IV. ТЕХНИЧЕСКИ ИЗИСКВАНИЯ И СПЕЦИФИКАЦИИ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

В) Технически изисквания и спецификации за обособена позиция № 1 по предмета на поръчката, представляващ:

Наименование на материала: Триполюсни автоматични прекъсвачи НН с лят корпус, от 100 А до 400 А, с термомагнитна защита, категория А

Съкратено наименование на материала: Трип. авт. прек. НН, с ТМ защита, 100-400 А, кат. А

Област: Н – Електрически уредби СрН/НН **Категория:** 17– Комутационни апарати НН за защита

Мерна единица: Брой **Аварийни запаси:** Да

Характеристика на материала:

Триполюсните автоматични прекъсвачи НН с лят корпус представляват механични комутационни апарати от фиксиран тип с предно свързване на шинната система. Автоматичните прекъсвачи са способни да провеждат и да включват/изключват ръчно електрически токове във вериги при нормални условия и да включват, да провеждат за определено време и да изключват автоматично посредством електромеханична защита от термомагнитен тип токове във вериги при условията на претоварване и късо съединение.

Тялото (корпусът) на автоматичните прекъсвачи НН е изработено чрез формоване на устойчив на нагряване, на огън и на механични удари изолационен материал. Използваните в конструкцията изолационни материали съответстват на изискванията на т. 7.1. от БДС EN 60947-2:2006.

Управлението се осъществява ръчно посредством лост. Включването/изключването на контактите на трите полюса се осъществява едновременно с висока скорост, която не зависи от действията на оператора. Автоматичният прекъсвач изпълнява разединяваща функция, която е обозначена със съответния символ. На челния панел на прекъсвача е разположен тест-бутон за проверка на изключвателния механизъм. Лостът за управление при вертикално монтиране на автоматичните прекъсвачи се движи в направление „нагоре – надолу", при което контактите се затварят при движение „нагоре". Лостът има три ясно индицирани положения, съответстващи на позицията на контактната система: „Включено", „Изключено" и „Автоматично изключено от свръхтокове /Тест". Конструкцията осигурява защита срещу проникване на твърди тела и вода до степен най-малко IP20 за клемните съединения и IP40 за челната повърхност на прекъсвача, съгласно БДС EN 60529+A1:2004.

Стойностите на прегряването на частите на триполюсните автоматични прекъсвачи НН с лят корпус при нормален работен режим при температура до 40°C не трябва да надвишават посочените в таблица 7 от БДС EN 60947-2:2006 стойности. Прекъсвачите са маркирани с информацията съгласно т. 5.2 от БДС EN 60947-2:2006 и CE маркировка за съответствие.

Прекъсвачите се доставят с предпазни клемови капаци, изолиращи фазови сепаратори и разширители и удължители на входа и на изхода, които са подходящи за свързване към шинна система, която е изработена с алуминиеви шини с правоъгълно сечение.
Триполюсните автоматични прекъсвачи са пакетирани в картонени кутии, на които е залепен етикет с наименование на материала „Автоматичен прекъсвач", техническите данни, годината на производство, партидните номера и стандарта, в съответствие с който са произведени и изпитани - БДС EN 60947-2:2006.

Използване:

Триполюсните автоматични прекъсвачи НН с лят корпус се монтират в разпределителни табла в трансформаторните постове и се използват за защита на електропроводните линии.

Съответствие на предлаганото изпълнение с нормативно-техническите документи:

Триполюсните автоматични прекъсвачи НН с лят корпус трябва да отговарят на посочените по-долу стандарти или еквиваленти включително на техните валидни изменения и допълнения:

- БДС EN 60947-1:2007 "Комутационни апарати за ниско напрежение. Част 1: Общи правила (IEC 60947-1:2007)"; и
- БДС EN 60947-2:2006 „Комутационни апарати за ниско напрежение. Част 2: Автоматични прекъсвачи (IEC 60947-2:2006)" и техните валидни изменения и допълнения и
- БДС EN 60529+A1:2004 Степени на защита, осигурени от обвивката (IP код) (IEC 60529:1989+A1:1999)

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. .....

Изисквания 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	1.BC160NT305-100-D 2.BC160NT305-160-D, 3.BD250NE305 + SE-BD-0250-DTV3 4. BH630NE305 + SE-BH-0400-DTV3 OEZ-Чехия, каталог J1-2013-A Приложен в ОП2
2.	Техническо описание и чертежи с нанесени на тях размери	каталог J1-2013-A Приложен в ОП2

№ по ред	Документ	Приложение № (или текст)
3.	ЕО декларация за съответствие	приложена
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	приложени
5.	Сертификат/акредитация на независимата изпитвателна лаборатория, провела типовите изпитвания по т. 4 – заверено копие	приложен
6.	Инструкции за транспортиране, складиране, монтиране, вкл. въртящия момент на затягане на клемовите съединения, обслужване и поддържане	Приложени + каталог

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.)

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 електроразпределителната мрежа

№ по ред	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 параметри и други данни

№ по ред	Технически параметър	Изискване	Гарантирано предложение
3.1	Брой на полюсите	3	3
3.2	Обявено работно напрежение (U_e)	min 690 V AC	690 V AC
3.3	Обявена честота	50 Hz	50/60 Hz
3.4	Обявено импулсно напрежение (U_{imp})	min 6 kV	8kV
3.5	Обявено изолационно напрежение (U_i)	min 690 V	690 V
3.6	Категория на приложение	A	A
3.7	Работна изключвателна възможност при късо съединение (I_{cs})	min 50% от I_{cu}	min 50% от I_{cu}
3.8	Защита от свръхтокове	-	-
3.8.1	Тип на защитата	Защитата от свръхтокове трябва да бъде от термомагнитен тип. (Допускат се изпълнения със защита от електронен тип.)	до 160 A – TM защита над 250 A - E3
3.8.2	Защита от претоварване	а) Диапазон на настройване на тока на изключване I_R=(min 0,8÷1)xI_n	I_R=(0,4÷1)xI_n
		б) Условен ток на неизключване I_{nd}=1,05xI_R във времеви интервал от 120 минути	б) Условен ток на неизключване I_{nd}=1,05xI_R във времеви интервал от 120 минути
		в) Условен ток на изключване I_d = 1,30xI_R във времеви интервал до 120 минути	в) Условен ток на изключване I_d = 1,30xI_R във времеви интервал до 120 минути
3.8.3	Защита от къси съединения	Токът на изключване I_i трябва да бъде фиксиран на една от стойностите или регулируем в диапазона препоръчително от min 4x I_n до 10x I_n	Диапазон на настройване I_i= 4xI_n или 8xI_n за АП 250A и 12,5xI_n за АП 400A

№ по ред	Технически параметър	Изискване	Гарантирано предложение
3.9	Степен на защита от проникване на твърди тела и вода съгласно БДС EN 60529+A1:2004	-	-
3.9.1	Клемни съединения	min IP 20	IP 20
3.9.2	Челна повърхност	min IP 40	IP 40
3.10	Аксесоари	а) Два комплекта разширители и удължител за свързване към шинна система от алуминиева шина с правоъгълно сечение	Два комплекта разширители и удължител за свързване към шинна система от алуминиева шина с правоъгълно сечение

4. Триполюсни автоматични прекъсвачи НН с лят корпус, 100 А ÷ 400 А, с термомагнитна защита, категория А

4.1 Триполюсен автоматичен прекъсвач НН с лят корпус, 100 А, с термомагнитна защита, кат. А

Номер на стандарта		**Тип/референтен номер съгласно каталога на производителя**	
20 17 5001		BC160NT305-100-D - 20204	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 100 А, с термомагнитна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ТМ защита, 100 А, кат. А	
№ по ред	**Технически параметър**	**Изискване**	**Гарантирано предложение**
4.1.1	Обявен ток (I_n)	100 А	100 А
4.1.2	Обявена максимална изключвателна възможност при к.с. (I_{cu})	min 12 kA / 500 V	12 kA / 500 V
4.1.3	Работна изключвателна възможност при късо съединение (I_{cs})	Съгласно т. 3.7 и т. 4.1.2 Да се посочи	6 kA / 500 V
4.1.4	Ток на изключване на защитата от къси съединения (I_i)	Съгласно т. 3.8.3 Да се посочи	Ii = (500 ÷ 1000) A
4.1.5	Време за изключване при I_{cu}	max 0,010 s	0.007s
4.1.6	Износоустойчивост	-	-

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 5001		BC160NT305-100-D - 20204	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 100 А, с термомагнитна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ТМ защита, 100 А, кат. А	
№ по ред	Технически параметър	Изискване	Гарантирано предложение
4.1.6a	Електрическа (брой к.ц.)	min 1500 бр.	6 000 бр.
4.1.6b	Механична (брой к.ц.)	min 8500 бр.	20 000 бр.
4.1.7	Максимални размери ВхШхД (Дълбочината „Д" не включва лоста за управление)	165x110x125 mm	130x75x70
4.1.8	Тегло, kg	Да се посочи	1

4.2 Триполюсен автоматичен прекъсвач НН с лят корпус, 160 А, с термомагнитна защита, кат. А

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 5002		BC160NT305-160-D - 20208	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 160 А, с термомагнитна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ТМ защита, 160 А, кат. А	
№ по ред	Технически параметър	Изискване	Гарантирано предложение
4.2.1	Обявен ток (I_n)	160 А	160 А
4.2.2	Обявена максимална изключвателна възможност при к.с. (I_{cu})	min 12 kA / 500 V	12 kA / 500 V
4.2.3	Работна изключвателна възможност при късо съединение (I_{cs})	Съгласно т. 3.7 и т. 4.2.2 Да се посочи	50 % от I_{cu}
4.1.4	Ток на изключване на защитата от къси съединения (I_i)	Съгласно т. 3.8.3 Да се посочи	Ii = (800 ÷ 1600) A
4.2.5	Време за изключване при I_{cu}	max 0,010 s	0.007s
4.2.6	Износоустойчивост	-	-
4.2.6a	Електрическа (брой к.ц.)	min 1000 бр.	6 000 бр.

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 5002		BC160NT305-160-D - 20208	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 160 А, с термомагнитна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ТМ защита, 160 А, кат. А	
№ по ред	Технически параметър	Изискване	Гарантирано предложение
4.2.6b	Механична (брой к.ц.)	min 7000 бр.	20 000 бр.
4.2.7	Максимални размери ВхШхД (Дълбочината „Д" не включва лоста за управление)	185x140x100 mm	130x75x70
4.2.8	Тегло, kg	Да се посочи	1

4.3 Триполюсен автоматичен прекъсвач НН с лят корпус, 250 А, с термомагнитна защита, кат. А

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 5003		BD250NE305-14414+SE-BD-0250-DTV3-24100	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 250 А, с термомагнитна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ТМ защита, 250 А, кат. А	
№ по ред	Технически параметър	Изискване	Гарантирано предложение
4.3.1	Обявен ток (I_n)	250 А	250 А
4.3.2	Обявена максимална изключвателна възможност при к.с. (I_{cu})	min 16 kA / 500 V	16 kA / 500 V
4.3.3	Работна изключвателна възможност при късо съединение (I_{cs})	Съгласно т. 3.7 и т. 4.3.2 Да се посочи	8 kA / 500 V
4.3.4	Ток на изключване на защитата от къси съединения (I_i)	Съгласно т. 3.8.3 Да се посочи	Ii= 1000 A - 2000 A
4.3.5	Време за изключване при I_{cu}	max 0,010 s	0.010s
4.3.6	Износоустойчивост	-	-
4.3.6a	Електрическа (брой к.ц.)	min 1000 бр.	3 000 бр.

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 5003		BD250NE305-14414+SE-BD-0250-DTV3-24100	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 250 А, с термомагнитна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ТМ защита, 250 А, кат. А	
№ по ред	**Технически параметър**	**Изискване**	**Гарантирано предложение**
4.3.6b	Механична (брой к.ц.)	min 7000 бр.	30 000 бр.
4.3.7	Максимални размери ВхШхД (Дълбочината „Д" не включва лоста за управление)	225x140x130 mm	225x105x105
4.3.8	Тегло, kg	Да се посочи	3

4.5 Триполюсен автоматичен прекъсвач НН с лят корпус, 400 А, с термомагнитна защита, кат. А

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 5005		BH630NE305-14412+SE-BH-0400-DTV3-25200	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 400 А, с термомагнитна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ТМ защита, 400 А, кат. А	
№ по ред	**Технически параметър**	**Изискване**	**Гарантирано предложение**
4.5.1	Обявен ток (I_n)	400 А	400 А
4.5.2	Обявена максимална изключвателна възможност при к.с. (I_{cu})	min 20 kA / 500 V	20 kA / 500 V
4.5.3	Работна изключвателна възможност при късо съединение (I_{cs})	Съгласно т. 3.7 и т. 4.4.2 Да се посочи	20 kA / 500 V
4.5.4	Ток на изключване на защитата от къси съединения (I_i)	Съгласно т. 3.8.3 Да се посочи	Ii=1600 A - 5000 A
4.5.5	Време за изключване при I_{cu}	max 0,010 s	0.010s
4.5.6	Износоустойчивост	-	-

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 5005		BH630NE305-14412+SE-BH-0400-DTV3-25200	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 400 А, с термомагнитна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ТМ защита, 400 А, кат. А	
№ по ред	Технически параметър	Изискване	Гарантирано предложение
4.5.6a	Електрическа (брой к.ц.)	min 1000 бр.	5 000 бр.
4.5.6b	Механична (брой к.ц.)	min 4000 бр.	20 000 бр.
4.5.7	Максимални размери ВхШхД (Дълбочината „Д" не включва лоста за управление)	300x195x160 mm	275x140x105
4.5.8	Тегло, kg.	Да се посочи	3

Наименование на материала: Триполюсни автоматични прекъсвачи НН с лят корпус, от 160 А до 1250 А, с електронна защита, категория А

Съкратено наименование на материала: Трип. авт. прек. НН, с ел. защита, 160-1250 А, кат. А

Област: Н – Електрически уредби СрН/НН **Категория:** 17–Комутационни апарати НН за защита

Мерна единица: Брой **Аварийни запаси:** Да

Характеристика на материала:

Триполюсните автоматични прекъсвачи НН с лят корпус представляват механични комутационни апарати от фиксиран тип с предно свързване на шинната система. Автоматичните прекъсвачи са способни да провеждат и да включват/изключват ръчно електрически токове във вериги при нормални условия и да включват, да провеждат за определено време и да изключват автоматично посредством защита от електронен тип токове във вериги при условията на претоварване и късо съединение.
Тялото (корпусът) на автоматичните прекъсвачи НН е изработено чрез формоване на устойчив на нагряване, на огън и на механични удари изолационен материал. Използваните в конструкцията изолационни материали съответстват на изискванията на т. 7.1. от БДС EN 60947-2:2006.
Управлението се осъществява ръчно посредством лост.
Включването/изключването на контактите на трите полюса се осъществява едновременно с висока скорост, която не зависи от действията на оператора.

Автоматичният прекъсвач изпълнява разединяваща функция, която е обозначена с предвидения от стандарта символ. На челния панел на прекъсвача е разположен тест-бутон за проверка на изключвателния механизъм. Лостът за управление при вертикално монтиране на автоматичните прекъсвачи се движи в направление „нагоре – надолу", при което контактите се затварят при движение „нагоре". Лостът има три ясно индицирани положения, съответстващи на позицията на контактната система: „Включено", „Изключено" и „Автоматично изключено от свръхтокове /Тест". Конструкцията осигурява защита срещу проникване на твърди тела и вода до степен най-малко IP20 за клемните съединения и IP40 за челната повърхност на прекъсвача, съгласно БДС EN 60529+A1:2004.
Стойностите на прегряването на частите на триполюсните автоматични прекъсвачи НН с лят корпус при нормален работен режим при температура до 40°C не трябва да надвишават посочените в таблица 7 от БДС EN 60947-2:2006 стойности. Прекъсвачите са маркирани с информацията съгласно т. 5.2 от БДС EN 60947-2:2006 и CE маркировка за съответствие.
Прекъсвачите се доставят с предпазни клемови капаци, изолиращи фазови сепаратори и разширители и удължители на входа и на изхода, които са подходящи за свързване към шинна система, която е изработена с алуминиеви шини с правоъгълно сечение.
Триполюсните автоматични прекъсвачи са пакетирани в картонени кутии, на които е залепен етикет с наименование на материала „Автоматичен прекъсвач", техническите данни, годината на производство, партидните номера и стандарта, в съответствие с който са произведени и изпитани - БДС EN 60947-2:2006.

Използване:

Триполюсните автоматични прекъсвачи НН с лят корпус се монтират в главните разпределителни табла в трансформаторните постове и се използват за защита на силови трансформатори СрН/0,4 kV с мощност до 800 kVA.

Съответствие на предлаганото изпълнение с нормативно-техническите документи:

Триполюсните автоматични прекъсвачи НН с лят корпус трябва да отговарят на посочените по-долу стандарти или еквиваленти, включително на техните валидни изменения и допълнения:
• БДС EN 60947-1:2007 "Комутационни апарати за ниско напрежение. Част 1: Общи правила (IEC 60947-1:2007)"; и
• БДС EN 60947-2:2006 „Комутационни апарати за ниско напрежение. Част 2: Автоматични прекъсвачи (IEC 60947-2:2006)" и техните валидни изменения и допълнения
• БДС EN 60529+A1:2004 Степени на защита, осигурени от обвивката (IP код) (IEC 60529:1989+A1:1999) 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. .....

Изисквания 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	BH630NE305 + SE-BH-0630-DTV3, BL1000NE305 + SE-BL-J1000-DTV3, BL1600NE305 + SE-BL-1250-DTV3 OEZ-Чехия, каталог J1-2013-A Приложен в ОП2
2.	Техническо описание и чертежи с нанесени на тях размери	каталог J1-2013-A Приложен в ОП2
3.	ЕО декларация за съответствие	приложена
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	приложени
5.	Сертификат/акредитация на независимата изпитвателна лаборатория, провела типовите изпитвания по т. 4 – заверено копие	приложен
6.	Инструкции за транспортиране, складиране, монтиране, вкл. въртящия момент на затягане на клемовите съединения, обслужване и поддържане	приложени
7.	Описание на потенциалната заплаха за увеличаване опасността и рисковете от замърсяване на околната среда и класификация на отпадъците съгласно Наредба №3/2004 г. за класификация на отпадъците, издадена от министъра на околната среда и водите и министъра на здравеопазването, обн. ДВ, бр. 44 от 25.05.2004 г.	приложено
8.	Декларация за възможността за рециклиране на използваните материали или за начина на ликвидацията им	приложена

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.)

Технически данни:

1. Характеристики на работната среда

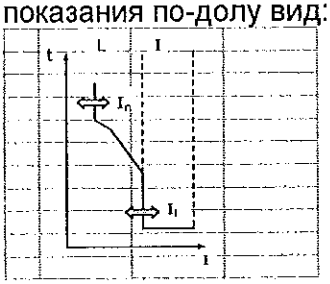
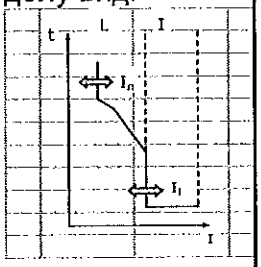
№ по ред	Характеристика	Стойност
1.1	Място на монтиране	На закрито

№ по ред	Характеристика	Стойност
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

№ по ред	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 параметри и други данни

№ по ред	Технически параметър	Изискване	Гарантирано предложение
3.1	Брой на полюсите	3	3
3.2	Обявено работно напрежение (U_e)	min 690 V AC	690 V AC
3.3	Обявена честота	50 Hz	50/60 Hz
3.4	Обявено импулсно напрежение (U_{imp})	min 6 kV	8 kV
3.5	Обявено изолационно напрежение (U_i)	min 690 V	690 V
3.6	Категория на приложение	A	A
3.7	Работна изключвателна възможност при късо съединение (I_{cs})	min 50% от I_{cu}	1. 50% от I_{cu} за АП 630 А 2. 67% от I_{cu} за АП 1000 А и 1250 А
3.8	Защита от свръхтокове	-	-
3.8.1	Тип и времетокова характеристика	Защитата от свръхтокове трябва да бъде от електронен тип с времетокова характеристика от показания по-долу вид: 	Защитата от свръхтокове трябва да бъде от електронен тип с времетокова характеристика от показания по-долу вид: 
3.8.2	Защита от претоварване	а) Диапазон на настройване I_R=(min 0,5÷1)xI_n	I_R=(0,4÷1)xI_n
		б) Условен ток на неизключване I_{nd}=1,05xI_R във времеви интервал от 120 минути	Условен ток на неизключване I_{nd}=1,05xI_R във времеви интервал от 120 минути

№ по ред	Технически параметър	Изискване	Гарантирано предложение
		в) Условен ток на изключване I_d = 1,30xI_R във времеви интервал до 120 минути	Условен ток на изключване I_d = 1,30xI_R във времеви интервал до 120 минути
3.8.3	Защита от къси съединения	Токът на изключване I_i трябва да бъде фиксиран на една от стойностите или регулируем в диапазона препоръчително от min 4x I_n до 10x I_n	Диапазон на настройване I_i= 4xIn или 12,5xI_n за АП 630А
3.9	Степен на защита от проникване на твърди тела и вода съгласно БДС EN 60529+A1:2004	-	-
3.9.1	Клемни съединения	min IP 20	IP 20
3.9.2	Челна повърхност	min IP 40	IP 40
3.10	Аксесоари	а) Два комплекта разширители и удължител за свързване към шинна система от алуминиева шина с правоъгълно сечение	Два комплекта разширители и удължител за свързване към шинна система от алуминиева шина с правоъгълно сечение
		б) Два комплекта предпазни клемови капаци и изолиращи фазови сепаратори.	Два комплекта предпазни клемови капаци и изолиращи фазови сепаратори.

4. Триполюсни автоматични прекъсвачи НН с лят корпус, от 160 А ÷ 1250 А, с електронна защита, категория А

4.3 Триполюсен автоматичен прекъсвач НН с лят корпус, 630 А, с електронна защита, кат. А

Номер на стандарта	Тип/референтен номер съгласно каталога на производителя
20 17 6002	BH630NE305-14412 + SE-BH-0630-DTV3-25100

Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 630 А, с електронна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ел. защита, 630 А, кат. А	
№ по ред	Технически параметър	Изискване	Гарантирано предложение
4.3.1	Обявен ток (I_n)	630 А	630 А
4.3.2	Обявена максимална изключвателна възможност при к.с. (I_{cu})	min 20 kA / 500 V	20 kA / 500 V
4.3.3	Работна изключвателна възможност при късо съединение (I_{cs})	Съгласно т. 3.7 и т. 4.3.2 Да се посочи	10 kA / 500 V
4.3.4	Ток на изключване на защитата от къси съединения (I_i)	Съгласно т. 3.8.3 Да се посочи	Ii=2520 A - 7875 A
4.3.5	Време за изключване при I_{cu}	max 0,010 s	0,010 s
4.3.6	Износоустойчивост	-	-
4.3.6a	Електрическа (брой к.ц.)	min 1000 бр.	5 000 бр.
4.3.6b	Механична (брой к.ц.)	min 4000 бр.	20 000 бр.
4.3.7	Максимални размери ВхШхД (Дълбочината „Д" не включва лоста за управление)	290x215x160 mm	275x140x105
4.3.8	Тегло, kg	Да се посочи	5.4, kg

4.4 Триполюсен автоматичен прекъсвач НН с лят корпус, 1000 А, с електронна защита, кат. А

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 6003		BL1000NE305-19381 + SE-BL-J1000-DTV3-19383	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 1000 А, с електронна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ел. защита, 1000 А, кат. А	
№ по ред	Технически параметър	Изискване	Гарантирано предложение
4.4.1	Обявен ток (I_n)	1000 А	1000 А
4.4.2	Обявена максимална изключвателна възможност при к.с. (I_{cu})	min 45 kA / 500 V	45 kA / 500 V

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 6003		BL1000NE305-19381 + SE-BL-J1000-DTV3-19383	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 1000 А, с електронна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ел. защита, 1000 А, кат. А	
№ по ред	**Технически параметър**	**Изискване**	**Гарантирано предложение**
4.4.3	Работна изключвателна възможност при късо съединение (I_{cs})	Съгласно т. 3.7 и т. 4.4.2 Да се посочи	30 kA / 500 V AC
4.4.4	Ток на изключване на защитата от къси съединения (I_i)	Съгласно т. 3.8.3 Да се посочи	Ii=1250 A - 14000 A
4.4.5	Време за изключване при I_{cu}	max 0,030 s	0,030 s
4.4.6	Износоустойчивост	-	-
4.4.6a	Електрическа (брой к.ц.)	min 500 бр.	4 000 бр.
4.4.6b	Механична (брой к.ц.)	min 2500 бр.	10 000 бр.
4.4.7	Максимални размери ВхШхД (Дълбочината „Д" не включва лоста за управление)	375x210x160 mm	350x210x135 mm
4.4.8	Тегло, kg	Да се посочи	22, kg

4.5 Триполюсен автоматичен прекъсвач НН с лят корпус, 1250 А, с електронна защита, кат. А

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 6004		BL1600SE305-14410+SE-BL-1250-DTV3-19388	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 1250 А, с електронна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ел. защита, 1250 А, кат. А	
№ по ред	**Технически параметър**	**Изискване**	**Гарантирано предложение**
4.5.1	Обявен ток (I_n)	1250 A	1250 A
4.5.2	Обявена максимална изключвателна възможност при к.с. (I_{cu})	min 45 kA / 500 V	45 kA / 500 V
4.5.3	Работна изключвателна	Съгласно т. 3.7 и т.	30 kA / 500 V

Номер на стандарта		Тип/референтен номер съгласно каталога на производителя	
20 17 6004		BL1600SE305-14410+SE-BL-1250-DTV3-19388	
Наименование на материала		Триполюсен автоматичен прекъсвач НН с лят корпус, 1250 А, с електронна защита, кат. А	
Съкратено наименование на материала		Трип. авт. прек. НН, с ел. защита, 1250 А, кат. А	
№ по ред	**Технически параметър**	**Изискване**	**Гарантирано предложение**
	възможност при късо съединение (I_{cs})	4.5.2 Да се посочи	
4.5.4	Ток на изключване на защитата от къси съединения (I_i)	Съгласно т. 3.8.3 Да се посочи	Ii=1875 A - 22500 A
4.5.5	Време за изключване при I_{cu}	max 0,030 s	0,030 s
4.5.6	Износоустойчивост	-	-
4.5.6a	Електрическа (брой к.ц.)	min 500 бр.	4 000 бр.
4.5.6b	Механична (брой к.ц.)	min 2500 бр.	10 000 бр.
4.5.7	Максимални размери ВхШхД (Дълбочината „Д" не включва лоста за управление)	375x210x160 mm	350x210x135
4.5.8	Тегло, kg	Да се посочи	22,kg

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

OEZ®

ES PROHLÁŠENÍ O SHODĚ / *CE DECLARATION OF CONFORMITY*

Číslo / *No.* : 219301/0803

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

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

Výrobek: Jističe MCCB
Product: Moulded case circuit breakers

Typ / *Type*: BC160

Příslušenství / *Accessory*:

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

České normy / *Czech standards*	**Evropské normy** / *European standards*
ČSN EN 60947-2:03ed.3+A1:01+consolidated ed.2.2:01 ČSN EN 60947-2ed.2:04	EN 60947-2:2003 - including amendments EN 60947-1:2004 - including amendments

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

NV 17/2003 Sb. v platném znění	2006/95/ES - including amendments

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

EZU Certifikát / *EZU Certificate*: 1060249 ze dne 3.4.2006
EZÚ zkušební protokol / *EZU test report*: 600332-03/01 ze dne 29.3.2006

Poslední dvojčíslí roku, v němž bylo označení CE na výrobek umístěno: 06
Last two digits of the year in which the CE mark was placed on the product:

Místo vydání: **Letohrad** **Zástupce výrobce a podpis:** **Ing. Jaroslav Toman**
Place of issue: Manufacturer's representative and
signature:

Datum vydání: **27.03.2008** **Funkce:** **generální ředitel**
Date of issue: *Position:* *general director*

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

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

OEZ

ES PROHLASENI O SHODE / *ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ*

Cislo/№ : 219301/0803

My / *Ние* **OEZ s.r.o.**
Sedivska 339, 561 51 Letohrad, Ceska republika

prohlasujeme na svou vylucnou odpovednost, ze
декларираме на своя собствена отговорност, че

Vyrobek: Jistice MCCB
Продукт: Прекъсвачи лят корпус

Typ/ *Тип:* BC160

Prislusenstvi / *Аксесоари:*

je ve shode s nasledujicimi normami:
отговаря на следните стандарти:

Ceske normy / *Чехски стандарти*	**Evropske norny** / *Европейски стандарти*
CSN EN 60947-2:03ed.3+A1:01+consolidated ed.2.2:01 CSN EN 60947-2ed.2:04	EN 60947-2:2003 – включително изменения EN 60947-1:2004 - включително изменения

a nasledujicimi narizenimi vlady, ve zneni pozdejsich predpisu (NV)
и следните държавни наредби (NV), изменен

NV 17/2003 Sb. v platnem zneni	2006/95/ES - включително изменения

Elektrotechnicky zkusebni ustav, Pod Lisem 129,171 02 Praha 71, Ceska republika
zkousel / certifikoval dany vyrobek a vydal:
проверен / сертифициран продукт и издаден:

EZU Certifikat / *EZU Сертификат:* 1060249 от 3.04.2006
EZU zkusebni protokol / *EZU тест протокол:* 600332-03/01 от 29.03.2006

Posledni dvojcisli roku, v nemz bylo oznaceni CE na vyrobek umisteno: 06
Последните две цифри на годината, през която маркировката се нанася върху продукта:

Misto vydani: **Letohrad**
Място на издаване:

Datum vydani: **27.03.2008**
Дата на издаване:

Zastupce vyrobce a podpis: **Ing. Jaroslav Toman**
Представител на производителя и подпис

Funkce: generalni reditel
Позиция генерален директор

ЕЛЕКТРИС ЕООД * ELECTRIS LTD

ВЕРНО С ОРИГИНАЛА

OEZ &r.o.
Sedivska 339, Letohrad
561 51
Cezka republika
IOO: 49810146, DIC: CZ49810146

OEZ

ES PROHLÁŠENÍ O SHODĚ / *CE DECLARATION OF CONFORMITY*

Číslo / *No.* : 205602/0803

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

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

Výrobek: Jističe MCCB
Product: Moulded case circuit breakers

Typ / *Type*: BD250

Příslušenství / *Accessory*:
BD250SE.05, BD250NE.05, SE-BD-., SP-BHD-X, SV-BHD-X,
ZO-BD-0250-, ZV-BD-0250-, PS-BHD-, MB-BD-, MB-BHD-,
RP-, MP-BD-X, CS-BD-..., OD-BD-, OD-BHD-, SO-BHD-,

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

České normy / *Czech standards*	**Evropské normy** / *European standards*
ČSN EN 60947-1:05ed.3	EN 60947-1:00 - including amendments
ČSN EN 60947-2:07+1:07	EN 60947-2:03 - including amendments
ČSN EN 61000-4-5:07ed.2	EN 61000-4-5:95 - including amendments
ČSN EN 61000-4-2:97+A1:99+Z1:01	EN 61000-4-2:95 - including amendments
ČSN EN 61000-4-3:06ed.3	EN 61000-4-3:02 - including amendments

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

NV 17/2003 Sb. v platném znění	2006/95/ES - including amendments
NV 616/2006 Sb. v platném znění	2004/108/ES - including amendments

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

EZU Certifikát / *EZU Certificate*: 1070838 ze dne 19.10.2007
EZÚ zkušební protokol / *EZU test report*: 703774-01/01 ze dne 12.10.2007

Poslední dvojčíslí roku, v němž bylo označení CE na výrobek umístěno: 01
Last two digits of the year in which the CE mark was placed on the product:

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

Zástupce výrobce a podpis: **Ing. Jaroslav Toman**
Manufacturer's representative and

Datum vydání: **27.03.2008**
Date of issue:

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

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

1

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

OEZ

ES PROHLASENI O SHODE / *ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ*

Cislo / *№.* : 205602/0803

My / *Ние* **OEZ s.r.o.**
Sedivska 339, 561 51 Letohrad, Ceska republika

prohlasujeme na svou vylucnou odpovednost, ze
декларираме на своя собствена отговорност, че

Vyrobek: Jistice MCCB
Продукт: Прекъсвачи лят корпус

Typ / *Тип:* BD250

Prislusenstvi / *Аксесоари:*
BD250SE.05, BD250NE.05, SE-BD-., SP-BHD-X, SV-BHD-X, ZO-BD-0250-, ZV-BD-0250-, PS-BHD-, MB-BD-, MB-BHD-, RP-, MP-BD-X, CS-BD-..., OD-BD-, OD-BHD-, SO-BHD-,

je ve shode s nasledujicimi normami:
отговаря на следните стандарти:

Ceske normy / *Чехски стандарти*	**Evropske normy** / *Европейски стандарти*
CSN EN 60947-1:05ed.3 CSN EN 60947-2:07+1:07 CSN EN61000-4-5:07ed.2 CSN EN 61000-4-2:97+A1:99+Z1:01 CSNEN61000-4-3:06ed.3	EN 60947-1:00 - включително изменения EN 60947-2:03 - включително изменения EN 61000-4-5:95 - включително изменения EN 61000-4-2:95 - включително изменения EN 61000-4-3:02 - включително изменения

a nasledujicimi narizenimi vlady, ve zneni pozdejsich predpisu (NV)
and the following government regulations (NV), as amended

NV 17/2003 Sb. v platnem zneni NV 616/2006 Sb. v platnem zneni	2006/95/ES - включително изменения 2004/108/ES - включително изменения

Elektrotechnicky zkusebni ustav, Pod Lisem 129,171 02 Praha 71, Ceska republika
zkousel / certifikoval dany vyrobek a vydal:
проверен / сертифициран продукт и издаден:

EZU Certifikat / *EZU Сертификат:* 1070838 от 19.10.2007
EZU zkusebni protokol / *EZU тест протокол:* 703774-01/ от 12.10.2007

Posledni dvojcisli roku, v nemz bylo oznaceni CE na vyrobek umisteno: 01
Последните две цифри на годината, през която маркировката се нанася върху продукта:

Misto vydani: Letohrad
Място на издаване:

Datum vydani: 27.03.2008
Дата на издаване:

Zastupce vyrobce a podpis: **Ing. Jaroslav Toman**
Представител на производителя и подпис

Funkce: generalni reditel
Позиция: генерален директор

OEZ &r.o.
Sedivska 339, Letohrad
561 51
Cezka republika
IOO: 49810146, DIC: CZ49810146

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

OEZ

ES PROHLÁŠENÍ O SHODĚ / *CE DECLARATION OF CONFORMITY*

Číslo / *No.* : 211802/0803

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

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

Výrobek: Jističe MCCB
Product: Moulded case circuit breakers

Typ / *Type*: BH630

Příslušenství / *Accessory*:
BH630SE.05, BH630NE.05, SE-BH-., SP-BHD-X, SV-BHD-X, ZO-BH-0630-, ZV-BH-0630-, PS-BHD-, MB-BH-, MB-BHD-, RP-, MP-BH-X, CS-BH-..., OD-BH-, OD-BHD-, SO-BHD-,

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

České normy / *Czech standards*	**Evropské normy** / *European standards*
ČSN EN 60947-1:05ed.3 ČSN EN 60947-2:07ed.3+1:07	EN 60947-1:00 - including amendments EN 60947-2:04 - including amendments

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

NV 17/2003 Sb. v platném znění NV 616/2006 Sb. v platném znění	2006/95/ES - including amendments 2004/108/ES - including amendments

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

EZU Certifikát / *EZU Certificate*: 1070840 ze dne 19.10.2007
EZÚ zkušební protokol / *EZU test report*: 703777-01/01 ze dne 09.10.2007

Poslední dvojčíslí roku, v němž bylo označení CE na výrobek umístěno: 01
Last two digits of the year in which the CE mark was placed on the product:

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

Zástupce výrobce a podpis: **Ing. Jaroslav Toman**
Manufacturer's representative and signature:

Datum vydání: **27.03.2008**
Date of issue:

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

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

ЕЛЕКТРИС ЕООД
ELECTRIS LTD

ВЯРНО С ОРИГИНАЛА

OEZ

ES PROHLASENI O SHODE / *ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ*

Cislo/№: 211802/0803

My / *Ние* **OEZ s.r.o.**
Sedivska 339, 561 51 Letohrad, Ceska republika

prohlasujeme na svou vylucnou odpovednost, ze
декларираме на своя собствена отговорност, че

Vyrobek: Jistice MCCB
Продукт: Прекъсвачи лят корпус

Typ / *Тип:* BH630

Prislusenstvi / *Аксесоари:*
BH630SE.05, BH630NE.05, SE-BH-., SP-BHD-X, SV-BHD-X, ZO-BH-0630-, ZV-BH-0630-, PS-BHD-, MB-BH-, MB-BHD-, RP-, MP-BH-X, CS-BH-..., OD-BH-, OD-BHD-, SO-BHD-,

je ve shode s nasledujicimi normami:
отговаря на следните стандарти:

Ceske normy / *Чехски стандарти*	**Evropske normy** / *Европейски стандарти*
CSN EN 60947-1:05ed.3 CSN EN 60947-2:07ed.3+1:07	EN 60947-1:00 - включително изменения EN 60947-2:04 - включително изменения

a nasledujicimi narizenimi vlady, ve zneni pozdejsich predpisu (NV)
and the following government regulations (NV), as amended

NV 17/2003 Sb. v platnem zneni NV 616/2006 Sb. v platnem zneni	2006/95/ES - включително изменения 2004/108/ES - включително изменения

Elektrotechnicky zkusebni ustav, Pod Lisem 129,171 02 Praha 71, Ceska republika
zkousel / certifikoval dany vyrobek a vydal:
проверен / сертифициран продукт и издаден:

EZU Certifikat / *EZU Сертификат:* 1070840 от 19.10.2007
EZU zkusebni protokol / *EZU тест протокол:* 703777-01/01 от 09.10.2007

Posledni dvojcisli roku, v nemz bylo oznaceni CE na vyrobek umisteno: 01
Последните две цифри на годината, през която маркировката се нанася върху продукта:

Misto vydani: Letohrad
Място на издаване:

Zastupce vyrobce a podpis: Ing. Jaroslav Toman
Представител на производителя и подпис

Datum vydani: 27.03.2008
Дата на издаване:

Funkce: generalni reditel
Позиция: генерален директор

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

OEZ &r.o.
Sedivska 339, Letohrad
561 51
Cezka republika
IOO: 49810146, DIC: CZ49810146

NÁRODNÍ AKREDITAČNÍ ORGÁN

Český institut pro akreditaci, o.p.s.
130 00 Praha 3, Olšanská 54/3

vydává

OSVĚDČENÍ O AKREDITACI

č. 635 / 2012

Elektrotechnický zkušební ústav, s.p.
se sídlem Pod Lisem 129, 171 02 Praha 8 - Troja, IČ 00001481

pro zkušební laboratoř č. **1056**
Zkušební laboratoř

Předmět akreditace:

Zkoušení výrobků, dílů, součástí, materiálů a pomůcek v rozsahu uvedeném v příloze tohoto osvědčení.

Toto osvědčení o akreditaci vydal Český institut pro akreditaci, o.p.s. na základě posouzení splnění akreditačních požadavků podle

ČSN EN ISO/IEC 17025:2005

a po zjištění, že zkušební laboratoř je odborně způsobilá objektivně a nezávisle vykonávat činnosti uvedené v rozsahu předmětu akreditace.

Adresát tohoto osvědčení je oprávněn používat při své činnosti v rozsahu tohoto osvědčení a po dobu jeho platnosti vedle svého názvu označení „zkušební laboratoř akreditovaná ČIA č. 1056", pod podmínkou, že bude vždy postupovat v souladu s příslušnými předpisy vztahujícími se k činnosti akreditované zkušební laboratoře, a to zejména ČSN EN ISO/IEC 17011, čl. 8.1, ČSN EN ISO/IEC 17025, zákona č. 22/1997Sb., o technických požadavcích na výrobky, ve znění pozdějších předpisů, včetně navazujících předpisů vydaných Českým institutem pro akreditaci, o.p.s.

Prokáže-li se, že adresát tohoto osvědčení neplní akreditační požadavky rozhodné pro jeho vydání a nedodržuje závazky podmiňující akreditaci, může Český institut pro akreditaci, o.p.s. účinnost tohoto osvědčení pozastavit nebo osvědčení o akreditaci zrušit.

Toto osvědčení je vydáno v souladu s ustanovením § 16 odst. 1 zákona č. 22/1997 Sb., o technických požadavcích na výrobky a v souladu s ustanovením § 151 zákona č. 500/2004 Sb., správní řád.

Toto osvědčení je platné do **15.10.2017**

V Praze dne 07.11.2012

Ing. Jiří Růžička, MBA
ředitel
Českého institutu pro akreditaci, o.p.s.

ЧЕШКИ ИНСТИТУТ ПО АКРЕДИТАЦИЯ
130 00 Praha 3, Olšanská 54/3

издава

СЕРТИФИКАТ ЗА АКРЕДИТАЦИЯ

№ 635 / 2012

Институт за електрически изпитвания, S. P.
седалище Pod Lisem 129, 171 02 Praha 8 - Troja,, IC 00001481

за Изследователските лаборатории №1056
Изпитвателна лаборатория

Предмет на акредитацията:

Изпитване на продукти, части, компоненти, материали и оборудване в степента, посочена в приложението към настоящото удостоверение.

Настоящият сертификат за акредитация, издаден от Чешкия институт за акредитация въз основа на оценка на съответствието с изискванията за акредитация на

ISO / IEC 17025:2005

констатира, че лабораторията за изпитване е компетентна обективно и независимо да изпълнява дейностите, посочени в обхвата на акредитация.

Адресатът на това удостоверение има право да упражнява своята дейност в обхвата на сертификата и срока на валидност на идентификация "изпитвателна лаборатория, акредитирана от ČIA №1056" при условие, че тя винаги ще действа в съответствие със съответните разпоредби, отнасящи се до дейността на акредитираните лаборатории за изпитване, по-специално EN ISO/IEC17011, член 8.I, ISO EN / IEC 17025, Закон № 22/1 997Sb., за техническите изисквания към продуктите, като по-късно законодателство, включително свързаните с правилник, издаден от Чешкия институт по акредитация

Ако се докаже, че адресатът на този сертификат не отговаря на изискванията за акредитация, приложими за издаване и не спазва задълженията за акредитация, Чешкият институт за акредитация може да спре действието или отнеме сертификата за акредитация.

Това удостоверение се издава в съответствие с § 16, параграф 1 от Закон № 22/1997 Sb., за техническите изисквания към продуктите, в съответствие с § 151 от Закон № 500/2004 Sb., на Административнопроцесуалния кодекс.

Този сертификат е валиден до 15-ти октомври 2017

Прага, 07.11.2012

Ing. Jiří Růžička, MBA
Директор
Чешки институт по акредитация

ЕЛЕКТРИС ЕООД
ELECTRIS LTD

СПИСЪК НА ИЗПИТАНИЯТА ЗА
Триполюсен автоматичен прекъсвач НН с лят корпус от 100 А

Удостоверение за изпитание	*Распределително устройство и механизъм за управление ниско напре жения: Част 2: Автоматични прекъсвачи*

Клиент:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Производител:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Място на производство:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-0465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Типово обозначение:	BC160NT305-100-D-20204
Търговска марка	OEZ®
Място на проведане на изпитанията:	Институт EZÚ , Pod Lisem 129 171 02 Praha 71 – Trója Тел.: 00420-266 104 111 факс.: 00420-284 680 070 e-mail : testing@ezu.cz
Описание:	Автоматичен прекъсвач-разединител НН с лят корпус BC160N
Приложими стандарти:	IEC 60 947-2:95+A1:97+A2:01

In	100A
полюса:	3
последоват. исп. :	I, II, III, Прилож. C,F,G,H

	Фамилия, имя:	Дата:	Подпис:
Испитан от:	Ярослав Клипа	29.03.2006	
Проверил:	Ян Главаты	29.03.2006	

Характеристики

Тип на автоматичния прекъсвач:	BC160NT305-100-D-20204
Брой на полюсите	3
вид на тока	AC

Брой на фазите	3	
Номиналная честота	50/60Гц	
категория на приложение	A	
контролна температура	40°C	
пригодност за изоляции	Да	

Номинални и пределни значения		
работно напряжение (Ue):	690	B
импулсное напряжение без пробив (Uimp)	8	кB
номиналное напряжение на изолация (Ui)	690	B
Условнен термичен ток (Ith/Ithe)	100	A
Номинален ток (In)	100	A
Номинално работно напрежение (U)	415/500/690	B

Характеристики на автоматичния прекъсвач

U/B	Icm/kA	Icu/kA	Ics/kA	
415	52	25	13	
500		12	6	
690		6	3	

СПИСЪК НА ИЗПИТАНИЯТА

1. **Вериги за управление**
2. **Спомагателни вериги**
3. **Изключватели**
4. **Маркировка**
5. **Последователност на изпитанията I**
6. **Общи експлоатационни характеристики**
7. **Граници и характеристики на изключване**
8. **Изключвател с обратно зависима задръжка по време**
9. **Характеристики на изключване в зависимост на темепературата на околния въздух**
10. **Изключване при късо съединение**
11. **Изключване при претоварване**

12. **Характеристики на сработване в зависимост от температурата на околната среда**
13. **Допълнително изпитание на ампер-секундната характеристика**
14. **Допълнителное испитание на изключвателя за определено време**
15. **Изпитание на диелектрични свойства**
16. **Проверка на диелектричната якост**
17. **Проверка на повърхностните расстояния**
18. **Изпитание на механична експлоатационна способност**
19. **Механическая износоустойчивост**
20. **Коммутационна износоустойчивост**
21. **Дополнителане при претоварване**
22. **Проверка на диэлектричната издръжливост**
23. **Проверка на превишена температура**
24. **Проверка на максимално-токовия иключвател**
25. **Последователност на изпитанията II**
26. **Проверка на диелектричната якост**
27. **Проверка за превишена температура**
28. Максимални изключватели при претоварване
29. **Превишение на температурата на клемите**
30. **Последователност на изпитанията III**
31. **Номинална пределна коммутационна способност**
32. **Изключвател при претоварване**
33. **Последователност на операциите** (0-t-C0)
34. **Проверка на здравината на изолацията**
35. **Дополнителни изпитания на изключвателя на всеко полюс поотделно**
36. **Последователност на изпитанията при късо суединение на 1 полюс**
37. **Дополнительни изисквания към авт. прекъсвачи с електронна защита**
38. **Изпитание за устойчивост по отношениюма индуцираните преходни**
39. **высокочестотни смущения**
40. **Изпитание на сух климат**
41. **Изпитание на устойчивости по отношению на електростатични смущения**
42. **Изпитание на топлинен удар**
43. **Изпитание на влажнен климат**
44. **Изпитание на радиочастотни лъчения**
45. **Загуба на мощност**
46. **Последователност на изпитания за авт. прекъсвачи за IT система**

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

СПИСЪК НА ИЗПИТАНИЯТА ЗА
Триполюсен автоматичен прекъсвач НН с лят корпус от 160 А

Удостоверение за изпитание ***Распределително устройство и механизъм за управление ниско напре жения: Част 2: Автоматични прекъсвачи***

Клиент:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Производител:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Място на производство:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-0465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Типово обозначение:	BC160NT305-160-D-20208
Търговска марка	OEZ®
Място на проведане на изпитанията:	Институт EZÚ , Pod Lisem 129 171 02 Praha 71 – Trója Тел.: 00420-266 104 111 факс.: 00420-284 680 070 e-mail : testing@ezu.cz
Описание:	Автоматичен прекъсвач-разединител НН с лят корпус BC160N
Приложиме стандарти:	IEC 60 947-2:95+A1:97+A2:01

In	160A	
полюса:	3	
последоват. исп. :	I, II, III, Прилож. C,F,G,H	

	Фамилия, имя:	Дата:	Подпис:
Испитан от:	Ярослав Клипа	29.03.2006	
Проверил:	Ян Главаты	29.03.2006	

Характеристики

Тип на автоматичния прекъсвач:	BC160NT305-160-D-20208
Брой на полюсите	3
вид на тока	AC

Брой на фазите	3	
Номиналная честота	50/60Гц	
категория на приложение	A	
контролна температура	40°C	
пригодност за изоляции	Да	

Номинални и пределни значения

работно напряжение (Ue):	690	B
импулсное напряжение без пробив (Uimp)	8	кВ
номиналное напряжение на изолация (Ui)	690	B
Условнен термичен ток (Ith/Ithe)	160	A
Номинален ток (In)	160	A
Номинално работно напрежение (U)	415/500/690	B

Характеристики на автоматичния прекъсвач

U/B	Icm/kA	Icu/kA	Ics/kA	
415	2,8			
500				
690				

СПИСЪК НА ИЗПИТАНИЯТА

1. **Вериги за управление**
2. **Спомагателни вериги**
3. **Изключватели**
4. **Маркировка**
5. **Последователност на изпитанията I**
6. **Общи експлоатационни характеристики**
7. **Граници и характеристики на изключване**
8. **Изключвател с обратно зависима задръжка по време**
9. **Характеристики на изключване в зависимост на темепературата на околния въздух**
10. **Изключване при късо съединение**
11. **Изключване при претоварване**

12. **Характеристики на сработване в зависимост от температурата на околната среда**
13. **Допълнително изпитание на ампер-секундната характеристика**
14. **Допълнителное испитание на изключвателя за определено време**
15. **Изпитание на диелектрични свойства**
16. **Проверка на диелектричната якост**
17. **Проверка на повърхностните расстояния**
18. **Изпитание на механична експлоатационна способност**
19. **Механическая износоустойчивост**
20. **Коммутационна износоустойчивост**
21. **Дополнителане при претоварване**
22. **Проверка на диэлектричната издръжливост**
23. **Проверка на превишена температура**
24. **Проверка на максимално-токовия иключвател**
25. **Последователност на изпитанията II**
26. **Проверка на диелектричната якост**
27. **Проверка за превишена температура**
28. Максимални изключватели при претоварване
29. **Превишение на температурата на клемите**
30. **Последователност на изпитанията** III
31. **Номинална пределна коммутационна способност**
32. **Изключвател при претоварване**
33. **Последователност на операциите** (0-t-C0)
34. **Проверка на здравината на изолацията**
35. **Дополнителни изпитания на изключвателя на всеко полюс поотделно**
36. **Последователност на изпитанията при късо суединение на 1 полюс**
37. **Дополнительни изисквания към авт. прекъсвачи с електронна защита**
38. **Изпитание за устойчивост по отношениюма индуцираните преходни**
39. **высокочестотни смущения**
40. **Изпитание на сух климат**
41. **Изпитание на устойчивости по отношению на електростатични смущения**
42. **Изпитание на топлинен удар**
43. **Изпитание на влажнен климат**
44. **Изпитание на радиочастотни лъчения**
45. **Загуба на мощност**
46. **Последователност на изпитания за авт. прекъсвачи за IT система**

СПИСЪК НА ИЗПИТАНИЯТА ЗА
Автоматичен 3 полюсен прекъсвач НН с лят корпус, 250A

Удостоверение за изпитание ***Распределително устройство и механизъм за управление ниско напре жения: Част 2: Автоматични прекъсвачи***

Клиент:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Производител:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Място на производство:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-0465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Типово обозначение:	BD250NE305-14414+SE-BD-0250-DTV3-24100
Търговска марка	OEZ®
Място на проведане на изпитанията:	Институт EZÚ , Pod Lisem 129 171 02 Praha 71 – Trója Тел.: 00420-266 104 111 факс.: 00420-284 680 070 e-mail : testing@ezu.cz
Описание:	Автоматичен прекъсвач
Приложими стандарти:	IEC 60 947-2:95+A1:97+A2:01

In	250A
полюса:	3
последоват. исп. :	I, II, III, Прилож. C,F,G,H

	Фамилия, имя:	Дата:	Подпис:
Изпитан от:	Ярослав Клипа	06.03.2007	
Проверил:	Ян Главаты	06.03.2007	

Характеристики

Тип на автоматичния прекъсвач:	BD250NE305-14414+SE-BD-0250-DTV3-24100
Брой на полюсите	3
вид на тока	AC

Брой на фазите	3		
Номиналная честота	50/60Гц		
категория на приложение	A		
контролна температура	40°C		
пригодност за изоляции	Да		

Номинални и пределни значения		
работно напряжение (Ue):	690	B
импулсное напряжение без пробив (Uimp)	8	кВ
номиналное напряжение на изолация (Ui)	690	B
Условнен термичен ток (Ith/Ithe)	250	A
Номинален ток (In)	250	A
Номинално работно напрежение (U)	415/500/690	B

Характеристики на автоматичния прекъсвач

U/B	Icm/kA	Icu/kA	Ics/kA	
415	75	36	18	
500		16	8	
690		10	5	

СПИСЪК НА ИЗПИТАНИЯТА

1. **Вериги за управление**
2. **Спомагателни вериги**
3. **Изключватели**
4. **Маркировка**
5. **Последователност на изпитанията I**
6. **Общи експлоатационни характеристики**
7. **Граници и характеристики на изключване**
8. **Изключвател с обратно зависима задръжка по време**
9. **Характеристики на изключване в зависимост на темепературата на околния въздух**
10. **Изключване при късо съединение**
11. **Изключване при претоварване**

12. **Характеристики на сработване в зависимост от температурата на околната среда**
13. **Допълнително изпитание на ампер-секундната характеристика**
14. **Допълнителное испитание на изключвателя за определено време**
15. **Изпитание на диелектрични свойства**
16. **Проверка на диелектричната якост**
17. **Проверка на повърхностните расстояния**
18. **Изпитание на механична експлоатационна способност**
19. **Механическая износоустойчивост**
20. **Коммутационна износоустойчивост**
21. **Дополнителане при претоварване**
22. **Проверка на диэлектричната издръжливост**
23. **Проверка на превишена температура**
24. **Проверка на максимално-токовия иключвател**
25. **Последователност на изпитанията II**
26. **Проверка на диелектричната якост**
27. **Проверка за превишена температура**
28. Максимални изключватели при претоварване
29. **Превишение на температурата на клемите**
30. **Последователност на изпитанията III**
31. **Номинална пределна коммутационна способност**
32. **Изключвател при претоварване**
33. **Последователност на операциите** (0-t-C0)
34. **Проверка на здравината на изолацията**
35. **Дополнителни изпитания на изключвателя на всеко полюс поотделно**
36. **Последователност на изпитанията при късо съединение на 1 полюс**
37. **Дополнительни изисквания към авт. прекъсвачи с електронна защита**
38. **Изпитание за устойчивост по отношениюма индуцираните преходни**
39. **высокочестотни смущения**
40. **Изпитание на сух климат**
41. **Изпитание на устойчивости по отношению на електростатични смущения**
42. **Изпитание на топлинен удар**
43. **Изпитание на влажнен климат**
44. **Изпитание на радиочастотни лъчения**
45. **Загуба на мощност**
46. **Последователност на изпитания за авт. прекъсвачи за IT система**

СПИСЪК НА ИЗПИТАНИЯТА ЗА
Автоматичен 3 полюсен прекъсвач НН с лят корпус, 400A

Удостоверение за изпитание	*Распределително устройство и механизъм за управление ниско напре жения: Част 2: Автоматични прекъсвачи*
Клиент:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Производител:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Място на производство:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-0465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Типово обозначение:	BH630NE305-14412 + SE-BH-0400-DTV3-25200
Търговска марка	OEZ®
Място на проведане на изпитанията:	Институт EZÚ , Pod Lisem 129 171 02 Praha 71 – Trója Тел.: 00420-266 104 111 факс.: 00420-284 680 070 e-mail : testing@ezu.cz
Описание:	Автоматичен прекъсвач
Приложиме стандарти:	IEC 60 947-2:95+A1:97+A2:01

In	630A
полюса:	3
последоват. исп. :	I, II, III, Прилож. C,F,G,H

	Фамилия, имя:	Дата:	Подпись:
Испитан от:	Ярослав Клипа	06.03.2007	
Проверил:	Ян Главаты	06.03.2007	

Характеристики	
Тип на автоматичния прекъсвач:	BH630NE305-14412 + SE-BH-0400-DTV3-25200
Брой на полюсите	3
вид на тока	AC

Брой на фазите	3	
Номиналная честота	50/60Гц	
категория на приложение	А	
контролна температура	40°C	
пригодност за изоляции	Да	

Номинални и пределни значения		
работно напряжение (Ue):	690	В
импулсное напряжение без пробив (Uimp)	8	кВ
номиналное напряжение на изолация (Ui)	690	В
Условнен термичен ток (Ith/Ithe)	400	А
Номинален ток (In)	400	А
Номинално работно напрежение (U)	415/500/690	В

Характеристики на автоматичния прекъсвач

U/B	Icm/kA	Icu/kA	Ics/kA	
415	75	36	18	
500		20	10	
690		15	8	

СПИСЪК НА ИЗПИТАНИЯТА

1. **Вериги за управление**
2. **Спомагателни вериги**
3. **Изключватели**
4. **Маркировка**
5. **Последователност на изпитанията I**
6. **Общи експлоатационни характеристики**
7. **Граници и характеристики на изключване**
8. **Изключвател с обратно зависима задръжка по време**
9. **Характеристики на изключване в зависимост на темепературата на околния въздух**
10. **Изключване при късо съединение**
11. **Изключване при претоварване**

12. **Характеристики на сработване в зависимост от температурата на околната среда**
13. **Допълнително изпитание на ампер-секундната характеристика**
14. **Допълнителное испитание на изключвателя за определено време**
15. **Изпитание на диелектрични свойства**
16. **Проверка на диелектричната якост**
17. **Проверка на повърхностните расстояния**
18. **Изпитание на механична експлоатационна способност**
19. **Механическая износоустойчивост**
20. **Коммутационна износоустойчивост**
21. **Дополнителане при претоварване**
22. **Проверка на диэлектричната издръжливост**
23. **Проверка на превишена температура**
24. **Проверка на максимално-токовия иключвател**
25. **Последователност на изпитанията II**
26. **Проверка на диелектричната якост**
27. **Проверка за превишена температура**
28. Максимални изключватели при претоварване
29. **Превишение на температурата на клемите**
30. **Последователност на изпитанията** III
31. **Номинална пределна коммутационна способност**
32. **Изключвател при претоварване**
33. **Последователност на операциите** (0-t-C0)
34. **Проверка на здравината на изолацията**
35. **Дополнителни изпитания на изключвателя на всеко полюс поотделно**
36. **Последователност на изпитанията при късо съединение на 1 полюс**
37. **Дополнительни изисквания към авт. прекъсвачи с електронна защита**
38. **Изпитание за устойчивост по отношениюма индуцираните преходни**
39. **высокочестотни смущения**
40. **Изпитание на сух климат**
41. **Изпитание на устойчивости по отношению на електростатични смущения**
42. **Изпитание на топлинен удар**
43. **Изпитание на влажнен климат**
44. **Изпитание на радиочастотни лъчения**
45. **Загуба на мощност**
46. **Последователност на изпитания за авт. прекъсвачи за IT система**

ЕЛЕКТРИС ЛТД * ELECTRIS LTD *

СПИСЪК НА ИЗПИТАНИЯТА ЗА
Автоматичен 3 полюсен прекъсвач НН с лят корпус, 630A

Удостоверение за изпитание	*Распределително устройство и механизъм за управление ниско напре жения: Част 2: Автоматични прекъсвачи*

Клиент:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Производител:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Място на производство:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-0465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Типово обозначение:	BH630NE305-14412 + SE-BH-0630-DTV3-25100
Търговска марка	OEZ®
Място на проведане на изпитанията:	Институт EZÚ , Pod Lisem 129 171 02 Praha 71 – Trója Тел.: 00420-266 104 111 факс.: 00420-284 680 070 e-mail : testing@ezu.cz
Описание:	Автоматичен прекъсвач
Приложими стандарти:	IEC 60 947-2:95+A1:97+A2:01

In	630A
полюса:	3
последоват. исп. :	I, II, III, Прилож. C,F,G,H

	Фамилия, имя:	Дата:	Подпись:
Испитан от:	Ярослав Клипа	06.03.2007	
Проверил:	Ян Главаты	06.03.2007	

Характеристики

Тип на автоматичния прекъсвач:	BH630NE305-14412 + SE-BH-0630-DTV3-25100
Брой на полюсите	3
вид на тока	AC

	Брой на фазите	3	
	Номиналная честота	50/60Гц	
	категория на приложение	A	
	контролна температура	40°C	
	пригодност за изоляции	Да	

Номинални и пределни значения

работно напряжение (Ue):	690	B
импулсное напряжение без пробив (Uimp)	8	кВ
номиналное напряжение на изолация (Ui)	690	B
Условнен термичен ток (Ith/Ithe)	630	A
Номинален ток (In)	630	A
Номинално работно напрежение (U)	415/500/690	B

Характеристики на автоматичния прекъсвач

U/B	Icm/kA	Icu/kA	Ics/kA	
415	75	36	18	
500		20	10	
690		15	8	

СПИСЪК НА ИЗПИТАНИЯТА

1. **Вериги за управление**
2. **Спомагателни вериги**
3. **Изключватели**
4. **Маркировка**
5. **Последователност на изпитанията I**
6. **Общи експлоатационни характеристики**
7. **Граници и характеристики на изключване**
8. **Изключвател с обратно зависима задръжка по време**
9. **Характеристики на изключване в зависимост на темепературата на околния въздух**
10. **Изключване при късо съединение**
11. **Изключване при претоварване**

12. **Характеристики на сработване в зависимост от температурата на околната среда**
13. **Допълнително изпитание на ампер-секундната характеристика**
14. **Допълнителное испитание на изключвателя за определено време**
15. **Изпитание на диелектрични свойства**
16. **Проверка на диелектричната якост**
17. **Проверка на повърхностните разстояния**
18. **Изпитание на механична експлоатационна способност**
19. **Механическая износоустойчивост**
20. **Коммутационна износоустойчивост**
21. **Дополнителане при претоварване**
22. **Проверка на диэлектричната издръжливост**
23. **Проверка на превишена температура**
24. **Проверка на максимално-токовия иключвател**
25. **Последователност на изпитанията II**
26. **Проверка на диелектричната якост**
27. **Проверка за превишена температура**
28. Максимални изключватели при претоварване
29. **Превишение на температурата на клемите**
30. **Последователност на изпитанията III**
31. **Номинална пределна коммутационна способност**
32. **Изключвател при претоварване**
33. **Последователност на операциите** (0-t-C0)
34. **Проверка на здравината на изолацията**
35. **Дополнителни изпитания на изключвателя на всеко полюс поотделно**
36. **Последователност на изпитанията при късо съединение на 1 полюс**
37. **Дополнительни изисквания към авт. прекъсвачи с електронна защита**
38. **Изпитание за устойчивост по отношениюма индуцираните преходни**
39. **высокочестотни смущения**
40. **Изпитание на сух климат**
41. **Изпитание на устойчивости по отношению на електростатични смущения**
42. **Изпитание на топлинен удар**
43. **Изпитание на влажнен климат**
44. **Изпитание на радиочастотни лъчения**
45. **Загуба на мощност**
46. **Последователност на изпитания за авт. прекъсвачи за IT система**

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

СПИСЪК НА ИЗПИТАНИЯТА ЗА
Автоматичен 3 полюсен прекъсвач НН с лят корпус, 1000A

Удостоверение за изпитание ***Распределително устройство и механизъм за управление ниско напрежения: Част 2: Автоматични прекъсвачи***

Клиент:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Производител:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Място на производство:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-0465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Типово обозначение:	BL1000SE305-19381 + SE-BL-J1000-DTV3-19383
Търговска марка	OEZ®
Място на проведане на изпитанията:	Институт EZÚ , Pod Lisem 129 171 02 Praha 71 – Trója Тел.: 00420-266 104 111 факс.: 00420-284 680 070 e-mail : testing@ezu.cz
Описание:	Автоматичен прекъсвач
Приложими стандарти:	IEC 60 947-2:95+A1:97+A2:01

In	1000A
полюса:	3
последоват. изп. :	I, II, III, Прилож. C,F,G,H

	Фамилия, имя:	Дата:	Подпис:
Изпитан от:	Ярослав Клипа	11.10.2002	
Проверил:	Ян Главаты	11.10.2002	

Характеристики

Тип на автоматичния прекъсвач:	BL1000SE305-19381 + SE-BL-J1000-DTV3-19383
Брой на полюсите	3
вид на тока	AC

Брой на фазите	3	
Номиналная честота	50/60Гц	
категория на приложение	A	
контролна температура	40°C	
пригодност за изоляции	Да	

Номинални и пределни значения

работно напряжение (Ue):	690	B
импулсное напряжение без пробив (Uimp)	8	кВ
номиналное напряжение на изолация (Ui)	690	B
Условнен термичен ток (Ith/Ithe)	1000	A
Номинален ток (In)	1000	A
Номинално работно напрежение (U)	415/500/690	B

Характеристики на автоматичния прекъсвач

U/B	Icm/kA	Icu/kA	Ics/kA	
415	140	65	36	
500	95	45	30	
690	60	20	20	

СПИСЪК НА ИЗПИТАНИЯТА

1. **Вериги за управление**
2. **Спомагателни вериги**
3. **Изключватели**
4. **Маркировка**
5. **Последователност на изпитанията I**
6. **Общи експлоатационни характеристики**
7. **Граници и характеристики на изключване**
8. **Изключвател с обратно зависима задръжка по време**
9. **Характеристики на изключване в зависимост на темепературата на околния въздух**
10. **Изключване при късо съединение**
11. **Изключване при претоварване**

12. **Характеристики на сработване в зависимост от температурата на околната среда**
13. **Допълнително изпитание на ампер-секундната характеристика**
14. **Допълнителное испитание на изключвателя за определено време**
15. **Изпитание на диелектрични свойства**
16. **Проверка на диелектричната якост**
17. **Проверка на повърхностните расстояния**
18. **Изпитание на механична експлоатационна способност**
19. **Механическая износоустойчивост**
20. **Коммутационна износоустойчивост**
21. **Дополнителане при претоварване**
22. **Проверка на диэлектричната издръжливост**
23. **Проверка на превишена температура**
24. **Проверка на максимално-токовия иключвател**
25. **Последователност на изпитанията II**
26. **Проверка на диелектричната якост**
27. **Проверка за превишена температура**
28. Максимални изключватели при претоварване
29. **Превишение на температурата на клемите**
30. **Последователност на изпитанията III**
31. **Номинална пределна коммутационна способност**
32. **Изключвател при претоварване**
33. **Последователност на операциите** (0-t-C0)
34. **Проверка на здравината на изолацията**
35. **Дополнителни изпитания на изключвателя на всеко полюс поотделно**
36. **Последователност на изпитанията при късо суединение на 1 полюс**
37. **Дополнительни изисквания към авт. прекъсвачи с електронна защита**
38. **Изпитание за устойчивост по отношениюма индуцираните преходни**
39. **высокочестотни смущения**
40. **Изпитание на сух климат**
41. **Изпитание на устойчивости по отношению на електростатични смущения**
42. **Изпитание на топлинен удар**
43. **Изпитание на влажнен климат**
44. **Изпитание на радиочастотни лъчения**
45. **Загуба на мощност**
46. **Последовательност на испытания за авт. прекъсвачи за IT система**

СПИСЪК НА ИЗПИТАНИЯТА ЗА
Автоматичен 3 полюсен прекъсвач НН с лят корпус, 1250A

Удостоверение за изпитание ***Распределително устройство и механизъм за управление ниско напре жения: Част 2: Автоматични прекъсвачи***

Клиент:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Производител:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Място на производство:	ООО "OEZ s.r.o." Šedivská 339 56151 Letohrad CZ Тел.: 00420-0465-672 111 факс: 00420-465-672 151 e-mail : zkusebna@oez.cz
Типово обозначение:	BL1600SE305-14410+SE-BL-1250-DTV3-19388
Търговска марка:	OEZ®
Място на проведане на изпитанията:	Институт EZÚ , Pod Lisem 129 171 02 Praha 71 – Trója Тел.: 00420-266 104 111 факс.: 00420-284 680 070 e-mail : testing@ezu.cz
Описание:	Автоматичен прекъсвач
Приложими стандарти:	IEC 60 947-2:95+A1:97+A2:01

In	1250A
полюса:	3
последоват. изп. :	I, II, III, Прилож. C,F,G,H

	Фамилия, имя:	Дата:	Подпись:
Изпитан от:	Ярослав Клипа	11.10.2002	
Проверил:	Ян Главаты	11.10.2002	

Характеристики

Тип на автоматичния прекъсвач:	BL1600SE305-14410+SE-BL-1250-DTV3-19388
Брой на полюсите	3
вид на тока	AC

Брой на фазите	3
Номиналная честота	50/60Гц
категория на приложение	A
контролна температура	40°C
пригодност за изоляции	Да

Номинални и пределни значения

работно напряжение (Ue):	690	B
импулсное напряжение без пробив (Uimp)	8	кB
номиналное напряжение на изолация (Ui)	690	B
Условнен термичен ток (Ith/Ithe)	1250	A
Номинален ток (In)	1250	A
Номинално работно напрежение (U)	415/500/690	B

Характеристики на автоматичния прекъсвач

U/B	Icm/kA	Icu/kA	Ics/kA	
415	140	65	36	
500	95	45	30	
690	60	20	20	

СПИСЪК НА ИЗПИТАНИЯТА

1. **Вериги за управление**
2. **Спомагателни вериги**
3. **Изключватели**
4. **Маркировка**
5. **Последователност на изпитанията I**
6. **Общи експлоатационни характеристики**
7. **Граници и характеристики на изключване**
8. **Изключвател с обратно зависима задръжка по време**
9. **Характеристики на изключване в зависимост на темепературата на околния въздух**
10. **Изключване при късо съединение**
11. **Изключване при претоварване**

12. **Характеристики на сработване в зависимост от температурата на околната среда**
13. **Допълнително изпитание на ампер-секундната характеристика**
14. **Допълнителное испитание на изключвателя за определено време**
15. **Изпитание на диелектрични свойства**
16. **Проверка на диелектричната якост**
17. **Проверка на повърхностните расстояния**
18. **Изпитание на механична експлоатационна способност**
19. **Механическая износоустойчивост**
20. **Коммутационна износоустойчивост**
21. **Дополнителане при претоварване**
22. **Проверка на диэлектричната издръжливост**
23. **Проверка на превишена температура**
24. **Проверка на максимално-токовия иключвател**
25. **Последователност на изпитанията II**
26. **Проверка на диелектричната якост**
27. **Проверка за превишена температура**
28. Максимални изключватели при претоварване
29. **Превишение на температурата на клемите**
30. **Последователност на изпитанията III**
31. **Номинална пределна коммутационна способност**
32. **Изключвател при претоварване**
33. **Последователност на операциите** (0-t-C0)
34. **Проверка на здравината на изолацията**
35. **Дополнителни изпитания на изключвателя на всеко полюс поотделно**
36. **Последователност на изпитанията при късо съединение на 1 полюс**
37. **Дополнительни изисквания към авт. прекъсвачи с електронна защита**
38. **Изпитание за устойчивост по отношениюма индуцираните преходни**
39. **высокочестотни смущения**
40. **Изпитание на сух климат**
41. **Изпитание на устойчивости по отношению на електростатични смущения**
42. **Изпитание на топлинен удар**
43. **Изпитание на влажнен климат**
44. **Изпитание на радиочастотни лъчения**
45. **Загуба на мощност**
46. **Последовательност на изпытания за авт. прекъсвачи за IT система**

OEZ

OEZ s.r.o

Sedivska 339, Letohrad,

Czech Republic

Letohrad, 25. 6. 2012

INSTRUCTIONS FOR TRANSPORTATION FOR THE DEVICES DELIVERED BY OEZ s.r.o.

The devices must not be transported in the environment with high humidity, presence of corrosive substances or rapid changes of temperature and condensing vapours. The devices are delivered and must be stored in disengaged condition.

The devices must be transporte in an environment with the following parameters as EN 60721-3-1.

Transport conditions are treated in compliance with the Incoterms 2010 devised and published by the International Chamber of Commerce. Each commercial invoice issued by OEZ s.r.o. clearly specify the beforehand agreed delivery term.

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

Ivan Hanzl
Regional Export Manager

OEZ s.r.o., Sedivska 339, 561 51 Letohrad, Czech Republic
phone: +420 465 672 268, fax: +420 465 672 398, e-mail: ivan.hanzl@oez.com , www.oez.com

ЕЛЕКТРИС СОФИЯ ELECTRIS LTD

OEZ s.r.o.
Šedivská 339
561 51 Letohrad
Czech Republic

T +420 465 672 111
F +420 465 672 151
E mail: oeztrade.cz@oez.com, www.oez.cz

OEZ s.r.o
Седивска 339, Летохрад
Чехия

Летохрад, 25.06.2012

Инструкция за транспорт на апаратурата доставена от OEZ s.r.o

Апаратурата не трябва да се транспортира в среда с висока влажност, с наличие на корозивни вещества с резки промени на температурата или при наличие на кондензирани изпарения. Прекъсвачите са доставени и трябва да се складират при подходящи условия.

Апаратурата трябва да се транспортира в среда със следните параметри, съгласно EN 60721-3-1.

Условията на транспортиране са в съответствие с Инкотермс 2010, подразделени и публикувани от Международната камера за търговия. Всяка търговска фактура, издадена от OEZ s.r.o точно спесифицира предварително уговорените условия на доставка.

Иван Ханзел
Регионален мениджър експорт

OEZ s.r.o, Седивска 339, Летохрад,Чехия
тел.:+420 465 672 268, факс: +420 465 672 398
e-mail: ivan.hanzl@oez.com, www.oez.com

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

OEZ

OEZ s.r.o

Sedivska 339, Letohrad,

Czech Republic

Letohrad, 25. 6. 2012

INSTRUCTIONS FOR STORAGE FOR THE DEVICES DELIVERED BY OEZ s.r.o.

The devices must not be stored in the environment with high humidity, presence of corrosive substances or rapid changes of temperature and condensing vapours. The devices are delivered and must be stored in disengaged condition.

The device must be store in an environment with the following parameters as ČSN EN 60721-3-1: 1K2/1Z1/1B1/1C2/1S2/1M2.

OEZ

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

Ivan Hanzl
Regional Export Manager

OEZ s.r.o., Sedivska 339, 561 51 Letohrad, Czech Republic
phone: +420 465 672 268, fax: +420 465 672 398, e-mail: ivan.hanzl@oez.com , www.oez.com

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

OEZ s.r.o.
Šedivská 339
561 51 Letohrad
Czech Republic

T +420 465 672 111
F +420 465 672 151
E mail: oeztrade.cz@oez.com, www.oez.cz

OEZ s.r.o
Седивска 339, Летохрад
Чехия

Летохрад, 25.06.2012

Условия за съхранение на апаратурата доставена от OEZ s.r.o

Апаратурата не трябва да се складира в среда с висока влажност, с наличие на корозивни вещества с резки промени на температурата или при наличие на кондензирани изпарения. Прекъсвачите са доставени и трябва да се складират при подходящи условия.

Апаратурата трябва да се складира в среда със следните параметри, отговарящи на CSN EN 60721-3-1:1K2/1Z1/1B1/1C2/1S2/1M2.

Иван Ханзел
Регионален мениджър експорт

OEZ s.r.o, Седивска 339, Летохрад,Чехия
тел.:+420 465 672 268, факс: +420 465 672 398
e-mail: ivan.hanzl@oez.com, www.oez.com

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC | IECEE CB SCHEME

Ref. Certif. No.

CZ-1751

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

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

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product Produit	Circuit-breakers with electronic trip
Name and address of the applicant Nom et adresse du demandeur	OEZ s. r. o. Šedivská 339, 561 51 Letohrad, Czech Republic
Name and address of the manufacturer Nom et adresse du fabricant	OEZ s. r. o. Šedivská 339, 561 51 Letohrad, Czech Republic
Name and address of the factory Nome et adresse de l'usine	OEZ s. r. o. Šedivská 339, 561 51 Letohrad, Czech Republic
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	In = 250, 400, 630 A; Un = 690 V
Trademark (if any) Marque de fabrique (si elle existe)	
Model / Type Ref. Ref. De type	BH630
Additional information (if necessary) Information complémentaire (si nécessaire)	
	PUBLICATION — **EDITION**
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60947-2 — 2003
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certifical	604547-01/01 of: 06.03.2007

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

Elektrotechnický zkušební ústav
Pod lisem 129, 171 02 Praha 8 – Trója
Czech Republic

Date: 14.3.2007

Signature: Pavel Kudrna
Certification and Inspection Manager

TEST REPORT
IEC 60 947-2
Low-voltage switchgear and controlgear

Part 2: Circuit - breakers

Report Reference No. ..... :	604547-01/01
Tested by (name+signature) ..... :	Jaroslav Klípa
Witnessed by (name+signature) .. :	Jan Hlavatý
Supervised by (name+signature) . :	Jan Hlavatý
Approved by (name+signature) .... :	Jan Hlavatý
Date of issue ..... :	06.03.2007

CB Testing Laboratory ..... :	Elektrotechnický zkušební ústav, s.p.
Address ..... :	Pod lisem 129, 171 02 Praha 8-Troja, Czech Republic
Testing location/ procedure ..... :	CBTL [X] RMT [ ] SMT [ ] WMT [ ] TMP [ ]
Testing location/ address ..... :	Pod lisem 129, 171 02 Praha 8-Troja, Czech Republic
Applicant's name ..... :	OEZ s.r.o.
Address ..... :	OEZ s.r.o. Šedivská 339 56151 Letohrad Czech Republic
Test specification:	
Standard ..... :	IEC 60 947 - 2 : 2003 (3rd Edition)
Test procedure ..... :	CB
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60947_2D
Test Report Form(s) Originator .... :	KEMA Nederland B.V.
Master TRF ..... :	Dated 2006-04

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 ..... :	
Trade Mark ..... :	OEZ.
Manufacturer..... :	OEZ s.r.o.
Model/Type reference ..... :	OEZ s.r.o. Šedivská 339 56151 Letohrad
Ratings ..... :	BH630

Particulars: test item vs. test requirements	
3. Classification	
3.1. Utilization category: (A or B)..... :	A
3.2. Interruption medium: (air, vacuum, gas Break) ..... :	Air
3.3. Design: (open construction, moulded case) .... :	moulded case
3.4. Method of controlling the operation mechanism: (dependent manual, independent manual, dependent power, independent power) ..... :	independent manual operation
3.5. Suitability for insulation: (suitable, not -suitable)..... .. :	suitable
3.6. Provision for maintenance: (maintainable, non maintainable) ..... :	non maintainable
3.7. Method of installation: (fixed, plug in, withdrawable:	withdrawable
3.8. Degree of protection: (IP code) ..... :	IP20
4.8. Integral fuses (integrally fused circuit-breakers) Type and characteristics of SCPD ..... :	N/A
4.9. Switching overvoltages: (when Uimp. is declared) ... :	Yes
7.3 Electromagnetic compatibility (EMC) Environment A or B..... :	Yes
Circuit-breaker for use on phase-earthed systems ..... :	Yes
Circuit-breaker for use in IT systems ..... :	Yes
Rated and limiting values, main circuit .... :	
- rated operational voltage: Ue (V) ..... :	415V/500V/690V AC
- rated insulation voltage: Ui (V)..... :	690V
- rated impulse withstand voltage: Uimp (kV) ..... :	8kV
- rated operational current: Ie (A) ..... :	630A
- kind of current ..... :	AC
- conventional free air thermal current: Ith (A) ..... :	630A
- conventional enclosed thermal current: Ithe (A) ..... :	N/A
- current rating for four-pole circuit-breakers: (A) ..... :	N/A
- number of poles ..... :	3
- rated frequency: (Hz) ..... :	50/60Hz

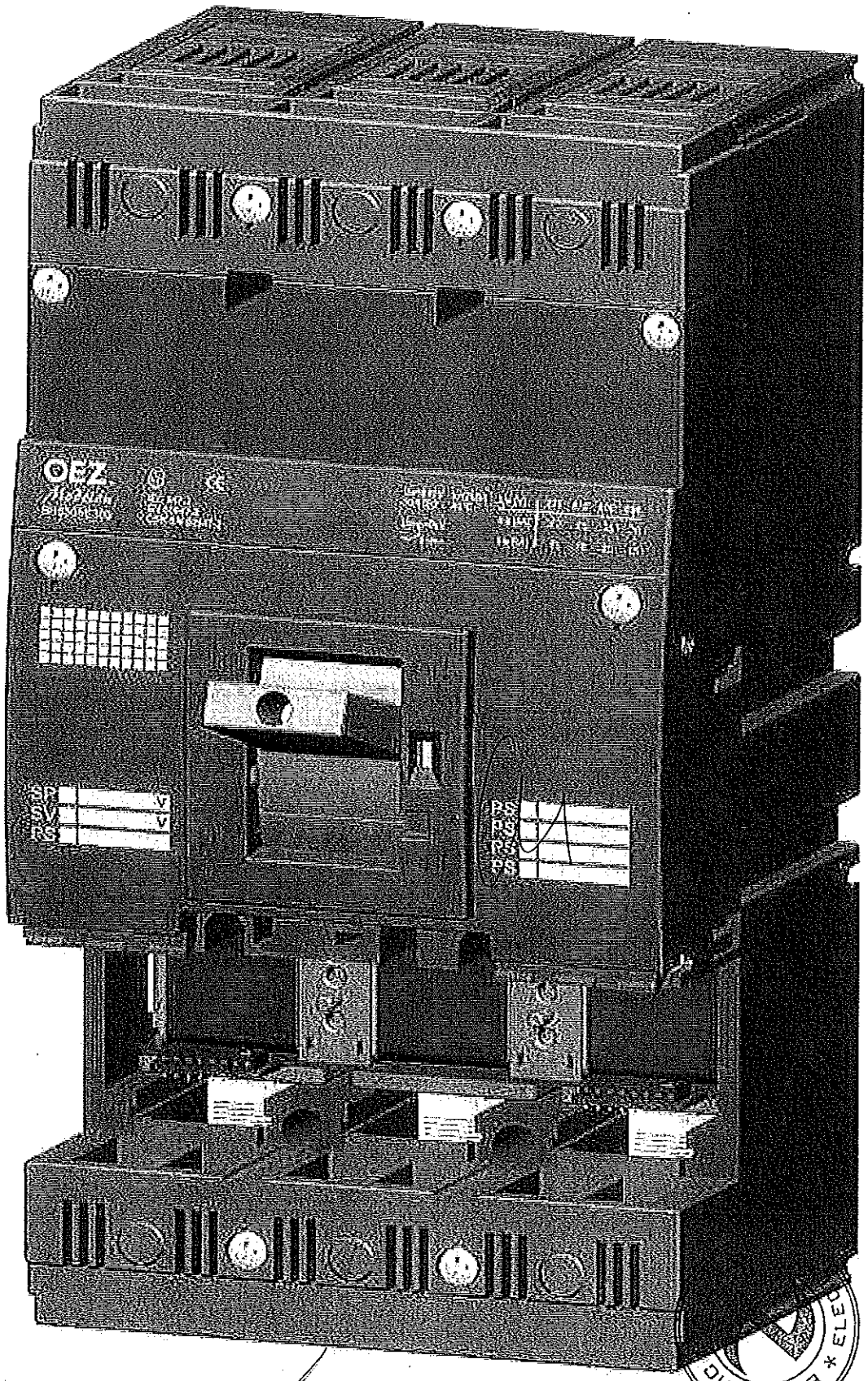
ВЯРНО С ОРИГИНАЛА

- integral fuses (rated values) ..... :	No
Rated duty :	
- eight-hour duty ..... :	YES
- uninterrupted duty: Iu (A) ..... :	630A
Short-circuit characteristic :	
rated short-time making capacity: Icm (kA) ..... :	415V 76kA
rated ultimate short-circuit breaking capacity: Icu (kA):	415V 36kA,500V 20kA, 690V 15kA
rated service short-circuit breaking capacity: Ics (kA).. :	415V 18kA,500V 10kA, 690V 8kA
rated short-time withstand current: Icw (kA/s) ..... :	6,5kA/1s
Control circuits :	N/A
Electrical control circuits :	
- kind of current: (AC, DC) ..... :	
- rated frequency: (Hz) ..... :	
- rated control circuit voltage: Uc (nature, frequency, V):	
- rated control supply voltage: Us (nature, frequency V):	
Air supply control circuits:(pneumatic or electro-pneumatic) :	
- rated pressure and its limit ..... :	
- volumes of air, at atmospheric pressure, required for each closing and each opening operation ..... :	
Auxiliary circuits :	
Rated and limiting values, auxiliary circuits ..... :	
- rated operational voltage Ue (V) ..... :	500V AC 240V DC
- rated insulation voltage: Ui (V) ..... :	500V AC 240VDC
- rated operational current: Ie (A) ..... :	2A AC 0,2A DC
- kind of current ..... :	AC/DC
- rated frequency: (Hz) ..... :	50/60HZ
- number of circuits ..... :	1
- number and kind of contact elements ..... :	1a or 1b
- rated uninterrupted current: Iu (A) ..... :	10A
- utilization category: (AC, DC, current and voltage) ..... :	2A/500V/AC15 0,2A /240V/DC13
Short-circuit characteristic :	
- Rated conditional short-circuit current (kA) ..... :	-
- Co-ordination of short-circuit protective devices ..... :	-
- kind of protective device ..... :	-

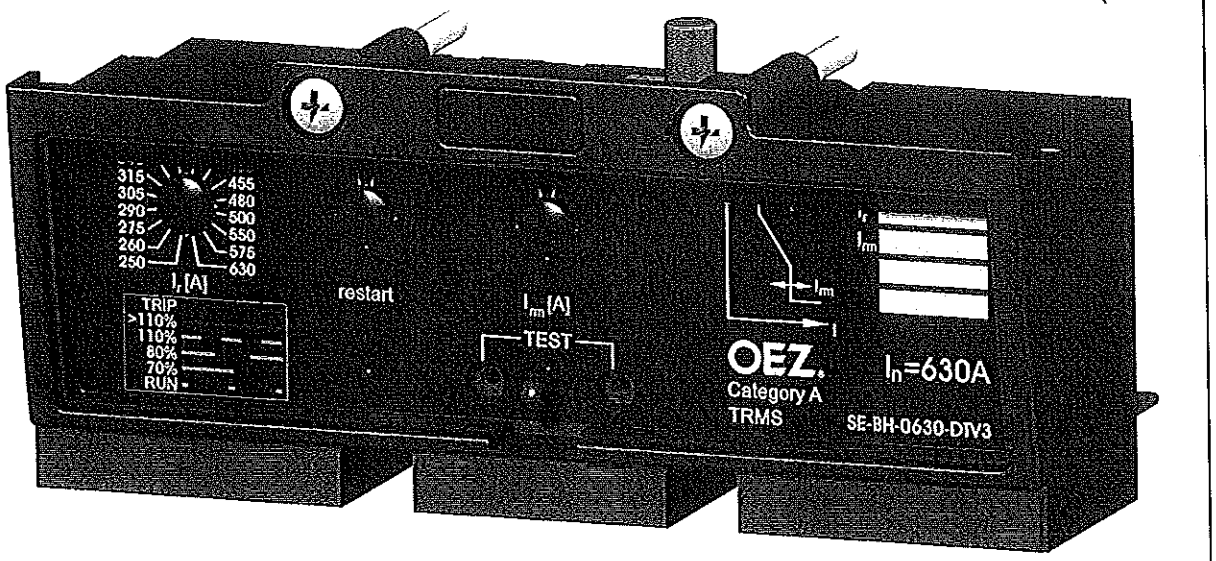
ВЕРНО СОРИГИНАЛА

Releases :	
1) shunt release ..... :	Yes
2) Over-current release ..... :	Yes
a) instantaneous ..... :	Yes
b) definite time delay ..... :	X
c) inverse time delay ..... :	X
- independent of previous load ..... :	X
- dependent on previous load; (for example thermal type release) ..... :	X
3) Undervoltage release (for opening) ..... :	Yes
4) Other releases ..... :	X
Characteristics :	
1) Shunt release and undervoltage release (for opening). :	
- rated control circuit voltage: Uc (nature, frequency, V) :	AC 24V, 48V, 110V, 230V, 400V,500V DC 24V,48V, 110V,220V
- kind of current ..... :	AC/DC
- rated frequency: (if AC) ..... :	50/60Hz
2) Over-current release ..... :	
- rated current ..... :	630A
- kind of current ..... :	AC
- rated frequency: (if AC) ..... :	50/60Hz
- current setting (or range of settings) ..... :	0,4 -1Ir
- time settings (or range of settings) ..... :	X

Copy of marking plate



Summary of testing:



Test item particulars ..... :	
Classification of installation and use ..... :	X
Supply Connection..... :	X
..... :	
..... :	
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 ..... :	
Date (s) of performance of tests..... :	

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:

ELECTRIS LTD * ΕΛΕΚΤΡΙΣ ΕΟΟΕ *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
5.2	MARKING		
a)	The following data shall be marked on the circuit-breaker itself or on a name plate or nameplates attached to the circuit-breaker, and located in a place such that they are visible and legible when the circuit-breaker is installed.		
	- rated current:	630A	
	- suitability for isolation, if applicable, with the symbol —/—|—X—	Yes	
	- indication of the open and closed position: with O and I respectively, if symbols are used	Yes	
b)	Marking on equipment not needed to be visible after mounting:		
	- manufacturer's name or trademark	OEZ	
	- type designation or serial number	BH630	
	- IEC 60947-2 if the manufacturer claims compliance with this standard.	Yes	
	- utilization category	A	
	- rated operational voltage(s) Ue	415V, 500V, 690V AC	
	- Circuit-breaker for use in IT systems: Circuit-breaker for which all values of rated voltage have not been tested according to annex H or are not covered by such testing, shall be identified by the symbol Ⓗ which shall be marked on the circuit-breaker immediately following these values of rated voltage	Circuit-breaker is suitable for use in IT systems 415V, 500V, 690V	
	- value (or range) of the rated frequency and/or the indication DC (or symbol)	50/60Hz	
	- rated service short-circuit breaking capacity. Ics	18kA/415V, 10kA/500V, 8kA/690V	
	- rated ultimate short-circuit breaking capacity. Icu	36kA/415V, 20/500V, 15kA/690V	
	- rated short-time withstand current, (Icw) and associated short-time delay, for utilization category B	N/A	
	- line and load terminals, unless their connection is immaterial	Yes	

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- neutral pole terminals, if applicable, by the letter N	N/A	
	- protective earth terminal, where applicable, by the symbol acc. 7.1.9.3 of part 1	N/A	
	- ref. temperature for non-compensated thermal releases, if different from 30℃	+40℃	
c)	Marked on the circuit-breaker as specified in item b), or shall be made available in the manufacturer's published information:		
	- rated short-circuit making capacity (Icm) (if higher than specified in 4.3.5.1)	75kA/415V	
	- rated insulation voltage. (Ui) if higher than the maximum rated operational voltage)	690V	
	- rated impulse withstand voltage (Uimp), when declared.	8kV	
	- pollution degree if other than 3	3	
	- conventional enclosed thermal current (Ithe) if different from the rated current:	Ith=In	
	- IP Code, where applicable:	IP20	
	- minimum enclosure size and ventilation data (if any) to which marked ratings apply:	N/A	
	- details of minimum distance between circuit-breaker and earthed metal parts for circuit-breaker intended for use without enclosure:	Vide catalogue	
	- r.m.s sensing if applicable, according to F.4.1.1	yes	
	- suitability for environment A or B	B	
d)	The following data concerning the opening and closing devices of the circuit-breaker shall be placed either on their own nameplates or on the nameplate of the circuit-breaker:		
	- rated control circuit voltage of the closing device, and rated frequency for AC:	N/A	
	- rated control circuit voltage of the shunt release and/or of the under-voltage release, and rated frequency:	24,48,110,230,400,500VAC2 4,48,110,220V DC 50/60Hz	
	- rated current of Indirect over-current releases:	N/A	
	- number and type of auxiliary contacts and kind of current, rated frequency (if AC) and rated voltages of the auxiliary switches, if different from those of the main circuit.	Vide catalogue	

ΕΛΕΚΤΡΙΣ ΕΟΟΔ * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
e)	Terminal shall be clearly and permanently identified in acc. with IEC 60445 and annex L :		
	- line terminal	satisfy	
	- load terminal	satisfy	
	- neutral pole terminal "N"	N/A	
	- protective earth terminal ⏚	N/A	
	- terminal of coils (A/B)	N/A	
	- terminal of shunt release (B)	satisfy	
	- terminals of under-voltage release (D)	satisfy	
	- terminals of interlocking electromagnets (E)	N/A	
	- terminals of indicated light devices (X)	N/A	
	- terminals of contact elements for switching devices (no)	N/A	
7.1	CONSTRUCTION		
7.1.1	Withdrawable circuit-breaker	satisfy	
	In the disconnected position (main- and auxiliary circuits)		
	Isolating distances for circuit-breaker suitable for isolating warranted:	16mm	P
	Mechanism fitted with a reliable indicating device with indicates the position of the isolating contacts.	yes	P
	Mechanism fitted with interlocks which only permit the isolating contacts to be separate or re-closed when main contacts are open	yes	P
	Mechanism fitted with interlock, which only permit the main contacts to be closed when the isolating contacts are fully closed.	yes	P
	Mechanism fitted with interlock, which only permit the main contacts to be closed when in disconnected position.	yes	P
	The isolating distances between the isolating contacts cannot be inadvertently reduced.	yes	P
7.1.1.1 part 1	Resistance to abnormal heat and fire	Satisfy IEC 60947-1	

ΕΛΕΚΤΡΙΣ ΕΠΕ ELECTRIS LTD

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.2 part 1	Current-carrying parts and their connection	Satisfy IEC 60947-1	
7.1.3	Clearances and creepage distances:		
	For circuit-breakers for which the manufacturer has declared a value of rated impulse withstand voltage. (Uimp.)		
	Clearances distances:	20,2mm	
	- Uimp is given as:	8kV	
	- max. value of rated operational voltage to earth	400V	
	- nominal voltage of supply system:	N/A	
	- overvoltage category:	IV	
	- pollution degree:	3	
	- field-in or homogeneous:	Inhomogeneous	
	- minimum clearances (mm):	8mm	
	- measured clearances (mm):	20,2mm	P
	Creepage distances:		
	- rated insulation voltage Ui (V)	690V	
	- pollution degree	3	
	- comparative tracking index (V)	400	
	- material group	2	
	Minimum creepage distances (mm)	9mm	
	Measured creepage distances (mm)	25,3mm	P
7.1.4 part 1	Actuator		
7.1.4.1 part 1	Insulation		
	The actuator of the equipment shall be insulated from the live parts for the rated insulation voltage and, if applicable, the rated impulse withstand voltage	satisfy	P
	If it is made of metal, it shall be capable of being satisfactorily connected to a protective conductor unless it is provided with additional reliable insulation	satisfy	P

ELECTRIS LTD * ΕΛΕΚΤΡΙΣ ΕΠΕ *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	If it is made of or covered by insulating material, any internal metal part, which might become accessible in the event of insulation failure, shall also be insulated from live parts for the rated insulation voltage	satisfy	P
7.1.4.2	Direction of movement		
	The direction of operation for actuators of devices shall normally conform to IEC 60447.		P
	Where devices cannot conform to these requirements, e.g. due to special applications or alternative mounting positions, they shall be clearly marked such that there is no doubt as to the "I" and "O" positions and the direction of operation		P
7.1.5 part 1	Indication of contact position		
7.1.5.1 part 1	Indicating means		
	When an equipment is provided with means for indicating the closed and open positions, these positions shall be unambiguous and clearly indicated	satisfy	P
	This is done by means of a position indicating device (see 2.3.18)	satisfy	P
	If symbols are used, they shall indicate the closed and open position respectively, in accordance with IEC 60417-2:		
	- 60417-2-IEC-5007 I On (power)	satisfy	P
	- 60417-2-IEC-5007 O Off (power)	satisfy	P
	For equipment operated by means of two push-buttons, only the push-button designated for the opening operation shall be red or marked with the symbol "O"	N/A	
	Red colour shall not be used for any other push-button	N/A	
	The colours of other push-buttons, illuminated push-buttons and indicator lights shall be in accordance with IEC 60073	N/A	
7.1.5.2 part 1	Indication by the actuator		

ELECTRIS LTD ΕΛΕΚΤΡΙΣ ΕΠΕ

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	When the actuator is used to indicate the position of the contacts, it shall automatically take up or stay, when released, in the position corresponding to that of the moving contacts; in this case, the actuator shall have two distinct rest positions corresponding to those of the moving contacts, but for automatic opening a third distinct position of the actuator may be provided	satisfy	P
7.1.6	Additional safety requirements for equipment suitable for isolation		
7.1.6.1	Additional constructional requirements for equipment suitable for isolation (Ue > 50 V):		
	Equipment suitable for isolation shall provide in the open position an isolation distance in acc. with the requirements necessary to satisfy the isolating function. Indication of the main contacts shall be provide by one or more of the following means:		
	- the position of the actuator	yes	P
	- a separate mechanical indicator	N/A	
	- visibility of the moving contacts	not	
	When means are provided or to lock the equipment in the open position, locking only be possible when contacts are in the open position	satisfy	P
	Actuator front-plate fitted to the equipment in a manner which ensures correct contact position indication and locking	yes	P
	The indicated open position is the only position in which the specified isolation distances between the contacts is ensured.	Satisfy	P
	- minimum clearances across open contacts (see Table XIII, Part 1) (mm) :	8mm	
	- measured clearances (mm) :	20,2mm	P
	- test Uimp across gap (kV) :	8kV	P
7.1.6.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		N/A
	auxiliary switch shall be rated according to IEC 60 947-5-1		

ΕΛΕΚΤΡΙΣ ΕΠΕ ELECTRIS LTD

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	If equipment suitable for isolation is provided with an auxiliary switch for the purpose of electrical interlocking with contactor (s) or circuit-breaker(s) and intended to be used in motor circuits, the following requirements shall apply unless the equipment is rated for AC-23 utilization category		
	The time interval between the opening of the contacts of the auxiliary switch and the contacts of the main poles shall be sufficient to ensure that the associated contactor or circuit-breaker interrupts the current before the main poles of the equipment open		
	Unless otherwise stated in the manufacturer's technical literature, the time interval shall be not less than 20 ms when the equipment is operated according to the manufacturer instructions		
	Compliance shall be verified by measuring the time interval between the instant of opening of the auxiliary switch and the instant of opening of the main poles under no-load conditions when the equipment is operated according to the manufacturer's instructions		
	During the closing operation the contacts of the auxiliary switch shall close after or simultaneously with the contacts of the main poles		
	A suitable opening time interval may also be provided by an intermediate position (between the ON and OFF position) at which the interlocking contact(s) is (are) open and the main poles remain closed		
7.1.6.3	Supplementary requirements for equipment provided with means for padlocking the open position:		
	the locking means shall be designed in such a way that it cannot be removed with the appropriate padlock(s) installed	satisfy	P
	Alternatively, the design may provide padlockable means to prevent access to the actuator	N/A	
	test force F applied to the actuator in an attempt to operate to the closed position (N) :	180N	P
	rated impulse withstand voltage (kV) :	8kV	P
	test Uimp on open main contacts at the test force		P

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.7	Terminals		
7.1.7.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength	satisfy	P
	Terminal connections shall be such that necessary contact pressure is maintained	satisfy	P
	Terminals shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	satisfy	P
	Terminal shall 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 shall not be reduced below the rated value	satisfy	P
7.1.7.2	Connection capacity		
	type of conductors :		
	minimum cross-sectional area of conductor (mm^2) :		
	maximum cross-sectional area of conductor (mm^2) :	2x185mm^2	
	number of conductors simultaneously connectable to the terminal :	2	
7.1.7.3	Connection		
	terminals for connection to external conductors shall be readily accessible during installation	satisfy	P
	clamping screws and nuts shall not serve to fix any other component	satisfy	P
7.1.7.4	Terminal identification and marking		
	terminal intended exclusively for the neutral conductor	N/A	
	protective earth terminal	N/A	
	other terminals	N/A	
7.1.8 part 1	Additional requirements for equipment provided with a neutral pole		N/A
	When an equipment is provided with a pole intended only for connecting the neutral, this pole shall be clearly identified to that effect by the letter N (see 7.1.7.4.).		

ΕΛΕΚΤΡΙΣ ΕΟΟΑ * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A switched neutral pole shall break not before and shall make not after the other poles		
	For equipment having a value of conventional thermal current (free air or enclosed, see 4.3.2.1 and 4.3.2.2) not exceeding 63 A, this value shall be identical for all poles		
	For higher conventional thermal current values, the neutral pole may have a value of conventional thermal current different from that of the other poles, but not less than half that value or 63 A, whichever is the higher		
	if a pole with a appropriate making and breaking capacity is used as a neutral pole, then all poles, incl. the neutral pole, shall operate substantially together.		
7.1.9	Provisions for protective earthing		N/A
7.1.9.1	The exposed conductive parts (e.g. chassis, framework and fixed parts of metal enclosures) other than those which cannot constitute a danger shall be electrically interconnected and connected to a protective earth terminal for connection to an earth electrode or to an external protective conductor		
part 1	This requirement can be met by the normal structural parts providing adequate electrical continuity and applies whether the equipment is used on its own or incorporated in an assembly		
	Exposed conductive parts are considered not to constitute a danger if they cannot be touched on large areas or grasped with the hand or if they are of small size (approximately 50 mm x 50 mm) or are so located as to exclude any contact with live parts		
7.1.9.2 part 1	Protective earth terminal		
	The protective earth terminal shall be readily accessible and so placed that the connection of the equipment to the earth electrode or to the protective conductor is maintained when the cover or any other removable part is removed	satisfy	P
	The protective earth terminal shall be suitably protected against corrosion	satisfy	P

ΕΛΕΚΤΡΙΣ ΕΠΕ ELECTRIS LTD

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	In the case of equipment with conductive structures, enclosures, etc., means shall be provided, if necessary, to ensure electrical continuity between the exposed conductive parts the equipment and the metal sheathing of connecting conductors	satisfy	P
	The protective earth terminal shall have no other function, except when it is intended to be connected to a PEN conductor (see 2.1.1.5 – Note). In this case, it shall also have the function of a neutral terminal in addition to meeting the requirements applicable to the protective earth terminal	satisfy	P
7.1.9.3	Protective earth terminal marking and identification		
	The protective earth terminal shall be clearly and permanently identified by its marking	satisfy	P
	The identification shall be achieved by colour (green-yellow mark) or by the notation PE, or PEN, as applicable, in accordance with IEC 60445, subclause 5.3, or, in the case of PEN, by a graphical symbol for use on equipment	satisfy	P
	Graphical symbol to be used: 60417-2-IEC-5019 ⏚ Protective earth (ground) in accordance with IEC 60417-2	satisfy	P
7.1.10	Enclosure for equipment		N/A
7.1.10.1	Design		N/A
	The enclosure, when it is opened: all parts requiring access for installation and maintenance are readily accessible		
	Sufficient space shall be provided inside the enclosure		
	The fixed parts of a metal enclosure shall be 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		
	Under no circumstances shall a removable metal part of the enclosure be insulated from the part carrying the earth terminal when the removable part is in place		

ELECTRIS LTD * ЕЛЕКТРИС ЕООД

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The removable parts of the enclosure shall be 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		
	When an enclosure is so designed as to allow the covers to be opened without the use of tools, means shall be provided to prevent loss of the fastening devices		
	If the enclosure is used for mounting push-buttons, it shall not be possible to remove the buttons from the outside of the enclosure		
7.1.10.2	Insulation		
	If, in order to prevent accidental contact between a metallic enclosure and live parts, the enclosure is partly or completely lined with insulating material, then this lining shall be securely fixed to the enclosure	satisfy	P
7.1.11	Degree of protection of enclosed equipment		
	Degree of protection.	IP20	
	Test for first characteristic.	IP20	
	Test for first numeral .....:	2	P
	Test for second characteristic	IP20	
	Test for second numeral .....:	0	P
7.1.12 part 1	Conduit pull-out, torque and bending with metallic conduits		N/A
	Polymeric enclosures of equipment, whether integral or not, provided with threaded conduit entries, intended for the connection of extra heavy duty, rigid threaded metal conduits complying with IEC 60981, shall withstand the stresses occurring during its installation such as pull-out, torque, bending		

ELECTRIS LTD

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.2	Performance requirements		
7.2.1	Operating condition		
7.2.1.1	Closing		
	For a circuit-breaker to be closed safely on to the making current corresponding to its rated short-circuit making capacity, it is essential that it should be operated with the same speed and the same firmness as during the type test for proving the short-circuit making capacity	satisfy	P
7.2.1.1.1	Dependent manual closing		N/A
	For a circuit-breaker having a dependent manual closing mechanism, it is not possible to assign a short-circuit making capacity rating irrespective of the conditions of mechanical operation		
	Such a circuit-breaker should not be used in circuits having a prospective peak making current exceeding 10 kA		
	However, this does not apply in the case of a circuit-breaker having a dependent manual closing mechanism and incorporating an integral fast-acting opening release which causes the circuit-breaker to break safely, irrespective of the speed and firmness with which it is closed on to prospective peak currents exceeding 10 kA; in this case, a rated short-circuit making capacity can be assigned		
7.2.1.1.2	Independent manual closing		
	A circuit-breaker having an independent manual closing mechanism can be assigned a short-circuit making capacity rating irrespective of the conditions of mechanical operation	satisfy	P
7.2.1.1.3	Dependent power closing		N/A
	At 110% of the rated control supply voltage, the closing operation performed on no-load shall not cause any damage to the circuit-breaker.		

ΕΛΕΚΤΡΙΣ ΕΠΕ * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	At 85% of the rated control supply voltage, the closing operation shall be performed when the current established by the circuit-breaker is equal to its rated making capacity within the limits allowed by the operation of its relays or releases and, if a maximum time is stated for the closing operation, in a time not exceeding this maximum time limit.		
7.2.1.1.4	Independent power closing		N/A
	A circuit-breaker having an independent power closing operation can be assigned a rated short-circuit making capacity irrespective of the conditions of power closing		
	Means for charging the operating mechanism, as well as the closing control components, shall be capable of operating in accordance with the manufacturer's specification		
7.2.1.1.5	Stored energy closing		N/A
	Capable ensuring closing of the circuit-breaker in any condition between no-load and its rated making capacity		
	- when the stored energy is retained within the circuit-breaker, a device is provided which indicates when the storing mechanism is fully charged.		
	- means for charging the operating mechanism and closing control components operates when auxiliary supply voltage is between 85% and 110% of the rated control supply voltage.		
	- not possible for the moving contacts to move from the open position, unless the charge is sufficient for satisfactory completion of the closing operation.		
	- by manually operated circuit-breaker is the direction of operation indicated. (not for circuit-breaker with an independent manual closing operation.)		
	- For trip free circuit-breaker it shall not be possible to maintain the contacts in the touching or closed position when the release is in the position to trip the circuit-breaker.		

ΕΛΕΚΤΡΙΣ ΕΟΔΑ * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.1.2	Opening		
7.2.1.2.1	Circuit-breakers which open automatically shall be trip-free and, unless otherwise agreed between manufacturer and user, shall have their energy for the tripping operation stored prior to the completion of the closing operation		
7.2.1.2.2	Opening by undervoltage releases		
7.2.1.3. a part 1	Operating voltage		
	An under-voltage relay or release, when associated with a switching device, shall operate to open the equipment even on a slowly falling voltage within the range between 70% and 35% of its rated voltage	satisfy	P
	An under-voltage relay or release shall prevent the closing of the equipment when the supply voltage is below 35% of the rated voltage of the relay or release; it shall permit closing of the equipment at supply voltages equal to or above 85% of its rated value	satisfy	P
	Unless otherwise stated in the relevant product standard, the upper limit of the supply voltage shall be 110% of its rated value	satisfy	P
7.2.1.3. b part 1	Operating time		N/A
	For a time-delay under-voltage relay or release, the time-lag shall be measured from the instant when the voltage reaches the operating value until the instant when the relay or release actuates the tripping device of the equipment		
7.2.1.2.3	Opening by shunt releases		
7.2.1.4 part 1	Limits of operation of shunt releases		
	A shunt release for opening shall cause tripping under all operating conditions of an equipment when the supply voltage of the shunt release measured during the tripping operation remains between 70% and 110% of the rated control supply voltage and, if a.c., at the rated frequency	satisfy	P
7.2.1.5 part 1	Limits of operation of current operated relays and released		
	Limits of operation of current operated relays and releases shall be stated in the relevant product standard	satisfy	P

ELECTRIS LTD ЕЛЕКТРИС ЕООД

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.1.2.4	Opening by over-current releases		
a)	Opening under short-circuit conditions		
	The short-circuit release shall cause tripping of the circuit-breaker with an accuracy of 20% of the tripping current value of the current setting for all values of the current setting of the short-circuit current release	ssatisfy	P
	Where necessary for over-current co-ordination the manufacturer shall provide information (usually curves) showing	satisfy	P
	- maximum cut-off (let-through) peak current as a function of prospective current (r.m.s. symmetrical)	Enclosure no	P
	- I^2t characteristics for circuit-breakers of utilization category A and, if applicable, B for circuit-breakers with instantaneous override (see note to 8.3.5)	Enclosure no	P
b)	Opening under overload conditions		
1)	Instantaneous or definite time-delay operation		
	The release shall cause tripping of the circuit-breaker with an accuracy of ± 10% of the tripping current value of the current setting for all values of current setting of the overload release	satisfy	P
2)	Inverse time-delay operation		
	At the reference temperature and at 1,05 times the current setting with the conventional non-tripping current, the opening release being energized on all poles, tripping shall not occur in less than the conventional time from the cold state, i.e. with the circuit-breaker at the reference temperature	satisfy	P
	Moreover, when at the end of the conventional time the value of current is immediately raised to 1,30 times the current setting, i.e. with the conventional tripping current, tripping shall then occur in less than the conventional time later	satisfy	P
	If a release is declared by the manufacturer as substantially independent of ambient temperature, the current values of table 6 shall apply within the temperature band declared by the manufacturer, within a tolerance of 0,3%/K	satisfy	P
	The width of the temperature band shall be at least 10 K on either side of the reference temperature	satisfy	P

ELECTRIS LTD * ЕЛЕКТРИС ЕООД *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.4.2	Operational performance capability		
7.2.4.2 part 1	The operational performance off-load for which the tests are made with the control circuits energized and the main circuit not energized, in order to demonstrate that the equipment meets the operating conditions specified at the upper and lower limits of supply voltage and/or pressure specified for the control circuit during closing and opening operations	satisfy	P
	The operational performance on-load during which the equipment shall make and break the specified current corresponding, where relevant, to its utilization category for the number of operations stated in the relevant product standard	satisfy	P
8	TESTS		
8.2.4	Mechanical properties of terminals		N/A
	Mechanical strength of terminals		
	maximum cross-sectional area of conductor (mm^2) :	2x185mm^2	
	diameter of thread (mm) :	10mm	
	torque (Nm) :	20Nm	
	5 times on 2 separate clamping units	satisfy	P
	Testing for damage to and accidental loosening of conductor (flexion test)		N/A
	conductor of the smallest cross-sectional area (mm^2) :	16	
	number of conductors of the smallest cross section :	2	
	diameter of bushing hole (mm) :	32	
	height between the equipment and the platen :	464mm	
	mass at the conductor(s) (kg) :	20	
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit	satisfy	
	Pull-out test		
	force (N) :	90	

ЕЛЕКТРИС ГООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	meets	P
	conductor of the largest cross-sectional area (mm^2) :	240	
	number of conductors of the largest cross section :	1	
	diameter of bushing hole (mm) :	32	
	height between the equipment and the platen :	464mm	
	mass at the conductor(s) (kg) :	20	
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		
	Pull-out test		
	force (N) :	578	
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	meets	P
	conductor of the largest and smallest cross-sectional area (mm^2) :		N/A
	number of conductors of the smallest cross section, number of conductors 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 shall neither slip out of the terminal nor break near the clamping unit		
	Pull-out test		
	force (N) :		
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit		

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS		
8.3.3.1	Tripping limits and characteristic		
8.3.3.1.2	Opening under short-circuit conditions		
	Manufacturer's name or trademark	OEZ s.r.o.	
	Type designation or serial number	BH630	
	Sample no:	1	
	Rated operational voltage: Ue (V)	415V,500V,690V AC	
	Rated current: In (A)	630A	
	Ambient temperature 10-40 °C :	safisty	P
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.	8000A	
	Range of adjustable setting current. (A)	8000A	
	Time delay stated by the manufacturer, in the case of definite time delay releases.	N/A	
	Test current: 80% of the rated, or minimum adjustable setting current: (A)	6400kA	
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 No operate of the release No operate of the release No operate of the release	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:	N/A	
	Test current: 80% of the maximum adjustable setting current: (A)	N/A	
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	N/A	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:	N/A	
	Test current: 120% of the rated, or minimum adjustable setting current: (A)	9600kA	
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3	N/A	
	Test current: 120% of the maximum adjustable setting current: (A)	N/A	
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	N/A	
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:	N/A	
	Test current: tripping current declared for single pole operation (A)	8000A	
	Operating time: < 0,2 s in case of instantaneous release: L1: L2: L3:	operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by manufacturer in case of definite time delay releases L1: L2: L3:	N/A	
8.3.3.1.3	Opening under overload conditions		
a)	Instantaneous or definite time-delay releases		
	Manufacturer's name or trademark	OEZ s.r.o.	

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Type designation or serial number	BH630	
	Sample no:	1	
	Rated operational voltage: Ue (V)	415V,500V,690V AC	
	Rated current: In (A)	630A	
	Ambient temperature 10-40 °C :	safisty	
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.	2520A - 7875A	
	Range of adjustable setting current. (A)	2520A - 7875A	
	Time delay stated by the manufacturer, in the case of definite time delay releases.	N/A	
	Test current: 90% of the rated, or minimum adjustable setting current: (A)	2268A	
	Operating time: >0,2s in case of instantaneous releases:	No operate of the release	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.	N/A	
	Test current: 90% of the maximum adjustable setting current: (A)	7088A	
	Operating time: >0,2s in case of instantaneous releases	No operate of the release	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.	N/A	
	Test current: 110% of the rated, or minimum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)	2772A N/A	
	Operating time: <0,2s in case of instantaneous releases:	operate of the release	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.	N/A	
	Test current: 110% of the maximum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)	8663A N/A	
	Operating time: <0,2s in case of instantaneous releases	operate of the release	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.	N/A	
b)	Inverse time delay releases		
	Manufacturer's name or trademark	OEZ s.r.o.	
	Type designation or serial number	BH630	
	Sample no:	1	
	Rated operational voltage: Ue (V)	415V, 500V, 690V AC	
	Rated current: In (A)	630A	
	For releases dependent of ambient air temperature: Reference temperature	N/A	
	Test ambient temperature (°C)	N/A	
	If test made at a difference ambient temperature: Acc. manufacturer's correction temperature/current data:	N/A	
	Range of adjustable setting current: (A)	N/A	
	For releases independent of ambient temperature: Test made at 30℃ and/or at 20/40℃	yes	
	Test ambient air temperature:	30℃	
	Releases, dependent of ambient air temperature: Reference temperature (℃)	N/A	
	Releases, independent of ambient air temperature: at 30℃		
	Test current: 105% of the rated, or minimum adjustable setting current: (A)	262,5A	
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	No operate of the release	P
	Test current: 130% of the rated, or minimum adjustable setting current: (A)	325A	
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.	N/A	
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	Operate of the release	P

ELECTRIS LTD

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test current: 105% of the maximum adjustable setting current: (A)	263A	
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	No operate of the release	P
	Test current: 130% of the maximum adjustable setting current: (A)	325A	
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.	N/A	
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	Operate of the release	P
	Releases, independent of ambient air temperature: at 20℃ or 40℃		
	Test ambient air temperature:	40℃	
	Test current: 105% of the rated, or minimum adjustable setting current: (A)	262,5A	
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	No operate of the release	P
	Test current: 130% of the rated, or minimum adjustable setting current: (A)	325A	
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.	N/A	
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	Operate of the release	P
	Test current: 105% of the maximum adjustable setting current: (A)	661,5A	
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	No operate of the release	P
	Test current: 130% of the maximum adjustable setting current: (A)	819A	
	For circuit-breakers having an identified neutral pole provided with an overload release (see 8.3.3.1.1), the test current at the conventional tripping current shall be multiplied by the factor 1,2.	N/A	
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	Operate of the release	P

ELECTRIS LTD

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	An additional test, at a current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer		
	Releases, dependent of ambient air temperature: Reference temperature (℃)	N/A	
	Releases, independent of ambient air temperature: at 30℃	30℃	
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)	Instantaneous rease ±20% short-circuit release ±10% Inverse time-delay releases ±30%	P
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)	yes	P
	Releases, independent of ambient air temperature: at 20℃ or 40℃		
	Test ambient air temperature:	40℃	
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)	Instantaneous rease ±20% short-circuit release ±10% Inverse time-delay releases ±30%	
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)	yes	P
8.3.3.1.4	Additional test for definite time-delay releases		N/A
a)	Time delay		
	Test is made at a current equal to 1,5 times the current setting		
	overload releases: (all phase poles loaded)		
	for circuit-breakers having an identified neutral pole provided with an overload release, the test current for this release shall be 1,5 times the current setting;		

ЕЛЕКТРИС ЕООД ELECTRIS LTD

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	short-circuit releases: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		
	Test current: 1,5 times of the rated, or minimum adjustable setting current: (A)		
	Operating time, overload releases: (s)		
	Time-delay: between the limits stated by the manufacturer:		
	Operating time, short-circuit releases: (s)..L1-L2: L1-L3: L2-L3:		
	Time-delay: between the limits stated by the manufacturer:		
	Test current: 1,5 times of the maximum adjustable setting current: (A)		
	Operating time, overload releases: (s)		
	Time-delay: between the limits stated by the manufacturer:		
	Operating time, short-circuit releases: (s)..L1-L2: L1-L3: L2-L3:		
	Time-delay: between the limits stated by the manufacturer:		
b)	Non-tripping duration		N/A
	Firstly, the test current equal to 1,5 times the current setting is maintained for a time interval equal to the non-tripping duration stated by the manufacturer.		
	overload releases: (all phase poles loaded)		
	short-circuit releases: two poles in series carrying the test current, using successively all possible combinations of poles having a short-circuit release.		
	Test current: 1,5 times of the rated, or minimum adjustable setting current: (A)		
	Time interval: non-tripping duration stated by the manufacturer: (s)		
	Operating time, overload releases: the circuit-breaker does not trip:		

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Operating time, short-circuit releases: the circuit-breaker does not trip: L1-L2: L1-L3: L2-L3:		
	Test current: 1,5 times of maximum adjustable setting current: (A)		
	Time interval: non-tripping duration stated by the manufacturer: (s)		
	Operating time, overload releases: the circuit-breaker does not trip:		
	Operating time, short-circuit releases: the circuit-breaker does not trip: L1-L2: L1-L3: L2-L3:		
	Then, the current is reduced to the rated current and maintained at this value for twice the time-delay stated by the manufacturer. The circuit-breaker shall not trip.		
	Test current: of the rated, or minimum adjustable setting current: (A)		
	Time interval: twice the delay-time stated by the manufacturer: (s)		
	Operating time, overload releases: the circuit-breaker does not trip:		
	Operating time, short-circuit releases: the circuit-breaker does not trip: L1-L2: L1-L3: L2-L3:		
	Test current: maximum adjustable setting current: (A)		
	Operating time, overload releases: the circuit-breaker does not trip:		
	Operating time, short-circuit releases: the circuit-breaker does not trip: L1-L2: L1-L3: L2-L3:		
8.3.3.2	Test of dielectric properties, impulse withstand voltage (Uimp indicated):		
8.3.3.4 part1	The 1,2/50µs impulse voltage shall be applied five times for each polarity at intervals of 1s minimum		
	- rated impulse withstand voltage (kV) :	8kV main circuits 6kV auxiliary circuits	

ЕЛЕКТРИС ЕООД ELECTRIS LTD

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- sea level of the laboratory:	340m	
	- test Uimp main circuits (kV) :	9,6kV	P
	- test Uimp auxiliary circuits (kV) :	7,2kV	P
	- test Uimp control circuits (kV) :	N/A	
	- test Uimp on open main contacts (equipment suitable for isolating) (kV) :	14,5kV	P
a)	Application of test voltage		
	i) Between all terminals of the main circuit connected together (incl. control and auxiliary circuits connected to the main circuit) and the enclosure or mounting plate, with the contacts in all normal positions of operation.	meets	P
	ii) Between all terminals of the main circuit and the other poles connected together and to the enclosure or mounting plate, with the contacts in all normal positions of operation.	meets	P
	iii) Between each control and auxiliary circuit not normally connected to the main circuit and: - the main circuit	meets	P
	- other circuits	meets	P
	- exposed conductive parts	meets	P
	- enclosure of mounting plate	meets	P
	iv) equipment suitable for isolation	meets	P
	equipment not suitable for isolation	N/A	
	- no unintentional disruptive discharge during the test's	no	P
	Test of dielectric properties, dielectric withstand voltage (Uimp not indicated):		N/A
	- rated insulation voltage (V) :	N/A	
	- main circuits, test voltage for 1 min (V)	N/A	
	- auxiliary circuits, test voltage for 1 min (V)	N/A	
	- control circuits, test voltage for 1 min (V)	N/A	
8.3.3.2.2	Application of test voltage		
1)	with circuit-breaker in the closed position		
	- between all live parts of all poles connected together and the frame of the circuit-breaker .	meets	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- between each pole and all the other poles connected to the frame of the circuit-breaker	meets	P
2)	with the circuit-breaker in the open position and, additionally, in the tripped position, if any.		P
	- between all live parts of all poles connected together and the frame of the circuit-breaker.	meets	P
	- between the terminals of one side connected together and the terminals of the other side connected together.	meets	P
b)	Control and auxiliary circuits		
1)	- between all the control and auxiliary circuits which are not normally connected to the main circuit, connected together, and the frame of the circuit-breaker.	meets	P
2)	- where appropriate, between each part of the control an auxiliary circuits which may be isolated from the other parts during normal operation and all the other parts connected together.	meets	P
	No unintentional disruptive discharge during the tests	no	P
8.3.3.2	For circuit-breaker suitable for isolation, the leakage current shall be measured through each pole with the contacts in the open position, at a test voltage of 1,1 Ue, and shall not exceed 0,5mA.	0,02mA	P
8.3.3.3	Mechanical operation and operational performance capability		
8.3.3.3.2	Construction and mechanical operation		
a)	Construction		
	A withdrawable circuit-breaker shall be checked for the requirements stated in 7.1.1	satisfy	P
	A circuit-breaker with stored energy operation shall be checked for compliance with 7.2.1.1.5, regarding the charge indicator and the direction of operation of manual energy storing	N/A	
b)	Mechanical operation		
	A circuit-breaker with dependent power operation shall comply with the requirements stated in 7.2.1.1.3	N/A	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ПО ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A circuit-breaker with dependent power operation shall operate with the operating mechanism charged to the minimum and maximum limits stated by the manufacturer	N/A	
	A circuit-breaker with stored energy operation shall comply with the requirements stated in 7.2.1.5 with the auxiliary supply voltage at 85% and 110% of the rated control supply voltage.	N/A	
	It shall also be verified that the moving contacts cannot be moved from the open position when the operating mechanism is charged to slightly below the full charge as evidenced by the indicating device	N/A	
	For a trip-free circuit-breaker it shall not be possible to maintain the contacts in the touching or closed position when the tripping release is in the position to trip the circuit-breaker	satisfy	P
	If the closing and opening times of a circuit-breaker are stated by the manufacturer, such times shall comply with the stated values	Satisfy	P
c)	Undervoltage releases		
	Undervoltage releases shall comply with the requirements of 7.2.1.3 of Part 1. For this purpose, the release shall be fitted to a circuit-breaker having the maximum current rating for which the release is suitable	Satisfy	
i)	Drop out voltage		
	It shall be verified that the release operates to open the circuit-breaker between the voltage limits specified	satisfy	P
	The voltage shall be reduced from rated voltage at a rate to reach 0 V in approximately 30 s	satisfy	P
	The test for the lower limit is made without current in the main circuit and without previous heating of the release coil	satisfy	P
	In the case of a release with a range of rated voltages, this test applies to the maximum voltage of the range	satisfy	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The test for the upper limit is made starting from a constant temperature corresponding to the application of rated control supply voltage to the release and rated current in the main poles of the circuit-breaker	satisfy	P
	This test may be combined with the temperature-rise test of 8.3.3.6	satisfy	P
	In the case of a release with a range of rated voltages, this test is made at both the minimum and maximum rated control supply voltages	satisfy	P
ii)	Test for limits of operation		
	Starting with the circuit-breaker open, at the temperature of the test room, and with the supply voltage at 30% rated maximum control supply voltage, it shall be verified that the circuit-breaker cannot be closed by the operation of the actuator	satisfy	P
	When the supply voltage is raised to 85% of the minimum control supply voltage, it shall be verified that the circuit-breaker can be closed by the operation of the actuator	satisfy	P
iii)	Performance under overvoltage conditions		
	With the circuit-breaker closed and without current in the main circuit, it shall be verified that the undervoltage release will withstand the application of 110% rated control supply voltage for 4 h without impairing its functions	satisfy	P
d)	Shunt releases		
	Shunt releases shall comply with the requirements of 7.2.1.4 of Part 1. For this purpose, the release shall be fitted to a circuit-breaker having the maximum rated current for which the release is suitable	satisfy	P
	It shall be verified that the release will operate to open the circuit-breaker at 70% rated control supply voltage when tested at an ambient temperature of + 55 ℃ ± 2 ℃ without current in the main poles of the circuit-breaker	satisfy	P
	In the case of a release having a range of rated control supply voltages, the test voltage shall be 70% of the minimum rated control supply voltage	satisfy	P
8.3.3.3.3	Operational performance capability without current.		
	Type designation or serial number	BH630	

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД ELECTRIS

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Sample no:	1	
	Rated current In (A)	630A	
	Rated operational voltage: Ue (V)	690V	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt releases: Uc (V)	230V AC	
	Rated control supply voltage undervoltage releases: Uc (V)	230V AC	
	Ambient temperature 10-40 °C :	23℃	P
	Number of operating cycles per hour	60/hour	P
	Number of cycles without current (total) (closing mechanism energized at the rated Uc)	20000	P
	Number of cycles without current (without releases)	18000	P
	Applied voltage: closing mechanism (V)	N/A	
	10% of total cycles for circuit-breaker with fitted shunt release: (50% at the beginning- and 50% at the end of the test.) Energized at the rated Uc	2000	P
	Applied voltage: shunt releases (V)	500V AC	P
	10% of total cycles for circuit-breaker with undervoltage releases: (50% at the beginning- and 50% at the end of the test.) Energized at the minimum rated Uc	2000	P
	10 cycles without applied voltage at the undervoltage releases. (Shall not possible to close the circuit-breaker.)	meets	P
	Applied voltage: undervoltage releases (V)	24V AC	P
	Electrical components do not exceed the value indicated in tab. 7.	N/A	
8.3.3.3.4	Operational performance capability with current.		
	Rated current: In (A)	630A	
	Maximum rated operational voltage: Ue (V)	690V	
	Conductor cross-sectional area (mm²) :	2x185mm²	P

ΕΛΕΚΤΡΙΣ ΕΟΔΑ ELEKTRIS LTD

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of operating cycles per hour	60/hour	P
	Number of cycles with current (total) (closing mechanism energized at the rated Uc)	5000	P
	Applied voltage: closing mechanism (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload setting at maximum and short-circuit setting at minimum.	satisfy	P
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:	750V 750V 750V	
	- test current I/Ie = 1,0 (A) .....L1: .....L2: L3:	630A 630A 630A	
	- power factor/time constant:	0,8	
	- frequency: (Hz)	50Hz	
	- on-time (ms):	60ms	
	- off-time (s):	20s	
	Electrical components do not exceed the value indicated in tab. 7.	meets	P
8.3.3.3.5	Additional test of operational performance capability without current for withdrawable circuit-breaker.		
	Number of operations cycles : 100	satisfy	
	After test, the isolating contacts, withdrawable mechanism and interlocks shall be suitable for further service.	meets	P
8.3.3.4	Overload performance		
	this test applies to circuit-breaker of rated current up to and including 630 A		
	Type designation or serial number	BH630	
	Sample no:	1	
	Rated current In (A)	630A	
	Rated operational voltage: Ue (V)	690V	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt releases: Uc (V)	230V AC	

ЕЛЕКТРИС ЕООД ELECTRIS LTD

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated control supply voltage undervoltage releases: Uc (V)	230V AC	
	Ambient temperature 10-40 °C :	22℃	
	Number of operating cycles per hour	60	
	Maximum rated operational voltage: Ue (V)	690V AC	
	Number of operating cycles per hour	60	
	Number of cycles with current (total) (closing mechanism energized at the rated Uc)	12	
	Applied voltage: closing mechanism (V)	725V AC	
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload/short-circuit settings at maximum.	satisfy	
	Conditions, overload operations:		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	725V AC 725V AC 725V AC	
	- test current AC/DC: I/Ie = 6,0/2.5 (A) .....L1: .....L2: L3:	 3780A 3780A 3780A	
	- power factor/time constant:	0,8	
	- Number of cycles manually opened: 9	satisfy	
	- Number of cycles automatically opened by an overload release: 3	satisfy	
	- frequency: (Hz)	50Hz	
	- on-time max 2s:	satisfy	
8.3.3.5	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1380V	
	- no breakdown or flashover	meets	P
8.3.3.6	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.	meets	P
	Temperature rise of main circuit terminals ≤ 80 K (K) :	Max. 67K	P
	conductor cross-sectional area (mm²) :	2x185mm²	

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	test current Ie (A) :	630A	
8.3.3.7	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	913,5A	
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	32´02"	P
8.3.3.8	Verification of undervoltage and shunt releases		
	Circuit-breaker fitted with undervoltage releases. The release shall not operate at 70% of the minimum control supply voltage -	satisy	P
	and shall operate at 35% of the maximum control supply voltage.	satisfy	P
	Circuit-breaker fitted with shunt releases. The release shall operate at 70% of the minimum rated control supply voltage. Test made at room temperature.	satisfy	P
8.3.3.9	Verification of the main contact position for circuit-breakers for isolation		
	actuating force for opening (N) .....:	60N	—
	test force with blocked main contacts for 10 s (N) .....:	180N	—
	Dependent power operation		
	Supply voltage of 110% of rated voltage (V).....:	N/A	
	Three attempts of 5 s to operate the equipment at intervals of 5 min.	satisfy	P
	Independent power operation		
	Three attempts to operate the equipment by the stored energy.	satisfy	P
	Lock ability of driving mechanism in OFF-position at test force and blocked main contacts .....:	180N	
	Position indicator does not show OFF-position after capture of test force at blocked main contacts	meets	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II (Ics):		
8.3.4.1	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number	BH630	
	Sample no:	2, 3, 4	
	Rated current: In (A)	630A	
	Rated operational voltage: Ue (V)	415V,500V,690V AC	
	Rated service short-circuit breaking capacity: (kA)	18kA/415V, 10kA/500V, 8kA/690V	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	satisfy	
	closing mechanism energized with 85% at the rated Uc: (V)	N/A	
	The circuit-breaker is mounted complete on its own support or an equivalent support.	satisfy	
	Test made in free air:	satisfy	
	Distances of the metallic screen's: (all sides)	Vide catalogue	
	The characteristics of the metallic screen:		
	- woven wire mesh	N/A	
	- perforated metal	N/A	
	- expanded metal	yes	
	- ratio hole area/total area: 0,45-0,65	satisfy	
	- size of hole: <30mm^2	satisfy	
	- finish: bare or conductive plating	satisfy	
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:	N/A	
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	satisfy	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Circuit is earthed at: (load-star- or supply-star point)	Load-star	
	Conductor cross-sectional area (mm²) :	2x185mm²	
	If terminals unmarked: line connected at: (underside/upside)	N/A	
	Tightening torques: (Nm)	20Nm	
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1,05 (V).....L1: .....L2: L3:	440V 440V 440V	
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:	18,67kA AC 18,52kA AC 18,00kA AC	
	power factor/time constant :	0,29	
	- Factor "n"	1,95	
	- peak test current (A) :	36,4 kA	
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	17,93kA 22,79kA 23,97kA	
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	1,3. 10^6 A²s 2,8 .10^6 A²s 2,3 .10^6 A²s	
	Pause, t: (min)	3min	
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	24,62kA 17,17kA 20,19kA	
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:	2,6 . 10^6 A²s 2,7 .10^6 A²s 2,41.10^6 A²s	
	Pause, t: (min)	3min	
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	23,87kA 21,06kA 18,36kA	

ΕΛΕΚΤΡΙΣ ΕΟΟΑ ELECTRIS LTD

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	$3,14 . 10^6 A^2s$ $1,6 .10^6 A^2s$ $1,18.10^6 A^2s$	
	Melting of the fusible element	no	P
	Holes in the PE-sheet for test sequence "O"	no	P
	Cracks observed	no	P
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1,05 (V).....L1: .....L2: L3:	550V 550V 550V	
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:	 10,42kA AC 10,5 kA AC 10,24kA AC	
	power factor/time constant :	0,5	
	- Factor "n"	1,68	
	- peak test current (A) :	17,7kA	
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	11,93kA 16,52kA 13,624kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	$1,12. 10^6 A^2s$ $1,59 .10^6 A^2s$ $1,05.10^6 A^2s$	
	Pause, t: (min)	3min	
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	14,63kA 16,09kA 9,56kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	$1,28 10^6 A^2s$ $1,29 .10^6 A^2s$ $0,53.10^6 A^2s$	
	Pause, t: (min)	3min	
	Test sequence "CO"		

ELECTRIS LTD ΕΛΕΚΤΡΙΣ ΕΠΕ

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	16,74kA 13,88kA 12,37kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	1,67. 10^6 A^2s 1,12 .10^6 A^2s 0,98.10^6 A^2s	
	Melting of the fusible element	no	P
	Holes in the PE-sheet for test sequence "O"	no	P
	Cracks observed	no	P
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1,05 (V).....L1: .....L2: L3:	776V 776V 776V	
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:	8,18kA AC 8,12kA AC 8,11kA AC	
	power factor/time constant :	0,49	
	- Factor "n"	1,69	
	- peak test current (A) :	13,7kA	
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	10,47kA 13,34kA 11,34kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	0,54 . 10^6 A^2s 1,19 .10^6 A^2s 0,619.10^6 A^2s	
	Pause, t: (min)	3min	
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	11,12A 13,28kA 9,99kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	2,0 . 10^6 A^2s 0,78 .10^6 A^2s 0,56.10^6 A^2s	
	Pause, t: (min)	3min	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test sequence "CO"		
	- max. let-through current: (kApeak) ....L1: ....L2: L3:	10,58kA 12,2kA 13,6kA	
	- Joule integral I²dt (A²s) ....L1: ....L2: L3:	0,58 . 10^6 A^2s 1,98 .10^6 A^2s 0,77.10^6 A^2s	
	Melting of the fusible element	no	P
	Holes in the PE-sheet for test sequence "O"	no	P
	Cracks observed	no	P
8.3.4.2	Operational performance capability with current.		
	Rated current: In (A)	630A	
	Maximum rated operational voltage: Ue (V)	690V	
	Conductor cross-sectional area (mm²) :	2x185mm^2	
	Number of operating cycles per hour	60/hour	
	Number (5% of the number given in column 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)	50	
	Applied voltage: closing mechanism (V)	N/A	
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload setting at maximum and short-circuit setting at minimum.	satisfy	
	Conditions, make/break operations:		
	Sample no	2 3 4	
	- test voltage U/Ue = 1,0 (V) ....L1: ....L2: L3:	415V 500V 690V 415V 500V 690V 415V 500V 690V	
	- test current I/Ie = 1,0 (A)..............................L1: ....L2: L3:	630A 630A 630A	
	- power factor/time constant:	0,8	
	- frequency: (Hz)	50Hz	
	- on-time (ms):	60ms	
	- off-time (s):	20s	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Electrical components do not exceed the value indicated in tab. 7.	satisfy	P
8.3.4.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1380V	
	- no breakdown or flashover	no	P
	Sample no	2 3 4	
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1.1 Ue)	0,12mA 0,01mA 0,08mA	P
8.3.4.4	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.	satisfy	P
	Temperature rise of main circuit terminals. ≤ 80 K (K) :	Max. 69K	P
	conductor cross-sectional area (mm²) :	2x185mm²	
	test current Ie (A) :	630A	
8.3.4.5	Verification of overload releases		
	Test current: 1.45 times the value of their current setting at the reference temperature: (A)	913,5A	
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	30´17" 31´23" 30´56"	P

8.3.4	TEST SEQUENCE II/III (Ics=Icu):		N/A
8.3.4.1	Test of rated service short-circuit breaking capacity		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number		
	Sample no:		
	Rated current: In (A)		
	Rated operational voltage: Ue (V)		
	Rated service short-circuit breaking capacity: (kA)		
	Rated control supply voltage of closing mechanism: Uc (V)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated control supply voltage of shunt release: Uc (V)		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		
	closing mechanism energized with 85% at the rated Uc: (V)		
	The circuit-breaker is mounted complete on its own support or an equivalent support.		
	Test made in free air:		
	Distances of the metallic screen's: (all sides)		
	The characteristics of the metallic screen:		
	- woven wire mesh		
	- perforated metal		
	- expanded metal		
	- ratio hole area/total area: 0,45-0,65		
	- size of hole: <30mm^2		
	- finish: bare or conductive plating		
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		
	Circuit is earthed at: (load-star- or supply-star point)		
	Conductor cross-sectional area (mm²) :		
	If terminals unmarked: line connected at: (underside/upside)		
	Tightening torques: (Nm)		
8.3.5.1	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :		
	Test sequence of operation: O – t – CO – t – CO		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:		
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:		
	power factor/time constant :		
	- Factor "n"		
	- peak test current (A) :		
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
	Pause, t: (min)		
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
	Pause, t: (min)		
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

...С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Melting of the fusible element		
	Holes in the PE-sheet for test sequence "O"		
	Cracks observed		
8.3.4.2	Operational performance capability with current.		
	Rated current: In (A)		
	Maximum rated operational voltage: Ue (V)		
	Conductor cross-sectional area (mm²) :		
	Number of operating cycles per hour		
	Number (5% of the number given in column 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)		
	Applied voltage: closing mechanism (V)		
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload setting at maximum and short-circuit setting at minimum.		
	Conditions, make/break operations:		
	- test voltage U/Ue = 1,0 (V) .....L1: .....L2: L3:		
	- test current I/Ie = 1,0 (A) .....L1: .....L2: L3:		
	- power factor/time constant:		
	- frequency: (Hz)		
	- on-time (ms):		
	- off-time (s):		
	Electrical components do not exceed the value indicated in tab. 7.		
8.3.4.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V		
	- no breakdown or flashover		
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1,1 Ue)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.4.4	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.		
	Temperature rise of main circuit terminals. ≤ 80 K (K) :		
	conductor cross-sectional area (mm²) :		
	test current Ie (A) :		
8.3.4.5	Verification of overload releases		
	Test current: 1,45 times the value of their current setting at the reference temperature: (A)		
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		
8.3.5.4	Verification of overload releases		
	The operation of overload releases shall be verified at 2,5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :		

8.3.5	TEST SEQUENCE III (Icu)		
	Rated ultimate short-circuit breaking		
	Except where the combined test sequence applies, this test sequence applies to circuit-breaker of utilization category A and to circuit-breaker of utilization B having a rated ultimate short-circuit breaking capacity higher than the rated short-time withstand current.		
	For circuit-breakers of utilization B having a rated short-time withstand current equal to their rated ultimate short-circuit breaking capacity, this test sequence need not be made, since, in this case, the ultimate short-circuit breaking capacity, is verified when carrying out test sequence IV.		
	For integrally fused circuit-breakers, test sequence V applies in place of this sequence.		
	Type designation or serial number	BH630	
	Sample no:	5, 6, 7	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated current: In (A)	630A	
	Rated operational voltage: Ue (V)	415,500,690V AC	
	Rated ultimate short-circuit breaking capacity: (kA)	36kA/415V, 20kA/500V, 15kA/690V	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	This test sequence need not be made when Icu = Ics		
8.3.5.1	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	3'52"	
	Sample no:	5 6 7	
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	3'52" 3'50" 3'47" 3'49" 3'48" 3'48" 3'47" 3'51" 3'40"	
8.3.5.2	Test of rated ultimate short-circuit breaking capacity		
	The test sequence of operations is O – t - CO		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	satisfy	
	closing mechanism energized with 85% at the rated Uc: (V)	N/A	
	The circuit-breaker is mounted complete on its own support or an equivalent support.	satisfy	
	Test made in free air:	satisfy	
	Distances of the metallic screen's: (all sides)	Vide catalogue	
	The characteristics of the metallic screen:		
	- woven wire mesh	N/A	
	- perforated metal	N/A	
	- expanded metal	yes	
	- ratio hole area/total area: 0,45-0,65	satisfy	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- size of hole: <30mm^2	satisfy	
	- finish: bare or conductive plating	satisfy	
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	satisfy	
	Circuit is earthed at: (load-star- or supply-star point)	Load-star	
	Conductor cross-sectional area (mm^2) :	2x185mm^2	
	If terminals unmarked: line connected at: (underside/upside)	N/A	
	Tightening, torques: (Nm)	20Nm	
	Test sequence of operation: O – t – CO		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	440V 440V 440V	
	- r.m.s. test current AC/DC: (A).....L1: .....L2: L3:	37,02kA 36,7kA 37,44kA	
	power factor/time constant :	0,20	
	- Factor "n"	2,15	
	- peak test current (Amax) :	79,2kA	
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	19,6kA 28,4kA 37,6kA	
	- Joule integral I^{2}dt (A^{2}s) .....L1: .....L2: L3:	2,13 . 10^6 A^{2}s 4,21 . 10^6 A^{2}s 3,7 . 10^6 A^{2}s	
	Pause, t: (min)	3min	
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	21,2kA 30,8kA 34,2kA	

ЕЛЕКТРИС СООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	$2,15 . 10^6 A^2s$ $4,32 . 10^6 A^2s$ $3,56. 10^6 A^2s$	
	Melting of the fusible element	no	P
	Holes in the PE-sheet for test sequence "O"	no	P
	Cracks observed	no	P
	Test sequence of operation: O – t – CO		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	560V 560V 560V	
	- r.m.s. test current AC/DC: (A).....L1: .....L2: L3:	20,48kA 20,64kA 20,73kA	
	power factor/time constant :	0,25	
	- Factor "n"	2,0	
	- peak test current (Amax) :	42,4kA	
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	18,79A 25,28kA 27,00kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	$1,22. 10^6 A^2s$ $3,52 .10^6 A^2s$ $3,13. 10^2 A^2s$	
	Pause, t: (min)	3min	
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	24,95kA 22,03kA 26,46kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	$3,2 . 10^6 A^2s$ $1,64. 10^6 A^2s$ $3,96. 10^6 A^2s$	
	Melting of the fusible element	no	P
	Holes in the PE-sheet for test sequence "O"	no	P
	Cracks observed	no	P
	Test sequence of operation: O – t – CO		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	760V 760V 760V	
	- r.m.s. test current AC/DC: (A).....L1: .....L2: L3:	15,12kA 15,14kA 15,27kA	
	power factor/time constant :	0,28	
	- Factor "n"	1,99	
	- peak test current (Amax) :	30,1kA	
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	18,36kA 24,73kA 20,41kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	$1,22 . 10^6 A^2s$ $2,71 . 10^6 A^2s$ $1,65 . 10^6 A^2s$	
	Pause, t: (min)	3min	
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:	23,0kA 18,25A 23,32kA	
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:	$2,59 . 10^6 A^2s$ $1,54 . 10^6 A^2s$ $3,12 . 10^6 A^2s$	
	Melting of the fusible element	no	P
	Holes in the PE-sheet for test sequence "O"	no	P
	Cracks observed	no	P
8.3.5.3	Verification of dielectric withstand		
	Sample no:	5 6 7	
	- equal to twice the rated operational voltage with a minimum of 1000 V	1000V 1000V 1380V	
	- no breakdown or flashover	no	P
	Sample no:	5 6 7	
	- the leaking current for circuit-breaker suitable for isolation: (<6mA / 1,1 Ue)	0,56mA 0,29mA 0,76mA	P

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict

8.3.5.4	Verification of overload releases				
	The operation of overload releases shall be verified at 2,5 times the value of their current setting on each pole separately.				
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.				
	Time specified by the manufacturer:	1´22"			
	Sample no:	5	6	7	
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	1´21" 1´20" 1´19" -	1´18" 1´19" 1´20"	1´17" 1´21" 1´19"	P
8.3.6	TEST SEQUENCE IV				N/A
	Rated short-time withstand current				
	Except where the combined test sequence applies, this test sequence applies to circuit-breakers of utilization category B and to those circuit-breaker of category A covered by note 3 of table 4, and comprises the following tests:				
	Where integrally fused circuit-breaker are of utilization category B, they shall meet the requirements of this sequence.				
	Type designation or serial number				
	Sample no:				
	Rated current: In (A)				
	Rated operational voltage: Ue (V)				
	Rated short-time withstand current: (kA/s)				
	Rated frequency: (Hz)				

8.3.6.1	Verification of overload releases		
	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.6.2	Test of rated short-time withstand current.		
	For this test, any over-current release, including the instantaneous override, if any, likely to operate during the test, shall be rendered inoperative.		
	- test frequency: (Hz)		
	- duration of the test: (s)		
	- test frequency: (Hz)		
	- power factor / time constant (ms):		
	- factor "n"		
	- test voltage: (V) .....L1: .....L2: L3:		
	- r.m.s. test current: (kA) .....L1: .....L2: L3:		
	- highest peak current: (kA)		
8.3.6.3	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.		
	Temperature rise of main circuit terminals. ≤ 80 K (K) :		
	conductor cross-sectional area (mm²) :		
	test current Ie (A) :		
8.3.6.4	Test of short-circuit breaking capacity at the max. short-time withstand current.		
	Rated short-time withstand current: (kA/s)		
	Test sequence: O – t – CO		
	max. available time setting of the short–time delay short-circuit release. (s)		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:		
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:		
	- test frequency: (Hz)		
	- power factor / time constant (ms):		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- factor "n"		
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
	PAUSE, T: (MIN)		
	- the circuit-breaker shall remain closed for the short-time corresponding to the max. available time setting of the short–time delay short-circuit release and -		
	- the instantaneous override, if any, shall not operate.		
	-pause: t (s)		
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
	PAUSE, T: (MIN)		
	- the circuit-breaker shall remain closed for the short-time corresponding to the max. available time setting of the short–time delay short-circuit release and -		
	- the instantaneous override, if any, shall not operate.		
	- if the circuit-breaker has a making current release, this requirement does not apply to the CO operation, if the prospective current exceeds the pre-determined value, since it will then operate.		
8.3.6.5	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V		
	- no breakdown or flashover		
8.3.6.6	Verification of overload releases		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :		
8.3.7	TEST SEQUENCE V		N/A
	Performance of integrally fused circuit-breakers		
	STAGE 1		
	Type designation or serial number		
	Sample no:		
	Rated current: In (A)		
	Rated operational voltage: Ue (V)		
	Value of prospective current equal to the selectivity limit current, as declared by the manufacturer. (kA)		
	Type of integrated fuses (all details)		
	Rated control supply voltage of closing mechanism: Uc (V)		
	Rated control supply voltage of shunt release: Uc (V)		
8.3.7.1	Short-circuit at the selectivity limit current		
	Test sequences "O"		
	Fuses shall be fitted		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		
	closing mechanism energized with 85% at the rated Uc: (V)		
	The circuit-breaker is mounted complete on its own support or an equivalent support.		
	Test made in free air:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Distances of the metallic screen's: (all sides)		
	The characteristics of the metallic screen:		
	- woven wire mesh		
	- perforated metal		
	- expanded metal		
	- ratio hole area/total area: 0,45-0,65		
	- size of hole: <30mm^2		
	- finish: bare or conductive plating		
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		
	Circuit is earthed at: (load-star- or supply-star point)		
	Conductor cross-sectional area (mm²) :		
	If terminals unmarked: line connected at: (underside/upside)		
	Tightening torques: (Nm)		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:		
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:		
	power factor/time constant :		
	- factor "n"		
	- peak test current (Amax) :		
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I²dt (A²s) .....L1: .....L2: L3:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- fuses shall still intact .....L1: .....L2: L3:		
8.3.7.2	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.		
	Temperature rise of main circuit terminals. ≤ 80 K (K) :		
	conductor cross-sectional area (mm²) :		
	test current Ie (A) :		
8.3.7.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V		
	- no breakdown or flashover		

	STAGE 2		
	Type designation or serial number		
	Sample no:		
	Rated current: In (A)		
	Rated operational voltage: Ue (V)		
	1.1 time the value of prospective current equal to the selectivity limit current, as declared by the manufacturer. (kA)		
	Type of integrated fuses (all details)		
	Rated control supply voltage of closing mechanism: Uc (V)		
	Rated control supply voltage of shunt release: Uc (V)		
8.3.7.4	Verification of overload releases		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The operation of overload releases shall be verified at twice the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :		
8.3.7.5	Short-circuit at 1,1 times the take-over current		
8.3.7.1	Short-circuit at the selectivity limit current		
	Test sequences "O"		
	Fuses shall be fitted		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		
	closing mechanism energized with 85% at the rated Uc: (V)		
	The circuit-breaker is mounted complete on its own support or an equivalent support.		
	Test made in free air:		
	Distances of the metallic screen's: (all sides)		
	The characteristics of the metallic screen:		
	- woven wire mesh		
	- perforated metal		
	- expanded metal		
	- ratio hole area/total area: 0,45-0,65		
	- size of hole: <30mm^2		
	- finish: bare or conductive plating		
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		
	Fuse "F": copper wire: diameter 0.8 mm, 50 mm long		
	Circuit is earthed at: (load-star- or supply-star point)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Conductor cross-sectional area (mm²) :		
	If terminals unmarked: line connected at: (underside/upside)		
	Tightening torques: (Nm)		
	1.1 time the value of prospective current equal to the selectivity limit current, as declared by the manufacturer. (kA)		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:		
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:		
	power factor/time constant :		
	- factor "n"		
	- peak test current (Amax) :		
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
	- at least two of the fuses shall have blown ..L1: .....L2: L3:		
8.3.7.6	Short-circuit at ultimate short-circuit breaking capacity		
	Type designation or serial number		
	Sample no:		
	Rated current: In (A)		
	Rated operational voltage: Ue (V)		
	Rated ultimate short-circuit breaking capacity. (kA)		
	Type of integrated fuses (all details)		
	Rated control supply voltage of closing mechanism: Uc (V)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated control supply voltage of shunt release: Uc (V)		
	Test sequences: O – t – CO		
	Fuses shall be fitted		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		
	closing mechanism energized with 85% at the rated Uc: (V)		
	The circuit-breaker is mounted complete on its own support or an equivalent support.		
	Test made in free air:		
	Distances of the metallic screen's: (all sides)		
	The characteristics of the metallic screen:		
	- woven wire mesh		
	- perforated metal		
	- expanded metal		
	- ratio hole area/total area: 0,45-0,65		
	- size of hole: <30mm^2		
	- finish: bare or conductive plating		
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		
	Circuit is earthed at: (load-star- or supply-star point)		
	Conductor cross-sectional area (mm^2) :		
	If terminals unmarked: line connected at: (underside/upside)		
	Tightening torques: (Nm)		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:		
	power factor/time constant :		
	- factor "n"		
	- peak test current (A) :		
	Test sequence "O"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
	Pause: t (s)		
	new fitted fuses		
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
8.3.7.7	Verification of dielectric withstand		
	- equal twice time rated operational voltage with a minimum of 1000 V (new fuses fitted)		
	- no breakdown or flashover		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

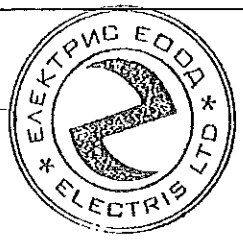
IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
8.3.7.8	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :		
8.3.8	Combined test sequence		N/A
	At the discretion of, or in agreement with the manufacturer, this sequence may be applied to circuit-breaker of utilization cat. B:		
	Type designation or serial number		
	Sample no:		
	Rated current: In (A)		
	Rated operational voltage: Ue (V)		
	Rated short-time withstand current: (kA/s)		
	Rated frequency: (Hz)		
8.3.8.1	Verification of overload releases		
	The operation of overload releases shall be verified twice times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :		
8.3.8.2	Test of rated short-time withstand current.		
	For this test, any over-current release, including the instantaneous override, if any, likely to operate during the test, shall be rendered inoperative.		
	- test frequency: (Hz)		
	- duration of the test: (s)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- test frequency: (Hz)		
	- power factor / time constant (ms):		
	- factor "n"		
	- test voltage: (V) .....L1: .....L2: L3:		
	- r.m.s. test current: (kA) .....L1: .....L2: L3:		
	- highest peak current: (kA)		
8.3.8.3	Test of rated service short-circuit breaking capacity		
	At the highest voltage applicable to the rated short-time current.		
	Test sequence of operation: O – t – CO – t – CO		
	Type designation or serial number		
	Sample no:		
	Rated current: In (A)		
	Rated operational voltage: Ue (V)		
	Rated service short-circuit breaking capacity: (kA)		
	Rated control supply voltage of closing mechanism: Uc (V)		
	Rated control supply voltage of shunt release: Uc (V)		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.		
	closing mechanism energized with 85% at the rated Uc: (V)		
	The circuit-breaker is mounted complete on its own support or an equivalent support.		
	Test made in free air:		
	Distances of the metallic screen's: (all sides)		
	The characteristics of the metallic screen:		
	- woven wire mesh		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- perforated metal		
	- expanded metal		
	- ratio hole area/total area: 0,45-0,65		
	- size of hole: <30mm^2		
	- finish: bare or conductive plating		
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long		
	Circuit is earthed at: (load-star- or supply-star point)		
	Conductor cross-sectional area (mm^2) :		
	If terminals unmarked: line connected at: (underside/upside)		
	Tightening torques: (Nm)		
	Test sequence of operation: O – t – CO – t – CO		
	The highest voltage applicable to the rated short-time current.		
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:		
	- r.m.s. test current AC/DC: (A) .....L1: .....L2: L3:		
	power factor/time constant :		
	- Factor "n"		
	- peak test current (A) :		
	Test sequence "O"		
	- max. let-through current: (kApeak .....L1: .....L2: L3:		
	- Joule integral I^{2}dt (A^{2}s) .....L1: .....L2: L3:		



IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Pause, t: (min)		
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
	Pause, t: (min)		
	Test sequence "CO"		
	- max. let-through current: (kApeak) .....L1: .....L2: L3:		
	- Joule integral I^2dt (A^2s) .....L1: .....L2: L3:		
	The circuit-breaker shall remain closed for the short-time corresponding to the max. available time setting of the short-time delay short-circuit release.		
	During this test the instantaneous override shall not operate		
	- and the making current release shall operate		
8.3.8.4	Operational performance capability with current.		
	Rated current: In (A)		
	Maximum rated operational voltage: Ue (V)		
	Conductor cross-sectional area (mm^2) :		
	Number of operating cycles per hour		
	Number (5% of the number given in column 4, tab. 8) of cycles with current (total) (closing mechanism energized at the rated Uc)		
	Applied voltage: closing mechanism (V)		
	For circuit-breaker fitted with adjustable releases, test shall be made with the overload setting at maximum and short-circuit setting at minimum.		
	Conditions, make/break operations:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- test voltage U/Ue = 1,0 (V).....L1: .....L2: L3:		
	- test current I/Ie = 1,0 (A).....L1: .....L2: L3:		
	- power factor/time constant:		
	- frequency: (Hz)		
	- on-time (ms):		
	- off-time (s):		
	Electrical components do not exceed the value indicated in tab. 7.		
8.3.8.5	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V		
	- no breakdown or flashover		
	- the leaking current for circuit-breaker suitable for isolation: (<2mA / 1,1 Ue)		
8.3.8.7	Verification of temperature-rise		
	- the values of temperature-rise do not exceed the those specified in tab. 7.		
	Temperature rise of main circuit terminals. ≤ 80 K (K) :		
	conductor cross-sectional area (mm²) :		
	test current Ie (A) :		
8.3.8.7	Verification of overload releases		
	Test current: 1,45 times the value of their current setting at the reference temperature: (A)		
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The operation of overload releases shall be verified at 2,5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:		
	- Operation time: (s) .....L1: .....L2: .....L3: .....N :		

ЕЛЕКТРИС ЕДОД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
Annex B	Circuit-breakers incorporating residual current protection		N/A
B.3	Classification		
B.3.1			
B.3.1.1	CBR functionally independent of line voltage		
B.3.1.2	CBR functionally dependent on line voltage		
B.3.1.2.1	Opening automatically in the case of failure of the line voltage with or without delay.		
B.3.1.2.2	Not opening automatically in the case of failure of line voltage.		
B.3.2	*THE RESIDUAL OPERATING CURRENT*		
B.3.2.1	*CBR WITH SINGLE RATED RESIDUAL OPERATING CURRENT*		
B.3.2.2	*CBR WITH MULTIPLE SETTINGS OF RESIDUAL OPERATING CURRENT*	Fixed steps/continuous	
B.3.3	*CLASSIFICATION ACCORDING TO TIME-DELAY OF THE RESIDUAL CURRENT FUNCTION*		
B.3.3.1	*CBR WITHOUT TIME-DELAY: NON-TIME-DELAYED TYPE*		
B.3.3.2	*CBR WITH TIME-DELAY: TIME-DELAYED TYPE*		
B.3.3.2.1	CBR with non-adjustable time-delay		
B.3.3.2.2	CBR with adjustable time-delay	Fixed steps/continuous	
B.3.4	Classification according to behaviour in presence of a d.c. component	CBR of type AC / type A	
B.4	Characteristics of CBRs concerning their residual current function		
B.4.1.1	$I\Delta$		
B.4.1.2	$I\Delta$		
B.4.1.3	$I\Delta$		
B.4.2	Preferred and limiting values		
	Preferred values of the rated residual operating current ($I\Delta n$)		
	Limiting value of the non-operating overcurrent in the case of a single-phase load in a multiphase circuit		
B.4.2.4	Operating characteristics		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The value of the rated voltage of the voltage source of CBRs		
	For a time-delay type, the limiting non-actuating time is defined at 2 $I\Delta n$ and shall be declared by the manufacturer.		
	For CBR's having a limiting non-actuating time higher than 0,06 s, the manufacturer shall declare the maximum break time at $I\Delta n$, 2 $I\Delta n$, 5 $I\Delta n$, and 10 $I\Delta n$.		
	In the case of a CBR having an inverse current/time characteristic, the manufacturer shall state the residual current/break time characteristic.		
B.4.3	$I\Delta$		
	The minimum value of $I\Delta m$ is 25 % of cu.		
B.5.	Marking		
	Data according B.5. section a) shall be marked on integral CBRs (see B.1.1), in addition to the marking specified in 5.2, and be clearly visible in the installed position		
	Data according B.5. section b) shall be marked on r.c. units and be clearly visible in the installed *POSITION*		
	Data according B.5. section c) shall be marked on r.c. units and be visible after assembly with the *CIRCUIT-BREAKER:*		
	Data according B.5.section d) shall be marked on integral CBRs or r.c. units, as applicable, or made available in the manufacturer's literature:		
	Data according section B.5. section e) shall be made available in the manufacturer's literature:		
B.8.	Tests		
	This clause specifies tests for CBRs having a rated residual operating current $I\Delta n$ up to and *INCLUDING* 30 A.		
	The applicability of the tests specified in this clause when $I\Delta n$ > 30 A is subject to agreement *BETWEEN MANUFACTURER AND USER.*		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The instruments for the measurement of the residual current shall be at least class 0,5 *(SEE IEC 60051) AND SHALL SHOW (OR PERMIT TO DETERMINE) THE TRUE R.M.S. VALUE.*		
	The instruments for the measurement of time shall have a relative error not greater than 10 % *OF THE MEASURED VALUE.*		
B.8.1.1			
	OPERATIONAL PERFORMANCE CAPABILITY		
	During the operating cycles with current a third of the breaking operations shall be performed by actuating the test device, and a further third by applying a residual current of value IΔn (or, if applicable, of the lowest setting of the residual operating current) to any one pole.		
	In the case of a reset-CBR, it is not possible to reclose the CBR after tripping without the intentional resetting action. This verification shall take place at the beginning and at the end of the operational performance capability test with current		
	NO FAILURE TO TRIP SHALL BE ADMITTED.		
	RATED SERVICE SHORT-CIRCUIT BREAKING CAPACITY (TEST SEQUENCE II)		
	Following the tests of 8.3.4, verification of the correct operation of the CBR in case of residual *CURRENT SHALL BE PERFORMED IN ACCORDANCE WITH B.8.2.4.1.*		
B.8.2.4.1	Verification of operating in case of steady increase of the residual current (figure B.1)		
	Increase the residual current from 0,2 IΔn to IΔn in 30 sec. Required: value between IΔno and IΔn		
	Min. setting IΔn.(mA): Interm. setting IΔn.(mA): Max. setting IΔn.(mA):		
	The correct operation of the overload releases of 8.3.5.1 and 8.3.5.4 by two-pole tests, on all possible combinations of phase poles in turn		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Following the tests of 8.3.5, verification of the correct operation of the CBR shall be performed *IN ACCORDANCE WITH B.8.2.4.3.*		
B.8.2.4.3	Verification of operating in case of a sudden appearance of the residual current (figure B.1)		
	A residual current is sudden appear on the CBR of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	a) Behaviour during rated short-time withstand current test *NO TRIPPING SHALL OCCUR DURING THE TEST OF 8.3.6.2 OR 8.3.6.2, AS APPLICABLE.*		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	b) Verification of overload releases test sequence IV For the purpose of verifying the correct operation of the overload releases in accordance with 8.3.6.1 and 8.3.6.6, the single pole tests specified in 8.3.5.1 shall be replaced by two-pole tests, made on all possible combinations of phase poles in turn.		
	b) Verification of overload releases for combined test sequence. For the purpose of verifying the correct operation of the overload releases in accordance with 8.3.8.1, the single pole test specified in 8.3.5.1 shall be replaced by two-pole tests made on all possible combinations of phase poles in turn.		
	b) For the purpose of verifying the correct operation of overload releases in accordance with 8.3.8.6, the test specified in 8.3.3.7 shall be made using a three-phase supply.		
	c) Verification of the residual current tripping device Following the tests of 8.3.6 or 8.3.8, as applicable, verification of the residual current tripping device shall be performed in accordance with B.8.2.4.3.		
B.8.2.4.3	Verification of operating in case of a sudden appearance of the residual current (figure B.1)		
	A residual current is sudden appear on the CBR of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	For the purpose of verifying the correct operation of the overload releases, the single-pole tests specified in 8.3.7.4 and 8.3.7.8 shall be replaced by two-pole tests, on all possible combinations of phase poles in turn, the test conditions being as specified in 8.3.7.4 and 8.3.7.8 but applicable to two poles.		
	Following the tests of 8.3.7, verification of the correct operation of the CBR shall be performed in accordance with B.8.2.4.3.		
B.8.2.4.3	Verification of operating in case of a sudden appearance of the residual current (figure B.1)		
	A residual current is sudden appear on the CBR of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	COMBINED TEST SEQUENCE		
	Following the tests of 8.3.8, verification of the correct operation of the CBR shall be performed in accordance with B.8.2.4.3.		
B.8.2.4.3	Verification of operating in case of a sudden appearance of the residual current (figure B.1)		
	A residual current is sudden appear on the CBR of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

ЕЛЕКТРИС ЕООД * ELI ELPIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
B I			
	Tests shall be made at the following values of voltage applied to the relevant terminals: - 0,85 times the minimum rated voltage for the tests specified in B.8.2.4 and B.8.2.5.1; - 1,1 times the maximum rated voltage for the tests specified in B.8.2.5.2.		
	CBRs with more than one rated frequency or a range of rated frequencies shall be tested in each case at the highest and lowest rated frequency. However, for CBRs rated at 50 Hz and 60 Hz, tests at 50 Hz or 60 Hz are considered to cover the requirements.		
B.8.2.4			
B.8.2.4.1	Verification of operating In case of steady increase of the residual current (figure B.1)		
	Increase the residual current from 0,2 IΔn to IΔn in 30 sec. Required: value between IΔno and IΔn		
	Min. setting IΔn.(mA): Interm. setting IΔn.(mA): Max. setting IΔn.(mA):		
B.8.2.4.2	Verification of operating in case of closing on residual current (figure B.1)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The CBR is closes on IΔn or each specified setting Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
B.8.2.4.3	Verification of operating in case of a sudden appearance of the residual current (figure B.1)		
	A residual current is sudden appear on the CBR of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	Verification of the limiting non-operating time of time delayed type CBRs		
	A residual current is sudden appear on the CBR of 2 IΔn for a time declared by the manufacturer Required : The CBR shall not operate		
	Min. setting IΔn. Min. setting time delay (ms): Min. setting IΔn. Max. setting time delay (ms):		
B.8.2.5	Tests at the temperature limits		
	General		
	Minimum temperature (℃)		
	Maximum temperature (℃)		
B.8.2.5.1	Verification of operating in case of a sudden appearance of the residual current at –5℃ or minimum temperature limit		
	A residual current is sudden appear on the CBR of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1: (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	Verification of the limiting non-operating time of time delayed type CBRs at –5℃ or minimum temperature limit		
	A residual current is sudden appear on the CBR of 2 IΔn for a time declared by the manufacturer Required : The CBR shall not operate		
	Min. setting IΔn. Min. setting time delay (ms): Min. setting IΔn. Max. setting time delay (ms):		
B.8.3.5.2	Verification of operating in case of a sudden appearance of the residual current at +40℃		
	A residual current is sudden appear on the CBR of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn for a time declared by the manufacturer Required : The CBR shall not operate		
	Min. setting IΔn. Min. setting time delay (ms): Min. setting IΔn. Max. setting time delay (ms):		
B.8.3	Verification of dielectric properties		
B.8.3.3.2	Verification of rated impuls withstand voltage		
	rated impulse withstand voltage		
	test impulse voltage (see table 12 part 1)		
	test impulse voltage for isolating (see table 14 part 1)		
B.8.4	Verification of the operation of the test device at the limits of the rated voltage		
	For CBRs having an adjustable time-delay the test is made at the maximum setting of time-delay:	_____ s	
B.8.4.a	Setting IΔn or minimum setting of IΔn	_____ A	
	Test voltage (1,1 x Ue max)	_____ V	
	Number of operations	25	
	Interval time	5 s	
	Tripping	☐ Yes / ☐ No	
B.8.4.b	Setting IΔn or maximum setting of IΔn	_____ A	
	Test voltage (0,85 x Ue min)	_____ V	
	Number of operations	3	
	Interval time	5 s	

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Tripping	☐ Yes / ☐ No	
B.8.4.c	Setting IΔn or minimum setting of IΔn	_____ A	
	Test voltage (1,1 x Ue max)	_____ V	
	Number of operations	1	
	Operating means of the test device held in close position	5 s	
	Tripping	☐ Yes / ☐ No	
B.8.5	Verification of the limiting value of non-operating current under overcurrent conditions, in case of a single phase load.		
	Setting IΔn or minimum setting of IΔn if adjustable	_____ A	
	Test current equal to the lower value of: ☐ 6 x In or ☐ 80 % of the maximum short-circuit release current setting	_____ A	
	Test voltage: ☐ rated voltage or ☐ any convenient voltage	_____ V	
	Test frequency	_____ Hz	
	Power factor (0,5)	_____	
	Current flow time	2 s	
	Interval time	60 s	
	Calibration plot number	_____	
	No tripping / change of state		
B.8.6	Resistance against unwanted tripping due to surge currents resulting from impulse voltages		
B.8.6.1	Verification of the resistance to unwanted tripping in case of loading of the network capacitance		
	Current surge test for CBR (0,5 µs / 100kHz ring wave test)		
	One pole of the CBR is submitted to 10 applications of a surge current according to the following requirements:		
	- peak value: 200 A + 10/0%		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- virtual front time: 0,5 µs ± 30%		
	- period of the following oscillatory wave: 10 µs ± 20%		
	- each successive peak: about 60% of the preceding peak		
	The polarity shall be inverted after every two applications		
	The interval between two consecutive applications shall be about 30 s		
	During the test the CBR shall not trip:	-	
B.8.6.2	Verification of the resistance to unwanted tripping in case of flashover without follow-on current.		
	Verification of behaviour at surge current up to 250 A (8/20 µs surge current test)		
	One pole of the CBR is submitted to 10 applications of a surge current according to the following requirements:		
	- peak value: 250 A + 10/0%		
	- virtual front time: 8 µs ± 20%		
	- virtual time to half value: 20 µs ± 20%		
	- peak of reverse current:: less than 30% of peak value		
	The polarity shall be inverted after every two applications		
	The interval between two consecutive applications shall be about 30 s		
	During the test the CBR shall not trip:		
B.8.7	Verification of the behaviour in case of an earth fault current comprising a d.c. component.		
	Type A CBR		
	For CBRs the operation of which depends on a voltage source the test are made at 1,1 and 0,85 times the rated voltage of the voltage source (Us).		
B.8.7.2.1	Verification of operation in case of a continuous rise of a residual pulsating direct current		
	Rated voltage	____ V	

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- steady increase from zero to: 1,4 IΔn for IΔn > 0,015 A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- steady increase from zero to: 2 IΔn for IΔn ≤ 0,015 A with 2 IΔn/30 A/s (mA)	_____ mA	
	- angle = 0 (+/-) :		
	- angle = 90 (+/-) :		
	- angle = 135 (+/-) :		
	No value exceeds the relevant specified limiting values		
B.8.7.2.2	Verification of operation in case of a suddenly appearing residual pulsating direct current		
	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle = 0°)		
	Rated voltage	_____ V	
	RCCB's with IΔn > 0,015 A:		
	- maximum break time (ms) at: 1,4 IΔn (+/-) :		
	- maximum break time (ms) at: 2,8 IΔn (+/-) :		
	- maximum break time (ms) at: 7 IΔn (+/-) :		
	- maximum break time (ms) at: 14 IΔn (+/-) :		
	No value exceeds the relevant specified limiting value		
	RCCB's with IΔn ≤ 0,015 A:		
	- maximum break time (ms) at: 2 IΔn (+/-) :		
	- maximum break time (ms) at: 4 IΔn (+/-) :		
	- maximum break time (ms) at: 10IΔn (+/-) :		
	- maximum break time (ms) at: 20 IΔn (+/-) :		
	No value exceeds the relevant specified limiting value		
B.8.7.2.3	Verification of operation with load at reference temperature		
	Rated voltage	_____ V	
B.8.7.2.1	- steady increase from zero to: 1,4 IΔn for IΔn > 0,015 A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- steady increase from zero to: 2 IΔn for IΔn ≤ 0,015 A with 2 IΔn/30 A/s (mA)	_____ mA	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- angle = 0 (+/-) :		
	- angle = 90 (+/-) :		
	- angle = 135 (+/-) :		
	No value exceeds the relevant specified limiting values		
B.8.7.2.2	Verification of operation in case of a suddenly appearing residual pulsating direct current		
	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle = 0°)		
	Rated voltage	____ V	
	RCCB's with IΔn > 0,015 A:		
	- maximum break time (ms) at: 1,4 IΔn (+/-) :		
	- maximum break time (ms) at: 2,8 IΔn (+/-) :		
	- maximum break time (ms) at: 7 IΔn (+/-) :		
	- maximum break time (ms) at: 14 IΔn (+/-) :		
	No value exceeds the relevant specified limiting value		
	RCCB's with IΔn ≤ 0,015 A:		
	- maximum break time (ms) at: 2 IΔn (+/-) :		
	- maximum break time (ms) at: 4 IΔn (+/-) :		
	- maximum break time (ms) at: 10IΔn (+/-) :		
	- maximum break time (ms) at: 20 IΔn (+/-) :		
	No value exceeds the relevant specified limiting value		
B.8.7.2.4	Verification of operation of a residual pulsating direct current superimposed by a smooth direct current of 6 mA.		
	Rated voltage	____ V	
	- steady increase from zero to: 1,4 IΔn for IΔn > 0,015 A with 1,4 IΔn/30 A/s (mA) + 6 mA	____ mA	
	-steady increase from zero to: 2 IΔn for IΔn ≤ 0,015 A with 2 IΔn/30 A/s (mA) + 6 mA	____ mA	
	- angle = 0 (+/-) :		
	No value exceeds the relevant specified limiting values		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
B.8.8			
	For CBRs having an adjustable residual operating current, the test is made at the lowest *SETTING.*		
	FOR CBRS WITH AN ADJUSTABLE TIME-DELAY, THE TEST IS MADE AT ANY ONE OF THE TIME-DELAY SETTINGS.		
	A voltage equal to the rated voltage is applied to the line terminals of the CBR and is then progressively lowered to zero over a time period corresponding to the longer of the two values given hereinafter until automatic opening occurs: – about 30 s; – a period long enough with respect to the delayed opening of the CBR, if any (see B.7.2.11).		
	Three measurements are made. All the values shall be less than 0,85 times the minimum rated voltage of the CBR.		
	A residual current is sudden appear on the CBR of IΔn (_____ mA) at a value just above highest measured value Required : no value exceeds the specified limiting value of Table B1: 300 ms		
	For any value of voltage less than the lowest value measured, it is not be possible to close the CBR by manual operating means.		
	The CBR being closed, a voltage equal to its rated voltage, or, in the case of a range of rated voltages, any one of the rated voltages is applied to its line terminals. The voltage is then switched off. The CBR shall trip. The time interval between the switching off and the opening of the main contacts is measured.		
	for CBRs opening without delay no value shall exceed 0,2 s;		
	for CBRs opening with delay the maximum and minimum values shall be situated within the range indicated by the manufacturer.		
B.8.9			

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	For CBRs having an adjustable residual operating current, the test is made at the lowest setting. For CBRs having an adjustable time-delay the test is made at any one of the time-delay settings.		
B.8.9.1			
	The CBR is connected according to figure B.3 and is supplied on the line side at 0,85 times the rated voltage, or, in the case of a range of rated voltages, at 0,85 times the lowest value of rated voltage.		
	Verification with one phase is switched off		
B.8.2.4.3	Verification of operating in case of a sudden appearance of the residual current		
	A residual current is sudden appear on the CBR of IΔn Required: no value exceeds the specified limiting value of Table B1: (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	Verification with other phase switched off		
B.8.2.4.3	Verification of operating in case of a sudden appearance of the residual current (figure B.1)		
	A residual current is sudden appear on the CBR of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the CBR of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the CBR of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	Test is repeated with resistor connected to other two phases in turn.		
	The CBR is connected according to figure B.3 and is supplied on the line side with the rated voltage or, in the case of a range of rated voltages, with the lowest rated voltage.		
	The supply is switched off. The CBR shall not trip.		
	With supply connected the voltage is reduced as follows: a) for CBRs for use with a three-phase supply: to 70 % of the lowest rated voltage;		
	b) for CBRs for use with a single phase supply: to 85 V applied as follows: – for single-pole and two-pole CBRs: between poles; – for three-pole and four-pole CBRs, declared as suitable for use with a single-phase supply (see B.5 e)): between each combination of two poles, connected according to the manufacturer's specification.		
	A current of value Δn is then applied to a) and/or b), as applicable. The CBR shall trip.		
BII	Test sequence BII		
	Where applicable, the CBR is adjusted at the lowest setting of residual operating current and at the maximum setting of time-delay.		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	If the CBR has more than one value of cu, each one having a corresponding value of .m, the test is made at the maximum value of .m, at the corresponding phase-to-neutral voltage.		
	maximum value of .m		
	Type designation or serial number		
	Sample no:		
	Point of test circuit which is directly earthed:		
	Grid distance "a" (mm):		
	Fine wire diameter (mm):		
	Prospective current (A):		
	Prospective current obtained (A):		
	Power factor / ratio *n*:		
	Power factor / ratio *n* obtained:		
	Plot no.		
	Test sequence: O-t-CO		
	I^2t (kA^2s); Ip (kA):	O operation: Ip :_____kA I^2t; _____kA^2s Plot no. _____	
		CO operation: Ip :_____kA I^2t; _____kA^2s Plot no.: _____	
	If tested at separate testing station see report		
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		
	After the tests no damage impairing further use		
	Dielectric strength test of the main circuit at test voltage of 2 Un for 5 s:		
	Test voltage		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Making and breaking its rated current at its maximum rated operational voltage.		
	The CBR shall be capable of performing satisfactorily the tests specified in B.8.2.4.3, but at a value of 1,25 IΔn and without measurement of break time. The test is made on any one pole, taken at random.		
	If the CBR has an adjustable residual operating current, the test is made at the lowest setting, at a current of a value of 1,25 times that setting.		
	Where applicable the CBR shall also be submitted to the test of B.8.2.4.4.		
	Verification of the limiting non-operating time of time delayed type CBRs		
	A residual current is sudden appear on the CBR of 2 IΔn for a time declared by the manufacturer Required : The CBR shall not operate		
	Min. setting IΔn. Min. setting time delay (ms): Min. setting IΔn. Max. setting time delay (ms):		
	CBRs functionally dependent on line voltage shall also satisfy the tests of B.8.8 or B.8.9, as applicable.		
B III	Test sequence B III		
B.8.11	*VERIFICATION OF THE EFFECTS OF ENVIRONMENTAL CONDITIONS*		
	THE TEST IS CARRIED OUT ACCORDING TO IEC 60068-2-30.		
	The upper temperature shall be 55 °C ± 2 °C (variant 1) and the number of cycles shall be – 6 for IΔn > 1 A – *28 FOR* IΔn ≤ *1 A*		
	At the end of the cycles the CBR shall be capable of complying with the tests of B.8.2.4.3, but with a residual operating current of 1,25 IΔn and without measurement of break time. Only one *VERIFICATION NEED BE MADE.*		
	Where applicable the CBR shall also comply with the test of B.8.2.4.4. Only one verification *NEED BE MADE.*		
	Verification of the limiting non-operating time of time delayed type CBRs		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the CBR of 2 IΔn for a time declared by the manufacturer Required : The CBR shall not operate		
	Min. setting IΔn. Min. setting time delay (ms): Min. setting IΔn. Max. setting time delay (ms):		
B.8.12	Verification of electromagnetic compatibility (EMC)		
	See report:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
Annex C	Individual pole short-circuit test sequence		
	Circuit-breaker for use on phase-earthed systems		
C.2	Test of individual pole short-circuit breaking capacity		
	A short-circuit test is made with a value of prospective current (Isu) equal to 25% of the ultimate rated short-circuit breaking capacity (Icu)		
	Type designation or serial number	BH630	
	Sample no:	8	
	Rated current: In (A)	630A	
	Rated operational voltage: Ue (V)	500V	
	Rated ultimate short-circuit breaking capacity: (kA)	20kA	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	The test sequence of operations is O – t - CO		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	satisfy	
	closing mechanism energized with 85% at the rated Uc: (V)	N/A	
	The circuit-breaker is mounted complete on its own support or an equivalent support.	satisfy	
	Test made in free air:	satisfy	
	Distances of the metallic screen's: (all sides)	Vide catalogue	
	The characteristics of the metallic screen:		
	- woven wire mesh	N/A	
	- perforated metal	N/A	
	- expanded metal	yes	
	- ratio hole area/total area: 0,45-0,65	Satisfy	
	- size of hole: <30mm^2	satisfy	
	- finish: bare or conductive plating	satisfy	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	satisfy	
	Circuit is earthed at: (load-star- or supply-star point)	Load-star	
	Conductor cross-sectional area (mm²):	2x185mm^2	
	If terminals unmarked: line connected at: (underside/upside)	N/A	
	Tightening torques: (Nm)	20Nm	
	Test sequence of operation: O – t – CO		
	Test circuit according figure: 9	satisfy	
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	552V 552V 552V	
	short-circuit test current (Isu): equal to 25% of the ultimate rated short-circuit breaking capacity (Icu)		
	- r.m.s. test current AC/DC: (A):	5,1kA AC	
	power factor/time constant:	0,7	
	- Factor "n"	1,52	
	- peak test current (Amax):	7,8kA	
	Test sequence "O" L1		
	- max. let-through current: (kApeak) L1:	7,6kA	
	- Joule integral I²dt (A²s) L1:	0,577 . 10^6 A^{2}s	
	Pause, t: (min)	3min	
	Test sequence "CO" L1		
	- max. let-through current: (kApeak) L1:	7,7kA	
	- Joule integral I²dt (A²s) L1:	0,599. 10^6 A^{2}s	
	Test sequence "O" L2		
	- max. let-through current: (kApeak) L2:	7,7kA	
	- Joule integral I²dt (A²s) L2:	0,857. 10^6 A^{2}s	
	Pause, t: (min)	3min	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО СЪРНЕ...

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test sequence "CO" L2		
	- max. let-through current: (kApeak) L2:	7,6A	
	- Joule integral I^2dt (A^2s) L2:	0,654 . 10^6 A^2s	
	Test sequence "O" L3		
	- max. let-through current: (kApeak) L3:	7,8kA	
	- Joule integral I^2dt (A^2s) L3:	0,61 . 10^6 A^2s	
	Pause, t: (min)	3min	
	Test sequence "CO" L3		
	- max. let-through current: (kApeak) L3:	7,7kA	
	- Joule integral I^2dt (A^2s) L3:	0,549 . 10^6 A^2s	
	Melting of the fusible element	no	P
	Holes in the PE-sheet for test sequence "O"	no	P
	Cracks observed	no	P
C.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1000V	
	- no breakdown or flashover	no	P
C.4	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer: 1´22"		
	- Operation time: (s) .....L1: .....L2: .....L3: .....N:	1´22" 1´17" 1´22" 1´17" 1´20" 1´18" 1´19" 1´19" 1´20"	P
Annex F	Additional tests for circuit-breakers with electronic over-current protection		
F.4.	Immunity tests		
F.4.1.	Tests regarding non-sinusoidal currents resulting from harmonics		
F.4.1.1.	Test conditions		
	Option b)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Desired values:		
	Third harmonic >60%		
	Fifth harmonic >14%		
	Seventh harmonic >7%		
	Actual values:		
	Third harmonic	72,49%	P
	Fifth harmonic	34,3%	P
	Seventh harmonic	8,21%	P
F.4.1.3.	Test procedure		
	Non-tripping current 0,9Ir	567A	
	Testing time	Non-tripping 2380sec.	P
	Tripping current 2 Ir	1260 A	
	Release time	3´42 "	P
	Tripping current 2x Ir	1260A	
	Release time	3´50"	P
	Performance criterion A of F.2.1.2.		P
F.4.2.	Current dips		
	The test circuit shall be in accordance with figure F.2. IEC60947-2,		
	The current applied according to figure F.5 and to table F.1	It did not trip	P
	Performance criterion B of F. 2.1.2.		P
F.4.3. IEC61000-4-2	Electrostatic discharges		
	At level	4	
Annex J.2.2.	Test voltage	8kV	
	Non-tripping current 0,9xIr	567A	
	Test data	It did not trip	P
	Tripping current 2xIr	1260A	
	Release time	3´49"	P
	Performance criterion B of F. 2.1.2.		P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
F.4.4.IEC 61000-4-3	Radiated radio-frequency electromagnetic fields		
Annex J.2.3.	Non-tripping current 0,9xIr	567A	
	Test data	it did not trip	P
	Tripping current 2xIr	1260A	
	Release time	3′53“	P
	Performance criterion A of F. 2.1.2.		P
F.4.5.	Electrical fast transients/bursts (EFT/B)		
F.5.2.2.1. IEC61000-4-4 Annex J.2.4.	Non-tripping current 0,9xIr	567A	
	Testing time	1′	P
	Tripping current 2xIr	1260A	
	Release time	3′50“	P
	Performance criterion A of F. 2.1.2.		P
F.4.6. IEC61000-4-5 Annex J.2.5.	Surges		
	Non-trippng current 0,9xIr	567A	
	Total number of pulses	20	P
	Tripping current 2xIr	1260A	
	Release time	3′57“	P
	Performance criterion B of F. 2.1.2.		P
F.4.7. Annex J.2.6.	Conducted disturbances induced by radio-frequenci fields (common mode)		
	Non-tripping current 0,9xIr	567A	
	Test data	it did not trip	P
	Tripping current 2 xIr	1260A	
	Release time	3′52“	P
	Performance criterion A of F. 2.1.2		P
F.5.4. AnnexJ.3.3.	Radiated RF disturbances (30MHz -1GHz)		
Figure F.3.	Meet the conditions for classes “B”		P
F.6.	Suitability for multiple frequencies		N/A
F.6.	Suitability for multiple frequencies		

ЕЛЕКТРИС ГООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
F.7.	Dry heat test		
	Ambient temperature	+40°C	
	Testing time	168h	
	Test data	it did not trip	P
F.7.3.	Verification of overload releases:		
7.2.1.2.4. b)	Instantaneous release:		
	setting release	7,875kA	
	Tripping current	7,75kA	P
	Inverse time-delay releases :		
	Ambient temperature	+30°C	
	Non-tripping current 1,05xIr	661,5A	
	Testing time	>2h	P
	Tripping current 1,3xIr	819A	
	Release time	32´26“	P
	Ambient temperature	+50°C	
	Non-tripping current 1,05xIr	661,5A	
	Testing time	>2h	P
	Tripping current 1,3xIr	819A	
	Release time	32´49“	P
F .8. IEC 60068-2-30	Damp heat test		
	The upper temperature The number of cycles	+55℃ 6	
F.8.2.	Verification of overload releases		
7.2.1.2.4. b)	Instantaneous release:		
	setting release 12,5xIr	7875A	
	Tripping current	7630A	P
	setting release 4xIr	2520A	
	Tripping current	2480A	P
	Inverse time-delay releases :		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Ambient temperature	+30°C	
	Non-tripping current 1,05xIr	661,5A	
	Testing time	>2h	P
	Tripping current 1,3xIr	819A	
	Release time	35′34“	P
	Ambient temperature	+50°C	
	Non-tripping current 1,05xIr	661,5A	
	Testing time	>2h	P
	Tripping current 1,3xIr	819A	
	Release time	35′12“	P
F .9. IEC60068-2-14	Temperature variation cycles at a specified		
	Number of operating	28	
	Test data	it did not trip	P
F.8.2.	Verification of overload releases:		
7.2.1.2.4. b)	Instantaneous release:		
	setting release 12,5xIr	7875A	
	Tripping current	7680A	P
	setting release 4xIr	2520	
	Tripping current	2470A	P
	Inverse time-delay releases :		
	Ambient temperature	+30°C	
	Non-tripping current 1,05xIr	661,5A	
	Testing time	>2h	P
	Tripping current 1,3xIr	819A	
	Release time	35′56“	P
	Ambient temperature	+50°C	
	Non-tripping current 1,05xIr	661,5A	
	Testing time	>2h	P
	Tripping current 1,3xIr	819A	
	Release time	33′58“	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
Annex G	Power loss		
	Phase L1	74W	
	L2	73,5W	
	L3	74,2W	
Annex H	Individual pole short-circuit test sequence		
	Circuit-breaker for use in IT systems		
H.2	Test of individual pole short-circuit breaking capacity		
	A short-circuit test is made on the individual poles of a multipole circuit-breaker at a value of prospective current (I_{IT}) equal to 1,2 times the max. setting of the short-time delay release tripping current or, in the absence of such a release, 1,2 time the max. setting of the tripping current of the instantaneous release, or, where relevant 1,2 times the max. setting of the definite time delay release tripping current, but not exceeding 50kA.		
	Type designation or serial number	BH630	
	Sample no:	9	
	Rated current: In (A)	630A	
	Rated operational voltage: Ue (V)	690V	
	Rated ultimate short-circuit breaking capacity: (kA)	7875kA	
	Rated control supply voltage of closing mechanism: Uc (V)	N/A	
	Rated control supply voltage of shunt release: Uc (V)	N/A	
	The test sequence of operations is O – t - CO		
	For circuit-breaker fitted with adjustable releases, test shall be made with the current and time settings at maximum.	satisfy	
	closing mechanism energized with 85% at the rated Uc: (V)	N/A	
	The circuit-breaker is mounted complete on its own support or an equivalent support.	Satisfy	
	Test made in free air:	satisfy	
	Distances of the metallic screen's: (all sides)	Vide catalogue	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The characteristics of the metallic screen:		
	- woven wire mesh	N/A	
	- perforated metal	N/A	
	- expanded metal	yes	
	- ratio hole area/total area: 0,45-0,65	Satisfy	
	- size of hole: <30mm^2	satisfy	
	- finish: bare or conductive plating	satisfy	
	Test made in specified individual enclosure: Details of these tests, including the dimensions of the enclosure:		
	Fuse "F": copper wire: diameter 0,8 mm, 50 mm long	satisfy	
	Circuit is earthed at: (load-star- or supply-star point)	Load-star	
	Conductor cross-sectional area (mm^2):	2x185mm^2	
	If terminals unmarked: line connected at: (underside/upside)	N/A	
	Tightening torques: (Nm)	20Nm	
	Test sequence of operation: O – t – CO		
	Test circuit according figure: 9	satisfy	
	- test voltage U/Ue = 1,05 (V) .....L1: .....L2: L3:	776V 776V 776V	
	Short-circuit test current (I_{nt}): equal to 1,2 times the max. setting of the short-time delay release tripping current,	N/A	
	or, in the absence of such a release, 1,2 time the max. setting of the tripping current of the instantaneous release,	satisfy	
	or, where relevant 1,2 times the max. setting of the definite time delay release tripping current, but not exceeding 50kA.	N/A	
	- r.m.s. test current AC/DC: (A)	9450A AC	
	power factor/time constant:	0,46	
	- Factor "n"	1,67	
	- peak test current (Amax) :	15,75 kA	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test sequence "O" L1		
	- max. let-through current: (kApeak) L1:	15,2kA	
	- Joule integral I^2dt (A^2s) L1:	1,53 . 10^6 A^2s	
	Pause, t: (min)	3min	
	Test sequence "CO" L1		
	- max. let-through current: (kApeak) L1:	14,98kA	
	- Joule integral I^2dt (A^2s) L1:	1,77 . 10^6 A^2s	
	Test sequence "O" L2		
	- max. let-through current: (kApeak) L2:	15,1kA	
	- Joule integral I^2dt (A^2s) L2:	1,5 . 10^6 A^2s	
	Pause, t: (min)	3min	
	Test sequence "CO" L2		
	- max. let-through current: (kApeak) L2:	13,7kA	
	- Joule integral I^2dt (A^2s) L2:	2,02 . 10^6 A^2s	
	Test sequence "O" L3		
	- max. let-through current: (kApeak) L3:	14,26kA	
	- Joule integral I^2dt (A^2s) L3:	1,9 . 10^6 A^2s	
	Pause, t: (min)	3min	
	Test sequence "CO" L3		
	- max. let-through current: (kApeak) L3:	12,9kA	
	- Joule integral I^2dt (A^2s) L3:	1,17 . 10^6 A^2s	
	For 4-pole circuit-breakers with a protected neutral pole, the test voltage for that pole shall be phase-to-phase voltage divided by $\sqrt{3}$. This test is applicable only where the construction of the protected neutral pole differs from that of the phase poles.		
	Test sequence "O" N		N/A
	- max. let-through current: (kApeak) ..... N:		
	- Joule integral I^2dt (A^2s) ..... N:		
	Pause, t: (min)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test sequence "CO" N		NA/
	- max. let-through current: (kApeak) ..... N:		
	- Joule integral I^2dt (A^2s) ..... N:		
	Melting of the fusible element		
	Holes in the PE-sheet for test sequence "O"		
	Cracks observed		
H.3	Verification of dielectric withstand		
	- equal to twice the rated operational voltage with a minimum of 1000 V	1380V	
	- no breakdown or flashover	no	P
H.4	Verification of overload releases		
	The operation of overload releases shall be verified at 2.5 times the value of their current setting on each pole separately.		
	The operating time shall not exceed the max. value stated by the manufacturer for twice the current setting at the reference temperature, on a pole singly.		
	Time specified by the manufacturer:	1´22"	
	- Operation time: (s) .....L1: .....L2: .....L3: ..... N :	1´18" 1´19" 1´22" 1´21" 1´20" 1´23" 1´22" 1´17" 1´19"	P
H.5	Marking		
	Circuit-breaker for which all values of rated voltage have not been tested according to this annex or are not covered by such testing, shall be identified by the symbol ⊗ which shall be market on the circuit-breaker immediately following these values of rated voltage	satisfy	P
Annex M	Modular residual current devices (without integral current breaking device)		N/A
M.8.3	Operating characteristics		
	Type designation or serial number		
	Sample no:		
	Rated current: In (A)		
	Rated operational voltage: Ue (V)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated frequency (Hz)		
	Terminal type or through conductor type		
	MRCD with sensing means and processing device combined or separate	Combined/separate	
	MRCD with voltage source		
	Operating automatically in case of failure of the voltage source.	Yes/no	
	Rated insulation voltage (*Ui*)		
	Rated impulse withstand voltage (*Uimp*)		
	Characteristics of the voltage source of MRCDs		
	Rated values of the voltage source of MRCDs (*Us*)		
	Rated values of the frequencies of the voltage source of MRCDs		
	Rated insulation voltage (*Ui*)		
	Rated impulse withstand voltage (*Uimp*)		
M.4.1.3	Characteristics of auxiliary contacts		
M.4.2	Characteristics of MRCDs concerning their residual current function		
M.4.2.2	Operating characteristic in case of residual current with d.c. component		
	Type AC MRCD		
	Type A MRCD		
	Type B MRCD		
M.4.3	Behaviour under short-circuit conditions		
	Rated conditional short-circuit current (*Icc*)		
	Rated conditional residual short-circuit current (*IΔc*)		
	Rated short-time withstand current (*Icw*)		
	Rated residual short-time withstand current (*IΔw*)		
	Peak withstand current		
M.4.4	Preferred and limiting values		
	Preferred values of the rated residual operating current (*IΔn*)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Minimum value of the rated residual non-operating current (/Δno)		
	Limiting value of the non-operating overcurrent in the case of a single-phase load in a multiphase circuit		
	Preferred values of rated voltage of the voltage source of MRCDs		
	Compliance with constructional requirements		
MI	Test sequence MI		
M.8.3.4.2	Verification of operating in case of steady increase of the residual current (figure M.1)		
	Increase the residual current from 0,2 IΔn to IΔn in 30 sec. Required: value between 0,2 IΔn and IΔn		
	Min. setting IΔn.(mA): Interm. setting IΔn.(mA): Max. setting IΔn.(mA):		
M.8.3.4.3	Verification of operating in case of closing on residual current (figure M.2)		
	The MRCD is closes on IΔn or each specified setting Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
M.8.3.4.4	Verification of operating in case of a sudden appearance of the residual current (figure M.2 and M3)		
	A residual current is sudden appear on the MRCD of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the MRCD of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of IΔn: 5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms)		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of IΔn: 10 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the MRCD of IΔn: 20 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of IΔn: 50 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of IΔn: 100 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of IΔn: 200 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of IΔn: 500 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
M.8.3.4.5	Verification of the limiting non-operating time of time delayed type MRCDs (figure M3)		
	A residual current is sudden appear on the MRCD of 2 IΔn for a time declared by the manufacturer Required : The MRCD shall not operated		
	Min. setting IΔn. Min. setting time delay (ms): Mln. setting IΔn. Max. setting time delay (ms):		
M.8.3.5	Tests at the temperature limits		
M.8.3.5.1	General (clause B.8.2.5 applies)		
	Minimum temperature (℃)		
	Maximum temperature (℃)		
M.8.3.5.2	Verification of operating in case of a sudden appearance of the residual current at –5℃ or minimum temperature limit (figur e M.2 and M3)		
	A residual current is sudden appear on the MRCD of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A residual current is sudden appear on the MRCD of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	Verification of the limiting non-operating time of time delayed type MRCDs at –5℃ or minimum temperature limit (figure M3)		
	A residual current is sudden appear on the MRCD of 2 IΔn for a time declared by the manufacturer Required : The MRCD shall not operated		
	Min. setting IΔn. Min. setting time delay (ms): Min. setting IΔn. Max. setting time delay (ms):		
M.8.3.5.3	Verification of operating in case of a sudden appearance of the residual current at +40℃ (figure M.2 and M3)		
	A residual current is sudden appear on the MRCD of IΔn Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of 2 IΔn Required : no value exceeds the specified limiting value of Table B1 (150 ms) or Table B2 (200 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of ☐ 5 IΔn or ☐ 0,25 A Required : no value exceeds the specified limiting value of Table B1 (40ms) or Table B2 (150 ms) and a non actuating time of 60 ms		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of ☐10 IΔn or ☐ 0,5 A Required : no value exceeds the specified limiting value of Table B1 (40 ms) or Table B2 (150 ms) and a non actuating time of 60 ms		
	Min. setting IΔn.(ms): Interm. setting IΔn.(ms): Max. setting IΔn.(ms):		
	A residual current is sudden appear on the MRCD of 2 IΔn for a time declared by the manufacturer Required : The MRCD shall not operated		
	Min. setting IΔn. Min. setting time delay (ms): Min. setting IΔn. Max. setting time delay (ms):		
M.8.4.	Verification of dielectric properties		
M.8.4.1	Verification of rated impuls withstand voltage		
	rated impulse withstand voltage		
	test impulse voltage (see table 12 part 1)		
	test impulse voltage for isolating (see table 14 part 1)		
M.8.4.1.2	Verification of rated impulse withstand voltage with respect to the monitored circuit		
M.8.4.1.2.1	Test for terminal type MRCD		
M.8.4.1.2.2	Tests for MRCDs of through-conductor type		
M.8.4.1.3	Verification of rated impulse withstand of the voltage source circuit (if applicable)		
M.8.5	Verification of the operation of the test device at the limits of the rated voltage		
	For MRCDs having an adjustable time-delay the test is made at the maximum setting of time-delay:	_____ s	
M.8.5.a	Setting IΔn or minimum setting of IΔn	_____ A	
	Test voltage (1,1 x Ue max)	_____ V	
	Number of operations	25	

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Interval time	5 s	
	Tripping	☐ Yes / ☐ No	
M.8.5.b	Setting IΔn or minimum setting of IΔn	_____ A	
	Test voltage (0,85 x Ue max)	_____ V	
	Number of operations	3	
	Interval time	5 s	
	Tripping	☐ Yes / ☐ No	
M.8.5.c	Setting IΔn or minimum setting of IΔn	_____ A	
	Test voltage (1,1 x Ue max)	_____ V	
	Number of operations	1	
	Operating means of the test device held in close position	5 s	
	Tripping	☐ Yes / ☐ No	
M.8.6	Verification of the limiting value of non-operating current under overcurrent conditions , in case of a single phase load.		
M.8.6	Circuit diagram	Fig. M4 ____	
	Setting IΔn or minimum setting of IΔn if adjustable	_____ A	
	Test current equal to the lower value of: ☐ 6 x In or ☐ 80 % of the maximum short-circuit release current setting	_____ A	
	Test voltage: ☐ rated voltage or ☐ any convenient voltage	_____ V	
	Test frequency	_____ Hz	
	Power factor (0,5)	_____	
	Current flow time	2 s	
	Interval time	60 s	
	Calibration plot number	____	
	No tripping / change of state		

ЕЛЕКТРИС ГООД ELECTRIS LTD

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
M.8.7	Resistance against unwanted tripping due to surge currents resulting from impulse voltages		
M.8.7.2	Verification of the resistance to unwanted tripping in case of loading of the network capacitance		
B.8.6.1	Current surge test for RMCDs (0,5 µs / 100kHz ring wave test)		
	One pole of the MRCD is submitted to 10 applications of a surge current according to the following requirements:		
	- peak value: 200 A + 10/0%		
	- virtual front time: 0,5 µs ± 30%		
	- period of the following oscillatory wave: 10 µs ± 20%		
	- each successive peak: about 60% of the preceding peak		
	The polarity shall be inverted after every two applications		
	The interval between two consecutive applications shall be about 30 s		
	During the test the MRCD shall not trip:	-	
M.8.7.3	Verification of the resistance to unwanted tripping in case of flashover without follow-on current.		
B.8.6.2	Verification of behaviour at surge current up to 250 A (8/20 µs surge current test)		
	One pole of the MRCD is submitted to 10 applications of a surge current according to the following requirements:		
	- peak value: 250 A + 10/0%		
	- virtual front time: 8 µs ± 20%		
	- virtual time to half value: 20 µs ± 20%		
	- peak of reverse current:: less than 30% of peak value		
	The polarity shall be inverted after every two applications		
	The interval between two consecutive applications shall be about 30 s		
	During the test the MRCD shall not trip:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
M.8.8	Verification of the behaviour in case of an earth fault current comprising a d.c. component.		
M.8.8.2	Type A MRCD		
	For MRCDs the operation of which depends on a voltage source the test are made at 1,1 and 0,85 times the rated voltage of the voltage source (Us).		
M.8.8.2.2	Verification of operation in case of a continuous rise of a residual pulsating direct current		
	Rated voltage	_____ V	
B.8.7.2.1	- steady increase from zero to: 1,4 IΔn for IΔn > 0,015 A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- steady increase from zero to: 2 IΔn for IΔn ≤ 0,015 A with 2 IΔn/30 A/s (mA)	_____ mA	
	- angle = 0 (+/-) :		
	- angle = 90 (+/-) :		
	- angle = 135 (+/-) :		
	No value exceeds the relevant specified limiting values		
M.8.8.2.3	Verification of operation in case of a suddenly appearing residual pulsating direct current		
B.8.7.2.2	Verification of the correct operation in case of suddenly appearing residual pulsating direct currents by closing S2 (angle = 0°)		
	Rated voltage	_____ V	
	RCCB's with IΔn > 0,015 A:		
	- maximum break time (ms) at: 1,4 IΔn (+/-) :		
	- maximum break time (ms) at: 2,8 IΔn (+/-) :		
	- maximum break time (ms) at: 7 IΔn (+/-) :		
	- maximum break time (ms) at: 14 IΔn (+/-) :		
	No value exceeds the relevant specified limiting value		
	RCCB's with IΔn ≤ 0,015 A:		
	- maximum break time (ms) at: 2 IΔn (+/-) :		
	- maximum break time (ms) at: 4 IΔn (+/-) :		
	- maximum break time (ms) at: 10IΔn (+/-) :		
	- maximum break time (ms) at: 20 IΔn (+/-) :		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	No value exceeds the relevant specified limiting value		
M.8.8.2.4	Verification of operation with load at reference temperature		
	Rated voltage	_____ V	
B.8.7.2.1	- steady increase from zero to: 1,4 IΔn for IΔn > 0,015 A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- steady increase from zero to: 2 IΔn for IΔn ≤ 0,015 A with 2 IΔn/30 A/s (mA)	_____ mA	
	- angle = 0 (+/-) :		
	- angle = 90 (+/-) :		
	- angle = 135 (+/-) :		
	No value exceeds the relevant specified limiting values		
M.8.8.2.5	Verification of operation of a residual pulsating direct current superimposed by a smooth direct current of 6 mA.		
	Rated voltage	_____ V	
B.8.7.2.1	- steady increase from zero to: 1,4 IΔn for IΔn > 0,015 A with 1,4 IΔn/30 A/s (mA) + 6 mA	_____ mA	
	-steady increase from zero to: 2 IΔn for IΔn ≤ 0,015 A with 2 IΔn/30 A/s (mA) + 6 mA	_____ mA	
	- angle = 0 (+/-) :		
	No value exceeds the relevant specified limiting values		
M.8.8.3	Type B MRCD		
M.8.8.3.2	Verification of operation in case of a slowly rising residual smooth direct current		
	Rated voltage (1,1*Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 90 (+/-) :		
	Operation shall occur between 0,5 and 2Idn		
	Rated voltage (0,85*Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)		
	- angle = 90 (+/-) :		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Operation shall occur between 0,5 and 2Idn		
M.8.8.3.3	Verification of operation in case of a suddenly appearing residual smooth direct current		
B.8.7.2.2	Verification of the correct operation in case of suddenly appearing a smooth residual direct currents by closing S2		
	Rated voltage (1,1*Un)	_____ V	
	RCCB's with IΔn > 0,015 A:		
	- maximum break time (ms) at: 2 IΔn (+/-) :		
	- maximum break time (ms) at: 4 IΔn (+/-) :		
	- maximum break time (ms) at: 10 IΔn (+/-) :		
	- maximum break time (ms) at: 20 IΔn (+/-) :		
	No value exceeds the relevant specified limiting value		
B.8.7.2.2	Verification of the correct operation in case of suddenly appearing a smooth residual direct currents by closing S2		
	Rated voltage (0,85*Un)	_____ V	
	RCCB's with IΔn > 0,015 A:		
	- maximum break time (ms) at: 2 IΔn (+/-) :		
	- maximum break time (ms) at: 4 IΔn (+/-) :		
	- maximum break time (ms) at: 10 IΔn (+/-) :		
	- maximum break time (ms) at: 20 IΔn (+/-) :		
	No value exceeds the relevant specified limiting value		
M.8.8.3.4	Verification of operation in case of a slowly rising residual current resulting from a fault in a circuit fed by a three-pulse star or a six-pulse connection.		
	Rated voltage (1,1*Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 90 (+/-) :		
	Operation shall occur between 0,5 and 2Idn		
	Rated voltage (0,85*Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 90 (+/-) :		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Operation shall occur between 0,5 and 2Idn		
M.8.8.3.5.	Verification of operation in case of a slowly rising residual current resulting from a fault in a circuit fed by two-pulse bridge connection line-to-line.		
	Rated voltage (Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 0 (+/-) :		
	Operation shall occur between 0,5 and 1,4Idn		
M.8.8.3.6	Verification of operation with load at the reference temperature		
M.8.8.3.6-M.8.8.3.2	Verification of operation in case of a slowly rising residual smooth direct current		
	Rated voltage (1,1*Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 90 (+/-) :		
	Operation shall occur between 0,5 and 2Idn		
	Rated voltage (0,85*Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 90 (+/-) :		
	Operation shall occur between 0,5 and 2Idn		
M.8.8.3.6-M.8.8.3.4	Verification of operation in case of a slowly rising residual current resulting from a fault in a circuit fed by a three-pulse star or a six-pulse connection		
	Rated voltage (1,1*Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 90 (+/-) :		
	Operation shall occur between 0,5 and 2Idn		
	Rated voltage (0,85*Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 90 (+/-) :		
	Operation shall occur between 0,5 and 2Idn		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
M.8.8.3.6-M.8.8.3.5.	Verification of operation in case of a slowly rising residual current resulting from a fault in a circuit fed by two-pulse bridge connection line-to-line.		
	Rated voltage (Un)	_____ V	
B.8.7.2.1	- steady increase from zero to: 2 IΔn A with 1,4 IΔn/30 A/s (mA)	_____ mA	
	- angle = 0 (+/-) :		
	Operation shall occur between 0,5 and 1,4Idn		
M.8.9.	Verification of the behaviour of MRCDs with separate sensing means in case of a failure of the sensing means connection		
M.8.9.2	Test method 1		
	Rated voltage of the sensing means		
	Interval time Required <5 sec		
M.8.9.3	Test method 2		
	Test shall be carried out as follows: - The test device is activated - The sensing means are disconnected and the test device is activated. The MRCD shall not operate		
	Rated voltage of the sensing means		
	Test device activated MRCD shall operate		
	Rated voltage of the sensing means		
	Sensing device disconnected and Test device activated MRCD shall not operate		
M.8.10	Verification of temperature-rise of terminal type MRCDs		
M.8.10.2	Tambient: _____℃		
8.3.2.5	Main circuits		
	Conventional thermal current I_{th}	_____ A	
	Conventional thermal current for enclosure I_{the}	_____ A	
	Conventional thermal current for the neutral pole	_____ A	
	Cabling characteristics		
	Cable	_____ mm^2	
	Bar / number / length	_____ mm / ___ / ____ m	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Arrangement	☐ 3 phase - ☐ poles on serie	
	Tightening torque	_____ Nm	
	Neutral pole (if applicable)		
	Cable	_____ mm^2	
	Bar / number / length	_____ mm / ___ / ____ m	
	Tightening torque	_____ Nm	
	Terminals(see table 2)		
	Manual operating means		
	Parts which need not be touched but not hand held		
	Parts which need not be touched during normal operation		
M.8.11	Verification of mechanical and electrical endurance		
	500 off-load operations controlled by the test device		
	Rated voltage:	_____ V ☐ ac ☐ dc	
	Result:	after___ operations,	
	500 off load operations by passing the rated residual operating current IΔn through one current path		
	Rated voltage:	_____ V ☐ ac ☐ dc	
	Rated residual current	____ mA	
	Result:	after___ operations,	
	500 on-load operations controlled by the test device		
	Rated voltage:	_____ V ☐ ac ☐ dc	
	Test current	_____ A	
	Power factor	_____	
	Test circuit		
	Result:	after___ operations,	
	500 on-load operations by passing the rated residual operating current IΔn through one current path.		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВИЗИЯ С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated voltage:	_____ V ☐ ac ☐ dc	
	Test current	_____ A	
	Power factor	_____	
	Test circuit		
	Rated residual current	____ mA	
	Result:	after___ operations,	
	Show no damage		
	High voltage test: twice rated voltage	Test voltage: _____ V	
	A residual current is sudden appear on the MRCD of IΔn (_____ mA) Required : no value exceeds the specified limiting value of Table B1 (300 ms) or Table B2 (500 ms) and a non actuating time of 60 ms		
M.8.12.	Verification of the behaviour of MRCDs in case of failure of the voltage source for MRCDs classified under M.3.2.2.1		
M.8.12.2	Determination of the limiting value of the voltage source		
	Source voltage (Us)	Max Us: _____ V ☐ac ☐ dc	
		Min Us: _____ V ☐ac ☐ dc	
	Adjustable residual current setting	_____ mA (lowest)	
	Adjustable time-delay setting	_____ s	
	Time period of voltage decreasing	30 s or a period enough with respect to delayed opening	
	Min voltage to automatic opening (U > 0,85 x Us)		
	A residual current is sudden appear on the MRCD of IΔn (_____ mA) at a value just above highest measured value Required : no value exceeds the specified limiting value of Table B1: 300 ms		
	It's not possible to switch "ON" by manual operating means at a lower value than the lower measured value.		
M.8.12.3	Verification of automatic opening in case of voltage source failure		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Source voltage (Us)	Max Us: _____ V ☐ac ☐ dc	
		Min Us: _____ V ☐ac ☐ dc	
	Adjustable residual current setting	_____ mA (lowest)	
	Adjustable time-delay setting	_____ s	
	Time period	Max 1 s or max. 1 s+time delay setting	
	Time period to automatic opening		
	No value exceeds the relevant specified limiting value		
M.8.13	Verification of the behaviour of MRCDs with voltage source as classified under M.3.2.2.2 in case of failure of the voltage source.		
	Source voltage (Us)	Max Us: _____ V ☐ac ☐ dc	
		Min Us: _____ V ☐ac ☐ dc	
	Adjustable residual current setting	_____ mA (lowest)	
	Adjustable time-delay setting	_____ s	
	Switch off and reclosed Sa or S1 and reduced the source voltage to 70 %	70% Us = _____ V ☐ac ☐ dc	
	Time period to automatic opening		
MII	Test sequence MII		
M.8.14	Verification of the behaviour of the MRCD under short-circuit conditions		
	Type designation or serial number		
	Sample no:		
M.8.14.3	Verification of the rated conditional short-circuit current (I_{cc})		
	Verification of the coordination between the MRCD and the SCPD		
	Test circuit according to figure:		
	Point of test circuit which is directly earthed:		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Grid distance "a" (mm):		
	Silver wire diameter (mm):		
	Used SCPD during the tests		
	Prospective current (A):		
	Prospective current obtained (A):		
	Power factor / ratio *n*:		
	Power factor / ratio *n* obtained:		
	Plot no.		
	Test sequence: O-t-O		
	I^2t (kA^2s); Ip (kA):	First O: Ip :_____kA I^2t; _____kA^2s Plot no. _____	
		Second O: Ip :_____kA I^2t; _____kA^2s Plot no.: _____	
	If tested at separate testing station see report	No.: _____ of _____ testing station _____	
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		
	After the tests no damage impairing further use		
8.3.3.5	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	Test voltage		
B.8.10.3.2	The RCCB shall trip with a test current of 1,25 IΔn (ms) in minimum setting:	I test: _____ mA trip time: ____ ms	
M.8.12.3	Verification of automatic opening in case of voltage source failure		
	Source voltage (Us)	Max Us: _____ V ☐ac ☐ dc	
		Min Us: _____ V ☐ac ☐ dc	

ЕЛЕКТРИС ГООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Adjustable residual current setting	_____ mA (lowest)	
	Adjustable time-delay setting	_____ s	
	Time period	Max 1 s or max. 1 s+time delay setting	
	Time period to automatic opening		
	No value exceeds the relevant specified limiting value		
	The polyethylene sheet shows no holes		
M.8.14.4	Verification of rated short-time withstand current (I_{cw})		
	Test circuit according to figure:		
	Point of test circuit which is directly earthed:		
	Grid distance "a" (mm):		
	Prospective current (A):		
	Prospective current obtained (A):		
	Power factor / ratio *n*:		
	Power factor / ratio *n* obtained:		
	Plot no.		
	Test sequence: O		
	I^2t (kA^2s); Ip (kA):	Ip :_____kA I^2t; _____kA^2s Test duration: _____ms Plot no. _____	
	If tested at separate testing station see report	No.: _____ of _____ testing station _____	
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		
	After the tests no damage impairing further use		
8.3.3.5	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	Test voltage		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО СЪРТИФИКАТА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
B.8.10.3.2	The RCCB shall trip with a test current of 1,25 IΔn (ms) in minimum setting:	I test: _____ mA trip time: ____ ms	
M.8.12.3	Verification of automatic opening in case of voltage source failure		
	Source voltage (Us)	Max Us: _____ V ☐ac ☐ dc	
		Min Us: _____ V ☐ac ☐ dc	
	Adjustable residual current setting	_____ mA (lowest)	
	Adjustable time-delay setting	_____ s	
	Time period	Max 1 s or max. 1 s+time delay setting	
	Time period to automatic opening		
	No value exceeds the relevant specified limiting value		
	The polyethylene sheet shows no holes		
M.8.14.5	Verification of the rated conditional residual short-circuit current (IΔc)		
	Test circuit according to figure:		
	Point of test circuit which is directly earthed:		
	Grid distance "a" (mm):		
	Silver wire diameter (mm):		
	Used SCPD during the tests		
	Prospective current (A):		
	Prospective current obtained (A):		
	Power factor / ratio *n*:		
	Power factor / ratio *n* obtained:		
	Plot no.		
	Test sequence: O-t-O		

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	I^2t (kA^2s); Ip (kA):	First O: Ip :_____kA I^2t; _____kA^2s Plot no. _____	
		Second O: Ip :_____kA I^2t; _____kA^2s Plot no.: _____	
	If tested at separate testing station see report	No.: _____ of _____ testing station _____	
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		
	After the tests no damage impairing further use		
8.3.3.5	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	Test voltage	-	
B.8.10.3.2	The RCCB shall trip with a test current of 1,25 IΔn (ms) in minimum setting:	I test: _____ mA trip time: ____ ms	
M.8.12.3	Verification of automatic opening in case of voltage source failure		
	Source voltage (Us)	Max Us: _____ V ☐ac ☐ dc	
		Min Us: _____ V ☐ac ☐ dc	
	Adjustable residual current setting	_____ mA (lowest)	
	Adjustable time-delay setting	_____ s	
	Time period	Max 1 s or max. 1 s+time delay setting	
	Time period to automatic opening		
	No value exceeds the relevant specified limiting value		
	The polyethylene sheet shows no holes		
M.8.14.6	Verification of rated residual short-time withstand current (IΔw)		

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Test circuit according to figure:		
	Point of test circuit which is directly earthed:		
	Grid distance "a" (mm):		
	Prospective current (A):		
	Prospective current obtained (A):		
	Power factor / ratio *n*:		
	Power factor / ratio *n* obtained:		
	Plot no.		
	Test sequence: O		
	I^2t (kA^2s); Ip (kA):	Ip :_____kA I^2t; _____kA^2s Test duration: _____ms Plot no. _____	
	If tested at separate testing station see report	No.: _____ of _____ testing station _____	
	During tests no endangering of operator, no permanent arcing, no flashover and no melting of fuse F		
	After the tests no damage impairing further use		
8.3.3.5	Dielectric strength test of the main circuit at test voltage of 2 Un for 1 min:		
	Test voltage	-	
B.8.10.3.2	The RCCB shall trip with a test current of 1,25 IΔn (ms) in minimum setting:	I test: _____ mA trip time: ____ ms	
M.8:12.3	Verification of automatic opening in case of voltage source failure		
	Source voltage (Us)	Max Us: _____ V ☐ac ☐ dc	
		Min Us: _____ V ☐ac ☐ dc	
	Adjustable residual current setting	_____ mA (lowest)	
	Adjustable time-delay setting	_____ s	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Time period	Max 1 s or max. 1 s+time delay setting	
	Time period to automatic opening		
	No value exceeds the relevant specified limiting value		
	The polyethylene sheet shows no holes		
M.III	Test sequence MIII		
M.8.15	Verification of effects of environmental conditions		
	Type designation or serial number		
	Sample no:		
B.8.10.3.2	The RCCB shall trip with a test current of 1,25 IΔn (ms) in minimum setting:	I test: _____ mA trip time: ____ ms	
M.IV	Test sequence MIV		
M.8.16	Verification of electromagnetic compatibility		
	See report		

	TABLE:		
	.....:		—
	.....:		—
supplementary information:			

	TABLE:						
							Comments

TRF No. IEC 60947_2D

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

СЛЕД ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict
supplementary information:			

	TABLE:		
	..... :		—
	..... :		—
	..... :		—
	..... :		—
supplementary information:			

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE:				
					result code
supplementary information:					

	TABLE:						
	.....:						—
	.....:						—
Supplementary information:							

	TABLE: Heating Test		
	Test voltage (V):	20V	—
	Ambient (°C):	40℃	—

Thermocouple Locations	max. temperature measured, (°C)	max. temperature limit, (°C)
Terminals for external connections	105	110
Manual operating means non-metalic	55	65
Parts intended to be touched non-metelic	61	80
Parts which need be touched for normal operation non-metelic	74	90

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE:					
supplementary information:						

	TABLE: dielectric strength		
test voltage applied between:		test potential applied (V)	breakdown / flashover (Yes/No)
Between all theterminals main circuit		1890V	no
Between each pole of the main circuit and the other poles and to the mounting plate		1890V	no
Between each control and auxiliary circuit not normally connected to the main circuit and the maincircuit		1890V	no
Between each control and auxiliary circuit not normally connected to the main circuit and the other circuit		1890V	no
Between each control and auxiliary circuit not normally connected to the main circuit and the mounting platre		1890V	no
For equipment suitable for isolation, acros s the poles of the main circuit		1890V	no
supplementary information:			

	TABLE: impact resistance			
impacts per surface		surface tested	impact energy (Nm)	comments
-		-	-	-
supplementary information:				

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: electrical data (in normal conditions)					
fuse #	I rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	condition/status
X	630A	690V	75W	X	X	-40 - +50℃
supplementary information:						

	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)
	976V	690V	8mm	20,2mm	9mm	25,3mm
supplementary information: distance auxiliary circuits from live partes is 25mm						

	TABLE: distance through insulation measurements			
distance through insulation di at/of:	U r.m.s. (V)	test voltage (V)	required di (mm)	di (mm)
supplementary information:				

	TABLE: ball pressure test of thermoplastics		
	allowed impression diameter (mm) .....:		—
part		test temperature (°C)	impression diameter (mm)
-		-	-
supplementary information:			

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД

IEC 60947-2			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: threaded part torque test		
threaded part identification	diameter of thread (mm)	column number (I, II, or III)	applied torque (Nm)
Connector	10mm	I,II and III	20Nm
supplementary information:			

	TABLE: over-voltage and under-voltage test				
test	operating condition	rated voltage (V)	test voltage (V)	temperature (°C)	comments
-	-	-	-	-	-
supplementary information: Isn´t dependent upon outer power supply					

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 6xxxx			
Clause	Requirement + Test	Result - Remark	Verdict
	National Differences for (country name)		
	..... :		
	..... :		
	. ..... :		
	..... :		
	..... :		
	..... :		

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

Ref. Certif. No.

CZ-1658

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

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

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product Produit	Circuit - breakers
Name and address of the applicant Nom et adresse du demandeur	OEZ s. r. o. Šedivská 339, 561 51 Letohrad, Czech Republic
Name and address of the manufacturer Nom et adresse du fabricant	OEZ s. r. o. Šedivská 339, 561 51 Letohrad, Czech Republic
Name and address of the factory Nome et adresse de l'usine	OEZ s. r. o. Šedivská 339, 561 51 Letohrad, Czech Republic
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	160 A; 230 V/415 V/500 V/690 V AC
Trademark (if any) Marque de fabrique (si elle existe)	
Model / Type Ref. Ref. De type	BC 160N (see enclosure)
Additional information (if necessary) Information complémentaire (si nécessaire)	
	PUBLICATION / EDITION
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60947-2 — 2003 ed. 3+A1:2001 +consolidated ed. 2.2:2001
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	600332-03/01 of: 29.03.2006

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

Elektrotechnický zkušební ústav
Pod lisem 129, 171 02 Praha 8 – Troja.
Czech Republic

Date: 3.4.2006

Signature: Pavel Kudrna
Certification and Inspection Manager

ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV POD LISEM 129 PRAHA - TROJA

ВЯРНО С ОРИГИНАЛА

CERTCZ-16584

ELECTRIS LAB 600332-03

Issued 2001-12

Circiut – breakers

BC160NT305-16-D
BC160NT305-20-D
BC160NT305-25-D
BC160NT305-32-D
BC160NT305-40-D
BC160NT305-50-D
BC160NT305-63-D
BC160NT305-80-D
BC160NT305-100-D
BC160NT305-125-D
BC160NT305-160-D

ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV
PODLESÍ 129, PRAHA - TŘEBEŠ
1

ЕЛЕКТРИС ЕООД
ELECTRIS LTD

ВЯРНО С ОРИГИНАЛА

Report No.600332-03/01

TEST REPORT

IEC 60 947-2

Low-voltage switchgear and controlgear

Part 2: Circuit - breakers

Report Reference No. ..... :	600332-01/01
Tested by (name+signature)..... :	Rezková Alena
Witnessed by (name+signature)..... :	Hlavatý Jan
Supervised by (name+signature)..... :	Hlavatý Jan
Approved by (name+signature) ..... :	Hlavatý Jan
Date of issue..... :	29.03.2006
CB Testing Laboratory..... :	Elektrotechnický zkušební ústav, s.p.
Address..... :	Pod lisem 129, 171 02 Praha 8 – Troja, Czech Republic
Testing location/ procedure ..... :	CBTL X
Testing location/ address..... :	Pod lisem 129, 171 02 Praha 8 – Troja, Czech Republic
Applicant's name ..... :	OEZ s.r.o
Address..... :	Šedivská 339, 56151 Letohrad, Czech Republic
Test specification:	
Standard ..... :	IEC 60 947 - 2 : 2003 (3rd Edition)
Test procedure..... :	CB
Non-standard test method..... :	N/A
Test Report Form No. ..... :	IEC60947_2C
TRF Originator..... :	KEMA Nederland B.V.
Master TRF..... :	Dated 2004-12

Test item description ..... :	Circuit-breakers
Trade Mark ..... :	OEZ.
Manufacturer..... :	OEZ s.r.o.
Address..... :	OEZ s.r.o. Šedivská 339 56151 Letohrad
Model/Type reference..... :	BC 160N (see page 5 of 162)
Ratings..... :	160 A; 230 V/415 V/500 V/690 V AC

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

Particulars: test item vs. test requirements	
3. Classification	
3.1. Utilization category: (A or B)..	A
3.2. Interruption medium: (air, vacuum, gas Break).....	Air
3.3. Design: (open construction, moulded case).....	moulded case
3.4. Method of controlling the operation mechanism: (dependent manual operation, independent manual operation, dependent power operation, independent power operation)	independent manual operation
3.5. Suitability for insulation: (suitable, not -suitable)	suitable
3.6. Provision for maintenance: (maintainable, non maintainable).....	non maintainable
3.7. Method of installation: (fixed, plug in, withdrawable:	fixed
3.8. Degree of protection: (IP code)	IP 20
4.8. Integral fuses (integrally fused circuit-breakers) Type and characteristics of SCPD	N/A
4.9. Switching overvoltages: (when Uimp. is declared)	Yes
7.3 Electromagnetic compatibility (EMC) Environment A or B.....	-
Circuit-breaker for use on phase-earthed systems.....	Yes
Circuit-breaker for use in IT systems.....	Yes
Rated and limiting values, main circuit	:
- rated operational voltage: Ue (V).....	230 V/415 V/500 V/690 V AC
- rated insulation voltage: Ui (V)	690 V
- rated impulse withstand voltage: Uimp (kV).....	8 kV
- rated operational current: Ie (A).....	160 A
- kind of current	AC
- conventional free air thermal current: Ith (A).....	160 A
- conventional enclosed thermal current: Ithe (A)	N/A
- current rating for four-pole circuit-breakers: (A).....	N/A
- number of poles.....	3
- rated frequency: (Hz).....	50/60 Hz
- integral fuses (rated values).....	No
- suitability for environment (A or B)	B
Rated duty :	
- eight-hour duty.....	Yes
- uninterrupted duty: Iu (A).....	160 A

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

Short-circuit characteristic :	
rated short-time making capacity: Icm (kA).....	230 V 84 kA, 415 V 53 kA, 500 V 24 kA , 690V 9 kA
rated ultimate short-circuit breaking capacity: Icu (kA)	230 V 40 kA, 415 V 25 kA, 500 V 12 kA , 690 V 6kA
rated service short-circuit breaking capacity: Ics (kA).....	230 V 20 kA, 415 V 13 kA, 500 V 6 kA , 690 V 3 kA
rated short-time withstand current: Icw (kA/s).....	-
Control circuits ;	N/A
Electrical control circuits :	
- kind of current: (AC, DC)	--
- rated frequency: (Hz).....	--
- rated control circuit voltage: Uc (nature, frequency, V)	--
- rated control supply voltage: Us (nature, frequency V)	--
Air supply control circuits: (pneumatic or electro-pneumatic) :--	
- rated pressure and its limit	--
- volumes of air, at atmospheric pressure, required for each closing and each opening operation.....	--
Auxiliary circuits :	
Rated and limiting values, auxiliary circuits	
- rated operational voltage Ue (V).....	5÷250 V AC/DC
- rated insulation voltage: Ui (V)	250 V AC/DC
- rated operational current: Ie (A).....	6 A/250 V 5 A/60 V 3 A/110 V 1,5 A/230 V AC 0,25 A/250 V 0,5 A/60 V 0,2 A/110 V 0,1 A/250 V 0,1 A DC
- kind of current.....	AC/DC
- rated frequency: (Hz).....	50/60 HZ
- number of circuits	6
- number and kind of contact elements.....	1a and 1b
- rated uninterrupted current: Iu (A).....	6 A
- utilization category: (AC, DC, current and voltage).....	6 A/250 V AC12, 5 A/60 V 3 A/110 V 1,5 A/230 V AC15 0,25 A/250 V DC12, 0,5 A/60 V 0,2 A/110 V 0,1 A/250 V 0,1 A DC13

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

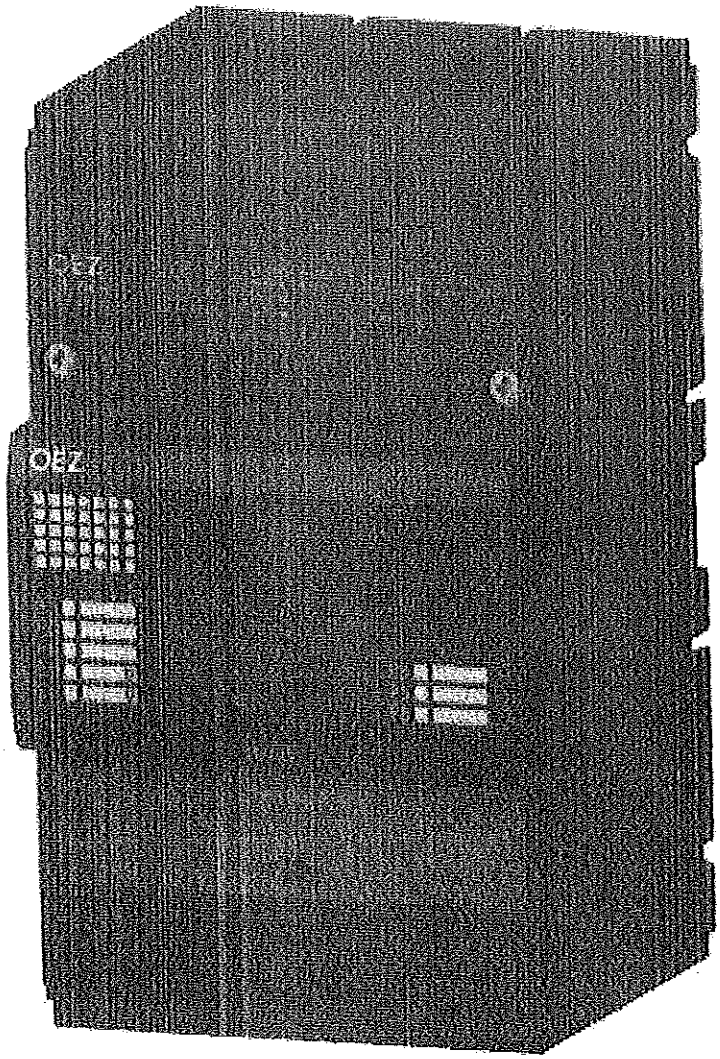
Short-circuit characteristic :	
Rated conditional short-circuit current: Icn (kA) ..... :	-
Co-ordination of short-circuit protective devices ..... :	
- kind of protective device ..... :	-
Releases :	
1) shunt release ..... :	Yes
2) Over current release ..... :	Yes
a) instantaneous ..... :	-
b) definite time delay ..... :	-
c) inverse time delay ..... :	Yes
- independent of previous load ..... :	X
- dependent on previous load; (for example thermal type release) ..... :	Yes
3) Undervoltage release (for opening) ..... :	Yes
4) Other releases ..... :	X
Characteristics :	
1) Shunt release and undervoltage release (for opening).. :	
- rated control circuit voltage: Uc (nature, frequency, V) .. :	AC/DC, 50/60 Hz, 24 V, 48 V, 110 V, 230 V, 400 V
- kind of current ..... :	AC/DC
-rated frequency: (if AC) ..... :	50/60 Hz

2) Overcurrent release ..... :	
- rated current ..... :	160 A
- kind of current ..... :	AC
- rated frequency: (if AC) ..... :	50/60 Hz
- current setting (or range of settings) ..... :	0,75 -1Ir
- time settings (or range of settings) ..... :	X

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

Copy of marking plate



Type circuit -breakers

BC160NT305-16-D

BC160NT305-20-D

BC160NT305-25-D

BC160NT305-32-D

BC160NT305-40-D

BC160NT305-50-D

BC160NT305-63-D

BC160NT305-80-D

BC160NT305-100-D

BC160NT305-125-D

BC160NT305-160-D

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

Summary of testing:

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

Test item particulars	:
Classification of installation and use	: X
Supply Connection	: X
.....	:
.....	:
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	: 02.02.2006
Date (s) of performance of tests	: 27.03.2006 – 29.03.2006

General remarks:

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.

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:

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict

5.2	MARKING		
a)	The following data shall be marked on the circuit-breaker itself or on a name plate or nameplates attached to the circuit-breaker, and located in a place such that they are visible and legible when the circuit-breaker is installed.		
	- rated current:	160 A	
	- suitability for isolation, if applicable, with the symbol —/—X—	Yes	P
	- indication of the open and closed position: with O and I respectively, if symbols are used	Yes	P
b)	Marking on equipment not needed to be visible after mounting:		
	- manufacturer's name or trademark	OEZ	P
	- type designation or serial number	BC 160N	P
	- IEC 60947-2 if the manufacturer compliance with this standard.	Yes	P
	- utilization category	A	P
	- rated operational voltage(s) Ue	230 V,415 V,500 V,690 V AC	P
	- Circuit-breaker for use in IT systems: Circuit-breaker for which all values of rated voltage have not been tested according to annex H or are not covered by such testing, shall be identified by the symbol Ⓜ which shall be market on the circuit-breaker immediately following these values of rated voltage	Circuit-breaker is suitable for use in IT systems 230 V,415 V, 500 V, 690 V	P
	- value (or range) of the rated frequency and/or the indication DC (or symbol)	50/60 Hz	P
	- rated service short-circuit breaking capacity. Ics	20 kA/230 V, 13 kA/415 V, 6 kA/500 V, 3 kA/690 V	P
	- rated ultimate short-circuit breaking capacity. Icu	40 kA/230 V, 25 kA/415 V, 12 kA/500 V, 6 kA/690 V	P
	- rated short-time withstand current, (Icw) and associated short-time delay, for utilization category B		N/A
	- line and load terminals, unless their connection is immaterial	Yes	P
	- neutral pole terminals, if applicable, by the letter N		N/A
	- protective earth terminal, where applicable, by the symbol acc. 7.1.9.3 of part 1		N/A

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	- ref. temperature for non-compensated thermal releases, if different from 30°C	+40°C	P
c)	Marked on the circuit-breaker as specified in item b), or shall be made available in the manufacturer's published information:		
	- rated short-circuit making capacity (Icm) (if higher than specified in 4.3.5.1	53 kA/415 V	P
	- rated insulation voltage. (Ui) if higher than the maximum rated operational voltage)	690 V	P
	- rated impulse withstand voltage (Uimp), when declared.	8 kV	P
	- pollution degree if other than 3	3	P
	- conventional enclosed thermal current (Ithe) if different from the rated current:	Ith=In	P
	- IP Code, where applicable:	IP 20	P
	- minimum enclosure size and ventilation data (if any) to which marked ratings apply:	N/A	P
	- details of minimum distance between circuit-breaker and earthed metal parts for circuit-breaker intended for use without enclosure:	Vide catalogue	P
	- r.m.s sensing if applicable, according to F.4.1.1	-	N/A
	- suitability for environment A or B	B	P
d)	The following data concerning the opening and closing devices of the circuit-breaker shall be placed either on their own nameplates or on the nameplate of the circuit-breaker:		
	- rated control circuit voltage of the closing device, and rated frequency for AC:		N/A
	- rated control circuit voltage of the shunt release and/or of the under-voltage release, and rated frequency:	24,48,110,230,400 V AC/DC 50/60 Hz	P
	- rated current of indirect over-current releases:		N/A
	- number and type of auxiliary contacts and kind of current, rated frequency (if AC) and rated voltages of the auxiliary switches, if different from those of the main circuit.	Vide catalogue	P
e)	Terminal shall be clearly and permanently identified in acc. with IEC 60445 and annex L :		
	- line terminal	Satisfy	P
	- load terminal	Satisfy	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	- neutral pole terminal "N"		N/A
	- protective earth terminal ⏚		N/A
	- terminal of coils (A/B)		N/A
	- terminal of shunt release (B)	Satisfy	P
	- terminals of under-voltage release (D)	Satisfy	P
	- terminals of interlocking electromagnets (E)		N/A
	- terminals of indicated light devices (X)		N/A
	- terminals of contact elements for switching devices (no)		N/A
7.1	CONSTRUCTION		
7.1.1	Withdrawable circuit-breaker		N/A
	In the disconnected position (main- and auxiliary circuits)		
	Isolating distances for circuit-breaker suitable for isolating warranted:		N/A
	Mechanism fitted with a reliable indicating device with indicates the position of the isolating contacts.		N/A
	Mechanism fitted with interlocks which only permit the isolating contacts to be separate or re-closed when main contacts are open		N/A
	Mechanism fitted with interlock, which only permit the main contacts to be closed when the isolating contacts are fully closed.		N/A
	Mechanism fitted with interlock, which only permit the main contacts to be closed when in disconnected position.		N/A
	The isolating distances between the isolating contacts cannot be inadvertently reduced.		N/A
7.1.1.1	Resistance to abnormal heat and fire	Satisfy IEC 60947-1	P
7.1.2	Current-carrying parts and their connection	Satisfy IEC 60947-1	P
7.1.3	Clearences and creepage distances:		
	For circuit-breakers for which the manufacturer has declared a value of rated impulse withstand voltage. (Uimp.)		
	Clearances distances:	13 mm	
	- Uimp is given as:	8 kV	
	- max. value of rated operational voltage to earth	400 V	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	- nominal voltage of supply system:	N/A	
	- overvoltage category:	IV	
	- pollution degree:	3	
	- field-in or homogeneous:	Inhomogeneous	
	- minimum clearances (mm):	8 mm	
	- measured clearances (mm):	13 mm	P
	Creepage distances:		
	- rated insulation voltage Ui (V)	690 V	
	- pollution degree	3	
	- comparative tracking index (V)	400 V	
	- material group	2	
	Minimum creepage distances (mm)	9 mm	
	Measured creepage distances (mm)	19 mm	P
7.1.4 part 1	Actuator		
7.1.4.1 part 1	Insulation		
	The actuator of the equipment shall be insulated from the live parts for the rated insulation voltage and, if applicable, the rated impulse withstand voltage	Satisfy	P
	If it is made of metal, it shall be capable of being satisfactorily connected to a protective conductor unless it is provided with additional reliable insulation	Satisfy	P
	If it is made of or covered by insulating material, any internal metal part, which might become accessible in the event of insulation failure, shall also be insulated from live parts for the rated insulation voltage	Satisfy	P
7.1.4.2	Direction of movement		
	The direction of operation for actuators of devices shall normally conform to IEC 60447.	Satisfy	P
	Where devices cannot conform to these requirements, e.g. due to special applications or alternative mounting positions, they shall be clearly marked such that there is no doubt as to the "I" and "O" positions and the direction of operation	Satisfy	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
7.1.5 part 1	Indication of contact position		
7.1.5.1 part 1	Indicating means		
	When an equipment is provided with means for indicating the closed and open positions, these positions shall be unambiguous and clearly indicated	Satisfy	P
	This is done by means of a position indicating device (see 2.3.18)	Satisfy	P
	If symbols are used, they shall indicate the closed and open position respectively, in accordance with IEC 60417-2:		
	- 60417-2-IEC-5007 I On (power)	Satisfy	P
	- 60417-2-IEC-5007 O Off (power)	Satisfy	P
	For equipment operated by means of two push-buttons, only the push-button designated for the opening operation shall be red or marked with the symbol "O"		N/A
	Red colour shall not be used for any other push-button		N/A
	The colours of other push-buttons, illuminated push-buttons and indicator lights shall be in accordance with IEC 60073		N/A
7.1.5.2 part 1	Indication by the actuator		
	When the actuator is used to indicate the position of the contacts, it shall automatically take up or stay, when released, in the position corresponding to that of the moving contacts; in this case, the actuator shall have two distinct rest positions corresponding to those of the moving contacts, but for automatic opening a third distinct position of the actuator may be provided	Satisfy	P
7.1.6	Additional safety requirements for equipment suitable for isolation		
7.1.6.1	Additional constructional requirements for equipment suitable for isolation (Ue > 50 V):		
	Equipment suitable for isolation shall provide in the open position an isolation distance in acc. with the requirements necessary to satisfy the isolating function. Indication of the main contacts shall be provide by one or more of the following means:		
	- the position of the actuator	Yes	P
	- a separate mechanical indicator		N/A

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	- visibility of the moving contacts		N/A
	When means are provided or to lock the equipment in the open position, locking only be possible when contacts are in the open position	Satisfy	P
	Actuator front-plate fitted to the equipment in a manner which ensures correct contact position indication and locking	Yes	P
	The indicated open position is the only position in which the specified isolation distances between the contacts is ensured.	Satisfy	P
	- minimum clearances across open contacts (see Table XIII, Part 1) (mm) :	8 mm	
	- measured clearances (mm) :	20 mm	P
	- test Uimp across gap (kV) :	8 kV	P
7.1.6.2	Supplementary requirements for equipment with provision for electrical interlocking with contactors or circuit-breakers:		
	auxiliary switch shall be rated according to IEC 60 947-5-1		N/A
	If equipment suitable for isolation is provided with an auxiliary switch for the purpose of electrical interlocking with contactor (s) or circuit-breaker(s) and intended to be used in motor circuits, the following requirements shall apply unless the equipment is rated for AC-23 utilization category		N/A
	The time interval between the opening of the contacts of the auxiliary switch and the contacts of the main poles shall be sufficient to ensure that the associated contactor or circuit-breaker interrupts the current before the main poles of the equipment open		N/A
	Unless otherwise stated in the manufacturer's technical literature, the time interval shall be not less than 20 ms when the equipment is operated according to the manufacturer" instructions		N/A
	Compliance shall be verified by measuring the time interval between the instant of opening of the auxiliary switch and the instant of opening of the main poles under no-load conditions when the equipment is operated according to the manufacturer's instructions		N/A
	During the closing operation the contacts of the auxiliary switch shall close after or simultaneously with the contacts of the main poles		N/A

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	A suitable opening time interval may also be provided by an intermediate position (between the ON and OFF position) at which the interlocking contact(s) is (are) open and the main poles remain closed		N/A
7.1.6.3	Supplementary requirements for equipment provided with means for padlocking the open position:		
	the locking means shall be designed in such a way that it cannot be removed with the appropriate padlock(s) installed	Satisfy	P
	Alternatively, the design may provide padlockable means to prevent access to the actuator		N/A
	test force F applied to the actuator in an attempt to operate to the closed position (N) :	165 N	P
	rated impulse withstand voltage (kV) :	8 kV	P
	test Uimp on open main contacts at the test force		P
7.1.7	Terminals		
7.1.7.1	All parts of terminals which maintain contact and carry current shall be of metal having adequate mechanical strength	Satisfy	P
	Terminal connections shall be such that necessary contact pressure is maintained	Satisfy	P
	Terminals shall be so constructed that the conductor is clamped between suitable surfaces without damage to the conductor and terminal	Satisfy	P
	Terminal shall 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 shall not be reduced below the rated value	Satisfy	P
7.1.7.2	Connection capacity		
	type of conductors :		P
	minimum cross-sectional area of conductor (mm²) :	2,5 mm^2	P
	maximum cross-sectional area of conductor (mm²) :	95 mm^2	P
	number of conductors simultaneously connectable to the terminal :	1	P
7.1.7.3	Connection		
	terminals for connection to external conductors shall be readily accessible during installation	Satisfy	P

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	clamping screws and nuts shall not serve to fix any other component	Satisfy	P
7.1.7.4	Terminal identification and marking		
	terminal intended exclusively for the neutral conductor		N/A
	protective earth terminal		N/A
	other terminals		N/A
7.1.8 part 1	Additional requirements for equipment provided with a neutral pole		
	When an equipment is provided with a pole intended only for connecting the neutral, this pole shall be clearly identified to that effect by the letter N (see 7.1.7.4.).		N/A
	A switched neutral pole shall break not before and shall make not after the other poles		N/A
	For equipment having a value of conventional thermal current (free air or enclosed, see 4.3.2.1 and 4.3.2.2) not exceeding 63 A, this value shall be identical for all poles		N/A
	For higher conventional thermal current values, the neutral pole may have a value of conventional thermal current different from that of the other poles, but not less than half that value or 63 A, whichever is the higher		N/A
	if a pole with a appropriate making and breaking capacity is used as a neutral pole, then all poles, incl. the neutral pole, shall operate substantially together.		N/A
7.1.9	Provisions for protective earthing		
7.1.9.1	The exposed conductive parts (e.g. chassis, framework and fixed parts of metal enclosures) other than those which cannot constitute a danger shall be electrically interconnected and connected to a protective earth terminal for connection to an earth electrode or to an external protective conductor		N/A
part 1	This requirement can be met by the normal structural parts providing adequate electrical continuity and applies whether the equipment is used on its own or incorporated in an assembly		N/A

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Exposed conductive parts are considered not to constitute a danger if they cannot be touched on large areas or grasped with the hand or if they are of small size (approximately 50 mm x 50 mm) or are so located as to exclude any contact with live parts		N/A
7.1.9.2 part 1	Protective earth terminal		
	The protective earth terminal shall be readily accessible and so placed that the connection of the equipment to the earth electrode or to the protective conductor is maintained when the cover or any other removable part is removed		N/A
	The protective earth terminal shall be suitably protected against corrosion		N/A
	In the case of equipment with conductive structures, enclosures, etc., means shall be provided, if necessary, to ensure electrical continuity between the exposed conductive parts the equipment and the metal sheathing of connecting conductors		N/A
	The protective earth terminal shall have no other function, except when it is intended to be connected to a PEN conductor (see 2.1.1.5 – Note). In this case, it shall also have the function of a neutral terminal in addition to meeting the requirements applicable to the protective earth terminal		N/A
7.1.9.3	Protective earth terminal marking and identification		
	The protective earth terminal shall be clearly and permanently identified by its marking		N/A
	The identification shall be achieved by colour (green-yellow mark) or by the notation PE, or PEN, as applicable, in accordance with IEC 60445, subclause 5.3, or, in the case of PEN, by a graphical symbol for use on equipment		N/A
	Graphical symbol to be used: 60417-2-IEC-5019 ⏚ Protective earth (ground) in accordance with IEC 60417-2		N/A

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
7.1.10	Enclosure for equipment		
7.1.10.1	Design		
	The enclosure, when it is opened: all parts requiring access for installation and maintenance are readily accessible		N/A
	Sufficient space shall be provided inside the enclosure		N/A
	The fixed parts of a metal enclosure shall be 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 shall a removable metal part of the enclosure be insulated from the part carrying the earth terminal when the removable part is in place		N/A
	The removable parts of the enclosure shall be 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 shall be provided to prevent loss of the fastening devices		N/A
	If the enclosure is used for mounting push-buttons, it shall not be possible to remove the buttons from the outside of the enclosure		N/A
7.1.10.2	Insulation		
	If, in order to prevent accidental contact between a metallic enclosure and live parts, the enclosure is partly or completely lined with insulating material, then this lining shall be securely fixed to the enclosure	Satisfy	P
7.1.11	Degree of protection of enclosed equipment		
	Degree of protection.	IP 20	
	Test for first characteristic.	IP 20	
	Test for first numeral ..... :	2	P
	Test for second characteristic	IP 20	
	Test for second numeral ..... :	0	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
7.1.12 part 1	Conduit pull-out, torque and bending with metallic conduits		
	Polymeric enclosures of equipment, whether integral or not, provided with threaded conduit entries, intended for the connection of extra heavy duty, rigid threaded metal conduits complying with IEC 60981, shall withstand the stresses occurring during its installation such as pull-out, torque, bending		N/A
7.2	Performance requirements		
7.2.1	Operating condition		
7.2.1.1	Closing		
	For a circuit-breaker to be closed safely on to the making current corresponding to its rated short-circuit making capacity, it is essential that it should be operated with the same speed and the same firmness as during the type test for proving the short-circuit making capacity	Satisfy	P
7.2.1.1.1	Dependent manual closing		
	For a circuit-breaker having a dependent manual closing mechanism, it is not possible to assign a short-circuit making capacity rating irrespective of the conditions of mechanical operation		N/A
	Such a circuit-breaker should not be used in circuits having a prospective peak making current exceeding 10 kA		N/A
	However, this does not apply in the case of a circuit-breaker having a dependent manual closing mechanism and incorporating an integral fast-acting opening release which causes the circuit-breaker to break safely, irrespective of the speed and firmness with which it is closed on to prospective peak currents exceeding 10 kA; in this case, a rated short-circuit making capacity can be assigned		N/A
7.2.1.1.2	Independent manual closing		
	A circuit-breaker having an independent manual closing mechanism can be assigned a short-circuit making capacity rating irrespective of the conditions of mechanical operation	Satisfy	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
7.2.1.1.3	Dependent power closing		
	At 110% of the rated control supply voltage, the closing operation performed on no-load shall not cause any damage to the circuit-breaker.		N/A
	At 85% of the rated control supply voltage, the closing operation shall be performed when the current established by the circuit-breaker is equal to its rated making capacity within the limits allowed by the operation of its relays or releases and, if a maximum time is stated for the closing operation, in a time not exceeding this maximum time limit.		N/A
7.2.1.1.4	Independent power closing		
	A circuit-breaker having an independent power closing operation can be assigned a rated short-circuit making capacity irrespective of the conditions of power closing		N/A
	Means for charging the operating mechanism, as well as the closing control components, shall be capable of operating in accordance with the manufacturer's specification		N/A
7.2.1.1.5	Stored energy closing		
	Capable ensuring closing of the circuit-breaker in any condition between no-load and its rated making capacity		N/A
	- when the stored energy is retained within the circuit-breaker, a device is provided which indicates when the storing mechanism is fully charged.		N/A
	- means for charging the operating mechanism and closing control components operates when auxiliary supply voltage is between 85% and 110% of the rated control supply voltage.		N/A
	- not possible for the moving contacts to move from the open position, unless the charge is sufficient for satisfactory completion of the closing operation.		N/A
	- by manually operated circuit-breaker is the direction of operation indicated. (not for circuit-breaker with an independent manual closing operation.)		N/A
	- For trip free circuit-breaker it shall not be possible to maintain the contacts in the touching or closed position when the release is in the position to trip the circuit-breaker.		N/A

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
7.2.1.2	Opening		
7.2.1.2.1	Circuit-breakers which open automatically shall be trip-free and, unless otherwise agreed between manufacturer and user, shall have their energy for the tripping operation stored prior to the completion of the closing operation		
7.2.1.2.2	Opening by undervoltage releases		
7.2.1.3. a part 1	Operating voltage		
	An under-voltage relay or release, when associated with a switching device, shall operate to open the equipment even on a slowly falling voltage within the range between 70% and 35% of its rated voltage	Satisfy	P
	An under-voltage relay or release shall prevent the closing of the equipment when the supply voltage is below 35% of the rated voltage of the relay or release; it shall permit closing of the equipment at supply voltages equal to or above 85% of its rated value	Satisfy	P
	Unless otherwise stated in the relevant product standard, the upper limit of the supply voltage shall be 110% of its rated value	Satisfy	P
7.2.1.3. b part 1	Operating time		
	For a time-delay under-voltage relay or release, the time-lag shall be measured from the instant when the voltage reaches the operating value until the instant when the relay or release actuates the tripping device of the equipment		N/A
7.2.1.2.3	Opening by shunt releases		N/A
7.2.1.4 part 1	Limits of operation of shunt releases		
	A shunt release for opening shall cause tripping under all operating conditions of an equipment when the supply voltage of the shunt release measured during the tripping operation remains between 70% and 110% of the rated control supply voltage and, if a.c., at the rated frequency	Satisfy	P
7.2.1.5 part 1	Limits of operation of current operated relays and released		
	Limits of operation of current operated relays and releases shall be stated in the relevant product standard	Satisfy	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
7.2.1.2.4	Opening by over-current releases		
a)	Opening under short-circuit conditions		
	The short-circuit release shall cause tripping of the circuit-breaker with an accuracy of 20% of the tripping current value of the current setting for all values of the current setting of the short-circuit current release	Satisfy	P
	Where necessary for over-current co-ordination the manufacturer shall provide information (usually curves) showing	Satisfy	P
	- maximum cut-off (let-through) peak current as a function of prospective current (r.m.s. symmetrical)	Vide catalogue	P
	- I^2t characteristics for circuit-breakers of utilization category A and, if applicable, B for circuit-breakers with instantaneous override (see not to 8.3.5)	Vide catalogue	P
b)	Opening under overload conditions		
1)	Instantaneous or definite time-delay operation		N/A
	The release shall cause tripping of the circuit-breaker with an accuracy of ± 10% of the tripping current value of the current setting for all values of current setting of the overload release		N/A
2)	Inverse timer-delay operation		
	At the reference temperature and at 1,05 times the current setting with the conventional non-tripping current, the opening release being energized on all poles, tripping shall not occur in less than the conventional time from the cold state, i.e. with the circuit-breaker at the reference temperature	Satisfy	P
	Moreover, when at the end of the conventional time the value of current is immediately raised to 1,30 times the current setting, i.e. with the conventional tripping current, tripping shall then occur in less than the conventional time later	Satisfy	P
	If a release is declared by the manufacturer as substantially independent of ambient temperature, the current values of table 6 shall apply within the temperature band declared by the manufacturer, within a tolerance of 0,3%/K	Satisfy	P
	The width of the temperature band shall be at least 10 K on either side of the reference temperature	Satisfy	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
7.2.4.2	Operational performance capability		
7.2.4.2 part 1	The operational performance off-load for which the tests are made with the control circuits energized and the main circuit not energized, in order to demonstrate that the equipment meets the operating conditions specified at the upper and lower limits of supply voltage and/or pressure specified for the control circuit during closing and opening operations	Satisfy	P
	The operational performance on-load during which the equipment shall make and break the specified current corresponding, where relevant, to its utilization category for the number of operations stated in the relevant product standard	Satisfy	P
8	TESTS		
8.2.4	Mechanical properties of terminals		
	Mechanical strength of terminals		
	maximum cross-sectional area of conductor (mm^2) :	95 mm^2	
	diameter of thread (mm) :	6 mm	
	torque (Nm) :	6 Nm	
	5 times on 2 separate clamping units	Satisfy	P
	Testing for damage to and accidental loosening of conductor (flexion test)		
	conductor of the smallest cross-sectional area (mm^2) :	2,5 mm^2	
	number of conductor of the smallest cross section :	1	
	diameter of bushing hole (mm) :	13x16 mm	
	height between the equipment and the platen :	280 mm	
	mass at the conductor(s) (kg) :	0,7 kg	
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit	135	P
	Pull-out test		
	force (N) :	50 N	
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	Meets	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	conductor of the largest cross-sectional area (mm^2) :	95 mm^2	
	number of conductor of the largest cross section :	1	
	diameter of bushing hole (mm) :	13x16 mm	
	height between the equipment and the platen :	368 mm	
	mass at the conductor(s) (kg) :	14 kg	
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit	135	P
	Pull-out test		
	force (N) :	351 N	
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	Meets	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 :		
	mass at the conductor(s) (kg) :	-	
	135 continuous revolutions: the conductor shall neither slip out of the terminal nor break near the clamping unit		N/A
	Pull-out test		
	force (N) :	-	
	1 min, the conductor shall neither slip out of the terminal nor break near the clamping unit	-	N/A

8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS		
8.3.3.1	Tripping limits and characteristic		
8.3.3.1.2	Opening under short-circuit conditions		
	Manufacturer's name or trademark	OEZ s.r.o.	
	Type designation or serial number	BC 160N	
	Sample no:	1	
	Rated operational voltage: Ue (V)	230 V,415 V,500 V,690 V AC	

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Rated current: In (A)	16 A	
	Ambient temperature 10-40 °C :	40°C	P
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.	240 A	P
	Range of adjustable setting current. (A)	160-240 A	P
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 80% of the rated, or minimum adjustable setting current: (A)	128 A	P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 No operate of the release No operate of the release No operate of the release	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 80% of the maximum adjustable setting current: (A)	192 A	P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 No operate of the release No operate of the release No operate of the release	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 120% of the rated, or minimum adjustable setting current: (A)	192 A	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 120% of the maximum adjustable setting current: (A)	288 A	P
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: tripping current declared for single pole operation (A)	240 A	P
	Operating time: < 200 ms in case of instantaneous release: L1: L2: L3:	 operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by manufacturer in case of definite time delay releases L1: L2: L3:		N/A

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
8.3.3.1.3	Opening under overload conditions		
a)	Instantaneous or definite time-delay releases		
	Manufacturer's name or trademark		
	Type designation or serial number		
	Sample no:		
	Rated operational voltage: Ue (V)		
	Rated current: In (A)		
	Ambient temperature 10-40 °C :		N/A
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.		N/A
	Range of adjustable setting current. (A)		N/A
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the rated, or minimum adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the maximum adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 110% of the rated, or minimum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)		N/A
	Operating time: <0,2s in case of instantaneous releases:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Test current: 110% of the maximum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)		N/A
	Operating time: <0,2s in case of instantaneous releases		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
b)	Inverse time delay releases		
	Manufacturer's name or trademark	OEZ s.r.o.	
	Type designation or serial number	BC 160N	
	Sample no:	1a	
	Rated operational voltage: Ue (V)	230 V,415 V,500 V,690 V AC	
	Rated current: In (A)	16 A	
	For releases dependent of ambient air temperature: Reference temperature	40°C	P
	Test ambient temperature (°C)	40°C	P
	If test made at a difference ambient temperature: Acc. manufacturer's correction temperature/current data:	40°C	P
	Range of adjustable setting current: (A)	-	N/A
	For releases independent of ambient temperature: Test made at 30°C and/or at 20/40°C		N/A
	Test ambient air temperature:	40°C	P
	Releases, dependent of ambient air temperature: Reference temperature (°C)	40°C	P
	Releases, independent of ambient air temperature: at 30°C		N/A
	Test current: 105% of the rated, or minimum adjustable setting current: (A)	13,125 A	P
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	No operate of the release	P
	Test current: 130% of the rated, or minimum adjustable setting current: (A)	16,25 A	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Operate of the release	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD

ВЕРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Test current: 105% of the maximum adjustable setting current: (A)	16,8 A	P
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	No operate of the release	P
	Test current: 130% of the maximum adjustable setting current: (A)	20,8 A	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Operate of the release	P
	Releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:		N/A
	Test current: 105% of the rated, or minimum adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the rated, or minimum adjustable setting current: (A)		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Test current: 105% of the maximum adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the maximum adjustable setting current: (A)		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	An additional test, at a current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer		
	Releases, dependent of ambient air temperature: Reference temperature (°C)	40°C	P
	Releases, independent of ambient air temperature: at 30°C	-	N/A
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)	Short-circuit release ±20% Inverse time-delay Releases ±30%	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЕРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)	Yes	P
	Releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:		N/A
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)		N/A
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)		N/A
			N/A
	Manufacturer's name or trademark	OEZ s.r.o.	
	Type designation or serial number	BC 160N	
	Sample no:	1a	
	Rated operational voltage: Ue (V)	230 V,415 V,500 V,690 V AC	
	Rated current: In (A)	20 A	
	Ambient temperature 10-40 °C :	40°C	P
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.	300 A	P
	Range of adjustable setting current. (A)	200-300 A	P
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 80% of the rated, or minimum adjustable setting current: (A)	160 A	P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 No operate of the release No operate of the release No operate of the release	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:	N/A	
	Test current: 80% of the maximum adjustable setting current: (A)	240 A	P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	No operate of the release No operate of the release No operate of the release	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 120% of the rated, or minimum adjustable setting current: (A)	240 A	P
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 120% of the maximum adjustable setting current: (A)	360 A	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: tripping current declared for single pole operation (A)	300 A	P
	Operating time: < 200 ms in case of instantaneous release: L1: L2: L3:	 operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by manufacturer in case of definite time delay releases L1: L2: L3:		N/A
8.3.3.1.3	Opening under overload conditions		
a)	Instantaneous or definite time-delay releases		
	Manufacturer's name or trademark		
	Type designation or serial number		
	Sample no:		
	Rated operational voltage: Ue (V)		
	Rated current: In (A)		
	Ambient temperature 10-40 °C :		N/A
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.		N/A
	Range of adjustable setting current. (A)		N/A

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the rated, or minimum adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases:		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 90% of the maximum adjustable setting current: (A)		N/A
	Operating time: >0,2s in case of instantaneous releases		N/A
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 110% of the rated, or minimum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)		N/A
	Operating time: <0,2s In case of instantaneous releases:		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 110% of the maximum adjustable setting current: (A) circuit-breaker with neutral pole: 1,2x110% (A)		N/A
	Operating time: <0,2s in case of instantaneous releases		N/A
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
b)	Inverse time delay releases		
	Manufacturer's name or trademark	OEZ s.r.o.	
	Type designation or serial number	BC 160N	
	Sample no:	1b	
	Rated operational voltage: Ue (V)	230 V,415 V,500 V, 690 V AC	
	Rated current: In (A)	20 A	

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	For releases dependent of ambient air temperature: Reference temperature	40°C	P
	Test ambient temperature (°C)	40°C	P
	If test made at a difference ambient temperature: Acc. manufacturer's correction temperature/current data:	40°C	P
	Range of adjustable setting current: (A)	-	N/A
	For releases independent of ambient temperature: Test made at 30°C and/or at 20/40°C		N/A
	Test ambient air temperature:	40°C	N/A
	Releases, dependent of ambient air temperature: Reference temperature (°C)	40°C	N/A
	Releases, independent of ambient air temperature: at 30°C		N/A
	Test current: 105% of the rated, or minimum adjustable setting current: (A)	16,8 A	P
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	No operate of the release	P
	Test current: 130% of the rated, or minimum adjustable setting current: (A)	20, 8A	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Operate of the release	P
	Test current: 105% of the maximum adjustable setting current: (A)	21 A	P
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A	No operate of the release	P
	Test current: 130% of the maximum adjustable setting current: (A)	26 A	P
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A	Operate of the release	P
	Releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:		N/A
	Test current: 105% of the rated, or minimum adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the rated, or minimum adjustable setting current: (A)		N/A

ВЯРНО С ОРИГИНАЛА

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	Test current: 105% of the maximum adjustable setting current: (A)		N/A
	Conventional non-tripping time: 1h when In < 63A, 2h when In > 63 A		N/A
	Test current: 130% of the maximum adjustable setting current: (A)		N/A
	Conventional tripping time: <1h when In < 63A, <2h when In > 63 A		N/A
	An additional test, at a current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer		
	Releases, dependent of ambient air temperature: Reference temperature (°C)	40°C	P
	Releases, independent of ambient air temperature: at 30°C	-	N/A
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)	Short-circuit release ±20% Inverse time-delay Releases ±30%	P
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)	Yes	P
	Releases, independent of ambient air temperature: at 20°C or 40°C		
	Test ambient air temperature:		N/A
	Test current: at current specified by the manufacturer to verify the time/current characteristic of the releases conform to the curves provided by the manufacturer. % at the rated, or minimum adjustable setting current: (% or A)		N/A
	Tripping time acc. time/current characteristic of the releases conform to the curves provided by the manufacturer. (within the stated tolerances)		N/A

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Manufacturer's name or trademark	OEZ s.r.o.	
	Type designation or serial number	BC 160N	
	Sample no:	1c	
	Rated operational voltage: Ue (V)	230 V,415 V,500 V,690 V AC	
	Rated current: In (A)	25 A	
	Ambient temperature 10-40 °C :	40°C	P
	Value of the tripping current declared by the manufacturer for a single pole, at which value they shall operate.	375 A	P
	Range of adjustable setting current. (A)	250-375 A	P
	Time delay stated by the manufacturer, in the case of definite time delay releases.		N/A
	Test current: 80% of the rated, or minimum adjustable setting current: (A)	200 A	P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 No operate of the release No operate of the release No operate of the release	P
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 80% of the maximum adjustable setting current: (A)	300 A	P
	Operating time: >0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	 No operate of the release No operate of the release No operate of the release	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА

IEC 60 947-2			
Clause	Requirement – Test	Result – Remark	Verdict
	Operating time: > twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 120% of the rated, or minimum adjustable setting current: (A)	300 A	P
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: 120% of the maximum adjustable setting current: (A)	450 A	P
	Operating time: <0,2s in case of instantaneous releases: L1-L2: L1-L3: L2-L3:	operate of the release operate of the release operate of the release	P
	Operating time: < twice time delay stated by the manufacturer, in the case of definite time delay releases: L1-L2: L1-L3: L2-L3:		N/A
	Test current: tripping current declared for single pole operation (A)	375 A	P

ЕЛЕКТРИС ЕООД * ELECTRIS LTD *

ВЯРНО С ОРИГИНАЛА