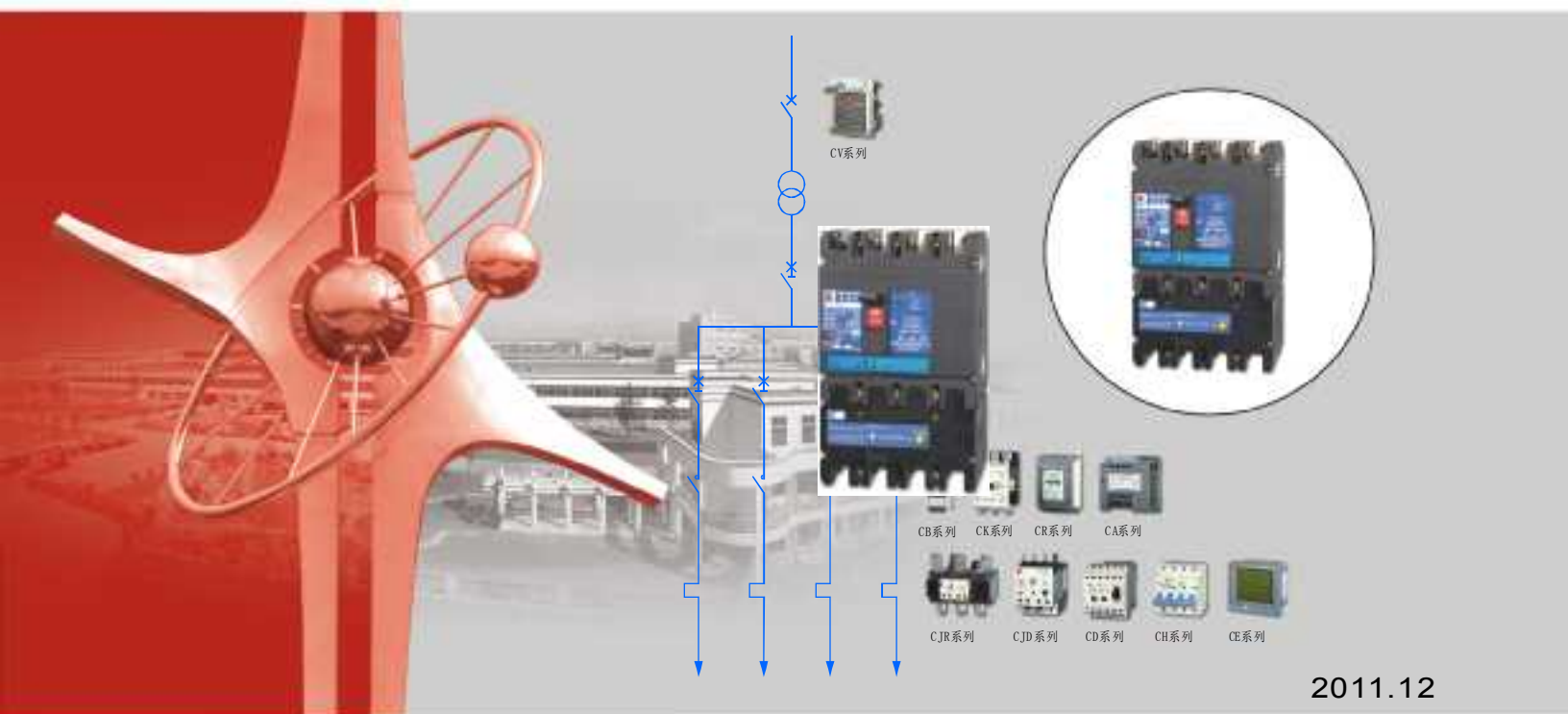




# CM1<sub>EL</sub>系列

## 带剩余电流保护电子可调式断路器

CM1<sub>EL</sub> SERIES ELECTRONIC ADJUSTABLE MCCB INCORPORATING RESIDUAL CURRENT PROTECTION



2011.12

**常熟开关制造有限公司**  
 (原常熟开关厂)  
 CHANGSHU SWITCHGEAR MFG. CO.,LTD.  
 (FORMER CHANGSHU SWITCHGEAR PLANT)



国家认定企业技术中心  
National Enterprise Technology Center



国家火炬计划重点高新技术企业证书  
State Torch Plan Key High-tech Enterprise Certificate



国家科学技术进步奖证书  
National Awards for Science and Technology Certificate



中国驰名商标  
China Well-known Trademark



质量管理体系认证证书  
Quality Management System Certificate



环境管理体系认证证书  
Environmental Management System Certificate



国家创新型试点企业  
National Innovative Pilot Enterprise



职业健康安全管理体系认证证书  
Occupational Health And Safety Management System Certificate



测量管理体系认证证书  
Certificate Of Conformity For Measurement Management Systems




博士后科研工作站  
Postdoctoral Programme



# 公司简介

## *Introduction*


常熟开关制造有限公司是国有资产参股的电器制造企业、“国家重点高新技术企业”，占地约300亩，员工1685人。主要生产中低压电器元件、工控产品、太阳能光伏逆变器、成套装置等，可以为您提供“智能配电系统三位一体完整的解决方案”。

公司建有博士后科研工作站、省级企业技术中心和江苏省电器控制工程中心，具有一支以博士、硕士、本科生为主的多层次研发队伍，工程技术人员占企业员工总数的50%左右。公司拥有先进的模具制造、零部件自动化生产、断路器装配自动检测流水线等一大批先进的制造和试验检测设备；实施以ERP管理为重点的信息化、网络化管理；完善质量/环境/职业健康安全体系，确保为用户提供优质、安全、可靠的产品。公司“”商标被国家工商行政管理总局认定为中国驰名商标，CM系列塑料外壳式断路器、CW系列智能型万能式断路器曾双双被评为中国名牌产品。

Changshu Switchgear Mfg. Co., Ltd. (Former Changshu Switchgear Plant), an enterprise with state-owned equity, covered an area of 200,000 m<sup>2</sup>, with 1685 staffs, is a "National Key New High-tech Enterprise" and mainly produces HV and LV electrical components, industry control products, solar photovoltaic inverters and complete sets of equipment etc, all of which could provide trinity and complete solutions for intelligent power distribution system.

Post - doctoral scientific research station, Province Enterprise Technique Center and Jiangsu Province Electrical Apparatus Control Engineering Research Center have been established and a multi-level professional technique team has been formed consisting of PHD candidates, postgraduates and university graduates. Engineers and technicians have covered 50% of all staffs.

Advanced mould manufacturing equipments, automation producing equipments for spare parts, assembling and inspecting lines for breakers and test equipments have been brought in. Meanwhile, information and network management, taking ERP management as the focal point, has been applied and quality environmental systems (ISO9001/ISO14001/OHSMS18001) have also been established and perfected to ensure reliability and safety for customers.

The registered trademark  has been recognized as Famous Trademark of China by State Administration for Industry and Commerce of China. And CM Series Moulded Case Circuit Breaker and CW Series Intelligent Air Circuit Breaker are both China Top Brand products.





常熟开关制造有限公司  
为您提供电气系统完整的解决方案

### 高压真空断路器



CV1-12系列  
高压真空断路器



CV2-12系列  
高压真空断路器



CV1-24系列  
高压真空断路器



CV1-40.5系列  
高压真空断路器

### 智能型万能式断路器



CW1系列  
智能型万能式断路器



CW2系列  
智能型万能式断路器



CW3系列  
智能型万能式断路器



CW3V系列  
智能型真空万能式断路器

### 塑料外壳式断路器



CM1系列  
塑料外壳式断路器



CM1e系列  
电子式塑壳断路器



CM1z系列  
智能型断路器



CM1L系列  
带剩余电流保护塑壳断路器



CM1EL系列  
带剩余电流保护  
电子可调式断路器



CM2系列  
塑料外壳式断路器



CM2Z系列  
智能型塑壳断路器



CM2L系列  
带剩余电流保护塑壳断路器



CM3系列  
塑料外壳式断路器



CM5系列  
塑料外壳式断路器



CM5Z系列  
塑料外壳式断路器

### 自动转换开关



CA1系列自动  
转换开关(CB级)



CAP1系列自动  
转换开关(PC级)



CAP2系列自动  
转换开关(PC级)

### 接触器和过载继电器



CK3系列接触器



CJR3系列  
热过载继电器



CJD3系列  
电子过载继电器

### 剩余电流动作继电器



CLJ3 剩余电流  
动作继电器



常熟开关制造有限公司  
为您提供电气系统完整的解决方案

### 电动机软起动器



CR1系列  
电动机软起动器



CR2系列  
电动机软起动器

### 电动机保护器



CD1系列  
电动机保护器



CD4系列  
智能马达保护器

### 控制和保护电器



CB1系列  
控制和保护开关电器(CPS)

### 变频调速



CF1系列  
通用变频器

### 光伏发电用产品



CS1G系列三相并网型  
光伏发电逆变器



CW3G系列  
隔离开关(AC, DC)



CM3DC系列  
塑料外壳式断路器

### 小型断路器



CH系列小型断路器

### 电力质量和系统自动化器件



CE1系列  
智能型电力仪表



CI1系列  
远程智能I/O模块



CN1DP-MP  
CN1DP-MD  
CN1DP-MC  
通信适配器  
CN1EG以太网  
适配器



FDM3  
短消息通知模块



FWB1温度报警模块

### 电气火灾探测



CSJ1系列剩余电流式电气  
火灾监控探测器(独立式)  
CMSJ2系列剩余电流式电气  
火灾监控探测器(非独立式)  
CSX1电气火灾监控设备

### 智能化通信低压配电网网络监控系列



● Ri year-PowerNet配电监控系统



● FCX3智能配电监控器





## 优秀特色

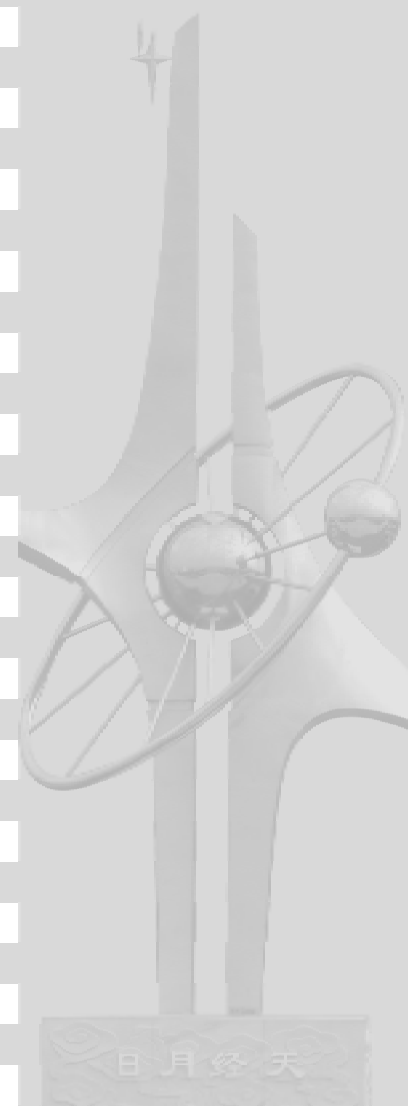
- 获得国际认可的CB证书
- 电子式可调过电流保护和剩余电流保护一体化产品
- 具有体积小、分断高、带隔离和多功能集成等特点  
额定极限短路分断能力 $I_{cu}$ ：400V：50kA ~ 100kA  
额定运行短路分断能力 $I_{cs}$ ：400V：35kA ~ 65kA
- 电子式可调三段过电流保护，方便用户灵活使用
- 剩余电流保护三相取电：常规的带剩余电流保护断路器的漏电保护模块工作电源取样为二相，本系列断路器为三相，若缺任一相，断路器漏电保护模块仍能正常工作
- 提供不同剩余电流动作脱扣器可选，应用范围可从30mA ~ 30A 进行整定  
额定剩余动作电流： $I_{\Delta n}$  (A)：0.03/0.1/0.3/0.5、0.1/0.3/0.5、0.3/0.5/1、0.3/1/3/10、1/3/10/30 可调  
 $5I_{\Delta n}$ 最大断开时间 $\Delta t$  (s)：瞬动/0.3/0.5/1/2可调
- 具有较强功能扩展性，可增选剩余电流报警模块，实现脱扣报警输出或不脱扣报警输出
- 可配FWB1温度报警模块，实现连接点在线超温报警





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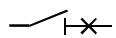
CM1EL系列带剩余电流保护断路器（以下简称断路器），是本公司采用国际先进设计、制造技术研制、开发的新型断路器之一。其额定绝缘电压为800V，适用于交流50Hz/60Hz，额定工作电压400V及以下，额定电流至800A的电路中作不频繁转换及电动机保护之用。断路器具有过载长延时反时限、短路短延时、短路瞬时和欠电压保护功能，能保护线路和电源设备不受损坏，同时，可对人提供间接接触保护，还可以对过电流保护不能检测出的长期存在的接地故障可能引起的火灾危险提供保护。在其它保护装置失灵时，额定剩余动作电流为30mA的CM1EL断路器可对直接接触起附加保护作用。

- 断路器按照其额定极限短路分断能力(Icu)的高低，分为M型(较高分断型)、H型(高分断型)两类。该断路器除具有体积小、高分断、短飞弧(部分规格加装零飞弧罩后可实现零飞弧)、带隔离、抗震动等特点

- 断路器可垂直安装（即竖装），亦可水平安装（即横装）

- 断路器不可倒进线，即只能1、3、5接电源线，LOAD接负载线

- 断路器具有隔离功能，其相应的符号为：



- 断路器产品符合下列标准：

IEC60947-1及GB14048.1-2006 低压开关设备和控制设备 总则

IEC60947-2及GB14048.2-2008 低压开关设备和控制设备 断路器及附录B 带剩余电流保护的断路器、附录F 带电子过电流保护断路器的附加试验

IEC60947-4-1及GB14048.4 低压开关设备和控制设备 机电式接触器和电动机起动器


- 断路器获国家强制性产品认证“CCC”标志。

CM1EL series electronic adjustable MCCB incorporating residual current protection(hereafter simply referred to as breakers) is one of the new type breakers which have been developed by the company using international design and manufacturing technology.The rated insulation voltage of breakers is 800V,suitable for infrequent change-over switching and infrequent motor starting up in the circuit of AC50Hz/60Hz,rated operational voltage 400V or below and rated current up to 800A.The breakers have overload long-time-delay inverse,short-circuit short-time delay,short-circuit instantaneous and under-voltage protection performances, concurrently, the breakers provide protection of persons against indirect contact,and provide protection against fire which may develop as a result of an earth fault of a lasting nature, which can't be detected by the over-current protective device.Additionally, when other protective devices fail to function,CM1EL breakers incorporating the rated residual operating current of 30mA can provide additional protection against direct contact.

- The breakers according to the rated ultimate short-circuit breaking capacity(Icu), are classified two kinds of types: M(second high type),H(high type).The breakers are of following characteristics: compact size,high breaking capacity,short arc-over distance(some breakers have zero arc distance by installing zero arc cover),isolation function and against vibrations,etc.

- The breakers could be installed vertically(upright)or horizontally(transverse).

- The breakers can't be wired adversely, only1,3,5 connected with supply line,LOAD connected with load line.

- The breakers are applicable to isolation,its corresponding symbol is shown as 

- The breakers comply with the demands of the following standards:

IEC 60947-1 and GB14048.1-2006 Low-voltage switchgear and controlgear General rules

IEC 60947-2 and GB14048.2-2008 Low-voltage switchgear and controlgear Circuit-breakers, annex B circuit-breakers incorporating residual current protection and annex F additional tests for circuit-breakers with electronic over-current protection

IEC60947-4-1 and GB 14048.4 Low-voltage switchgear and controlgear Electromechanical contactors and motor-starters

- The breakers have obtained the CCC mark of CQC.





● 周围空气温度不超过 + 40℃ 和不低于 - 5℃，且24h的平均值不超过 + 35℃；

● 安装地点的海拔不超过2000m；

● 安装地点的空气相对湿度在最高温度为 + 40℃时不超过50%，在较低温度下可以有较高的相对湿度，例如20℃时达90%。对于温度变化偶尔产生的凝露应采取特殊措施；

● 污染等级为3级；

● 断路器主电路安装类别为Ⅲ，其余辅助电路、控制电路安装类别为Ⅱ；

● 断路器适用于电磁环境A；

● 断路器应安装在无爆炸危险和无导电尘埃、无足以腐蚀金属和破坏绝缘的地方；

● 断路器应安装在没有雨雪侵袭的地方。

● The ambient air temperature does not exceed + 40℃ and its average over a period of 24h does not exceed + 35℃ ,the lower limit of the ambient air temperature is - 5℃；

● The altitude of the site of installation does not exceed 2000m；

● The relative humidity of the air does not exceed 50% at a maximum temperature of +40℃, higher relative humidities may be permitted at lower temperature,e.g.90% at +20℃. Special measures may be necessary in cases of occasional condensation due to variations in temperature；

● Pollution degree 3；

● Installing category: III for the main circuit,and II for other auxiliary and control circuits；

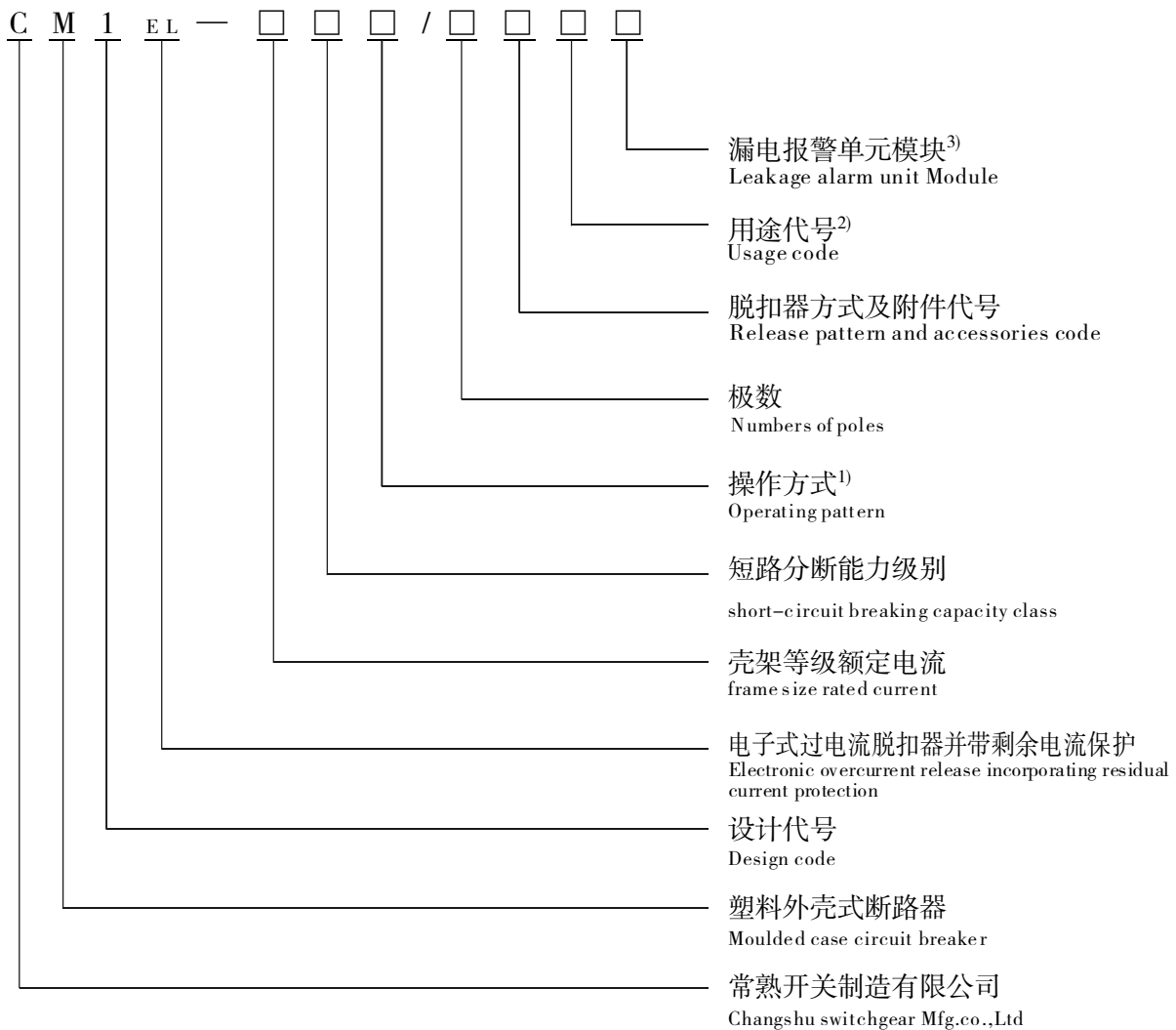
● The breaker has been designed for environment A；

● There must be not any explosive dangrous and not any conduting dust, there must be not any gas which would corrode metal and destroy insulation；

● The place would not be invaded by rain and snow.



## 型号及含义 Type and its meaning



注：1) 直接操作无代号；电动机操作用P表示；手动操作机构用Z表示。

2) 配电用断路器无代号；保护电动机用断路器以2表示。

3) 不带漏电报警单元模块无代号，带漏电报警单元模块并在工作方式一时用I表示，在工作方式二时用II表示。

Note: 1) No code for operation directly; P for motor operator; Z for rotary handle operator.

2) Usage code for distribution MCCB is without code, usage code for motor protection is two.

3) leakage without alarm unit module without code; with such as I when in working method one; as II when in working method two.

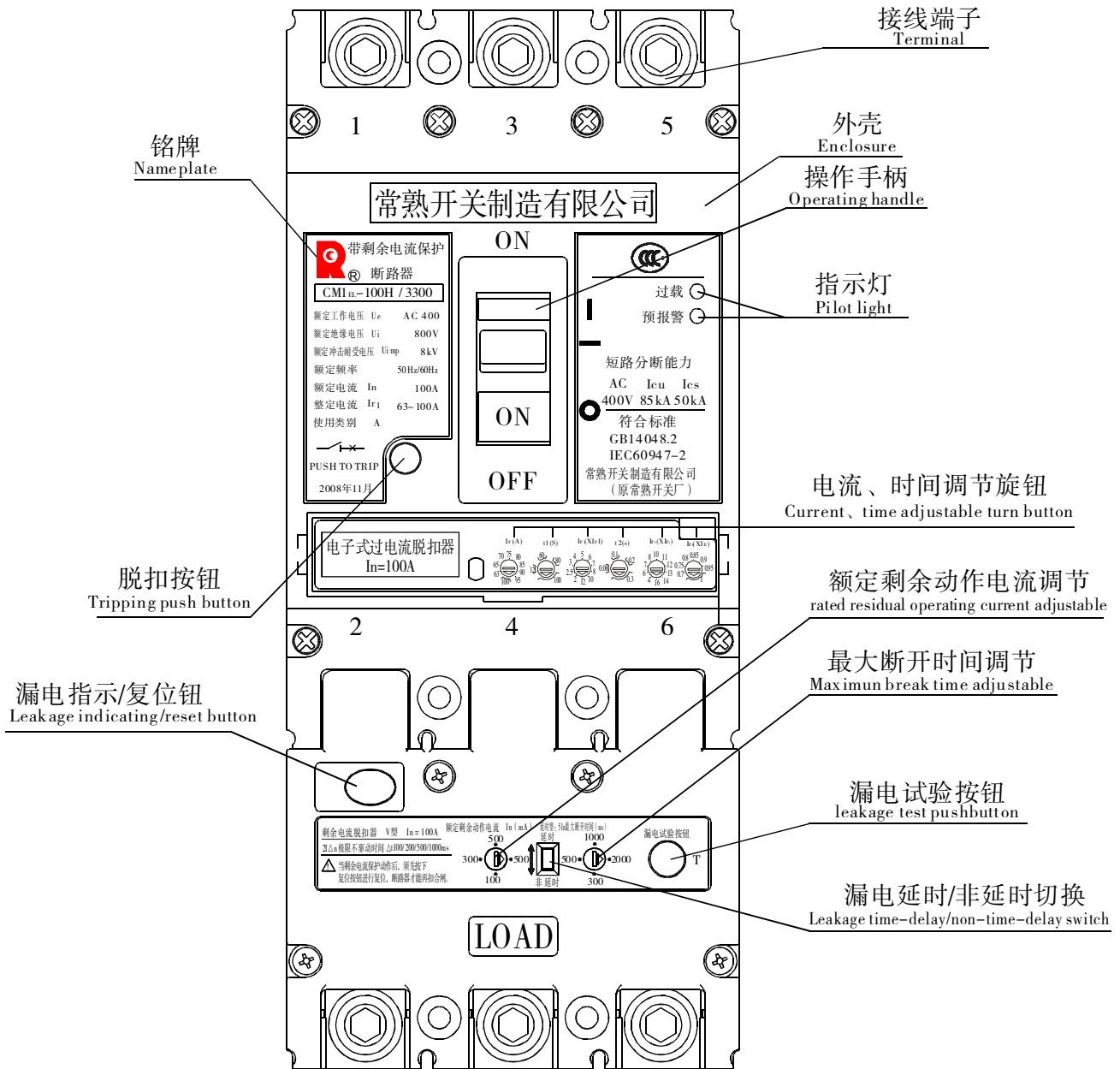


- 按产品极数分为三极与四极。四极产品中性极(N极)的型式为：N极过电流保护电流、时间参数100%自动跟踪相线整定值，且N极与其它三极一起合分（N极先合后分）。
- 按额定电流分：CM1EL-100为32、63、100A；CM1EL-250为250A；CM1EL-400为400A；CM1EL-800为630、800A。
- 按接线方式分为板前接线、板后接线、插入式板前接线、插入式板后接线四种。
- 附件分内部附件和外部附件：内部附件有分励脱扣器、欠电压脱扣器、辅助触头、报警触头、漏电报警单元模块五种，外部附件有手动操作机构、电动机操作机构、手持式CM1E专用测试器、FWB1温度报警模块等。
- According to the pole numbers of product, it classifies three and four-poles. The pattern of neutral pole(N) for four poles breaker as follows:protective current and time parameters of over-current in N pole,100% automatic tracking phase,and N pole combining with other three poles(Closing first and opening last).
- Classification according to rated current:CM1EL-100 has 32、63、100A;CM1EL-250 has 250A;CM1EL-400 has 400A; CM1EL-800 has 630、800A.
- The connected mode has four:front connected, rear connected, plug-in front connected and plug-in rear connected.
- The accessories can be classified into internal and external accessories.The internal accessories have five kinds of shunt release,under-voltage release, auxiliary contact,alarm contact and leakage alarm unit module;the external accessories have rotary handle operator,motor operator and CM1E tester、temperature alarm module.



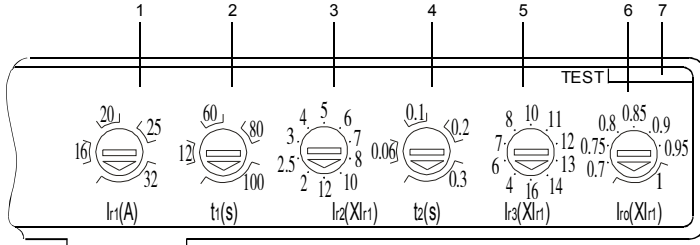


# 结构简介 Structure introduction

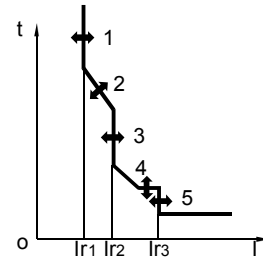




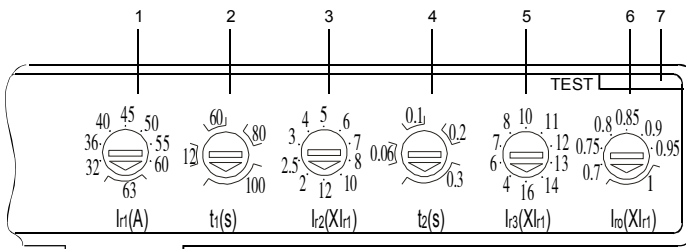
CM1EL-100,  $I_n=32A$ 电子式过电流脱扣器  
Electronic overcurrent release



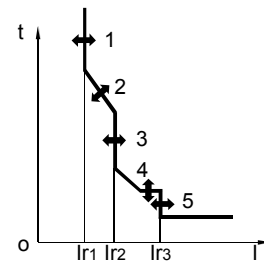
电子式过电流脱扣器保护特性曲线  
Protective characteristic curve of electronic over current release



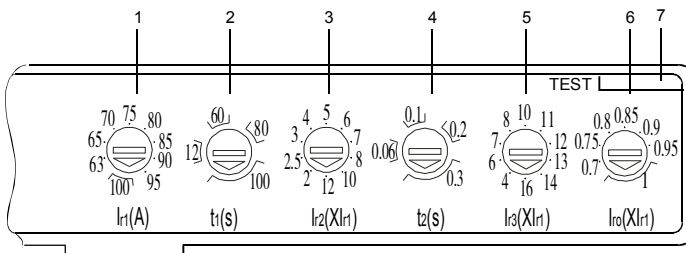
CM1EL-100,  $I_n=63A$ 电子式过电流脱扣器  
Electronic overcurrent release



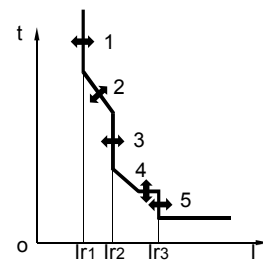
电子式过电流脱扣器保护特性曲线  
Protective characteristic curve of electronic over current release



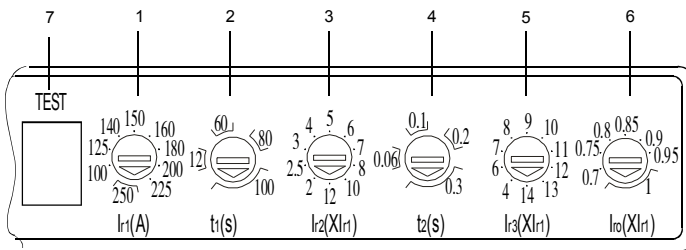
CM1EL-100,  $I_n=100A$ 电子式过电流脱扣器  
Electronic overcurrent release



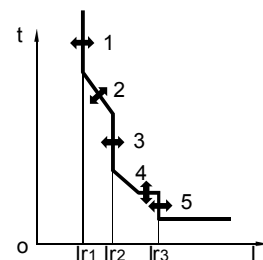
电子式过电流脱扣器保护特性曲线  
Protective characteristic curve of electronic over current release



CM1EL-250,  $I_n=250A$ 电子式过电流脱扣器  
Electronic overcurrent release

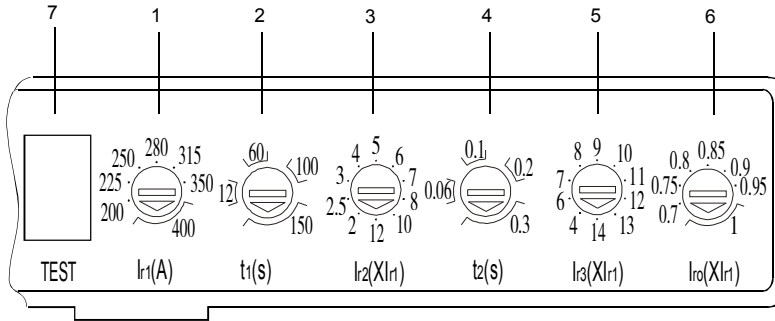


电子式过电流脱扣器保护特性曲线  
Protective characteristic curve of electronic over current release

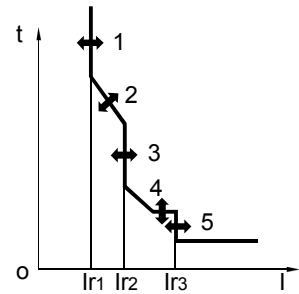




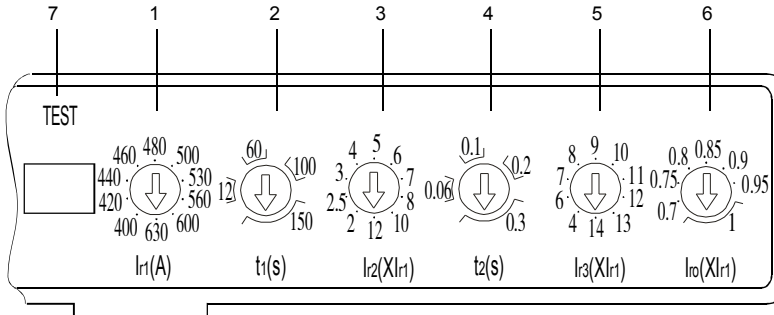
CM1EL-400,  $I_n=400A$ 电子式过电流脱扣器  
Electronic overcurrent release



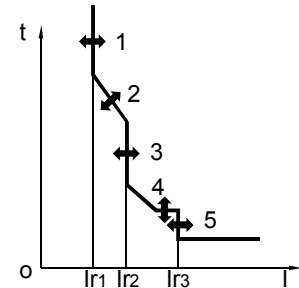
电子式过电流脱扣器保护特性曲线  
Protective characteristic curve of electronic over current release



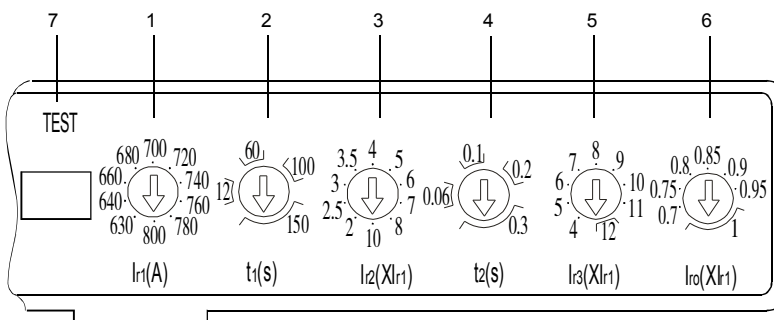
CM1EL-800,  $I_n=630A$ 电子式过电流脱扣器  
Electronic overcurrent release



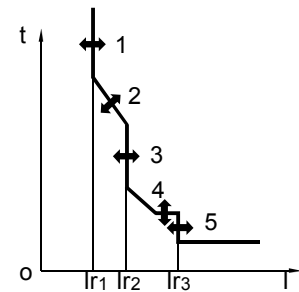
电子式过电流脱扣器保护特性曲线  
Protective characteristic curve of electronic over current release



CM1EL-800,  $I_n=800A$ 电子式过电流脱扣器  
Electronic overcurrent release



电子式过电流脱扣器保护特性曲线  
Protective characteristic curve of electronic over current release



- 1-过载长延时动作电流 $I_{r1}$ 调整, 根据断路器不同的额定电流, 可从4档到10档进行调整;
- 2-长延时动作时间 $t_1$ 调整, 可进行4档调整;
- 3-短路短延时动作电流 $I_{r2}$ 调整, 可进行10档调整;
- 4-短延时动作时间 $t_2$ 调整, 可进行4档调整;

- 1-For the adjustment of overload long-time delay operating current  $I_{r1}$ , according to different rated current this knob can be adjusted from 4 steps to 10 steps;
- 2-For the adjustment of long-time operating time  $t_1$ , this knob can be adjusted 4 steps;
- 3-For the adjustment of short-circuit short-time delay operating current  $I_{r2}$ , this knob can be adjusted 10 steps;
- 4-For the adjustment of short-time operating time  $t_2$ , this knob

- 5-短路瞬时动作电流 $I_{r3}$ 调整, 可进行9档或10档调整;

- 6-预报警动作电流 $I_{r0}$ 调整, 可进行7档调整;

- 7-测试端, 用于检测电子过电流脱扣器当前整定值。

- can be adjusted 4 steps;

- 5-For the adjustment of short-circuit instantaneous operating current  $I_{r3}$ , this knob can be adjusted 9 steps or 10 steps;

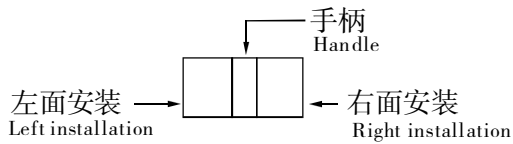
- 6-For the adjustment of pre-alarm operating current  $I_{r0}$ , this knob can be adjusted 7 steps;

- 7-Test terminal for the testing of present setting value of electronic overcurrent release.





# 脱扣器方式及内部附件代号 Release pattern and internal accessories code



- 报警触头 Alarm contact
- 辅助触头 Auxiliary contact
- 分励脱扣器 Shunt release
- 欠电压脱扣器 Under voltage release
- 引线方向 Lead direction

| 脱扣器方式及内部附件代号<br>Release pattern and accessories code | 附件名称<br>Accessories name  | 型号 Type                          |                   | 极数 Numbers of pole |                                  |
|--|---|----------------------------------|-------------------|--------------------|----------------------------------|
|  |   | CM1EL-100<br>CM1EL-250           | CM1EL-400         |                    | CM1EL-800                        |
|  |   | 3极、4极<br>Three poles, four poles | 3极<br>Three poles | 4极<br>Four poles   | 3极、4极<br>Three poles, four poles |
| 308  | 报警触头<br>Alarm contact   | □ □ □                            | □ □ □             | □ □ □              | □ □ □                            |
| 310  | 分励脱扣器<br>Shunt contact  | ● □ □                            | ● □ □             | ● □ □              | □ □ ●                            |
| 320  | 辅助触头<br>Auxiliary switch  | ■ □ □                            | ■ □ □             | ■ □ □              | ■ □ □                            |
| 330  | 欠电压脱扣器<br>Under voltage release   | ○ □ □                            | ○ □ □             | ○ □ □              | ○ □ □                            |
| 340  | 分励脱扣器 辅助触头<br>Shunt release Auxiliary contact                             | —                                | —                 | ● □ ■              | ■ □ ●                            |
| 350  | 分励脱扣器 欠电压脱扣器<br>Shunt release Under voltage release                       | —                                | —                 | —                  | ○ □ ●                            |
| 360  | 二组辅助触头<br>Two Auxiliary contact   | —                                | —                 | ■ □ ■              | ■ □ ■                            |
| 370  | 辅助触头 欠电压脱扣器<br>Auxiliary contact Under voltage release                    | —                                | —                 | ○ □ ■              | ○ □ ■                            |
| 318  | 分励脱扣器 报警触头<br>Shunt release Alarm contact                                 | —                                | —                 | —                  | □ □ ●                            |
| 328  | 辅助触头 报警触头<br>Auxiliary contact Alarm contact                              | ■ □ □                            | ■ □ □             | ■ □ □              | □ □ ■                            |
| 338  | 欠电压脱扣器 报警触头<br>Under voltage release Alarm contact                        | —                                | —                 | —                  | ○ □ □                            |
| 348  | 分励脱扣器 辅助触头 报警触头<br>Shunt release Auxiliary switch Alarm switch            | —                                | —                 | —                  | ■ □ ●                            |
| 368  | 二组辅助触头 报警触头<br>Two auxiliary contact Alarm contact                        | —                                | —                 | ■ □ ■              | ■ □ ■                            |
| 378  | 辅助触头 欠电压脱扣器 报警触头<br>Auxiliary contact Under voltage release Alarm contact | —                                | —                 | —                  | ○ □ ■                            |

- 注: 1. 脱扣器方式及内部附件代号首位数字3表示具有三段过电流保护的电子式脱扣器; 后两位数字表示内部附件代号, 无附件则用00表示;
2. 对CM1EL-400中328规格、CM1EL-800中348规格的辅助触头为一对触头(即一常开, 一常闭), CM1EL-400、CM1EL-800中368规格的辅助触头为三对触头(即三常开, 三常闭); 其余规格辅助触头的触头数按第26页表中配置;
3. 对CM1EL-100、250中320规格辅助触头可提供二对触头(即二常开, 二常闭), 但须在订货时注明。

- Note: 1. First number three of release pattern and internal accessories code is provided with three level overcurrent protective electronic release; the last two numbers are provided accessories code. No accessory the code is 00.
2. For CM1EL-400 code 328, CM1EL-800 code 348 only have one pair of auxiliary contact(one NO and one NC). For CM1EL-400, CM1EL-800 code 328 only have three pairs of auxiliary contacts(three NO and three NC). The amount of auxiliary contacts in terms of other specifications is disposed accords to the diagrams on page 26.
3. For CM1EL-100, 250 code 320. Two pairs of auxiliary contacts are provided,note when making order.



## 主要技术性能指标 Main technical performance index

| 型号 Type   | CM1EL-100   |                            |                             | CM1EL-250                           |                                      | CM1EL-400                   |                                       | CM1EL-800   |                                       |       |                                       |  |  |
|---|---|----------------------------|-----------------------------|-------------------------------------|--------------------------------------|-----------------------------|---------------------------------------|---|---------------------------------------|-------|---------------------------------------|--|--|
| 壳架等级额定电流 $I_{nm}$ (A)<br>Frame size rated current   | 100   |                            |                             | 250                                 |                                      | 400                         |                                       | 800   |                                       |       |                                       |  |  |
| 额定电流 $I_n$ (A)<br>Rated current   | 32  | 63                         | 100                         | 250                                 |                                      | 400                         |                                       | 630   | 800                                   |       |                                       |  |  |
| 过载长延时整定电流 $I_{r1}$ (A)<br>Over load Long-time delay   | 16,20,25,32   | 32,36,40,45,50,55,60,63    | 63,65,70,75,80,85,90,95,100 | 100,125,140,150,160,180,200,225,250 |                                      | 200,225,250,280,315,350,400 |                                       | 400,420,440,460,480,500,530,560,600,630,720,740,760,780,800 |                                       |       |                                       |  |  |
| 极数 Number of poles  | 3, 4  |                            |                             | 3, 4                                |                                      | 3, 4                        |                                       | 3, 4  |                                       |       |                                       |  |  |
| 额定工作电压 $U_e$ (V)<br>Rated operational voltage   | AC400   |                            |                             |                                     |                                      |                             |                                       |   |                                       |       |                                       |  |  |
| 额定绝缘电压 $U_i$ (V)<br>Rated insulation voltage  | AC800   |                            |                             |                                     |                                      |                             |                                       |   |                                       |       |                                       |  |  |
| 额定冲击耐受电压 $U_{imp}$ (V)<br>Rated impulse withstand voltage                                   | 8000  |                            |                             |                                     |                                      |                             |                                       |   |                                       |       |                                       |  |  |
| 分断能力级别<br>Breaking capacity class   | M   |                            |                             | H                                   |                                      | M                           |                                       | H   |                                       |       |                                       |  |  |
| 额定极限短路分断能力 $I_{cu}(kA)$<br>Rated ultimate short-circuit breaking capacity                   | AC400V  |                            |                             | 50                                  |                                      | 85                          |                                       | 65  |                                       | 100   |                                       |  |  |
| 额定运行短路分断能力 $I_{cs}(kA)$<br>Rated service short-circuit breaking capacity                    | AC400V  |                            |                             | 35                                  |                                      | 50                          |                                       | 42  |                                       | 65    |                                       |  |  |
| 额定短时耐受电流 $I_{cw}(kA)/1s$<br>Rated short-time withstand current                              |   |                            |                             |                                     |                                      | 5                           |                                       | 10  |                                       |       |                                       |  |  |
| 使用类别 Utilization category   | A   |                            |                             | A                                   |                                      | B                           |                                       | B   |                                       |       |                                       |  |  |
| 额定剩余动作电流 $I_{\Delta n}(A)$<br>Rated residual operating current                              | U型, 非延时<br>Type U, non-time-delay   |                            | 0.03/0.1/0.3/0.5            |                                     |                                      | 0.03/0.1/0.3/0.5            |                                       |   |                                       |       |                                       |  |  |
|   | V型, 非延时、延时可调<br>Type V, Non-time-delay, time-delay adjustable                       |                            | 0.1/0.3/0.5                 |                                     |                                      | 0.1/0.3/0.5                 |                                       |   | 0.1/0.3/0.5                           |       |                                       |  |  |
|   | W型, 非延时、延时可调<br>Type W, Non-time-delay, time-delay adjustable                       |                            | 0.3/1/3/10                  |                                     |                                      | 0.3/1/3/10                  |                                       |   | 1/3/10/30                             |       |                                       |  |  |
| 额定剩余不动作电流 $I_{\Delta n0}(A)$<br>Rated residual non-operating current                        |   | $\frac{1}{2} I_{\Delta n}$ |                             |                                     |                                      |                             |                                       |   |                                       |       |                                       |  |  |
| 额定剩余短路接通(分断)能力 $I_{\Delta m}(kA)$<br>Rated residual short-circuit making(breaking) capacity |   | $\frac{1}{4} I_{cu}$       |                             |                                     |                                      |                             |                                       |   |                                       |       |                                       |  |  |
| 飞弧距离 (mm)<br>Arc-over distance  |   | $\geq 50(0)^*$             |                             |                                     | $\geq 50(0)^*$                       |                             | $\geq 100(0)^*$                       |   | $\geq 100$                            |       |                                       |  |  |
| 电气寿命**<br>Electrical durability   |   | 8000                       |                             |                                     | 8000                                 |                             | 7500                                  |   | 7500                                  |       |                                       |  |  |
| 机械寿命**<br>Mechanical durability   | 免维护<br>Free maintenance   |                            | 20000                       |                                     |                                      | 20000                       |                                       | 10000   |                                       | 10000 |                                       |  |  |
|   | 有维护<br>Maintenance  |                            | 40000                       |                                     |                                      | 40000                       |                                       | 20000   |                                       | 20000 |                                       |  |  |
| 外形尺寸 (mm)<br>Outline dimensions   |  |                            | W                           |                                     | 92/122 (三极/四极)<br>(Three/four poles) |                             | 107/142 (三极/四极)<br>(Three/four poles) |   | 150/198 (三极/四极)<br>(Three/four poles) |       | 210/280 (三极/四极)<br>(Three/four poles) |  |  |
|   |   |                            | L                           |                                     | 215                                  |                             | 240                                   |   | 357                                   |       | 400                                   |  |  |
|   |   |                            | H                           |                                     | 92                                   |                             | 90                                    |   | 106.5                                 |       | 115.5                                 |  |  |
| 板前接线 Front connected  |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 板后接线 Rear connected   |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 插入式接线 Plug-in connected   |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 欠电压脱扣器 Under voltage release  |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 分励脱扣器 Shunt release   |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 辅助触头 Auxiliary contact  |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 报警触头 Alarm contact  |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 电动机操作机构<br>Motor operator   |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 手动操作机构<br>Rotary handle operator  |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| CM1E专用测试器<br>CM1E tester  |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |
| 漏电报警单元模块<br>Leakage alarm unit module   |   | ○                          |                             |                                     | ○                                    |                             | ○                                     |   | ○                                     |       |                                       |  |  |

\*注: 选装高为6mm (CM1EL-100)、7.5mm (CM1EL-250)、9.3mm (CM1EL-400) 的零飞弧罩, 实现零飞弧。

\*\*注: 按GB14048.1-2006, 术语“寿命”表示电器在修理或更换部件前能完成的操作循环次数的概率。

1. 本系列三极断路器接三相负载时, 负载不能带中性线, 包括取自断路器负载端的负载控制回路电源也不能带中性线, 否则该断路器会产生误动作。

2. 本系列三极和四极断路器接单相负载时, 相线接A极, 中性线接C极, 不要接B极。

\*Note: zero arcing by installing zero arcing cover are of 6mm(CM1EL-100)、7.5mm(CM1EL-250)、9.3mm(CM1EL-400).

\*\*Note: The term "durability" expresses the expectancy of the number of operating cycles which can be performed by the equipment before repair or replacement of parts.

1. The load can't have neutral wire, including the power supply of the load monitor circuit from the breakers' load terminals. When this series three poles breakers connecting with three-phases load, or the breakers will be misoperation.

2. When this series three-poles and four-poles breakers connecting with single phase load, the phase line is connected with A pole, and neutral line is connected with C pole, with B pole empty.



## 功耗及高海拔降容 Power loss and altitude derating

- 功耗  
Power loss

| 型号<br>Type | 通电电流 (A)<br>With current | 三极/四极总功率损耗 (W)<br>The total power loss of three poles/four poles |                                    |                                   |
|------------|--------------------------|--|------------------------------------|-----------------------------------|
|            |                          | 板前、板后接线<br>Front/rear connected                                  | 插入式板前接线<br>Plug-in front connected | 插入式板后接线<br>Plug-in rear connected |
| CM1EL-100  | 100                      | 17   | 17.1                               | 17.2                              |
| CM1EL-250  | 250                      | 48.8   | 48.9                               | 49                                |
| CM1EL-400  | 400                      | 76.8   | 76.9                               | 77.1                              |
| CM1EL-800  | 800                      | 153.6  | 153.7                              | 153.9                             |

- 海拔超过适用工作环境2000m，断路器电气性能可参照下表修正：  
Altitude of service environment more than application of 2000m, electrical performance of breaker can be corrected according to following table:

|  |      |      |      |      |
|--|------|------|------|------|
| 海拔 (m)<br>Altitude                                     | 2000 | 3000 | 4000 | 5000 |
| 工频耐压 (V)<br>Power-frequency withstand voltage          | 3000 | 2500 | 2000 | 1800 |
| 工作电流修正系数<br>operational current correction coefficient | 1    | 0.94 | 0.88 | 0.83 |



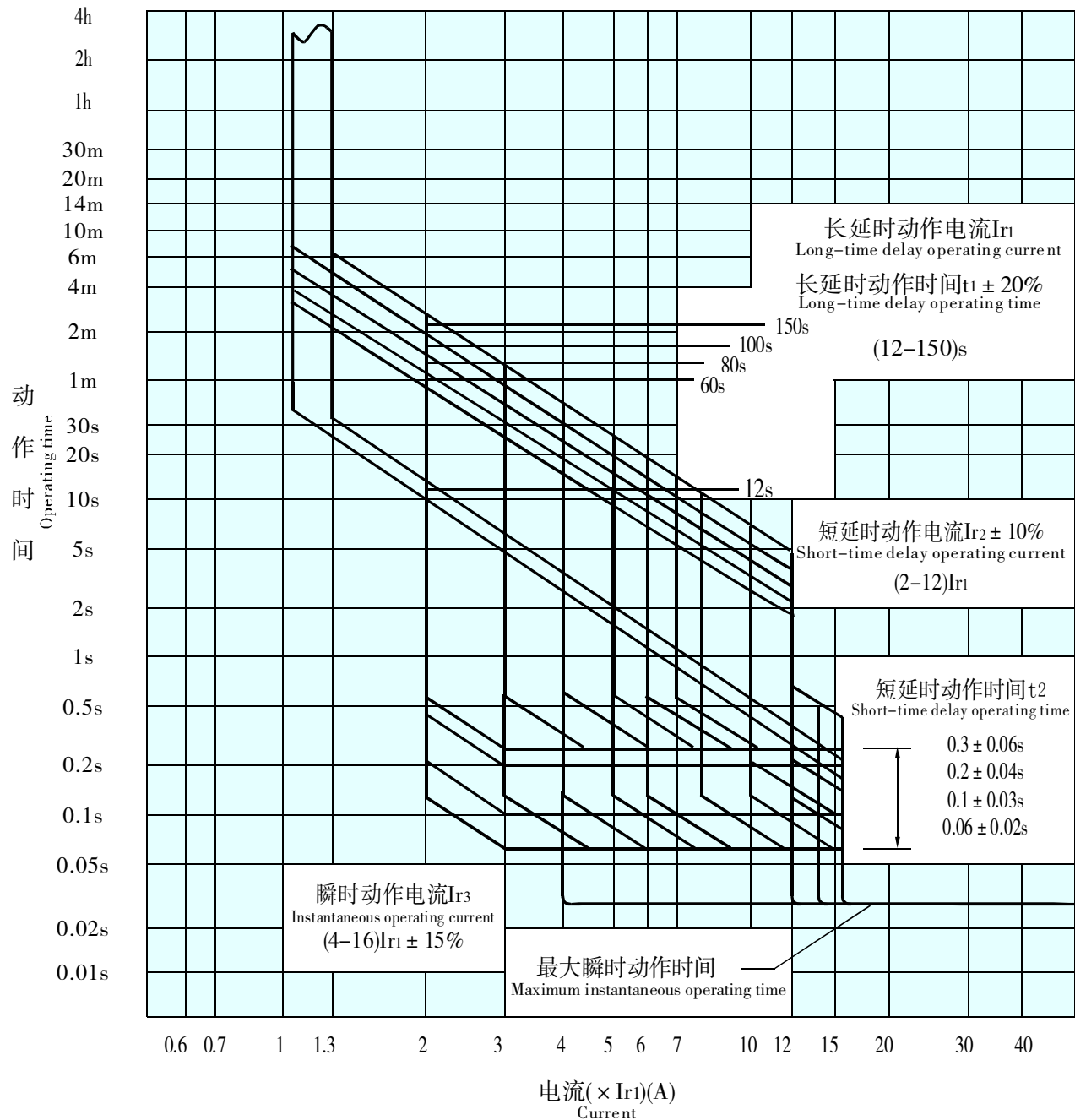


## 电子式过电流脱扣器保护特性

### Protection characteristic of electronic overcurrent release

- 断路器内装按有效值采样的电流传感器。断路器具有过载长延时反时限、短路短延时反时限、短路短延时定时限、短路瞬时等保护功能，可由用户自行设定组成所需的保护特性；中性线过电流保护电流、时间参数100%自动跟踪相线整定值。脱扣器特性见下图。

The breaker for which the current sensing means are stated to be r.m.s. responsive, it has overload long-time-delay inverse, short-circuit short-time delay inverse, short-circuit short-time delay definite, short-circuit instantaneous protection function, can be set up protection which is made up by the users; neutral overcurrent protective current, and time parameter 100% automatic tracking phase setting value. see the following diagram of release characteristic.





## 电子式过电流脱扣器保护特性

### Protection characteristic of electronic overcurrent release

- 长延时过电流保护反时限动作特性见表。  
Long-time-delay overcurrent protective inverse operating characteristic see following table

| 电 流 Current   |                        | 动 作 时 间<br>Operating time                |                           |      |      |      |   |      |      |      |
|---|------------------------|--|---------------------------|------|------|------|---|------|------|------|
| 配<br>电<br>用<br>Distribution   | 1.05I <sub>r1</sub>    | 2小时内不动作<br>Non-operating within two hour |                           |      |      |      |   |      |      |      |
|   | 1.3I <sub>r1</sub>     | ≤1h动作<br>Operating time                  |                           |      |      |      |   |      |      |      |
|   | 2I <sub>r1</sub>       | 整定时间t <sub>1</sub> (s)<br>Setting time   | I <sub>nm</sub> =100、250A |      |      |      | I <sub>nm</sub> =400、800A   |      |      |      |
|   |                        |  | 12                        | 60   | 80   | 100  | 12  | 60   | 100  | 150  |
| 电<br>动<br>机<br>保<br>护<br>用<br>Motor protection  | 1.05I <sub>r1</sub>    | 2小时内不动作<br>Non-operating within two hour |                           |      |      |      |   |      |      |      |
|   | 1.2I <sub>r1</sub>     | ≤1h动作<br>Operating time                  |                           |      |      |      |   |      |      |      |
|   | 1.5I <sub>r</sub>      | 动作时间T <sub>1</sub> (s)<br>Operating time | I <sub>nm</sub> =100、250A |      |      |      | I <sub>nm</sub> =400、I <sub>nm</sub> =800A (I <sub>n</sub> =630A) |      |      |      |
|   |                        |  | 21.3                      | 107  | 142  | 178  | 21.3  | 107  | 178  | 267  |
|   | 2I <sub>r1</sub>       | 整定时间t <sub>1</sub> (s)<br>Setting time   | 12                        | 60   | 80   | 100  | 12  | 60   | 100  | 150  |
|   | 7.2I <sub>r1</sub>     | 动作时间T <sub>1</sub> (s)<br>Operating time | 0.93                      | 4.63 | 6.17 | 7.72 | 0.93  | 4.63 | 7.72 | 11.6 |
|   | 脱扣级别<br>Tripping class |  | —                         | 10A  | 10   | 20   | —   | 10   | 20   | 30   |
| 注：1.动作时间符合 $I^2T_1=(2I_{r1})^2t_1$ (1.2I <sub>r1</sub> ≤ I < I <sub>r2</sub> )；<br>2.动作时间允差为 ± 20%；<br>3.可返回时间不小于动作时间的70%。<br>Note: 1.operating time complying with $I^2T_1=(2I_{r1})^2t_1$ (1.2I <sub>r1</sub> ≤ I < I <sub>r2</sub> )；<br>2.operating time tolerance: ± 20%；<br>3.Returnable time not less than 70% operating time. |                        |  |                           |      |      |      |   |      |      |      |

- 短延时过电流动作特性见表。  
Short-time delay overcurrent operating characteristic see following table

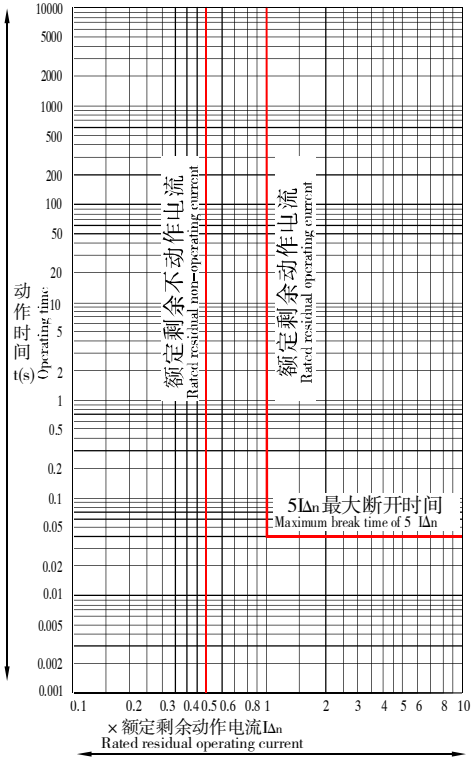
| 电 流<br>Current  |                         | 动 作 时 间<br>Operating time              |  |        |        |        |
|---|-------------------------|--|--|--------|--------|--------|
| I <sub>r2</sub> ≤ I < 1.5I <sub>r2</sub>                            |                         | 反时限<br>Inverse                         | I <sup>2</sup> T <sub>2</sub> =(1.5I <sub>r2</sub> ) <sup>2</sup> t <sub>2</sub> |        |        |        |
| 1.5I <sub>r2</sub> ≤ I < I <sub>r3</sub>                            | 定<br>时<br>限<br>Definite | 整定时间t <sub>2</sub> (s)<br>Setting time | 0.06   | 0.1    | 0.2    | 0.3    |
|   |                         | 允差(s)<br>Tolerance                     | ± 0.02   | ± 0.03 | ± 0.04 | ± 0.06 |
|   |                         | 可返回时间(s)<br>Returnable time            | —  | —      | 0.14   | 0.21   |
| 注：反时限动作时间允差 ± 20%。<br>Note: Inverse operating time tolerance ± 20%. |                         |  |  |        |        |        |



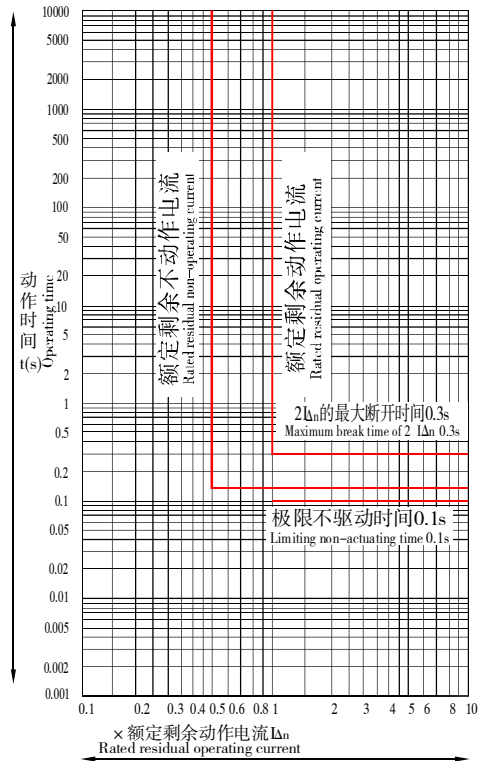
# 剩余电流保护特性曲线

# Residual current protection characteristic curve

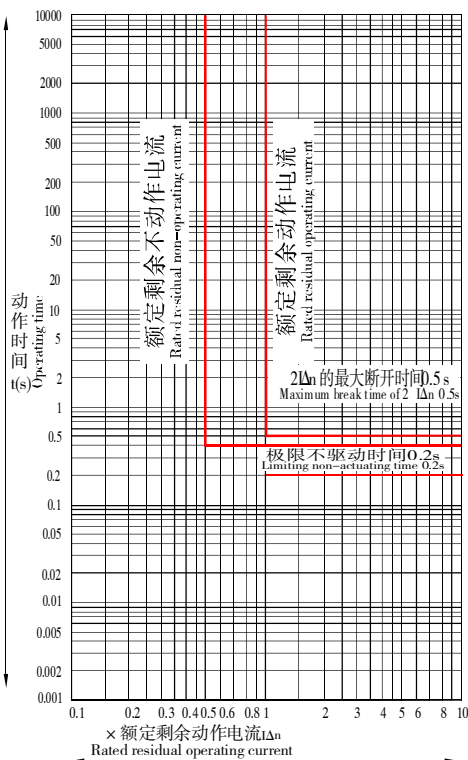
$I_{\Delta n}=0.03/0.1/0.3/0.5/1/3/10/30$  (A)  
 非延时剩余电流保护时间/电流特性曲线  
 Time/current characteristic curve of non-time-delay residual current protection



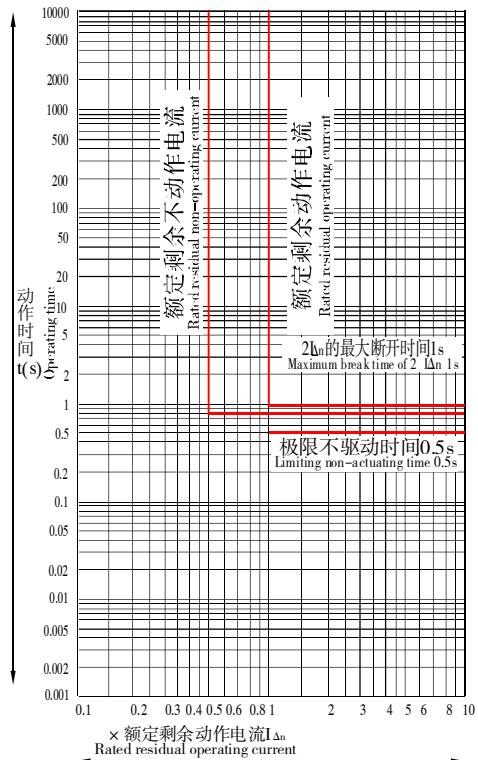
$I_{\Delta n}=0.1/0.3/0.5/1/3/10/30$  (A)  
 延时剩余电流保护时间/电流特性曲线  
 Time/current characteristic curve of time-delay residual current protection



$I_{\Delta n}=0.1/0.3/0.5/1/3/10/30$  (A)  
 延时剩余电流保护时间/电流特性曲线  
 Time/current characteristic curve of time-delay residual current protection



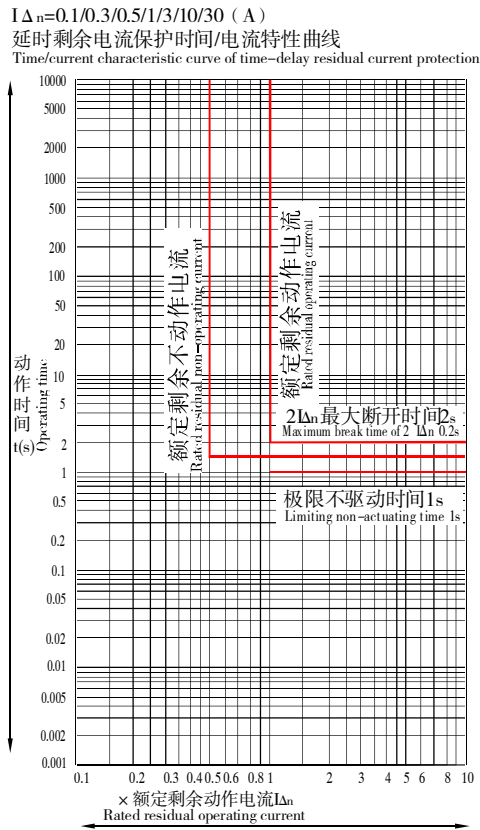
$I_{\Delta n}=0.1/0.3/0.5/1/3/10/30$  (A)  
 延时剩余电流保护时间/电流特性曲线  
 Time/current characteristic curve of time-delay residual current protection







# 剩余电流保护特性曲线 Residual current protection characteristic curve



剩余电流保护动作时间：  
 residual current operating time

| 剩余电流<br>Residual current |  | $I_{\Delta n}$    | $2I_{\Delta n}$ | $5I_{\Delta n}$ | $10I_{\Delta n}$ |
|--------------------------|--|-------------------|-----------------|-----------------|------------------|
| 非延时<br>Non-time-delay    | 最大断开时间 (s)<br>Maximun break time           | 0.08              | 0.08            | 0.04            | 0.04             |
| 延时<br>Time-delay         | 最大断开时间 (s)<br>Maximun break time           | 0.5/0.8/1.15/2.15 | 0.3/0.5/1/2     | 0.3/0.5/1/2     | 0.3/0.5/1/2      |
|                          | 极限不驱动时间 (s)<br>Limiting non-actuating time | —                 | 0.1/0.2/0.5/1   | —               | —                |

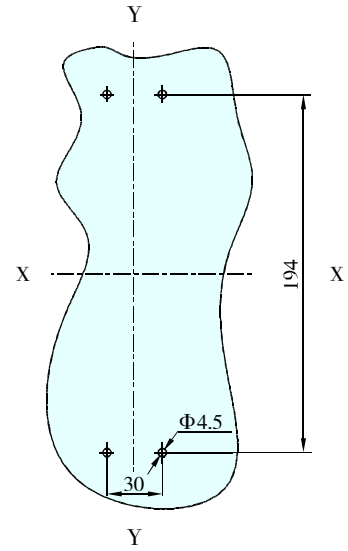
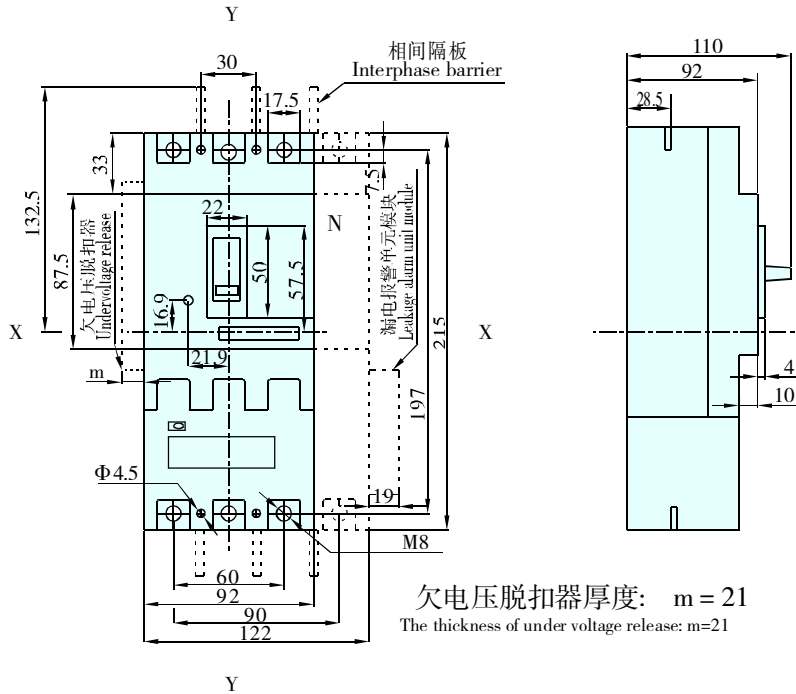


# 外形尺寸及安装尺寸

## Outline and mounting dimensions

- CM1EL-100板前接线（三极、四极）  
X-X、Y-Y为三极断路器中心

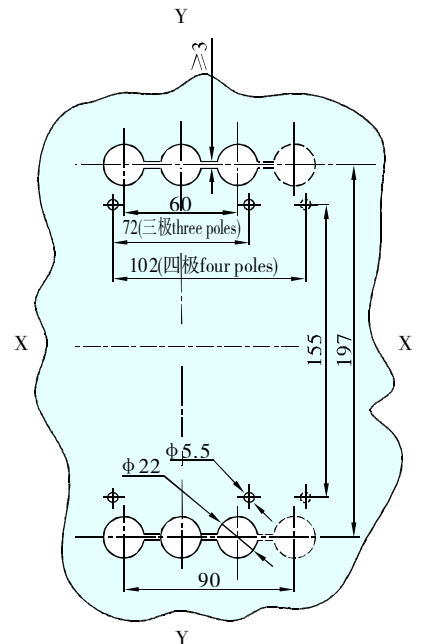
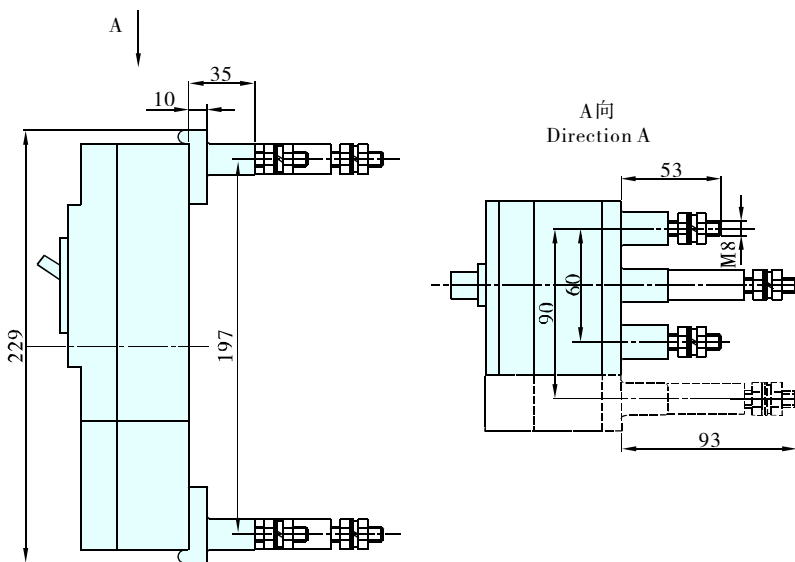
- CM1EL-100 front connected( three poles and four poles)  
X-X、Y-Y center for the three poles breaker



板前接线安装板开孔尺寸  
Mounting plate cutout dimensions of front connected

- CM1EL-100板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心

- CM1EL-100 rear connected( three poles and four poles)  
X-X、Y-Y center for the three poles breaker

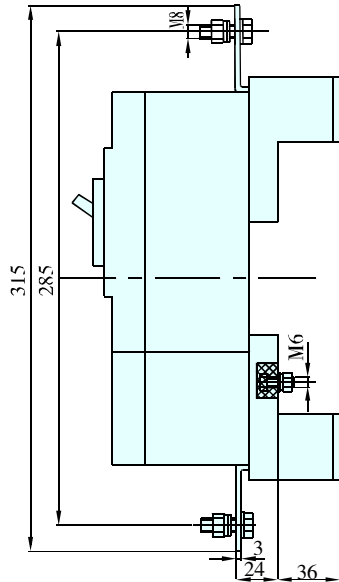


板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of rear connected

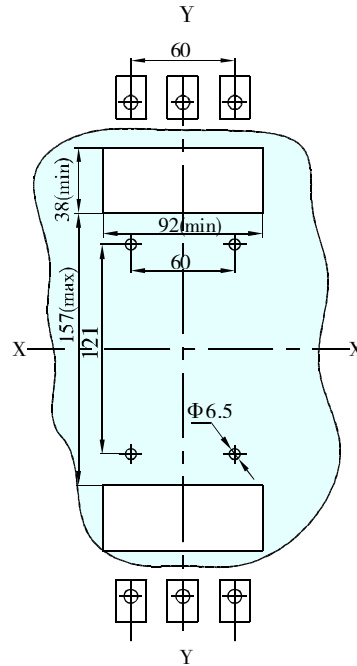


## 外形尺寸及安装尺寸 Outline and mounting dimensions

- CM1EL-100插入式板前接线（三极）  
X-X、Y-Y为三极断路器中心

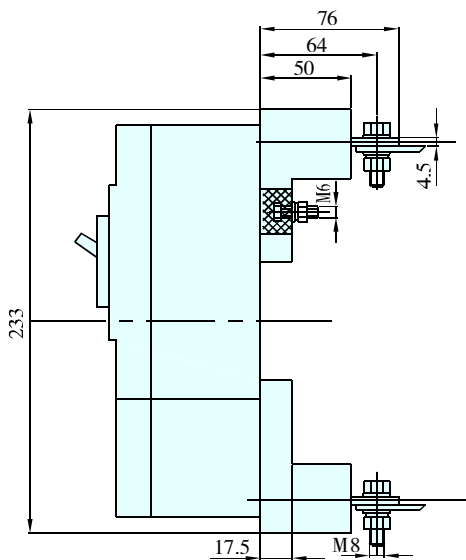


- CM1EL-100 plug-in front connected( three poles)  
X-X、Y-Y center for the three poles breaker

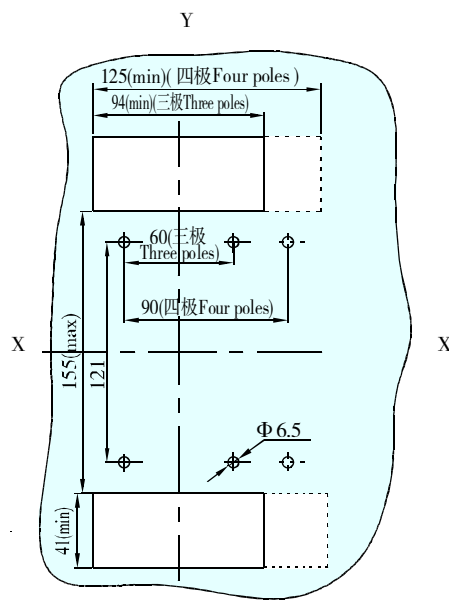


插入式板前接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in front connected

- CM1EL-100插入式板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心



- CM1EL-100 plug-in rear connected (three poles and four poles)  
X-X、Y-Y center for the three poles breaker

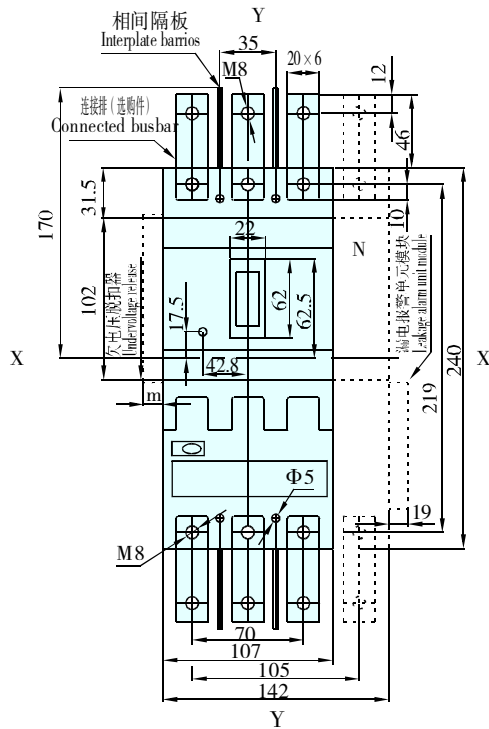


插入式板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in rear connected



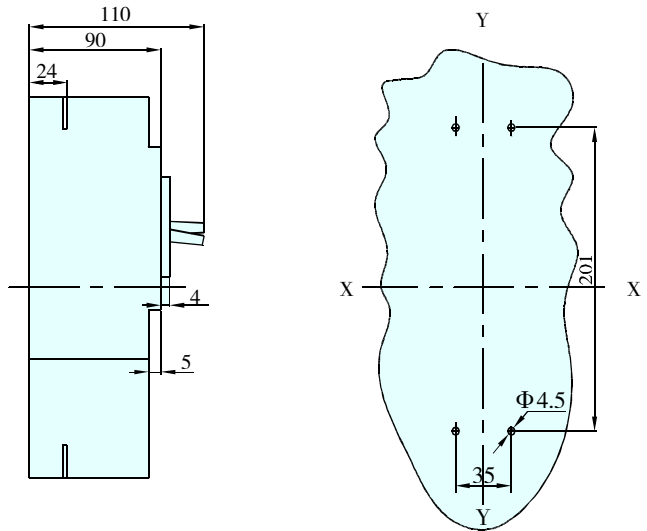
# 外形尺寸及安装尺寸 Outline and mounting dimensions

- CM1EL-250板前接线（三极、四极）  
X-X、Y-Y为三极断路器中心



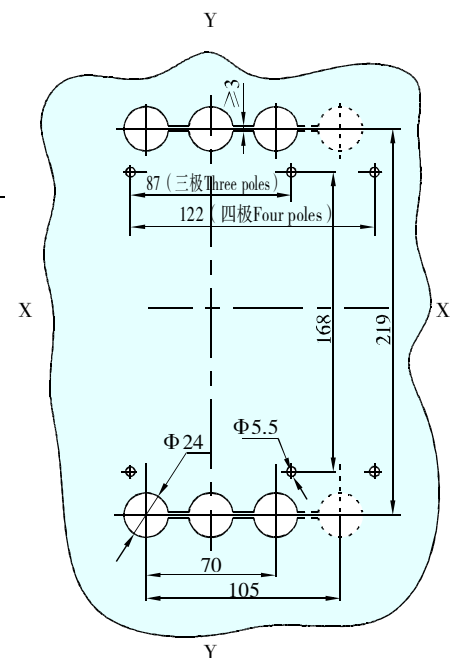
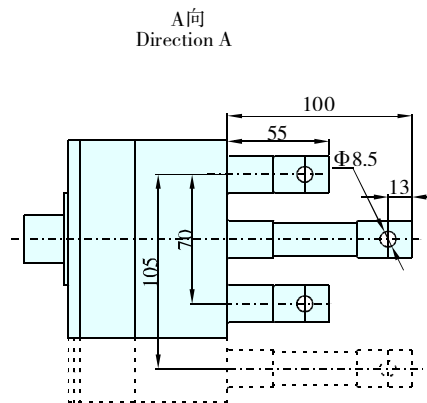
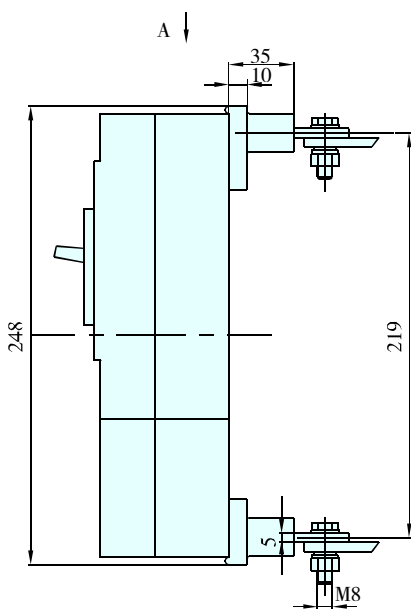
欠电压脱扣器厚度  $m = 21$   
The thickness of under voltage release:  $m = 21$

- CM1EL-250 front connected (three poles and four poles)  
X-X、Y-Y center for the three poles breaker



板前接线安装板开孔尺寸  
Mounting plate cutout dimensions of front connected

- CM1EL-250板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心



板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of rear connected

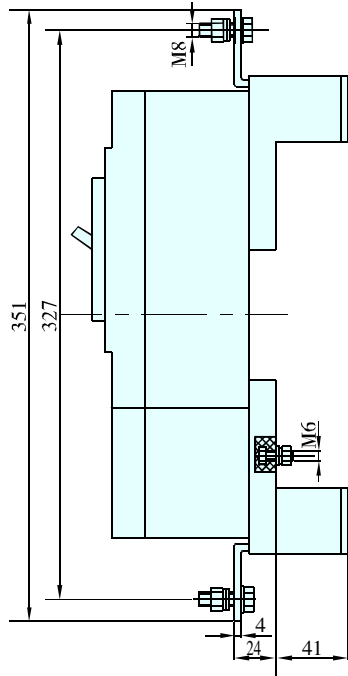




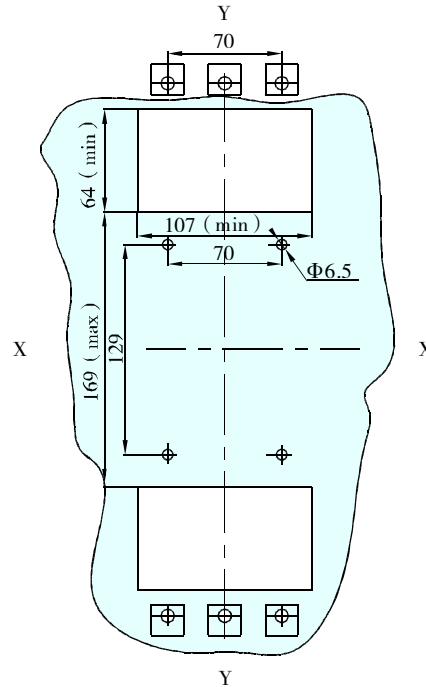
## 外形尺寸及安装尺寸

## Outline and mounting dimensions

- CM1EL-250插入式板前接线（三极）  
X-X、Y-Y为三极断路器中心

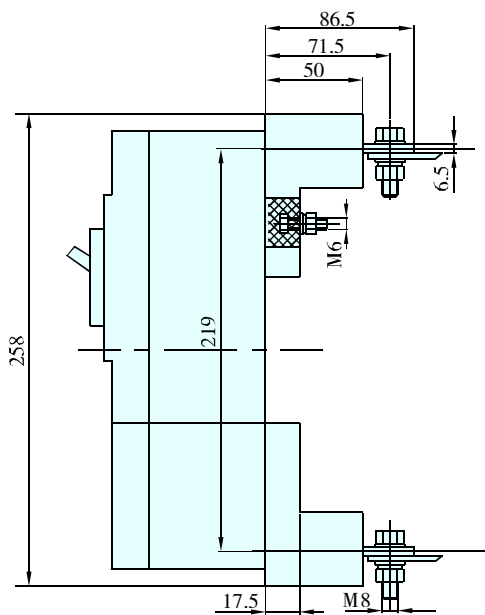


- CM1EL-250 plug-in front connected( three poles)  
X-X、Y-Y center for the three poles breaker

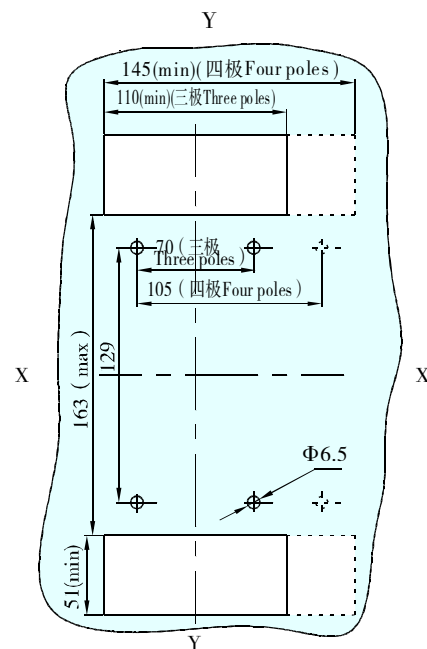


插入式板前接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in front connected

- CM1EL-250插入式板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心



- CM1EL-250 plug-in rear connected (three poles and four poles)  
X-X、Y-Y center for the three poles breaker



插入式板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in rear connected

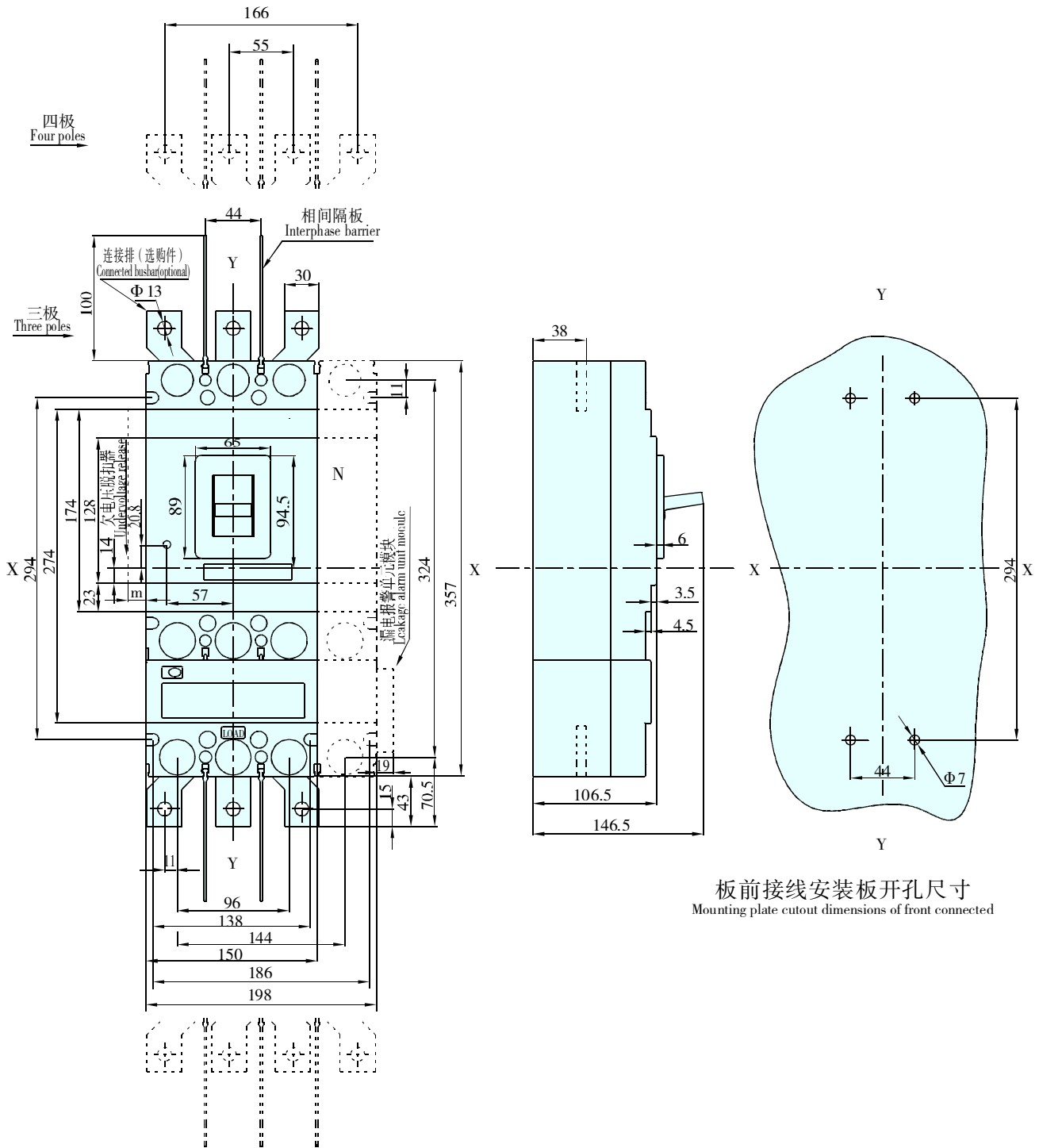


# 外形尺寸及安装尺寸

## Outline and mounting dimensions

- CM1EL-400板前接线（三极、四极）  
X-X、Y-Y为三极断路器中心

- CM1EL-400 front connected( three poles and four poles)  
X-X、Y-Y center for the three poles breaker



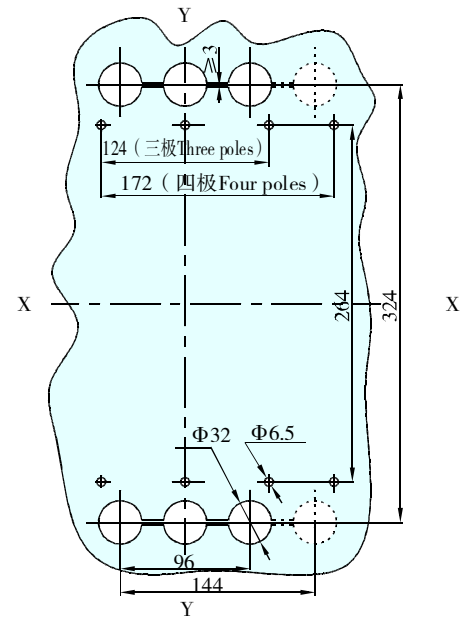
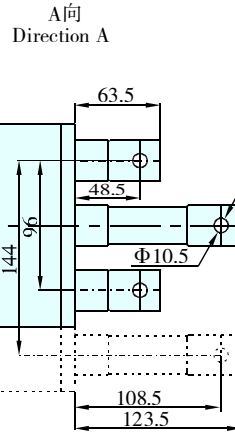
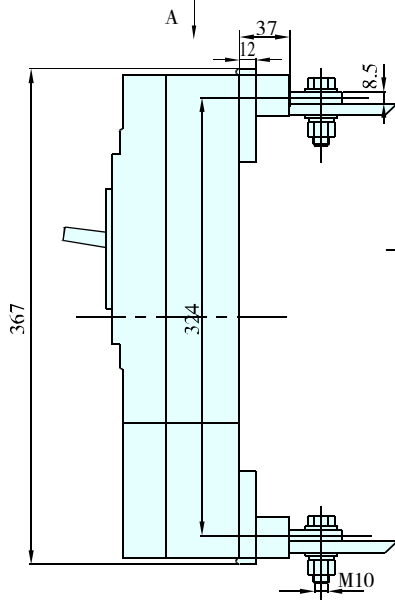
板前接线安装板开孔尺寸  
Mounting plate cutout dimensions of front connected

欠电压脱扣器厚度  $m = 21$   
The thickness of under voltage release:  $m = 21$



## 外形尺寸及安装尺寸 Outline and mounting dimensions

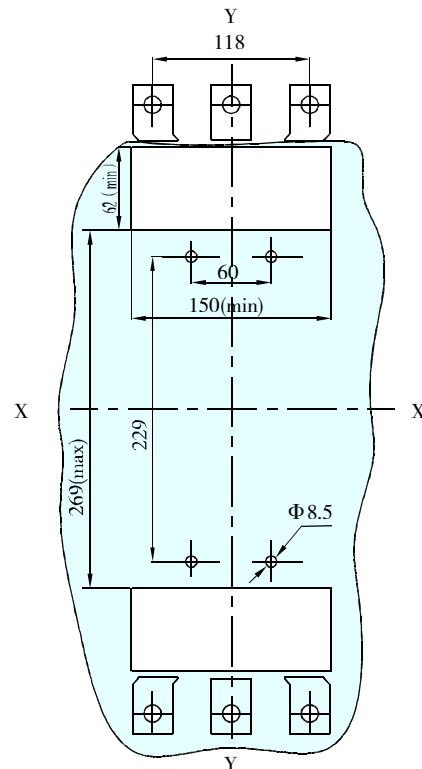
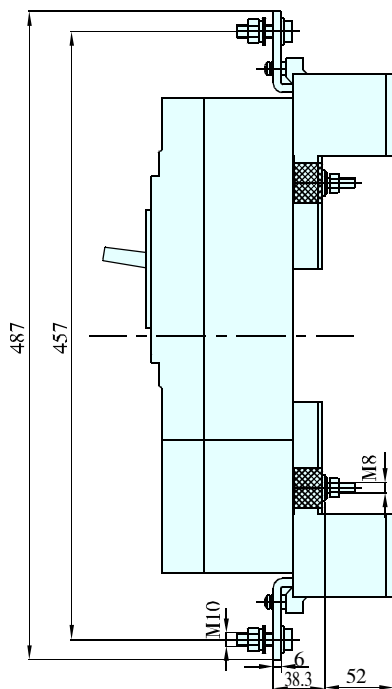
- CM1EL-400板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心



板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of rear connected

- CM1EL-400 rear connected (three poles and four poles)  
X-X、Y-Y center for the three poles breaker

- CM1EL-400插入式板前接线（三极）  
X-X、Y-Y为三极断路器中心

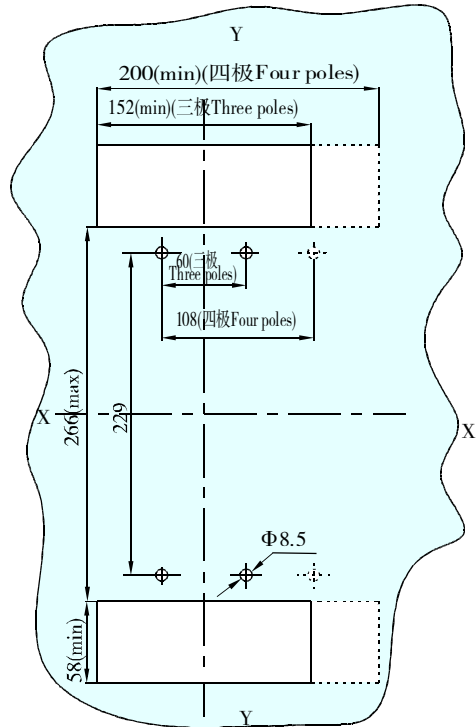
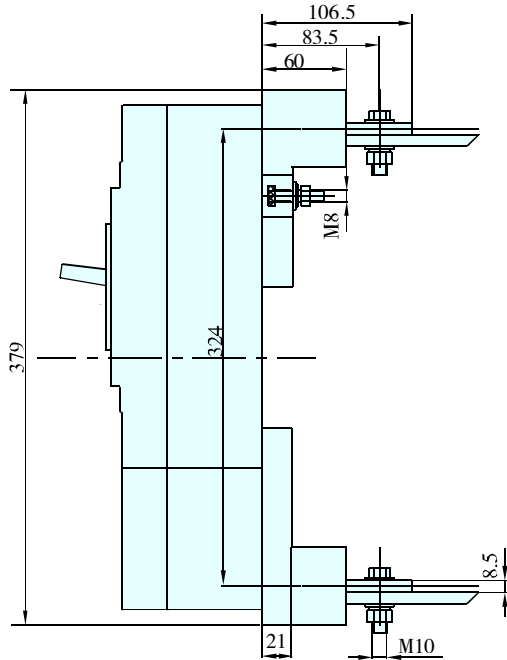


插入式板前接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in front connected



## 外形尺寸及安装尺寸 Outline and mounting dimensions

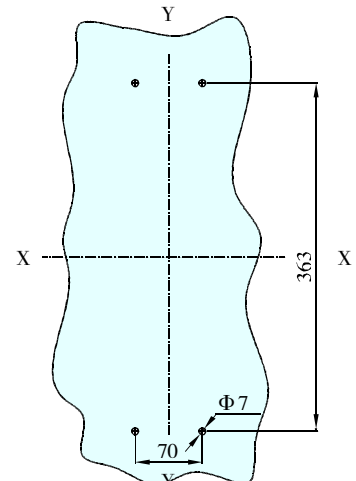
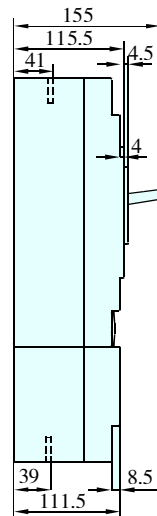
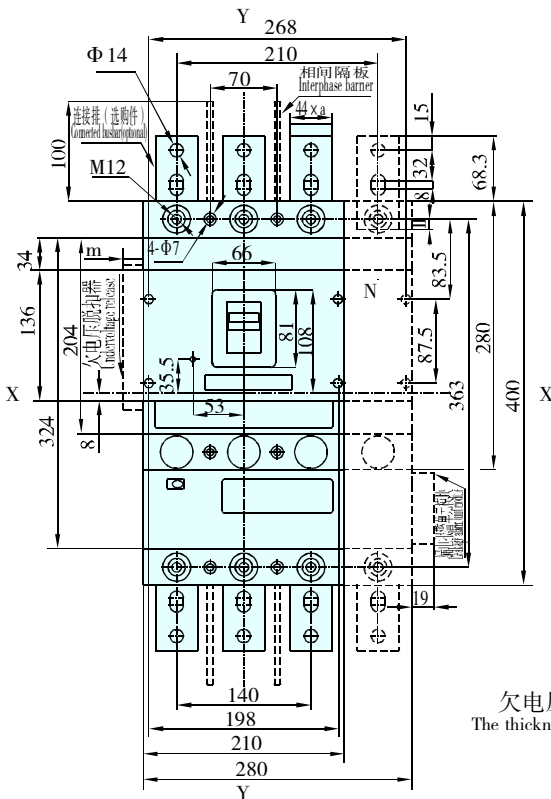
- CM1EL-400插入式板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心
- CM1EL-400 plug-in rear connected (three poles and four poles)  
X-X、Y-Y center for the three poles breaker



- CM1EL-800板前接线（三极、四极）  
X-X、Y-Y为三极断路器中心

插入式板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in rear connected

- CM1EL-800 front connected (three poles and four poles)  
X-X、Y-Y center for the three poles breaker



板前接线安装板开孔尺寸  
Mounting plate cutout dimensions of front connected

欠电压脱扣器厚度:  $m=0$   
The thickness of under voltage release:  $m=0$

| 额定电流<br>Rated current | a(mm) |
|-----------------------|-------|
| $I_n=630A$            | 7     |
| $I_n=800A$            | 10    |

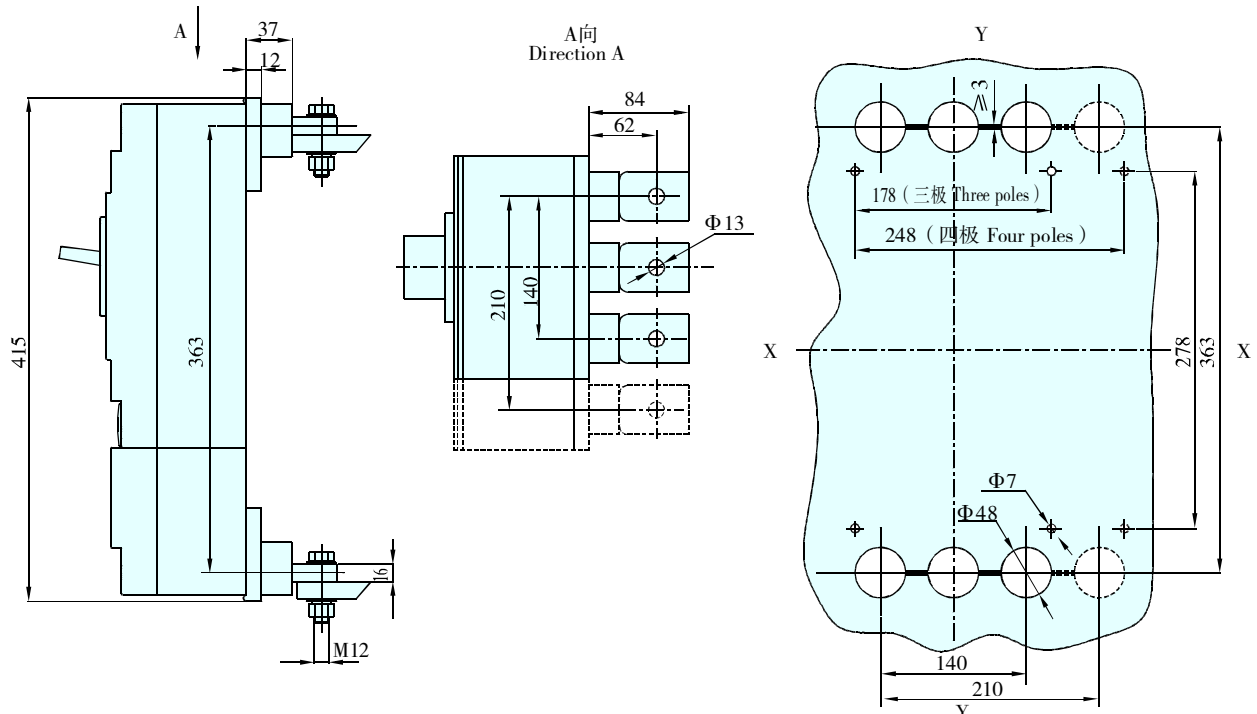


## 外形尺寸及安装尺寸

## Outline and mounting dimensions

- CM1EL-800板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心

- CM1EL-800 rear connected (three poles and four poles)  
X-X、Y-Y center for the three poles breaker

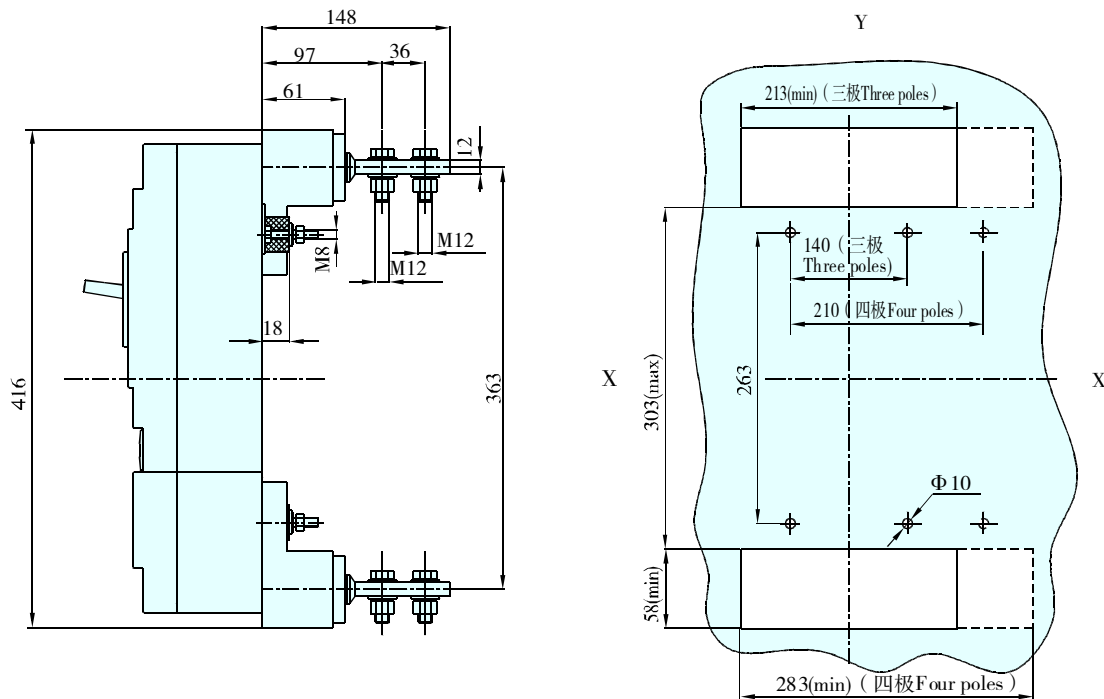


板后接线安装板开孔尺寸

Mounting plate cutout dimensions of rear connected

- CM1EL-800插入式板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心

- CM1EL-800 plug-in rear connected (three poles and four poles)  
X-X、Y-Y center for the three poles breaker



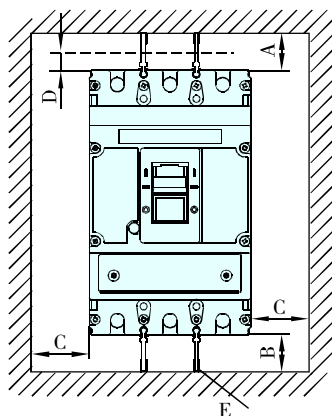
插入式板后接线安装板开孔尺寸

Mounting plate cutout dimensions of plug-in rear connected





## 断路器安装安全间隙 Mounting safety clearance



A: 到导电回路（包括无遮挡物或有接地金属）

B: 断路器端子到底墙

C: 断路器侧部到侧墙（包括无遮挡物或有接地金属）

D: 到非导电部件

注：E为相间隔板。必须安装相间隔板或零飞弧罩。

A: To conductive circuit (including without shelter or with earthed metals)

B: The terminals of the circuit breaker to the bottom wall

C: The side case of the circuit breaker to the side wall (including without shelter or with earthed metals)

D: To non-conductive units

Note: E, the interphase barrier. The interphase barriers or zero arcing covers should be installed.

单位：mm  
Measurement

| 型号<br>Type | A                                   |                                 | B  | C  | D  |
|------------|-------------------------------------|---------------------------------|----|----|----|
|            | 不带零飞弧罩<br>Without zero arcing cover | 带零飞弧罩<br>With zero arcing cover |    |    |    |
| CM1EL-100  | 50                                  | 25                              | 25 | 25 | 25 |
| CM1EL-250  | 50                                  | 25                              | 25 | 25 | 25 |
| CM1EL-400  | 100                                 | 25                              | 25 | 25 | 25 |
| CM1EL-800  | 100                                 | -                               | 25 | 25 | 25 |



## 内外附件 Internal/external accessories

### 1、断路器的内部附件 Internal accessories

根据用户需要断路器附件可直接导线引出（导线长度为50cm，有特殊要求订货时说明），或加装接线端子排（加装接线端子排，用户订货时注明）。

Accessories in accordance with users can directly be leaded by wire (wire length is 50cm, special demand when ordering) or terminal block to installed (the installation of terminal block, users specify when ordering).

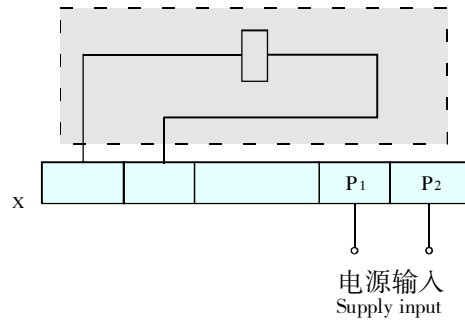
#### ● 欠电压脱扣器，符号○ Under-voltage release

欠电压脱扣器额定控制电源电压Us: AC50Hz/60Hz 230V、400V。

外挂欠电压模块接线图(虚框内为断路器内部附件)

Rated control supply voltage of under-voltage Us: AC50Hz/60Hz 230V、400V.

External under-voltage module wiring diagram show below (inside vital is internal accessory)



| 欠电压脱扣器型号<br>Types for Under-voltage release | 配用断路器<br>Fitting breaker       | 安装位置<br>Mounting position | 欠电压脱扣器功率 (VA)<br>Under voltage release power |        |
|---|--------------------------------|---------------------------|--|--------|
|   |                                |                           | AC230V                                       | AC400V |
| QTCM1L-100Z                                 | CM1EL-100三极、四极three/four poles | 左面 left                   | 2.6  | 3.3    |
| QTCM1E-225Z                                 | CM1EL-250三极、四极three/four poles | 左面 left                   | 3.8  | 3.3    |
| QTCM1L-400Z                                 | CM1EL-400三极、四极three/four poles | 左面 left                   | 3.7  | 2.7    |
| QTCM1-800Z                                  | CM1EL-800三极、四极three/four poles | 左面 left                   | 2.5  | 2.8    |

在额定控制电源电压的35%~70%时，欠电压脱扣器应可靠使断路器脱扣；

在额定控制电源电压的85%~110%时，欠电压脱扣器应保证断路器能合闸；

在额定控制电源电压低于35%时，欠电压脱扣器应防止断路器合闸。

At rated control supply voltage of 35%~70%, under-voltage release should be reliable to trip breaker.

At rated control supply voltage of 85%~110%, under-voltage release should be able to close breaker.

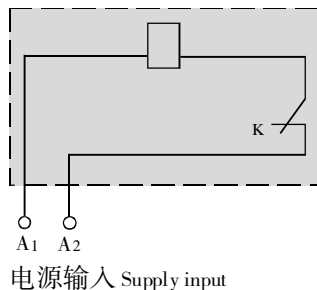
At rated control supply voltage less than 35% under-voltage should prevent breaker from closing.

**警告：欠电压脱扣器必须先通电，断路器才能再扣及合闸。否则将损坏断路器！**

**Caution: under-voltage release must be electricity,circuit breaker can be closed,otherwise will damage circuit breaker!**

● 分励脱扣器，符号 ● Shunt release

接线图（虚框内为断路器内部附件）  
Wiring diagram(inside virtual is internal accessory)



K: 分励脱扣器内部与线圈串联的微动开关为常闭触头，当断路器分闸后，该触头自行断开，合闸时闭合

K:shunt release coil in series with in the micro-switch for the normally closed contact,when circuit breaker opening,the contact to dis connect,when breaker closing the switch connected  
电压规格：AC50Hz/60Hz 230V、400V;DC220V、24V

在额定控制电源电压的70~110%之间时，分励脱扣器应可靠使断路器脱扣。

Rated control supply voltage of 70%~110%,shunt release should be reliable to trip circuit breaker.



| 额定控制电源电压Us(DC24V)<br>Rated control supply voltage | 导线截面积<br>Conductor cross-section | 1.5mm <sup>2</sup> | 2.5mm <sup>2</sup> |
|---|----------------------------------|--------------------|--------------------|
| 100%Us  |                                  | 150m               | 250m               |
| 85%Us   |                                  | 100m               | 160m               |

注：当额定控制电源电压为DC24V时，有两种解决方案：

方案1：采用DC24V分励脱扣器，但应满足如下条件：铜导线最大长度（两根导线中每根长度）须满足上表条件，脱扣器接线端处的电源功率须满足最小50W要求。


方案2：采用DC24V中间继电器控制AC230V或AC400V分励脱扣器，中间继电器触点容量不小于1A。

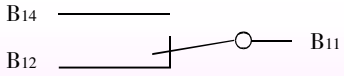
Note: While selecting DC24V rated control supply voltage, selecting two solution.

Solution1: Selecting DC24V shunt release, but satisfying below condition: the maximum length of copper wire (two wires in the length of each) shall meet above table condition, supply power of shunt release terminal must meet minimum 50W.


Solution2: Selecting DC24V auxiliary relay to control AC230V or AC400V shunt release, contact current capacity is 1 A.

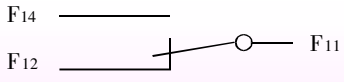
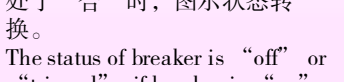
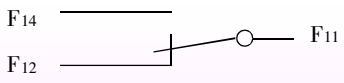
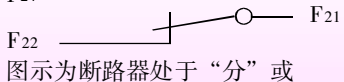
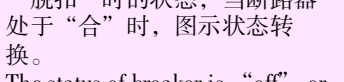
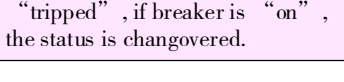
| 分励脱扣器型号<br>Shunt release type | 配用断路器<br>Fitting breaker         | 安装位置<br>Mounting position |
|-------------------------------|----------------------------------|---------------------------|
| FTCM1L-100Z                   | CM1EL-100 三极、四极 three/four poles | 左面 left                   |
| FTCM1L-225Z                   | CM1EL-250 三极、四极 three/four poles | 左面 left                   |
| FTCM1-400Z                    | CM1EL-400 三极、四极 three/four poles | 左面 left                   |
| FTCM1-800Y                    | CM1EL-800 三极、四极 three/four poles | 右面 right                  |


● 报警触头，符号  Alarm contact

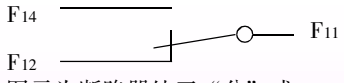
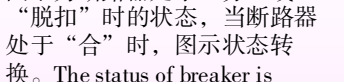
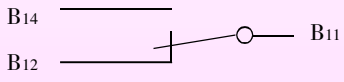
| 报警触头型号<br>alarm contact type | 配用断路器<br>Fitting breaker         | 安装位置<br>Mounting position | 状态<br>status   |
|------------------------------|----------------------------------|---------------------------|--|
| BCCM1L-100Z                  | CM1EL-100 三极、四极 three/four poles | 左面 left                   |   |
| BCCM1L-225Z                  | CM1EL-250 三极、四极 three/four poles | 左面 left                   | 图示为断路器处于“分”或“合”时的状态，<br>The status of the breaker in “off” or “on”，<br>当断路器处于“脱扣”时，图示状态转换。<br>If breaker is “tripped”，the status is changovered. |
| BCCM1-400Z                   | CM1EL-400 三极、四极 three/four poles | 左面 left                   |  |
| BCCM1-800Z                   | CM1EL-800 三极、四极 three/four poles | 左面 left                   |  |



● 辅助触头，符号  Auxiliary contact

| 辅助触头型号<br>Auxiliary contact type | 配用断路器<br>Fitting breaker         | 安装位置<br>Mounting position | 状态<br>status  |
|----------------------------------|----------------------------------|---------------------------|---|
| FCCM1L-100Z                      | CM1EL-100 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“脱扣”时的状态，当断路器处于“合”时，图示状态转换。</p> <p>The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p>   |
| FCCM1L-225Z                      | CM1EL-250 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“脱扣”时的状态，当断路器处于“合”时，图示状态转换。</p> <p>The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p>   |
| FCCM1L-100ZS                     | CM1EL-100 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“脱扣”时的状态，当断路器处于“合”时，图示状态转换。</p> <p>The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p>   |
| FCCM1L-225ZS                     | CM1EL-250 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“脱扣”时的状态，当断路器处于“合”时，图示状态转换。</p> <p>The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p>   |
| FCCM1-400ZS                      | CM1EL-400 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“脱扣”时的状态，当断路器处于“合”时，图示状态转换。</p> <p>The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p> |
| FCCM1-800ZS                      | CM1EL-800 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“脱扣”时的状态，当断路器处于“合”时，图示状态转换。</p> <p>The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p> |

● 辅助触头+报警触头，符号  Auxiliary and alarm contact

| 辅助触头+报警触头型号<br>Auxiliary and alarm contact type | 配用断路器<br>Fitting breaker         | 安装位置<br>Mounting position | 状态<br>status  |
|---|----------------------------------|---------------------------|---|
| FBCM1L-100Z                                     | CM1EL-100 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“脱扣”时的状态，当断路器处于“合”时，图示状态转换。</p> <p>The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p> |
| FBCM1L-225Z                                     | CM1EL-250 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“脱扣”时的状态，当断路器处于“合”时，图示状态转换。</p> <p>The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p> |
| FBCM1-400Z                                      | CM1EL-400 三极、四极 three/four poles | 左面 left                   |  <p>图示为断路器处于“分”或“合”时的状态，</p> <p>The status of the breaker in “off” or “on”,</p>  |
| FBCM1-800Z                                      | CM1EL-800 三极、四极 three/four poles | 左面 left                   | <p>当断路器处于“脱扣”时，图示状态转换。</p> <p>If breaker is “tripped”, the status is changovered.</p>   |



辅助触头、报警触头额定工作电流 Rated operationed current of auxiliary contact and alarm contact

| 分类<br>Categories          | 壳架等级额定电流 $I_{nm}(A)$<br>Frame size rated current | 约定发热电流 $I_{th}(A)$<br>Conventional thermal current | 额定工作电流 $I_e(A)$<br>Rated operational current |        |
|---------------------------|--|--|--|--------|
|                           |  |  | AC400V                                       | DC220V |
| 辅助触头<br>auxiliary contact | $I_{nm} \leq 250$                                | 3  | 0.3  | 0.15   |
| 报警触头<br>Alarm contact     | $I_{nm} \geq 400$                                | 3  | 0.4  | 0.15   |

通电操作性能及相应的试验条件见表

operational performance with current and the corresponding testing condtion see table

| 使用类别<br>Utilization category | 接通<br>Making |         |                             | 分断<br>Breaking |         |                             | 通电操作<br>循环次数<br>Number of<br>operating cycles<br>with current | 每分钟操作<br>循环次数<br>Number of<br>operating cycles<br>per minute | 通电时间<br>With current |
|------------------------------|--------------|---------|-----------------------------|----------------|---------|-----------------------------|---|--|----------------------|
|                              | $I/I_e$      | $U/U_e$ | $\cos \phi$ 或<br>$T_{0.95}$ | $I/I_e$        | $U/U_e$ | $\cos \phi$ 或<br>$T_{0.95}$ |   |  |                      |
| AC-15                        | 10           | 1       | 0.3                         | 1              | 1       | 0.3                         | 6050  | 6  | $\geq 0.05s$         |
| DC-13                        | 1            | 1       | $6P_e$                      | 1              | 1       | $6P_e$                      |   |  | $\geq T_{0.95}$      |

非正常条件下接通与分断能力见表

Non-normal conditions making and breaking capacity see table

| 使用类别<br>Utilization category | 接通<br>Making |         |                             | 分断<br>Bearing |         |                             | 通电操作<br>循环次数<br>Number of<br>operating cycles<br>with current | 每分钟操作<br>循环次数<br>Number of<br>operating cycles<br>per minute | 通电时间<br>With current |
|------------------------------|--------------|---------|-----------------------------|---------------|---------|-----------------------------|---|--|----------------------|
|                              | $I/I_e$      | $U/U_e$ | $\cos \phi$ 或<br>$T_{0.95}$ | $I/I_e$       | $U/U_e$ | $\cos \phi$ 或<br>$T_{0.95}$ |   |  |                      |
| AC-15                        | 10           | 1.1     | 0.3                         | 10            | 1.1     | 0.3                         | 10  | 2  | $\geq 0.05s$         |
| DC-13                        | 1.1          | 1.1     | $6P_e$                      | 1.1           | 1.1     | $6P_e$                      |   |  | $\geq T_{0.95}$      |

注：上述二表

- $T_{0.95}=6P_e$ 是经验公式，其中 $P_e$ 以“瓦”单位， $T_{0.95}$ 毫秒为单位。
- 操作频率和通电时间允许与断路器主电路的一致。

Note: The table above

- $T_{0.95}=6P_e$  is experience formula, The unit of  $P_e$  is "watt" and the unit of  $T_{0.95}$  is "millisecond".
- Operating frequency and time with current when allowed the main breaker in line.





● 漏电报警单元模块  
Leakage alarm unit module

漏电报警单元模块有两种方式，用户根据需要可在订货时说明：

方式一(用 I 表示)：当发生漏电，漏电报警模块发出信号，同时断路器脱扣；

方式二（用 II 表示）：当发生漏电，漏电报警模块发出信号，但断路器不脱扣。

注：方式二是为满足特殊场合需要，用户在采用此功能保护电器时请慎重考虑。

leakage alarm unit module has two patterns, users can illuminate when ordering.

Pattern one(as I ):leakage alarm unit module send out signals when leakage, meanwhile the breaker tripping.

Pattern two(as II ):leakage alarm unit module send out signals when leakage but the breaker no tripping.

Note:Pattern two fits for special situation, please carefully consideration when using this protection devices.

2、断路器的外部附件  
External accessories of breaker

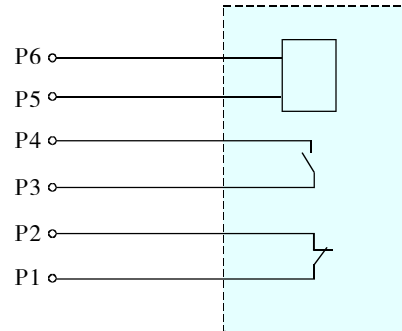
CM1E专用测试器（用户订货需注明）为方便用户对断路器各整定参数进行确认，本公司可提供CM1E专用测试器（内装一节9V碱性电池，用户自备），测试器通过电子式脱扣器上的“TEST”插口与断路器本体相连。

CM1E tester(Please mark out in making order)

For the users'convenience to make sure of the breaker's setting parameters,we can supply CM1E tester (inner fixed one 9V alkaline cell, prepared by users),connecting with the breaker's main body by "TEST" face of the electric release.

接线图（虚框内为漏电报警模块内部接线图）

Wiring diagram, (inside virtual is leakage alarm module internal wiring diagram)



规格：P5-P6端输入电源为AC50Hz/60Hz 230V或400V。

P1-P2、P3-P4触头容量为AC230V 5A。

Specification:The input supply of terminal P5-P6 is AC50Hz/60Hz 230V or 400V.

The contacts capacity of P1-P2,P3-P4 is AC230V 5A.

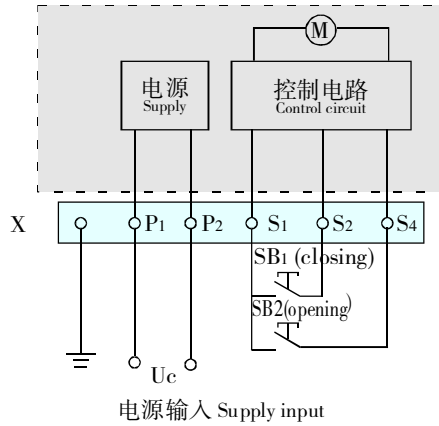




● DCCM1E 电动操作机构 Motor operator

电动操作机构接线图见下图(虚框内为电动操作机构内部接线图)

Wiring diagram of motor operator see the figure below (inside virtual is motor operator internal wiring diagram)



电压规格: AC 50Hz/60Hz 110V、230V  
Voltage specifications: DC24V、110V、220V

符号说明:

SB1、SB2 操作按钮 (用户自备)

X 接线端子排

P1、P2 为外接电源输入

description:

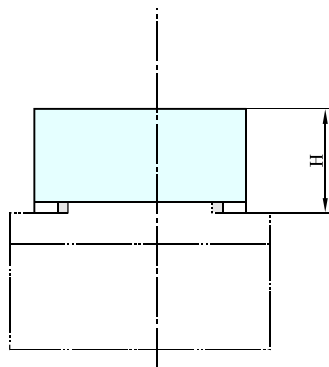
SB1、SB2 operating push button(user-owned)

X terminal block

P1、P2 for external supply

● 电动操作机构相关参数

Motor operator parameter



| 电动操作机构型号<br>Motor operator type | 配用断路器<br>Fitting breaker       | 动作电流(A)<br>Operating current | 电动机功率(W)<br>Motor power | 寿命(次)<br>Durability(times) | 高度<br>Height(mm) |
|---------------------------------|--------------------------------|------------------------------|-------------------------|----------------------------|------------------|
| DCCM1E-100                      | CM1EL-100 三、四极three/four poles | ≤0.5                         | 14                      | 20000                      | 89.5             |
| DCCM1E-225                      | CM1EL-250 三、四极three/four poles | ≤0.5                         | 14                      | 20000                      | 93               |
| DCCM1E-400                      | CM1EL-400 三、四极three/four poles | ≤2                           | 35                      | 10000                      | 142              |
| DCCM1E-800                      | CM1EL-800 三、四极three/four poles | ≤2                           | 35                      | 10000                      | 146              |



● CZ<sub>E</sub>手动操作机构 rotary handle operator

特点：该操作机构采用独特的设计和传动机构，通过旋转手柄实现塑壳断路器的合闸、分闸和再扣。机构灵活、平稳、操作力小、安装方便，机构的整体性能和质量均优于其他同类产品。

用途：本机构专用于CM1EL系列塑壳断路器，通过转动手柄实现抽屉柜、配电柜、动力箱等在面板上操作的要求，并保证断路器处于合闸时柜体门板不能开启(即与门联锁)。操纵杆与断路器中心的相对尺寸及安装尺寸见下图（图上方为进线端）：

Features:

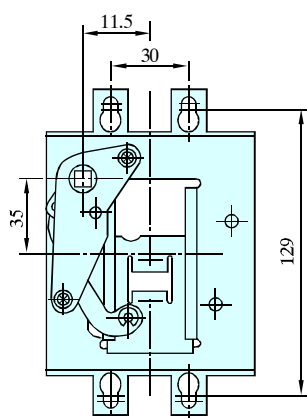
The operator adopt a unique struture design and transmission,through MCCB handle can make breaker close、open and re-trip.flexible operation, stable operation of power in small,easy to install,the institution's overall performance and quality are superior to other similar products.

Usege:

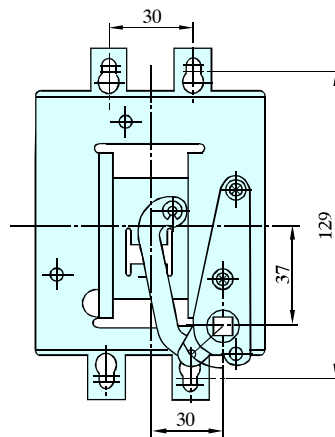
Rotary handle through the realization of a with drawable cabinets,distribution cabinets,power boxes,such as operation in the panel request. And to ensure that when breaker closing in the door cabinets can not be opened(that is with the door interlocking). Handle operator type,relevant dimensions and mounting dimensions of shaft with breaker center,see following diagram(upper diagram position is coming):

● 配CM1EL-100三极、四极的操作机构

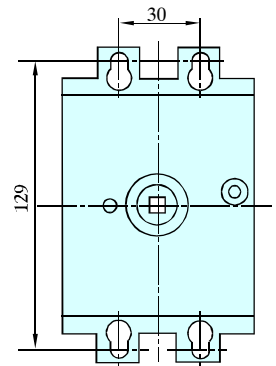
Operator of CM1EL-100(three/four poles)



CZE-100A



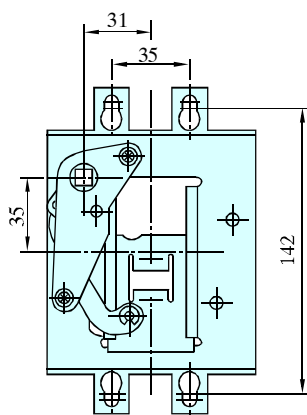
CZE-100B



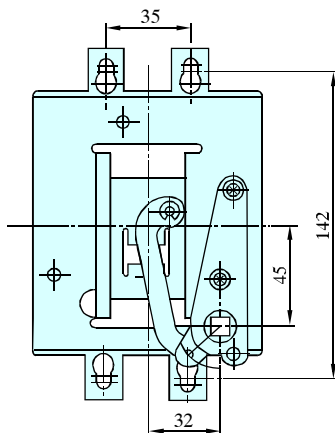
CZE-100C

● 配CM1EL-250三极、四极的操作机构

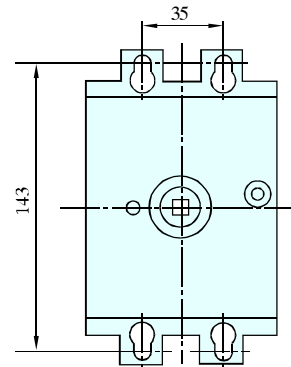
Operator of CM1EL-250(three/four poles)



CZE-225A



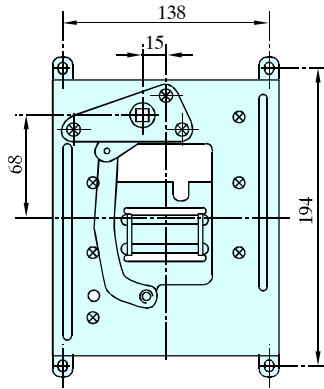
CZE-225B



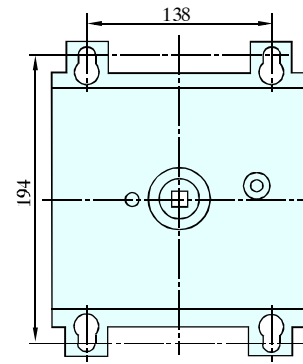
CZE-225C



- 配CM1<sub>EL</sub>-400三极的操作机构  
Operator of CM1<sub>EL</sub>-400(three poles)

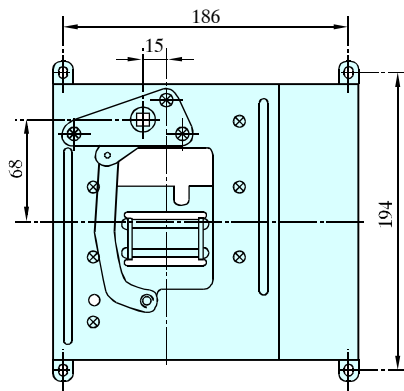


CZE-400A

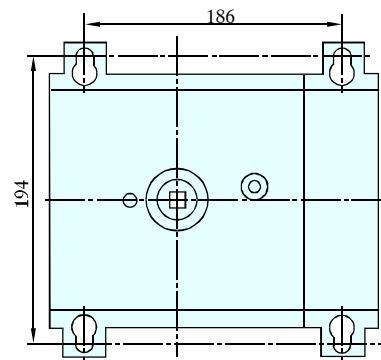


CZE-400C

- 配CM1<sub>EL</sub>-400四极的操作机构  
Operator of CM1<sub>EL</sub>-400(four poles)

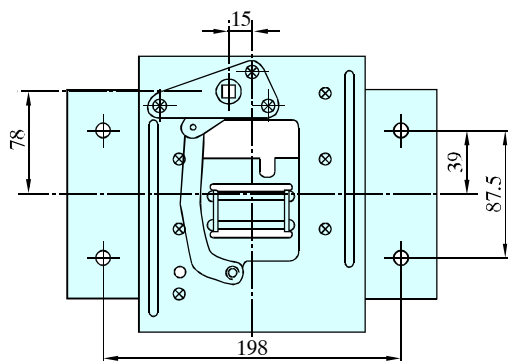


CZE-400B

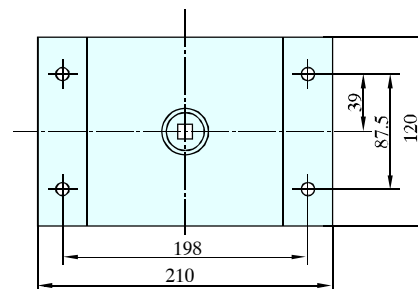


CZE-400D

- 配CM1<sub>EL</sub>-800三极的操作机构  
Operator of CM1<sub>EL</sub>-800(three poles)



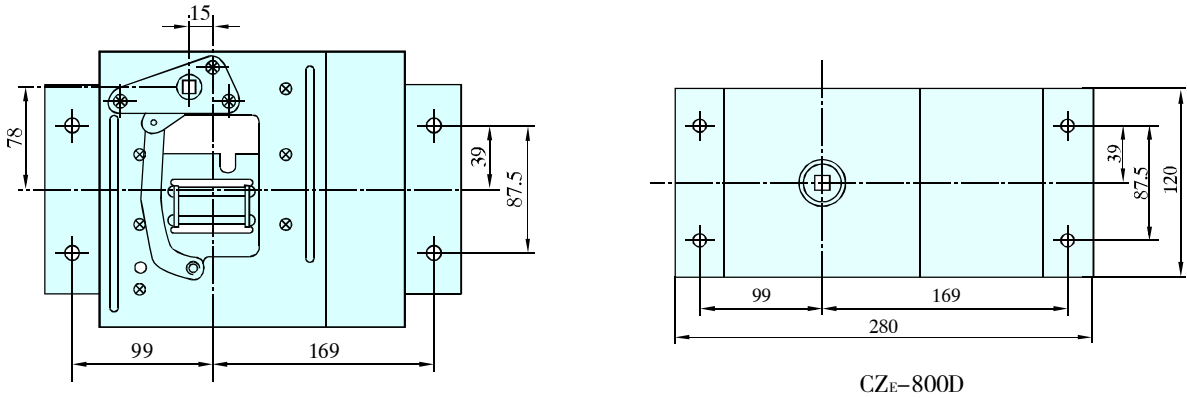
CZE-800A



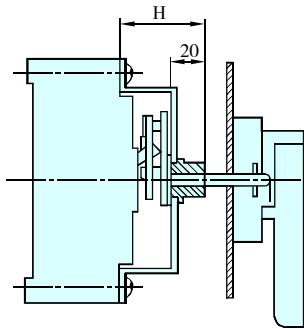
CZE-800C



● 配CM1<sub>EL</sub>-800四极的操作机构  
Operator of CM1<sub>EL</sub>-800(four poles)



操作机构高度  
Height of the operator



| 安装操作机构的断路器型号<br>Mech type of installing operator | H (mm)      |
|--|-------------|
| CZE-100A/CZE-100B/CZE-100C                       | 45/45/49    |
| CZE-225A/CZE-225B/CZE-225C                       | 47/47/55    |
| CZE-400A/CZE-400B/CZE-400C/CZE-400D              | 61/61/76/76 |
| CZE-800A/CZE-800B/CZE-800C/CZE-800D              | 55/55/68/68 |

操作机构可配用二种操作手柄：一种为“F”型方形手柄；另一种为“A”型圆形手柄，其门板开孔尺寸见下图。操作手柄特点：

1. 当断路器在合闸状态下时，不能开启柜门；

Handle operator can be operated with two kinds of handles: one for the "F" type; another for the "A" type, cutout door dimensions shown below.

Operating handle features:

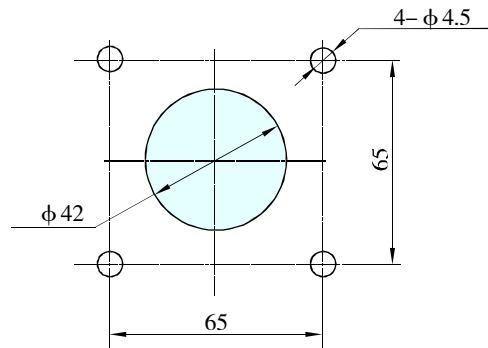
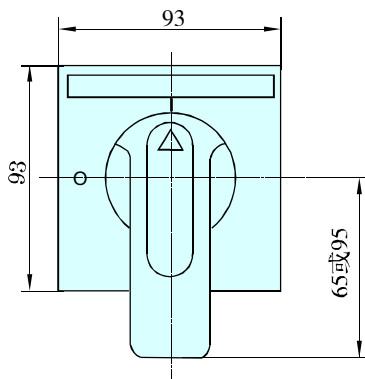
1. When circuit breaker in the closing state, can not open the door;

2. 若操作手柄或机构在合闸状态时有故障，可通过操作手柄上的紧急解锁装置开启柜门；

3. 对应不同规格的机构，相配套的手柄，其门板开孔一致。

2. Even if the handle or mechanism on the closing status in the fault, operating handle can unlock the device to open the emergency doors.

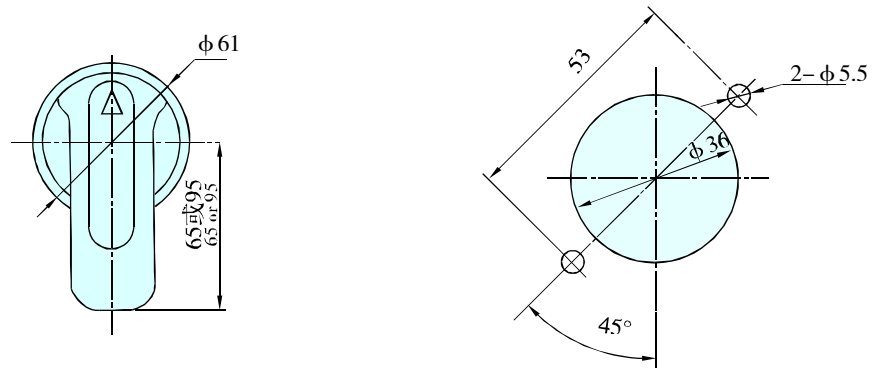
3. Correspond to different specifications of mechanism, matching handle, the door cutout the same.



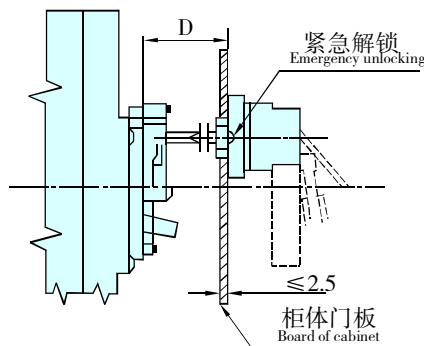
“F”型方形手柄外形及门板开孔尺寸（开孔中心离铰链距离不小于200mm）

F type square handle outline and door cutout dimensions (cutout center distance from the hinge is not less than 200mm)





“A”型圆形手柄外形及门板开孔尺寸（开孔中心离铰链距离不小于200mm）  
A type circular outline and door cutout dimensions (cutout center distance from the hinge is not less than 200mm)



注：方轴长度 $D=150\text{mm}$ ，长度大于 $150\text{mm}$ 在订货时注明；

敬告用户：手动操作机构，须向本公司配套订货保证质量。如用户自行购买，装配后发生的一切不良后果本公司不能负责。

Note: The shaft length of  $D = 150\text{mm}$ , length of more than  $150\text{mm}$  when the time specified in the order.

Advice to users: handle operator should be placed it order with the company for complete set. If bought by yourselves, and harmful effects took place after mounted, the company would be not responsible for it.



## 不同额定电流的连接导线参考截面

### Cross-section wiring conductor corresponding rated current

- 不同额定电流的连接导线的参考截面见表

Cross-section of wire conductor corresponding rated current see table

|   |    |    |     |     |     |
|---|----|----|-----|-----|-----|
| 额定电流 $I_n$ (A)<br>Rated current         | 32 | 63 | 100 | 250 | 400 |
| 导线截面积( $\text{mm}^2$ )<br>Cross-section | 6  | 16 | 35  | 120 | 240 |

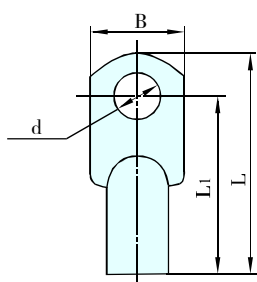
| 额定电流(A)<br>Rated current | 电缆<br>Cable                           |              | 铜排<br>Copper busbar |              |
|--------------------------|---------------------------------------|--------------|---------------------|--------------|
|                          | 截面积( $\text{mm}^2$ )<br>Cross-section | 数量<br>Amount | 尺寸size (mm × mm)    | 数量<br>Amount |
| 630                      | 185                                   | 2            | 40 × 5              | 2            |
| 800                      | 240                                   | 2            | 50 × 5              | 2            |



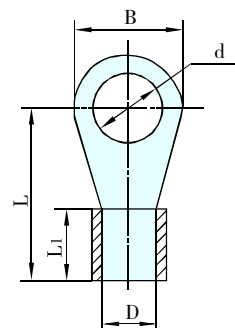
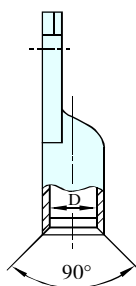
## 接线端子型号 Terminal type

- 接线端子分JGC及JBC二种型号供用户选用

Two type of terminal are supplied: JGC and JBC



JGC型  
Type JGC



JBC型  
Type JBC

| 型号<br>Type             | 额定电流(A)<br>Rated current | 导线截面积( $\text{mm}^2$ )<br>Cross-section | 端子型号<br>Terminal type | B    | L    | L1   | D    | d    |
|------------------------|--------------------------|---|-----------------------|------|------|------|------|------|
| CM1 <sub>EL</sub> -100 | 32                       | 6                                       | JBC6-8                | 15   | 24.5 | 10   | φ3.5 | φ8.2 |
|                        | 63                       | 16                                      | JGC16-8               | 12.5 | 41   | 33.5 | φ6   | φ8.2 |
|                        | 100                      | 35                                      | JGC35-8               | 15.5 | 52   | 44.5 | φ8   | φ8.2 |



## FWB1温度报警模块 TEMPERATURE ALARM MODULE

FWB1温度报警模块采用FRG热传感器直接安装在连接点位置在线检测温度，最多监测6路连接位置温度(热传感器连接至温度报警模块背面的输入端子分别为1T、2T、3T、4T、5T、6T)。当监测到连接点温度超过动作温度时，温度报警模块指示灯点亮发出相应报警指示，并且内置的继电器二路输出触头闭合（二路输出端子分别为13、14，23、24），可发出远方报警信号或使断路器跳闸；当监测到连接点温度降至复位温度时，温度报警模块指示灯熄灭并且二路输出触头断开。温度报警模块连接至热传感器的线长为1.5米。

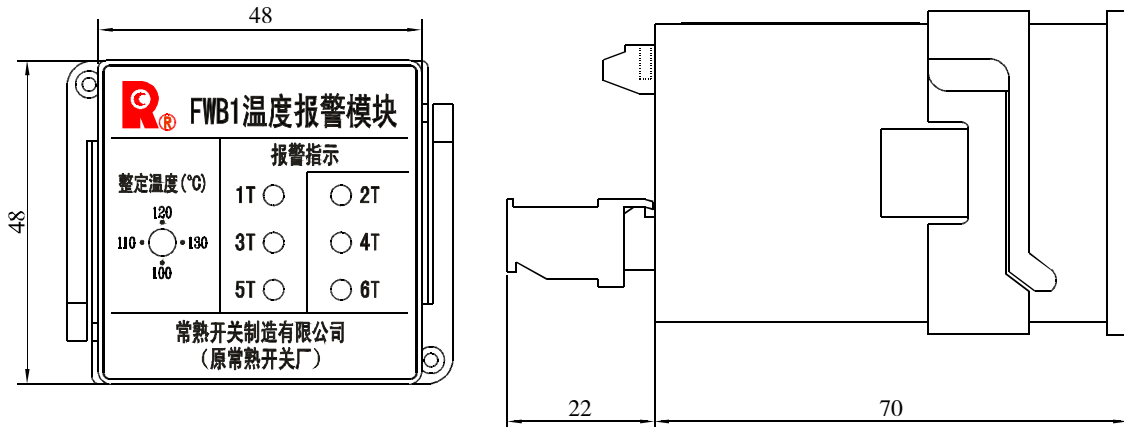
FWB1 temperature alarm module adopts online temperature detection that the FRG heat sensor directly mounted on the connection position. It can detect at most six points connection position (the input terminals on the back of the temperature alarm module, which the heat sensor is connected to, are 1T, 2T, 3T, 4T, 5T, 6T respectively). When detecting the temperature of the connection points is higher than action temperature, the temperature alarm module's directive lights are on and alarming, at that time, the inbuilt relay's 2nd output contact will make (the 2nd output terminals are 13, 14, 23, 24 respectively); when detecting the connection temperature dropping to resetting temperature, the temperature alarm module's directive lights are off and the 2nd output contact will break. The connection wire between the temperature alarm module and the heat sensor is of 1.5m length.

|  |                        |
|--|------------------------|
| 测温范围<br>temperature detection range            | 0~150℃                 |
| 动作温度To<br>action temperature                   | 100/110/120/130℃       |
| 复位温度Tr<br>resetting temperature                | To-5℃                  |
| 精度<br>precision                                | ± 5℃                   |
| 传感器绝缘耐压<br>sensor insulation withstand voltage | AC3500V/1min           |
| 测温点数<br>temperature detection points           | 最多6路 6 points at most  |
| 工作电源<br>operating current                      | AC230V，范围range195~253V |
| 输出触头容量<br>output contact capacity              | 3A/AC250V，3A/DC24V     |
| 工作温度<br>operating temperature                  | - 20℃~+70℃             |

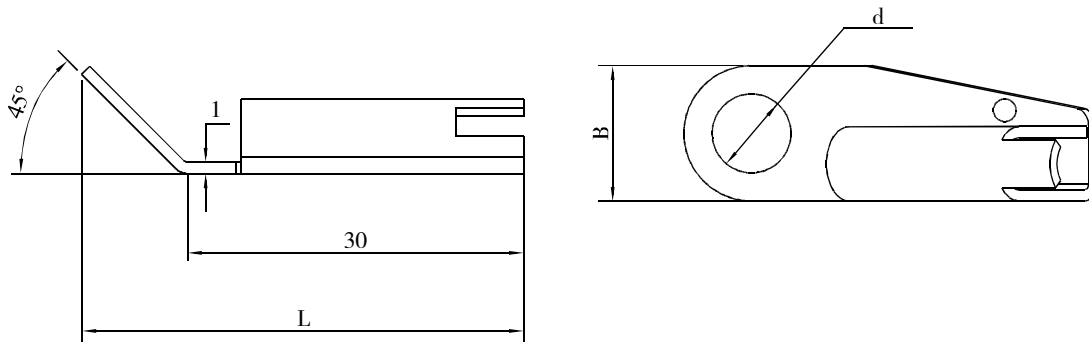


# FWB1温度报警模块 TEMPERATURE ALARM MODULE

- FWB1温度报警模块+FRG热传感器 FWB1 temperature alarm module+FRG heat sensor



FWB1温度报警模块  
Temperature alarm module



FRG热传感器  
Heat sensor

| 热传感器型号<br>heat sensor type | B (mm) | L (mm) | d (mm) |
|----------------------------|--------|--------|--------|
| FRG-7                      | 12     | 40     | φ7     |
| FRG-9                      | 14     | 41     | φ9     |
| FRG-11                     | 16     | 42     | φ11    |
| FRG-13                     | 18     | 44     | φ13    |
| FRG-17                     | 22     | 47     | φ17    |



● 断路器各种特性由制造厂整定，用户在使用中不可随意调整；

● 断路器的额定剩余动作电流、时间，用户可根据实际需要进行调整(专业人员进行)；

● 在主电路通电状态下，对额定剩余动作时间为非延时的断路器，手按模拟剩余电流动作试验按钮应立即脱扣。对延时的断路器，手按试验按钮且保持所调的延时时间值，断路器才脱扣；

● 断路器剩余电流脱扣后，面板上漏电指示按钮向外凸出；

● 带剩余电流报警模块断路器，当发生剩余电流报警后，必须对模块上的复位按钮进行复位才能正常工作；

● 断路器手柄可以处在三个位置，分别标示合闸、分闸、脱扣三种状态，当手柄处于脱扣位置时，应向后扳动手柄，使断路器再扣，然后合闸；

● 在用户遵守正确保管和使用条件下，从制造公司发货之日起，不超过18个月，断路器封印完好，产品如因制造质量问题而发生损坏或不能正常使用时，制造公司负责无偿更换和修理。

● Characteristics of breaker by the factory setting, the user in use can not be adjusted;

● Breaker rated residual operating current and time, the user can be adjusted according to actual needs (professionals);

● Main circuit with current for non-time-delay, breaker, press simulated residual current operating test pushbutton, MCCB should immediately trip. For time-delay, press the button and maintain the value of the delay time, breaker trip;

● After residual breaker tripping, leakage indicating button on panel protruding outward;

● With residual current alarm module breaker, residual current alarm occurred, the button must be reset and MCCB normal work;

● Breaker handle at the three positions, respectively marked closing、opening、tripping three states, when the handle in tripping position, the handle should be pulled after and re-tripped then closing;

● The user to comply with the custody and use of the right conditions, from the manufacturing company from the date of delivery, not more than 18 months, breaker seal intact, due to manufacturing quality products, such as damage or problems often can not use. Manufacturing Company is responsible for unpaid replacement and repair.



用户务必确认对本产品技术资料已有详细了解，并应根据断路器将来使用的场合，按“订货规范”表订货。如用户订货时对剩余电流保护参数不作要求，本公司按“剩余电流保护出厂整定值”表配置。三相四线400V/230V或单相与三相共用的线路，应选用四极断路器。

Make sure the user of this product has a detailed understanding of technical information. And circuit breakers should be based on future use of the occasion, according to the order ordering specification table.

Orders such as user-current protection on the remaining parameters do not make a request, the Company in accordance with the "residual current protection factory setting" table configuration.

400V/230V three-phase four-wire or single phase and three-phase line sharing. Four poles circuit breaker should be selected.



# 订货规范 ORDERING FORM

(请在 \_\_\_\_ 内填上数值, □ 内打√)  
Please fill figures in \_\_\_\_, or sign √ in □

|  |   |  |  |                                       |                                       |                             |
|--|---|--|--|---------------------------------------|---------------------------------------|-----------------------------|
| 用户单位 User units  |   | 订货总数<br>Order amount   |  | 订货日期<br>Order date                    |                                       |                             |
| 规格<br>specification  | 配电型CM1EL - ____ / ____ In= ____ A, 对CM1EL-100、250、400、800<br>Power distribution                                       |  |  |                                       |                                       |                             |
|  | 电动机保护型CM1EL - ____ / ____ 2 ____ In= ____ A, 对CM1EL-100、250、400、800中的In=630A<br>Motor protection                      |  |  |                                       |                                       |                             |
| 接线方式 Connection  | 板前接线 <input type="checkbox"/>   | 板后接线 <input type="checkbox"/>  | 插入式板前接线 <input type="checkbox"/>   | 插入式板后接线 <input type="checkbox"/>      |                                       |                             |
| 电子式过电流<br>脱扣器整定值<br>Electronic overcurrent<br>release setting value  | 过载长延时动作电流 $I_{r1} =$ ____ A   |  | 长延时动作时间 $t_1 =$ ____ s   |                                       |                                       |                             |
|  | 短路短延时动作电流 $I_{r2} =$ ____ $\times I_{r1}$   |  | 短延时动作时间 $t_2 =$ ____ s   |                                       |                                       |                             |
|  | 短路瞬动动作电流 $I_{r3} =$ ____ $\times I_{r1}$  |  |  |                                       |                                       |                             |
|  | 预报警动作电流 $I_{r0} =$ ____ $\times I_{r1}$   |  |  |                                       |                                       |                             |
| 相对应剩余电流<br>脱扣器型式的额<br>定剩余动作电流<br>$I_{\Delta n}$<br>Rated residual operating<br>current for residual<br>current release | U型, 非延时<br>Type U, non-time-delay   | 0.03A <input type="checkbox"/> 0.1A <input type="checkbox"/> 0.3A <input type="checkbox"/> 0.5A <input type="checkbox"/> (对CM1EL-100、CM1EL-250)<br>(For CM1EL-100、CM1EL-250) |  |                                       |                                       |                             |
|  | V型, 非延时、<br>延时可调<br>(标准型)<br>Type V, non-time-<br>delay and time-delay<br>adjustable (standard)                       | 0.1A <input type="checkbox"/> 0.3A <input type="checkbox"/> 0.5A <input type="checkbox"/> (对CM1EL-100、CM1EL-250、CM1EL-400)<br>(For CM1EL-100、CM1EL-250、CM1EL-400)            |  |                                       |                                       |                             |
|  |   | 0.3A <input type="checkbox"/> 0.5A <input type="checkbox"/> 1A <input type="checkbox"/> (对CM1EL-800) (For CM1EL-800)   |  |                                       |                                       |                             |
|  | W型, 非延时、<br>延时可调<br>Type W, non-time-delay<br>and time-delay adjustable   | 0.3A <input type="checkbox"/> 1A <input type="checkbox"/> 3A <input type="checkbox"/> 10A <input type="checkbox"/> (对CM1EL-100、CM1EL-250)<br>(For CM1EL-100、CM1EL-250)       |  |                                       |                                       |                             |
| 剩余电流<br>动作时间<br>Residual current<br>operating time   | 非延时<br>Non-time-delay   | <input type="checkbox"/>   |  |                                       |                                       |                             |
|  | 延时<br>Time-delay  | 2I $\Delta n$ 时极限不驱动时间 $\Delta t$<br>Limiting non-actuating time of 2I $\Delta n$  | 0.1s <input type="checkbox"/>  | 0.2s <input type="checkbox"/>         | 0.5s <input type="checkbox"/>         | 1s <input type="checkbox"/> |
|  |   | 5I $\Delta n$ 时最大断开时间<br>Maximum break time of 5I $\Delta n$   | 0.3s   | 0.5s                                  | 1s                                    | 2s                          |
|  |   | 相对应I $\Delta n$ 时最大断开时间<br>Maximum break time of I $\Delta n$  | 0.5s   | 0.8s                                  | 1.15s                                 | 2.15s                       |
|  |   | 相对应2I $\Delta n$ 时最大断开时间<br>Maximum break time of 2I $\Delta n$  | 0.3s   | 0.5s                                  | 1s                                    | 2s                          |
| 附件<br>Accessories  | 分励脱扣器<br>Shunt release  | AC400V <input type="checkbox"/> AC230V <input type="checkbox"/> DC220V <input type="checkbox"/> DC24V <input type="checkbox"/>   |  |                                       |                                       |                             |
|  | 欠电压脱扣器<br>Under voltage release   | AC230V <input type="checkbox"/> AC400V <input type="checkbox"/>  |  |                                       |                                       |                             |
|  | 漏电报警单元模块<br>Leakage alarm unit module   | AC230V <input type="checkbox"/> AC400V <input type="checkbox"/>  |  |                                       |                                       |                             |
|  | 电动机操作机构<br>Motor operator   | AC230V <input type="checkbox"/> AC110V <input type="checkbox"/> DC220V <input type="checkbox"/> DC110V <input type="checkbox"/> DC24V <input type="checkbox"/>               |  |                                       |                                       |                             |
|  | 手动操作机构<br>Rotary handle operator  | <input type="checkbox"/>   | 操作手柄<br>Operating handle   | F型 <input type="checkbox"/><br>Type F | A型 <input type="checkbox"/><br>Type A |                             |
|  | CM1E专用测试器 <input type="checkbox"/><br>CM1E tester   | 接线端子 JBC <input type="checkbox"/> JGC <input type="checkbox"/><br>Terminal   |  |                                       |                                       |                             |
|  | 连接排 <input type="checkbox"/><br>Connected busbar  | 内部附件接线端子排 <input type="checkbox"/><br>terminal of internal accessories   | 零飞弧罩 <input type="checkbox"/> (仅CM1EL-100、250、400具有)<br>Zero arcing cover (Only for CM1EL-100、250、400) |                                       |                                       |                             |
|  | FWB1温度报警模块 <input type="checkbox"/> 和<br>Temperature alarm module   | 热传感器型号Type<br>数量Number   | FRG-7  | FRG-9                                 | FRG-11                                | FRG-13                      |
| 备注 Note  | V型剩余电流脱扣器为标准型, 订货时不必注明。<br>Type V residual current release is standard type, it's unnecessary to note while ordering. |  |  |                                       |                                       |                             |





## 电子式过电流脱扣器出厂整定值

electronic release factory's setting value

配电型断路器

Distribution breaker

|   |                                  |                          |            |
|---|----------------------------------|--------------------------|------------|
| 过载长延时<br>Overload long-time delay       | 整定电流 $I_{r1}$<br>Setting current | $I_n$                    |            |
|   | 延时 $t_1$<br>Time-delay           | 60s                      |            |
| 短路短延时<br>Short-circuit short-time delay | 整定电流 $I_{r2}$<br>Setting current | $I_{nm}=100、250、400、800$ | $8I_{r1}$  |
|   | 延时 $t_2$<br>Time-delay           | 0.3s                     |            |
| 短路瞬时<br>Short-circuit instantaneous     | 整定电流 $I_{r3}$<br>Setting current | $I_{nm}=100、250、400$     | $12I_{r1}$ |
|   |                                  | $I_{nm}=800$             | $10I_{r1}$ |
| 预报警<br>Pre-alarm                        |                                  | $0.9I_{r1}$              |            |

## 电动机型断路器

motor protection breaker

|   |                                  |   |            |
|---|----------------------------------|---|------------|
| 过载长延时<br>Overload long-time delay       | 整定电流 $I_{r1}$<br>Setting current | $I_n$                                       |            |
|   | 延时 $t_1$<br>Time-delay           | 100s  |            |
| 短路短延时<br>Short-circuit short-time delay | 整定电流 $I_{r2}$<br>Setting current | $10I_{r1}$                                  |            |
|   | 延时 $t_2$<br>Time delay           | 0.3s  |            |
| 短路瞬时<br>Short-circuit instantaneous     | 整定电流 $I_{r3}$<br>Setting current | $I_{nm}=100、250、400、I_{nm}=800A (I_n=630A)$ | $14I_{r1}$ |
| 预报警<br>Pre-alarm                        | 整定电流 $I_{r0}$<br>Setting current | $0.9I_{r1}$                                 |            |

## 剩余电流脱扣器出厂整定值

residual current release factory's setting valuse

| 型号<br>Type  |                       | CM1 <sub>EL</sub> -100 | CM1 <sub>EL</sub> -250 | CM1 <sub>EL</sub> -400   | CM1 <sub>EL</sub> -800 |
|---|-----------------------|------------------------|------------------------|--|------------------------|
| 相对应剩余电流脱扣器型式的额定剩余动作电流 $I_{\Delta n}$<br>Rated residual operating current for residual current release | U型<br>Type U          | 0.03A                  | 0.03A                  | —  | —                      |
|   | V型<br>Type V          | 0.1A                   | 0.1A                   | 0.1A   | 0.3A                   |
|   | W型<br>Type W          | 0.3A                   | 0.3A                   | 1A   | 1A                     |
| 额定剩余动作时间<br>Rated residual operating time   | 非延时<br>Non-time-delay |                        |                        | 延时, $5I_{\Delta n}$ 时最大断开时间 0.3s<br>Time-delay,maximun break time of $5I_{\Delta n}$ is 0.3s |                        |

# 全国一级经销商明细表

## 北京

北京欣凯通机电有限公司 010-66162644  
北京市北方森源电气有限责任公司 010-87581702

## 天津

天津市强强电器科技有限公司 022-83715527

## 上海

上海企开电器设备有限公司 021-56319844  
上海森昊电器有限公司 021-54791857  
上海泰耀机电设备有限公司 021-57428230  
上海华启电气设备有限公司 021-56319844  
上海斐格电气有限公司 021-24205696

## 福建

泉州市恒源电力设备有限公司 0595-22587087  
厦门亿合电器有限公司 0592-5223466

## 浙江

杭州华森电器有限公司 0571-86969090  
杭州天源机电设备有限公司 0571-87244850  
乐清市新格电气有限公司 0577-62727313  
宁波市江东腾辉电器有限公司 0574-87890910

## 安徽

合肥恒祥电气设备安装有限公司 0551-6393319

## 江苏

南京扬力电器有限公司 025-84585297  
南京苏能动力工程设计有限公司 025-85283021  
常州市中环电器有限公司 0519-88867161  
镇江兆丰电器有限公司 0511-88320888  
苏州市机电设备有限责任公司 0512-67202006  
苏州苏新机电设备有限公司 0512-67571866  
苏州市中信机电设备有限公司 0512-65236366  
苏州明大机电有限公司 0512-65833162  
无锡市法德兰电器成套公司 0510-82736734  
盐城市科宇电气有限公司 0515-89800508  
连云港市希门自动化电器设备有限公司 0518-85013959  
徐州泛得电子有限公司 0516-83861527  
南通正源电气有限公司 0513-85030391  
扬州通润电气设备有限公司 0514-87895515  
常熟市中通电力设备有限责任公司 0512-52853511  
常熟市润源电气设备销售有限公司 0512-52110269  
常熟市创达电气物资有限责任公司 0512-52728292  
海安县巨龙工贸有限公司 13328080061

## 山东

莱芜汇鑫实业有限公司 13863410777  
山东亘源电力工程有限公司 0531-86018833  
淄博新能机电设备有限公司 0533-2186118  
济南中机电亿万电器有限公司 0531-85906760  
烟台信谊电气技术有限公司 0535-6105866  
江苏华晟电器设备有限公司山东电气技术中心 0531-88950385

## 江西

江西佳创实业有限公司 0791-8317951

## 吉林

长春市金蟾经贸有限公司 0431-84788961

## 广东

广州市友朋电气设备有限公司 020-34527080  
佛山市君鹏机电设备有限公司 0757-83811990  
佛山市嘉合贸易有限公司 0757-83397660  
东莞市运通泰电气科技有限公司 0769-22028877  
深圳市华冠电器销售有限公司 0755-83928099  
众业达电气股份有限公司(含子公司) 0754-88739922  
汕头市新兴工业配套材料有限公司 0754-88681888

## 湖南

长沙常开电气有限公司 0731-84699925  
长沙市康发电器有限公司 0731-84422858

## 湖北

武汉万千新能电气有限公司 027-87312243  
武汉圣天科技有限公司 027-82706552

## 广西

南宁市德控机电设备有限责任公司 0771-3212829

## 河北

河北华尔电气有限公司 0311-87227761

## 河南

河南中电电器有限公司 0371-66965984  
河南航天机电数字有限公司 0371-63329016

## 四川

成都慧永电器成套设备有限公司 028-68003527

## 陕西

陕西新力源电气有限公司 029-88348089  
西安西菱电器机械设备有限公司 029-88320213

## 云南

昆明惠尔电气有限公司 0871-3835808

## 宁夏

银川同正电气有限公司 0951-6014483

## 甘肃

天水上联电器成套有限公司 0938-8381068

## 山西

山西万里顺贸易有限公司 0351-6521630  
山西常顺电器销售服务有限公司 0351-7023860

## 新疆

新疆德控电气有限公司 0991-5588266

## 辽宁

沈阳市新业物资实业公司 024-22734762  
鞍山市耐特机电系统工程有限公司 0412-5230221

## 黑龙江

哈尔滨北低成套设备有限公司 0451-88387734

## 内蒙古

包头市杰德自动化工程有限公司 0472-6973800  
内蒙古宇欣机电科技有限公司 0471-6512281

## 海南

海南华胜电气设备有限公司 0898-66226803



常熟开关 持续超越

- 国家创新型试点企业
- 国家重点高新技术企业
- 全国企事业知识产权示范单位
- 全国守合同重信用企业
- 国家科学技术进步二等奖获得者

2011.12

## 常熟开关制造有限公司(原常熟开关厂) CHANGSHU SWITCHGEAR MFG. CO., LTD. (FORMER CHANGSHU SWITCHGEAR PLANT)

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SALES DEP. FOR COMPLETE SWITCHGEAR EQUIPMENT :

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