Приложение 1:

СТОКА И БАЗОВИ ЕДИНИЧНИ ЦЕНИ

№	Наименование на материала	Мярка	Ед. цена лева без ДДС
1	2	3	4
1.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 4A	Бр.	3.02
2.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 6A	Бр.	2.49
3.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 10A	Бр.	2.49
4.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 16A	Бр.	2.49
5.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 20A	Бр.	2.49
6.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 25A	Бр.	2.49
7.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 32A	Бр.	2.49
8.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 40A	Бр.	3.02
9.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 50A	Бр.	3.02
10.	Еднополюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 1P 63A	Бр.	3.02
11.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 4A	Бр.	9.09
12.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 6A	Бр.	7.45
13.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 10A	Бр.	7.45
14.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 16A	Бр.	7.45
15.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 20A	Бр.	7.45
16.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 25A	Бр.	7.45
17.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 32A	Бр.	7.45
18.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 40A	Бр.	9.09
19.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 50A	Бр.	9.09
20.	Триполюсен миниатюрен автоматичен прекъсвач до 63А, 10кА, широчина на полюс 18mm, 3P 63A	Бр.	9.09
21.	Триполюсен миниатюрен автоматичен прекъсвач до 125, 10кА, широчина на полюс 27mm, 3P 80A	Бр.	33.83
22.	Триполюсен миниатюрен автоматичен прекъсвач до 125, 10кА, широчина на полюс 27mm, 3P 100A	Бр.	33.83
23.	Триполюсен миниатюрен автоматичен прекъсвач до 125, 10кА, широчина на полюс 27mm, 3P 125A	Бр.	33.83

ВЪЗЛОЖИТЕЛ:

ИЗПЪЛНИТЕЛ:

Приложение2:

ТЕХНИЧЕСКИ ИЗИСКВАНИЯ

Приложение 3:

ПРОЕКТ НА КОНКРЕТЕН ДОГОВОР

Днес, ...201... г. (дата на сключване), в град София, България, между страните:

(1) "ЧЕЗ РАЗПРЕДЕЛЕНИЕ БЪЛГАРИЯ" АД, седалище и адрес на управление: Република България, гр. София 1784, бул. "Цариградско шосе" № 159, «Бенч Марк Бизнес Център», вписано в Търговски регистър при Агенцията по вписванията с ЕИК: 130277958, ИН по ДДС: BG 130277958, Банкова сметка: код: UNCRBGSF; сметка: BG43UNCR76301002ERPBUL; при банка: Уникредит Булбанк, представлявано от Душан Рибан – Изпълнителен Директор и упълномощен член на Управителен съвет, наричано за краткост "**ВЪЗЛОЖИТЕЛ**", от една страна,

и

(2) „ПМ ЕЛЕКТРИКАЛ" ЕООД, седалище и адрес на управление: Република България, гр. София 1463, ул. "Цар Асен" № 44, вписано в Търговски регистър при Агенцията по вписванията с ЕИК: 201257416, ИН по ДДС: BG 201257416, Банкова сметка: код: BPBIBGSF; сметка: BG88BPBI79401066836901; при банка: Юробанк България АД-град/клон/офис: гр.София, клон Солунска 15, представлявано от Мария Василева Колева - Христова – Управител, наричано за краткост **"ИЗПЪЛНИТЕЛ",** от друга страна,

в резултат на проведена открита процедура за възлагане на обществена поръчка с реф. № PPD 15-032 и предмет: „Доставка на еднополюсни и триполюсни миниатюрни автоматични прекъсвачи", сключено Рамково споразумение № .../... г. и на основание чл. 41 от ЗОП, се сключи настоящият договор за следното:

1. ПРЕДМЕТ НА ДОГОВОРА

1.1. Съгласно условията на настоящия договор и последващите поръчки за доставка, **ИЗПЪЛНИТЕЛЯТ** се задължава да достави и продаде, а **ВЪЗЛОЖИТЕЛЯТ** да поръча, приеме и закупи стоки, представляващи: еднополюсни и триполюсни миниатюрни автоматични прекъсвачи, описани по вид и количество в Приложение 1 от настоящия договор и отговарящи на техническите изисквания (характеристики) от Приложение 2 на рамковото споразумение. За целите на договора и за краткост еднополюсните и триполюсните миниатюрни автоматични прекъсвачи, ще бъдат наричани по-долу "**СТОКА**".

1.2. Стоката, предмет на настоящия договор, се доставя и купува по поръчки, генерирани през SAP и отправени от **ВЪЗЛОЖИТЕЛЯ** до **ИЗПЪЛНИТЕЛЯ. ВЪЗЛОЖИТЕЛЯТ** не е длъжен да поръчва стока по предмета на договора всеки месец, нито да поръча, приеме и закупи цялото прогнозно количество от стоката през срока на действие на договора. **ВЪЗЛОЖИТЕЛЯТ** ще поръчва само толкова стока, колкото му е необходима според неговата готовност. В поръчката се включват данни за вида на стоката, конкретните количества, единична и обща цена, срок и място за доставка. Местата за доставка на стоката по предмета на договора са складове на **ВЪЗЛОЖИТЕЛЯ,** намиращи се на територията на страната в следните населени места: гр. София, гр. Враца, гр. Левски и гр. Дупница.

1.3. Предаването на стоката се извършва в посочения в поръчката склад с приемно - предавателен протокол, двустранно подписан от страните по този договор или от техни надлежно упълномощени представители. Приемно-предавателният протокол се изготвя в 3 (три) еднообразни екземпляра в съответствие с образеца от Приложение 3 към договора, като един остава за **ИЗПЪЛНИТЕЛЯ** и два се предават на **ВЪЗЛОЖИТЕЛЯ**, заедно с документите, описани в Приложение 5 към т. 4.2 от настоящия договор.

1.4. (1)Протоколът по т. 1.3. се подписва и от подизпълнителя, ако в поръчката по т. 1.2 са включени стоки, за доставка на които **ИЗПЪЛНИТЕЛЯТ** е сключил договор за подизпълнение, съгласно 4.10. от договора.

(2) т. 1.4, ал.1 не се прилага, ако **ИЗПЪЛНИТЕЛЯТ** представи на **ВЪЗЛОЖИТЕЛЯ** доказателства, че договорът за подизпълнение е прекратен, или доставката на стока или част от нея не е възложена на подизпълнителя.

1.5. Собствеността и рискът от погиването и повреждането на стока преминават върху **ВЪЗЛОЖИТЕЛЯ** с подписването на приемно-предавателния протокол по т. 1.3 по-горе.

2. ЦЕНА И НАЧИН НА ПЛАЩАНЕ

2.1. (1) Единичните цени на стоката, предмет на договора, са описани в **Приложение 1**, неразделна част от него.

Единичната цена за всеки вид стока, посочена в Приложение 1 към настоящия договор, не може да бъде по-висока от базовата единична цена за съответната стока по сключеното рамково споразумение.
(2) При надлежно и своевременно осъществяване предмета на договора **ВЪЗЛОЖИТЕЛЯТ** ще заплаща на **ИЗПЪЛНИТЕЛЯ** поръчаната по реда на т. 1.2 и приета по реда на т. 1.3 стока по единични цени от Приложение 1. При фактурирането се начислява дължимият в момента ДДС според законодателството на Република България. Единичните цени, по които се плаща стоката, са определени до франко складове на **ВЪЗЛОЖИТЕЛЯ** в следните градове, посочени в т. 1.2 по-горе., като включват всички разходи: транспорт, такси, застраховки, опаковка, документация и всички други съпътстващи доставката на стоката разходи.
2.2. ВЪЗЛОЖИТЕЛЯТ се задължава да заплаща поръчаната по реда на т. 1.2. и приета по реда на т. 1.3. стока чрез банкови преводи по банкова сметка на **ИЗПЪЛНИТЕЛЯ**, извършени в срок до 60 (шестдесет) календарни дни, считано от датата на издаване и предоставяне от **ИЗПЪЛНИТЕЛЯ** на **ВЪЗЛОЖИТЕЛЯ** на оригинална фактура за стойността на конкретната доставка и документите, посочени в т. 4.2 от договора, които придружават стоката. Във фактурата трябва да са посочени: № и дата на договора, № и дата на рамковото споразумение, № и дата на приемно-предавателния протокол по т. 1.3 и № на поръчката за доставка. **ИЗПЪЛНИТЕЛЯТ** е длъжен да представи на **ВЪЗЛОЖИТЕЛЯ** издадената фактура и документите, които придружават стоката, най-късно в срок до 5 (пет) дни, считано от датата на издаването на фактурата, като при забава за представяне на фактура и придружаващите стоката документи, срокът за плащане се удължава съответно със срока на забавата.
2.3. Максималната стойност на договора е в размер на ..... (.....) лева без ДДС. Независимо от това дали срокът на договора по т. 3.1 е изтекъл, при достигане на максималната стойност по тази точка, договорът се прекратява автоматично, без която и да е от страните да дължи уведомление или предизвестие на другата страна.
2.4. ВЪЗЛОЖИТЕЛЯТ извършва окончателното плащане по договор за обществена поръчка, за който има сключени договори за подизпълнение, след като получи от **ИЗПЪЛНИТЕЛЯ** доказателства, че е заплатил на подизпълнителите всички работи, приети по реда на т. 5.7.
2.5. Условието по т.2.4. не се прилага в случаите по т. 5.8.

3. СРОКОВЕ
3.1. Договорът се сключва за срок от **..... (.....) месеца**, считано от датата на влизането му в сила.
3.2. Съответните срокове за доставка на съответните максимални количества от стоката са посочени в Приложение 3.
3.3. Срокът за доставка по предходната т. 3.2 тече от датата на поръчката по т. 1.2.
3.4. ВЪЗЛОЖИТЕЛЯТ има право да поръча едновременно от всички видове стоки, предмет на договора.
3.5. Независимо от това колко вида стоки са поръчани едновременно, **ИЗПЪЛНИТЕЛЯТ** е длъжен да достави поръчаните му стоки в уговорения срок от датата на поръчката, ако за всеки от поръчаните видове стоки е спазено съответното максималното количество, посочено в т. 3.2. от настоящия договор.
3.6. В случай, че в поръчката са включени количества, по-големи от договорените по т. 3.2., за количеството над максималното, това обстоятелство ще бъде посочено текстово в съответната поръчка изпратена към **ИЗПЪЛНИТЕЛЯ**. С потвърждението на поръчката, **ИЗПЪЛНИТЕЛЯТ** вписва в същата очаквана дата за доставка, която се отнася само за количествата над максималните, посочени в т. 3.2, като **ИЗПЪЛНИТЕЛЯТ** е длъжен да достави уговореното максимално количество по т. 3.2 в 30-дневен срок от датата на поръчката.

4. ПРАВА И ЗАДЪЛЖЕНИЯ НА ИЗПЪЛНИТЕЛЯ
4.1. ИЗПЪЛНИТЕЛЯТ е длъжен да достави стоката във вид, качество и с технически показатели, отговарящи на техническите изисквания, определени в Приложение 2 от Рамково споразумение № ...../....., сключено между същите страни, и в съответствие с регламентите, определени в настоящия договор.
4.2. ИЗПЪЛНИТЕЛЯТ е длъжен да достави стоката, комплектована с документите, описани в Приложение 5, неразделна част от настоящия договор.
4.3. ИЗПЪЛНИТЕЛЯТ се задължава да уведоми писмено **ВЪЗЛОЖИТЕЛЯ** най-малко два дни преди изпращането на стоката за очакваната дата на пристигането й в местоизпълнението /местоназначението/, посочено в съответната поръчка, чрез факс съобщение или съобщение на електронна поща. Неизпълнението на това задължение освобождава **ВЪЗЛОЖИТЕЛЯ** от забава за приемането на стоката.
4.4. ИЗПЪЛНИТЕЛЯТ отговаря пред **ВЪЗЛОЖИТЕЛЯ**, ако трети лица предявят правото си на собственост или други права по отношение на стоката, които могат да бъдат противопоставени на **ВЪЗЛОЖИТЕЛЯ**.

4.5. ИЗПЪЛНИТЕЛЯТ е длъжен да върне на **ВЪЗЛОЖИТЕЛЯ** платената цена заедно с лихвите, както и да заплати разноските по договора в случаите, когато се докаже, че продадената стока принадлежи изцяло или отчасти на трето лице, като в тези случаи **ВЪЗЛОЖИТЕЛЯТ** има право да развали договора по т. 9.1., ал. (1).
4.6. ИЗПЪЛНИТЕЛЯТ се задължава да определи свой представител за предаване на стоката по т. 1.1. с приемно-предавателния протокол по т. 1.3.
4.7. ИЗПЪЛНИТЕЛЯТ е длъжен да замени дефектната или неотговаряща на изискванията стока, констатирано в съответствие с т. 5.2. или т. 6.5. на договора, в сроковете, определени в договора.
4.8. ИЗПЪЛНИТЕЛЯТ има право да получи цената на поръчаната, реално доставена и приета стока, съгласно условията на настоящия договор.
4.9. При изпълнението на настоящият договор **ИЗПЪЛНИТЕЛЯТ** няма да използва/ще използва следнитя/те подизпълнител/и ..... (*попълва се при сключване на договора, ако участникът, определен за изпълнител е декларирал в офертата си, че при изпълнение на договора ще използва подизпълнители*) за изпълнение на ..... (*посочват се видовете работи, които ще се изпълняват от подизпълнителя/ите*), представляващи .....(.....)% от общата стойност на поръчката (*попълва се съобразно декларацията от офертата на участника*).
4.10. ИЗПЪЛНИТЕЛЯТ сключва договор за подизпълнение с подизпълнителите, посочени в офертата, и в срок до три дни от датата на сключване изпраща оригинален екземпляр от договора за подизпълнение на **ВЪЗЛОЖИТЕЛЯ**.
4.11. ИЗПЪЛНИТЕЛЯТ няма право да възлага изпълнението на една или повече от работите, включени в предмета на договора, на лица, които не са посочени като негови подизпълнители в т. 4.9 по-горе, и с които не е сключен и представен на **ВЪЗЛОЖИТЕЛЯ** договор за подизпълнение.
4.12. ИЗПЪЛНИТЕЛЯТ има право да замени подизпълнителя/ите по т. 4.9, когато:
а) За подизпълнителя/ите е налице или възникне обстоятелство чл. 47, ал. 1 и ал. 5 от ЗОП;
б) Подизпълнителят/ите не отговарят на нормативно изискване за изпълнение на работите, включени в предмета на договора за подизпълнение;
в) Договорът за подизпълнение е прекратен по вина на подизпълнителя/ите, включително ако подизпълнителя/ите превъзлагат една или повече работи, включени в предмета на договора за подизпълнение.
4.13. ИЗПЪЛНИТЕЛЯТ е длъжен да прекрати договор за подизпълнение, ако по време на изпълнението му възникне обстоятелство по чл. 47, ал. 1 и ал. 5 от ЗОП, както и ако подизпълнителят превъзлага една или повече работи, включени в предмета на договора за подизпълнение.
4.14. В случаите по т. 4.12 и 4.13 **ИЗПЪЛНИТЕЛЯТ** сключва нов договор за подизпълнение или допълнително споразумение към договор за подизпълнение и изпраща оригинален екземпляр на **ВЪЗЛОЖИТЕЛЯ** в срок до три дни от датата на сключване, заедно с доказателства за липса на обстоятелствата по чл. 47, ал. 1 и ал. 5 от ЗОП за подизпълнителя.
4.15. Сключване на договор за подизпълнение или на допълнително споразумение към договор за подизпълнение не освобождава **ИЗПЪЛНИТЕЛЯ** от отговорността му за изпълнение на настоящия договор. Използването на подизпълнител/и не изменя задълженията на **ИЗПЪЛНИТЕЛЯ** по договора. **ИЗПЪЛНИТЕЛЯТ** отговаря за действията на подизпълнителя/ите като за свои действия.
4.16. Приложимите клаузи на договора са задължителни за изпълнение от подизпълнителя/ите.
4.17.Подизпълнителите нямат право да превъзлагат една или повече от дейностите, които са включени в предмета на договора, за подизпълнение.
4.18. Доставката на стоки, материали или оборудване, необходими за изпълнението на обществената поръчка, не се счита за наемане на подизпълнител, когато такава доставка не включва монтаж, както и сключването на договори за услуги, които не са част от настоящия договор за обществена поръчка, съответно - от договора за подизпълнение.

5. ПРАВА И ЗАДЪЛЖЕНИЯ НА ВЪЗЛОЖИТЕЛЯ
5.1. ВЪЗЛОЖИТЕЛЯТ се задължава да определи свой представител за приемане на стоката по т. 1.1. с приемно-предавателния протокол по т. 1.3.
5.2. (1) ВЪЗЛОЖИТЕЛЯТ провежда входящ контрол за качество на доставената стока с цел установяване на съответствието ѝ с изискванията, посочени в настоящия договор и приложенията към него. За проведения входящ контрол **ВЪЗЛОЖИТЕЛЯТ** изготвя протокол.
(2) При установяване на недостатъци по време на входящия контрол, **ВЪЗЛОЖИТЕЛЯТ** е длъжен писмено да уведоми **ИЗПЪЛНИТЕЛЯ** в срок до 10 /десет/ дни от датата на протокола по ал. (1). В писменото уведомление по предходното изречение **ВЪЗЛОЖИТЕЛЯТ** описва недостатъците (дефектите) на доставената стока и начинът за отстраняването им. **ИЗПЪЛНИТЕЛЯТ** е длъжен да прегледа уведомлението с констатациите на **ВЪЗЛОЖИТЕЛЯ** за недостатъци (дефекти) на стоката и да го уведоми писмено (по факс или на електронна поща) за това дали приема констатациите - съответно предложеният начин за отстраняване на недостатъците (дефектите) или не ги приема. **ИЗПЪЛНИТЕЛЯТ** следва да изпълни задължението си за уведомяване по предходното изречение в

срок до 1 /един/ работен ден от датата на получаване на уведомлението на **ВЪЗЛОЖИТЕЛЯ** за резултатите от входящия контрол. В случай, че **ИЗПЪЛНИТЕЛЯТ** не уведоми **ВЪЗЛОЖИТЕЛЯ** за решението си относно констатациите от входящия контрол в срока по предходното изречение, се счита, че не ги приема, вследствие на което **ВЪЗЛОЖИТЕЛЯТ** пристъпва към съставянето на констативен протокол по ал. (3). В случай че **ИЗПЪЛНИТЕЛЯТ** приеме констатациите и предложенията на **ВЪЗЛОЖИТЕЛЯ**, констативен протокол по ал. (3) не се съставя, а **ИЗПЪЛНИТЕЛЯТ** е длъжен да отстрани констатираните недостатъци (дефекти) в срок до 15 /петнадесет/ календарни дни, считано от датата на писменото им приемане. В случай, че **ИЗПЪЛНИТЕЛЯТ** не приеме констатациите и предложенията на **ВЪЗЛОЖИТЕЛЯ**, последният го уведомява писмено за дата, час и място за съставяне на констативен протокол по ал. (3). Писменото уведомление за съставянето на констативен протокол по ал. (3) се изпраща на **ИЗПЪЛНИТЕЛЯ** не по-късно от три дни преди посочената в уведомлението дата за съставяне на протокола.

(3) При отказ на **ИЗПЪЛНИТЕЛЯ** да приеме констатациите на **ВЪЗЛОЖИТЕЛЯ** относно недостатъците (дефектите) на стоката и начина на тяхното отстраняване по предходната алинея, страните по договора съставят и подписват констативен протокол, в който се описват установените недостатъци, начинът и срокът за тяхното отстраняване. Срокът за отстраняване на недостатъците (дефектите) на стоката не може да бъде по-дълъг от 15 /петнадесет/ календарни дни.

(4) Неявяването на **ИЗПЪЛНИТЕЛЯ** за съставяне и подписване на констативния протокол по предходната алинея не го освобождава от отговорност. В този случай констативният протокол се съставя само от представители на **ВЪЗЛОЖИТЕЛЯ** и се изпраща на **ИЗПЪЛНИТЕЛЯ** по факс или електронна поща за изпълнение. В този случай срокът за отстраняване на недостатъците, посочен в констативния протокол, започва да тече от датата на изпращането на протокола на **ИЗПЪЛНИТЕЛЯ**.

(5) При съставянето на констативния протокол по ал. (3), респективно по ал. (4), страните отчитат уговореното в т. 5.3. от договора.

5.3. При установяване на недостатъци (дефекти) на стоката по реда на т. 5.2. или т. 6.5. от договора **ВЪЗЛОЖИТЕЛЯТ** има следните алтернативни права:

(1) да иска замяна на дефектната или неотговаряща на изискванията стока с нова за сметка на **ИЗПЪЛНИТЕЛЯ**; или

(2) да задържи стоката и да иска отбив от цената; или

(3) да откаже да приеме стоката или да върне приетата, но дефектна или неотговаряща на изискванията стока, съответно да не я заплати или ако вече е заплатена, да иска връщането на платената за нея цена.

5.4. При доставка на дефектна стока или стока, която не отговаря на изискванията на **ВЪЗЛОЖИТЕЛЯ**, констатирано в съответствие с т. 5.2. или т. 6.5., и в случай, че **ИЗПЪЛНИТЕЛЯТ** не отстрани недостатъците, съответно не замени дефектната стока с качествена в уговорените срокове, то **ВЪЗЛОЖИТЕЛЯТ** има право да предприеме действия за отстраняване на недостатъците от трета страна или да ги отстрани сам, за сметка на **ИЗПЪЛНИТЕЛЯ**. В този случай **ВЪЗЛОЖИТЕЛЯТ** има право на неустойката по т. 7.2.

5.5. В случаите на т. 5.3., **ВЪЗЛОЖИТЕЛЯТ** може да приеме неотговарящата на изискванията или дефектна стока на отговорно пазене, като вземе всички възможни мерки за безопасното й съхранение за максимален срок от един месец.

5.6. **ВЪЗЛОЖИТЕЛЯТ** е длъжен, съгласно условията на този договор, да изплати на **ИЗПЪЛНИТЕЛЯ** договорената цена за поръчаната, реално доставена и приета стока.

5.7. **ВЪЗЛОЖИТЕЛЯТ** приема изпълнението на дейност по договора за обществена поръчка, за която **ИЗПЪЛНИТЕЛЯТ** е сключил договор за подизпълнение, в присъствието на **ИЗПЪЛНИТЕЛЯ** и на подизпълнителя.

5.8. При приемането на работата **ИЗПЪЛНИТЕЛЯТ** може да представи на **ВЪЗЛОЖИТЕЛЯ** доказателства, че договорът за подизпълнение е прекратен, или работата или част от нея не е извършена от подизпълнителя.

6. ГАРАНЦИИ И РЕКЛАМАЦИИ

6.1. При подписване на настоящия договор **ИЗПЪЛНИТЕЛЯТ** представя гаранция за изпълнение на стойност от ..... (.....) лева под формата на паричен депозит по сметка на **ВЪЗЛОЖИТЕЛЯ,** както следва: SWIFT (BIC): UNCRBGSF; Банкова сметка (IBAN) в лева: BG43 UNCR 7630 1002 ERPB UL; при банка: Уникредит Булбанк или под формата на безусловна и неотменяема банкова гаранция, издадена в полза на **ВЪЗЛОЖИТЕЛЯ** със срок на валидност ...../...../ месеца.

6.2.(1)Гаранцията за изпълнение ще компенсира **ВЪЗЛОЖИТЕЛЯ** за всякакви вреди и загуби, причинени вследствие виновно неизпълнение/забава на договора (задължения по договора) от страна на **ИЗПЪЛНИТЕЛЯ**, както и за произтичащите от тях неустойки. В случай, че претърпените вреди на **ВЪЗЛОЖИТЕЛЯ** са в по-голям размер от размера на гаранцията за изпълнение по

предходната точка, **ВЪЗЛОЖИТЕЛЯТ** има право да потърси обезщетение по общия съдебен ред пред компетентния български съд.
(2) За неуредените условия по отношение на гаранцията за изпълнение и в частност за попълването и при усвояване на суми от нея се прилага съответно Раздел 6 (в частност т. 6.5) от рамковото споразумение.

6.3.(1) Гаранцията за изпълнение или неинкасираната част от нея ще бъде освободена от **ВЪЗЛОЖИТЕЛЯ** и върната на **ИЗПЪЛНИТЕЛЯ** в срок до 30 /тридесет/ календарни дни след изтичане на срока на договора, съответно след прекратяването му на друго основание, ако изпълнението е надлежно,освен ако не е усвоена поради неизпълнение.
(2) За срока, през който гаранцията за изпълнение е престояла законосъобразно при **ВЪЗЛОЖИТЕЛЯ**, последният не дължи лихва.
6.4. Гаранционният срок на закупената стока е ..... месеца, считано от датата на подписването на приемно-предавателния протокол за приемането ѝ в склада на **ВЪЗЛОЖИТЕЛЯ** при спазване на указанията за съхранение, монтаж и експлоатация на производителя.
6.5.(1) По всяко време от действието на договора, **ВЪЗЛОЖИТЕЛЯТ** има право да проверява доставената стока, която не е в режим на експлоатация, за наличие на скрити недостатъци. Проверката по предходното изречение се извършва от служители на **ВЪЗЛОЖИТЕЛЯ**, притежаващи съответната техническа компетентност, и се удостоверява със съставянето на констативен протокол. При откриване на скрити недостатъци на доставената стока по реда на настоящата точка, същите се считат за гаранционни дефекти и **ИЗПЪЛНИТЕЛЯТ** е длъжен да ги отстрани в съответствие с гаранционните условия, при условие, че са спазени условията за съхранение на стоката.
(2) За гаранционни дефекти на стоката, освен скритите недостатъци по т. 6.5, ал. 1, се считат и всички дефекти на стоката, които са се проявили по време на експлоатацията ѝ и не са резултат от неправилни действия на **ВЪЗЛОЖИТЕЛЯ** и/или негови служители и са в рамките на гаранционния срок по т. 6.4.
(3) При констатиране на дефекти (неизправности) на стоката в рамките на гаранционния срок, **ВЪЗЛОЖИТЕЛЯТ** е длъжен да уведоми писмено **ИЗПЪЛНИТЕЛЯ** в 10 /десет/ дневен срок от откриването им. В писменото уведомление по предходното изречение **ВЪЗЛОЖИТЕЛЯТ** описва недостатъците (дефектите) на стоката и начинът за отстраняването им. **ИЗПЪЛНИТЕЛЯТ** е длъжен да прегледа уведомлението с констатациите на **ВЪЗЛОЖИТЕЛЯ** за недостатъци (дефекти) на стоката и да го уведоми писмено (по факс или на електронна поща) за това дали приема констатациите - съответно предложеният начин за отстраняване на недостатъците (дефектите) или не ги приема. **ИЗПЪЛНИТЕЛЯТ** следва да изпълни задължението си за уведомяване по предходното изречение в срок до 5 /пет/ работни дни от датата на получаване на уведомлението на **ВЪЗЛОЖИТЕЛЯ** за констатирания дефект на стоката в рамките на гаранционния срок. В случай, че **ИЗПЪЛНИТЕЛЯТ** не уведоми **ВЪЗЛОЖИТЕЛЯ** за решението си по отношение на предявената рекламация в срока по предходното изречение, се счита, че не я приема, вследствие на което **ВЪЗЛОЖИТЕЛЯТ** пристъпва към съставянето на констативен протокол. За съставянето и съдържанието на констативния протокол се прилагат съответно т. 5.2, ал. (2), (3), (4) и **(4).** При съставянето на констативния протокол страните отчитат уговореното в т. 6.6.
6.6. В рамките на гаранционния срок по т. 6.4, всички разходи по отстраняване на дефекти и/или замяна на стоката с нова, са за сметка на **ИЗПЪЛНИТЕЛЯ**.
6.7. Ако в рамките на гаранционния срок се констатират фабрични дефекти, които не могат да бъдат отстранени от **ИЗПЪЛНИТЕЛЯ** в срок до 15 /петнадесет/ календарни дни от датата, на която неизправната стока му е предадена за ремонт, **ИЗПЪЛНИТЕЛЯТ** е длъжен да замени дефектната стока с нова в срок до 1 (един) месец, считано от изтичането на 15-дневния срок за ремонт на стоката.

7. ОТГОВОРНОСТИ

7.1. При забава за изпълнение на задължения по този договор, с изключение на случаите по т. 8.1 на договора, **ИЗПЪЛНИТЕЛЯТ** дължи на **ВЪЗЛОЖИТЕЛЯ** неустойка в размер на 0,2% знав секи пълен ден забава, но не повече от 10% общо върху стойността на неизпълненото задължение.
7.2. За всеки отделен случай на неизпълнение на задълженията в рамките на гаранционния срок (с изключение на случаите по т. 8.1), **ИЗПЪЛНИТЕЛЯТ** дължи на **ВЪЗЛОЖИТЕЛЯ** неустойка, равна на 10% от стойността на реално доставената, но дефектна (неизправна) стока, по отношение на която е възникнало неизпълненото гаранционно задължение.
7.3. **ВЪЗЛОЖИТЕЛЯТ** има право да претендира неустойка в размер на 50% от стойността на гаранцията за изпълнение на договора, посочена в т. 6.1, в следните случаи:
(1) при прекратяване на договора по т. 9.1., ал. (2);
(2) при отказ на **ИЗПЪЛНИТЕЛЯ** да изпълни поръчка за доставка при условията на този договор;
(3) при прекратяване на договора по т. 9.1., ал. (3) и ал. (4).

7.4. При забава за плащане, **ВЪЗЛОЖИТЕЛЯТ** дължи на **ИЗПЪЛНИТЕЛЯ** обезщетение в размер на законната лихва за забава (равна на основния лихвен процент (ОЛП), обявен от БНБ, плюс 10%), начислена върху стойността на закъснялото плащане за периода на забавата, като стойността на обезщетението не може да бъде повече от 10% общо от стойността на забавеното плащане.

7.5. Неустойките по настоящия договор се заплащат в срок до 10 (десет) календарни дни, считано от датата на писмената претенция за тях от изправната до неизправната страна. **ВЪЗЛОЖИТЕЛЯТ** има право, ако в определения срок за плащане на дължимата неустойка **ИЗПЪЛНИТЕЛЯТ** не изпълни задължението си, да се удовлетвори за сумата на неустойката от гаранцията за изпълнение на договора в съответствие с 6.2 по-горе или да я прихване от следващо дължимо плащане по договора.

7.6. В случай, че не е уговорено друго, неустойките се начисляват върху стойността на закъснялото/неизпълнено задължение без ДДС.

7.7. В случаите, когато посочените по-горе неустойки не покриват действителния размер на претърпените от **ВЪЗЛОЖИТЕЛЯ** вреди, той може да търси от **ИЗПЪЛНИТЕЛЯ** по съдебен ред разликата до пълния размер на претърпените вреди и пропуснатите ползи.

7.8. В случай, че **ИЗПЪЛНИТЕЛЯТ** не изпълни задължението си да изпрати на **ВЪЗЛОЖИТЕЛЯ** оригинален екземпляр от договор за подизпълнение/допълнително споразумение към договор за подизпълнение по т. 4.10 и/или 4.14 от настоящия договор в срок до **три дни** от датата на сключване на договора, съответно споразумението към него, то той дължи на **ВЪЗЛОЖИТЕЛЯ** неустойка в размер на 2 000.00 лева.

7.9. При нарушаване на задължение по раздел 11 по-долу, виновната страна дължи на изправната страна неустойка за всеки конкретен случай на нарушение в размер на **50%** от гаранцията за изпълнение, заедно с обезщетяване на всички вреди над сумата на неустойката, настъпили вследствие нарушаване на задълженията по раздел 11 от договора.

8. НЕПРЕОДОЛИМА СИЛА ИЛИ НЕПРЕДВИДИМИ СЪБИТИЯ

8.1 В случаи на непреодолима сила по смисъла на чл. 306 от Търговския закон или на непредвидими събития и доколкото тези събития се отразяват върху изпълнението на задълженията на двете страни по договора, сроковете за изпълнение трябва да бъдат удължени за времето, през което е траела непреодолимата сила или непредвидимите събития. Страните се споразумяват за непредвидими събития да се считат издадени или изменени нормативни или ненормативни актове на държавни или общински органи, настъпили по време на изпълнение на договора, които се отразяват на изпълнението на задълженията, на която и да е от страните.

8.2 Двете страни трябва взаимно да се уведомяват писмено за началото и края на тези събития, както следва:

8.2.1. за непреодолимата сила известието трябва да бъде потвърдено от Търговската камара на страната, в която е настъпило, и да бъде изпратено на другата страна до 14 (четиринадесет) дни след започването му.

8.2.2. за непредвидимите събития – в 14-дневен срок от издаването или изменението на нормативен или ненормативн акт на държавен или общински орган.

8.3 В случай на непреодолима сила или непредвидимо събитие в страната на **ИЗПЪЛНИТЕЛЯ** и/или **ВЪЗЛОЖИТЕЛЯ** и ако то доведе до закъснение в изпълнението на задълженията на някоя от страните за повече от 1 (един) месец, всяка от страните има право да прекрати договора по т. 9.3.

9. РАЗВАЛЯНЕ И ПРЕКРАТЯВАНЕ НА ДОГОВОРА

9.1. ВЪЗЛОЖИТЕЛЯТ има право:

(1) да развали договора в случаите на т. 4.5. от договора;

(2) да прекрати договора с 10-дневно писмено предизвестие отправено до **ИЗПЪЛНИТЕЛЯ** при забава на **ИЗПЪЛНИТЕЛЯ** с повече от 30 дни, без да са налице обстоятелствата по т. 8.1, като в този случай **ВЪЗЛОЖИТЕЛЯТ** има право на неустойката по т. 7.3., ал. (1);

(3) да прекрати договора с 30-дневно писмено предизвестие до **ИЗПЪЛНИТЕЛЯ**, при повторна доставка на партида дефектна стока или на стока, неотговаряща на изискванията на **ВЪЗЛОЖИТЕЛЯ**, посочени в договора и в приложенията към него, когато това обстоятелство е установено по реда на точка 5.2. от настоящия договор, като в този случай **ИЗПЪЛНИТЕЛЯТ** дължи неустойката по т. 7.3., ал. (3). Настоящата клауза се прилага и в случаите, когато:

а) двете доставени партиди дефектна стока и/или стока, неотговаряща на изискванията на **ВЪЗЛОЖИТЕЛЯ**, не са поредни;

б) в рамките на срока на договора е установено един или повече пъти по реда на т. 6.5. и един или повече пъти по реда на т. 5.2. (кумулативно), че доставена стока е дефектна и/или не отговаря на изискванията на **ВЪЗЛОЖИТЕЛЯ**, посочени в договора и в приложенията към него.

(4) да прекрати договора без предизвестие, в случай, че по реда на т. 6.5 към **Изпълнителя** са отправяни три или повече претенции (които не е задължително да са последователни) за

гаранционни дефекти на доставената стока, дори същите да са били отстранени. В този случай **Изпълнителят** дължи неустойката по т. 7.3., ал. (3).

9.2. Настоящият договор може да се прекратява по взаимно писмено съгласие по всяко време, като двете страни уреждат взаимоотношенията си до момента на прекратяването.

9.3. В случаите на т. 8.3., всяка от страните има право да прекрати договора с 10-дневно писмено предизвестие до другата страна.

9.4. Договорът се прекратява и в следните случаи:

(1) по т. 2.3; и

(2) по т. 3.1.

9.5. Извън хипотезите по предходните точки, настоящият договор се прекратява или разваля и на следните основания:

(1) в изрично посочените случаи в рамковото споразумение, които не се съдържат в настоящия договор;

(2) на общо основание при условията и по реда на чл. 87 от Закона за задълженията и договорите (ЗЗД);

(3) при разваляне или прекратяване на рамковото споразумение, въз основа на което се сключва настоящия договор, като направените поръчки до момента на прекратяването съответно развалянето се довършват и заплащат при условията на договора.

10. РЕШАВАНЕ НА СПОРОВЕ

10.1. Всички спорове, възникнали във връзка с тълкуването и/или изпълнението на договора, се решават чрез преговори и постигане на взаимно изгодни договорености, материализирани в писмена форма за валидност.

10.2. Всички спорове, породени от този договор или отнасящи се до него, включително споровете, породени или отнасящи се до неговото тълкуване, недействителност, изпълнение или прекратяване, както и споровете за попълване празноти в него или приспособяването му към нововъзникнали обстоятелства, за които не е постигнато съгласие по реда на предходната точка, ще бъдат разрешавани по общия гражданскоправен ред, от компетентния съд в Република България със седалище в гр. София.

10.3. Отнасянето на спора за решаване от компетентния съд не ще се счита за причина за спирането на изпълнението на други задължения по настоящия договор, които нямат отношение към предмета на спора.

10.4. Решение от компетентен съд или изменение на законодателството, което прави някое от условията на този договор невалидно, недействително или неизпълнимо, ще се отнася само до това условие и няма да прави целия договор или някакво друго условие от него невалиден, недействителен или неизпълним и всички други условия на договора ще останат в пълна сила и ефект, така както са уговорени от страните. Страните поемат задължението да положат всички усилия, за да се договорят за заместващо условие на невалидното, недействителното или неизпълнимото условие с валидно, действително и изпълнимо условие, което най-близко отразява целта на невалидното, недействителното или неизпълнимото условие.

11. КОНФИДЕНЦИАЛНОСТ

11.1. Страните се задължават да пазят и да не допускат разпространяването на информацията определена за конфиденциална, получена от всяка от страните по повод сключването или по време на срока на действие на този договор, както и да използват тази информация единствено за целите на изпълнението. Страните ще считат за конфиденциална информацията съдържаща се в договора и информацията във връзка с начина на изпълнението му, както и всяка информация която се съдържа на хартиен или магнитен носител и е създадена или предоставена на някоя от страните във връзка с изпълнението на договора. Конфиденциална е и всяка информация, която е станала достъпна на някоя от страните по повод изпълнението на договора и която представлява ноу-хау, схеми на складове съответно схеми за достъп и охрана или фирмена тайна на другата страна, или която е определена изрично при предоставянето ѝ от съответната страна за конфиденциална. Конфиденциална е и информацията свързана с лични данни, станали известни на някоя от страните във връзка със сключването или изпълнението на договора.

11.2. Страните се съгласяват, че въпреки прекратяването на този договор поради каквато и да е причина, клаузите свързани с конфиденциалност, ще са в сила и задълженията във връзка с тях ще бъдат валидни за период от 2 (две) години след прекратяване на договора.

11.3. Клаузите за конфиденциалност не се прилагат когато някоя от страните е длъжна да предостави информация по договора на компетентен държавен орган, който е поискал тази информация във връзка с правомощията му по закон. При предоставяне на информация по тази точка, страната която я дава е длъжна незабавно да уведоми писмено другата страна.

12. ЗАКЛЮЧИТЕЛНИ РАЗПОРЕДБИ

12.1. Договорът влиза в сила считано от датата на подписването му от страните.

12.2. (1) При празноти в настоящия конкретен договор, сключен въз основа на рамково споразумение, субсидиарно ще се прилага уговореното в рамковото споразумение, доколкото то не противоречи на смисъла и съдържанието на настоящия конкретния договор.
(2) При противоречие на уговореното в рамковото споразумение и приложенията към него с уговореното в конкретния договор (и приложенията към него), сключен въз основа на настоящото рамково споразумение, с предимство ще се ползва и прилага уговореното в настоящия конкретен договор за обществена поръчка.
12.3. По отношение на този договор и за неуредените в него въпроси е приложимо действащото в Република България законодателство.
12.4. Всички съобщения и уведомления на страните по настоящия договор ще се извършват само в писмена форма, като условие за действителност. Тази форма ще се счита за спазена, ако съобщението е изпратено по e-mail или факс, доколкото съществува техническа възможност за установяване на момента на получаване на съобщението/уведомлението чрез генериране на известие за доставяне от техническото средство на изпращане..
12.5. (1) При преобразуване на изпълнителя в съответствие със законодателството на държавата, в която е установен, настоящият договор остава в сила, ако са налице едновременно следните условия:
1. Правоприемникът сключи договор за продължаване на настоящия договор за изпълнение;
2. Договорът за продължаване не променя настоящия договор за изпълнение;
3. Правоприемникът отговаря на условията на чл. 43, ал. 7 изречение второ от ЗОП.
(2) Ако правоприемникът не отговаря на предходната ал. 1, т. 3, настоящият договор се прекратява по право, като **ИЗПЪЛНИТЕЛЯТ**, съответно правоприемникът дължи обезщетение по общия исков ред.
12.6. Неразделна част от настоящия договор са следните приложения:
Приложение 1: Стока и цени;
Приложение 2: Количества със срокове за доставка и опаковка */определят се в последваща процедура на договаряне без обявление/*;
Приложение 3: Образец на приемно-предавателен протокол */определят се в последваща процедура на договаряне без обявление/*;
Приложение 4: Образец на опаковъчен лист */определят се в последваща процедура на договаряне без обявление/*;
Приложение 5: Придружаващи доставката документи */определят се в последваща процедура на договаряне без обявление/*;

Договорът е изготвен в два еднообразни екземпляра на български език – по един за всяка от страните, които след като се запознаха със съдържанието му и го приеха го подписаха, както следва:

ВЪЗЛОЖИТЕЛ :

ИЗПЪЛНИТЕЛ:

София 1528, България
ул.Поручик Недялко Бончев №10
Склад 27

Тел: 02/ 411 25 04
тел./факс: 02/ 852 80 01
e-mail: pm@pmelectrical.bg

ПМ Електрикал ЕООД

До: **ЧЕЗ Разпределение България АД**

Относно: **Участие в открита процедура за сключване на рамково споразумение за възлагане на обществени поръчки с предмет:**

„Доставка на еднополюсни и триполюсни миниатюрни автоматични прекъсвачи“

Реф. № PPD 15-032

ПРЕДЛОЖЕНИЕ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

ОТ:

ПМ Електрикал ЕООД

София 1528, България
ул Поручик Неделчо Бончев №10
Склад 27

Тел: 02/ 411 25 04
тел./факс: 02/ 852 80 01
e-mail: pm@pmelectrical.bg

ТЕХНИЧЕСКО ПРЕДЛОЖЕНИЕ

ДО: "ЧЕЗ РАЗПРЕДЕЛЕНИЕ БЪЛГАРИЯ" АД – *гр. София, ул. „Цар Симеон" № 330*

ОТ : **ПМ Електрикал ЕООД – гр. София**

Адрес по регистрация: гр. София 1463, ул.Цар Асен, № 44
Адрес за кореспонденция: гр. София 1528, ул. Поручик Неделчо Бончев, № 10, склад 27
тел.: 02 / 411 25 01 факс: 02/ 852 80 01; e-mail: pm@pmelectrical.bg
Единен идентификационен код: 201257416,
Представлявано от Мария Василева Колева – Христова – Управител
Упълномощен представител за тази процедура (*ако е предвидено*) .....
с приложено пълномощно № ....., дата ....., Тел.: ....., Факс: ....., e-mail: .....
Банка: Юробанк България АД IBAN: BG88BPBI79401066836901, BIC: BPBIBGS (*за връщане на гаранцията за участие, ако е парична сума*)

УВАЖАЕМИ ГОСПОДА,

1. Запознат съм и приемам изискванията на Възложителя, като представям техническите спецификации от раздел IV на документацията с попълнени всички изисквани стойности за всички позиции от стоката по предмета на поръчката.
2. Представям всички изисквани данни и документи, посочени в Приложение 2 от настоящото техническо предложение. Запознат съм с изискването, че представените документи трябва да бъдат на български език или с превод на български език, придружени с оригиналните документи, с изключение на каталозите и протоколите от типовите изпитвания, които могат да се представят и само на английски език.
3. Запознат съм, че представените от нас технически документи (протоколи от изпитания, каталози и др.) са доказателство за декларираните от мен технически данни и параметри в техническите спецификации на стоката и оценката ще се извърши по стойности от протоколите от изпитания за съответните характеристики на стоката, посочени в методиката за оценка – Раздел XI от документацията за участие.
4. Потвърждавам, че представяните от нас стоки, описани в Техническото ни предложение, ще отговарят на посочените от възложителя стандарти или на еквивалентни. В случай, че даден материал отговаря на стандарт, еквивалентен на посочения, се задължаваме да го отразим в отделен документ и да представим доказателства за еквивалентността на двата стандарта.
5. Всички стойности, попълнени в колона **„Гарантирано предложение"** на приложените таблици от Технически спецификации от раздел IV от документацията за участие са точни и истински.
6. Предлагам гаранционен срок за предлаганите стоки – 24 /двадесет и четири/ месеца */не по-малко от 24 месеца/*, от датата на приемно – предавателен протокол за получаване на стоката от Възложителя.
7. Запознат съм, че видовете стоки и ориентировъчни количества за доставка ще бъдат посочени от Възложителя при провеждане на процедура на договаряне без обявление.
8. Запознат съм, че в процедурата на договаряне без обявление, изборът на изпълнител ще бъде направен по критерий "най-ниска цена".
9. Приемем, че в срок до .....(*не повече от 10 дни*) от датата на подписване на договор с възложителя, ще сключа договор с посочения/те в офертата подизпълнител/и (*попълва се, ако участникът е декларирал, че ще използва подизпълнител/и*).
10. Запознат съм, че максималният срок за изпълнение на конкретен договор ще бъде определен от Възложителя в поканата за договаряне.

Приложения:

1. Технически изисквания и спецификации за изпълнение на поръчката – раздел IV от документацията за участие – попълнени на съответните места;
2. Изисквани документи от Технически изисквания и спецификации;

Мария Колева – Христова
Управител
ПОДПИС И ПЕЧАТ:

IV.ТЕХНИЧЕСКИ ИЗИСКВАНИЯ И СПЕЦИФИКАЦИИ ЗА ИЗПЪЛНЕНИЕ НА ПОРЪЧКАТА

Наименование на материала: Еднополюсни и триполюсни миниатюрни автоматични прекъсвачи до 63 А, 10 kA, широчина на полюс 18 mm
Кратко наименование на материала: Мин.авт.прек.до 63А, шир. 18
Област: G – Инсталации **Категория:** 17–Комутационни апарати НН (Електромерни табла)

Мерна единица: Брой **Аварийни запаси:** Да
Характеристика на материала:
Миниатюрните автоматични прекъсвачи представляват механични комутационни апарати, 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 токове във вериги при условията на претоварване и късо съединение.
Тялото на миниатюрните автоматични прекъсвачи е изработено чрез формоване на устойчив на нагряване, на огън и на механични удари изолационен материал с максимална широчина на един полюс 18 mm. В монтирано състояние съгласно инструкциите на производителя и след опроводяване активните части на миниатюрните прекъсвачи не са достъпни.
Средството (лостът) за управление при вертикално монтиране на миниатюрните автоматични прекъсвачи се движи в направление „нагоре – надолу", при което контактите се затварят при движение „нагоре". Миниатюрните прекъсвачи са снабдени с ясно видимо от челната страна средство за указване на затвореното и отвореното положение на контактната система.
Стойностите на прегряването на частите на миниатюрните прекъсвачи при нормален работен режим при температура до 40°C не трябва да надвишават посочените в таблица 6 от БДС EN 60898-1:2006 стойности.
Изолационните разстояния през въздуха и изолационните разстояния по повърхността на изолацията не трябва да бъдат по-малки от посочените в таблица 4 на БДС EN 60898-1:2006 стойности. За свързване на проводниците от външната верига се използват винтови клеми с притискаща пластина с обхват на номиналните напречни сечения на проводниците съгласно таблица 5 на БДС EN 60898. Конструкцията на винтовите клеми трябва да позволява лесно въвеждане на проводниците, при което не се освобождават напълно съставните им части, както и лесно освобождаване на проводниците в експлоатационни условия.
Миниатюрните прекъсвачи конструктивно са приспособени за закрепване на монтажна шина с DIN – профил с размери 35x7,5 mm съгласно БДС EN 60715:2003 "Размери на комутационни апарати за ниско напрежение. Стандартизирано монтиране върху релси за механична опора на електрически устройства в уредби с комутационни апарати за ниско напрежение (IEC 60715:1981 +A1:1995) или еквивалентно.
Миниатюрните прекъсвачи са маркирани с информацията съгласно т. 6 от БДС EN 60898-1:2006 и CE маркировка за съответствие.
Миниатюрните прекъсвачи са пакетирани в картонени кутии, на които е залепен етикет с наименование на материала „Миниатюрни автоматични прекъсвачи", техническите данни и броя на миниатюрните прекъсвачи, годината на производство, партидните номера и стандарта, в съответствие, с който са произведени и изпитани - БДС EN 60898-1:2006.
Използване:
Миниатюрните автоматични прекъсвачи са предназначени за монтиране в електромерни табла за директно измерване на електрическата енергия и се използват за защита срещу свръхтокове на вериги, захранващи битови и други подобни уреди.

Съответствие на предлаганото изпълнение с нормативно-техническите документи:
Миниатюрните автоматични прекъсвачи трябва да отговарят на посочените по-долу стандарти или еквиваленти, включително на техните валидни изменения и допълнения:

- БДС EN 60898-1:2006 „Автоматични прекъсвачи за защита срещу свръхтокове на битови и други подобни уредби. Част 1 Автоматични прекъсвачи за работа с променливо напрежение (IEC 60898-1:2002, с промени)" и на неговите валидни изменения и допълнения;
- БДС EN 60898-1:2003/A1:2006 „Автоматични прекъсвачи за защита срещу свръхтокове на битови и други подобни уредби. Част 1 Автоматични прекъсвачи за работа с променливо напрежение (IEC 60898-1:2003/A1:2003)";
- БДС EN 60898-1:2003/A11:2006 „Автоматични прекъсвачи за защита срещу свръхтокове на битови и други подобни уредби. Част 1 Автоматични прекъсвачи за работа с променливо напрежение";

- **БДС EN 60947-2:2006** „Комутационни апарати за ниско напрежение. Част 2: Автоматични прекъсвачи (IEC 60947-2:2006)" и на неговите валидни изменения и допълнения при запазване на времетоковите характеристики на задействане съгласно БДС EN 60898-1:2006 и осигуряване на еквивалентни или по-високи технически параметри, включително гранични и работни изключвателни възможности при късо съединение;
- **БДС EN 60947-2:2006/A1:2009** „Комутационни апарати за ниско напрежение. Част 2: Автоматични прекъсвачи"; 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. .....

Изискване към документацията и изпитванията

№ по ред	Документ	Приложение № или текст
1.	Точно означение на типа, производителя и страната на производство (произход) и последно издание на каталога на производителя	**GACIA PB8H** GACIA ELECTRICAL APPLIANCE CO., LTD., Китай *Приложение No 1*
2.	Техническо описание и чертежи с нанесени на тях размери	*ДА Приложение No 1*
3.	ЕО декларация за съответствие	*ДА Приложение No 2*
4.	Протоколи от типови изпитвания на английски или български език, проведени от независима изпитвателна лаборатория – заверени копия, с приложен списък на отделните изпитвания на български език	*ДА Приложение No 3*
5.	Сертификат/акредитация на независимата изпитвателна лаборатория, провела типовите изпитвания по т. 4 – заверено копие	*ДА Приложение No 4*
6.	Инструкции за транспортиране, складиране, монтиране, вкл. въртящия момент на затягане на клемовите съединения, обслужване и поддържане	*ДА Приложение No 5*

Забележка: Всички оригинални документи трябва да бъдат на български език или с превод на български език. Каталозите и изпитвателните протоколи могат да бъдат и само на английски език.

Технически данни

1. Работна среда

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

2. Параметри на електроразпределителната мрежа НН

№ по ред	Наименование	Стойност
2.1	Номинално напрежение	400 / 230 V
2.2	Максимално напрежение	440 / 253 V
2.3	Номинална честота	50 Hz
2.4	Брой проводници в разпределителната мрежа	4 проводна мрежа

№ по ред	Наименование	Стойност
		(L_1, L_2, L_3, PEN)
2.5	Схема на разпределителната мрежа	TN-C

3. Технически параметри и други данни

№ по ред	Характеристика	Изискване	Гарантирано предложение
3.1	Тип на времетоковата характеристика на задействане	C	C
3.2	Обявено работно напрежение (U_e)	-	-
3.2.1	Еднополюсни прекъсвачи	230/400 V	230/400 V
3.2.2	Триполюсни прекъсвачи	400 V	400 V
3.3	Обявена честота (f_n)	50 Hz	50 Hz
3.4	Обявено напрежение на изолацията (U_i)	min 440 V	500 V
3.5	Обявено издържано импулсно напрежение (U_{imp})	min 6 kV	6 kV
3.6	Категория по пренапрежение	IV	IV
3.7	Обявена комутационна възможност при късо съединение (I_{cn})	min 10 kA	10 kA
3.8	Степен на защита от проникване на твърди тела и вода	min IP20	IP20
3.9	Износоустойчивост	-	-
3.9.1	Електрическа (брой к.ц.)	min 4000 бр.	4000 бр.
3.9.2	Механична (брой к.ц.)	Да се посочи	10000 бр.
3.10	Монтажна ширина на един полюс	max 18 mm	17.5 mm
3.11	Конструкция	Тялото на автомат. прекъсвачи е съоръжено с вход за присъединяване на фазовите захранващи проводници и отделен вход за присъединяване на размнож. гребен. Конструкцията на клемите за присъединяване на размножителния гребен към еднополюсните и триполюсните автомат. прекъсвачи трябва да бъде идентична, като при монтаж върху DIN - шина не трябва да създава предпоставки за влошаване на електрическите контакти.	Тялото на автомат. прекъсвачи е съоръжено с вход за присъединяване на фазовите захранващи проводници и отделен вход за присъединяване на размнож. гребен. Конструкцията на клемите за присъединяване на размножителния гребен към еднополюсните и триполюсните автомат. прекъсвачи е идентична, като при монтаж върху DIN - шина не създава предпоставки за влошаване на електрическите контакти.
3.12	Експлоатационна дълготрайност	min 30 години	30 години

4. Миниатюрни автоматични прекъсвачи до 63 A / 10 kA – разсейвана мощност на полюс и тегло

№ на стандарта	Брой на полюсите	Съкратено наименование	Обявен ток, A	Максимална разсейвана мощност, W		Тегло g
				Изискване	Гарант. предложение	
20 17 1801	1	Мин.авт.прек.до 63A, шир. 18,1P 4A	4	3	1,8	90

№ на стандарта	Брой на полюсите	Съкратено наименование	Обявен ток, A	Максимална разсейвана мощност, W		Тегло g
				Изискване	Гарант. Предложение	
20 17 1802	1	Мин.авт.прек.до 63A, шир. 18,1P 6A	6	3	1.8	90
20 17 1803	1	Мин.авт.прек.до 63A, шир. 18,1P 10A	10	3	1.8	90
20 17 1804	1	Мин.авт.прек.до 63A, шир. 18,1P 16A	16	3,5	2	90
20 17 1805	1	Мин.авт.прек.до 63A, шир. 18,1P 20A	20	4.5	2.5	90
20 17 1806	1	Мин.авт.прек.до 63A, шир. 18,1P 25A	25	4.5	2.5	90
20 17 1807	1	Мин.авт.прек.до 63A, шир. 18,1P 32A	32	6	3.2	90
20 17 1808	1	Мин.авт.прек.до 63A, шир. 18,1P 40A	40	7.5	4	90
20 17 1809	1	Мин.авт.прек.до 63A, шир. 18,1P 50A	50	9	4.5	90
20 17 1810	1	Мин.авт.прек.до 63A, шир. 18,1P 63A	63	13	6.5	90
20 17 1811	3	Мин.авт.прек.до 63A, шир. 18,3P 4A	4	3	1.8	290
20 17 1812	3	Мин.авт.прек.до 63A, шир. 18,3P 6A	6	3	1.8	290
20 17 1813	3	Мин.авт.прек.до 63A, шир. 18,3P 10A	10	3	1.8	290
20 17 1814	3	Мин.авт.прек.до 63A, шир. 18,3P 16A	16	3,5	2	290
20 17 1815	3	Мин.авт.прек.до 63A, шир. 18,3P 20A	20	4.5	2.5	290
20 17 1816	3	Мин.авт.прек.до 63A, шир. 18,3P 25A	25	4.5	2.5	290
20 17 1817	3	Мин.авт.прек.до 63A, шир. 18,3P 32A	32	6	3.2	290
20 17 1818	3	Мин.авт.прек.до 63A, шир. 18,3P 40A	40	7.5	4	290
20 17 1819	3	Мин.авт.прек.до 63A, шир. 18,3P 50A	50	9	4.5	290
20 17 1820	3	Мин.авт.прек.до 63A, шир. 18,3P 63A	63	13	6.5	290

Наименование на материала: Еднополюсни и триполюсни миниатюрни автоматични прекъсвачи до 125 A, 10 kA, широчина на полюс 27 mm

Кратко наименование на материала: Мин.авт.прек. до 125A, шир. 27

Област: G – Инсталации (Електромерни табла)

Категория: 17– Комутационни апарати НН

Мерна единица: Брой

Аварийни запаси: Да

Характеристика на материала:
Миниатюрните автоматични прекъсвачи представляват механични комутационни апарати, 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 токове във вериги при условията на претоварване и късо съединение.
Тялото на миниатюрните автоматични прекъсвачи е изработено чрез формоване на устойчив на нагряване, на огън и на механични удари изолационен материал с максимална широчина на един полюс 27 mm. В монтирано състояние съгласно инструкциите на производителя и след опроводяване активните части на миниатюрните прекъсвачи не са достъпни.
Средството (лостът) за управление при вертикално монтиране на миниатюрните автоматични прекъсвачи се движи в направление „нагоре – надолу", при което контактите се затварят при движение „нагоре". Миниатюрните прекъсвачи са снабдени с ясно видимо от челната страна средство за указване на затвореното и отвореното положение на контактната система.
Стойностите на прегряването на частите на миниатюрните прекъсвачи при нормален работен режим при температура до 40°C не трябва да надвишават посочените в таблица 6 от БДС EN 60898-1:2006 стойности.
Изолационните разстояния през въздуха и изолационните разстояния по повърхността на изолацията не трябва да бъдат по-малки от посочените в таблица 4 на БДС EN 60898-1:2006 стойности. За свързване на проводниците от външната верига се използват винтови клеми с притискаща пластина с обхват на номиналните напречни сечения на проводниците съгласно таблица 5 на БДС EN 60898-1:2006. Конструкцията на винтовите клеми трябва да позволява

лесно въвеждане на проводниците, при което не се освобождават напълно съставните им части, както и лесно освобождаване на проводниците в експлоатационни условия.
Миниатюрните прекъсвачи конструктивно са приспособени за закрепване на монтажна шина с DIN – профил с размери 35x7,5 mm съгласно БДС EN 60715:2003 "Размери на комутационни апарати за ниско напрежение. Стандартизирано монтиране върху релси за механична опора на електрически устройства в уредби с комутационни апарати за ниско напрежение (IEC 60715:1981 +A1:1995) или еквивалентно.
Миниатюрните прекъсвачи са маркирани с информацията съгласно т. 6 от БДС EN 60898-1:2006 и CE маркировка за съответствие.
Миниатюрните прекъсвачи са пакетирани в картонени кутии, на които е залепен етикет с наименование на материала „Миниатюрни автоматични прекъсвачи", техническите данни и броя на миниатюрните прекъсвачи, годината на производство, партидните номера и стандарта, в съответствие, с който са произведени и изпитани - БДС EN 60898-1:2006.

Използване:
Миниатюрните автоматични прекъсвачи са предназначени за монтиране в електромерни табла за директно измерване на електрическата енергия и се използват за защита срещу свръхтокове на вериги, захранващи битови и други подобни уреди.

Съответствие на предлаганото изпълнение с нормативно-техническите документи:
Миниатюрните автоматични прекъсвачи трябва да отговарят на следните приложимите български и международни стандарти и нормативно-технически документи и на техните валидни изменения и поправки или еквиваленти:

- БДС EN 60898-1:2006 „Автоматични прекъсвачи за защита срещу свръхтокове на битови и други подобни уредби. Част 1 Автоматични прекъсвачи за работа с променливо напрежение (IEC 60898-1:2002, с промени)" и на неговите валидни изменения и допълнения
- БДС EN 60898-1:2003/A1:2006 „Автоматични прекъсвачи за защита срещу свръхтокове на битови и други подобни уредби. Част 1 Автоматични прекъсвачи за работа с променливо напрежение (IEC 60898-1:2003/A1:2003)"
- БДС EN 60898-1:2003/A11:2006 „Автоматични прекъсвачи за защита срещу свръхтокове на битови и други подобни уредби. Част 1 Автоматични прекъсвачи за работа с променливо напрежение"

или

- БДС EN 60947-2:2006 „Комутационни апарати за ниско напрежение. Част 2: Автоматични прекъсвачи (IEC 60947-2:2006)" и на неговите валидни изменения и допълнения при запазване на времетоковите характеристики на задействане съгласно БДС EN 60898-1:2006 и осигуряване на еквивалентни или по-високи технически параметри, включително гранични и работни изключвателни възможности при късо съединение
- БДС EN 60947-2:2006/A1:2009 „Комутационни апарати за ниско напрежение. Част 2: Автоматични прекъсвачи"

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. .....

Изискване към документацията и изпитванията

№ по ред	Документ	Приложение № или текст
1.	Точно означение на типа, производителя и страната на производство (произход) и последно издание на каталога на производителя	GACIA N8GH GACIA ELECTRICAL APPLIANCE CO.,LTD., Китай *Приложение No 1*
2.	Техническо описание и чертежи с нанесени на тях размери	*ДА* *Приложение No 1*

№ по ред	Документ	Приложение № или текст
3.	ЕО декларация за съответствие	*ДА Приложение No 2*
4.	Протоколи от типови изпитвания на английски или български език, проведени от независима изпитвателна лаборатория – заверени копия, с приложен списък на отделните изпитвания на български език	*ДА Приложение No 3*
5.	Сертификат/акредитация на независимата изпитвателна лаборатория, провела типовите изпитвания по т. 4 – заверено копие	*ДА Приложение No 4*
6.	Инструкции за транспортиране, складиране, монтиране, вкл. въртящия момент на затягане на клемовите съединения, обслужване и поддържане	*ДА Приложение No 5*

Технически данни

1. Работна среда:

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

2. Параметри на електроразпределителната мрежа НН:

№ поред	Наименование	Стойност
2.1	Номинално напрежение	400 / 230 V
2.2	Максимално напрежение	440 / 253 V
2.3	Номинална честота	50 Hz
2.4	Брой проводници в разпределителната мрежа	4 проводна мрежа (L_1, L_2, L_3, PEN)
2.5	Схема на разпределителната мрежа	TN-C

3. Технически параметри и други данни

№ по ред	Характеристика	Изискване	Гарантирано предложение
3.1	Тип на времетоковата характеристика на задействане	C	C
3.2	Обявено работно напрежение (U_e)	-	-
3.2.1	Еднополюсни прекъсвачи	230/400 V	230/400 V
3.2.2	Триполюсни прекъсвачи	400 V	400 V
3.3	Обявена честота (f_n)	50 Hz	50 Hz

№ по ред	Характеристика	Изискване	Гарантирано предложение
3.4	Обявено напрежение на изолацията (U_i)	min. 440 V	500 V
3.5	Обявено издържано импулсно напрежение (U_{imp})	min 6 kV	6 kV
3.6	Категория по пренапрежение	IV	IV
3.7	Обявена комутационна възможност при късо съединение (I_{cn})	min 10 kA	15 kA
3.8	Степен на защита от проникване на твърди тела и вода	min IP20	IP20
3.9	Износоустойчивост	-	-
3.9.1	Електрическа (брой к.ц.)	min 4000 бр.	10000 бр.
3.9.2	Механична (брой к.ц.)	Да се посочи	20000 бр.
3.10	Монтажна ширина на един полюс	max 27 mm	27 mm
3.11	Експлоатационна дълготрайност	min 30 години	30 години

4. Миниатюрните автоматични прекъсвачи 125 A / 10 kA – разсейвана мощност на полюс и тегло

№ на стандарта	Брой на полюсите	Съкратено наименование	Обявен ток, A	Максимална разсейвана мощност, W	Тегло, g
20 17 2710	3	Мин.авт.прек. до 125A, шир. 27,3P 80A	80	9	540
20 17 2711	3	Мин.авт.прек. до 125A, шир. 27,3P 100A	100	11	540
20 17 2712	3	Мин.авт.прек. до 125A, шир. 27, шир. 27,3P 125A	125	13	540

София 1528, България
ул.Поручик Недялко Бончев №10
ет.1 оф.2

Тел: 02/ 411 25 04
тел./факс: 02/ 852 80 01
e-mail: pm@pmelectrical.bg

ПМ Електрикал ЕООД

Приложение 1

GACIA

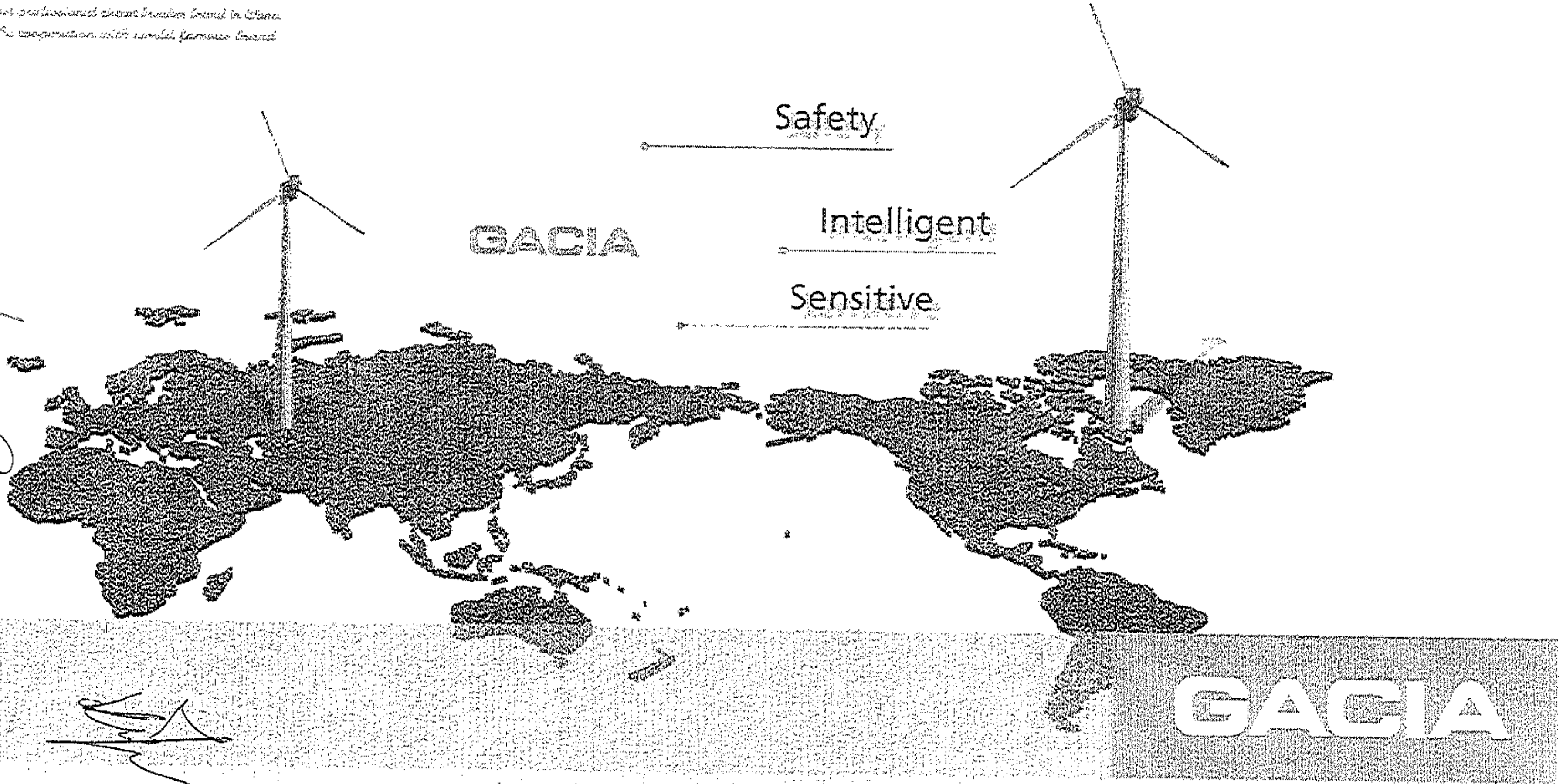
GACIA ELECTRICAL APPLIANCE CO.,LTD.

GACIA

P SERIES TERMINAL ELECTRIC

We produce circuit breaker only

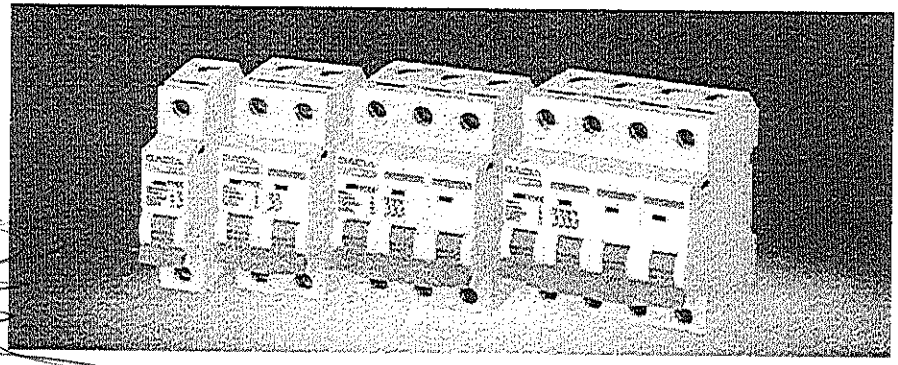
We produce circuit breaker only



ISO9001 ISO14001 OHSAS18001 SA8000

CB RoHS

GACIA
More Professional
Safer
More Sensitive
More Intelligent
Higher Cost-Performance

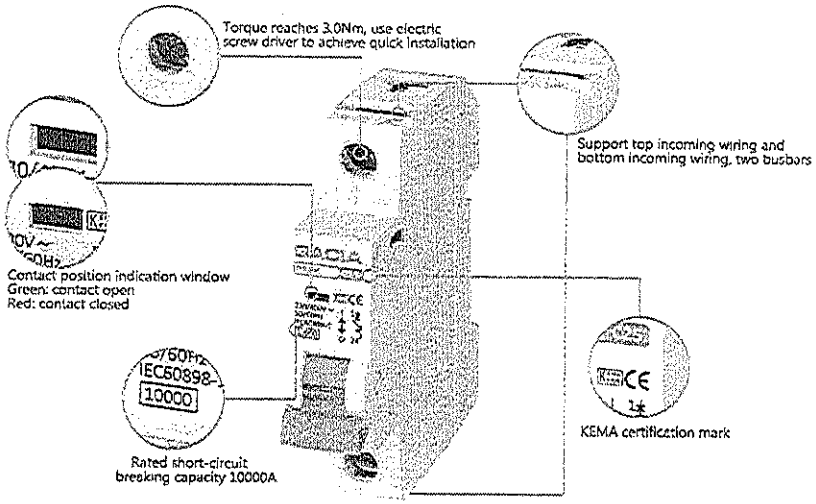


PB8H MCB has the following functions:

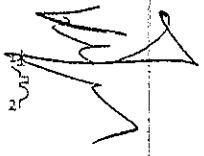
- Short-circuit protection
- Isolation function
- Indication function of contact position
- Support 35mm Din-rail installation
- Overload protection
- Close quickly
- Quick wiring function of busbar
- Support top incoming and bottom outgoing wiring type, or bottom incoming and top outgoing wiring type
- Able to select electrical accessories and achieve distant indication of MCB condition: breaking, closed, and fault tripping.
- Able to select electrical accessories and realize under-voltage and over-voltage protection of MCB and distant shunt release.

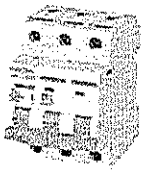
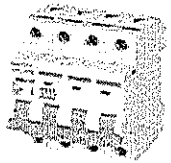
P Series Terminal Electric
IEC/EN 60898-1 Icn=10kA

PB8H MCB



PB8H MCB Order Code

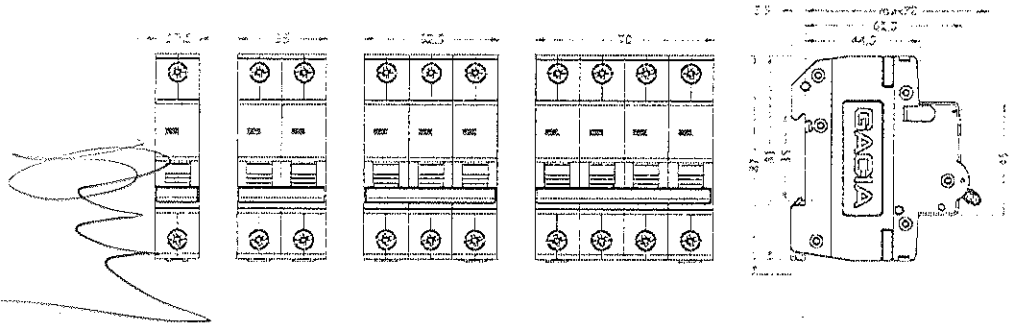



Poles	1P			2P			3P			4P		
In	Curve B	Curve C	Curve D	Curve B	Curve C	Curve D	Curve B	Curve C	Curve D	Curve B	Curve C	Curve D
1A	PB8H-1B1	PB8H-1C1	PB8H-1D1	PB8H-2B1	PB8H-2C1	PB8H-2D1	PB8H-3B1	PB8H-3C1	PB8H-3D1	PB8H-4B1	PB8H-4C1	PB8H-4D1
2A	PB8H-1B2	PB8H-1C2	PB8H-1D2	PB8H-2B2	PB8H-2C2	PB8H-2D2	PB8H-3B2	PB8H-3C2	PB8H-3D2	PB8H-4B2	PB8H-4C2	PB8H-4D2
3A	PB8H-1B3	PB8H-1C3	PB8H-1D3	PB8H-2B3	PB8H-2C3	PB8H-2D3	PB8H-3B3	PB8H-3C3	PB8H-3D3	PB8H-4B3	PB8H-4C3	PB8H-4D3
4A	PB8H-1B4	PB8H-1C4	PB8H-1D4	PB8H-2B4	PB8H-2C4	PB8H-2D4	PB8H-3B4	PB8H-3C4	PB8H-3D4	PB8H-4B4	PB8H-4C4	PB8H-4D4
6A	PB8H-1B6	PB8H-1C6	PB8H-1D6	PB8H-2B6	PB8H-2C6	PB8H-2D6	PB8H-3B6	PB8H-3C6	PB8H-3D6	PB8H-4B6	PB8H-4C6	PB8H-4D6
10A	PB8H-1B10	PB8H-1C10	PB8H-1D10	PB8H-2B10	PB8H-2C10	PB8H-2D10	PB8H-3B10	PB8H-3C10	PB8H-3D10	PB8H-4B10	PB8H-4C10	PB8H-4D10
16A	PB8H-1B16	PB8H-1C16	PB8H-1D16	PB8H-2B16	PB8H-2C16	PB8H-2D16	PB8H-3B16	PB8H-3C16	PB8H-3D16	PB8H-4B16	PB8H-4C16	PB8H-4D16
20A	PB8H-1B20	PB8H-1C20	PB8H-1D20	PB8H-2B20	PB8H-2C20	PB8H-2D20	PB8H-3B20	PB8H-3C20	PB8H-3D20	PB8H-4B20	PB8H-4C20	PB8H-4D20
25A	PB8H-1B25	PB8H-1C25	PB8H-1D25	PB8H-2B25	PB8H-2C25	PB8H-2D25	PB8H-3B25	PB8H-3C25	PB8H-3D25	PB8H-4B25	PB8H-4C25	PB8H-4D25
32A	PB8H-1B32	PB8H-1C32	PB8H-1D32	PB8H-2B32	PB8H-2C32	PB8H-2D32	PB8H-3B32	PB8H-3C32	PB8H-3D32	PB8H-4B32	PB8H-4C32	PB8H-4D32
40A	PB8H-1B40	PB8H-1C40	PB8H-1D40	PB8H-2B40	PB8H-2C40	PB8H-2D40	PB8H-3B40	PB8H-3C40	PB8H-3D40	PB8H-4B40	PB8H-4C40	PB8H-4D40
50A	PB8H-1B50	PB8H-1C50	PB8H-1D50	PB8H-2B50	PB8H-2C50	PB8H-2D50	PB8H-3B50	PB8H-3C50	PB8H-3D50	PB8H-4B50	PB8H-4C50	PB8H-4D50
63A	PB8H-1B63	PB8H-1C63	PB8H-1D63	PB8H-2B63	PB8H-2C63	PB8H-2D63	PB8H-3B63	PB8H-3C63	PB8H-3D63	PB8H-4B63	PB8H-4C63	PB8H-4D63

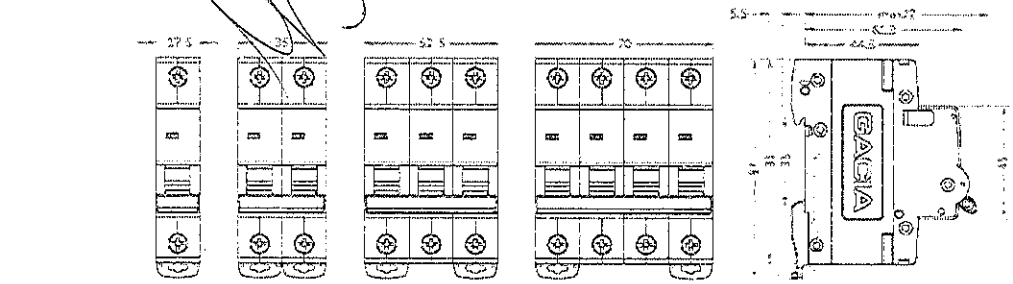
P Series Terminal Electric

Model		PB8N	PB8H	PB8NN	PB8HN	PB3N2	PB8H2	PN8N	PN8H
									
Product Standard		IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60898-1
Certification		KEMA CE	KEMA CE	KEMA CE	KEMA CE	KEMA CE	KEMA CE	KEMA CE	KEMA CE
Electrical Features									
Poles		1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P+N	1P+N
Thermo-magnetic Tripping Characteristic		B, C, D	B, C, D	B, C, D	B, C, D	B, C, D	B, C, D	B, C, D	B, C, D
Rated Current	In	1-63A	1-63A	1-63A	1-63A	1-63A	1-63A	1-40A	1-40A
Rated Voltage	Ue	1P:230/400V~, 2/3/4P:400V~	1P:230/400V~, 2/3/4P:400V~	1P:230/400V~, 2/3/4P:400V~	1P:230/400V~, 2/3/4P:400V~	1P:230/400V~, 2/3/4P:400V~	1P:230/400V~, 2/3/4P:400V~	230V~	230V~
Insulation Voltage	Ui	500V	500V	500V	500V	500V	500V	400V	400V
Maximum Working Voltage	Umax	440V	440V	440V	440V	440V	440V	240V	240V
Minimum Working Voltage	Umin	12V	12V	12V	12V	12V	12V	-	-
Rated Impulse Withstand Voltage	Uimp	6kV	6kV	6kV	6kV	6kV	6kV	4kV	4kV
Rated Frequency		50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Rated Short Circuit Breaking Capacity	Icn	6kA	10kA	6kA	10kA	6kA	10kA	4.5kA	6kA
Electrical Life		4000	4000	4000	4000	4000	4000	4000	4000
Mechanical Life		10000	10000	10000	10000	10000	10000	10000	10000
Contact Position Indicator		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Installation									
Protection Degree	MCB Body	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20
Protection Degree	Installed in Distribution Box	IP40	IP40	IP40	IP40	IP40	IP40	IP40	IP40
Ambient Temperature(With Daily Average≤35℃)		-5~+40℃	-5~+40℃	-5~+40℃	-5~+40℃	-5~+40℃	-5~+40℃	-5~+40℃	-5~+40℃
Storage Temperature		-25~+70℃	-25~+70℃	-25~+70℃	-25~+70℃	-25~+70℃	-25~+70℃	-25~+70℃	-25~+70℃
Terminal Connection Type		Cable/Busbar	Cable/Busbar	Cable/Busbar	Cable/Busbar	Cable/Busbar	Cable/Busbar	Cable	Cable
Terminal Size Top/bottom for Cable		35mm^2	35mm^2	35mm^2	35mm^2	35mm^2	35mm^2	16mm^2	16mm^2
Terminal Size Top/bottom for Busbar		25mm^2	25mm^2	25mm^2	25mm^2	25mm^2	25mm^2	-	-
Tightening Torque		3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Connection		Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom	Top and Bottom
Combination With Accessories									
Earth Leakage Accessories		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Auxiliary Contact		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Alarm Contact		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ALT+AUX		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shunt Release		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UnderVoltage Release		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

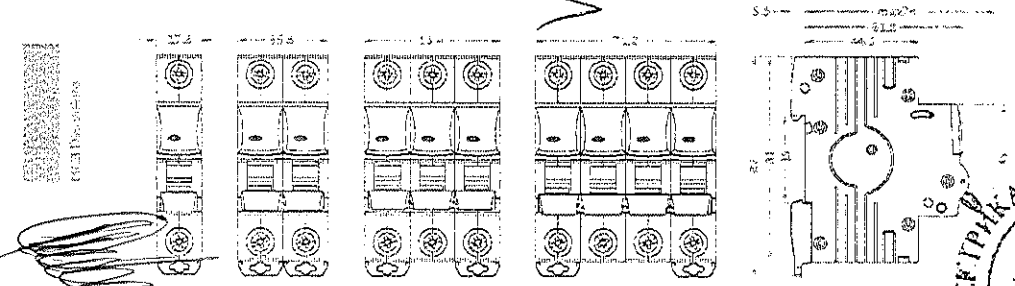
PB8N/PB8H



PB8NN/PB8HN

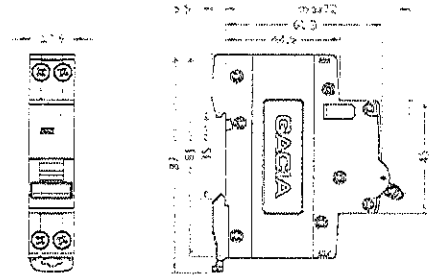


PB8N2/PB8H2



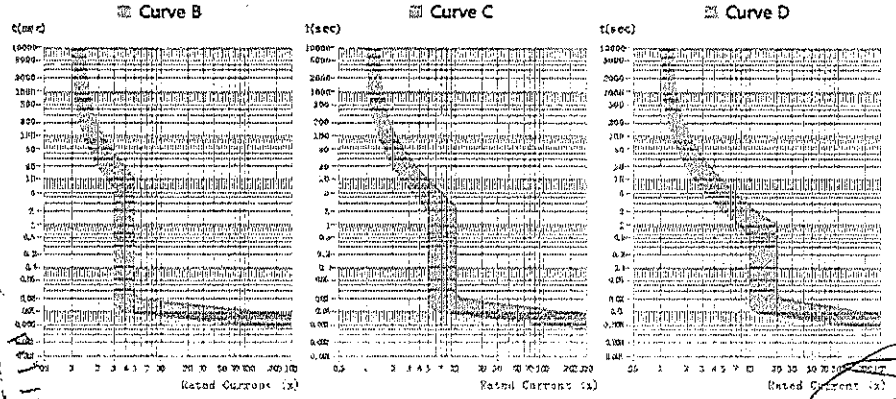
P Series Terminal Electric

PN8N/PN8H

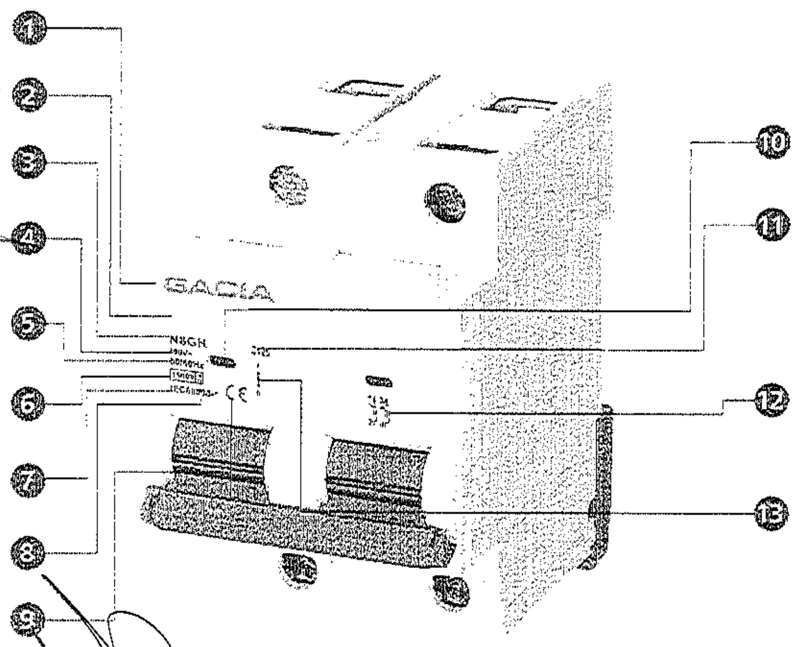


Characteristics Curve

PB8N/PB8H/PB8NN/PB8HN/PB8N2/PB8H2/PN8N/PN8H



Appearance



1. Brand
2. Loop Circuit Marking Area
3. Model
4. Rated Voltage
5. Rated Frequency
6. Rated Short circuit Capacity
7. Standard
8. Current-Limiting Level
9. Certification Mark
10. Indication window
11. Tripping curve; Rated Current
12. Electric Wiring Diagram
13. ON/OFF Position

Overview

Advanced Human Engineering and Detail-oriented

This product adopts simple outline and distinctive design concepts.On the front side it adopts transparent cover protection mark. The side texture is mainly line-plane comparison arrangement, which brings perfect appearance to N8 series products.

Application

- N8G Series Miniature Circuit Breaker complise with IEC/EN60898-1 and GB10963.1.
- It is suitable in the circuit of AC 50/60Hz, rated voltage 230V/400V, rated current up to 125A and is suitable for isolation, overload, and short-circuit, motor, and equipment etc.
- It is suitable in terminal distribution field such as industry, Building for civil use, energy and infrastructure.

Indication window

Red and Green window indication is easy for user to distinguish the state of circuit breaker.

Position 0 indicates window green, the circuit breaker is in the disconnected state

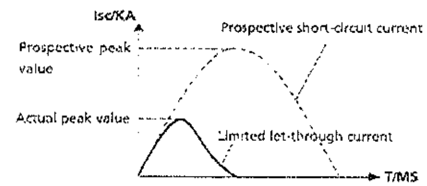
Position I indicates the red of the window, the circuit breaker is in the closed state

Locking Slot

Operation handle is equipped with safety locking slot in order to make ciruit breaker fixed at the required place and avoid maloperation.

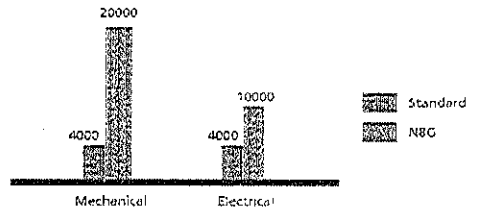
Excellent Current Limiting Characteristic

The current limit characteristic of this circuit breaker is better than 3 classcurrent limit requirement specified by IEC/EN60898-1 standard. When short-circuit happens,the circuit breaker can lower the heat effect of cable and fault point to the minimum value,which greatly improves the safety of electrical system and utilization life of products.



Prospective short-circuit current and Limited let-through current

Excellent Operation performance:



Convenient installation and wiring

Wiring capacity complies with the requirement of GB and IEC standard and can reach 50mm², terminal torque can reach 4Nm. Installation structure with special design allows installation and disassembly of circuit breaker without moving combtype or ... type busbar, which improves the wiring efficiency.

PN ELECTRICAL Ltd — Electrical Projects Management

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Overview

Accessories

- Electrial Accessories
  N8AUX Auxiliary contact, N8ALT Alarm contact, N8UVT Under-voltage release, N8SHT Shunt release

Environment

- 100% recyclable material
- 100% complies with RoHS
- 100% complies with REACH

Characteristics

Instantaneous tripping Type Instruction

Type C Protect pure resistive load and a low sense of lighting systems
Rated current :63-125A (30℃)
Tripping characteristics: Instantaneous Tripping Range (5-10)In

Type D Protection of high perceptual load and start the current impact load(Such as motors, transformers, etc.)
Rated current :63-125A (30℃)
Tripping characteristics: Instantaneous Tripping Range (10-14)In

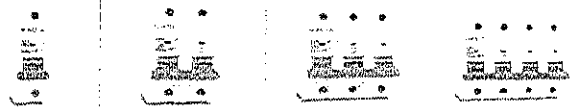
Standards

Conforms to IEC / EN 60898-1 and GB10963.1 standards

Selection

Order to indicate	N8G	N	3P	C	125A
	Product code	Rated short-circuit breaking capacity Code	Poles	Tripping curves	Rated current
	Miniature Circuit Breaker	N:10KA H:15KA	1P,2P 3P,4P	C, D Curve	63A, 80A, 100A, 125A

Parameters list

Poles		1P	2P	3P	4P
Product picture					
Electrical properties					
Function		Short circuit protection, overload protection, isolation, control			
Rated frequency (Hz)		50/60			
Rated working voltage Ue(VAC)		230/400			
Rated current In(A)		63, 80, 100, 125			
Rated insulation voltage Ui(V)		500			
Impulse withstand voltage Uimp(KV)		6			
Rated short-circuit breaking capacity Icu(KA)	N8GN	10			
	N8GH	15			
Endurance (C-0 cycle)	Mechanical	20000			
	Electrical	10000			
Control and indication					
Shunt release		[illegible]			
Undervoltage release		[illegible]			
Auxiliary contact		[illegible]			
Alarm contacts		[illegible]			
Connection and installation					
Protection degree		IP20			
Handle lock		ON/OFF position			
Connection capability		1~50mm²			
Application Ambient Temperature (℃)		-5℃~+40℃			
Altitude		below 2000m			
Relative humidity of air		below 95%			
Installation environment		Avoid obvious vibration and shock			
Mounting		On DIN rail			
Weight		0.18	0.36	0.54	0.72

■ Standard configuration □ Optional — None

ЕЛЕКТРИКА ГРУП PM ELECTRICAL Ltd Electrical Product Management

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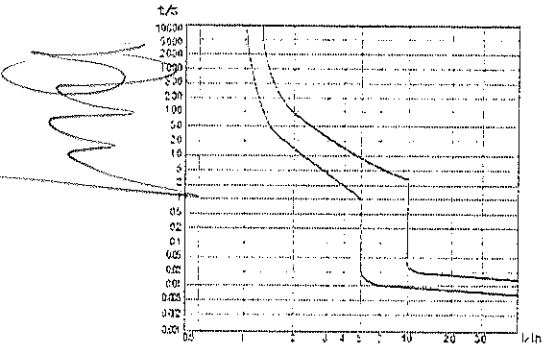
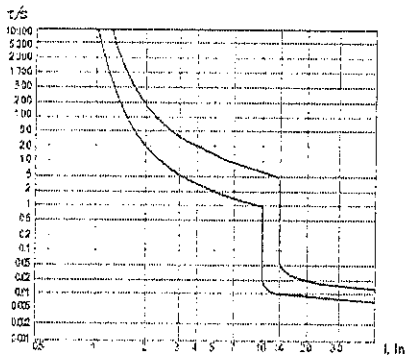
Tripping curves

Standard: IEC60898-1/GB10963.1

Type C tripping curve: (5-10)In
Type D tripping curve: (5-10)In

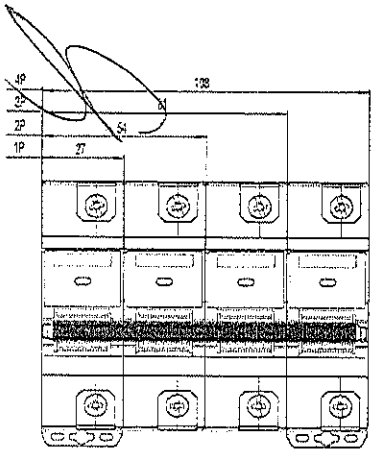


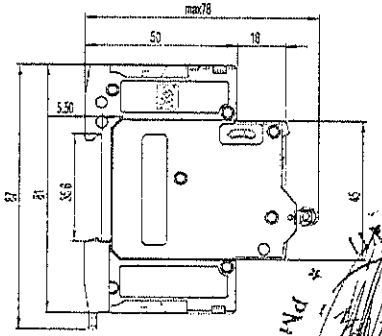
Type C tripping curve



Type D tripping curve

Appearance and Installation Dimensions





Specification Code

Type	Width (mm)	Rated current (A)	Rated voltage (VAC)	Specification Code
		N8GH Miniature Circuit Breaker (breaking capacity: 15KA) type C		
1P	27	63	230/400	N8GH 1P C 63A
	27	80	230/400	N8GH 1P C 80A
	27	100	230/400	N8GH 1P C 100A
	27	125	230/400	N8GH 1P C 125A
		N8GH Miniature Circuit Breaker (breaking capacity: 15KA) type D		
	27	63	230/400	N8GH 1P D 63A
	27	80	230/400	N8GH 1P D 80A
	27	100	230/400	N8GH 1P D 100A
	27	125	230/400	N8GH 1P D 125A
		N8GH Miniature Circuit Breaker (breaking capacity: 15KA) type C		
2P	54	63	400	N8GH 2P C 63A
	54	80	400	N8GH 2P C 80A
	54	100	400	N8GH 2P C 100A
	54	125	400	N8GH 2P C 125A
		N8GH Miniature Circuit Breaker (breaking capacity: 15KA) type D		
	54	63	400	N8GH 2P D 63A
	54	80	400	N8GH 2P D 80A
	54	100	400	N8GH 2P D 100A
	54	125	400	N8GH 2P D 125A
		N8GH Miniature Circuit Breaker (breaking capacity: 15KA) type C		
3P	81	63	400	N8GH 3P C 63A
	81	80	400	N8GH 3P C 80A
	81	100	400	N8GH 3P C 100A
	81	125	400	N8GH 3P C 125A
		N8GH Miniature Circuit Breaker (breaking capacity: 15KA) type D		
	81	63	400	N8GH 3P D 63A
	81	80	400	N8GH 3P D 80A
	81	100	400	N8GH 3P D 100A
	81	125	400	N8GH 3P D 125A
		N8GH Miniature Circuit Breaker (breaking capacity: 15KA) type C		
4P	108	63	400	N8GH 4P C 63A
	108	80	400	N8GH 4P C 80A
	108	100	400	N8GH 4P C 100A
	108	125	400	N8GH 4P C 125A
		N8GH Miniature Circuit Breaker (breaking capacity: 15KA) type D		
	108	63	400	N8GH 4P D 63A
	108	80	400	N8GH 4P D 80A
	108	100	400	N8GH 4P D 100A
	108	125	400	N8GH 4P D 125A

София 1528, България
ул Поручик Недялко Бончев №10
Тел: 02/ 411 25 04
тел./факс: 02/ 852 80 01
e-mail: pm@pmelectrical.bg

ПМ Електрикал ЕООД

Приложение 2

Превод от английски език

лого на ГАЦИЯ

ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙЪНС КО., ЛТД.

ЕС ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСВИЕ

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

Декларираме, че нашия продукт

Миниатюрен Автоматичен Прекъсвач
Тип: PB8H

към който се отнася тази декларация е в съответствие със следния/ните стандарт/и или друг/и нормативен/ни документ/и

IEC/EN 60898-1
IEC/EN 60947-2

Продуктите изпълняват изискванията на нисковолтова директива 2006/95/ЕС

Продуктът е с CE маркировка.

Дата: 11 Март 2015
Печат: кръгъл печат на Гация Електрикал Аплайънс Ко., Лтд.
Име и подпис: Рита

GACIA 加西亞 GACIA ELECTRICAL APPLIANCE CO., LTD

CE

DECLARATION OF CONFORMITY

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

declare that our product

MINIATURE CIRCUIT BREAKER

Type: PB8H

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

IEC/EN 60898-1
IEC/EN 60947-2

The products are complies the requirement of the Low Voltage directive 2006/95/EC

The product is with CE marking.

Date: 11 of March 2015.
Name:
Stamp and Signature:

Превод от английски език

лого на ГАЦИЯ

ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙЪНС КО., ЛТД.

ПИСМО-ПОТВЪРЖДЕНИЕ
Декларация за Съответсвие

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

потвърждава и дава пълна гранция, че

ГАЦИЯ миниатюрен прекъсвач (и неговите аксесоари), модел PB8H:
- е класифициран в категория IV с допустимо напрежение от 6 kV според изискванията на стандарт IEC 60364-4;
- е проектиран и класифициран за работа в трудни индустриални условия, степен на замърсяване 3;

Дата: 11 Март 2015
Печат: кръгъл печат на Гация Електрикал Аплайънс Ко., Лтд.
Име и подпис: Рита

GACIA 加西亚 GACIA ELECTRICAL APPLIANCE CO., LTD

LETTER-CONFIRMATION

Declaration of Conformity

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

confirms and gives full guarantee that the

GACIA miniature circuit breakers (and their accessories), model PB8H ;

- are classified in category IV with admissible voltage 6kV according to the requirements of standard IEC 60364-4;
- are designed and classified for working in heavy industry conditions, pollution degree 3;

Date: 11 of March 2015

Name:

Stamp and Signature:

Превод от английски език

лого на ГАЦИЯ

ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙЪНС КО., ЛТД.

ЕС ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСВИЕ

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

Декларираме, че нашия продукт

Миниатюрен Автоматичен Прекъсвач
Тип: N8GH

към който се отнася тази декларация е в съответствие със следния/ните стандарт/и или друг/и нормативен/ни документ/и

IEC/EN 60898-1
IEC/EN 60947-2

Продуктите изпълняват изискванията на нисковолтова директива 2006/95/ЕС

Продуктът е с СЕ маркировка.

Дата: 11 Март 2015
Печат: кръгъл печат на Гация Електрикал Аплайънс Ко., Лтд.
Име и подпис: Рита

GACIA ELECTRICAL APPLIANCE CO.,LTD.

CE

DECLARATION OF CONFORMITY

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

declare that our product

MINIATURE CIRCUIT BREAKER

Type: N8GH

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

IEC/EN 60898-1
IEC/EN 60947-2

The products are complies the requirement of the Low Voltage directive 2006/95/EC

The product is with CE marking.

Date 11 of March 2016
Name
Stamp and Signature:

Превод от английски език

лого на ГАЦИЯ

ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙЪНС КО., ЛТД.

ПИСМО-ПОТВЪРЖДЕНИЕ
Декларация за Съответсвие

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

потвърждава и дава пълна гранция, че

ГАЦИЯ миниатюрен прекъсвач (и неговите аксесоари), модел N8GH:
- е класифициран в категория IV с допустимо напрежение от 6 kV според изискванията на стандарт IEC 60364-4;
- е проектиран и класифициран за работа в трудни индустриални условия, степен на замърсяване 3;

Дата: 11 Март 2015
Печат: кръгъл печат на Гация Електрикал Аплайънс Ко., Лтд.
Име и подпис: Рита

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GACIA ELECTRICAL APPLIANCE CO.,LTD.

LETTER-CONFIRMATION

Declaration of Conformity

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

confirms and gives full guarantee that the

GACIA miniature circuit breakers (and their accessories), model N8GH ;

- are classified in category IV with admissible voltage 6kV according to the requirements of standard IEC 60364-4;
- are designed and classified for working in heavy industry conditions, pollution degree 3.

Date. 11 of March 2015

Name:

Stamp and Signature:

Превод от английски език

лого на ГАЦИЯ

ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙЪНС КО., ЛТД.

ПИСМО-ПОТВЪРЖДЕНИЕ
Декларация за Съответствие

Ние, ГАЦИЯ ЕЛЕКТРИКАЛ АПЛАЙАНС, ООД, с адрес: 545# Дондажие, Бейбаксианг, Байтауанг Индустриал Зоун, Уенджоу Джейджанг, 325603 Китай,

потвърждава и дава пълна гранция, че

ГАЦИЯ миниатюрни прекъсвачи – 1P, 63A има следните параметри:

- максималната разсейвана мощност е 6,5W;
- обхватът на напречните номинални сечения, който трябва да се свържат с клемите:
  за обявен ток 50-80A е: 1 ÷50 mm^2;
- номиналния диаметър на резбата на стягащия винт е: M6

Дата: 20 Юли 2015
Печат: кръгъл печат на Гация Електрикал Аплайънс Ко., Лтд.
Име и подпис: Рита 22.07.2015

GACIA ELECTRICAL APPLIANCE CO.,LTD.

LETTER-CONFIRMATION

Declaration of Conformity

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

confirms and gives full guarantee that the

GACIA miniature circuit breakers - 1P, 63A has the following parameters:

- the max. power loss is 6,5 W;
- the range of the cross nominal sections, which to connect to the terminals: for the announced current 50-80A is 1 – 50mm^2;
- the nominal diameter of the thread of the tightened screw is: M6

Date: 20 of July 2015

Name:

Stamp and Signature:

София 1528, България
ул.Поручик Неделчо Бончев №10
Склад 22
Тел: 02/ 411 25 04
тел./факс: 02/ 852 80 01
e-mail: pm@pmelectrical.bg

ПМ Електрикал ЕООД

Приложение 3

CERTIFICATE

Issued to:
Applicant:
GACIA ELECTRICAL APPLIANCE CO., LTD
545# Dongdajie, Baitawang Industrial Zone,
Beibaixiang Yueqing Zhejiang, 325603, China

Manufacturer/Licensee:
GACIA ELECTRICAL APPLIANCE CO., LTD
545# Dongdajie, Baitawang Industrial Zone,
Beibaixiang Yueqing Zhejiang, 325603, China

Product(s) : circuit-breakers for overcurrent protection
Trade name(s) : GACIA
Type(s)/model(s) : PB8H, PB8HN, PB8HQ, PB8H2, PB8N, PB8NN, PB8NQ, PB8N2, PB8LN, M80H, M100(M80)

The product and any acceptable variation thereto is specified in the Annex to this certificate and the documents therein referred to.

DEKRA hereby declares that the above-mentioned product has been certified on the basis of:
- a type test according to the standard EN 60898-1:2003 + A1:2004 + A11:2005 + A12:2008, IEC 60898-1:2002 + A1:2002 + A2:2003;
- an inspection of the production location according to CENELEC Operational Document CIG 021
- a certification agreement with the number 2167361

DEKRA hereby grants the right to use the KEMA-KEUR certification mark.

The KEMA-KEUR certification mark may be applied to the product as specified in this certificate for the duration of the KEMA-KEUR certification agreement and under the conditions of the KEMA-KEUR certification agreement.

This certificate is issued on: 15 November 2013 and expires upon withdrawal of one of the above mentioned standards.

Certificate number: 3305490.01

DEKRA Certification B.V.

drs. G.J. Zoetbrood
Managing Director

F.S. Strikwerda
Certification Manager

ACCREDITED BY
THE DUTCH COUNCIL
FOR ACCREDITATION

DEKRA Certification B.V. Meander 1051, 6825 MJ Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands
T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Registered Arnhem 09085390

CB TEST CERTIFICATE

Ref. Certificate No.

NL-23130

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

Issued by:	DEKRA Certification B.V.		
Product:	Circuit-breakers for overcurrent protection		
Applicant:	ZHEJIANG GACIA ELECTRICAL APPLIANCE CO.,LTD	545# Dongdajie, Baitawang Industrial Zone, Beibaixiang, Yueqing, Zhejiang, 325603	China
Manufacturer:	ZHEJIANG GACIA ELECTRICAL APPLIANCE CO.,LTD	545# Dongdajie, Baitawang Industrial Zone, Beibaixiang, Yueqing, Zhejiang, 325603	China
Factory:	ZHEJIANG GACIA ELECTRICAL APPLIANCE CO.,LTD	545# Dongdajie, Baitawang Industrial Zone, Beibaixiang, Yueqing, Zhejiang, 325603	China
Rating and principal characteristics:	Ue: 230 / 400 Vac (1P), 400 Vac (2P, 3P, 4P) In: 1, 2, 3, 4, 5, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63 A Type B, C, D Icn: 10 000 A; Ics: 7 500 A safety distance "a" = 45 mm		
Trade mark (if any):	GACIA		
Model/Type reference:	PB8H, PB8HN, PB8HQ, PB8H2, PB8N, PB8NN, PB8NQ, PB8N2, PB8LN, M80H		
Additional information:	Energy limiting class 3 according EN 60898-1:2003 for B and C type with In ≤ 40 A. This test certificate is based on CB test certificate NL-21140 dated on 2011-07-05. All tests were performed in 2011.		
Sample of product tested to be in conformity with IEC:	60898-1(ed.1);am1;am2		
Test Report Ref. No:	3302398.50, W0807018.50, 3303230.50		

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

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

DEKRA

DEKRA Certification is former KEMA Quality

Signed by: H.L. Schendstok

Date of issue: 2012-05-15

1/1

Test Report issued under the responsibility of:

TEST REPORT
IEC/EN 60898-1
Circuit-breakers for over current protection for household and similar installations

Report Reference No.	W0807018.50
Date of issue	2008-09-03
Total number of pages	136 pages
CB Testing Laboratory	KEMA Quality Testing Services (Zhejiang) Co. Ltd
Address	No 5 Changjiang Road Great Bridge Industrial Park North Baixiang Wenzhou Zhejiang 325603 P R China
Applicant's name	ZHEJIANG GACIA ELECTRICAL APPLIANCE CO.,LTD
Address	545# Dongdajie, Baixiang Industrial Zone, Beibaixiang Yueqing Zhejiang, 325603, China
Test specification:	
Standard	☒ IEC 60 898-1:2002 (1st Edition) + A1:2002 + A2:2003 and/or ☐ EN 60 898-1:2003 + A1:2004 + A11:2006
Test procedure	CB
Non-standard test method	N/A
Test Report Form No.	IECEN60898_1C
Test Report Form(s) Originator	OVE
Master TRF	Dated 2007-12

Test item description	Circuit-breakers for overcurrent protection (CB)
Trade Mark	GACIA
Manufacturer	ZHEJIANG GACIA ELECTRICAL APPLIANCE CO.,LTD 545# Dongdajie, Baixiang Industrial Zone, Beibaixiang Yueqing Zhejiang, 325603, China
Model/Type reference	M100 (M60)
Ratings	See page 7

Testing procedure and testing location:

☒ CB Testing Laboratory:	KEMA Quality Testing Services (Zhejiang) Co. Ltd
Testing location/ address	No 5 Changjiang Road Great Bridge Industrial Park North Baixiang Wenzhou Zhejiang 325603 P R China
☐ Associated CB Laboratory:	
Testing location/ address	
Tested by (name + signature)	Harry Wang
Approved by (+ signature)	Fred Fu
☐ Testing procedure: TMP	
Tested by (name + signature)	
Approved by (+ signature)	
Testing location/ address	
☐ Testing procedure: WMT	
Tested by (name + signature)	
Witnessed by (+ signature)	
Approved by (+ signature)	
Testing location/ address	
☐ Testing procedure: SMT	
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	
Testing location/ address	
☐ Testing procedure: RMT	
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	
Testing location/ address	

Summary of testing.

The following samples were chosen for the type test according to annex C of IEC 60898-1

Test sequence		D type tested first			C type			B type	
		1P	2P	4P	1P	2P	4P	1P	4P
A		1 / 63 A	N.A	1 / 63 A	N/A	N/A	N/A	N/A	N/A
B		3 / 63 A	N/A	3 / 63 A	N/A	N/A	N/A	3 / 63 A (only 9.8)	3 / 63 A (only 9.8)
C	C1	N.A	N/A	N/A	3 / 63 A	N/A	3 / 63 A	N/A	N/A
	C2	3 / 63 A	2 / 63 A	1 / 63 A	N/A	N/A	N/A	N/A	N/A
D	DD1D1	3 / 63 A	N/A	6 / 63 A	N/A	N/A	N/A	N/A	N/A
	D0	1 for all other rated current	N/A	N/A	1 for all other rated current (only 9.10.2)	N/A	N/A	1 for all rated current (only 9.10.2)	N/A
E1		3+3: 63 A 3+3 / 1 A	3 / 63 A 3 / 1 A	3+3 / 63 A 3+3 / 1 A	N.A	N/A	N/A	N/A	N/A
E2		3+3 / 63 A 3+3 / 1 A	3 / 63 A 3 / 1 A	3+3 / 63 A 3+3 / 1 A	N/A	N/A	N/A	N/A	N/A
F1		N/A		N/A	N/A	N/A	N/A	N/A	N/A

Note: The short-circuit test was conducted on C type to cover the reduced short test on D type (see table 9). According to C type first, the test of test sequence C of C type can cover the same test of D type.

REMARKS:

1 Test at service short-circuit capacity (Ics)
For single-pole circuit-breakers of rated voltage 230 / 400 V or 240 / 415 V, an additional set of three samples is tested in a circuit according to figure 5. During the test the I²t values need not be measured.
The test procedure is shown as below:

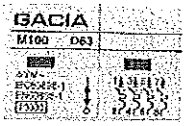
Operation	Samples		
	1	2	3
1	O	O	O
2	--	CO	O
3	O	--	CO
4	CO	O	--

2 Test at rated short-circuit capacity (Icn)
For single-pole circuit-breakers of rated voltage 230 / 400 V or 240 / 415 V an additional set of three samples is tested in a circuit according to figure 5. During the test the I²t values need not be measured.
The test procedure is shown as below:

Operation	Samples			
	1	2	3	4
1	O	O	O	--
2	O	CO	--	--
3	--	--	CO	O

Copy of marking plate

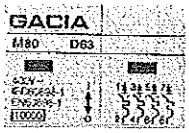
Example for M100 series:



Marking for 4P CB

Marking for 1P CB

Example for M80 series:



Marking for 4P CB

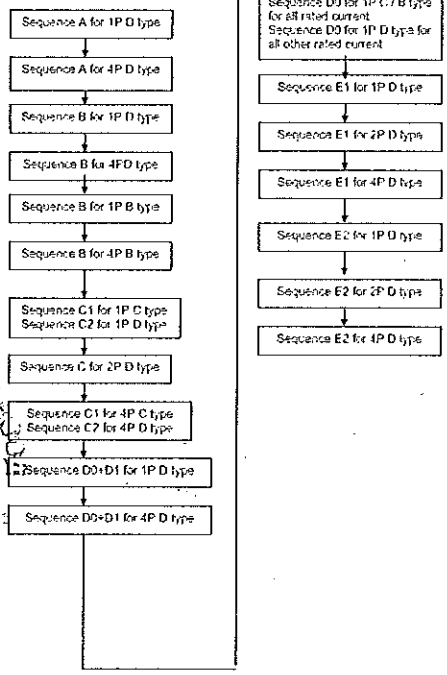
Marking for 1P CB

Note:

1 The tests were conducted according to IEC 60898-1 only.

2 The markings for CB are same except the rated current, the tripping characteristic type and the number of poles maybe different.

Structure of the test report



Test item particulars	
Type of circuit-breaker	M100 (M80)
Number of poles	☒ 1-P ☐ 1-P+N ☒ 2-P ☒ 3-P ☐ 3-P+N ☒ 4-P ☐ Other :
Protection against external influences	☐ enclosed ☒ unenclosed
Method of mounting	☐ surface ☒ flush ☒ panel board / distribution board
Method of connection	☒ not associated with the mechanical mounting ☐ associated with the mechanical mounting
Instantaneous tripping current	☒ B ☒ C ☒ D
Ambient air temperature (°C)	☒ 30°C ☐ 40°C ☐ Other ___°C
Energy limiting class	☐ Class 1 ☐ Class 2 ☐ Class 3 ☒ N/A
Rated short-circuit capacity (A)	☐ 1.5 kA ☐ 3 kA ☐ 4.5 kA ☐ 6 kA ☒ 10 kA ☐ 15 kA ☐ 20 kA ☐ 25 kA
Type of terminal	☐ screw *) ☒ pillar *) ☐ cage *) ☐ lug ☐ screw less *) ☐ fast quick connect *) ☐ plug-in ☐ screw-in * copper conductors ** aluminium conductors***
Value of rated operational voltage	☐ 120 V ** ☐ 230 V ☐ 240 V ** ☐ 120/240 V ** ☒ 230/400 V for 1P CB ☒ 400 V for 2P, 3P and 4P CBs ☐ 240/415 V ☐ 415 V
Value of rated current	1, 2, 3, 4, 5, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63 A
Value of rated frequency	☒ 50 Hz ☒ 60 Hz
Rated impulse withstand voltage (Uimp)	☐ 2,5 kV* ☒ 4 kV ☐ declared ___kV
Material group and CTI declared by manufacturer	☐ Group I, (600 V ≤ CTI) ☐ Group II (400 V ≤ CTI < 600 V) ☒ Group IIIa, (175 V ≤ CTI < 400 V)
Remark	** delete for EN and *** only for EN

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.

Note: This TRF includes EN Group Differences together with National Differences and Special National Conditions, if any. All Differences are located in the Appendix to the main body of this TRF.

Throughout this report a ☒ comma or ☐ point is used as the decimal separator.

The basic part of this test report covers the evaluation of the IEC requirements.

Annex 1 of this test report covers the evaluation of the CENELEC common modifications.

M80 series CBs are fully identical to M100 series CBs except the type references are different. Therefore,

-All tests were conducted on M100 series CBs.

-The tests for M100 series CB are considered to cover the tests for M80 series CBs.

General product information:

Ue: 230/400 Vac (1P), 400 Vac (2P, 3P, 4P);
In: 1, 2, 3, 4, 5, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63 A ; B, C and D Type ;
Ics: 7500 A ; Icn: 10 000 A

Factory:
ZHEJIANG GACIA ELECTRICAL APPLIANCE CO. LTD
5458 Dongdafe, Baitaxiang Industrial Zone, Beibaixiang Yueqing, Zhejiang 325603, China

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A" 1 SAMPLE	Type: D63 1P	P
6	MARKING AND OTHER INFORMATION		
See Annex I	Circuit-breaker marked with:		P
	a) Manufacturer's name or trade mark	GACIA	P
	b) Type designation, catalogue number or other identification number	M100	P
	c) Rated voltage (V)	230/400 V	P
	d) Rated current (A)	63 A	P
	e) Rated frequency (Hz)	50/60 Hz	P
	f) Rated short circuit capacity (A)	10 000 in a rectangle	P
	g) Wiring diagram		P
	h) Ambient air temperature, if different from 30 C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) For D-type circuit-breakers: the mean num instantaneous tripping current if higher than 20 (see table 2)		N/A
	k) Rated impulse withstand voltage Uimp if it is 2.5 kV		N/A
	Symbol for instantaneous tripping current	D	
	Symbol for nature of supply	-	
	Marking for rated current and for instantaneous tripping shall be readily visible when CB is installed		P
	Other marking shall be easily discernible		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	Energy limiting class		N/A
	I²t characteristic (documentation)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A
	Earthing terminal if any (IEC 60417-5019)		N/A

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	On - off position shall be clearly indicated - 01 -	O I	P
	For push-button CB the off push button shall either be red or be marked with the symbol „0"		N/A
	Red not used for other push-button		N/A
	This symbol shall be easily discernible		P
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts) 15 s with water 15 s with hexane (see cl. 8.3)		P
8.	REQUIREMENTS FOR CONSTRUCTION AND OPERATION		
8.1.1	General		P
8.1.2	Mechanism		P
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		N/A
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indication visible from the outside		P

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts, operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement.		P
8.1.3	Clearances and creepage distances		P
8.1.3	Clearances [mm] see table 4		P
	1 between live parts (of the main circuits) which are separated when the CB is in off position	≥ 4.6 mm	P
	2 between live parts of different polarity		N/A
	3 between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	≥ 4,7 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted	≥ 4,6 mm	P
	- screws or other means for fixing the circuit breaker		N/A
	- metal covers or boxes		N/A
	- other accessible metal parts	≥ 6,8 mm	P
	- metal frames supporting the base (flush-type)	≥ 4,6 mm	P
	5 between metal parts of mechanism and		P

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- accessible metal parts	≥ 7,1 mm	P
	- screws or other means for fixing the circuit breaker		N/A
	- metal frames supporting the base (flush type)	≥ 4.6 mm	P
8.1.3	Creepage distances [mm] (see table 4)		P
	Material group	☒ IIIa ☐ II ☐ I	P
	1 between live parts (of the main circuits) which are separated when the CB is in off position	≥ 4,6 mm	P
	2 between live parts of different polarity		N/A
	3 between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4. between live parts and		P
	- accessible surfaces of operating means	≥ 4,7mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted	≥ 4,6 mm	P
	- screws or other means for fixing the circuit breaker		N/A
	- metal covers or boxes		N/A
	- other accessible metal parts	≥ 6,8 mm	P
	- metal frames supporting the base (flush-type)	≥ 4,6 mm to mounting rail	P
	5 between metal parts of mechanism and		P
	- accessible metal parts	≥ 7,1 mm	P
	- screws or other means for fixing the circuit breaker		N/A
	- metal frames supporting the base (flush type)	≥ 4,6 mm to mounting rail	P
8.1.4	Screws, current-carrying parts and connections		P
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		N/A
	Test according to cl. 9.4:		
	- 10 times (screw Ø / torque Nm)		
	- 5 times (screw Ø / torque Nm)	Ø 3,8 mm / 2,0 Nm	

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		N/A
8.1.4.2	Screws with a thread of insulating material ensured correct introduction		N/A
8.1.4.3	Electrical connection, contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		P
	- copper		P
	- alloy 58% copper for worked solid parts		N/A
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
8.1.5	**Terminals for external conductors**		P
8.1.5.1	Terminals ensure correct connection of conductors (Test acc. to cl. 9.5 or annex J or K)	cl. 9.5	P
9.5	Torque Ø 5,0 mm 2,0 Nm max. sect. 25 mm²		P
9.5.1	Pull test min sect. 1,0 mm² max sect. 25 mm² Pull 100 N for 1 min for 25 mm² Pull 50 N for 1 min for 25 mm² Torque (2/3)= 1,33 Nm During the test conductor does not move noticeably		P
9.5.2	min sect. 1,0 mm² Torque (2/3)= 1,33 Nm max sect. 25 mm² The conductor shows no damage		

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.5.3	Nominal cross-section from 1,0 to 25 mm² No of wires 7 Ø of wires 2,14 mm Torque (2/3) = 1,33 Nm No of wires 7 Ø of wires 0,67 mm Torque (2/3) = 1,33 Nm		P
8.1.5.2	Terminals allow the connection of conductors of the following cross-sectional areas: (table 5)		P
	Rated current (A) / Range of nominal cross sections to be clamped (mm²) ≤ 13: 1 to 2,5 > 13 ≤ 16: 1 to 4 > 16 ≤ 25: 1,5 to 6 > 25 ≤ 32: 2,5 to 10 > 32 ≤ 50: 4 to 16 > 50 ≤ 80: 10 to 25 > 80 ≤ 100: 16 to 35 > 100 ≤ 125: 25 to 50	1 - 25 mm²	P
	It is required that, for current ratings up to and including 50 A terminals are designed to clamp solid conductors as well as rigid stranded conductors; the use of flexible conductors is permitted	The terminals of the CBs in this series (from 1 A to 63 A B, C, D type) are same	P
	Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm² up to 6 mm² are designed to clamp solid conductors only		N/A
8.1.5.3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)		P
8.1.5.4	Terminals for $I_n \leq 32$ A allow the connection of conductors without special preparation	The terminals of the CBs in this series (from 1 A to 63 A B, C, D type) are same	P
8.1.5.5	Terminals shall have adequate mechanical strength; ISO thread or equivalent (See tests of sub-clause 9.4 and 9.5.1)		P
8.1.5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.2)		P

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.1.5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9.5.1)		P
8.1.5.8	Conductor shall not slip-out when the clamping screw or nuts are tightened (See test of sub-clause 9.5.3)		P
8.1.5.9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)		P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening		N/A
8.1.5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P
8.1.6	**Non interchangeability**		N/A
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8.1.7	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s), shall be retable and have adequate stability		N/A
8.1.7.1	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1.7.2	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.2	**Protection against electric shock**		P
	Live parts not accessible in normal use		P

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	For CB, other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material Lining - reliable fixed, - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (by push-type), screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
9.6	**Test of protection against electric shock**		P
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N		P
7.10	**Resistance to heat**		P
	CB sufficiently resistant to heat		P
9.14	**Test of resistance to heat**		P
9.14.1	Test		P
	- without removable covers ..... 1 h (100 ± 2) °C		P

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- removable covers ..... 1 h (70 ± 2) °C		N/A
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C Ø of impression ≤ 2 mm	Impression: 0.8 mm	P
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position T = (70 ± 2)°C Ø of impression ≤ 2 mm	Impression: 0.75 mm	P
9.11	Resistance to abnormal heat and to fire		P
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions		P
9.15	**Resistance to abnormal heat and to fire**		P
	Glow wire test No visible flame, no sustained glowing or flames and glowing extinguish within 30 s		P
	external parts retaining current-carrying parts and parts of the protective circuit in position ..... (960 ± 15)°C	Housing body	P
	all other external parts ..... (650 ± 10)°C	Switch knob	P
9.12	Resistance to rusting		P
	Ferrous parts adequately protected against rusting		P
9.10	Test of resistance to rusting:		
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P
	- 10 min at 95% humidity at 20°C		P
	- 10 min at 100°C		P
	No sign of rust		P

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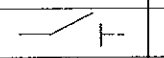
IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A" 1 SAMPLE	Type: D63 1P	P
6 *)	**MARKING AND OTHER INFORMATION**		
*see Annex I	Circuit-breaker marked with:		P
	a) Manufacturer's name or trade mark	GACIA	P
	b) Type designation, catalogue number or other identification number	M100	P
	c) Rated voltage (V)	440 V	P
	d) Rated current (A)	63 A	P
	e) Rated frequency (Hz)	50/60 Hz	P
	f) Rated short circuit capacity (A)	10 000 in a rectangle	P
	g) Wiring diagram		P
	h) Ambient air temperature, if different from 30°C		N/A
	i) Degree of protection, if different from IP20		N/A
	j) For D type circuit-breakers: the maximum instantaneous tripping current, if higher than 20 In (see table 2)		N/A
	k) Rated impulse withstand voltage Uimp if it is 2.5 kV		N/A
	Symbol for instantaneous tripping current	D	P
	Symbol for nature of supply	~	P
	Marking for rated current and for instantaneous tripping shall be readily visible when CB is installed		P
	Other marking shall be easily discernible		P
	The suitability for isolation, which is provided by all circuit-breakers of this standard, may be indicated by the symbol on the device		P
	Energy limiting class		N/A
	I²t characteristic (documentation)		N/A
	Symbols on supply and load terminal		N/A
	Terminal for neutral conductor N		N/A

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IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Earthing terminal if any (IEC 60417-5019)		N/A
	On - off position shall be clearly indicated - 0 I -	O I	P
	For push-button CB the off push-button shall either be red or be marked with the symbol O		N/A
	Red not used for other push-button		N/A
	This symbol shall be easily discernible		P
	For CB with multiple current ratings, the maximum value is marked, the adjusted value indicated without ambiguity		N/A
	Marking shall be indelible and easily legible (not on removable parts) 15 s with water, 15 s with hexane (see cl. 8.3)		P
8.	**REQUIREMENTS FOR CONSTRUCTION AND OPERATION**		
8.1.1	General		P
8.1.2	Mechanism		P
	The moving contact shall be mechanically coupled so that all poles make and break together, whether operated manually or automatically, even if an overload occurs on one pole only		N/A
	The switched neutral shall close before and open after the protected pole (s)		N/A
	Neutral pole having adequate making and breaking capacity and CB with independent manual operation: all poles operate together including neutral pole		N/A
	CB shall have a trip free mechanism		P
	It shall be possible to switch the CB on and off by hand		P
	No intermediate position of the contacts		P
	Position of contacts shall be indicated		P
	Indicating shall be from the outside		P

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IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	If the indication is on the actuating means, it shall, when released, automatically take up or stay in the position corresponding to that of the moving contacts. operating means shall have two different rest positions, except that, for automatic operation, a third distinct rest position may be provided		P
	If a separate mechanical indicator is used to indicate the position of the main contacts, colour red shall be used for the on position and green for the off position		P
	The action of the mechanism shall not be influenced by the position of enclosures		P
	If the cover is used as a guiding means for push-button, it shall not be possible to remove this button from the outside		N/A
	Operating means securely fixed, not possible to remove them without a tool		P
	For the up-down operating means the contacts shall be closed by the up movement		P
8.1.3	**Clearances and creepage distances**		P
8.1.3	Clearances [mm] see table 4		P
	1 between live parts (of the main circuits) which are separated when the CB is in off position ..	≥ 4,6 mm	P
	2 between live parts of different polarity	≥ 4,6 mm	P
	3 between circuits supplied from different sources one of which being PELV or SELV .		N/A
	4, between live parts and		P
	- accessible surfaces of operating means	≥ 4,7 mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted	≥ 4,6 mm	P
	- screws or other means for fixing the circuit breaker		N/A
	- metal covers or boxes		N/A
	- other accessible metal parts	≥ 6,8 mm	P
	- metal frames supporting the base (flush type) ..	≥ 4,6 mm	P
	5 between metal parts of mechanism and		P

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IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	- accessible metal parts .... :	≥ 7,1 mm	P
	- screws or other means for fixing the circuit breaker .... :		N/A
	- metal frames supporting the base (flush type) . :	≥ 4 6 mm	P
8.1.3	**Creepage distances [mm] (see table 4)**		P
	Material group	☒ IIIa ☐ II ☐ I	P
	1 between live parts (of the main circuits) which are separated when the CB is in off position ..... :	≥ 4,6 mm	P
	2 between live parts of different polarity .... :	≥ 4,6 mm	P
	3 between circuits supplied from different sources, one of which being PELV or SELV		N/A
	4 between live parts and		P
	- accessible surfaces of operating means .... :	≥ 4,7mm	P
	- screws or other means for fixing covers		N/A
	- surface on which the base is mounted .... :	≥ 4.6 mm	P
	- screws or other means for fixing the circuit breaker .... :		N/A
	- metal covers or boxes.....................		N/A
	- other accessible metal parts....................	≥ 6.8 mm	P
	- metal frames supporting the base (flush-type) . :	≥ 4,6 mm to mounting rail	P
	5 between metal parts of mechanism and.		P
	- accessible metal parts .... :	≥ 7,1 mm	P
	- screws or other means for fixing the circuit breaker..................... :		N/A
	- metal frames supporting the base (flush type) . :	≥ 4.6 mm to mounting rail	P
8 1.4	**Screws, current-carrying parts and connections**		P
8.1.4.1	Connections, withstand mechanical stresses occurring in normal use		P
	Screws for mounting of the CB not of the thread-cutting type		N/A
	Test according to cl 9.4.		P
	- 10 times (screw Ø / torque Nm)		N/A
	- 5 times (screw Ø / torque Nm)	Ø 5,0 mm 2.0 Nm	P

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Plug in connections tested by plugging in and pulling out five times		N/A
	After test connections have not become loose nor electrical function impaired		N/A
8 1.4.2	Screws with a thread of insulating material ensured correct introduction		N A
8 1 4.3	Electrical connection. contact pressure not transmitted through insulating material, unless there is sufficient resilience in the metallic parts		F
	- copper		P
	- alloy 58% copper for worked cold parts		N/A
	- alloy 50% copper for other parts		N/A
	- other metal		N/A
8.1.5	**Terminals for external conductors**		P
8.1 5.1	Terminals ensure correct connection of conductors (Test acc. to cl. 9 5 or annex J or K)	cl 9.5	P
9.5	Torque Ø 5.0 mm 2.0 Nm max. sect. 25 mm²		P
9.5.1	Pull test. min sect. 1.0 mm² max sect. 25 mm² Pull 100 N for 1 min for 25 mm² Pull 50 N for 1 min for 25 mm² Torque (2/3)= 1.33 Nm During the test conductor does not move noticeably		P
9.5 2	min sect. 1,0 mm² Torque (2/3)= 1,33 Nm max sect. 25 mm² The conductor shows no damage		P

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.5.3	Nominal cross-section from 1.0 to 25 mm² No of wires 7 Ø of wires 2.14 mm Torque (2/3) = 1 33 Nm No of wires 7 Ø of wires 0.67 mm Torque (2/3) = 1,33 Nm After the test no wire escaped outside		P
8 1.5 2	Terminals allow the connection of conductors of the following cross-sectional areas. (table 5)		P
	Rated current (A) — Range of nominal cross sections to be clamped (mm²) ≤ 13 — 1 to 2.5 > 13 ≤ 16 — 1 to 4 > 16 ≤ 25 — 1,5 to 6 > 25 ≤ 32 — 2,5 to 10 > 32 ≤ 50 — 4 to 16 > 50 ≤ 80 — 10 to 25 > 80 ≤ 100 — 16 to 35 > 100 ≤ 125 — 25 to 50	1 - 25 mm²	P
	It is required that, for current ratings up to and including 50 A terminals are designed to clamp solid conductors as well as rigid stranded conductors; the use of flexible conductors is permitted	The terminals of the CBs in this series (from 1 A to 63 A, B, C, D type) are same	P
	Nevertheless, it is permitted that terminals for conductors having cross-sections from 1 mm² up to 6 mm² are designed to clamp solid conductors only		N/A
8 1 5 3	Means for clamping the conductors in the terminals not serve to fix any other component (See test sub-clause 9.5)		P
8 1 5 4	Terminals for I_n ≤ 32 A allow the connection of conductors without special preparation	The terminals of the CBs in this series (from 1 A to 63 A, B, C, D type) are same	P
8 1 5 5	Terminals shall have adequate mechanical strength (See ...) equivalent (See tests of sub-clause 9.5 1)		P

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
8 1 5.6	Clamping of conductor without damage to the conductor (See test of sub-clause 9.5.2)		P
8 1 5.7	Clamping of conductor between metal surfaces (See tests of sub-clause 9.4 and 9 5 1)		P
8 1 5.8	Conductor shall not slip out when the clamping screw or nuts are tightened (See test of sub-clause 9.5 3)		P
8.1.5 9	Terminals shall be properly fixed. No work loose when the clamping screws or nuts are tightened or loosened (See test of sub-clause 9.4)		P
8.1.5.10	Clamping screws or nuts of terminals for protective conductors adequately secured against accidental loosening		N/A
8 1 5.12	Screws and nuts of terminals for external conductors shall be in engagement with a metal thread, and the screws shall not be of tapping screw type		P
8.1.6	Non interchangeability		N/A
	For circuit-breakers intended to be mounted on bases forming a unit therewith (plug-in or screw-in type) it shall not be possible, without the aid of a tool, to replace a circuit-breaker when mounted as for normal use by another of the same make having a higher rated current, compliance is checked by inspection		N/A
8 1.7	Plug-in type circuit breakers, the holding in position of which does not depend solely on their plug-in connection(s), shall be reliable and have adequate stability		N/A
8 1 7.1	Plug-in type circuit-breakers, the holding in position of which does not depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9.13		N/A
8.1 7 2	Plug-in type circuit-breakers, the holding in position of which does depend solely on their plug-in connection(s) Compliance of the mechanical mounting is checked by the relevant test 9 13		N/A
8.2	**Protection against electric shock**		[illegible]
	Live parts not accessible in normal use		[illegible]

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Clause	Requirement + Test	Result - Remark	Verdict
	For CB other than plug-in type, external parts, other than screws and other means for fixing covers, which are accessible shall be of insulating material		P
	Unless the live parts are within an internal enclosure of insulating material: Lining - reliable fixed - adequate thickness and - mechanical strength		N/A
	Inlet openings for cables shall be in insulating material or be provided with bushings or similar devices in insulating material Such device - shall be reliable fixed - shall have adequate mechanical strength		N/A
	For plug-in CB, external parts, other than screws and other means for fixing covers, which are accessible shall be in insulating material		N/A
	Metallic operating means insulated from live parts		N/A
	Metal parts of the mechanism not accessible and insulated from accessible metal parts, metal frames (for flush-type) screws or other means for fixing the base		P
	Replacement of plug-in CB possible without touching live parts		N/A
	Lacquer or enamel not considered		P
9.6	**Test of protection against electric shock**		P
	Use of test finger so designed that each jointed can be turned through an angle of 90° with respect to the finger		P
	Circuit-breaker with enclosures of thermoplastic material are additional tested at 35 °C for 1 min with a force of 75 N		P
7.10	**Resistance to heat**		P
	CB sufficiently resistant to heat		P
9.14	**Test of resistance to heat**		P
9.14.1	Test:		P
	- without removable covers . . . . . 1 h (100 ± 2) °C		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- removable covers . . . . . 1 h (70 ± 2) °C		P
	After the test no access to live parts, marking still legible		P
9.14.2	Ball pressure test for external parts of insulating material (parts retaining current-carrying parts and parts of the protective circuit in position) T = 125°C, Ø of impression ≤ 2 mm	Impression: 0.9 mm	P
9.14.3	Ball pressure test for external parts of insulating material (parts not retaining current-carrying parts and parts of the protective circuit in position T = (70 ± 2)°C Ø of impression ≤ 2 mm	Impression: 0.75 mm	P
8.11	Resistance to abnormal heat and to fire		P
	External parts of insulating material shall not ignite or spread fire under fault or overload conditions		P
9.15	**Resistance to abnormal heat and to fire**		P
	Glow wire test No visible flame, no sustained glowing or flames and glowing extinguish within 30 s		P
	external parts retaining current-carrying parts and parts of the protective circuit in position . . . . . (960 ± 15)°C	Housing body	P
	all other external parts . . . . . (650 ± 10)°C	Switch knob	P
9.12	Resistance to rusting		P
	Ferrous parts adequately protected against rusting		P
9.13	Test of resistance to rusting:		P
	- 10 min immersed in a cold chemical degreaser such as methyl-chloroform or refined petrol		P
	- 10 min immersed in a 10% solution of chloride in water at 20°C		P
	- 10 min at 95% humidity at 20°C		P
	- 10 min at 100°C		P
	No sign of rust		P

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B" 3 SAMPLES	Type: D63 1P	P
8.3	**Dielectric properties and isolating capability**		P
	CB shall have adequate dielectric properties and shall ensure isolation		P
8.3.1	Dielectric strength at power frequency		P
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		P
8.3.2	Isolating capability		P
	Circuit-breakers shall be suitable for isolation Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3		P
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)		P
	Circuit-breakers shall adequately withstand impulse voltages. Compliance is checked by the tests of 9.7.6.2	Uimp = 4 kV	P
9.7	**Test of dielectric properties and isolating capability**		P
9.7.1	Resistance to humidity		P
9.7.1.1	Preparation of the circuit-breaker for test		P
	Inlet openings, if any, are left open, if knock-outs are provided, one of them is opened.		N/A
9.7.1.2	Test conditions		P
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	R.H. = 95 % T = 25 °C	P
9.7.1.3	Test procedure:		P
	The sample is kept in the cabinet for 48 h.		P
9.7.1.4	Condition of the circuit-breaker after the test		P
	After this treatment sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3		P
9.7.2	Dielectric strength of the main circuit		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	After an interval between 30 min and 60 min following the treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:				P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position ≥ 2 MΩ	B-1 ≥ 500 MΩ	B-2 ≥ 500 MΩ	B-3 ≥ 500 MΩ	P
	b) In off-position, between each pole in turn and the others connected together ≥ 2 MΩ				N/A
	c) In on-position, between all poles connected together and the frame ≥ 5 MΩ	≥ 500 MΩ	≥ 500 MΩ	≥ 500 MΩ	P
	d) between metal parts of mechanism and the frame ≥ 5 MΩ				P
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material ≥ 5 MΩ				N/A
9.7.3	Dielectric strength of the main circuit				P
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2	2000 V			P
	a) 2000 V				P
	b) 2000 V				N/A
	c) 2000 V				P
	d) 2000 V				P
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame U = _____ V				

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Clause	Requirement + Test	Result - Remark	Verdict
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together U = [1000 V if Ui ≤ 60 V or 2Ui + 1000 V if Ui > 60 V]		N/A
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		P
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		P
	The 1,2/50μs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		P
	- rated impulse withstand voltage (kV) .	4 kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13)..................:	6,2 kV	P
	- no unintentional disruptive discharge during the test s		P
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		P
	The 1,2/50μs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		P
	- rated impulse withstand voltage (kV) .	4 kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp main circuits (see table 14) :	4,9 kV	P
	Application of test voltage		P
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		P
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		P
	- no unintentional disruptive discharge during the test's		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)				P
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2, or 9.12.11.3, or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position				P
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA	≤ 0,1 mA			P
8.4	Temperature rise				P
	Temperature rise does not exceed the limiting values stated in table V:				P
9.8.2	Test current: I_n= (reach the steady-state value) Four-pole CB's: ☐ 1) Three poles loaded 2) One pole and neutral pole loaded ☐ 1) Four-poles loaded	63 A			N/A
	Ambient air temperature ....:	22,1 °C			P
	Parts .... Temperature rise (K)	B-1	B-2	B-3	P
	Terminal L1 load side	44 K	47 K	47 K	
	Terminal L1 supply side	43 K	44 K	45 K	
	Terminal L2 load side				
	Terminal L2 supply side				
	Terminal L3 load side				
	Terminal L3 supply side				
	Terminal L4 load side				
	Terminal L4 supply side				
	Terminals for external connections. 60				P

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Clause	Requirement + Test	Result - Remark			Verdict
	External parts liable to be touched during manual operation of the circuit-breaker. Including operating means of insulating material and metallic means for coupling of insulating operating means of several poles............ 40	18 K	18 K	18 K	P
	External metallic parts of operating means ... 25		-		N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60	37 K	38 K	38 K	P
9.8.5	Measurement of power losses				P
	Power loss do not exceed the values stated in table 15	13 W			P
	Test current: I_n = _____ A (reach the steady state value)	63 A			P
	Loaded one pole after the other				P
	Max. power loss : W	B-1	B-2	B-3	P
	L1	6.2 W	6.2 W	6.4 W	
	L2				
	L3				
	L4				
	L3				
	L4				
8.6	Uninterrupted duty				P
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				P
	28 cycles / 21h with current / 3h without current; cross section area _____ mm²	63 A 16 mm²			P

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Clause	Requirement + Test	Result - Remark			Verdict
	During the test no tripping during the test period, temperature rise shall be measured	-			P
	Ambient air temperature ....:	22,1 °C			P
	Parts........................ Temperature rise [K]				P
	Terminals for external connections.	B-1	B-2	B-3	P
	Terminal L1 load side	56 K	59 K	59 K	
	Terminal L1 supply side	52 K	57 K	55 K	
	Terminal L2 load side				
	Terminal L2 supply side				
	Terminal L3 load side				
	Terminal L3 supply side				
	Terminal L4 load side				
	Terminal L4 supply side				
	Test current 1.45 I_n	91,4 A			P
	- Tripping within	B-1	B-2	B-3	P
	- 1h (≤ 63 A)	117 s	151 s	[illegible]	[illegible]
	- 2h (> 63 A)				

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B" 3 SAMPLES	Type: DS3 4P	P
8.3	Dielectric properties and isolating capability		P
	CB shall have adequate dielectric properties and shall ensure isolation		P
8.3.1	Dielectric strength at power frequency		P
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		P
8.3.2	Isolating capability		P
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of Item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.		P
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)		P
	Circuit-breakers shall adequately withstand impulse voltages Compliance is checked by the tests of 9.7.6.2	Uimp = 4 kV	P
9.7	Test of dielectric properties and isolating capability		P
9.7.1	Resistance to humidity		P
9.7.1.1	Preparation of the circuit-breaker for test		P
	Inlet openings, if any, are left open, if knock-outs are provided, one of them is opened.		N/A
9.7.1.2	Test conditions		
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C	R H.= 95 % T = 25 °C	
9.7.1.3	Test procedure:		P
	The sample is kept in the cabinet for 48 h.		P
9.7.1.4	Condition of the circuit-breaker after the test		
	After this treat, the sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3		P
9.7.2	Insulation resistance of the main circuit		

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	After an interval between 30 min and 60 min Bowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows:				P
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position ≥ 2 MΩ	B-4 ≥ 500 MΩ	B-5 ≥ 500 MΩ	B-6 ≥ 500 MΩ	P
	b) In off-position, between each pole in turn and the others connected together ≥ 2 MΩ	≥ 500 MΩ	≥ 500 MΩ	≥ 500 MΩ	P
	c) In on-position, between all poles connected together and the frame ≥ 5 MΩ	≥ 500 MΩ	≥ 500 MΩ	≥ 500 MΩ	P
	d) between metal parts of mechanism and the frame ≥ 5 MΩ				P
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material ≥ 5 MΩ				N/A
9.7.3	Dielectric strength of the main circuit				P
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2	2000 V			P
	a) 2000 V				P
	b) 2000 V				P
	c) 2000 V				P
	d) 2000 V				P
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame U = ____ V				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together U = (1000 V if Ui ≤ 60 V or 2Ui + 1000 V if Ui > 60 V)		N/A
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		P
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		P
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		P
	- rated impulse withstand voltage (kV) :	4 kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13) :	6.2 kV	P
	- no unintentional disruptive discharge during the test's		P
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		P
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		P
	- rated impulse withstand voltage (kV) :	4 kV	P
	- sea level of the laboratory:	Sea level	P
	- test Uimp main circuits (see table 14) :	4,9 kV	P
	Application of test voltage		P
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		P
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		P
	- no unintentional disruptive discharge during the test		P

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)				P
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2. or 9.12.11.3. or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position				P
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA	0.1 mA			
8.4	Temperature rise				P
	Temperature rise does not exceed the limiting values stated in table V:				P
9.8.2	Test current I_n = (reach the steady-state value)	63 A			N/A
	Four-pole CB's: ☒ 1) Three poles loaded 2) One pole and neutral pole loaded ☐ 1) Four-poles loaded				
	Ambient air temperature	22.1 °C			P
	Parts . . . . . Temperature rise (K)	B-4	B-5	B-6	P
	1) Terminal L1 load side	54 K	54K	54 K	
	1) Terminal L1 supply side	53 K	53 K	54 K	
	1) Terminal L2 load side	57 K	57 K	57 K	
	1) Terminal L2 supply side	55 K	53 K	58 K	
	1) Terminal L3 load side	58 K	58 K	57 K	
	1) Terminal L3 supply side	57 K	57 K	57 K	
	2) Terminal L4 load side	53 K	54 K	54 K	
	2) Terminal L4 supply side	55 K	54 K	54 K	
	Terminals for external connections 60				

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Clause	Requirement + Test	Result - Remark			Verdict
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40	20 K	19 K	19 K	P
	External metallic parts of operating means 25				N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60	48 K	48 K	47 K	P
9.8.5	Measurement of power losses				P
	Power loss do not exceed the values stated in table 15	13 W			P
	Test current I_n = ... A (reach the steady state value)	63 A			P
	Loaded one pole after the other				P
	Max. power loss : W	B-4	B-5	B-6	
	L1	6,6 W	6,8 W	6,9 W	
	L2	6,9 W	7,2 W	7,3 W	
	L3	7,0 W	7,4 W	7,1 W	
	L4	6,7 W	7,1 W	7,2 W	
	L3				
	L4				
9.9	Uninterrupted duty				P
	Circuit-breakers operate reliable even after long service				P
9.9	28 day test				P
	28 cycles - 21 h with current - 3 h without current cross-sectional area ____ mm²	63 A 16 mm²			P

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Clause	Requirement + Test	Result - Remark			Verdict
	During the test no tripping during the last period temperature rise shall be measured				P
	Ambient air temperature	22,1 °C			P
	Parts . . . . . Temperature rise [K]				P
	Terminals for external connections	B-4	B-5	B-6	P
	Terminal L1 load side	64 K	64 K	64 K	
	Terminal L1 supply side	63 K	64 K	65 K	
	Terminal L2 load side	65 K	72 K	66 K	
	Terminal L2 supply side	65 K	68 K	71 K	
	Terminal L3 load side	72 K	66 K	67 K	
	Terminal L3 supply side	66 K	67 K	65 K	
	Terminal L4 load side	65 K	65 K	65 K	
	Terminal L4 supply side	65 K	63 K	63 K	
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 9.8) by more than 15 K				P
	Test current 1,45 I_n	91,4 A			P
	- Tripping within	B-4	B-5	B-6	P
	- 1h (≤ 63 A)	113 s	58 s	53 s	P
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B" 3 SAMPLES	Type: B 63 1P	P
8.3	Dielectric properties and isolating capability		N/A
	CB shall have adequate dielectric properties and shall ensure isolation:		N/A
8.3.1	Dielectric strength at power frequency		N/A
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		N/A
8.3.2	Isolating capability		N/A
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.		N/A
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)		N/A
	Circuit-breakers shall adequately withstand impulse voltages Compliance is checked by the tests of 9.7.6.2		N/A
9.7	Test of dielectric properties and isolating capability		N/A
9.7.1	Resistance to humidity		N/A
9.7.1.1	Preparation of the circuit-breaker for test		N/A
	Inlet openings, if any, are left open, if knock-outs are provided, one of them is opened.		N/A
9.7.1.2	Test conditions		N/A
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C		N/A
9.7.1.3	Test procedure:		N/A
	The sample is kept in the cabinet for 48 h.		N/A
9.7.1.4	Condition of the circuit-breaker after the test		N/A
	After this test, the sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3		N/A
9.7.2	Insulation resistance of the main circuit		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	After an interval between 30 min and 60 min flowing this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows				N/A
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position ≥ 2 MΩ	B-7	B-8	B-9	N/A
	b) In off-position, between each pole in turn and the others connected together ≥ 2 MΩ				N/A
	c) In on-position, between all poles connected together and the frame ≥ 5 MΩ	B-7	B-8	B-9	N/A
	d) between metal parts of mechanism and the frame ≥ 5 MΩ				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material ≥ 5 MΩ				N/A
9.7.3	Dielectric strength of the main circuit				N/A
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				N/A
	a) 2000 V				N/A
	b) 2000 V				N/A
	c) 2000 V				N/A
	d) 2000 V				N/A
	e) 2000 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	f) Between all the auxiliary or control circuits and the frame U = ____ V				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together U = [1000 V if Ui ≤ 60 V or 2Ui + 1000 V if Ui > 60 V]		N/A
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		N/A
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		N/A
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		N/A
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13).....		N/A
	- no unintentional disruptive discharge during the tests		N/A
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		N/A
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		N/A
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp main circuits (see table 14) :		N/A
	Application of test voltage		N/A
	a) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		N/A
	b) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		N/A
	- no unintentional disruptive discharge during the tests		N/A
9.7.6.3	Verification of leakage current across open contacts (suitability for isolation)		N/A
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2. or 9.12.11.3. or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open position		N/A
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.8.4	Temperature rise		P
	Temperature rise does not exceed the limiting values stated in table V:		P
9.8.2	Test current I_n = (reach the steady-state value)	63 A	N/A
	Four-pole CB is: ☒ 1) Three poles loaded 2) One pole and neutral pole loaded ☐ 1) Four-poles loaded		N/A
	Ambient air temperature	22,3°C	P

Parts ..... Temperature rise [K]	B-7	B-8	B-9	P
Terminal L1 load side	43 K	45 K	44 K	
Terminal L1 supply side	42 K	41 K	45 K	
Terminal L2 load side				
Terminal L2 supply side				
Terminal L3 load side				
Terminal L3 supply side				
Terminal L4 load side				
Terminal L4 supply side				
Terminal L3 load side				
Terminal L3 supply side				
Terminal L4 load side				
Terminal L4 supply side				
Terminals for external connections..... C0				P

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Clause	Requirement + Test	Result - Remark			Verdict
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40	17 K	18 K	18 K	P
	External metallic parts of operating means .. 25				N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60	39 K	40 K	43 K	P
9.8.5	Measurement of power losses				P
	Power loss do not exceed the values stated in table 15	13 W			P
	Test current: I_n = _____ A (reach the steady state value)	63 A			P
	Loaded one pole after the other				P
	Max. power loss : W	B-7	B-8	B-9	P
	L1	6,4 W	6,5 W	6,5 W	
	L2				
	L3				
	L4				
	L3				
	L4				
9.9	Uninterrupted duty				N/A
	Circuit-breakers operate reliable even after long service				N/A
9.9	28 day test				N/A
	28 cycles - 21 h with current - 3 h without current (cross-sectional area ____ mm²)				N/A
	During the test of 9.9 during the last period, temperatures shall be measured				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Ambient air temperature				N/A
	Parts ..... - Temperature rise [K]				N/A
	Terminals for external connections.....	B-7	B-8	B-9	N/A
	Terminal L1 load side				
	Terminal L1 supply side				
	Terminal L2 load side				
	Terminal L2 supply side				N/A
	Terminal L3 load side				
	Terminal L3 supply side				
	Terminal L4 load side				
	Terminal L4 supply side				
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 9.8) by more than 15 K				N/A
	Test current 1,45 I_n				N/A
	- Tripping within	B-7	B-8	B-9	N/A
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „B" 3 SAMPLES	Type: B 63 4P	P
8.3	Dielectric properties and isolating capability		N/A
	CB shall have adequate dielectric properties and shall ensure isolation		N/A
8.3.1	Dielectric strength at power frequency		N/A
	Compliance is checked by the tests 9.7.1, 9.7.2 and 9.7.3 on circuit-breaker in new condition		N/A
8.3.2	Isolating capability		N/A
	Circuit-breakers shall be suitable for isolation. Compliance is checked by the verification of compliance with the minimum clearances and creepage distances of item 1 of table 4 and by tests of 9.7.6.1 and 9.7.6.3.		N/A
8.3.3	Dielectric strength at rated impulse withstand voltage (Uimp)		N/A
	Circuit-breakers shall adequately withstand impulse voltages Compliance is checked by the tests of 9.7.6.2.		N/A
9.7	Test of dielectric properties and isolating capability		N/A
9.7.1	Resistance to humidity		N/A
9.7.1.1	Preparation of the circuit-breaker for test		N/A
	Inlet openings, if any, are left open; if knock-outs are provided, one of them is opened.		N/A
9.7.1.2	Test conditions		N/A
	The humidity treatment is carried out in humidity cabinet 91% to 95% and the temperature of the air between 20 °C and 30 °C		N/A
9.7.1.3	Test procedure:		N/A
	The sample is kept in the cabinet for 48 h.		N/A
9.7.1.4	Condition of the circuit-breaker after the test		N/A
	After this treat, the sample show no damage within the meaning of this standard and shall withstand the tests of 9.7.2 and 9.7.3		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
9.7.2	Insulation resistance of the main circuit				N/A
9.7.2	After an interval between 30 min and 60 min during this treatment, the insulation resistance is measured 5 s after application of a d.c. voltage of approximately 500 V, consecutively as follows				N/A
	a) In off-position, between the terminals which are electrically connected together when the circuit-breaker is in the closed position ≥ 2 MΩ	B-10	B-11	B-12	N/A
	b) In off-position, between each pole in turn and the others connected together ≥ 2 MΩ	B-10	B-11	B-12	N/A
	c) In on-position, between all poles connected together and the frame ≥ 5 MΩ	B-10	B-11	B-12	N/A
	d) between metal parts of mechanism and the frame ≥ 5 MΩ				N/A
	e) between the frame and metal foil in contact with the inner surface of the internal enclosure or lining of insulating material ≥ 5 MΩ				N/A
9.7.3	Dielectric strength of the main circuit				N/A
	After the circuit-breakers have passed the tests of 9.7.2 the test voltage specified in 9.7.5 is applied for 1 min between the parts indicated in 9.7.2				N/A
	a) 2000 V				N/A
	b) 2000 V				N/A
	c) 2000 V				N/A
	d) 2000 V				N/A
	e) 2500 V				N/A
9.7.4	Dielectric strength of the auxiliary and control circuits				N/A
	For these tests, the main circuit shall be connected to the frame. The test voltage specified in 9.7.5 shall be applied for 1 min as follows:				N/A
	1) Between all the auxiliary or control circuits and the frame U = ____ V				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	2) Between each part of the auxiliary or control circuits which may be isolated from the other parts of the auxiliary or control circuits and these other parts connected together U = [1000 V if Ui ≤ 60 V or 2Ui + 1000 V if Ui > 60 V]		N/A
9.7.6	Verification of the impulse withstand voltage (across clearances and across solid insulation) and leakage current across open contacts		N/A
9.7.6.1	Verification of the impulse withstand voltage across open contacts (suitability for isolation)		N/A
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		N/A
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp on open main contacts (equipment suitable for isolating) (see table 13)_____ :		N/A
	- no unintentional disruptive discharge during the test's		N/A
9.7.6.2	Verification of impulse withstand voltage for the parts not test in 9.7.6.1		N/A
	The 1,2/50µs impulse voltage shall be applied three times for each polarity at intervals of 1s minimum		N/A
	- rated impulse withstand voltage (kV) :		N/A
	- sea level of the laboratory:		N/A
	- test Uimp main circuits (see table 14) :		N/A
	Application of test voltage		N/A
	i) Between all the phase pole(s) connected together and to the neutral pole (or path) of the circuit-breaker		N/A
	ii) Between all the phase pole(s) and the neutral pole (or path) connected together and the metal support connected to the terminals intended for the protective conductor(s)		N/A
	- no unintentional disruptive discharge during the test s		N/A
9.7.6.3	Verification of leakage currents across open contacts (suitability for isolation)		N/A
	For circuit-breakers suitable for isolation, the leakage current shall be measured. Each pole having been submitted to the test of 9.12.11.2. or 9.12.11.3 or 9.12.11.4.2 or 9.12.11.4.3 is supplied at a test voltage of 1,1 times its rated operational voltage, the circuit-breaker being in the open		N/A
	The leakage current flowing across the open contacts is measured and shall not exceed 2 mA		

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Clause	Requirement + Test	Result - Remark			Verdict
8.4	Temperature rise				P
	Temperature rise does not exceed the limiting values stated in table V:				P
9.8.2	Test current, I_n= (reach the steady-state value)	63 A			N/A
	Four-pole CB s: ☒ 1) Three poles loaded 2) One pole and neutral pole loaded ☐ 1) Four-poles loaded				
	Ambient air temperature	22,3 °C			P
	Parts . . . . . Temperature rise [K]	B-10	B-11	B-12	P
	1) Terminal L1 load side	56 K	55 K	53 K	
	1) Terminal L1 supply side	54 K	54 K	53 K	
	1) Terminal L2 load side	58 K	58 K	57 K	
	1) Terminal L2 supply side	58 K	57 K	56 K	
	1) Terminal L3 load side	58 K	57 K	54 K	
	1) Terminal L3 supply side	57 K	56 K	56 K	
	2) Terminal L4 load side	55 K	54 K	53 K	
	2) Terminal L4 supply side	55 K	53 K	54 K	
	Terminals for external connections				P
	External parts liable to be touched during manual operation of the circuit-breaker, including operating means of insulating material and metallic means for coupling of insulating operating means of several poles 40	29 K	29 K	19 K	P
	External metallic parts of operating means . . . 25				N/A
	Other external parts, including that face of the circuit-breaker is in direct contact with the mounting surface 60	49 K	49 K	49 K	P

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Clause	Requirement + Test	Result - Remark			Verdict
9.8.5	**Measurement of power losses**				P
	Power loss do not exceed the values stated in table 15	13 W			P
	Test current: I_n = ______ A (reach the steady state value)	63 A			P
	Loaded one pole after the other				P
	Max. power loss : W	B-10	B-11	B-12	P
	L1	7.1 W	7,0 W	6.8 W	
	L2	7,3 W	7,5 W	7.2 W	
	L3	7,3 W	7,3 W	7,0 W	
	L4	7,0 W	7,2 W	7,1 W	
	L3				
	L4				
8.5	Uninterrupted duty				N/A
	Circuit-breakers operate reliable even after long service				N/A
9.9	**28 day test**				N/A
	28 cycles - 21 h with current - 3 h without current cross sectional area. ____ mm²				N/A
	During the test no tripping during the last period, temperature rise shall be measured				N/A
	Ambient air temperature.................................:				N/A
	Parts .... Temperature rise [K]				N/A
	Terminals for external connections.................60	B-10	B-11	B-12	N/A
	Terminal L1 load side				
	Terminal L1 supply side				
	Terminal L2 load side				
	Terminal L2 supply side				

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Clause	Requirement + Test	Result - Remark			Verdict
	Terminal L3 load side				
	Terminal L3 supply side				
	Terminal L4 load side				
	Terminal L4 supply side				
	The temperature rise does not exceed the value measured during the temperature rise test (subclause 9.8) by more than 15 K				N/A
	Test current 1,45 I_n				N/A
	- Tripping within	B-10	B-11	B-12	N/A
	- 1h (≤ 63 A)				N/A
	- 2h (> 63 A)				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „C" 3 +3 samples	Type: C63 1P for C1 sequence D63 1P for C2 sequence			P
8.7	Test C_1 __ Mechanical and electrical endurance	C1-1	C1-2	C1-3	P
	Circuit-breaker shall be capable to perform an adequate number of cycles with rated current				P
9.11.1	General test conditions				P
	Test: Test Voltage ______V (rated voltage) Test Current ______A (rated current) Power factor ________(0.85-0.9) Par. resistor ________ Ohm Cross sect. area ____mm²	232,6 V 64,6 A 0,89 16 mm²			P
9.11.2	Test procedure				P
	The circuit-breaker is submitted to 4000 operating cycles with rated current.	4000 cycles			P
	- I_n ≤ 32 A: 2 s on - 13 s off				N/A
	- I_n > 32 A: 2 s on - 28 s off				P
	During the test the circuit-breaker shall be operated as in normal use.				P
9.11.3	Condition of the circuit-breaker after the test				P
	Following the test 9.11.2 the sample shall not show:				P
	- undue wear				P
	- discrepancy between the position of the moving contacts and corresponding position of the indicating device	No discrepancy			P
	- damage to the enclosure permitting access to live parts by test finger (see 9.6	No damage			P
	- loosening of electrical or mechanical connections	No loosen			P
	- seepage of sealing compound				N/A
	Make-over test current..................2.55 I_n _____A	160,7 A			P
	[illegible] less 1 s or more than	C1-1	C1-2	C1-3	P

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Clause	Requirement + Test	Result - Remark			Verdict
	- 60 s (≤ 32 A)				N/A
	- 120 s (> 32 A)	32 s	45 s	28 s	P
	Dielectric strength reduced to 1500 V *)see Annex 1				P
9.12.11.2	**Test at reduced short-circuit currents**				P
9.12.11.2.1	Test on all circuit-breakers				P
9.12.11.2.1	Test at reduced short-circuit currents Fig. 3				P
	Test current:	Obtained			P
	- 500 A or 10 In	634,9 A			P
	Test voltage 1.05 Un	243,6 V			P
	Power factor 0,93-0,98	0.97			P
9.12.9.1	Test in free air copper wire F': ☐ 0.12 mm / ☒ 0.16 mm resistor R' : ☐ 0.75 Ohm / ☒ 1.5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0.12 mm / ☐ 0.16 mm resistor R : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure ______x______x______mm			N/A
	I_{peak} (A) max. value	C1-1	C1-2	C1-3	P
		1,17 kA	1,18 kA	1,20 kA	
	Sequence: 6 x "0" and 3x "CO"				P
	Max. I²t (kA²s)	C1-1	C1-2	C1-3	P
	L1	9,17	8,62	9.03	
	L2				
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				

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Clause	Requirement + Test	Result - Remark			Verdict
	After the test				P
9.12.12	**Verification of the circuit-breaker after short-circuit tests**				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 254 V. The circuit – breaker is in the open position				P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	L2				
	L3				
	L4				
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A
9.12.11.2.2	**Test C_2 Short-circuit test on circuit-breakers rated 230 V, or 240 V or 230/400 V for verifying for use in IT systems**				P
	Test current:	Obtained			P
	- 500 A or 1,2 times the upper limit of the standard	1549.9 A			P
	Test voltage 1,05 Un	425.9 V			P
	Power factor 0,93-0,98	0,93			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: ____x____x____mm			N/A
	I_{2t} (A) max. value	C2-1	C2-2	C2-3	P
		1,33 kA	1,84 kA	1,33 kA	

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Clause	Requirement + Test	Result - Remark			Verdict
	Sequence: "O" + "CO" on each protected pole				P
	Shifted point 30 ° on the other protected pole	C2-1	C2-2	C2-3	P
	Max. I^2t (kA²s) L1	3,78	11,5	3,78	P
	L2				
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P
9.12.12.1	**The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.**				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 253 V. The circuit – breaker is in the open position				P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	L2				
	L3				
	L4				
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS, C' 3 +3 samples	Type: D63 2P	N/A
8.7	**Test C_1 Mechanical and electrical endurance**		N/A
	Circuit-breaker shall be capable to perform an adequate number of cycles with rated current		N/A
9.11.1	General test conditions		N/A
	Test: Test Voltage _____V (rated voltage) Test Current _____A (rated current) Power factor _____(0,65-0,9) Per. resistor _____ Ohm Cross sect. area ____mm²		N/A
9.11.2	**Test procedure**		N/A
	The circuit-breaker is submitted to 4000 operating cycles with rated current.		N/A
	- $I_n \leq 32$ A: 2 s on - 13 s off		N/A
	- $I_n > 32$ A: 2 s on - 28 s off		N/A
	During the test the circuit-breaker shall be operated as in normal use.		N/A
9.11.3	**Condition of the circuit-breaker after the test**		N/A
	Following the test 9.11.2 the sample shall not show:		N/A
	- undue wear		N/A
	- discrepancy between the position of the moving contacts and corresponding position of the indicating device		N/A
	- damage to the enclosure permitting access to live parts by test finger (see 9.6		N/A
	- loosening of electrical or mechanical connections		N/A
	- seepage of sealing compound		N/A
	Moreover the current ... 2,55 I_n ____A		N/A
	Operating time less 1 s or more then		N/A
			N/A
			N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Dielectric strength reduced to 1500 V (see Annex 1				N/A
9.12.11.2	**Test at reduced short-circuit currents**				N/A
9.12.11.2.1	Test on all circuit-breakers				N/A
9.12.11.2.1	Test at reduced short-circuit currents: Fig. 3				N/A
	Test current				N/A
	- 500 A or 10 In				N/A
	Test voltage 1,05 Un				N/A
	Power factor 0,93-0,98				N/A
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm				N/A
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure ____x____x____mm			N/A
	I_{2t} (A) max. value				N/A
	Sequence: 6 x "O" and 3 x "CO"				N/A
	Max. I^2t (kA²s) L1				N/A
	L2				
	L3				
	L4				
	- No permanent arcing				N/A
	- No flash-over between poles or between poles and frame				N/A
	- No blowing of the fuses F and F'				N/A
	- Polyethylene foil shows no holes				N/A
	After the test:				N/A
9.12.12	**Verification of the circuit-breaker after short-circuit tests**				N/A
9.12.12.1	The circuit-breakers shall show no damage impairing ... maintenance, withstand the following tests.				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	a) leakage current across open contacts according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = _____ V. The circuit - breaker is in the open position				N/A
	The leakage current shall not exceed 2 mA L1				N/A
	L2				
	L3				
	L4				
	Electric strength test:				N/A
	Test voltage 1500 V (see 8.7.2)				N/A
	a)				N/A
	b)				N/A
	c)				N/A
	d)				N/A
	e) 2000 V				N/A
9.12.11.2.2	Test C_2: Short-circuit test on circuit-breakers rated 230 V, or 240 V or 230/400 V for verifying for use in IT systems				P
	Test current:	Obtained			P
	- 500 A or 1,2 times the upper limit of the standard	1549.9 A			P
	Test voltage 1.05 Un	425,9 V			P
	Power factor 0.93-0.98	0,93			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R: ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R: ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	I^2t_{on} (A) max. value	C2-4	C2-5		P
		1,92 kA	1,85 kA		
	Sequence: "O" + "CO" on each protected pole				P
	Shifted point 30 ° on the other protected pole	C2-4	C2-5		P
	Max. I^2t (kA²s) L1	12,1	11,9		P
	L2				

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Clause	Requirement + Test	Result - Remark			Verdict
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After this test				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit breaker is in the open position				P
	The leakage current shall not exceed 2 mA	C2-4	C2-5		P
	L1	≤ 0,1 mA	≤ 0,1 mA		
	L2	≤ 0,1 mA	≤ 0,1 mA		
	L3				
	L4				
	Electric strength test				F
	Test voltage 1500 V (see 8.7.2)	1500 V			F
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „C" 3 +3 samples	Type: C63 4P for C1 sequence D63 4P for C2 sequence			P
8.7	Test C_1: Mechanical and electrical endurance	C1-4	C1-5	C1-6	P
	Circuit-breaker shall be capable to perform an anterquits number of cycles with rated current				P
9.11.1	General test conditions				P
	Test: Test Voltage _____V (rated voltage) Test Current _____A (rated current) Power factor _____(0.85-0.9) Par. resistor _____Ohm Cross sect. area ____mm²	402 V 64,2 A 0,88 16 mm²			P
9.11.2	Test procedure				P
	The circuit-breaker is submitted to 4000 operating cycles with rated current.	4000 cycles			P
	- $I_n \leq 32$ A: 2 s on - 13 s off				N/A
	- $I_n > 32$ A: 2 s on - 28 s off	In = 63 A			P
	During the test the circuit-breaker shall be operated as in normal use.				P
9.11.3	Condition of the circuit-breaker after the test				P
	Following the test 9.11.2 the sample shall not show:				P
	- undue wear				P
	- discrepancy between the position of the moving contacts and corresponding position of the indicating device	No discrepancy			P
	- damage to the enclosure permitting access to live parts by test finger (see 9.6)	No damage			P
	- loosening of electrical or mechanical connections	No loosen			P
	- seepage of sealing compound				N/A
	Minimum test current . . . . . 2,55 I_n ____A	161 A			P
	Operating time less 1 s or more than	C1-4	C1-5	C1-6	P
					N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- 120 s (> 32 A)	35 s	50 s	43 s	P
	Dielectric strength reduced to 1500 V *) see Annex 1				P
9.12.11.2	Test at reduced short-circuit currents				P
9.12.11.2.1	Test on all circuit-breakers				P
9.12.11.2.1	Test at reduced short-circuit currents. Fig. 3				P
	Test current:	Obtained			P
	- 500 A or 10 In	634,9 A			P
	Test voltage 1,05 Un	243,6 V			P
	Power factor 0,93-0,98	0,97			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R: ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R: ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	I^2t_{on} (A) max. value	C1-4	C1-5	C1-6	P
	L1	1,19 kA	1,43 kA	1,62 kA	
	L2	1,19 kA	1,66 kA	1,65 kA	
	L3	1,19 kA	1,23 kA	1,53 kA	
	L4	1,23 kA	1,80 kA	1,76 kA	
	Sequence: 6 x "O" and 3 x "CO"				P
	Max. I^2t (kA²s)	C1-4	C1-5	C1-6	P
	L1	8,41	9,66	8,68	
	L2	9,02	9,66	10,1	
	L3	6,35	6,35	6,31	
	L4	6,42	6,51	6,55	
	- No permanent arming				P
	- No flash-over between poles or between poles and frame				
	- No blowing of the fuses F and F'				

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Clause	Requirement + Test	Result - Remark			Verdict
	- Polyethylene foil shows no holes				P
	After the test				P
9.12.12	**Verification of the circuit-breaker after short-circuit tests**				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1.1 times Un = 440 V. The circuit - breaker is in the open position				P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	L2	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L3	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L4	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	Electric strength test				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A
9.12.11.2.2	Test C_2 : **Short-circuit test on circuit-breakers rated 230 V, or 240 V or 230/400 V for verifying for use in IT systems**				P
	Test current	Obtained			P
	- 500 A or 1.2 times the upper limit of the standard	1542.9 A			P
	Test voltage 1.05 Un	425.9 V			P
	Power factor 0,93-0,98	0.93			P
9.12.9.1	Test in free air copper wire F : ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0.75 Ohm / ☒ 1.5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F : ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0.75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	I^2t_{on} (A) max. value	C2-6			P
	L1	2,03 kA			

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Clause	Requirement + Test	Result - Remark			Verdict
	L2	1,87 kA			
	L3	1,61 kA			
	L4	1,14 kA			
	Sequence "O" + "CO" on each protected pole				P
	Shifted point 30 ° on the other protected pole				P
	Max. I^2t (kA^2s)	C2-6			P
	L1	13,6			
	L2	9,60			
	L3	5,82			
	L4	2,74			
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P
9.12.12.1	**The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.**				P
	a) leakage current across open contacts according to 9.7.6.3, each pole is supplied at a voltage 1.1 times Un = 440 V. The circuit – breaker is in the open position				P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA			P
	L2	≤ 0,1 mA			
	L3	≤ 0,1 mA			
	L4	≤ 0,1 mA			
	Electric strength test				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D" 3 samples	Type D63 1P			P
8.6	**Automatic operation**				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests: D_0				P
	I_n (A)	63 A			P
	Sect. (mm²)	16 mm²			P
	Instantaneous tripping current	☐ B ☐ C ☒ D			P
9.10.1	Test of time-current characteristic				P
9.10.1.1	Test current 1.13 I_n (A) starting from cold for:	71.2 A			P
	- 1 h ($I_n \leq$ 63 A)				P
	- 2 h ($I_n >$ 63 A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1.45 I_n (A)	91,3 A			P
	- Tripping within	D0+D1-1	D0+D1-2	D0+D1-3	P
	- 1h ($\leq$ 63 A)	97 s	51 s	196 s	P
	- 2h (> 63 A)				N/A
9.10.1.2	Test current 2.55 I_n (A) starting from cold for:	160,6 A			P
	opening time not less than 1 s or more than	D0+D1-1	D0+D1-2	D0+D1-3	P
	- 60 s				N/A
	- 120 s	22 s	28 s	21 s	P
9.10.2	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.2.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage Un (phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operations is : O-CO-CO-CO Interval 3 min				P

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Clause	Requirement + Test	Result - Remark			Verdict
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.2.2 *)	☐ For circuit-breakers of the B Type				N/A
*see Annex 1	Test current $3I_n$ (A), starting from cold				N/A
	Opening time:				N/A
	- 0,1s ≤ t [≤ 45s (≤ 32A) *)acc. EN60898]				N/A
	- 0,1s ≤ t [≤ 90s (> 32A) *)acc. EN60898]				N/A
	Test current 5 I_n (A), starting from cold				N/A
	Tripping less than 0.1 s				N/A
9.10.2.3 *)	☐ For circuit-breakers of the C Type				N/A
*see Annex 1	Test current $5I_n$ (A), starting from cold				N/A
	Opening time:				N/A
	- 0,1s ≤ t [≤ 15s (≤ 32A) *)acc. EN60898]				N/A
	- 0,1s ≤ t [≤ 30s (> 32A) *)acc. EN60898]				N/A
	Test current 10 I_n (A), starting from cold				N/A
	Tripping less than 0.1 s				N/A
9.10.2.4 *)	☑ For circuit-breakers of the D - Type				P
*see Annex 1	Test current $10I_n$ (A), starting from cold	630 A			P
	Opening time:	D0+D1-1	D0+D1-2	D0+D1-3	P
	- 0,1s ≤ t [≤ 4s (≤ 32A) *)acc. EN60898]				N/A
	- 0,1s ≤ t [≤ 8s (> 32A) *)acc. EN60898]	> 0,1 s	> 0,1 s	> 0,1 s	P
	Test current 20 I_n (A) or to the maximum instantaneous tripping current(see cl. 6, Rem.)), starting from cold	1260 A			P
	Tripping less than 0,1 s	D0+D1-1	D0+D1-2	D0+D1-3	P
		Typ: 7 ms	Typ: 6 ms	Typ: 5 ms	
9.10.3	Test of effect of single pole loading on the tripping characteristic of multipole circuit-breakers:				

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current 1.1 It (A), (two pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
	Test current 1.2 It (A), (three pole or four pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	Test current 1.13 I_n (A)	71.2 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1.9 I_n (A) within 5s	119.7 A			P
	Tripping within	D0+D1-1	D0+D1-2	D0+D1-3	P
	- 1h	256 s	147 s	288 s	P
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P
	Test current I_n (A)	63 A			P
	No tripping within				P
	- 1h				P
	- 2h				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS: D_1	Type D63 1P	P
8.9	**Resistance to mechanical shock and impact**		P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.13.1	**Mechanical shock**		P
	- 50 falls on two sides of vertical board C		P
	- Vertical board turned 90°		P
	- 50 falls on two sides of vertical board C		P
	During the test the circuit-breakers shall not open		P
9.13.2	Mechanical impact		P
9.13.2.1	All types:		P
	- Impact test 10 blows-height 10 cm no damage		P
9.13.2.2	Screw-in types:		N/A
	- Torque 2.5 Nm for 1 min. no damage		N/A
9.13.2.3	CB intended to be mounted on a rail		P
	- downward vertical 50 N for 1 min		P
	- upward vertical 50 N for 1 min. no damage		P
9.13.2.4	Plug-in types		N/A
	The circuit-breaker are mounted in there normal position, complete with plug-in base but without cables and any cover plate		N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 17).		N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use		N/A
9.12.11.3	**Test at 1500 A:**		P
	Prospective current of 1500 A - power factor 0,93 to 0,98		P
	Prospective current obtained (A)	1549 A	P
	Power factor	0,91	P
	Test voltage 1,05 Un	245,1 V	P

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Clause	Requirement + Test	Result - Remark			Verdict
	Test circuit, figure	Figure 3 for 6O + 2CO Figure 5 for last O			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F: ☐ 0.12 mm / ☒ 0.16 mm resistor R: ☐ 0.75 Ohm / ☒ 1,5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0.12 mm / ☐ 0.16 mm resistor R: ☐ 0.75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	Sequence	6O + 2CO + O			P
	I^2t (A) max. value	D0+D1-1	D0+D1-2	D0+D1-3	P
		1,66 kA	1,67 kA	1,74 kA	
	Pt = No specified value	D0+D1-1	D0+D1-2	D0+D1-3	P
	Max. Pt(kA^2s) L1	7,74	8,44	8,53	
	L2				
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1.1 times Un = 253 V, the circuit - breaker is in the open position	D0+D1-1	D0+D1-2	D0+D1-3	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	L2				
	L3				

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Clause	Requirement + Test	Result - Remark			Verdict
	L4				
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 0.85x non tripping current (1,13 I_n)	60,5 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1.45 I_n) within 5s	100,5 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	D0+D1-1	D0+D1-2	D0+D1-3	P
		87 s	60 s		

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D" 3 samples	Type: D63 4P			P
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests: D_0				P
	I_n (A)	63 A			P
	Seal (mm²)	16 mm²			P
	Instantaneous tripping current	☐ B ☐ C ☒ D			P
9.10.1	Test of time-current characteristic				P
9.10.1.1	Test current 1,13 I_n (A) starting from cold for:	71,2 A			P
	- 1 h ($I_n \leq 63$ A)				P
	- 2 h ($I_n > 63$ A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1,45 I_n (A)	91,3 A			P
	- Tripping within	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 1h (≤ 63 A)	145 s	276 s	469 s	P
	- 2h (> 63 A)				N/A
9.10.1.2	Test current 2,55 I_n (A) starting from cold for:	160,6 A			P
	opening time not less than 1 s or more than	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 60 s				N/A
	- 120 s	19 s	20 s	25 s	P
9.10.2	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.2.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage Un(phase to neutral) with a power factor between 0,95 and 1.				
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P

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Clause	Requirement + Test	Result - Remark			Verdict
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.2.2 *)	☐ For circuit-breakers of the B – Type				N/A
*see Annex 1	Test current 3I_n (A), starting from cold				N/A
	Opening time:				N/A
	- 0,1s ≤ t [≤ 45s (≤ 32A) *)acc. EN60898]				N/A
	- 0,1s ≤ t [≤ 90s (> 32A) *)acc. EN60898]				N/A
	Test current 5 I_n (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.2.3 *)	☐ For circuit-breakers of the C – Type				N/A
*see Annex 1	Test current 5I_n (A) starting from cold				N/A
	Opening time:				N/A
	- 0,1s ≤ t [≤ 15s (≤ 32A) *)acc. EN60898]				N/A
	- 0,1s ≤ t [≤ 30s (> 32A) *)acc. EN60898]				N/A
	Test current 10 I_n (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.2.4 *)	☒ For circuit-breakers of the D – Type				P
*see Annex 1	Test current 10I_n (A) starting from cold	630 A			P
	Opening time:	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 0,1s ≤ t [≤ 4s (≤ 32A) *)acc. EN60898]				N/A
	- 0,1s ≤ t [≤ 8s (> 32A) *)acc. EN60898]				P
	Test current 20 I_n (A) or to the maximum instantaneous tripping current(see cl. 8. item j), starting from cold	1260 A			P
	Tripping less than 0,1 s	D0+D1-4	D0+D1-5	D0+D1-6	P
		8 ms	6ms	7 ms	
9.10.3	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers.				P

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current 1,1 It (A). (two pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
	Test current 1,2 It (A). (three pole or four pole) starting from cold	109,6 A			P
	Tripping within				P
	- 1h	D0+D1-4	D0+D1-5	D0+D1-6	P
	L1	168 s	196 s	226 s	
	L2	237 s	167 s	205 s	
	L3	193 s	209s	172 s	
	L4	171 s	178 s	131 s	
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	Test current 1,13 I_n (A)	71,2 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,9 I_n (A) within 5s	119,7 A			P
	Tripping within	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 1h	311 s	466 s	497 s	P
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P
	Test current I_n (A)	63 A			P
	- No tripping within				P
	- 1h				P
	- 2h				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS: D_1		P
8.9	Resistance to mechanical shock and impact		P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use		P
9.13.1	Mechanical shock		P
	- 50 falls on two sides of vertical board C		P
	- Vertical board turned 90°		P
	- 50 falls on two sides of vertical board C		P
	During the test the circuit-breakers shall not open		P
9.13.2	Mechanical impact		P
9.13.2.1	All types:		P
	- Impact test: 19 blows-height 10 cm, no damage		P
9.13.2.2	Screw-in types.		N/A
	- Torque 2,5 Nm for 1 min, no damage		N/A
9.13.2.3	CB intended to be mounted on a rail		P
	- downward vertical 50 N for 1 min		P
	- upward vertical 50 N for 1 min, no damage		P
9.13.2.4	Plug-in types		N/A
	The circuit-breaker are mounted in there normal position, complete with plug-in base but without cables and any cover plate		N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 17)		N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use.		N/A
9.12.11.3	Test at 1500 A:		P
	Prospective current of 1500 A - power factor 0,95 to 0,98		P
	Prospective current obtained (A)	1534 A	
	Power factor	0,95	
	Test voltage 1,05 Un	425,2 V	

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Clause	Requirement + Test	Result - Remark			Verdict
	Test circuit, figure	Figure 6			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F: ☐ 0.12 mm / ☒ 0.16 mm resistor R ☐ 0.75 Ohm / ☒ 1.5 Ohm	"a" = 35 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0.12 mm / ☐ 0.16 mm resistor R ☐ 0.75 Ohm / ☐ 1.5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	Sequence	6O + 3CO, normal connection			P
	I_{cm} (A) max. value	D0+D1-4	D0+D1-5	D0+D1-6	P
		1,55 kA	1,55 kA	1,57 kA	
	I²t = No specified value	D0+D1-4	D0+D1-5	D0+D1-6	P
	Max. I²t (kA²s) L1	5,63	5,87	6,15	
	L2	7,87	7,55	7,55	
	L3	6,69	6,14	5,09	
	L4				
	Sequence	6O + 3CO 3 additional samples due to no N marked Using successively each pole as neutral in turn.			P
	I_{cm} (A) max. value	D0+D1-4	D0+D1-5	D0+D1-6	P
		1,53 kA	1,56 kA	1,58 kA	
	I²t = No specified value	D0+D1-7	D0+D1-8	D0+D1-9	P
	Max. I²t (kA²s) L1	5,11	7,03		
	L2	7,45		6,19	
	L3		9,34	6,57	
	L4	5,30	6,85	7,0	
	- No permanent arcing				P

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Clause	Requirement + Test	Result - Remark			Verdict
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following test's				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit – breaker is in the open position	D0+D1-4	D0+D1-5	D0+D1-6	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	L2	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L3	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L4	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
		D0+D1-7	D0+D1-8	D0+D1-9	
	L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L3	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L4	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	Electric strength test:				P
	Test voltage 1500 V (see 8.2.2)	1500 V			P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 0,85 x non tripping current (1,13 I_n)	60,5 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_n) within 5s	100,5 A			P

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Clause	Requirement + Test	Result - Remark			Verdict
	Tripping within ☒ 1 hour / ☐ 2 hour	D0+D1-4	D0+D1-5	D0+D1-6	P
		46 s	111 s	39 s	
		D0+D1-7	D0+D1-8	D0+D1-9	
		130 s	87 s	205 s	

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D"	D type, 1 for All other rated current B, C type, 1 for all rated current (only 9.10.2 for B and C type)			P
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests: D_0				P
	I_n (A)	D0-1	D0-2	D0-3	P
		D1	D2	D3	
		D0-4	D0-5	D0-6	
		D4	D5	D6	
		D0-7	D0-8	D0-9	
		D10	D13	D16	
		D0-10	D0-11	D0-12	
		D20	D25	D32	
		D0-13	D0-14	--	
		D40	D50	--	
		D0-15	D0-16	D0-17	
		B1	B2	B3	
		D0-18	D0-19	D0-20	
		B4	B5	B6	
		D0-21	D0-22	D0-23	
		B10	B13	B16	
		D0-24	D0-25	D0-26	
		B20	B25	B32	
		D0-27	D0-28	D0-29	
		B40	B50	B63	
		--	D0-30	D0-31	
	I_n (A)	--	C1	C2	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-32	D0-33	D0-34	
		C3	C4	C5	
		D0-35	D0-36	D0-37	
		C6	C10	C13	
		D0-38	D0-39	D0-40	
		C16	C20	C25	
		D0-41	D0-42	D0-43	
		C32	C40	C50	
		D0-44			
		C63			
	Sect. (mm²)	D0-1	D0-2	D0-3	P
		1 mm²	1 mm²	1 mm²	
		D0-4	D0-5	D0-6	
		1 mm²	1 mm²	1 mm²	
		D0-7	D0-8	D0-9	
		1,5 mm²	1,5 mm²	2,5 mm²	
		D0-10	D0-11	D0-12	
		2,5 mm²	2,5 mm²	4 mm²	
		D0-13	D0-14	--	
		6 mm²	10 mm²	--	
		D0-15	D0-16	D0-17	
		1 mm²	1 mm²	1 mm²	
		D0-18	D0-19	D0-20	
		1 mm²	1 mm²	1 mm²	
		D0-21	D0-22	D0-23	
		1,5 mm²	1,5 mm²	2,5 mm²	
		D0-24	D0-25	D0-26	
		2,5 mm²	4 mm²	6 mm²	
	Sect. (mm²)	D0-27	D0-28	D0-29	P
		10 mm²	10 mm²	16 mm²	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-30	D0-32	D0-33	
		1 mm²	1 mm²	1 mm²	
		D0-34	D0-35	D0-36	
		1 mm²	1 mm²	1,5 mm²	
		D0-37	D0-38	D0-39	
		1,5 mm²	2,5 mm²	2,5 mm²	
		D0-40	D0-41	D0-42	
		4 mm²	6 mm²	10 mm²	
		D0-43	D0-44		
		10 mm²	16 mm²		
	Instantaneous tripping current	☐ B	☐ C	☒ D	P
9.10.1	Test of time-current characteristic				P
9.10.1.1	Test current 1,13 I_n (A) starting from cold for	D0-1	D0-2	D0-3	P
		1,13 A	2,26 A	3,39 A	
		D0-4	D0-5	D0-6	
		4,52 A	5,65 A	6,78 A	
		D0-7	D0-8	D0-9	
		11,3 A	14,7 A	18,1 A	
		D0-10	D0-11	D0-12	
		22,6 A	28,3 A	36,2 A	
		D0-13	D0-14		
		45,2 A	56,5 A		
	- 1 h ($I_n \leq 63$ A)				P
	- 2 h ($I_n > 63$ A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1,45 I_n (A)	D0-1	D0-2	D0-3	P
		1,45 A	2,9 A	4,35 A	
		D0-4	D0-5	D0-6	

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Clause	Requirement + Test	Result - Remark			Verdict
		5,8 A	7,25 A	8,7 A	
		D0-7	D0-8	D0-9	
		14,5 A	18,9 A	23,2 A	
		D0-10	D0-11	D0-12	
		29 A	36,3 A	46,4 A	
		D0-13	D0-14		
		58 A	72,5 A		
	- Tripping within				P
	- 1h (≤ 63 A)	D0-1	D0-2	D0-3	P
		197 s	334 s	241 s	
		D0-4	D0-5	D0-6	
		59 s	38 s	88 s	
		D0-7	D0-8	D0-9	
		48 s	75 s	140 s	
		D0-10	D0-11	D0-12	
		57 s	261 s	154 s	
		D0-13	D0-14		
		108 s	72 s		
	- 2h (> 63 A)				N/A
9.10.1.2	Test current 2,55 I_n (A) starting from cold for	D0-1	D0-2	D0-3	P
		2,55 A	5,1 A	7,65 A	
		D0-4	D0-5	D0-6	
		10,2 A	12,8 A	15,3 A	
		D0-7	D0-8	D0-9	
		25,5 A	33,2 A	40,8 A	
		D0-10	D0-11	D0-12	
		51 A	63,8	81,6 A	
		D0-13	D0-14		P
		102 A	127,5 A		
	Tripping time not less than 1 s or more than				P
		D0-1	D0-2	D0-3	

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Clause	Requirement + Test	Result - Remark			Verdict
		24 s	21 s	27 s	
		D0-4	D0-5	D0-6	
		35 s	28 s	32 s	
		D0-7	D0-8	D0-9	
		17s	25 s	26 s	
		D0-10	D0-11	D0-12	
		34 s	40 s	27 s	
	- 120 s	D0-13	D0-14		P
		37 s	31 s		
9.10.2	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.2.1	General test conditions				P
	For the lower values of the test current the test is made once, at any convenient voltage				P
	For the upper values of the test current the test is made at rated voltage Un(phase to neutral) with a power factor between 0,95 and 1.				P
	The sequence of operation is : O-CO-CO-CO Interval time: > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.2.2 *)	☒ For circuit-breakers of the B - Type				P
*see Annex I	Test current 3I_n (A), starting from cold	D0-15	D0-16	D0-17	P
		3 A	6 A	9 A	
		D0-18	D0-19	D0-20	
		12 A	15 A	18 A	
		D0-21	D0-22	D0-23	
		30 A	39 A	48 A	
		D0-24	D0-25	D0-26	P
		60 A	75 A	90 A	
		D0-27	D0-28	D0-29	
		120 A	150 A	180 A	

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Clause	Requirement + Test	Result - Remark			Verdict
	Opening time:				P
	- 0,1s ≤ t [≤ 45s (≥ 32A) *)acc. EN60898]				P
	- 0,1s ≤ t [≤ 90s (< 32A) *)acc. EN60898]				P
	Test current 5 I_n (A), starting from cold	D0-15	D0-16	D0-17	P
		5 A	10 A	15 A	
		D0-18	D0-19	D0-20	
		20 A	25 A	30 A	
		D0-21	D0-22	D0-23	
		50 A	65 A	80 A	
		D0-24	D0-25	D0-26	
		100 A	125A	160A	
		D0-27	D0-28	D0-29	
		200A	250 A	315 A	
	Tripping less than 0,1 s	D0-15	D0-16	D0-17	P
		7,7 ms	6,9 ms	11 ms	
		D0-18	D0-19	D0-20	
		9,8 ms	7,9 ms	10,2 ms	
		D0-21	D0-22	D0-23	
		13,1 ms	9,9 ms	6,7 ms	
		D0-24	D0-25	D0-26	
		8,9 ms	10 ms	9,8 ms	
		D0-27	D0-28	D0-29	
		10 ms	6,9 ms	8,8 ms	
9.10.2.3 *)	☑ For circuit-breakers of the C - Type				
*see Annex 1	Test current 5I_n (A), starting from cold	D0-30	D0-31	D0-32	P
		5 A	10 A	15 A	
		D0-33	D0-34	D0-35	
		20 A	25 A	30 A	
		D0-36	D0-37	D0-38	

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Clause	Requirement + Test	Result - Remark			Verdict
		50 A	65 A	80 A	
		D0-39	D0-40	D0-41	
		100 A	125A	160 A	
		D0-42	D0-43	D0-44	
		200 A	250 A	315 A	
	Opening time:				P
	- 0,1s ≤ t [≤ 15s (≥ 32A) *)acc. EN60898]				P
	- 0,1s ≤ t [≤ 30s (< 32A) *)acc. EN60898]				P
	Test current 10 I_n (A), starting from cold	D0-30	D0-31	D0-32	P
		10 A	20 A	30 A	
		D0-33	D0-34	D0-35	
		20 A	50 A	80A	
		D0-36	D0-37	D0-38	
		100A	130 A	160 A	
		D0-39	D0-40	D0-41	
		200 A	250A	320 A	
		D0-42	D0-43	D0-44	
		400 A	500 A	630 A	
	Tripping less than 0,1 s	D0-30	D0-31	D0-32	P
		9,7 ms	12 ms	11,2 ms	
		D0-33	D0-34	D0-35	
		10,9 ms	13 ms	10,1 ms	
		D0-36	D0-37	D0-38	
		6,9 ms	12 ms	9,7 ms	
		D0-39	D0-40	D0-41	
		11,3 ms	13 ms	10 ms	
		D0-42	D0-43	D0-44	

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Clause	Requirement + Test	Result - Remark			Verdict
		10,7 ms	11 ms	6,8 ms	
9.10.2.4 *)	☒ For circuit-breakers of the D Type				P
*see Annex 1	Test current 10I_n (A), starting from cold	D0-1	D0-2	D0-3	P
		10 A	20A	30 A	
		D0-4	D0-5	D0-6	
		40 A	50 A	60 A	
		D0-7	D0-8	D0-9	
		100 A	130 A	160 A	
		D0-10	D0-11	D0-12	
		200 A	250 A	320A	
		D0-13	D0-14		
		400 A	500 A		
	Opening time:				P
	- 0,1s ≤ t [≤ 4s (≥ 32A) *)acc. EN60898]				P
	- 0,1s ≤ t [≤ 8s (< 32A) *)acc. EN60898]				P
	Test current 20 I_n (A) or to the maximum instantaneous tripping current(see cl. 6. item j), starting from cold	Tested at 20 In			P
		D0-1	D0-2	D0-3	
		20 A	40A	60 A	
		D0-4	D0-5	D0-6	
		80 A	100 A	120 A	
		D0-7	D0-8	D0-9	
		200 A	260 A	320 A	
		D0-10	D0-11	D0-12	
		400 A	500 A	640A	
		D0-13	D0-14		P
		600 A	1000 A		
	Tripping less than 0,1 s	D0-1	D0-2	D0-3	P
		7 ms	6 ms	8 ms	
		D0-4	D0-5	D0-6	
		7 ms	8 ms	6 ms	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-7	D0-8	D0-9	
		5 ms	7 ms	9 ms	
		D0-10	D0-11		
		6 ms	7 ms		
		D0-12	D0-13	D0-14	
		8 ms	7 ms	6 ms	
9.10.3	Test of effect of single pole loading on the tripping characteristic of multipole circuit-breakers:				P
	Test current 1,1 It (A), (two pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
	Test current 1,2 It (A), (three pole or four pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	L1				
	L2				
	L3				
	L4				
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	Test current 1,13 I_n (A)	D0-1	D0-2	D0-3	P
		1,13 A	2,26 A	3,39 A	
		D0-4	D0-5	D0-6	
		4,52 A	5,65 A	6,78 A	
		D0-7	D0-8	D0-9	

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Clause	Requirement + Test	Result - Remark			Verdict
		11.3 A	14.7 A	18.1 A	
		D0-10	D0-11	D0-12	
		22.6 A	28,3 A	36.2 A	
		D0-13	D0-14		
		45,2 A	65.0 A		
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1.9 I_n (A) within 5s	D0-1	D0-2	D0-3	P
		1,9 A	3.8 A	5.7 A	
		D0-4	D0-5	D0-6	
		7,6 A	9,5 A	11.4 A	
		D0-7	D0-8	D0-9	
		18,0 A	24,7 A	30,4 A	
		D0-10	D0-11	D0-12	
		38,0 A	47,5 A	60.8 A	
		D0-13	D0-14		
		76.0 A	95.0 A		
	Tripping within				P
	- 1h	D0-1	D0-2	D0-3	P
		163 s	372 s	145 s	
		D0-4	D0-5	D0-6	
		71 s	56 s	77 s	
		D0-7	D0-8	D0-9	
		81 s	153 s	107 s	P
		D0-10	D0-11	D0-12	
		33 s	176 s	255 s	
		D0-13	D0-14		
		138 s	55 s		
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current I_n (A)	D0-1	D0-2	D0-3	P
		1 A	2 A	3 A	
		D0-4	D0-5	D0-6	
		4 A	5 A	6 A	
		D0-7	D0-8	D0-9	
		10 A	13 A	16 A	
		D0-10	D0-11	D0-12	
		20 A	25 A	32 A	
		D0-13	D0-14		
		40 A	50A		
	No tripping within				P
	- 1h				P
	- 2h				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E1" 3 + 3 SAMPLES *) *SEE ANNEX 1*	Type: D1 1P			P
8.12.11.4.2	Test: E_1-Test at service short-circuit capacity	E1-1	E1-2	E1-3	P
	Service short-circuit capacity	7500 A			P
	Test circuit: figure _	Figure 3			P
	Prospective current	7500 A			P
	Prospective current obtained	7530 A			P
	Test voltage 1.05 Un	245.3 V			P
	Power factor	0.45-0,50			P
	Power factor obtained	0,50			P
	Sequence	Table 19 of IEC 60898-1			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0.16 mm resistor R: ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 m			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0.16 mm resistor R: ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimensions of enclosure: _____x_____x_____mm			N/A
	I_{n-n} (mA) max. value	0,81 mA			P
	PI = No specified value	E1-1	E1-2	E1-3	P
	Max. I²t (kA²s) L1	1.01	0.94	1.07	
	L2				
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No melting of the fuses F and F'				P
	Cellophane foil shows no holes				P
					P

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3 each pole is supplied at a voltage 1,1 times Un = 253 V. The circuit - breaker is in the open position	E1-1	E1-2	E1-3	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2				
	L3				
	L4				
	Electric strength test.				P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 0,65x non tripping current (1,13 I_n)	0,96 A			P
	Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1.45 I_n) within 5s	1.53 A			P
	Tripping within ☒ 1 Hour / ☐ 2 hour	E1-1	E1-2	E1-3	P
		87 s	68 s	49 s	

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Clause	Requirement + Test	Result - Remark			Verdict
8.12.11.4.2	Test: E_1(Test at service short-circuit capacity) three phase tests for single circuit-breakers	E1-4	E1-5	E1-6	P
	Service short-circuit capacity	7500 A			P
	Test circuit: figure _ :	Figure 5			P
	Prospective current :	7500 A			P
	Prospective current obtained	7641 A			P
	Test voltage 1,05 Un	425,3 V			P
	Power factor	0,45-0,5			P
	Power factor obtained	0,46			P
	Sequence	table 21 of IEC 60898-1			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimensions of enclosure: ____x____x____mm			N/A
	I^2t (kA²) max. value	0,71 kA			P
	I^2t = No specified value	E1-4	E1-5	E1-6	P
	Max. I^2t (kA²s) L1	0,54			
	L2		0,83		
	L3			0,55	
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 253 V. The circuit - breaker is in the open position	E1-4	E1-5	E1-6	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2				
	L3				
	L4				
	Electric strength test.				P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 0,65x non tripping current (1,13 I_n)	0,96 A			P
	-Passed for 1h				P
	-Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_n) within 5s	1,53 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1-4	E1-5	E1-6	P
		139 s	200 s	50 s	

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IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E1" 3 + 3 SAMPLES *) SEE ANNEX 1	Type: D63 1P			P
8.12.11.4.2	Test: E_1 Test at service short-circuit capacity	E1-7	E1-8	E1-9	P
	Service short-circuit capacity	7500 A			P
	Test circuit: figure _ :	Figure 3			P
	Prospective current	7500 A			P
	Prospective current obtained	7530 A			P
	Test voltage 1,05 Un	245,3 V			P
	Power factor	0,45-0,50			P
	Power factor obtained	0,50			P
	Sequence	Table 19 of IEC 60898-1			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimensions of enclosure: ____x____x____mm			N/A
	I^2t (kA) max. value	5,07 kA			P
	I^2t = No specified value	E1-7	E1-8	E1-9	P
	Max. I^2t (kA²s) L1	110,9	101,6	53,5	
	L2				
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test				P

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IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 253 V. The circuit - breaker is in the open position	E1-7	E1-8	E1-9	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2				
	L3				
	L4				
	Electric strength test.				P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 0,65x non tripping current (1,13 I_n)	60,5 A			P
	-Passed for 1h				P
	-Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_n) within 5s	100,5 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1-7	E1-8	E1-9	P
		340 s	2[illegible] s	2[illegible] s	

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IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
8.12.11.4.2	**Test: E1(Test at service short-circuit capacity) three phase tests for single circuit-breakers**	E1-10	E1-11	E1-12	P
	Service short-circuit capacity	7500 A			P
	Test circuit: figure _	Figure 5			P
	Prospective current	7500 A			P
	Prospective current obtained	7644 A			P
	Test voltage 1,05 Un	425,3 V			P
	Power factor	0,45~0,5			P
	Power factor obtained	0,46			P
	Sequence	table 21 of IEC 60898-1			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimensions of enclosure: ____x____x____mm			N/A
	I_{cs} (kA) max. value	5,87 kA			P
	I²t = No specified value	E1-10	E1-11	E1-12	P
	Max. I²t (kA²s) L1	54,3			
	L2		73,8		
	L3			66,0	
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test				P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	**The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.**				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 253 V. The circuit - breaker is in the open position	E1-10	E1-11	E1-12	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2				
	L3				
	L4				
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 0,85x non tripping current (1,13 I_n)	60,5 A			P
	-Passed for 1h				P
	-Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_n) within 5s	100,5 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1-10	E1-11	E1-12	P
		48 s	36 s	78 s	

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS , E1* 3 samples *) see Annex 1	Type: D1 2P			P
8.12.11.4.2	**Test: E_1 Test at service short-circuit capacity**	E1-13	E1-14	E1-15	P
	Service short-circuit capacity	7500 A			P
	Test circuit: figure _	Figure 4b			P
	Prospective current	7500 A			P
	Prospective current obtained	7600 A			P
	Test voltage 1,05 Un	425,6 V			P
	Power factor _____	0,45~0,50			P
	Power factor obtained	0,47			P
	Sequence	Table 19 of IEC 60898-1			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimensions of enclosure: ___x____x_____mm			N/A
	I_{cs} (kA) max. value	0,78 kA			P
	I²t = No specified value	E1-13	E1-14	E1-15	P
	Max. I²t (kA²s) L1	0,69	0,64	0,78	
	L2	0,79	0,76	0,71	
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test				P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	**The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.**				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit - breaker is in the open position	E1-13	E1-14	E1-15	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L3				
	L4				
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 0,85x non tripping current (1,13 I_n)	0,96 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_n) within 5s	1,51 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1-13	E1-14	E1-15	P
		52 s	68 s	39 s	

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „E1" 3 samples **) see Annex 1*	Type: D63 2P	P
8.12.11.4.2	**Test: E_1 Test at service short-circuit capacity**	E1-16 / E1-17 / E1-18	P
	Service short-circuit capacity	7500 A	P
	Test circuit: figure _	Figure 4b	P
	Prospective current	7500 A	P
	Prospective current obtained	7600 A	P
	Test voltage 1.05 Un	425,8 V	P
	Power factor ____ :	0,45–0,50	P
	Power factor obtained	0,47	P
	Sequence	Table 19 of IEC 60898-1	P
	T (min)	3 min	P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm	P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimensions of enclosure: ____x____x____mm	N/A
	I_{cu} (kA) max. value	4,82 kA	P
	I²t = No specified value	E1-16 / E1-17 / E1-18	P
	Max. I²t (kA²s) L1	46,7 / 29,9 / 29,9	
	L2	53,1 / 36,8 / 36,8	
	L3		
	L4		
	- No permanent arcing		P
	- No flash-over between poles or between poles and frame		P
	- No blowing of the fuses F and F'		P
	- Polyethylene foil shows no holes		P
	After the test:		P

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IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.12.12.1	**The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.**		P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit - breaker is in the open position	E1-16 / E1-17 / E1-18	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA / ≤ 0,1 mA / ≤ 0,1 mA	
	L2	≤ 0,1 mA / ≤ 0,1 mA / ≤ 0,1 mA	
	L3		
	L4		
	Electric strength test:		P
	Test voltage 1500 V (see 8.7.2)		P
	a)		P
	b)		P
	c)		P
	d)		P
	e) 2000 V		N/A
	Test current 0,85x non tripping current (1,13 I_n)	60,5 A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_n) within 5s	100,5 A	P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1-16 / E1-17 / E1-18 151 s / 172 s / 79 s	P

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IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „E1" 3 SAMPLES **) SEE ANNEX 1*	Type: D1 4P	P
8.12.11.4.2	**Test: E_1 Test at service short-circuit capacity**	E1-19 / E1-20 / E1-21	P
	Service short-circuit capacity	7500 A	P
	Test circuit: figure _	Figure 6	P
	Prospective current	7500 A	P
	Prospective current obtained	7644 A	P
	Test voltage 1.05 Un	425,3 V	P
	Power factor ____	0,45–0,50	P
	Power factor obtained	0,46	P
	Sequence	Table 20 of IEC 60898-1	P
	T (min)	3 min	P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm	P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimensions of enclosure: ____x____x____mm	N/A
	I_{cu} (kA) max. value	0,81 kA	P
	I²t = No specified value	E1-19 / E1-20 / E1-21	P
	Max. I²t (kA²s) L1	0,09 / 0,09 / 0,76	
	L2	0,45 / 0,72 / 0,42	
	L3	0,53 / 0,87 / 0,62	
	L4		
	- No permanent arcing		P
	- No flash-over between poles or between poles and frame		P
	- No blowing of the fuses F and F'		P
	- Polyethylene foil shows no holes		P
	After the test:		P

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IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
9.12.12.1	**The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.**		P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit – breaker is in the open position	E1-19 / E1-20 / E1-21	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA / ≤ 0,1 mA / ≤ 0,1 mA	
	L2	≤ 0,1 mA / ≤ 0,1 mA / ≤ 0,1 mA	
	L3	≤ 0,1 mA / ≤ 0,1 mA / ≤ 0,1 mA	
	L4	≤ 0,1 mA / ≤ 0,1 mA / ≤ 0,1 mA	
	Electric strength test:		P
	Test voltage 1500 V (see 8.7.2)		P
	a)		P
	b)		P
	c)		P
	d)		P
	e) 2000 V		N/A
	Test current 0,85 x non tripping current (1,13 I_n)	0,96 A	P
	- Passed for 1h		P
	- Passed for 2h		N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_n) within 5s	1,53 A	P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1-19 / E1-20 / E1-21 127 s / 205 s / 102 s	P

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IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E1" 3 SAMPLES *) SEE ANNEX 1	Type: D63 4P			P
8.12.11.4.2	Test: E_1 Test at service short-circuit capacity	E1-22	E1-23	E1-24	P
	Service short-circuit capacity	7500 A			P
	Test circuit figure _:	Figure 6			P
	Prospective current	7500 A			P
	Prospective current obtained	7644 A			P
	Test voltage 1,05 Un	425,3 V			P
	Power factor _____:	0,45-0,50			P
	Power factor obtained	0,46			P
	Sequence	Table 20 of IEC 60898-1			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F': ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimensions of enclosure: ____x____x____mm			N/A
	$I_{c.s}$ (kA) max. value	5,75 kA			P
	I^2t = No specified value	E1-22	E1-23	E1-24	P
	Max. I^2t (kA^2s) L1	60,5	84,4	38,7	
	L2	32,9	61,7	17,3	
	L3	60,4	65,8	53,0	
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test				P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Ue = 440 V. The circuit - breaker is in the open position	E1-22	E1-23	E1-24	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L3	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L4	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	Electric strength test.				P
	Test voltage 1500 V (see 8.7.2)				P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 0,85x non tripping current (1,13 I_n)	60,5 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1,1 x tripping current (1,45 I_n) within 5s	100,5 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	E1-22	E1-23	E1-24	P
		49 s	52 s	40 s	

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E2" 3 + 4 samples	Type: D1 1P			P
9.12.11.4.3	Test: E_2 (Test at rated short-circuit capacity)	E2-1	E2-2	E2-3	P
	Service short-circuit capacity	10 000 A			P
	Test circuit figure _:	Figure 3			P
	Prospective current:	10 000 A			P
	Prospective current obtained	10 130 A			P
	Test voltage 1,05 Un"	245,6 V			P
	Power factor _____:	0,45 - 0,5			P
	Power factor obtained _____:	0,45			P
	Sequence:	Table 22 of IEC 60898-1			P
	T (min) _	3 min			P
9.12.9.1	Test in free air copper wire F': ☐ 0,12 mm / ☒ 0,16 mm resistor R' ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: ____x____x____mm			N/A
	$I_{c.s}$ (kA) max. value	5,42 kA			P
	I^2t = No specified value	E2-1	E2-2	E2-3	P
	Max. I^2t (kA^2s) L1	66,7	68,2	52,0	
	L2				
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test				P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3 each pole is supplied at a voltage 1,1 times Ue = 253 V. The circuit - breaker is in the open position	E2-1	E2-2	E2-3	P
	The leakage current shall not exceed 2 mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	P
	L2				N/A
	L3				N/A
	L4				N/A
	Electric strength test.				P
	Test voltage 900 V (see 9.7.3)				P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 2,8 I_n	2,80 A			P
	Tripping within > 0,1 s up to	E2-1	E2-2	E2-3	P
	- 60 s	35 s	41 s	27 s	P
	- 120 s				N/A

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Clause	Requirement + Test	Result - Remark	Verdict

9.12.11.4.3	Test: E2 (Test at rated short-circuit capacity) three phase tests for single circuit-breakers	E2-4	E2-5	E2-6	E2-7	P
	Test: E2 (Test at rated short-circuit capacity)	Type: D1 1P				P
	Service short-circuit capacity :	10 000 A				P
	Test circuit: figure :	Figure 5				P
	Prospective current :	10 000 A				P
	Prospective current obtained :	10 425 A				P
	Test voltage 1,05 Un**	425,3 V				P
	Power factor ____ :	0,45 - 0,5				P
	Power factor obtained ____ :	0,49				P
	Sequence:	table 23 of IEC 60898-1				P
	T (min) _ :	3 min				P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm				P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: ____x____x____mm				N/A
	I_{test} (kA) max. value	0,80 kA				P
	I²t = No specified value	E2-4	E2-5	E2-6	E2-7	P
	Max. I²t (kA²s) L1	0,99				
	L2		0,63			
	L3			0,76		
	L4				0,79	
	- No permanent arcing					P
	- No flash-over between poles or between poles and frame					P
	- No blowing of the fuses F and F'					P
	- Polyethylene foil shows no holes					P
	After the test:					P

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Clause	Requirement + Test	Result - Remark	Verdict

9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 253 V. The circuit - breaker is in the open position	E2-4	E2-5	E2-6	E2-7	P
	The leakage current shall not exceed 2mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2					
	L3					
	L4					
	Electric strength test					P
	Test voltage 900 V (see 9.7.3)					P
	a)					P
	b)					N/A
	c)					P
	d)					P
	e) 2000 V					N/A
	Test current 2,8 I_t	2,80 A				P
	Tripping within > 0,1 s up to	E2-4	E2-5	E2-6	E2-7	P
	- 60 s	31 s	26 s	40 s	39 s	P
	- 120 s					N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	TESTS „E2" 3 + 4 samples	Type: D63 1P			P
9.12.11.4.3	Test: E_2 (Test at rated short-circuit capacity)	E2-8	E2-9	E2-10	P
	Service short-circuit capacity :	10 000 A			P
	Test circuit: figure _ :	Figure 5			P
	Prospective current :	10 000 A			P
	Prospective current obtained :	10 130 A			P
	Test voltage 1,05 Un**	245,6 V			P
	Power factor ____ :	0,45 - 0,5			P
	Power factor obtained ____ :	0,45			P
	Sequence:	Table 22 of IEC 60898-1			P
	T (min) _ :	3 min			P
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: ____x____x____mm			N/A
	I_{test} (kA) max. value	5,42 kA			P
	I²t = No specified value	E2-8	E2-9	E2-10	P
	Max. I²t (kA²s) L1	43,1	137,7	63,9	
	L2				
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P

TRF No IECEN60898_1C

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 253 V. The circuit - breaker is in the open position	E2-8	E2-9	E2-10	P
	The leakage current shall not exceed 2mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2				
	L3				
	L4				
	Electric strength test				P
	Test voltage 900 V (see 9.7.3)				P
	a)				P
	b)				N/A
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 2,8 I_t	176,4 A			P
	Tripping within > 0,1 s up to	E2-8	E2-9	E2-10	P
	- 60 s	1 s	1 s	1 s	N/A
	- 120 s	46 s	45 s	45 s	P

TRF No IECEN60898_1C

IEC/EN 60 898-1						
Clause	Requirement + Test	Result - Remark				Verdict
9.12.11.4.3	Test: E2 (Test at rated short-circuit capacity) three phase tests for single circuit-breakers	E2-11	E2-12	E2-13	E2-14	P
	Test: E2 (Test at rated short-circuit capacity)	Type: D63 1P				P
	Service short-circuit capacity :	10 000 A				P
	Test circuit figure .	Figure 5				P
	Prospective current .	10 000 A				P
	Prospective current obtained :	10 425 A				P
	Test voltage 1,05 Un**	425,3 V				P
	Power factor ____ :	0,45 - 0,5				P
	Power factor obtained ____ :	0,49				P
	Sequence:	table 23 of IEC 60898-1				P
	T (min)_ :	3 min				P
9.12.9.1	Test in free air copper wire F': ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm				
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: _____x_____x_____mm				N/A
	$I_{n,s}$ (A) max. value.	5,19 kA				P
	I²t = No specified value	E2-11	E2-12	E2-13	E2-14	P
	Max. I²t (kA²s) L1	117,4				
	L2		47,4			
	L3			135,5		
	L4				30,8	
	- No permanent arcing					P
	- No flash-over between poles or between poles and frame					P
	- No blowing of the fuses F and F'					P
	- Polyethylene foil shows no holes					P
	After the test.					P

IEC/EN 60 898-1						
Clause	Requirement + Test	Result - Remark				Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.					P
	a) leakage current across open contacts according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 253 V. The circuit - breaker is in the open position	E2-11	E2-12	E2-13	E2-14	P
	The leakage current shall not exceed 2mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2					
	L3					
	L4					
	Electric strength test:					P
	Test voltage 900 V (see 9.7.3)					P
	a)					P
	b)					N/A
	c)					P
	d)					P
	e) 2000 V					N/A
	Test current 2,8 I_4	176,4 A				P
	Tripping within > 0,1 s up to	E2-11	E2-12	E2-13	E2-14	P
	- 60 s					N/A
	- 120 s	37 s	48 s	49 s	35 s	P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E2" 3 samples	Type: D1 2P			P
9.12.11.4.3	Test: E_2 (Test at rated short-circuit capacity)	E2-15	E2-16	E2-17	P
	Service short-circuit capacity :	10 000 A			P
	Test circuit figure .	Figure 4b			P
	Prospective current :	10 000 A			P
	Prospective current obtained .	10 230 A			P
	Test voltage 1,05 Un**	425,3 V			P
	Power factor ____ :	0,45-0,5			P
	Power factor obtained ____ :	0,50			P
	Sequence.	Table 22 of IEC 60898-1			P
	T (min)_ :	3 min			P
9.12.9.1	Test in free air copper wire F': ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F : ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	$I_{n,s}$ (kA) max. value.	0,92 kA			P
	I²t = No specified value	E2-15	E2-16	E2-17	P
	Max. I²t (kA²s) L1	1,24	0,84	1,24	
	L2	1,14	0,73	1,14	
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test.				P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit - breaker is in the open position	E2-15	E2-16	E2-17	P
	The leakage current shall not exceed 2mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L3				
	L4				
	Electric strength test:				P
	Test voltage 900 V (see 9.7.3)				P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 2,8 I_4	2,80 A			P
	Tripping within > 0,1 s up to	E2-15	E2-16	E2-17	P
	- 60 s	27 s	35 s	39 s	P
	- 120 s				N/A

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E2" 3 samples	Type: D63 2P			P
9.12.11.4.3	Test: E_2 (Test at rated short-circuit capacity)	E2-18	E2-19	E2-20	P
	Service short-circuit capacity :	10 000 A			P
	Test circuit, figure :	Figure 4b			P
	Prospective current :	10 000 A			P
	Prospective current obtained :	10 230 A			P
	Test voltage 1.05 Un**	425,3 V			P
	Power factor :	0,45-0,5			P
	Power factor obtained :	0,50			P
	Sequence:	Table 22 of IEC 60898-1			P
	T (min) :	3 min			P
9.12.9.1	Test in free air copper wire F : ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F : ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: ____x____x____mm			N/A
	$I_{c.e}$ (kA) max. value.....	5,77 kA			P
	I²t = No specified value	E2-18	E2-19	E2-20	P
	Max. I²t (kA²s) L1	47,7	35,1	34,8	
	L2	52,4	39,2	35,1	
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit - breaker is in the open position	E2-18	E2-19	E2-20	P
	The leakage current shall not exceed 2mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L3				
	L4				
	Electric strength test:				P
	Test voltage 900 V (see 9.7.3)				P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 2,8 I_t	176,4 A			P
	Tripping within > 0,1 s up to	E2-18	E2-19	E2-20	P
	- 60 s				N/A
	- 120 s	29 s	35 s	48 s	P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E2" 3 samples	Type: D1 4P			P
9.12.11.4.3	Test: E_2 (Test at rated short-circuit capacity)	E2-21	E2-22	E2-23	P
	Service short-circuit capacity :	10 000 A			P
	Test circuit, figure :	Figure 5			P
	Prospective current :	10 000 A			P
	Prospective current obtained :	10 425 A			P
	Test voltage 1.05 Un**	425,3 V			P
	Power factor :	0,45 - 0,5			P
	Power factor obtained :	0,49			P
	Sequence:	Table 22 of IEC 60898-1			P
	T (min) :	3 min			P
9.12.9.1	Test in free air copper wire F : ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F : ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: ____x____x____mm			N/A
	$I_{c.e}$ (kA) max. value.....	0,84 kA			P
	I²t = No specified value	E2-21	E2-22	E2-23	P
	Max. I²t (kA²s) L1	0,72	0,69	0,06	
	L2	0,05	0,65	0,65	
	L3	0,60	0,66	0,84	
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit - breaker is in the open position	E2-21	E2-22	E2-23	P
	The leakage current shall not exceed 2mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L3	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L4	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	Electric strength test:				P
	Test voltage 900 V (see 9.7.3)				P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 2,8 I_t	2,80 A			P
	Tripping within > 0,1 s up to	E2-21	E2-22	E2-23	P
	- 60 s	22 s	1[illegible]8 s	17 s	P
	- 120 s				N/A

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „E2“ 3 samples	Type: D63 4P			P
9.12.11.4.3	Test: E_2 (Test at rated short-circuit capacity)	E2-24	E2-25	E2-26	P
	Service short-circuit capacity .	10 000 A			P
	Test circuit figure .	Figure 5			P
	Prospective current	10 000 A			P
	Prospective current obtained	10 425 A			P
	Test voltage 1.05 Un''	425,3 V			P
	Power factor ____	0,45 - 0,5			P
	Power factor obtained _____ :	0,49			P
	Sequence:	table 22 of IEC60898-1			P
	T (min) _ :	3 min			P
9.12.9.1	Test in free air copper wire F': ☐ 0,12 mm / ☒ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☒ 1,5 Ohm	"a" = 45 mm			P
9.12.9.2	Test in enclosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R' : ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: _____x_____x_____mm			N/A
	I_{peak} (A) max. value.................................. :	6,78 kA			P
	I^2t = No specified value	E2-24	E2-25	E2-26	P
	Max. I^2t (kA^2s) L1	50,2	87,8	90,5	
	L2	41,6	10,9	137,4	
	L3	100	56,4	48,2	
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P

IEC/EN 60 898-1					
Clause	Requirement + Test	Result - Remark			Verdict
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests				P
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = 440 V. The circuit-breaker is in the open position	E2-24	E2-25	E2-26	P
	The leakage current shall not exceed 2mA L1	≤ 0,1 mA	≤ 0,1 mA	≤ 0,1 mA	
	L2	≤ 0,1 mA	≤ 0.1 mA	≤ 0.1 mA	
	L3	≤ 0,1 mA	≤ 0.1 mA	≤ 0.1 mA	
	L4	≤ 0,1 mA	≤ 0,1 mA	≤ 0.1 mA	
	Electric strength test				P
	Test voltage 900 V (see 9.7.3)				P
	a)				P
	b)				P
	c)				P
	d)				P
	e) 2000 V				N/A
	Test current 2,8 I_n	176,4 A			P
	Tripping within > 0,1 s up to	E2-24	E2-25	E2-26	P
	- 60 s				N/A
	- 120 s	31 s	25 s	42 s	P

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX C (NORMATIVE)

Test sequence and number of samples to be submitted for certification purposes
Table C.1 - Test sequences

Test sequence		Clause or subclause	Test (or inspection)
A		6 8.1.1 8.1.2 9.3 8.1.3 8.1.6 9.4 9.5 9.6 9.14 8.1.3 9.15 9.16	Marking General Mechanism Indelibility of marking Clearance and creepage distances (external parts only) Non-interchangeability Reliability of screws, current-carrying parts and connections Reliability of terminals for external conductors Protection against electric shock Resistance to heat Clearances and creepage distances (internal parts) Resistance to abnormal heat and to fire Resistance to rusting
B		9.7 9.8 9.9	Dielectric properties Temperature-rise 28-day test
C	C_1	9.11 9.12.11.2.1 9.12.12	Mechanical and electrical endurance Performance at reduced short-circuit currents Verification of the circuit-breaker after short-circuit tests
	C_2	9.12.11.2.2 9.12.12	Short-circuit test for verifying the suitability of circuit-breakers for use in IT systems Verification of the circuit-breaker after short-circuit tests
D	D_0	9.10	Tripping characteristic
	D_1	9.13 9.12.11.3 9.12.12	Resistance to mechanical shock and impact Short-circuit performance at 1 500 A Verification of circuit-breaker after short-circuit tests
E	E_1	9.12.11.4.2 and 9.12.12	Service short-circuit capacity (I_{cs}) Verification of circuit-breaker after short-circuit tests
	E_2	9.12.11.4.3 and 9.12.12	Performance at rated short-circuit capacity (I_{cn}) Verification of circuit-breaker after short-circuit tests

NOTE At the request of the manufacturer the same samples may be used for more than one test sequence.

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Clause	Requirement + Test	Result - Remark	Verdict

Table C.2 - Number of samples for full test procedure

Test sequence		Number of samples	Minimum number of samples which shall pass the test [a, b]	Maximum number of samples for repeated tests [c]
A		1	1	--
B		3	2	3
C	C_1	3	2 [c]	3
	C_2 [f]	3	2 [c]	3
D		3	2 [c]	3
E_1		3 + 4 [d]	2 [c] + 2 [c, e]	3 + 4 [d]
E_2		3 + 4 [d]	2 [c] + 2 [c, e]	3 + 4 [d]

a) In total, a maximum of two test sequences may be repeated.

b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design.

c) In the case of repeated tests, all results shall be acceptable.

d) Supplementary samples in the case of single-pole circuit-breakers rated 230/400 V or 240/415 V (see table 1).

e) All samples shall meet the test requirements of 9.12.10, 9.12.11.2, 9.12.11.3 and 9.12.11.4, as appropriate.

f) For this sequence read "number of protected poles" instead of "number of samples". In total a maximum of three test sequences may be repeated.

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Clause	Requirement + Test	Result - Remark	Verdict

Table C.3 - Number of samples for simplified test procedure

Test sequence		Number of samples depending on number of poles [b]			
		One pole [c]	Two poles [d]	Three poles [e]	Four poles [e]
A		1 max. rated I_n	1 [a)] max. rated I_n	1 [a)] max. rated I_n	1 [a)] max. rated I_n
B		3 max. rated I_n	3 [a)] max. rated I_n	3 max. rated I_n	3 max. rated I_n
C	C_1	3 max. rated I_1	3 [a)] max. rated I_n	3 max. rated I_n	3 max. rated I_n
	C_2	3 max. rated I_1	2 max. rated I_n for 2 protected poles, or 3 max. rated I_n for one protected pole	1 max. rated I_n	1 max. rated I_n
$D_1 + D_2$		3 max. rated I_2	3 [a)] max. rated I_n	3 max. rated I_n	3 max. rated I_n
D_1		1 of all other rated I_2			[h)]
F_1		3+3 [i)] max. rated I_n 3+3 [i)] min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n
E_1		3+4 [i)] max. rated I_n 3+4 [i)] min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n

a) If a test is to be repeated according to the acceptance criteria of C.2, a new set of samples is used for the relevant test sequence. In repeated tests all results shall be satisfactory.
b) If only multipole circuit-breakers are submitted, this column applies to the set of samples having the smallest number of poles (instead of the relevant column).
c) Applicable to two-pole circuit-breakers whether with two protected poles or with one protected pole.
d) This series is omitted when four-pole circuit-breakers are also tested.
e) Also applicable to circuit-breakers with three protected poles and a neutral pole.
f) Supplementary samples in case of single-pole circuit-breakers of 9.3.1.4
g) This test sequence is omitted when three-pole or four-pole circuit-breakers have been tested.
h) This test sequence shall be omitted for two-pole circuit breakers with two protected poles, when three-pole or four-pole circuit-breakers have been tested.
i) When multipole circuit-breakers are submitted, a maximum of four screw-type terminals for external conductors are subjected to the tests of 9.5 i.e. two supply and two load terminals

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Clause	Requirement + Test	Result - Remark	Verdict

Table C.4 - Test sequences for a series of circuit-breakers being of different instantaneous tripping classifications

Circuit-breaker type-tested first	Subsequent test sequences for circuit-breakers of		
	B-type	C-type	D-type
B-type	-	$(D_1 + D_2) + E$	$(D_1 + D_2) + E$
C-type	D_1 [a)] + B [a)]		$(D_1 + D_2) + E$
D-type	D_1 [a)] + B [a)]	D_1 [a)] + B [a)]	

a) For these test sequences only the tests of 9.8 and 9.10.2 are required.
b) When certification is requested at the same time for B-type, C-type and D-type circuit-breakers having the same rated short-circuit capacity, only test sequence Do is required if B-type and D-type samples have been tested.

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Clause	Requirement + Test	Result - Remark	Verdict

	Annex E	N/A
	Special requirements for auxiliary circuits for safety extra-low voltage (*) (*) For auxiliary contact units assembled or to be assembled separately to circuit-breakers see EN62019	N/A

	Annex J	N/A
	Particular requirements for circuit-breakers with screwless type terminals for external copper conductors (in not exceeding 20 A, cross-sectional area up to 4 mm^2	N/A

	Annex K	N/A
	Particular requirements for circuit-breakers with fast quick-connect terminations	

	Annex L	N/A
	Specific requirements for circuit-breakers with screw-type terminals for external unprepared aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Annex I	N/A
	EN 60898-1 COMMON MODIFICATIONS	N/A

	GENERAL		N/A
9.12	Short-circuit tests		N/A
9.12.2	Value of the power frequency recovery voltage shall be equal to 110 % of the rated voltage		N/A
9.12.3	Tolerances on test quantities		N/A
	voltage (including recovery voltage): 0, -5%		N/A

	TESTS „A" 1 sample		N/A
6	MARKING AND OTHER INFORMATION		N/A
6.1	Standard marking:		N/A
	f) Rated short circuit capacity (A) within a rectangle, without symbol "A"		N/A
	h)Calibration temperature, if different from 30°C		N/A
	j) Energy limiting class in a square in accordance with annex ZA, if applied		N/A
	k) Making and breaking capacity on an individual protected pole of multipole circuit-breakers (I_{cn1}), if different from I_{cn}		N/A
6.2	Additional marking		N/A
	Additional marking to other standards (EN or IEC or other) is allowed under the follow conditions:		N/A
	- the circuit-breaker shall comply with all the requirements of the additional standard;		N/A
	- the relevant standard to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to cl. 6.1		N/A
	Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.3	Guidance table for marking		N/A
	EACH CB SHALL BE MARKED IN A DURABLE MANNER WITH ALL OR, FOR SMALL APPARATUS ACCORDING TABLE FOR MARKING		N/A

	TESTS „C" 3 + 3 SAMPLES	C_1	C_2	C_3	
9.11.3	Dielectric strength reduced to 900 V				N/A

	TESTS „D" 3 samples				
9.10	Tests: D_0	D_{0-1}	D_{0-2}	D_{0-3}	N/A
9.10.2.2	☐ For circuit-breakers of the B – Type				N/A
	Moreover the C.B. shall perform following test:				N/A
9.10.1.2	Test current 2,55 I_n (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
9.10.2.2	☐ For circuit-breakers of the C - Type				N/A
	Moreover the C.B. shall perform following test:				N/A
9.10.1.2	Test current 2,55 I_n (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
9.10.2.2	☐ For circuit-breakers of the D - Type				N/A
	Moreover the C.B. shall perform following test:				N/A
9.10.1.2	Test current 2,55 I_n (A) starting from cold for:	_____ A			N/A
	opening time not less than 1 s or more than	[s]	[s]	[s]	N/A
	- 60 s				N/A
	- 120 s				N/A

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

	TESTS „E_3"				
9.12.11.4.4	Test: E_3 (Test at making and breaking capacity on a individual pole (for)	$E_{3.1}$	$E_{3.2}$	$E_{3.3}$	N/A
	Service short-circuit capacity ... :	_____ A			N/A
	Test circuit figure ... :	3			N/A
	Prospective current ... :	_____ A			N/A
	Prospective current obtained ... :	_____ A			N/A
	Power factor ... :	_____			N/A
	Power factor obtained ... :	_____			N/A
	Sequence ... :	O - t –CO 15' 45 75'			N/A
	T (min) ... :	_____ min			N/A
9.12.9.1	Test in free air copper wire F: ☐ 0,12 mm / ☐ 0,16 mm resistor R': ☐ 0,75 Ohm / ☐ 1,5 Ohm	"a" = _____ mm			N/A
9.12.9.2	Test in endosures copper wire F': ☐ 0,12 mm / ☐ 0,16 mm resistor R': ☐ 0,75 Ohm / ☐ 1,5 Ohm	dimension of enclosure: ____x____x____mm			N/A
	$I_{n\times k}$ (A) max. value ... :	_____ A			N/A
	Pt ≤ _____ kA^2s	[kA^2s]	[kA^2s]	[kA^2s]	N/A
	Max. Pt ≤ _____ kA^2s L1 L2 L3	---- ---- ----	---- ---- ----	---- ---- ----	N/A
	- No permanent arcing				N/A
	- No flash-over between poles or between poles and frame				N/A
	- No blowing of the fuses F and F'				N/A
	- Polyethylene foil shows no holes				N/A
	After the test				N/A

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				N/A
	a) leakage current across open contacts, according to 9.7.6.3, each pole is supplied at a voltage 1,1 times Un = _____ V. The circuit breaker is in the open position	$E_{3.1}$ [mA]	$E_{3.2}$ [mA]	$E_{3.3}$ [mA]	N/A
	The leakage current shall not exceed 2 mm L1				N/A
	L2				N/A
	L3				N/A
	L4				N/A
	Electric strength test:				N/A
	Test voltage 900 V (see 9.7.3)				N/A
	a)				N/A
	b)				N/A
	c)				N/A
	d)				N/A
	e) 2000 V				N/A
	Test current 2,8 I_n	_____ A			N/A
	Tripping in ≤ 0,1 s up to	[s]	[s]	[s]	N/A
	- 60 s				N/A
	- 120 s				N/A

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX C (NORMATIVE)

replace table C.1 by:

Test sequence and number of samples to be submitted for certification purposes
Table C.1 - Test sequences

Test sequence		Clause or subclause	Test (or inspection)
A		6 8.1.1 8.1.2 9.3 8.1.3 8.1.6 9.4 9.5 9.6 9.14 8.1.3 9.15 9.16	Marking General Mechanism Indelibility of marking Clearance and creepage distances (external parts only) Non-interchangeability Reliability of screws, current-carrying parts and connections Reliability of terminals for external conductors Protection against electric shock Resistance to heat Clearances and creepage distances (internal parts) Resistance to abnormal heat and to fire Resistance to rusting
B		9.7 9.8 9.9	Dielectric properties Temperature-rise 28-day test
C	C_1	9.11 9.12.11.2.1 9.12.12	Mechanical and electrical endurance Performance at reduced short-circuit currents Verification of the circuit-breaker after short-circuit tests
	C_2	9.12.11.2.2 9.12.12	Short-circuit test for verifying the suitability of circuit-breakers for use in IT systems Verification of the circuit-breaker after short-circuit tests
D	D_0	9.10	Tripping characteristic
	D_1	9.13 9.12.11.3 9.12.12	Resistance to mechanical shock and impact Short-circuit performance at I 500 A Verification of circuit-breaker after short-circuit tests
E	E_1	9.12.11.4.2 and 9.12.12	Service short-circuit capacity (I_{cs}) Verification of circuit-breaker after short-circuit tests
	E_2	9.12.11.4.3 and 9.12.12	Performance at rated short-circuit capacity (I_{cn}) Verification of circuit-breaker after short-circuit tests
	E_3	9.12.11.4.4 and 9.12.12	Performance at rated making and breaking capacity (I_{cn}) on an individual pole of multipole circuit-breakers Verification of circuit-breaker after short-circuit tests

NOTE With the agreement of the manufacturer the same samples may be used for more than one test sequence.

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

replace table C.2 by:

Table C.2 - Number of samples for full test procedure

Test sequence		Number of samples	Minimum number of samples which shall pass the test [a] [b]	Maximum number of samples for repeated tests [c]
A		1	1	--
B		3	2	3
C	C_1	3	2 [d]	3
	C_2 [e]	3	2 [d]	3
D		3	2 [d]	3
E_1		3 + 3 [d]	2 [d] + 2 [d, f]	3 + 3 [d]
E_2		3 + 4 [f]	2 [d] + 3 [d, f]	3 + 4 [f]
E_4		3	2 [d]	3

a) In total, a maximum of two test sequences may be repeated.

b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design.

c) In the case of repeated tests, all results shall be acceptable.

d) Supplementary samples in the case of single-pole circuit-breakers rated 230/400 V, 240/415 V (see table 1)

e) All samples shall meet the test requirements of 9.12.10, 9.12.11.2, 9.12.11.3 and 9.12.11.4, as appropriate.

f) For this sequence read "number of protected poles" instead of "number of samples"; in total a maximum of three test sequences may be repeated.

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

replace table C.3 by:

Table C.3 - Number of samples for simplified test procedure

Test sequence		Number of samples depending on number of poles [a]			
		One pole [b]	Two poles [b]	Three poles [c]	Four poles [c]
A		1 max. rated I_n	1 [d] max. rated I_n	1 [d] max. rated I_n	1 [d] max. rated I_n
B		3 max. rated I_n	3 [d] max. rated I_n	3 max. rated I_n	3 max. rated I_n
C	C_1	3 max. rated I_n	3 [d] max. rated I_n	3 max. rated I_n	3 max. rated I_n
	C_2	3 max. rated I_n	2 max. rated I_n for 2 protected poles, or 3 max. rated I_n for one protected pole	1 max. rated I_n	1 max. rated I_n
$D_a + D_1$		3 max. rated I_n	3 [d] max. rated I_n	3 max. rated I_n	3 max. rated I_n
D_2		1 of all other rated I_n			
E_1		3+3 [e] max. rated I_n 3+3 [e] min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n
E_2		3+4 [f] max. rated I_n 3+4 [f] min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n
E_4		[g]	3 [d] max. rated I_n	3 [d] max. rated I_n	3 [d] max. rated I_n

a) If a test is to be repeated according to the acceptance criteria of C.2, a new set of samples is used for the relevant test sequence. In repeated tests all results shall be satisfactory.

b) If only multipole circuit-breakers are submitted, this column applies to the set of samples having the smallest number of poles (instead of the relevant column).

c) Applicable to two-pole circuit-breakers whether with two protected poles or with one protected pole.

d) This series is omitted when four-pole circuit-breakers are also tested.

e) Also applicable to circuit-breakers with three protected poles and a neutral pole.

f) Supplementary samples in case of single-pole circuit-breakers of 5.3.1.4.

g) This test sequence is omitted when three-pole or four-pole circuit-breakers have been tested.

h) This test sequence shall be omitted for two-pole circuit breakers with two protected poles when three-pole or four-pole circuit-breakers have been tested.

i) When multipole circuit-breakers are submitted, a maximum of four screw-type terminals for external conductors are subjected to the tests of 9.5, i.e. two supply and two load terminals.

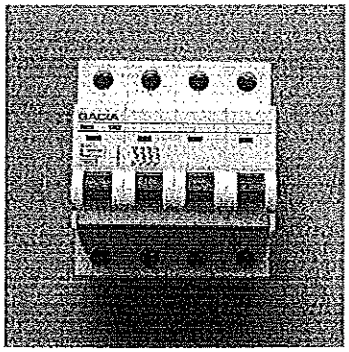
j) If each pole of the multipole is identical to the individual pole tested in E2, this test is omitted. If not, this test is carried out on an individual protected pole, taken at random, of the circuit-breaker with the highest number of poles.

k) Covered by test sequence E2

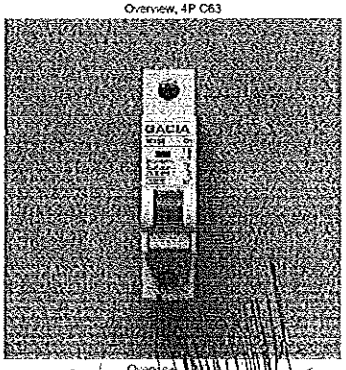
IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

	Annex ZC (normative)	N/A
	EN 60 898-1 Special national conditions	N/A
	For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.	N/A
J 1	Austria, Czech Republic, Denmark, Germany, Netherlands, Norway and Switzerland	N/A
	The upper limit of current for use of screw less terminals is 16 A	N/A
J 3.3	Austria, Belgium, Denmark, France, Germany, Italy, Portugal, Spain, Sweden, Switzerland, and United Kingdom	N/A
	Only universal screwless type terminals are accepted.	N/A
K8 2.2	BELGIUM, FRANCE, ITALY, PORTUGAL, SPAIN, AND UNITED KINGDOM	N/A
	The use of circuit-breakers with flat quick-connect terminations for rated currents upto and including 20 A is accepted.	N/A
K 8 2.2	BELGIUM, FRANCE, ITALY, PORTUGAL, SPAIN, AND UNITED KINGDOM	N/A
	The use of circuit-breakers up to and including 20 A	N/A

Photos:

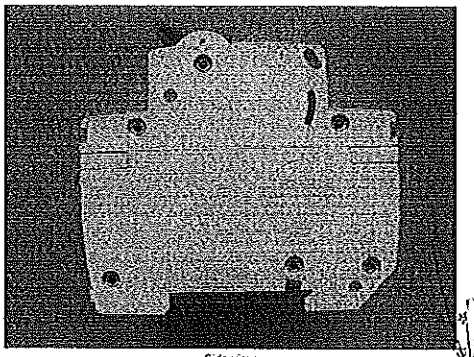


Overview, 4P C63

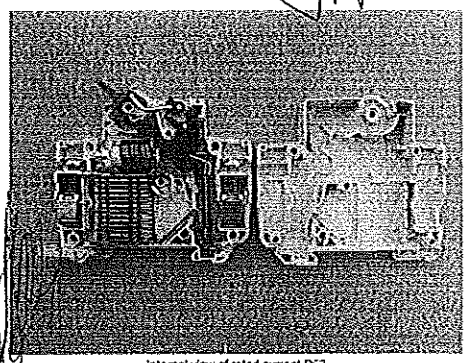


Overview

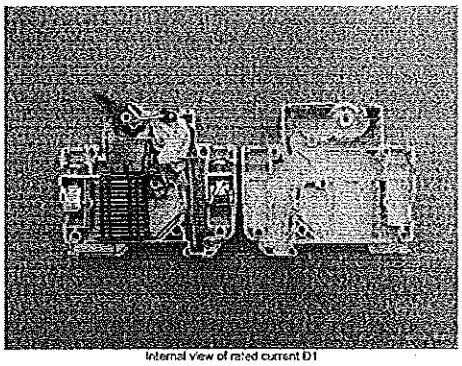
66



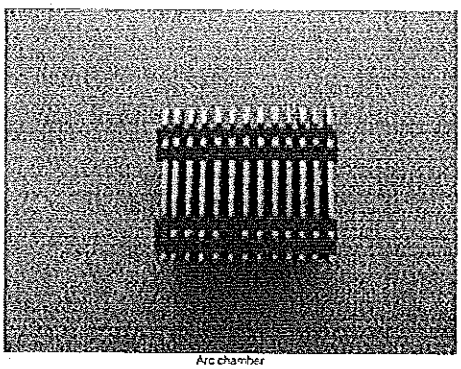
Side view



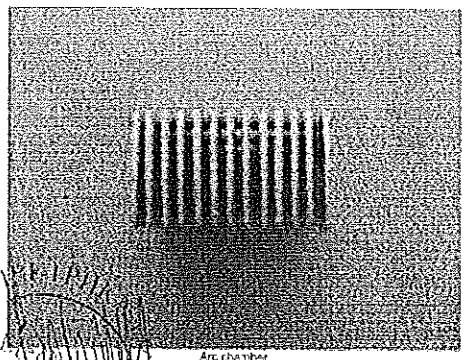
Internal view of rated current D63



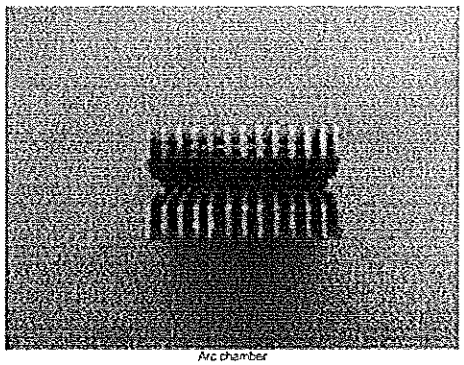
Internal view of rated current D1



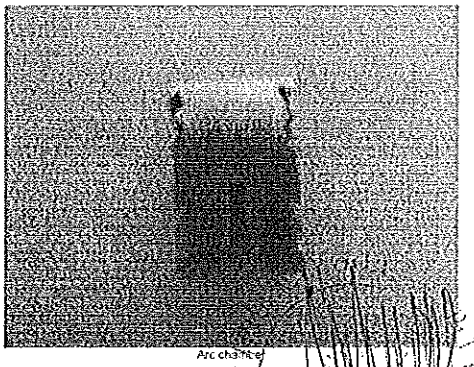
Arc chamber



Arc chamber



Arc chamber



Arc chamber

TEST REPORT
IEC/EN 60898-1
Circuit-breakers for over current protection for household and similar installations

Report Reference No.	3305490.50
Date of issue	2013-11-15
Total number of pages	45
CB Testing Laboratory	DEKRA Testing Services (Zhejiang) Co., Ltd.
Address	No.5, Changjiang Road Great Bridge Industrial Park North Babiang Wenzhou, Zhejiang, 325603 P.R. China
Applicant's name	GACIA ELECTRICAL APPLIANCE CO., LTD
Address	545# Dongdajie Batawang Industrial Zone, Beibabiang Yueqing Zhejiang, 325603, China
Test specification:	
Standard	☒ IEC 60 898-1 2002 (1st Edition) + A1:2002 + A2:2003 and/or ☒ EN 60 898-1 2003 + A1 2004 + A11 2006
Test procedure	Type test
Non-standard test method	N/A
Test Report Form No.	IECEN60898_1C
Test Report Form(s) Originator	OVE
Master TRF	Dated 2007-12

Test Item description	Circuit-breakers for overcurrent protection
Trade Mark	GACIA
Manufacturer	GACIA ELECTRICAL APPLIANCE CO., LTD 545# Dongdajie, Batawang Industrial Zone Beibabiang Yueqing Zhejiang, 325603, China
Model/Type reference	PB6H, PB6HNI, PB8HQ, PB8H2, PB8N, PB6NN, PB8NQ, PB8N2, PB8LN, M80H, M100(M80)
Ratings	Ue: 230/400 Vac (1P), 400 Vac (2P, 3P, 4P), B, C, D type In: 1, 2, 3, 4, 5, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63 A Icn: 7500 A, Icn: 10 000 A Energy limit class 3 (according to EN 60898-1:2003)

Testing procedure and testing location:	
☒ CB Testing Laboratory	DEKRA Testing Services (Zhejiang) Co., Ltd.
Testing location/ address	No.5, Changjiang Road Great Bridge Industrial Park North Babiang Wenzhou, Zhejiang, 325603 P.R. China
☐ Associated CB Laboratory:	N/A
Testing location/ address	N/A
Tested by (name + signature)	Lester Wang
Approved by (+ signature)	Eric Wang
☐ Testing procedure: TMP	N/A
Tested by (name + signature)	N/A
Approved by (+ signature)	N/A
Testing location/ address	N/A
☐ Testing procedure: WMT	N/A
Tested by (name + signature)	N/A
Witnessed by (+ signature)	N/A
Approved by (+ signature)	N/A
Testing location/ address	N/A
☐ Testing procedure: SMT	N/A
Tested by (name + signature)	N/A
Approved by (+ signature)	N/A
Supervised by (+ signature)	N/A
Testing location/ address	N/A
☐ Testing procedure: RMT	N/A
Tested by (name + signature)	N/A
Approved by (+ signature)	N/A
Supervised by (+ signature)	N/A
Testing location/ address	N/A

Summary of testing:

Tests performed:

The following samples were chosen according to annex C of EN 60898-1 to cover EN requirements

Testing location:

DEKRA Testing Services (Zhejiang) Co., Ltd.

No.5 Changjiang Road Great Bridge Industrial Park North Babiang Wenzhou, Zhejiang, 325603 P.R. China

Test sequence	D type		C type	B type
	1P	4P	1P	1P
D0	1 for all other rated current	N/A	1 for all rated current	1 for all rated current
D0+D1	3/63 A	3/63 A	3/63 A	3/63 A

Above mentioned tests were conducted to update previous test reports no W0807018.50 dated on 2008-09-03, 3302398.50 dated on 2011-05-27 and 3303230.50 dated on 2012-05-02.

The tests were performed to comply with deviation in EN 60898-1. This report has to be read in conjunction with previous test reports no. W0807018.50, 3302398.50 and 3303230.50.

REMARKS
N/A

Summary of compliance with National Differences:

N/A

Copy of marking plate

Example of the marking

Marking for 4P circuit-breaker

Marking for 1P circuit-breaker

Note: Energy limiting 3 was verified according to EN 60898-1:2003.

Test item particulars:	Circuit-breakers for overcurrent protection
Type of circuit-breaker	PB8H, PB8HN, PB8HO, PB8H2, PB8N, PB8NN, PB8NQ, PB8N2, PB8LN, M80H, M100(M80)
Number of poles	☒ 1-P ☐ 1-P+N ☒ 2-P ☒ 3-P ☐ 3-P+N ☒ 4-P ☐ Other
Protection against external influences	☐ enclosed ☒ unenclosed
Method of mounting	☐ surface ☒ flush ☒ panel board / distribution board
Method of connection	☒ not associated with the mechanical mounting ☐ associated with the mechanical mounting
Instantaneous tripping current	☒ B ☒ C ☒ D
Ambient air temperature (°C)	☒ 30°C ☐ 40°C ☐ Other ____ °C
Energy limiting class	☐ Class 1 ☐ Class 2 ☒ Class 3 for B and C type 1 A to 40 A circuit breaker ☐ N/A
Rated short-circuit capacity (A)	☐ 1.5 kA ☐ 3 kA ☐ 4.5 kA ☐ 6 kA ☒ 10 kA ☐ 15 kA ☐ 20 kA ☐ 25 kA
Type of terminal	☐ screw *1) ☒ pillar *1) ☐ cage *1) ☐ lug ☐ screwless *1) ☐ flat quick connect *1) ☐ plug-in ☐ screw-in *1) copper conductors *1) aluminium conductors***
Value of rated operational voltage	☐ 120 V ** ☐ 230 V ☐ 240 V ** ☐ 120/240 V ** ☒ 230/400 V for 1P circuit-breakers ☒ 400 V for 2P, 3P and 4P circuit-breakers ☐ 240/415 V ☐ 415 V
Value of rated current	1, 2, 3, 4, 5, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63 A
Value of rated frequency	☒ 50 Hz ☒ 60 Hz
Rated impulse withstand voltage (Uimp)	☐ 2.5 kV** ☒ 4 kV ☐ declared ___ kV
Material group and CTI declared by manufacturer	☐ Group I (600 V ≤ CTI) ☐ Group II (400 V ≤ CTI < 600 V) ☒ Group IIIa (175 V ≤ CTI < 400 V)
Remark	** delete for EN and *** only for EN

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.

Note: This TRF includes EN Group Differences together with National Differences and Special National Conditions, if any. All Differences are located in the Appendix to the main body of this TRF.

Throughout this report a ☒ comma or ☐ point is used as the decimal separator.

The basic part of this test report covers the evaluation of the IEC requirements.

Annex 1 of this test report covers the evaluation of the CENELEC common modifications.

Although it is not mentioned on the front page the following standards are considered as well:
A12 2008 of EN 60898-1 2003.

This report shall be read in conjunction with reports W0807018.50, 3302398.50 and 3302330.50.

Report W0807018.50 is original report, containing requirement of IEC 60898-1:2002 +A1:2002 +A2: 2003

Report 3302398.50 was issued due to that energy limiting class 3 for B and C type circuit breaker 1 A to 40 A which was tested according to EN 60898-1: 2003.

Report 3303230.50 was issued due to that new types were added: PB8H, PB8HN, PB8HO, PB8H2, PB8N, PB8NN, PB8NQ, PB8N2, PB8LN and M80H.

This report is issued due that requirement of EN 60898-1:2003 + A1:2004 + A11:2005 + A12: 2008 was considered.

The type references PB8H, PB8HN, PB8HO, PB8H2, PB8N, PB8NN, PB8NQ, PB8N2, PB8LN, M80H and M100(M80) are identical except model references.

General product information:

Ue: 230/400 Vac (1P): 400 Vac (2P, 3P, 4P).
In: 1, 2, 3, 4, 5, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63 A. B, C, D type.
Ics: 7500 A. Icn: 10 000 A
Energy limiting class 3 for B and C type 1 A to 40 A circuit breaker according to EN60898-1: 2003

Factory:
GACIA ELECTRICAL APPLIANCE CO.,LTD
545# Dongdajie, Baiwang Industrial Zone, Beibeiliang Yueqing, Zhejiang, 325603, China

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „A"	refer to test report no. W0807018.50	P
	TESTS „B"	refer to test report no. W0807018.50	P
	TESTS „C"	refer to test report no. W0807018.50	P

IEC/EN 60 898-1						
Clause	Requirement + Test	Result - Remark				Verdict
	TESTS „D" 3 samples	D63 1P				P
8.6	Automatic operation					P
8.6.1	Standard time-current zone					P
	Tripping characteristic of CB ensures adequate protection of the circuit without premature operation.					P
9.10	Tests: D_0					P
	I_n (A)	63 A				P
	Sect. (mm^2)	16 mm^2				P
	Instantaneous tripping current	☐ B ☐ C ☒ D				P
9.10.1 f	Test of time-current characteristic					P
9.10.1.1	Test current 1.13 I_n (A) starting from cold for	71.2 A				P
	- 1 h ($I_n \leq 63$ A)					P
	- 2 h ($I_n > 63$ A)					N/A
	No tripping					P
	Then steadily increased within 5 s to 1.45 I_n (A)	91.4 A				P
	- Tripping within	D0+D1-1	D0+D1-2	D0+D1-3		P
	- 1h ($I_n \leq 63$ A)	76 s	257 s	141 s		P
	- 2h ($I_n > 63$ A)					N/A
9.10.1.2	Test current 2,55 I_n (A) starting from cold for	160.6 A				P
	opening time not less than 1 s or more than	D0+D1-1	D0+D1-2	D0+D1-3		P
	- 60 s					N/A
	- 120 s	15 s	6 s	9 s		P
9.10.2	Test of instantaneous tripping and of correct opening of the contacts					P
9.10.2.1	General test conditions					P
	For the lower values of the test current the test is made once, at any convenient voltage.					P
	For the upper values of the test current the test is made at rated voltage Un (phase to neutral) with a power factor between 0,95 and 1.					P
	The sequence of operation is : O-CO-CO-CO Interval time > 3 min					P
	The tripping time of the O operation is measured					P
	After each operation the indicating means shall show the open position of the contacts					P
9.10.2.2 *)	☐ For circuit-breakers of the B – Type					N/A

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict
*see Annex 1	Test current $3I_n$ (A) starting from cold		N/A
	Opening time		N/A
	- 0.1s ≤ t [≤ 45s (≤ 32A) *)acc. EN60898]		N/A
	- 0.1s ≤ t [≤ 90s (> 32A) *)acc. EN60898]		N/A
	Test current $5I_n$ (A) starting from cold		N/A
	Tripping less than 0,1 s		N/A
9.10.2.3 *)	☐ For circuit-breakers of the C – Type		N/A
*see Annex 1	Test current $5I_n$ (A) starting from cold		N/A
	Opening time:		N/A
	- 0,1s ≤ t [≤ 15s (> 32A) *)acc. EN60898]		N/A
	- 0,1s ≤ t [≤ 30s (> 32A) *)acc. EN60898]		N/A
	Test current $10I_n$ (A), starting from cold		N/A
	Tripping less than 0,1 s		N/A
9.10.2.4 *)	☒ For circuit-breakers of the D – Type		P
*see Annex 1	Test current $10I_n$ (A) starting from cold	630,0 A	P
	Opening time	D0+D1-1 / D0+D1-2 / D0+D1-3	P
	- 0.1s ≤ t [≤ 4s (≤ 32A) *)acc. EN60898]		N/A
	- 0.1s ≤ t [≤ 8s (> 32A) *)acc. EN60898]	2 s / 2 s / 3 s	P
	Test current 20 I_n (A) or to the maximum instantaneous tripping current(see cl. 6, Item j), starting from cold	1271 A	P
	Tripping less than 0,1 s	D0+D1-1 / D0+D1-2 / D0+D1-3 4.5 ms / 7.6 ms / 6.1 ms	P
9.10.1.2	Test current 2.55 I_n (A) starting from cold for	160.6 A	P
	opening time not less than 1 s or more than	D0+D1-1 / D0+D1-2 / D0+D1-3	P
	- 60 s		N/A
	- 120 s	7 s / 11 s / 13 s	P
9.10.3	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers		N/A
	Test current 1.1 I_n (A), (two pole) starting from cold		N/A
	Tripping within		N/A
	- 1h		N/A
	- 2h		N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current 1.2 I_n (A), (three pole or four pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	Test current 1.13 I_n (A)	71.2 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1.9 I_n (A) within 5s	119,7 A			P
	Tripping within	D0+D1-1	D0+D1-2	D0+D1-3	P
	- 1h	35 s	43 s	44 s	P
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P
	Test current I_n (A)	63 A			P
	No tripping within				P
	- 1h				P
	- 2h				N/A
	TESTS: D_1	D63 1P			P
		D0+D1-1	D0+D1-2	D0+D1-3	
8.9	Resistance to mechanical shock and impact				P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use				P
9.13.1	Mechanical shock				P
	- 50 falls on two sides of vertical board C				P
	- Vertical board turned 90°				P
	- 50 falls on two sides of vertical board C				P
	During the test the circuit-breakers shall not open				P
9.13.2	Mechanical impact				P
9.13.2.1	All types				P
	- Impact test 10 blows-height 10 cm, no damage				P
9.13.2.2	Screw-in types				N/A
	- Torque 2,5 Nm for 1 min, no damage				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.13.2.3	CB intended to be mounted on a rail		P
	- downward vertical 50 N for 1 min		P
	- upward vertical 50 N for 1 min no damage		P
9.13.2.4	Plug-in types		N/A
	The circuit-breaker are mounted in there normal position, complete with plug-in base but without cables and any cover plate		N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 17).		N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use.		N/A
9.12.11.3	Test at 1500 A:		P
	Prospective current of 1500 A - power factor 0.93 to 0.98		P
	Prospective current obtained (A)	1525 A	P
	Power factor	0,95	P
	Test voltage 1.05 Un	244,3 V	P
	Test circuit figure	Figure 3 for 6O + 2CO	P
	Prospective current obtained (A)	1505 A for last O shot	P
	Power factor	0,95	P
	Test voltage 1.05 Un	436.4 V	P
	Test circuit figure	Figure 5 for last O	P
	T (min)	3 min	P
9.12.8.1	Test in free air copper wire F ☒ 0,12 mm / ☐ 0.15 mm resistor R ☐ 0.75 Ohm / ☒ 1.5 Ohm	"a" = 35 mm	
9.12.8.2	Test in enclosures copper wire F ☐ 0.12 mm / ☐ 0.15 mm resistor R ☐ 0.75 Ohm / ☐ 1,5 Ohm		N/A
	Sequence	6O + 2CO + O	P
	I_{max} (A) max. value	D0+D1-1 / D0+D1-2 / D0+D1-3	P
	L1	2.20 kA / 1,99 kA / 1,99 kA	
	L2		
	L3		
	L4		

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Clause	Requirement + Test	Result - Remark			Verdict
	Max. I^2t = No specified value	D0+D1-1	D0+D1-2	D0+D1-3	P
	L1	33,7 kA^2s	12,6 kA^2s	12.6 kA^2s	
	L2				
	L3				
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test:				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts, according to 9.7.6.3 each pole is supplied at a voltage 1.1 times Un = V. The circuit – breaker is in the open position	440 V			P
	The leakage current shall not exceed 2 mA	D0+D1-1	D0+D1-2	D0+D1-3	P
	L1	5 µA	5 µA	6 µA	
	L2				
	L3				
	L4				
	Electric strength test:				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	aj				P
	bj				N/A
	cj				P
	dj				N/A
	ej 2000 V				N/A
	Test current 0,85x non tripping current (1,13 I_n)	60.5 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1.1 x tripping current (1,45 I_n) within 5s	100,5 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	D0+D1-1	D0+D1-2	D0+D1-3	P
		137 s	145 s	54 s	

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D" 3 samples	D63 4P			P
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation				P
9.10	Tests: D_5				P
	I_n (A)	63 A			P
	Sect. (mm²)	16 mm²			P
	Instantaneous tripping current	☐ B ☐ C ☒ D			P
9.10.1	Test of time-current characteristic				P
9.10.1.1	Test current 1,13 I_n (A) starting from cold for:	71,2 A			P
	- 1 h (I_n > 63 A)				P
	- 2 h (I_n - 63 A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1,45 I_n (A)	91,4 A			P
	- Tripping within	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 1h (I_n ≤ 63 A)	438 s	263 s	184 s	P
	- 2h (I_n > 63 A)				N/A
9.10.1.2	Test current 2,55 I_n (A) starting from cold for:	160,6 A			P
	opening time not less than 1 s or more than	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 60 s				N/A
	- 120 s	15 s	18 s	19 s	P
9.10.2	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.2.1	General test conditions				P
	For the lower values of the test current the test is made once at any convenient voltage.				P
	For the upper values of the test current the test is made at rated voltage Un(phase to neutral) with a power factor between 0,65 and 1.				P
	The sequence of operation is O-CO-CO-CO Interval time > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.2.2 *)	☐ For circuit-breakers of the B – Type				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
*see Annex 1	Test current 3I_n (A), starting from cold				N/A
	Opening time				N/A
	- 0,1s ≤ t [≤ 45s (≤ 32A) *)acc. EN60898]				N/A
	- 0 1s ≤ t [≤ 90s (> 32A) *)acc. EN60898]				N/A
	Test current 5 I_n (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.2.3 *)	☐ For circuit-breakers of the C – Type				N/A
*see Annex 1	Test current 5I_n (A), starting from cold				N/A
	Opening time				N/A
	- 0,1s ≤ t [≤ 15s (≤ 32A) *)acc. EN60898]				N/A
	- 0 1s ≤ t [≤ 30s (> 32A) *)acc. EN60898]				N/A
	Test current 10 I_n (A), starting from cold				N/A
	Tripping less than 0,1 s				N/A
9.10.2.4 *)	☑ For circuit-breakers of the D – Type				P
*see Annex 1	Test current 10I_n (A), starting from cold	630 A			P
	Opening time	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 0 1s ≤ t [≤ 4s (≤ 32A) *)acc. EN60898]				N/A
	- 0 1s ≤ t [≤ 8s (> 32A) *)acc. EN60898]	2 s	2 s	3 s	P
	Test current 20 I_n (A) or to the maximum instantaneous tripping current(see cl. 6 item j), starting from cold	1264 A			P
	Tripping less than 0,1 s	D0+D1-4	D0+D1-5	D0+D1-6	P
		5,7 ms	4,5 ms	4,3 ms	
9.10.2.5	Test current 2,55 I_n (A) starting from cold for				P
	opening time not less than 1 s or more than	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 60 s				N/A
	- 120 s	2 s	3 s	3 s	P
9.10	Test of effect of single pole loading on the tripping characteristic of multi-pole circuit-breakers				P
	Test current 1,1 It (AL (two pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	Test current 1 2 It (A), (three pole or four pole) starting from cold	109,6 A			P
	Tripping within				P
	- 1h	D0+D1-4	D0+D1-5	D0+D1-6	P
	L1	211 s	131 s	63 s	
	L2	124 s	78 s	101 s	
	L3	117 s	117 s	127 s	
	L4	109 s	122 s	131 s	
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	Test current 1 13 I_n (A)	71 2 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1 9 I_n (A) within 5s	119,7 A			P
	Tripping within	D0+D1-4	D0+D1-5	D0+D1-6	P
	- 1h	17 s	39 s	21 s	P
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P
	Test current I_n (A)	63 A			P
	No tripping within				P
	- 1h				P
	- 2h				N/A
	Tests: D_5	D63 4P			P
		D0+D1-4	D0+D1-5	D0+D1-6	P
8.9	Resistance to mechanical shock and impact				P
	CB shall have adequate mechanical behaviour so as to withstand the stresses imposed during installation and use				P
9.13.1	Mechanical shock				P
	- 50 falls on two sides of vertical board C				P
	- Vertical board turned 90°				P
	- 50 falls on two sides of vertical board C				P
	During the test the circuit-breakers shall not open				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.13.2	Mechanical impact				P
9.13.2.1	All types				P
	- Impact test 10 blows-height 10 cm no damage				P
9.13.2.2	Screw-in types				N/A
	- Torque 2 5 Nm for 1 min. no damage				N/A
9.13.2.3	CB intended to be mounted on a rail				P
	- downward vertical 50 N for 1 min				P
	- upward vertical 50 N for 1 min no damage				P
9.13.2.4	Plug-in types				N/A
	The circuit-breaker are mounted in there normal position, complete with plug-in base but without cables and any cover plate				N/A
	A force of 20 N applied for 1min to the circuit-breaker (see fig 17)				N/A
	During this test the circuit-breaker part shall not become loose from the base and shall not show damage impairing further use.				N/A
9.12.11.3	Test at 1500 A:				P
	Prospective current of 1500 A - power factor 0,93 to 0 98				F
	Prospective current obtained (A)	1634 A			P
	Power factor	0 95			P
	Test voltage / 0 95 Un	424,4 V			P
	Test circuit figure	Figure 6			P
	T (min)	3 min			P
9.12.9.1	Test in free air copper wire F ☐ 0,12 mm / ☑ 0 16 mm resistor R ☐ 0 75 Ohm / ☑ 1 5 Ohm	a* = 35 mm			P
9.12.9.2	Test in enclosures copper wire F ☐ 0,12 mm / ☐ 0 16 mm resistor R ☐ 0 75 Ohm / ☐ 1 5 Ohm				N/A
	Sequence	6O + 3CO			P
	I^2t (A) max. value	D0+D1-4	D0+D1-5	D0+D1-6	P
		1 59 kA	1 60 kA	1 60 kA	

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Clause	Requirement + Test	Result - Remark			Verdict
	Max Pt = No specified value	D0+D1-4	D0+D1-5	D0+D1-6	P
	L1	9,8 kA²s	8,7 kA²s	3,6 kA²s	
	L2	7,5 kA²s	8,0 kA²s	6,2 kA²s	
	L3	8,0 kA²s	8,0 kA²s	3,1 kA²s	
	L4				
	- No permanent arcing				P
	- No flash-over between poles or between poles and frame				P
	- No blowing of the fuses F and F'				P
	- Polyethylene foil shows no holes				P
	After the test				P
9.12.12.1	The circuit-breakers shall show no damage impairing their further use and shall maintenance, withstand the following tests.				P
	a) leakage current across open contacts according to 8.7.6.3 each pole is supplied at a voltage 1.1 times U_n = V. The circuit –breaker is in the open position	440 V			P
	The leakage current shall not exceed 2 mA	D0+D1-4	D0+D1-5	D0+D1-6	P
	L1	5 µA	5 µA	5 µA	
	L2	6 µA	5 µA	5 µA	
	L3	6 µA	5 µA	5 µA	
	L4	5 µA	5 µA	6 µA	
	Electric strength test				P
	Test voltage 1500 V (see 8.7.2)	1500 V			P
	a)				P
	b)				P
	c)				P
	d)				N/A
	e) 2000 V				N/A
	Test current 0,85x non tripping current (1,13 I_n)	60,5 A			P
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1.1 x tripping current (1,45 I_n) within 5s	100,5 A			P
	Tripping within ☒ 1 hour / ☐ 2 hour	D0+D1-4	D0+D1-5	D0+D1-6	P
		291 s	145 s	117 s	

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Clause	Requirement + Test	Result - Remark			Verdict
	TESTS „D"	D type, 1 for all other rated current B, C type, 1 for all rated current (only 9.10.2) Tests were conducted on 1P circuit-breaker			P
8.6	Automatic operation				P
8.6.1	Standard time-current zone				P
	Tripping characteristic of CB ensures adequate protection of the circuit, without premature operation.				P
9.10	Tests: D_0				P
	I_n (A)	D0-1	D0-2	D0-3	P
		D1	D2	D3	
		D0-4	D0-5	D0-6	
		D4	D5	D6	
		D0-7	D0-8	D0-9	
		D10	D13	D16	
		D0-10	D0-11	D0-12	
		D20	D25	D32	
		D0-13	D0-14		
		D40	D50		
		D0-15	D0-16	D0-17	
		C1	C2	C3	
		D0-18	D0-19	D0-20	
		C4	C5	C6	
		D0-21	D0-22	D0-23	
		C10	C13	C16	
		D0-24	D0-25	D0-26	
		C20	C25	C32	
		D0-27	D0-28	D0-29	
		C40	C50	C63	
		D0-30	D0-31	D0-32	
		B1	B2	B3	
		D0-33	D0-34	D0-35	
		B4	B5	B6	
		D0-36	D0-37	D0-38	
		B10	B13	B16	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-33	D0-40	D0-41	
		B20	B25	B32	
		D0-42	D0-43	D0-44	
		B40	B50	B63	
	Sect. (mm²) :	D0-1	D0-2	D0-3	P
		1 mm²	1 mm²	1 mm²	
		D0-4	D0-5	D0-6	
		1 mm²	1 mm²	1 mm²	
		D0-7	D0-8	D0-9	
		1,5 mm²	1,5 mm²	2,5 mm²	
		D0-10	D0-11	D0-12	
		2,5 mm²	4 mm²	6 mm²	
		D0-13	D0-14		
		10 mm²	10 mm²		
		D0-15	D0-16	D0-17	
		1 mm²	1 mm²	1 mm²	
		D0-18	D0-19	D0-20	
		1 mm²	1 mm²	1 mm²	
		D0-21	D0-22	D0-23	
		1,5 mm²	1,5 mm²	2,5 mm²	
		D0-24	D0-25	D0-26	
		2,5 mm²	4 mm²	6 mm²	
		D0-27	D0-28	D0-29	
		10 mm²	10 mm²	16 mm²	
		D0-30	D0-31	D0-32	
		1 mm²	1 mm²	1 mm²	
		D0-33	D0-34	D0-35	
		1 mm²	1 mm²	1 mm²	
		D0-36	D0-37	D0-38	
		1,5 mm²	1,5 mm²	2,5 mm²	
		D0-39	D0-40	D0-41	
		2,5 mm²	4 mm²	6 mm²	
		D0-42	D0-43	D0-44	
		10 mm²	10 mm²	16 mm²	

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Clause	Requirement + Test	Result - Remark			Verdict
	Instantaneous tripping current	☒ B	☒ C	☒ D	P
9.10.1	Test of time-current characteristic				P
9.10.1.1	Test current 1,13 I_n (A) starting from cold for.	D0-1	D0-2	D0-3	P
		1,13 A	2,26 A	3,39 A	
		D0-4	D0-5	D0-6	
		4,52 A	5,65 A	6,78 A	
		D0-7	D0-8	D0-9	
		11,3 A	14,69 A	18,08 A	
		D0-10	D0-11	D0-12	
		22,6 A	28,25 A	35,16 A	
		D0-13	D0-14		
		45,2 A	56,5 A		
	- 1 h ($I_n \leq 63$ A)				P
	- 2 h ($I_n > 63$ A)				N/A
	No tripping				P
	Then steadily increased within 5 s to 1.45 I_n (A)	D0-1	D0-2	D0-3	P
		1,45 A	2,9 A	4,35 A	
		D0-4	D0-5	D0-6	
		5,8 A	7,25 A	8,7 A	
		D0-7	D0-8	D0-9	
		14,5 A	18,85 A	23,2 A	
		D0-10	D0-11	D0-12	
		29,0 A	36,25 A	46,4 A	
		D0-13	D0-14		
		58,0 A	72,5 A		
	- Tripping within				P
	- 1h (≤ 63 A)	D0-1	D0-2	D0-3	P
		265 s	217 s	147 s	
		D0-4	D0-5	D0-6	
		131 s	357 s	181 s	
		D0-7	D0-8	D0-9	
		10 s	25 s	53 s	
		D0-10	D0-11	D0-12	
		45 s	30 s	60 s	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-13	D0-14		
		64 s	57 s		
	- 2h (> 63 A)				N/A
9.10.1.2	Test current 2.55 I_n (A) starting from cold for.	D0-1	D0-2	D0-3	P
		2,55 A	5,1 A	7,65 A	
		D0-4	D0-5	D0-6	
		10,2 A	12,75 A	15,3 A	
		D0-7	D0-8	D0-9	
		25,5 A	33,15 A	40,8 A	
		D0-10	D0-11	D0-12	
		51,0 A	63,8 A	81,6 A	
		D0-13	D0-14		
		102,0 A	127,5 A		
	opening time not less than 1 s or more than				P
	- 60 s	D0-1	D0-2	D0-3	
		47 s	17 s	14 s	
		D0-4	D0-5	D0-6	
		13 s	15 s	11 s	
		D0-7	D0-8	D0-9	
		13 s	17 s	20 s	
		D0-10	D0-11	D0-12	
		28 s	17 s	31 s	
	- 120 s	D0-13	D0-14		P
		26 s	20 s		
9.10.2	Test of instantaneous tripping and of correct opening of the contacts				P
9.10.2.1	General test conditions				P
	For the lower values of the test current the test is made once at any convenient voltage				P
	For the upper values of the test current the test is made at rated voltage Un(phase to neutral) with a power factor between 0.95 and 1,				P
	The sequence of operation is O-CO-CO-CO Interval time > 3 min				P
	The tripping time of the O operation is measured				P
	After each operation the indicating means shall show the open position of the contacts				P
9.10.2.2*)	Test current 2.55 I_n (A) starting from cold for				P

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Clause	Requirement + Test	Result - Remark			Verdict
9.10.2.2 *)	☒ For circuit-breakers of the B – Type				P
*see Annex 1	Test current 3I_n (A), starting from cold	D0-30	D0-31	D0-32	P
		9,0 A	6,0 A	9,0 A	
		D0-33	D0-34	D0-35	
		12,0 A	15,0 A	18,0 A	
		D0-36	D0-37	D0-38	
		30,0 A	39,0 A	45,0 A	
		D0-39	D0-40	D0-41	
		60 A	75 A	90 A	
		D0-42	D0-43	D0-44	
		120 A	150 A	180 A	
	Opening time				P
	-0,1s ≤ t [s 45s (≥ 32A) *)acc. EN60898]	D0-30	D0-31	D0-32	P
		17 s	9 s	7 s	
		D0-33	D0-34	D0-35	
		7 s	5 s	7 s	
		D0-36	D0-37	D0-38	
		6 s	5 s	6 s	
		D0-39	D0-40	D0-41	
		3 s	7 s	15 s	
	- 0,1s ≤ t [s 90s (- 32A) *)acc. EN60898]	D0-42	D0-43	D0-44	P
		2 s	13 s	9 s	
	Test current 5 I_n (A), starting from cold	D0-30	D0-31	D0-32	P
		5,12 A	10,12 A	15,21 A	
		D0-33	D0-34	D0-35	
		20,12 A	25,15 A	30,77 A	
		D0-36	D0-37	D0-38	
		50,0 A	65,2 A	80,3 A	
		D0-39	D0-40	D0-41	
		100 A	125,4 A	152,8 A	
		D0-42	D0-43	D0-44	
		204 A	250 A	316 A	
	Tripping less than 0,1 s	D0-30	D0-31	D0-32	P
		31,3 ms	39,1 ms	16,4 ms	
		D0-33	D0-34	D0-35	
		64,8 ms	32,6 ms	22,9 ms	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-36	D0-37	D0-38	
		36,8 ms	48,6 ms	26,5 ms	
		D0-39	D0-40	D0-41	
		23,6 ms	35,6 ms	48,2 ms	
		D0-42	D0-43	D0-44	
		5,7 ms	24 ms	5,7 ms	
9.10.1.2*)	Test current 2.55 I_n (A) starting from cold for	D0-30	D0-31	D0-32	P
		2,5 A	5,1 A	7,65 A	
		D0-33	D0-34	D0-35	
		10,2 A	12,75 A	15,3 A	
		D0-36	D0-37	D0-38	
		25,5 A	33,2 A	40,8 A	
		D0-39	D0-40	D0-41	
		51 A	63,8 A	81,6 A	
		D0-42	D0-43	D0-44	
		102 A	127,5 A	160,6 A	
	opening time not less than 1 s or more than				P
	- 60 s	D0-30	D0-31	D0-32	P
		22 s	12 s	11 s	
		D0-33	D0-34	D0-35	
		10 s	9 s	13 s	
		D0-36	D0-37	D0-38	
		14 s	14 s	11 s	
		D0-39	D0-40	D0-41	
		12 s	13 s	25 s	
	- 120 s	D0-42	D0-43	D0-44	
		7 s	21 s	14 s	
9.10.2.2 *)	☒ For circuit-breakers of the C - Type				P
*see Annex 1	Test current 5I_n (A) starting from cold	D0-15	D0-16	D0-17	P
		5 A	10 A	15 A	
		D0-18	D0-19	D0-20	
		20 A	25 A	30 A	
		D0-21	D0-22	D0-23	
		50 A	65 A	80 A	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-24	D0-25	D0-26	
		160 A	125 A	160 A	
		D0-27	D0-28	D0-29	
		200 A	250 A	315 A	
	Opening time				P
	- 0,1s ≤ t [s 15s (≥ 32A) *)acc. EN60898]	D0-15	D0-16	D0-17	P
		5 s	2 s	2 s	
		D0-18	D0-19	D0-20	
		4 s	2 s	3 s	
		D0-21	D0-22	D0-23	
		4 s	4 s	3 s	
		D0-24	D0-25	D0-26	
		3 s	3 s	5 s	
	- 0,1s ≤ t [s 30s (> 32A) *)acc. EN60898]	D0-27	D0-28	D0-29	P
		5 s	7 s	5 s	
	Test current 10 I_n (A), starting from cold	D0-15	D0-16	D0-17	P
		10,12 A	20,12 A	30,77 A	
		D0-18	D0-19	D0-20	
		40,4 A	51 A	60,12 A	
		D0-21	D0-22	D0-23	
		100 A	132,13 A	162,75 A	
		D0-24	D0-25	D0-26	
		204 A	250,3 A	321 A	
		D0-27	D0-28	D0-29	
		403,3 A	501,5 A	632,9 A	
	Tripping less than 0,1 s	D0-15	D0-16	D0-17	P
		10,4 ms	14,6 ms	7,4 ms	
		D0-18	D0-19	D0-20	
		9,2 ms	16,1 ms	16,8 ms	
		D0-21	D0-22	D0-23	
		16,3 ms	17,4 ms	6,7 ms	
		D0-24	D0-25	D0-26	
		5,1 ms	14,3 ms	6,7 ms	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-27	D0-28	D0-29	
		7,2 ms	4,9 ms	11,3 ms	
9.10.1.2 *)	Test current 2.55 I_n (A) starting from cold for:	D0-15	D0-16	D0-17	P
		2,55 A	5,1 A	7,65 A	
		D0-18	D0-19	D0-20	
		10,2 A	12,75 A	15,3 A	
		D0-21	D0-22	D0-23	
		25,5 A	33,2 A	40,8 A	
		D0-24	D0-25	D0-26	
		51 A	63,8 A	81,6 A	
		D0-27	D0-28	D0-29	
		102 A	127,5 A	160,6 A	
	opening time not less than 1 s or more than				P
	- 60 s	D0-15	D0-16	D0-17	P
		13 s	10 s	13 s	
		D0-18	D0-19	D0-20	
		13 s	13 s	9 s	
		D0-21	D0-22	D0-23	
		14 s	15 s	15 s	
		D0-24	D0-25	D0-26	
		11 s	15 s	17 s	
	- 120 s	D0-27	D0-28	D0-29	
		11 s	13 s	11 s	
9.10.2.4 *)	☒ For circuit-breakers of the D – Type				P
*see Annex J	Test current $10I_n$ (A), starting from cold	D0-1	D0-2	D0-3	P
		10 A	20 A	30 A	
		D0-4	D0-5	D0-6	
		40 A	50 A	60 A	

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Clause	Requirement + Test	Result - Remark			Verdict
		D0-7	D0-8	D0-9	
		160 A	130 A	160 A	
		D0-10	D0-11	D0-12	
		200 A	250 A	320 A	
		D0-13	D0-14		
		400 A	500 A		
	Opening time				P
	- 0.1s ≤ t [s 4s (≤ 32A and > 10 A) *)acc. EN60898]	D0-6	D0-9	D0-10	P
		2 s	2 s	2 s	
		D0-11	D0-12		
		2 s	2 s		
	- 0.1s ≤ t [s 6s (> 32A and ≤10 A) *)acc EN60898]	D0-1	D0-2	D0-3	P
		4 s	4 s	3 s	
		D0-4	D0-5	D0-6	
		3 s	3 s	3 s	
		D0-7	D0-13	D0-14	
		3 s	2 s	2 s	
	Test current 20 I_n (A) or to the maximum instantaneous tripping current(see cl. 6 item j), starting from cold	Tested at 20 In			P
		D0-1	D0-2	D0-3	
		20,1 A	40.4 A	60.1 A	
		D0-4	D0-5	D0-6	
		80.3 A	100 A	121.3 A	
		D0-7	D0-8	D0-9	
		200 A	260 A	321 A	
		D0-10	D0-11	D0-12	
		403 A	501 A	643 A	
		D0-13	D0-14		
		501 A	1002 A		
	Tripping less than 0.1 s	D0-1	D0-2	D0-3	P
		6,8 ms	6,8 ms	6,1 ms	
		D0-4	D0-5	D0-6	
		26.1 ms	8.8 ms	7.6 ms	
		D0-7	D0-8	D0-9	
		4,6 ms	7.6 ms	4,1 ms	
		D0-10	D0-11	D0-12	

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Clause	Requirement + Test	Result - Remark			Verdict
		14,3 ms	5,1 ms	4,7 ms	
		D0-13	D0-14		
		6,8 ms	6.6 ms		
9.10.1.2 *)	Test current 2.55 I_n (A) starting from cold for:	D0-1	D0-2	D0-3	P
		2,55 A	5,10 A	7,65 A	
		D0-4	D0-5	D0-6	
		10,2 A	12,75 A	16 3 A	
		D0-7	D0-8	D0-9	
		25,5 A	33,2 A	40,8 A	
		D0-10	D0-11	D0-12	
		51,0 A	63,8 A	81,6 A	
		D0-13	D0-14		
		102 A	127,5 A		
	opening time not less than 1 s or more than				P
	- 60 s	D0-1	D0-2	D0-3	P
		49 s	23 s	24 s	
		D0-4	D0-5	D0-6	
		16 s	13 s	21 s	
		D0-7	D0-8	D0-9	
		17 s	20 s	23 s	
		D0-10	D0-11	D0-12	
		31 s	20 s	42 s	
	- 120 s	D0-13	D0-14		P
		27 s	21 s		
9.10.3	Test of effect of single pole loading on the tripping characteristic of multipole circuit-breakers.				P
	Test current 1.1 I_t (A), (two pole) starting from cold				N/A
	Tripping within				N/A
	- 1h				N/A
	- 2h				N/A
	Test current 1.2 I_t (A), (three pole or four pole) starting from cold				N/A
	Tripping within				N/A

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Clause	Requirement + Test	Result - Remark			Verdict
	- 1h				N/A
	- 2h				N/A
9.10.4	Test of effect of ambient temperature on the tripping characteristics				P
	a) Ambient temperature of (35 ± 2)°C below the ambient air reference temperature	-5 °C			P
	Test current 1.13 I_n (A)	D0-1	D0-2	D0-3	P
		1.13 A	2.26 A	3.39 A	
		D0-4	D0-5	D0-6	
		4,52 A	5.65 A	6.78 A	
		D0-7	D0-8	D0-9	
		11,3 A	14.69 A	18.08 A	
		D0-10	D0-11	D0-12	
		22,6 A	28,25 A	35.16 A	
		D0-13	D0-14		
		45.2 A	56.5 A		
	- Passed for 1h				P
	- Passed for 2h				N/A
	Current is then steadily increased to 1.9 I_n (A) within 5s	D0-1	D0-2	D0-3	P
		1,9 A	3,8 A	5.7 A	
		D0-4	D0-5	D0-6	
		7.6 A	9.5 A	11.4 A	
		D0-7	D0-8	D0-9	
		19.0 A	24.7 A	30.4 A	
		D0-10	D0-11	D0-12	
		38 A	47.5 A	60.8 A	
		D0-13	D0-14		
		76 A	95 A		
	Tripping within				P
	- 1h	D0-1	D0-2	D0-3	P
		617 s	147 s	191 s	
		D0-4	D0-5	D0-6	
		127 s	261 s	251 s	
		D0-7	D0-8	D0-9	
		77 s	153 s	191 s	
		D0-10	D0-11	D0-12	

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Clause	Requirement + Test	Result - Remark			Verdict
		61 s	32 s	71 s	
		D0-13	D0-14		
		83 s	137 s		
	- 2h				N/A
	b) Ambient temperature of (40 ± 2)°C	40 °C			P
	Test current I_n (A)	D0-1	D0-2	D0-3	P
		1 A	2 A	3 A	
		D0-4	D0-5	D0-6	
		4 A	5 A	6 A	
		D0-7	D0-8	D0-9	
		10 A	13 A	16 A	
		D0-10	D0-11	D0-12	
		20 A	25 A	32 A	
		D0-13	D0-14		
		40 A	50 A		
	No tripping within				P
	- 1h				P
	- 2h				N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	TESTS „E1" *) SEE ANNEX 1	refer to test report no. WD807018.50	P
	TESTS „E2" *) SEE ANNEX 1	refer to test reports no. WD807018.50 and 3302398.50	P
	TESTS „E3" *) SEE ANNEX 1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Table C.2 - Number of samples for full test procedure

Test sequence		Number of samples	Minimum number of samples which shall pass the test [a] [b]	Maximum number of samples for repeated tests [a] [c]
A		1	1	–
B		3	2	3
C	C_1	3	2 [d]	3
C	C_2 [e]	3	2 [d]	3
D		3	2 [d]	3
E_1		3 + 4 [f]	2 [d] + 2 [d] [f]	3 + 4 [d]
E_2		3 + 4 [d]	2 [d] + 2 [d] [f]	3 + 4 [d]

a) In total, a maximum of two test sequences may be repeated.
b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design.
c) In the case of repeated tests, all results shall be acceptable.
d) Supplementary samples in the case of single-pole circuit-breakers rated 230/400 V or 240/415 V (see table 1).
e) All samples shall meet the test requirements of 9.12.10, 9.12.11.2, 9.12.11.3 and 9.12.11.4, as appropriate.
f) For this sequence read "number of protected poles" instead of "number of samples". In total a maximum of three test sequences may be repeated.

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Clause	Requirement + Test	Result - Remark	Verdict

Table C.3 - Number of samples for simplified test procedure

Test sequence		Number of samples depending on number of poles [a]			
		One pole [b]	Two poles [c]	Three poles [c]	Four poles [c]
A		1 max. rated I_n	1 [d] max. rated I_n	1 [e] max. rated I_n	1 [e] max. rated I_n
B		3 max. rated I_n	3 [d] max. rated I_n	3 max. rated I_n	3 max. rated I_n
C	C_1	3 max. rated I_n	3 [d] max. rated I_n	3 max. rated I_n	3 max. rated I_n
C	C_2	3 max. rated I_n for 2 protected poles, or 3 max. rated I_n for one protected pole		1 max. rated I_n	1 max. rated I_n
$D_2 + D_1$		3 max. rated I_n	3 [d] max. rated I_n	3 max. rated I_n	3 max. rated I_n
D_2		1 of all other rated I_n			
E_1		3+3 [f] max. rated I_n 3+3 [f] min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n
E_2		3+4 [g] max. rated I_n 3+4 [g] min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n

a) If a test is to be repeated according to the acceptance criteria of C.2, a new set of samples is used for the relevant test sequence. In repeated tests all results shall be satisfactory.
b) If only multipole circuit-breakers are submitted, this column applies to the set of samples having the smallest number of poles (instead of the relevant column).
c) Applicable to two-pole circuit-breakers whether with two protected poles or with one protected pole.
d) This series is omitted when four-pole circuit-breakers are also tested.
e) Also applicable to circuit-breakers with three protected poles and a neutral pole.
f) Supplementary samples in case of single-pole circuit-breakers of 5.3.1.4.
g) This test sequence is omitted when three-pole or four-pole circuit-breakers have been tested.
h) This test sequence shall be omitted for two-pole circuit breakers with two protected poles, when three-pole or four-pole circuit-breakers have been tested.
i) When multi-pole circuit-breakers are submitted, a partition of four screw-type terminals for external conductors are subjected to the tests of 9.5 (e.g. two supply and two load terminals).

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Clause	Requirement + Test	Result - Remark	Verdict

Table C 4 – Test sequences for a series of circuit-breakers being of different instantaneous tripping classifications			
Circuit-breaker type-tested first	Subsequent test sequences for circuit-breakers of		
	B-type	C-type	D-type
B-type	–	$(D_o + D_1) + E$	$(D_o + D_1) + E$
C-type	D_o [a] + B [a]		$(D_o + D_1) + E$
D-type	D_o [a] + B [a] [b]	D_o [a] + B [a] [b]	–

a) For these test sequences only the tests of 9.8 and 9.10.2 are required.
b) When certification is requested at the same time for B-type, C-type and D-type circuit-breakers having the same rated short-circuit capacity, only test sequence Do is required if B-type and D-type samples have been tested.

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	Annex E	N/A
	Special requirements for auxiliary circuits for safety extra-low voltage (*) (*) For auxiliary contact units assembled or to be assembled separately to circuit-breakers see EN62019.	N/A

	Annex J	N/A
	Particular requirements for circuit-breakers with screwless type terminals for external copper conductors (in not exceeding 20 A, cross-sectional area up to 4 mm^2	N/A

	Annex K	N/A
	Particular requirements for circuit-breakers with flat quick-connect terminations	

	Annex L	N/A
	Specific requirements for circuit-breakers with screw-type terminals for external untreated aluminium conductors and with aluminium screw-type terminals for use with copper or with aluminium conductors	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Annex I	P
	EN 60898-1 COMMON MODIFICATIONS	P

	GENERAL		P
9.12	Short-circuit tests	refer to test reports no. W0507018.60 and 3302398.50	P
9.12.2	Value of the power frequency recovery voltage shall be equal to 110 % of the rated voltage.		P
9.12.3	Tolerances on test quantities		P
	voltage (including recovery voltage) 0, -5%		P

	TESTS „A" 1 sample		P
6	MARKING AND OTHER INFORMATION		P
6.1	Standard marking:		P
	f) Rated short circuit capacity (A) within a rectangle, without symbol "A"	10000 in rectangle	P
	h)Calibration temperature, if different from 30°C		N/A
	j) Energy limiting class in a square in accordance with annex ZA if applied	3 for B-Type, C-Type 1 A to 40 A circuit breakers	P
	k) Making and breaking capacity on an individual protected pole of multipole circuit-breakers if(cn1) if different from Icn		N/A
6.2	Additional marking		N/A
	Additional marking to other standards (EN or IEC or other) is allowed under the follow conditions		
	- the circuit-breaker shall comply with all the requirements of the additional standard,		
	- the relevant standard to which the additional marking refers shall be indicated adjacent to this marking and shall be clearly differentiated or separated from the standard marking according to cl. 6.1		
	Compliance is checked by inspection and by carrying out all the test sequences required by the relevant standard. Equivalent or less severe test sequences need not be repeated		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

6.3	Guidance table for marking		P
	EACH CBO SHALL BE MARKED IN A DURABLE MANNER WITH ALL OR FOR SMALL APPARATUS, ACCORDING TABLE FOR MARKING		P

	TESTS „C"		P
9.11.3	Dielectric strength reduced to 900 V	Tested at 1500 V	P

	TESTS „D" 3 samples	See main part of this report	P
9.10	Tests: D_o		P
9.10.2.2	☒ For circuit-breakers of the B – Type		P
	Moreover the C.B. shall perform following test:		P
9.10.1.2	Test current 2,55 I_n (A) starting from cold for		P
	opening time not less than 1 s or more than		P
	- 60 s		P
	- 120 s		P
9.10.2.2	☒ For circuit-breakers of the C – Type		P
	Moreover the C.B. shall perform following test		P
9.10.1.2	Test current 2,55 I_n (A) starting from cold for		P
	opening time not less than 1 s or more than		P
	- 60 s		P
	- 120 s		P
9.10.2.2	☒ For circuit-breakers of the D – Type		P
	Moreover the C.B. shall perform following test		P
9.10.1.2	Test current 2,55 I_n (A) starting from cold for		P
	opening time not less than 1 s or more than		P
	- 60 s		P
	- 120 s		P

	TESTS „E"				N/A
9.12.1.4	Test: E_o (Test at making and breaking capacity on a individual pole (Icn1)	E3-1	E3-2	E3-3	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX C (NORMATIVE)

replace table C.1 by:

Test sequence and number of samples to be submitted for certification purposes
Table C.1 - Test sequences

Test sequence		Clause or subclause	Test (or inspection)
A		6 8.1.1 8.1.2 9.3 8.1.3 8.1.6 9.4 9.5 9.6 9.14 8.1.3 9.15 9.15	Marking General Mechanism Indelibility of marking Clearance and creepage distances (external parts only) Non-interchangeability Reliability of screws, current-carrying parts and connections Reliability of terminals for external conductors Protection against electric shock Resistance to heat Clearances and creepage distances (external parts) Resistance to abnormal heat and to fire Resistance to rusting
B		9.7 9.8 9.8	Dielectric properties Temperature-rise 28-day test
C	C_1	9.11 9.12.11.2.1 9.12.12	Mechanical and electrical endurance Performance at reduced short-circuit currents Verification of the circuit-breaker after short-circuit tests
	C_2	9.12.11.2.2 9.12.12	Short-circuit test for verifying the suitability of circuit-breakers for use in IT systems Verification of the circuit-breaker after short-circuit tests
D	D_3	9.10	Tripping characteristic
	D_1	9.13 9.12.11.3 9.12.12	Resistance to mechanical shock and impact Short-circuit performance at 1 500 A Verification of circuit-breaker after short-circuit tests
E	E_1	9.12.11.4.2 and 9.12.12	Service short-circuit capacity (I_{cs}) Verification of circuit-breaker after short-circuit tests
	E_2	9.12.11.4.3 and 9.12.12	Performance at rated short-circuit capacity (I_{cn}) Verification of circuit-breaker after short-circuit tests
	E_3	9.12.11.4.4 and 9.12.12	Performance at rated making and breaking capacity (I_{cm}) on an individual pole of multipole circuit-breakers Verification of circuit-breaker after short-circuit tests

NOTE With the agreement of the manufacturer the same samples may be used for more than one test sequence

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

replace table C.2 by:

Table C.2 - Number of samples for full test procedure

Test sequence		Number of samples	Minimum number of samples which shall pass the test [a] [b]	Maximum number of samples for repeated tests [c]
A		1	1	--
B		3	2	3
C	C_1	3	2 [d]	3
	C_2 [h]	3	2 [d]	3
D		3	2 [d]	3
E_1		3 + 3 [e]	2 [d] + 2 [d] [e]	3 + 3 [e]
E_2		3 + 4 [e]	2 [d] + 3 [e] [d]	3 + 4 [e]
E_3		3	2 [d]	3

a) In total a maximum of two test sequences may be repeated.

b) It is assumed that a sample which has not passed a test has not met the requirements due to workmanship or assembly defects which are not representative of the design.

c) In the case of repeated tests, all results shall be acceptable.

d) Supplementary samples in the case of single-pole circuit-breakers rated 230/400 V or 240/415 V (see table 1).

e) All samples shall meet the test requirements of 9.12.10, 9.12.11.2, 9.12.11.3 and 9.12.11.4, as appropriate.

f) For this sequence read "number of protected poles" instead of "number of samples". In total a maximum of three test sequences may be repeated.

IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

replace table C.3 by:

Table C.3 - Number of samples for simplified test procedure

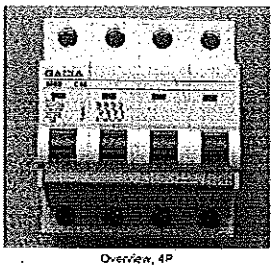
Test sequence		Number of samples depending on number of poles [f]			
		One pole [a]	Two poles [f]	Three poles [g]	Four poles [g]
A		1 max. rated I_n	1 [a] [c] max. rated I_n	1 [a] max. rated I_n	1 [a] max. rated I_n
B		3 max. rated I_n	3 [a] max. rated I_n	3 max. rated I_n	3 max. rated I_n
C	C_1	3 max. rated I_n	3 [a] max. rated I_n	3 max. rated I_n	3 max. rated I_n
	C_2	3 max. rated I_n	2 max. rated I_n for 2 protected poles or 3 max. rated I_n for one protected pole	1 max. rated I_n	1 max. rated I_n
$D_3 + D_1$		3 max. rated I_n	3 [a] max. rated I_n	3 max. rated I_n	3 max. rated I_n
D_3		1 of all other rated I_n			
E_1		3+3 [a] max. rated I_n 3+3 [a] min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n
E_2		3+4 [a] max. rated I_n 3+4 [a] min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n	3 max. rated I_n 3 min. rated I_n
E_3		[i]	3 [a] max. rated I_n	3 [a] max. rated I_n	3 [a] max. rated I_n

a) If a test is to be repeated according to the acceptance criteria of C.2, a new set of samples is used for the relevant test sequence. In repeated tests all results shall be satisfactory.
b) If only multipole circuit-breakers are submitted, this column applies to the set of samples having the smallest number of poles (instead of the relevant column).
c) Applicable to two-pole circuit-breakers whether with two protected poles or with one protected pole.
d) This series is omitted when four-pole circuit-breakers are also tested.
e) Also applicable to circuit-breakers with three protected poles and a neutral pole.
f) Supplementary samples in case of single-pole circuit-breakers of 5.3.1.4.
g) This test sequence is omitted when three-pole or four-pole circuit-breakers have been tested.
h) This test sequence shall be omitted for two-pole circuit breakers with two protected poles, when three-pole or four-pole circuit-breakers have been tested.
i) When multipole circuit-breakers are submitted, a maximum of four screw-type terminals for external conductors are subjected to the tests of 9.5, i.e. two supply and two load terminals.
j) If each pole of the multipole is identical to the individual pole tested in E2, this test is omitted. If not this test is carried out on an individual protected pole taken at random of the circuit-breaker with the highest number of poles.
k) Covered by test sequence E2.

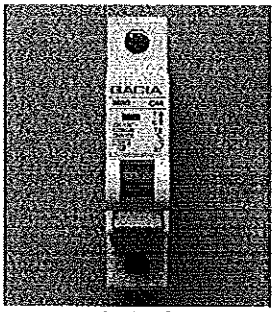
IEC/EN 60 898-1			
Clause	Requirement + Test	Result - Remark	Verdict

	Annex ZC (normative)	N/A
	EN 60 898-1 Special national conditions	N/A
	For the countries in which the relevant special national conditions apply these provisions are normative; for other countries they are informative.	N/A
J.1	Austria, Czech Republic, Denmark, Germany, Netherlands, Norway and Switzerland	N/A
	The upper limit of current for use of screw less terminals is 16 A	N/A
J.3.3	Austria, Belgium, Denmark, France, Germany, Italy, Portugal, Spain, Sweden, Switzerland, and United Kingdom	N/A
	Only universal screwless type terminals are accepted.	N/A
K1	BELGIUM, FRANCE, ITALY, PORTUGAL, SPAIN, AND UNITED KINGDOM	N/A
	The use of circuit-breakers with flat quick-connect terminations for rated currents up to and including 20 A is accepted.	N/A
K.8.2.2	BELGIUM, FRANCE, ITALY, PORTUGAL, SPAIN, AND UNITED KINGDOM	N/A
	The use for rated currents up to and including 20 A	N/A

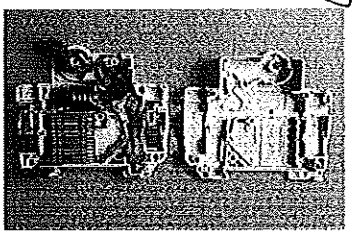
Photos



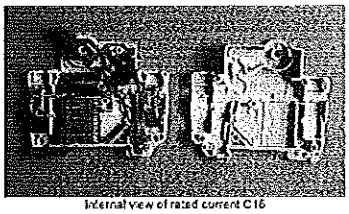
Overview, 4P



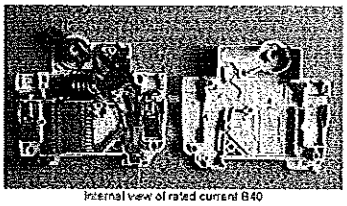
Overview 1P



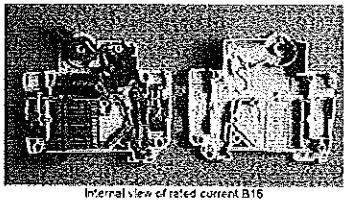
Internal view of rated current C40



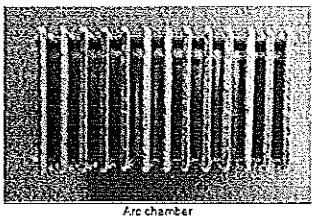
Internal view of rated current C16



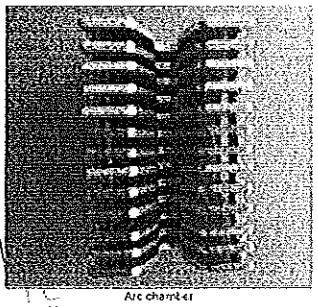
Internal view of rated current B40



Internal view of rated current B16

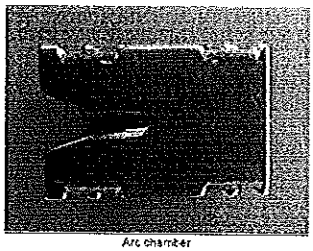


Arc chamber

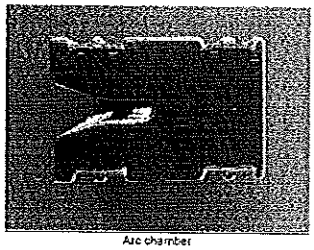


Arc chamber

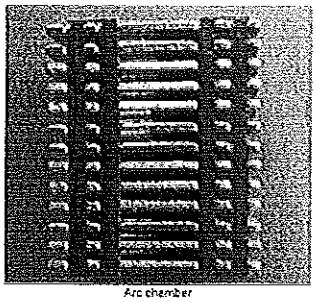
78



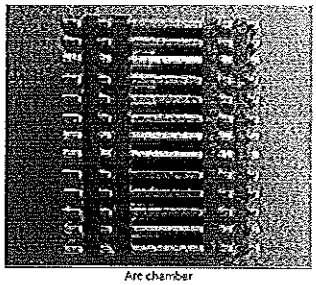
Arc chamber



Arc chamber



Arc chamber



Arc chamber

CTS (NINGBO) TESTING SERVICE TECHNOLOGY INTERNATIONAL

OPERATE ACCORDING TO ISO/IEC 17025

EMC TEST REPORT

TEST REPORT NUMBER : CNB3130325-00366-E

CTS (Ningbo) Testing Service Technology Co., Ltd.
2/F., South Tower, Huoju Building, No.181, Canghai Road,
Jiangdong Science and Technology Park, Ningbo, Zhejiang, China

TEST REPORT EN 60898- 1: 2003+A13:2012 Electrical accessories - Circuit breakers for overcurrent protection for household and similar installations -- Part 1: Circuit-breakers for a.c. operation ——Only EMC Requirement	
Report Reference No.	CNB3130325-00366-E
Date of issue	30 March 2013
Testing Laboratory Name	**CTS (Ningbo) Testing Service Technology Co., Ltd.**
Address	GZ test site;Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China.
Testing location/ procedure	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's name	GACIA ELECTRICAL APPLIANCE CO.,LTD.
Address	545#Dongdajie,Baitawang Industrial zone,Beibaixiang,Wenzhou ,China
Test specification:	
Standard	**EN 60898- 1: 2003+A13:2012**
Test Report Form No.	CTSEMC-1.0
TRF Originator	CTS (Ningbo) Testing Service Technology Co., Ltd.
Master TRF	Dated 2009-01
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Test item description.	The circuit breaker
Trade Mark	GACIA
Manufacturer	GACIA ELECTRICAL APPLIANCE CO.,LTD.
Model/Type reference	N8GH
Ratings	/
Result	**PASSED**

Compiled by:	Supervised by:	Approved by:
Kate zhang / File administrators	Duke yang / Technique principal	Vincent yao / Manager

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EMC -- TEST REPORT

Test Report No. : CNB3130325-00366-E	30 March 2013 Date of issue

Type / Model.....	N8GH
EUT.....	The circuit breaker
Applicant.....	GACIA ELECTRICAL APPLIANCE CO.,LTD.
Address.....	545#Dongdajie,Baitawang Industrial zone,Beibaixiang,Wenzhou ,China
Telephone.....	+86-577- 62988813
Fax.....	+86-577-62982306
Contact.....	WU MAN HUAI
Manufacturer.....	GACIA ELECTRICAL APPLIANCE CO.,LTD.
Address.....	545#Dongdajie,Baitawang Industrial zone,Beibaixiang,Wenzhou ,China
Telephone.....	+86-577- 62988813
Fax.....	+86-577-62982306
Contact.....	WU MAN HUAI
Factory.....	GACIA ELECTRICAL APPLIANCE CO.,LTD.
Address.....	545#Dongdajie,Baitawang Industrial zone,Beibaixiang,Wenzhou ,China
Telephone.....	+86-577- 62988813
Fax.....	+86-577-62982306
Contact.....	WU MAN HUAI

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

EN 60898- 1: 2003+A13:2012 Electrical accessories - Circuit breakers for overcurrent protection for household and similar installations – Part 1: Circuit-breakers for a.c. operation

2 SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	25 March 2013
Testing commenced on	25~29 March 2013
Testing concluded on	30 March 2013

2.2 FINAL ASSESSMENT

The EMC requirements pertaining to the technical standards and tested operation modes are

■ - fulfilled.

☐ - not fulfilled.

The equipment under test

■ - fulfils the EMC requirements cited on page 1.

☐ - does not fulfil the EMC requirements cited on page 1.

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3 EQUIPMENT UNDER TEST

3.1 Power supply system utilised

Power supply voltage: ■ AC 230V/50Hz
☐ Other (Specified blank below)

3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: 1
Serial number: Prototype

3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

■ - Normal

Operating Mode: Normal

Emissions tests : According to EN 55022, searching for the highest disturbance.

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3.4 EUT configuration

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurement:

Not Applicable

3.5 Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product.

3.6 Definition related to the performance level

■ based on the used product standard
☐ based on the declaration of the manufacturer, requestor or purchaser

Criterion A:
Definition: normal performance within limits specified by the manufacturer, requestor or purchaser:

Criterion B:
Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention:

Criterion C:
Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention:

Criterion D:
Definition: loss of function or degradation of performance, which is not recoverable, owing to damage to hardware or software, or loss of data:

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

GZ test site;Building F, Dachuang Industrial park, No.379, Zhongshan Dadao, Guangzhou, China

Tel: +86-20-85543113 (32 lines) Fax: +86-20-38780406

4.2 Test facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L3394

CTS (Ningbo) Testing Service Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (Identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

IC-Registration No.: 8374A

The 3m Alternate Test Site of CTS (Ningbo) Testing Service Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on June 06, 2011 .

FCC-Registration No.: 971995

CTS (Ningbo) Testing Service Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No.971995, July 13, 2012.

4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

4.4 Definitions of symbols used in this test report

■ - The black square indicates that the listed condition, standard or equipment is applicable for this report.
☐ - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

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4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Radiation emission (3m)	30MHz~300MHz	±3.14dB	(1)
	300MHz~1000MHz	±3.18dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.7 Test Description

4.7.1 Description of Standards and Results

EMISSION EN (EN 60898- 1: 2003+A13:2012)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN 55022:2006+A1:2007	Class B	PASS
Conducted disturbance at telecommunication port	EN 55022:2006+A1:2007	Class B	N/A
Radiated disturbance	EN 55022:2006+A1:2007	Class B	PASS
Harmonic current emissions	EN 61000-3-2:2006+A2:2009	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3:2008	——	N/A

IMMUNITY (EN 60898- 1: 2003+A13:2012)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	IEC 61000-4-2: 2008	B	N/A
Radio-frequency, Continuous radiated disturbance	IEC 61000-4-3:2006 +A1:2007+A2:2010	A	N/A
Electrical fast transient (EFT)	IEC 61000-4-4:2012	B	N/A
Surge (Input a.c. power ports)	IEC 61000-4-5: 2005	B	N/A
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	IEC 61000-4-6: 2008	A	N/A
Power frequency magnetic field	IEC 61000-4-8: 2009	A	N/A
Voltage dips, >95% reduction	IEC 61000-4-11: 2004	B	N/A
Voltage dips, 30% reduction		B	N/A
Voltage interruptions		C	N/A
N/A is an abbreviation for Not Applicable.			

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5 TEST CONDITIONS AND RESULTS

5.1 Conducted disturbance

For test instruments and accessories used see section 6 part 6.2.

5.1.1 Description of the test location

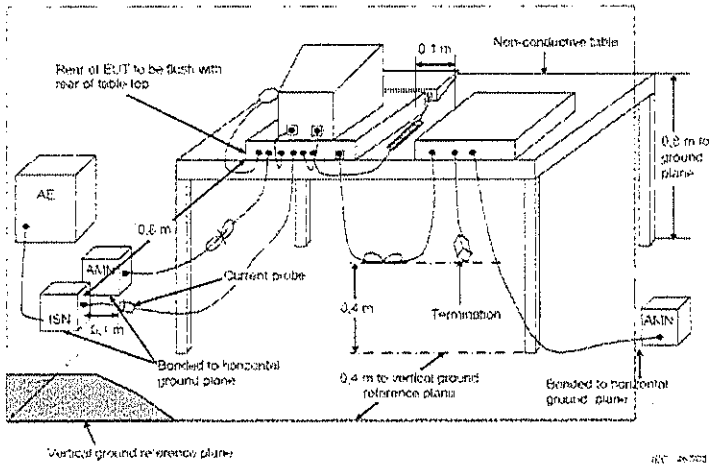
Test location: Shielded room

5.1.2 Description of the test set-up

5.1.2.1 Operating Condition

The EUT is engraving during the test, and the results of the maximum emanation are recorded

5.1.2.2 Block Diagram of Test Setup



5.1.3 Limits disturbance

Frequency			Maximum RF Line Voltage (dBμV)	
			Quasi-peak Level	Average Level
150kHz	~	500kHz	66 ~ 56 *	56 ~ 46 *
500kHz	~	5MHz	56	46
5MHz	~	30MHz	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

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5.1.4 Test result

Frequency Range	Passed	Failed	Number of rechecks
150 kHz - 30 MHz	☒	☐	0

Test by: Wade
Test date: 25~29 March 2013

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5.2 Radiated disturbance (electric field)

For test instruments and accessories used see section 6 part 6.1.

5.2.1 Description of the test location

Test location : Semi-Anechoic chamber

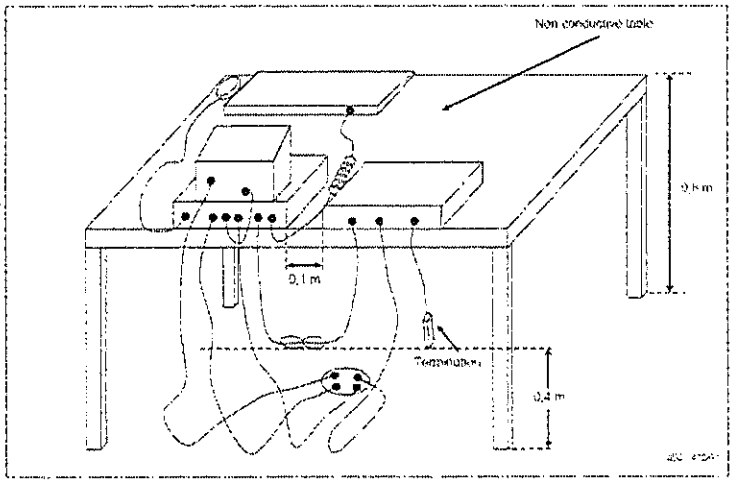
Test disturbance: 3 Meter

5.2.2 Description of the test set-up

5.2.2.1 Operating Condition

The EUT is engraving during the test, and the results of the maximum emanation are recorded

5.2.2.2 Block Diagram of Test Setup



5.2.3 Limits of disturbance (Class B)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The tighter limit shall apply at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

CTS (Ningbo) Testing Service Technology Co., Ltd.
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Complaint line: +86-20-85533471 E-mail: cts@cts-lab.com.cn

5.2.4 Test result

Frequency Range / Polarization	Passed	Failed	Number of rechecks
30 MHz - 200 MHz / vertical	☒	☐	0
30 MHz - 200 MHz / horizontal	☒	☐	0
200 MHz - 1000 MHz /vertical	☒	☐	0
200 MHz - 1000 MHz / horizontal	☒	☐	0

Test by: Wade
Test date: 25~29 March 2013

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Complaint line: +86-20-85533471 E-mail: cts@cts-lab.com.cn See Reverse For Terms And Conditions of Service

6 USED TEST EQUIPMENT

6.1					
Radiated disturbance (Electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2012/03/20
2	EMI Test Receiver	ROHDE & SCHWARZ	ESVS 10	842885/001	2012/11/06
3	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2012/03/24
4	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2012/03/24
5	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2012/03/24
6	EMI Test Software	Farad	EZ-EMC	N/A	N/A

6.2					
Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2012/11/06
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2012/11/06
3	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	100140	2012/11/06
4	Pulse Limiter	ROHDE & SCHWARZ	ESHS-Z2	100301	2012/11/06
5	EMI Test Software	Farad	EZ-EMC	N/A	N/A

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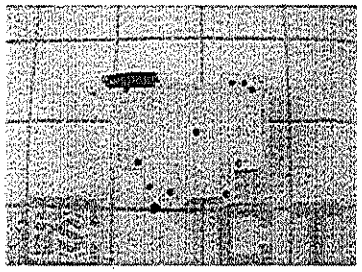
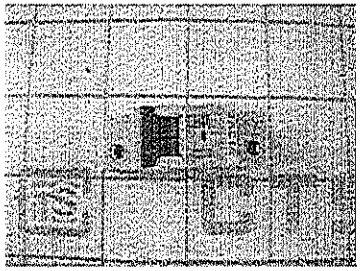
Complaint line: +86-20-85533471 E-mail: cts@cts-lab.com.cn See Reverse For Terms And Conditions of Service

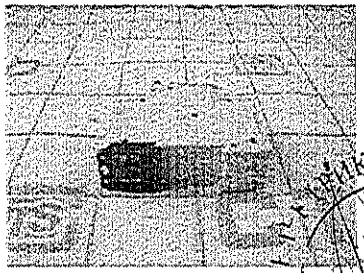
7 External and Internal Photos of the EUT



External view 1



External view 2



External view 3

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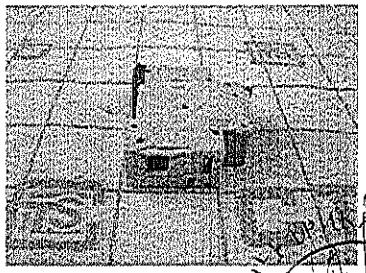
Complaint line: +86-20-85533471 E-mail: cts@cts-lab.com.cn See Reverse For Terms And Conditions of Service



External view 4

CTS (Ningbo) Testing Service Technology Co., Ltd.
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Complaint line: +86-20-85533471 E-mail: cts@cts-lab.com.cn See Reverse For Terms And Conditions of Service

8 Manufacturer/ Approval holder Declaration

The following identical model(s):

N/A

Belong to the tested device:

Product description: **The circuit breaker**
Model name: **N8GH**

CTS (Ningbo) Testing Service Technology Co., Ltd.
2/F., South Tower, Huoju Building, No.161, Canghai Road, Jiangdong Science and Technology Park, Ningbo, Zhejiang, China
Tel: +86-20-85543113 (32 lines) Fax: +86-20-38780406
Complaint line: +86-20-85533471 E-mail: cts@cts-lab.com.cn See Reverse For Terms And Conditions of Service

Списък на изпитванията от типови изпитания:

- Маркировка;
- Конструкция;
- Механични характеристики на клемови съединения;
- Изключване при късо съединение;
- Изключване при претоварване;
- Времезакъснение;
- Тестване на диелектрични харакеритики, импулсно напрежение;
- Работа в режим без ток;
- Работа в режим с ток;
- Свръхнатоварване;
- Диелектрична издържливост;
- Тестване при повишение на температурата;
- Защита от претоварване;
- Проверка на шунтове.

София 1528, България
ул.Поручик Неделчо Бончев №10
Сграда 27

Тел: 02/ 411 25 04
тел. факс: 02/ 852 80 01
e-mail: pm@apmelectrical.bg

ПМ Електрикал ЕООД

Приложение 4

Превод от английски език

Международна Електротехническа комисия
лого **IEC**
лого **IECEE**
Международна Система за Тестване и Сертификация на Електротехническо Оборудване и Компоненти (IECEE)

СЕРТИФИКАТ ЗА ОДОБРЕНИЕ

За участие в IECEE CB Схема

ДЕКРА Тестинг Сървисис (Джейджанг) Ко., ООД

№ 5, ул. Чангджианг, Грейт Бридж Индустриал Парк, Северен Бейксианг, Уенджоу, Джейджанг, 325603 Н.Р. Китай

е оценена и определена, че напълно съответства на изискванията на ISO/IEC 17025:2005-05, Основните правила, IECEE 01:2012-06 и Правилата на процедура IECEE 02:2012-06, и свързаната IECEE CB-Sheme Оперативни документи

ДЕКРА Тестинг Сървисис (Джейджанг) Ко., ООД

следователно има право да работи като Китайска CB изпитвателна лаборатория под ръководството на DEKRA Certification BV Certification като Национален Сертифициращ Орган и да извършва изпитвания в рамките на IECEE CB схемата за обхвата (Категория (и) продукти и Стандарт (и)), изброени в съответната част от IECEE уеб сайта на www.iecee.org, и е предмет на всички останали условия, както е посочено в IECEE Основни правила и процедурни правила.

Този сертификат е валиден до 3 Април 2016, през което време той ще бъде преиздаден от IECEE Изпълнителният секретар при успешно завършване на нормално насрочено 3-годишна програма и преоценка, администрирана от IECEE CB схемата.

Дата н издаване 2013-09-13
TL 241

Подпис: (не се чете)
Пиер де Руво
IECEE Изпълнителен секретар

9.1

International Electrotechnical Commission

Worldwide System for Conformity Testing and Certification of Electrotechnical Equipment and Components (IECEE)

CERTIFICATE OF ACCEPTANCE

TO PARTICIPATE IN THE IECEE CB-SCHEME

DEKRA Testing Services (Zhejiang) Co., Ltd.
No. 5. Changjiang Road, Great Bridge Industrial Park, North Baixiang, Wenzhou, Zhejiang, 325603, P.R.China

has been assessed and determined to fully comply with the requirements of ISO/IEC 17025: 2005-05, The Basic Rules, IECEE 01: 2012-06 and Rules of Procedure IECEE 02: 2012-06, and the relevant IECEE CB-Scheme Operational Documents.

DEKRA Testing Services (Zhejiang) Co., Ltd.

is therefore entitled to operate as a Chinese CB Testing Laboratory under the responsibility of DEKRA Certification B.V. as National Certification Body and to carry out testing within the IECEE CB Scheme for the Scope (Product Category(ies) and Standard(s)) as listed in the relevant part of the IECEE Web Site at www.iecee.org, and is subject to all other terms as set forth in the IECEE Basic Rules and Rules of Procedure

This certificate remains valid until April 3rd 2016 at which time it will be reissued by the IECEE Executive Secretary upon successful completion of the normally scheduled 3-year Reassessment Programme administered by the IECEE CB Scheme.

Signed by:

Pierre de Ruvo
IECEE EXECUTIVE SECRETARY

Date of Issue: 2013-09-13

Превод от английски език

Международна Електротехническа комисия
лого **IEC**
лого **IECEE**
Международна Система за Тестване и Сертификация на Електротехническо Оборудване и Компоненти (IECEE)

СЕРТИФИКАТ ЗА ОДОБРЕНИЕ
За участие в IECEE CB Схема

ДЕКРА Сертификейшън Б.В.
Офис адрес: ул. Меандер 1051, 6825 МДжей Арнхем
Пощенски адрес: П.К. 5185, 6802 М ЕД Арнхем

е оценена и определена, че напълно съответства на изискванията на ISO/IEC Guide 65: 1996-06, Основните правила, IECEE 01:2012-06 и Правилата на процедура IECEE 02:2012-06, и свързаната IECEE CB-Sheme Оперативни документи

ДЕКРА Сертификейшън Б.В.

следователно има право да работи като Холандски Национален Сертифициращ Орган по Издаване и Признаване в рамките на IECEE CB схемата за обхвата (Категория (и) продукти и Стандарт (и)), изброени в съответната част от IECEE уеб сайта на www.iecee.org, и е предмет на всички останали условия, както е посочено в IECEE Основни правила и процедурни правила.

Този сертификат е валиден до 18 Януари 2016, през което време той ще бъде преиздаден от IECEE Изпълнителният секретар при успешно завършване на нормално насрочено 3-годишна програма и преоценка, администрирана от IECEE CB схемата.

Дата н издаване 2014-02-26
CB 010

Подпис: (не се чете)
Кери МакМанама
IECEE Изпълнителен секретар и COO

93

International Electrotechnical Commission

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

CERTIFICATE OF ACCEPTANCE

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

DEKRA Certification B.V.
Office address: Meander 1051, 6825 MJ Arnhem
Postal address: P.O. Box 5185, 6802 ED Arnhem

has been assessed and determined to fully comply with the requirements of ISO/IEC Guide 65: 1996-06, The Basic Rules, IECEE 01: 2012-06 and Rules of Procedure IECEE 02: 2012-06, and the relevant IECEE CB-Scheme Operational Documents.

DEKRA Certification B.V.

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

This certificate remains valid until January 18th 2016, at which time it will be reissued by the IECEE Executive Secretary upon successful completion of the normally scheduled 3-year Reassessment Programme administered by the IECEE CB Scheme.

Signed by:

Kerry McMANAMA
IECEE EXECUTIVE SECRETARY AND COO

Date of Issue: 2014-02-26
CB010

Превод от английски език

лого на ilac-MRA
лого на CNAS

Китайската национална служба за акредитация за оценка на съответствието

СЕРТИФИКАТ ЗА АКРЕДИТАЦИЯ НА ЛАБОРАТОРИЯ

(Регистрационен No. CNAS L3394)

CTS (Нингбо) Тестинг Сървис Технолоджи Ко., Лтд

2/F, Саут Тауър, сграда Хуоджу 181, ул Кангай,
Джиангдонг Саиънс & Текнолоджи Парк, Нингбо, Джейджанг, Китай

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

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

Дата на издаване: 2014-04-04
Дата на изтичане: 2017-04-03
Дата на първоначална акредитация: 2008-03-18
Дата на подновяване:2014-04-04

Подпис: (не се чете)
Подписан от страна на Китайската национална служба за акредитация за оценка на съответствието

Китайската национална служба за акредитация за оценка на съответствието (CNAS) е оторизирана от Сертифицираща и Акредитираща Администрация на Народна република Китай (CNCA) да оперира националните системи за акредитация со оценка на съответсвието.
CNAS е подписваща страна към Международната кооперация за акредитации на лаборатории (ILACMRA) и подписваща стана към Азия Пасифик Международна кооперация за акредитации на лаборатории (APLAC MRA).

中国合格评定国家认可委员会

实验室认可证书

（注册号：CNAS L3394）

兹证明：

测控界（宁波）检测产品技术有限公司

[illegible]

符合 ISO/IEC 17025：2005《检测和校准实验室能力的通用要求》（CNAS-CL01《检测和校准实验室能力认可准则》）的要求，具备承担本证书附件所列检测服务的能力，予以认可。

获认可的能力范围见标有相同认可注册号的证书附件，证书附件是本证书组成部分。

签发日期：2014-06-04

有效期至：2017-06-03

初次认可：2008-05-[illegible]

更新日期：2014-06-04

中国合格评定国家认可委员会授权人

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(Registration No. CNAS L3394)

CTS(Ningbo) Testing Service Technology Co., Ltd.

1F, South Tower, Hoom Building, No.[illegible], Canghai Road, Jiangdong Science & Technology Park, Ningbo, Zhejiang, China

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

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

Date of Issue: 2014-06-04

Date of Expiry: 2017-06-03

Date of Initial Accreditation: 2008-05-[illegible]

Date of Update: 2014-06-04

Signed on behalf of China National Accreditation Service for Conformity Assessment

София 1528, България
ул Поручик Недялко Бончев №10
Стаю 22

Тел: 02 411 25 04
тел./факс: 02 852 80 01
e-mail: pm@pmelectrical.bg

ПМ Електрикал ЕООД

Приложение 5

ИНСТРУКЦИИ ЗА ТРАНСПОРТ, СКЛАДИРАНЕ, МОНТИРАНЕ, ОБСЛУЖВАНЕ И ПОДДЪРЖАНЕ

ВЪРТЯЩ МОМЕНТ НА ЗАТЯГАНЕ НА КЛЕМОВИТЕ СЪЕДИНЕНИЯ:

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

1. **Инсталиране и обслужване.**

1.1. **Инсталиране**

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

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

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

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

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

1.2. **Обслужване**

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

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

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

2. **Предупреждения за безопасност.**

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

2.2. **Завийте винта до края така, че проводниците да не са хлабави и да не се местят, когато ги свързвате към автоматичния прекъсвач.** Не оставяйте оголени проводници извън отворите на връзката.

3. **Често срещани неизправности, повреди и начини за отстраняване то им.**
Често срещаните неизправности и начините за отстраняването им са показани в

таблица 5.

Таблица 5

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

Механично натоварване, въртящ момент на затягане на клемовите съединения:
Макс. напречно сечение на проводник (mm²): 50 mm²,
5 пъти (винт Ø / въртящ момент Nm) - Ø 5,0 mm 2,0 Nm

Тест за изтегляне :
Min сеч. 1,0 mm²
max сеч. 50 mm²
Изтегляне 100 N за 1 min за 25 mm²
Изтегляне 50 N за 1 min за 25 mm²
въртящ момент (2/3)= 1,33 Nm

брой жила 7
Ø жилата 2,14 mm
Въртящ момент (2/3) = 1,33 Nm

брой жила 7
Ø жилата 0,67 mm
Въртящ момент (2/3) = 1,33 Nm

Превод от английски език

ИНСТРУКЦИЯ
ИНСТАЛАЦИЯ, РАБОТА И РЕМОНТ НА МИНИАТЮРНИ АВТОМАТИЧНИ ПРЕКЪСВАЧИ

Инсталация и работа

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

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

Миниатюрните автоматични прекъсвачи трябва да се използват при нормални условия на експлоатация.

- Проверете възможностите на прекъсвач за точното му приложение, преди инсталацията.
- Измерете изолационното съпротивление с помощта на 500V мегом метра преди инсталацията. Измерената стойност не трябва да бъде по-ниска от10M при стайна температура 20±5, и относителна влажност 50% до 70%. В противен случай, прекъсвачът трябва да се изсуши, и не може да се използва, докато не подобри съпротивление на изолацията съгласно изискванията.
- Прекъсвача може да се монтира на неподвижна опора, DIN шина

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

- Кабелите, използвани за свързване на прекъсвач трябва да бъде гладки, непарапени и да не са пречупени при инсталацията на прекъсвача за предотвратяване на повреди на прекъсвач и отклонения от неговите стандартни характеристики.
- След като инсталирате прекъсвача, следните оперативни тестове се провеждат преди да се пусне веригата. Тя не може да бъде пусната в експлоатация докато всички условия не са коректни и точни:

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

2) Ако прекъсвачът е оборудван е електрическии акеесоари или електрическии работен механизъм, трябва да се свърже е допълнителна верига с тях в съответствие с диаграмата в техническия каталог, а след това проверка на съответствието на номинално работно напрежение.

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

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

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

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

Поддръжка

По време на работа, прекъсвачът се проверява периодично в съответствие с посочените по-горе процедури.

- Почистете всяко прекомерно натрупване на прах, за да бъде изолацията на прекъсвач в добро състояние.
- Проверка на условията за експлоатация на прекъсвача след всяко кратко прекъсване на прекъсвача, сменете нов, ако не е в състояние да бъде използван.

Ремонт

Проблеми могат да възникнат по време на инсталация, настройка или експлоатация на прекъсвача. Решаването на проблемите се извършва от квалифициран [illegible]. Можете да се свържете с офис на дистрибутора, където инженери ще ви [illegible] и предоставят допълнителни услуги.

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Installation, Operation and Maintenance

GACIA

Installation and operation

For the safety of person and electrical equipment, you should observe following instructions before putting circuit breakers into operation:

- Please read this instruction of operation carefully before installation of the circuit breakers.
- The circuit breakers must be used in normal service conditions.
- Check the ratings of the circuit breaker to the demand of application before installation.
- Measuring its insulation resistance by means of 500V megohm meter before installation. The measured value shall not be lower than 10MΩ at ambient temperature 20℃ ±5℃, and relative humidity 50%~70%. Otherwise, the circuit breaker shall be dried, and can't be used until its insulation resistance to the requirement.
- The installation position of the circuit breaker is of option without influence on its performance. But the specified distance between circuit breaker and top, bottom, side and front of compartment, and other circuit breaker should be reserved for safely requirement (see table XX).
- The circuit breaker can be mounted on the fixed support or base plate with standard screws.
- Care should be taken that no any foreign conductive articles should be entered in to the circuit breaker when installing.
- The conductor and cables used for connection of circuit breaker shall be flat and shall ndtave any additional mechanical stress on the circuit breaker when installing to prevent the circuit breaker and its standarcharacteristics from damage.
- After installing, the following operational tests shall be conducted before its main circuit to be energized. If can not be put into service until every condition is correct and perfect:

① Check carefully that there shall beno any foreign articles entered into 3 phase conductors or cables. Remove if any. The circuit breaker shall be kept in clear condition.

② If your circuit breaker is fitted with electrical accessories or electrical operating mechanism, you should connect thauxiliary circuit of them in accordance with the diagram shown in this instruction, and then check the compliance of rated operational voltage of under voltage release, shunt release and motor with practical supply voltage.

③ Check the current settings of overload and short-circuit protections.

④ After all checks and inspections, its auxiliary circuit can be energized. Only in this case, The circuit breaker can be closed after the under voltage release has been closed.

⑤ Manual operating test: Manual closing , and manual opening for several times. The circuit breaker shall be normally.

⑥ Electrical operating test: closing by electricaloperating mechanism, and then opening byit for several times. The circuitbreaker shall be operated normally.

Maintenance

- During the operation, the circuit breaker shall be checked periodically according to above mentioned procedures ①~⑥.
- Clean any excessive dust accumulation to keep the insulation of circuit breaker in good condition.
- Check the operation conditions of circuit breaker after each short circuit breaking, replace new one if it is unable to be used.

Repair

Trouble may occur during the installation, adjustment or operation of the circuit breakers. The trouble shooting shall be done by skilled person, or you can contact our after service office, our engineer will help you and provide our services.

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