		P
	test voltage (1,1 U_e) (V)	456,5 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	L1: 0,006 mA L2: 0,006 mA L3: 0,006 mA L1 to frame: 0,006 mA L2 to frame: 0,006 mA L3 to frame: 0,006 mA	P
8.3.6.5	Temperature-rise verification		P
	Fuse-link details (fuse-combination units only):		



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
	- manufacturer's name, trademark or identification mark		
	- manufacturer's model or type reference		
	- rated current (A)		
	- power loss (W)		
	- rated breaking capacity (kA)		
	- conductor cross-section (mm ²)	50 mm ²	
	- test current I _e (A)	125 A	
	Measured temperature-rise.....	see appended table 8.3.6.5	P

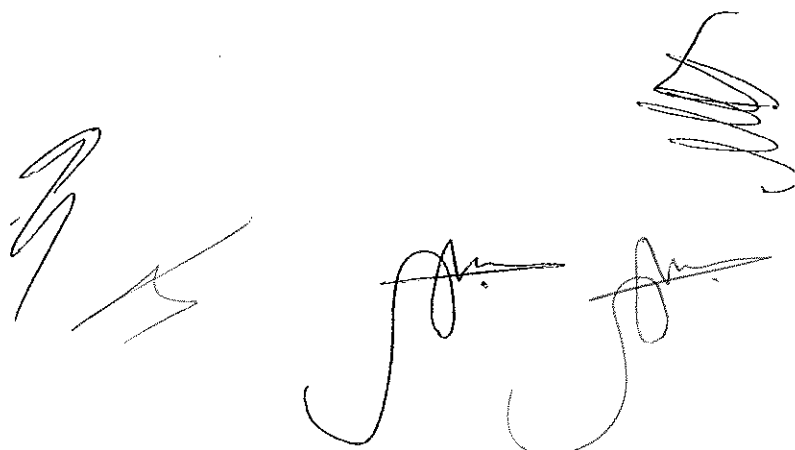
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.7	TEST SEQUENCE V: OVERLOAD PERFORMANCE CAPABILITY		N/A
8.4	ELECTROMAGNETIC COMPATIBILITY TESTS		N/A
Annex A (normative)			N/A
Annex C (normative)			N/A



IEC 60947-3						
Clause	Requirement + Test	Result - Remark				Verdict
7.1.4	TABLE 1: Clearance and creepage distance measurements					P
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 phases	6000 V	415 V	5,5 mm	8 mm	6,3 mm	8 mm
Between contacts when it is open	6000 V	415 V	5,5 mm	8 mm	6,3 mm	8 mm
Between live parts and operating means(actuator)	6000 V	415 V	5,5 mm	30 mm	6,3 mm	30 mm
Between live parts and mounting plate	6000 V	415 V	5,5 mm	25 mm	6,3 mm	25 mm
supplementary information: N/A						

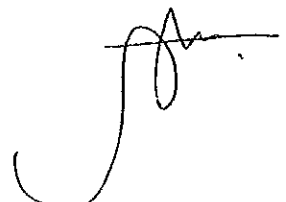
TABLE 2: Resistance to fire (Glow wire test)							P
No.	Description	Thick	Temp. °C	Burning after T(s)	drops	Support burning	P
1	Handle indication and enclosure: PA66	3 mm	960 °C	0	No	No	P

TABLE 3: Resistance to tracking (tracking test)							P
No.	Description	Drops (no.)	Test voltage (V)	Burning	Current	Result	P
1	Handle indication and enclosure: PA66	51	200 V	No	< 0,5 A	P	P



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.1	TABLE 4: Temperature-rise (measurements)	Sample 1#, 1P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top pole		34,5	70
Bottom pole		33,9	70
Manual operating means		7,9	25
Front enclosure		10,4	40
Side enclosure		16,6	50
supplementary information: N/A			

8.3.3.1	TABLE 5: Temperature-rise (measurements)	Sample 2#, 2P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top left pole		37,6	70
Top right pole		39,2	70
Bottom left pole		37,4	70
Bottom right pole		37,8	70
Manual operating means		8,1	25
Front enclosure		11,4	40
Side enclosure		16,9	50
supplementary information: N/A			



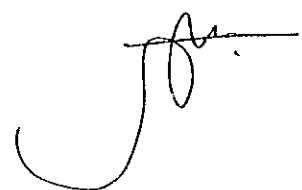
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.1	TABLE 6: Temperature-rise (measurements)	Sample 3#, 4P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top left pole		35,9	70
Top centre pole		34,9	70
Top right pole		33,5	70
Top 4th pole		35,9	70
Bottom left pole		34,5	70
Bottom centre pole		31,5	70
Bottom right pole		34,1	70
Bottom 4th pole		35,5	70
Manual operating means		8,1	25
Front enclosure		12,2	40
Side enclosure		18,5	50
supplementary information: N/A			

8.3.3.6	TABLE 7: Temperature-rise (measurements)	Sample 1#, 1P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top pole		36,9	80
Bottom pole		36,9	80
Manual operating means		7,1	35
Front enclosure		11,6	50
Side enclosure		17,9	60
supplementary information: N/A			



IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3.6	TABLE 8: Temperature-rise (measurements)	Sample 2#, 2P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top left pole		41,5	80
Top right pole		42,0	80
Bottom left pole		40,6	80
Bottom right pole		40,6	80
Manual operating means		8,0	35
Front enclosure		11,5	50
Side enclosure		17,1	60
supplementary information: N/A			

8.3.3.6	TABLE 9: Temperature-rise (measurements)	Sample 3#, 4P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top left pole		38,6	80
Top centre pole		44,1	80
Top right pole		41,7	80
Top 4th pole		38,1	80
Bottom left pole		37,9	80
Bottom centre pole		43,5	80
Bottom right pole		39,3	80
Bottom 4th pole		35,5	80
Manual operating means		8,3	35
Front enclosure		12,2	50
Side enclosure		18,7	60
supplementary information: N/A			

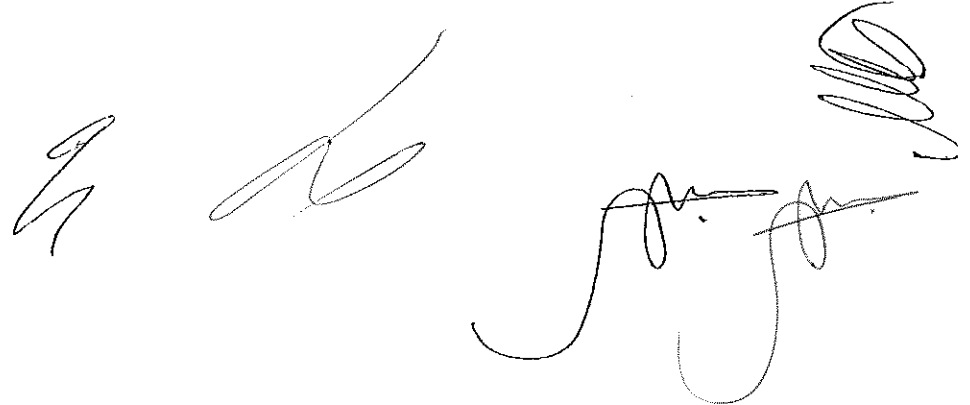




IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict

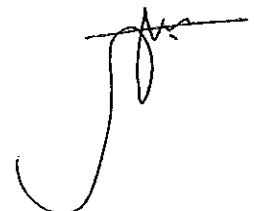
8.3.4.4	TABLE 10: Temperature-rise (measurements)	Sample 4#, 1P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top pole		32,9	80
Bottom pole		32,4	80
Manual operating means		3,2	35
Front enclosure		9,8	50
Side enclosure		16,4	60
supplementary information: N/A			

8.3.4.4	TABLE 11: Temperature-rise (measurements)	Sample 5#, 2P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top left pole		39,8	80
Top right pole		43,4	80
Bottom left pole		44,2	80
Bottom right pole		48,5	80
Manual operating means		5,9	35
Front enclosure		6,7	50
Side enclosure		23,6	60
supplementary information: N/A			



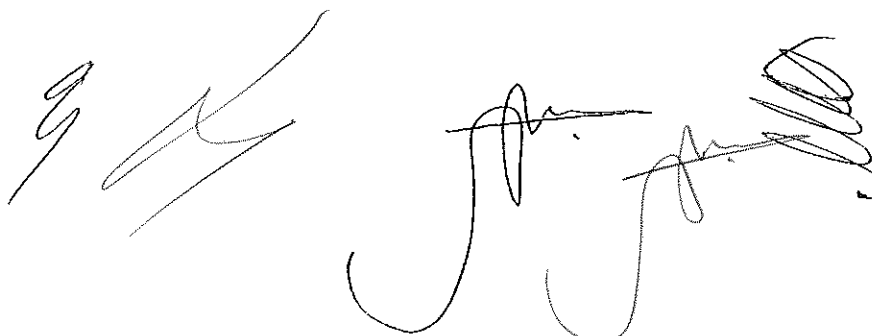
IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.4	TABLE 12: Temperature-rise (measurements)	Sample 6#, 4P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top left pole		43,4	80
Top centre pole		45,2	80
Top right pole		46,2	80
Top 4th pole		51,7	80
Bottom left pole		43,4	80
Bottom centre pole		44,4	80
Bottom right pole		47,4	80
Bottom 4th pole		41,4	80
Manual operating means		10,4	35
Front enclosure		16,4	50
Side enclosure		25,2	60
supplementary information: N/A			

8.3.6.5	TABLE 13: Temperature-rise (measurements)	Sample 7#, 1P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top pole		37,2	80
Bottom pole		41,9	80
Manual operating means		1,7	35
Front enclosure		3,5	50
Side enclosure		21,2	60
supplementary information: N/A			

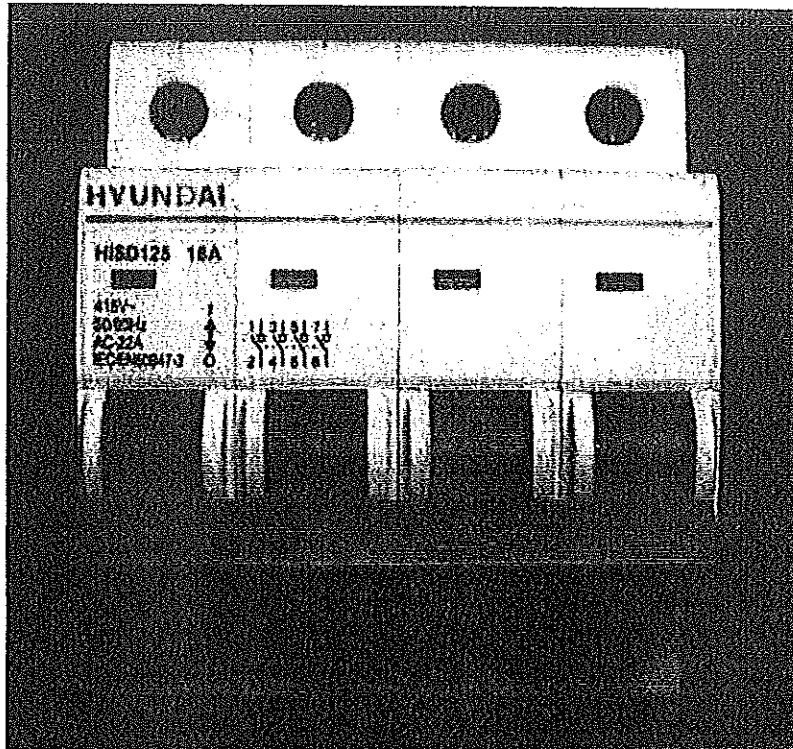


IEC 60947-3			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.5	TABLE 14: Temperature-rise (measurements)	Sample 8#, 2P	P
Temperature rise ΔT of part:		ΔT (K) measured	ΔT (K) required
Top left pole		39,4	80
Top right pole		37,2	80
Bottom left pole		36,6	80
Bottom right pole		36,7	80
Manual operating means		3,8	35
Front enclosure		8,2	50
Side enclosure		21,1	60
supplementary information: N/A			

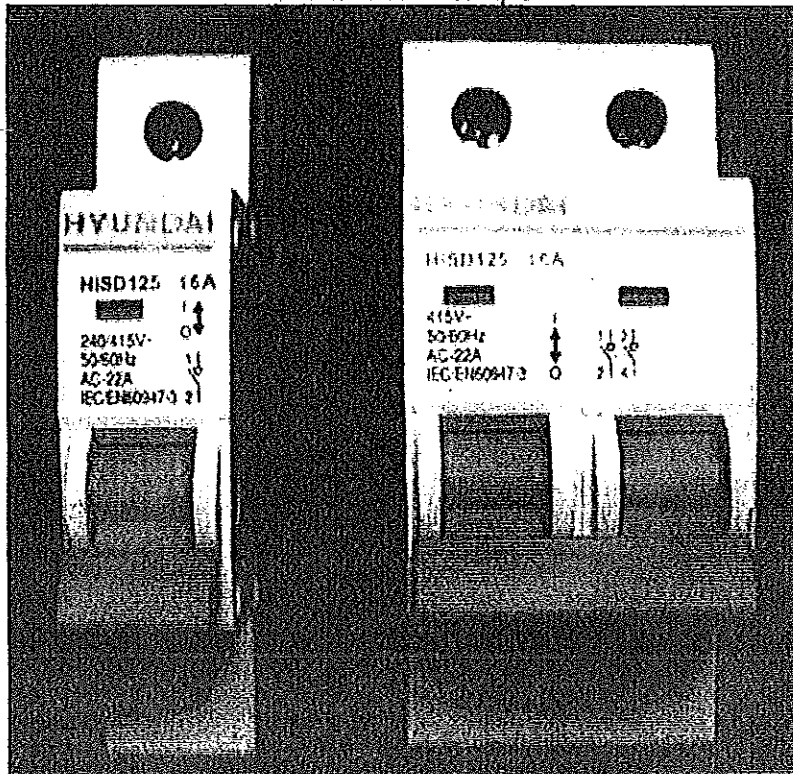
8.3.6.5	TABLE 15: Temperature-rise (measurements)	Sample 9#, 4P	P
Temperature rise ΔT of part:		Δt (K) measured	ΔT (K) required
Top left pole		41,0	80
Top centre pole		41,3	80
Top right pole		42,7	80
Top 4th pole		41,3	80
Bottom left pole		43,2	80
Bottom centre pole		40,8	80
Bottom right pole		40,4	80
Bottom 4th pole		32,3	80
Manual operating means		6,9	35
Front enclosure		11,9	50
Side enclosure		23,1	60
supplementary information: N/A			



Photographs

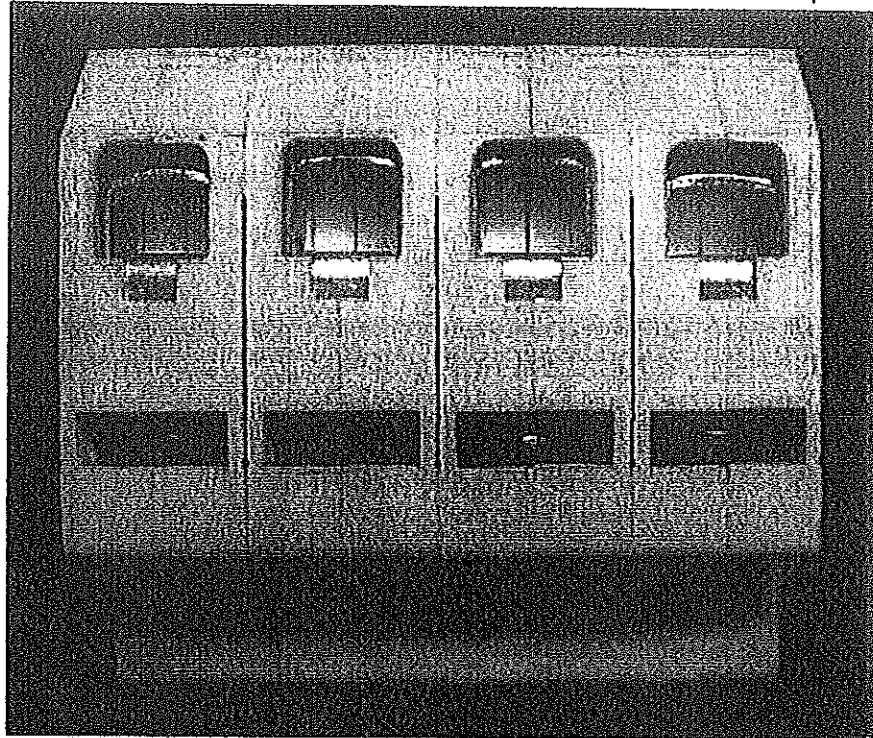


Overview of 4P sample

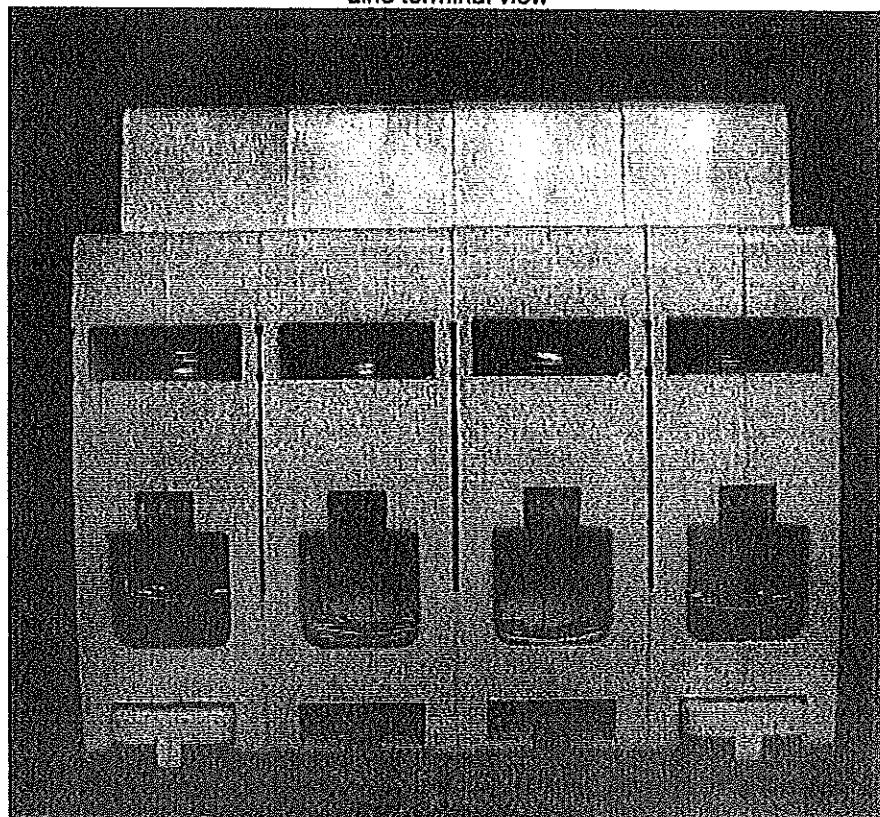


Overview of 1P and 2P sample

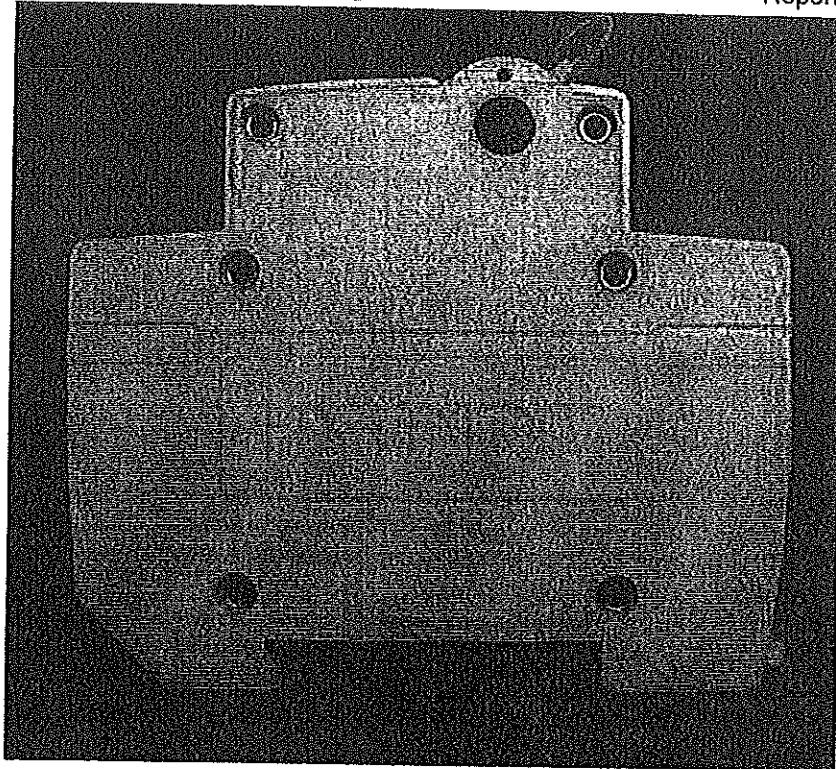
A handwritten signature in black ink, located in the bottom right corner of the page.



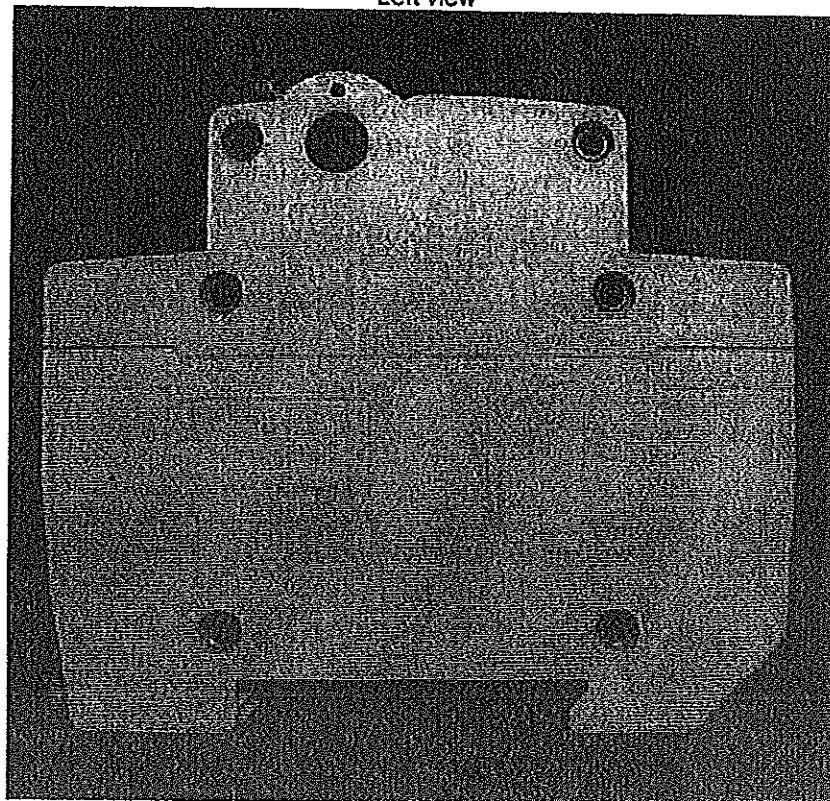
Line terminal view



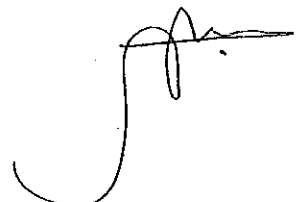
Load terminal view

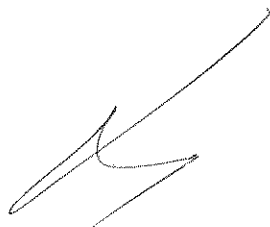
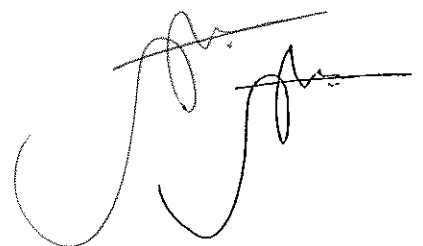


Left view

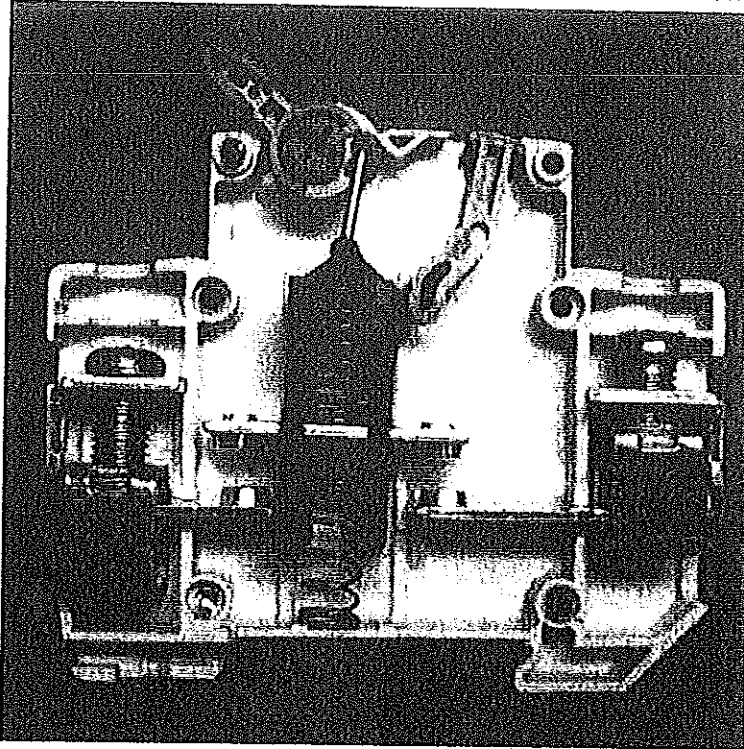


Right view

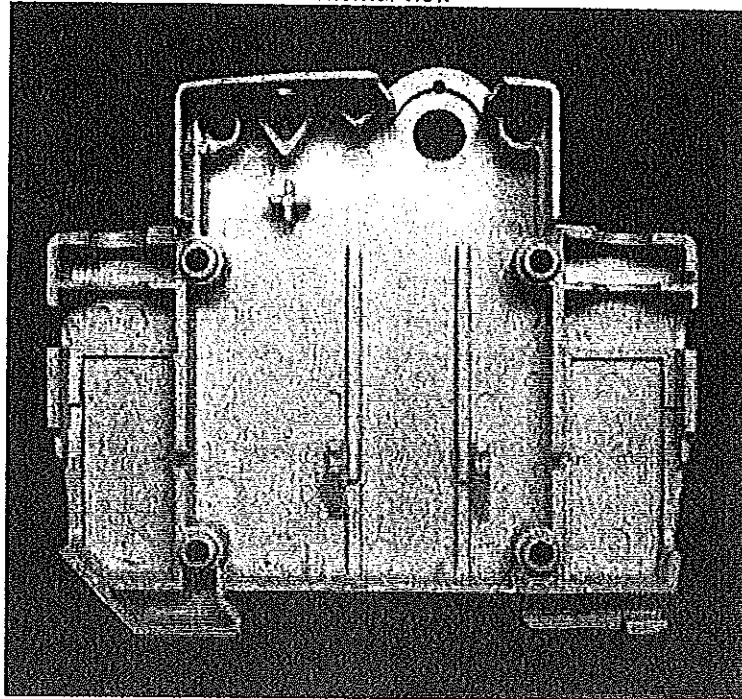
A handwritten signature in black ink, consisting of a stylized, cursive script.

A handwritten signature consisting of a few fluid, connected strokes, possibly representing the letters 'K' and 'S'.A handwritten signature with a large, sweeping initial 'J' followed by several smaller, connected strokes, possibly representing the name 'John'.

[Handwritten signature]



Internal view



Internal view

[Handwritten signature]

[Handwritten signature]

[Handwritten signature]