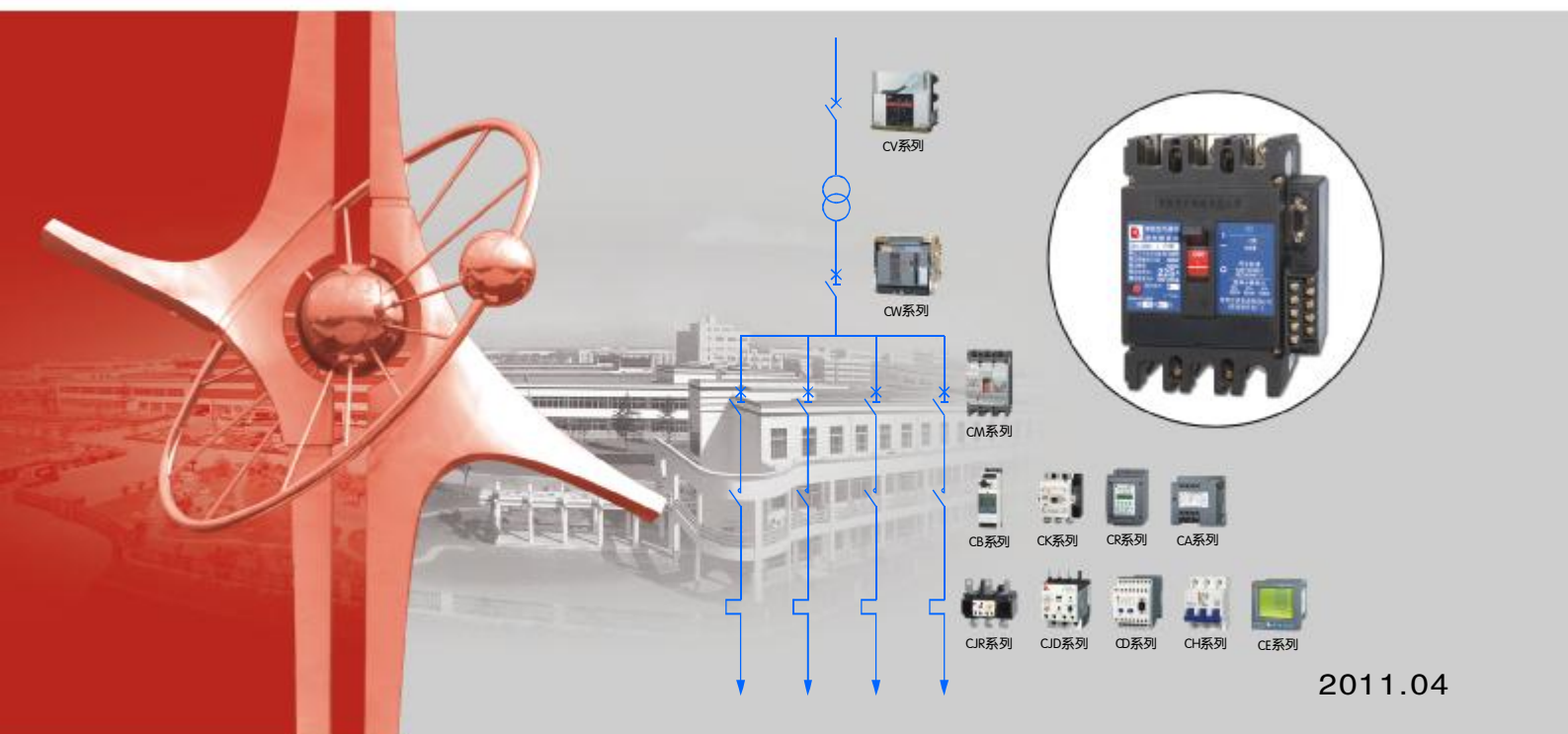




中国驰名商标

# CM1z 系列 智能型可通信塑壳断路器

CM1z SERIES INTELLIGENT COMMUNICATIVE MCCB



2011.04

常熟开关制造有限公司  
(原常熟开关厂)

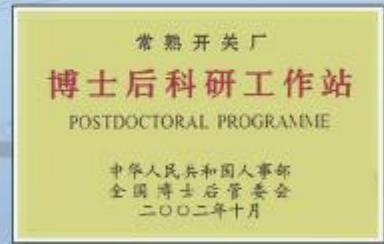
CHANGSHU SWITCHGEAR MFG. CO., LTD.  
(FORMER CHANGSHU SWITCHGEAR PLANT)



中国驰名商标  
China Well-known Trademark



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



博士后科研工作站  
Postdoctoral Programme



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



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



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



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

# 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1500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45%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 300,000 m<sup>2</sup>, with 1500 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 45% 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



●Riyear-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
- 具有体积小、分断高、带隔离等特点

额定极限短路分断能力： $I_{cu}$ ：85kA ~ 100kA

额定运行短路分断能力： $I_{cs}$ ：50kA ~ 65kA

额定短时耐受电流 $I_{cw}$ （1s）：5kA ~ 10kA

- 基于微处理器技术的电子可调脱扣器，具有精确的三段保护功能
- 短路保护具有后备保护，由后备磁脱扣实现快速脱扣，限制了短路电流，并确保断路器可靠分断
- 基于Modbus-RTU协议的通信断路器，通过本公司的CN1DP适配器、CN1EG以太网适配器可应用于Modbus、Profibus、Devicenet、CAN总线和以太网通信网络，方便用户进行多种协议的应用管理
- 通过配置FDM3短消息通知模块，可实现断路器故障脱扣或报警信息无线监视
- 可配FWB1温度报警模块，实现连接点在线超温报警



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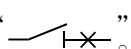


CM1z系列智能型可通信塑壳断路器（以下简称断路器），是本公司采用先进的CAD/CAM/CAE设计、制造技术，研制、开发的新型断路器。其额定绝缘电压为800V，适用于交流50Hz，额定工作电压400V，额定电流至800A的电路中作不频繁转换之用。断路器具有过载长延时反时限、短路短延时反时限、短路短延时定时限、短路瞬时和欠电压保护功能，能保护线路和电源设备不受损坏。

- 断路器具有体积小、分断高、飞弧短、带隔离、抗振动等特点。

- 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，2、4、6接负载线。

- 断路器适用于隔离，符号表示为“”。

- 断路器产品执行下列标准：

IEC60947-1及GB14048.1-2006 总则

IEC60947-2及GB14048.2-2008 断路器

及附录F 带电子过电流保护断路器的附加试

验


- 断路器获国家强制性产品认证“CCC”标志。

CM1z Series Moulded Case Circuit Breakers (hereafter simply referred to as breakers) are one of the new type breakers which have been developed by the company using international advanced design and manufacturing technology. The rated insulation voltage of the breakers is 800V. In the circuit of AC50Hz, rated voltage 400V and rated current up to 800A, the breakers take the role of infrequent turn-on or turn-off. The breakers have overload long-delay inverse time, short-circuit short-delay inverse time, short-circuit short-delay definite time, short-circuit instantaneous and under-voltage protection performances so as to protect the circuit and power appliance from damage.

- CM1z Series MCCBs have the characteristics of compact size, high-breaking capacity, short arcover distance, isolation and anti-vibration etc.

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

- The breakers can't be wired adversely. 1,3 and 5 can only be connected with power line; 2,4 and 6 can only be connected with load line.

- The breaker has isolation function and its corresponding symbol is shown as “”.

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

IEC60947-1 and GB14048.1-2006 General rules

IEC60947-2 and GB14048.2-2008 Circuit breakers

And annex F: additional tests for circuit breakers

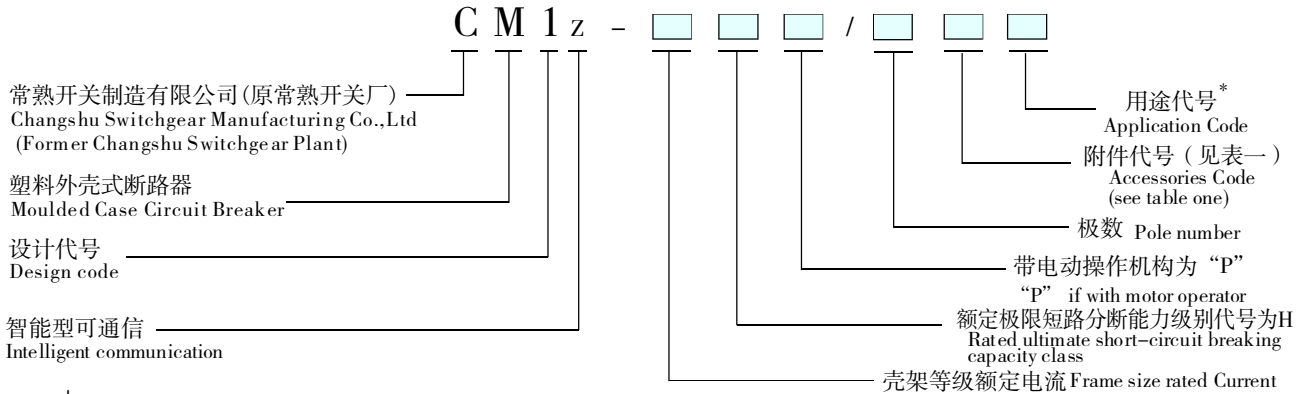
with electrical over-current protection.

- The breakers have obtained the CCC mark of CQC.





● 型号及其含义如下 Type and its meaning



\*注：配用电无代号，保护电动机用2表示。 Note: No code for power distribution type 2 for motor protection type

● 按产品极数分三极与四极。四极产品中性极(N极)的型式为：N极过电流保护电流、时间参数为0(即中性极无保护)或50%或100%自动跟踪相极电流、时间整定值，且N极与相极一起合分(先合后分)。

● 按额定电流分：CM1z-100为32(16~32)、63(32~63)、100(63~100)；CM1z-225为225(100~225)；CM1z-400为400(200~400)；CM1z-630为630(400~630)；CM1z-800为800(630~800)。

● 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；

● 按断路器是否带附件分带附件和不带附件两种：

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、报警触头四种；外部附件有电动操作机构、断路器控制器、通信转接器、免焊连接器、FWB1温度报警模块。

● Can be classified in terms of pole numbers into: three poles and four poles. The pattern of neutral phase (N) for four-pole breakers as follows: protective current of over-current in N pole, time parameter 0 (namely, no protection for neutral phase) or 50% or 100% automatic tracking phase current, setting value of time, and N pole can be turned on or off together with phase poles (first turned on, then off).

● Can be classified in terms of rated current into: 32 (16~32), 63 (32~63), 100 (63~100) for CM1z-100; 225 (100~225) for CM1z-225; 400 (200~400) for CM1z-400; 630 (400~630) for CM1z-630; 800 (630~800) for CM1z-800.

● The wiring method has five ways: front connected、rear connected、plug-in front connected、plug-in rear connected and draw out connected.

● Can be classified into two types in terms of accessory: with or without accessories:

The accessories can be classified into: internal and external accessories. The internal accessories have four kinds of shunt release, under-voltage release, auxiliary contact and alarm contact; the external accessories have power-driven operating mechanism, controller, communication adapter and welding-free adapter FWB1 temperature alarm module.



## 适用工作环境及安装条件 *APPLICABLE ENVIRONMENT AND INSTALLATION CONDITION*

安装地点的海拔不超过2000m;

周围介质温度不高于+40℃和不低于-5℃, 且24小时的平均值不超过35℃(特殊订货除外);

安装地点的相对空气湿度在最高温度为+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%, 对由于温度变化偶尔产生的凝露应采取特殊的措施;

污染等级为3级;

断路器主电路的安装类别为Ⅲ, 不接至主电路的辅助电路和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;

安装在没有雨雪侵袭的地方;

断路器应按产品的使用说明书安装和连线。

The elevation of the installing site doesn't exceed 2000m;

The ambient temperature is not above +40℃ and not below -5℃, and average temperature in 24 hours doesn't exceed 35℃ (except special order);

The relative humidity of the installing site doesn't exceed 50% at the maximum temperature of +40℃; at lower temperature, higher humidity would be permitted, for example, 90% at 20℃, given consideration of the dews due to the temperature change, special measures should be taken;

Pollution grade: 3;

Installing categories: III for the main circuit, II for the auxiliary circuit without being connected with the main circuit and for control circuit alike;

Be suitable in electromagnetic environment A;

There must be not any explosive medium, and any gas which would corrode metal or any non-conducting dust which would destroy the insulation;

The place would not be invaded by rain and snow;

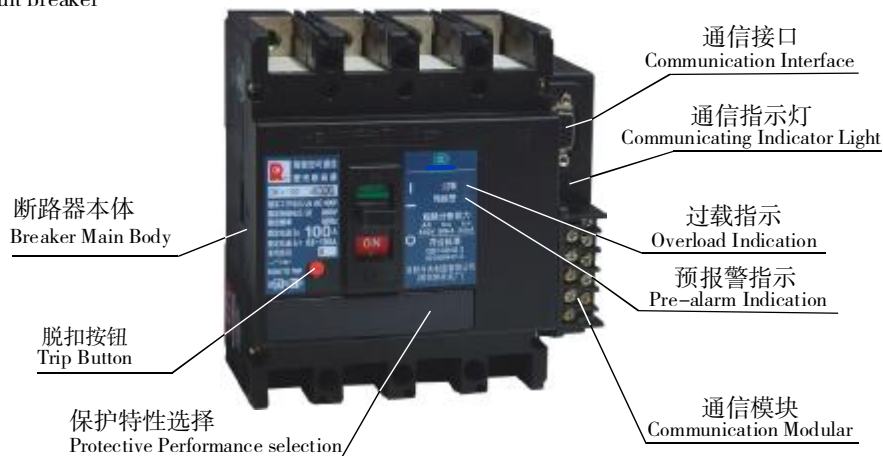
The circuit breaker should be installed and wired by following its instruction.



## 结构简介 *SYNOPSIS OF STRUCTURE*

### ● 断路器外观

View of the circuit breaker





## ● 智能型脱扣器保护特性参数的设定

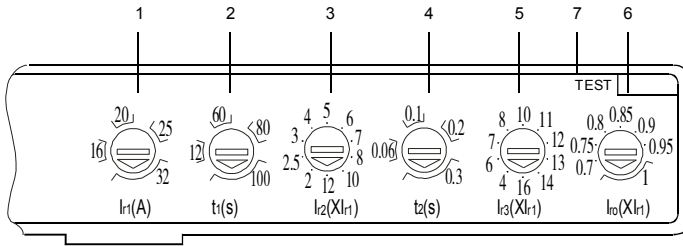
注：出厂时已设置，用户一般不需调整。

## ● Setting Protective Performance Parameters For Intelligent Release

Note: The Conventional settings are given at the time of shipping. Normally, it is not necessary for customer to adjust them.

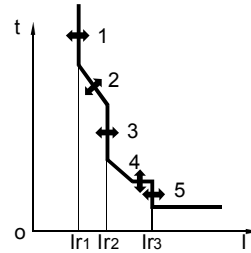
### CM1z-100, In=32A智能型脱扣器

CM1z-100, In=32A Intelligent Release



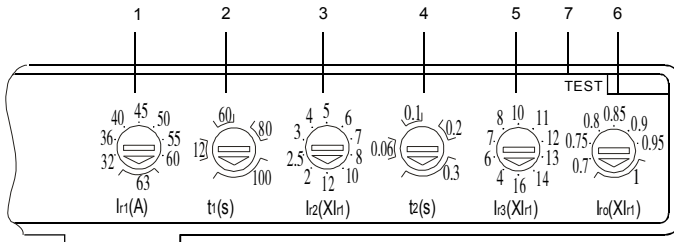
### 智能型脱扣器保护特性曲线

Protective Performance Curve of Intelligent Release



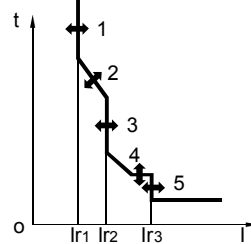
### CM1z-100, In=63A智能型脱扣器

CM1z-100, In=63A Intelligent Release



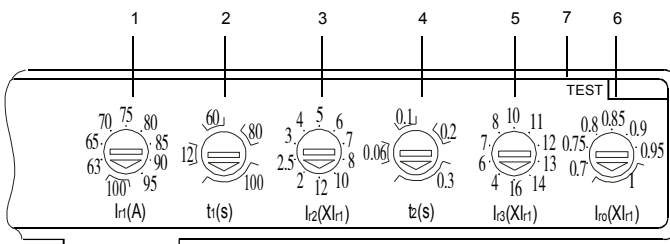
### 智能型脱扣器保护特性曲线

Protective Performance Curve of Intelligent Release



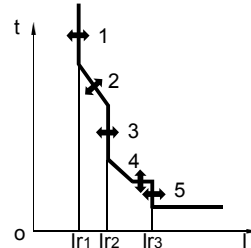
### CM1z-100, In=100A智能型脱扣器

CM1z-100, In=100A Intelligent Release



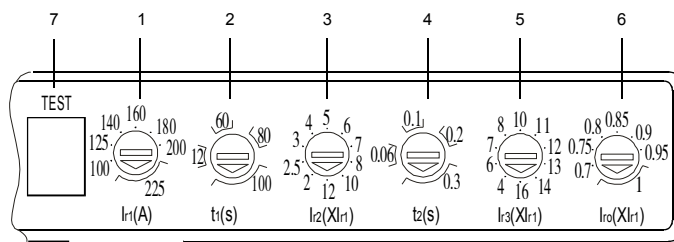
### 智能型脱扣器保护特性曲线

Protective Performance Curve of Intelligent Release



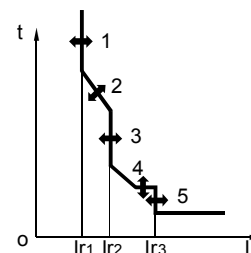
### CM1z-225, In=225A智能型脱扣器

CM1z-225, In=225A Intelligent Release



### 智能型脱扣器保护特性曲线

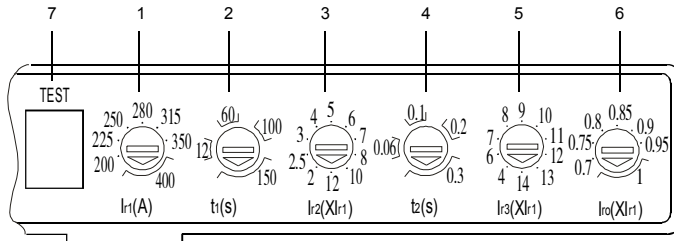
Protective Performance Curve of Intelligent Release





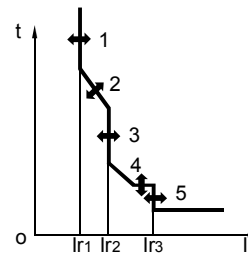
### CM1z-400, In=400A智能型脱扣器

CM1z-400, In=400A Intelligent Release



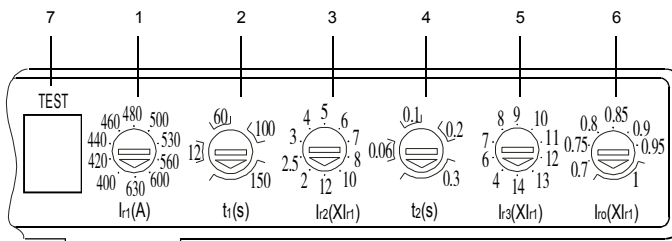
### 智能型脱扣器保护特性曲线

Protective Performance Curve of Intelligent Release



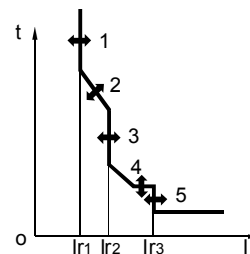
### CM1z-630, In=630A智能型脱扣器

CM1z-630, In=630A Intelligent Release



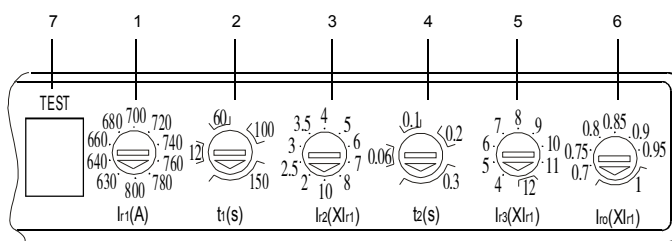
### 智能型脱扣器保护特性曲线

Protective Performance Curve of Intelligent Release



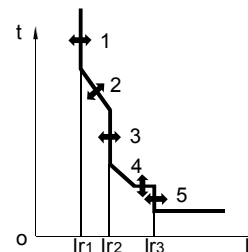
### CM1z-800, In=800A智能型脱扣器

CM1z-800, In=800A Intelligent Release



### 智能型脱扣器保护特性曲线

Protective Performance Curve of Intelligent Release



#### 保护:

- 1-过载长延时动作电流Ir1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t1调整, 可进行4档调整;
- 3-短路短延时动作电流Ir2调整, 可进行10档调整;
- 4-短延时动作时间t2调整, 可进行4档调整;
- 5-短路瞬时动作电流Ir3调整, 可进行8档、9档或10档调整;
- 6-预报警动作电流Ir0调整, 可进行7档调整。

#### 其它功能:

- 7-测试端, 用于检测智能型脱扣器当前整定值。

#### Protection

- 1-For the adjustment of overload long-time delay acting current Ir1, according to different rated current, this knob can be adjusted from 4 stops to 10 stops;
- 2-For the adjustment of long-time acting time t1, this knob can be adjusted 4 stops;
- 3-For the adjustment of short-circuit short-time delay acting current Ir2, this knob can be adjusted 10 stops;
- 4-For the adjustment of short-time acting time t2, this knob can be adjusted 4 stops;
- 5-For the adjustment of short-circuit instantaneous acting current Ir3, this knob can be adjusted 8 stops, 9 stops or 10 stops;
- 6-For the adjustment of pre-alarm acting current Ir0, this knob can be adjusted 7 stops;

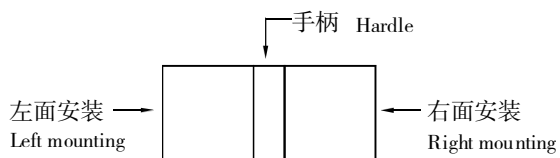
#### Other Functions

- 7-Test terminal, for the testing of present values of intelligent release.



# 内部附件代号 INTERNAL ACCESSORIES CODE

● 附件代号见表一 Accessories Code See Table 1



- 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

表一 Table 1

附件代号 Accessories Code	附件名称 Accessories name	型号 Code		CM1z-100		CM1z-225		CM1z-400		CM1z-630		CM1z-800	
		极数 Pole number		3	4	3	4	3	4	3	4	3	4
308	报警触头 Alarm contact			→ □ □ □	→ □ □ □	→ □ □ □	→ □ □ □	→ □ □ □	→ □ □ □	→ □ □ □	→ □ □ □	→ □ □ □	→ □ □ □
310	分励脱扣器 Shunt Release			→ ● □ □	→ ● □ □	→ ● □ □	→ ● □ □	→ ● □ □	→ ● □ □	→ ● □ □	→ ● □ □	→ ● □ □	→ ● □ □
320	辅助触头 Auxiliary Contact			→ ■ □ □	→ ■ □ □	→ ■ □ □	→ ■ □ □	→ ■ □ □	→ ■ □ □	→ ■ □ □	→ ■ □ □	→ ■ □ □	→ ■ □ □
330	欠电压脱扣器 Under-voltage Release			→ ○ □ □	→ ○ □ □	→ ○ □ □	→ ○ □ □	→ ○ □ □	→ ○ □ □	→ ○ □ □	→ ○ □ □	→ ○ □ □	→ ○ □ □
328	辅助触头 报警触头 Auxiliary Contact Alarm Contact			→ ■ □ □ □	→ ■ □ □ □	→ ■ □ □ □	→ ■ □ □ □	→ ■ □ □ □	→ ■ □ □ □	→ ■ □ □ □	→ ■ □ □ □	→ ■ □ □ □	→ ■ □ □ □

注: 300表示不带表中附件的断路器;

Note: 300 for the circuit breakers without accessories listed in table;



## 主要技术性能指标 MAIN TECHNICAL PERFORMANCE INDEX

● 断路器主要技术性能指标见表二

The Circuit Breaker Main Technical Performance Index See Table 2

表二 Table 2

型号 Type		CM1z-100		CM1z-225		CM1z-400		CM1z-630		CM1z-800		
壳架电流 $I_{nm}$ (A) Frame size Current		100		225		400		630		800		
额定电流 $I_n$ (A) Rated Current		32,63,100		225		400		630		800		
整定电流 $I_{r1}$ (A) Setting current		32(16~32) 63(32~63) 100(63~100)		225(100~225)		400(200~400)		630(400~630)		800(630~800)		
极数 Pole Number		3	4	3	4	3	4	3	4	3	4	
额定绝缘电压 $U_i$ (V) Rated Insulation Voltage		800										
额定工作电压 $U_e$ (V) Rated operational Voltage		400										
额定冲击耐受电压 $U_{imp}$ (V) Rated impulse withstand Voltage		8000										
额定极限短路分断能力 $I_{cu}$ (kA) Rated ultimate short-circuit Breaking capacity		85		85		100		100		100		
额定运行短路分断能力 $I_{cs}$ (kA) Rated service short-circuit Breaking capacity		50		50		65		65		65		
额定短时耐受电流 $I_{ew}$ (kA)/1s Rated Short-time withstand current						5		8		10		
使用类别 Utilization Category		A		A		B		B		B		
飞弧距离 (mm) Arc-over Distance(mm)		$\geq 50(0)**$				$\geq 100(0)**$		$\geq 100$				
电气寿命*(次)times Electrical durability		8000		8000		7500		7500		7500		
机械* 寿命 (次)times Mechanical durability	免维护 Free maintenance	20000		20000		10000		10000		10000		
	维护 Maintenance	40000		40000		20000		20000		20000		
外形尺寸 (mm) Outline dimensions		W	92	122	107	142	150	198	210	280	210	280
		L	150		165		257		280		280	
		H	92		90		106.5		115.5		115.5	
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		○		○		○		○		○		
电动操作机构 Motor operator		○		○		○		○		○		

注：CM1z-800无电动机保护型。

Note: CM1z-800 without the type of electromotor protection.

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

\*Note: for GB14048.1-2006, 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

\*\*注：CM1z-100、225、400分别选装高为6mm、7.5mm、9.3mm的零飞弧罩，实现零飞弧。

\*\*note: can be zero arc venting by installing arc cover of 6mm, 7.5mm, 9.3mm for CM1z-100/225/400.



- 功率损耗见表三 Power Loss See Table 3

表三 Table 3

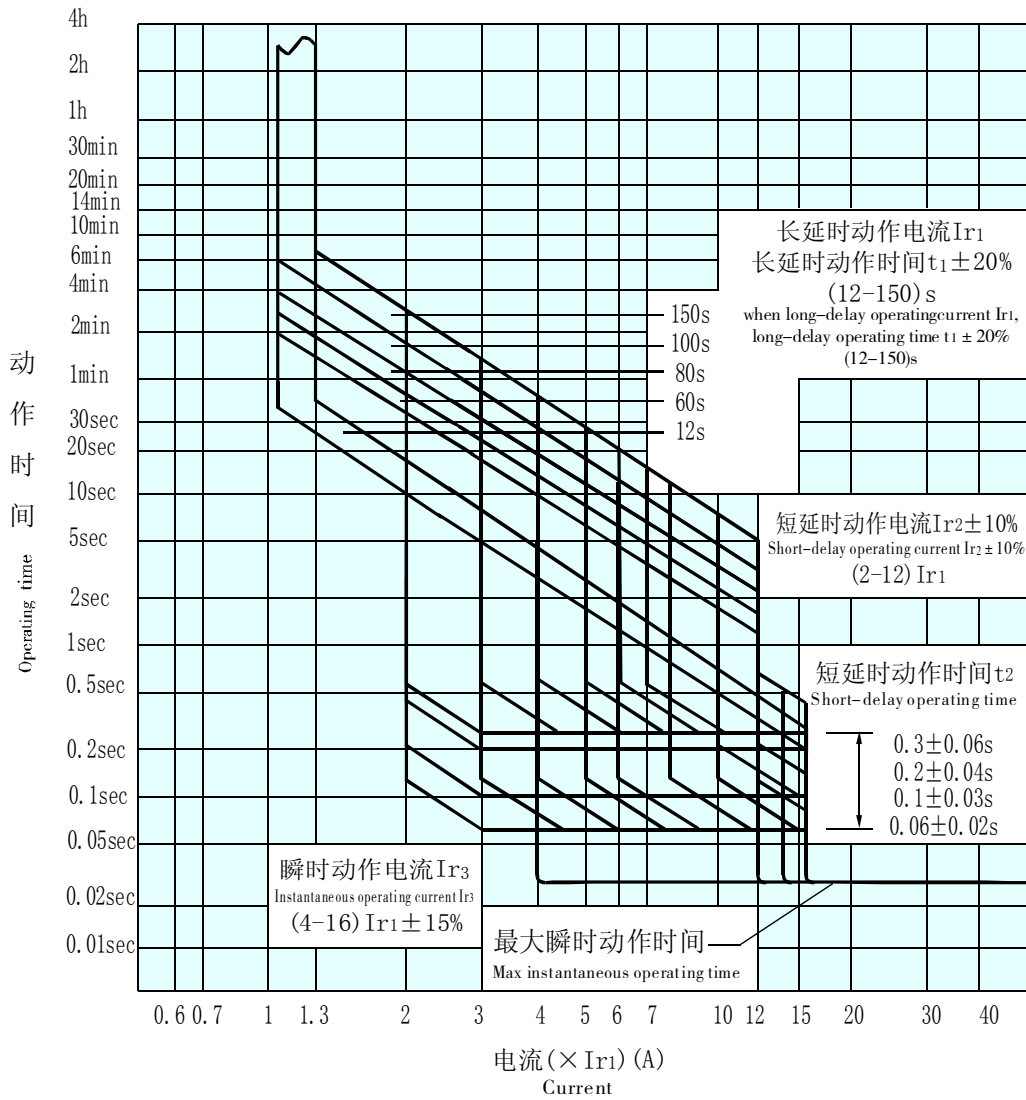
型号 Code	通电电流 (A) Energized	三极/四极总功率损耗(W) Total Power Loss of Three /four poles			
		板前、板后接线 Front/rear connected	插入式板前接线 Plug-in front connected	插入式板后接线 Plug-in rear connected	抽出式板后接线 Draw-out connected
CM1z-100	100	12	12	12.2	——
CM1z-225	225	24.3	24.3	24.5	——
CM1z-400	400	52.8	52.8	53.2	73
CM1z-630	630	71.4	71.4	71.6	91.4
CM1z-800	800	115.2	115.2	115.4	135.4



● 脱扣器特性 Release Feature

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、短路瞬时动作等保护功能，可由用户自行设定组成所需的保护特性。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 the protection features of long-delay overload inverse time, short-circuit short-delay inverse time, short-circuit short-delay definite time, instantaneous short-circuit, etc. It can also adjusted to meet the customers' needs by themselves. See the following chart of release feature.







● 长延时过电流保护反时限动作特性见表四

Long-time delay over-current protection inverse operating characteristics see table 4

表四 Table 4

电 流 Current		动 作 时 间 Operating Time								
配 电 型 Operating distribution Type	1.05I <sub>r1</sub>	2小时内不动作 No operating within 2h								
	1.3I <sub>r1</sub>	≤1h动作 Operating								
	2I <sub>r1</sub>	整定时间t <sub>1</sub> (s) Setting time	I <sub>nm</sub> =100、225A				I <sub>nm</sub> =400、630、800A			
			12	60	80	100	12	60	100	150
电 动 机 保 护 型 Motor-protection Type	1.05I <sub>r1</sub>	2小时内不动作 No operating within 2h								
	1.2I <sub>r1</sub>	≤1h动作 Operating								
	1.5I <sub>r1</sub>	动作时间T <sub>1</sub> (s) Operating time	I <sub>nm</sub> =100、225A				I <sub>nm</sub> =400、630A			
			21.3	107	142	178	21.3	107	178	267
	2I <sub>r1</sub>	整定时间t <sub>1</sub> (s) Setting time	12	60	80	100	12	60	100	150
	7.2I <sub>r1</sub>	动作时间T <sub>1</sub> (s) Operating time	0.93	4.63	6.17	7.72	0.93	4.63	7.72	11.6
	脱扣级别 Trip class	-	10A	10	20	-	10	20	30	
注：1.动作时间符合 $I^2T_1=(2I_{r1})^2t_1$ ( $1.2I_{r1} \leq I < I_{r2}$ )； 2.动作时间允差为±20%； 3.可返回时间不小于动作时间的70%。 Note: 1. Acting time in line with $I^2T_1=(2I_{r1})^2t_1$ 2. Acting time tolerance: ±20% 3. Returnable time not less than 70% acting time.										

● 短延时过电流保护特性见表五

Short-time delay over-current protection characteristics see table 5

表五 Table 5

电 流 Current		动 作 时 间 Operating Time					
I <sub>r2</sub> ≤ I < 1.5I <sub>r2</sub>		反时限 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 时 限 Definite	整定时间t <sub>2</sub> (s) Setting time	0.06	0.1	0.2	0.3	
		允差(s) Allowable Tolerance	±0.02	±0.03	±0.04	±0.06	
		可返回的时间(s) Returnable time			0.14	0.21	

● 电动机用断路器的三相不平衡保护功能

三相不平衡保护用不平衡度 (I<sub>max</sub>-I<sub>min</sub>)/I<sub>max</sub>表示，从30%~70%可选，0代表关闭不平衡功能；不平衡动作时间范围为1~255s，0为只报警不动作。

注：用户只能通过上位机（见P26页）查询、设定三相不平衡保护参数，因此当断路器不与上位机组网并需此功能时，用户在订货时必须按“订货规范”表注明。

● Three-phase disequilibrium protection of motor-protection type

Disequilibrium level (I<sub>max</sub>-I<sub>min</sub>)/I<sub>max</sub> for three-phase disequilibrium protection, optional from 30% to 70%, 0 stands for the stoppage of disequilibrium protection; Time range of response due to disequilibrium from 1 to 255s, 0 stands for no acting but alarm.

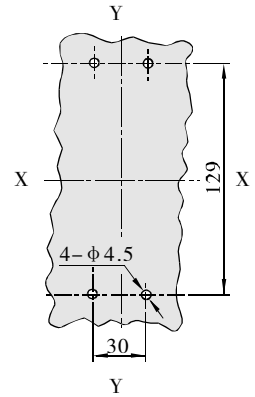
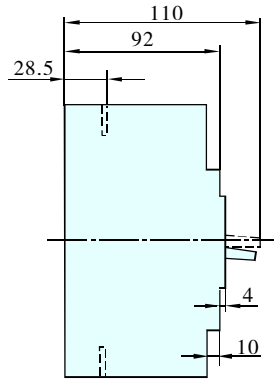
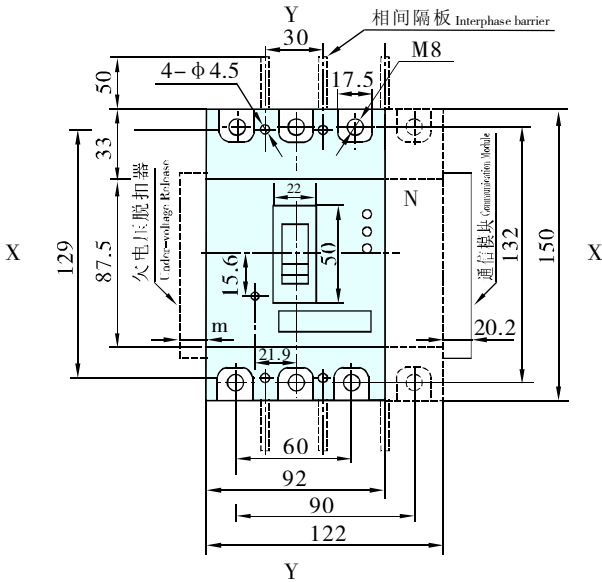
Note: The customers can check out and set the parameters of three-phase disequilibrium protection by the upper-level computer, therefore, when the circuit breaker is not networked with the upper-level computer and this function is available, the customers have to make its indication according to "Ordering Notice" when making order.



# 外形尺寸及安装尺寸 Outline Dimensions and Installation Dimensions

CM1z-100板前接线 (三极、四极)  
X-X、Y-Y为三极断路器中心

X-X Y-Y as the center of three poles breaker  
Front connected(three, four poles)



欠电压脱扣器厚度:

C型 m=21

The width of under-voltage release

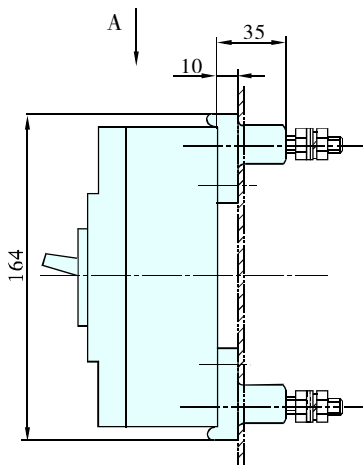
Type m=21

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

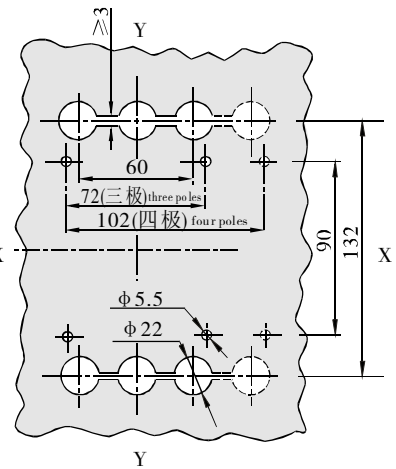
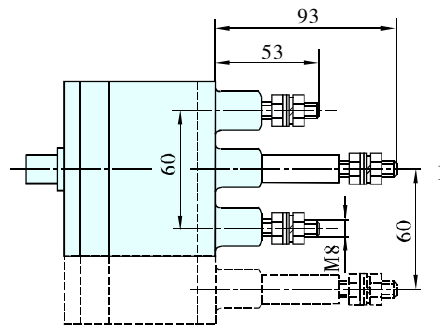
CM1z-100板后接线 (三极、四极)  
X-X、Y-Y为三极断路器中心

Rear connected (three, four poles)

X-X、Y-Y as the center of three poles breaker



A向 direction



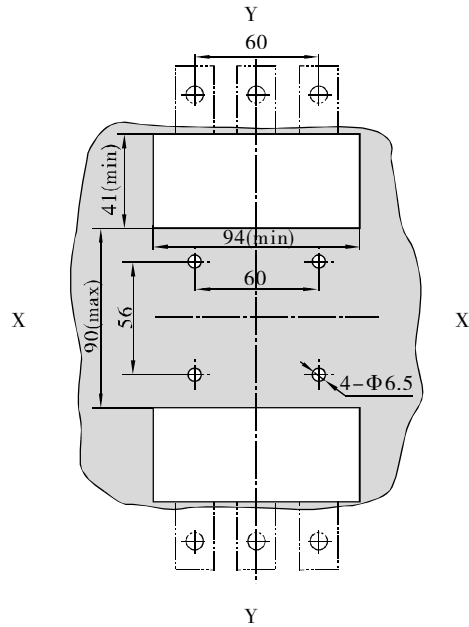
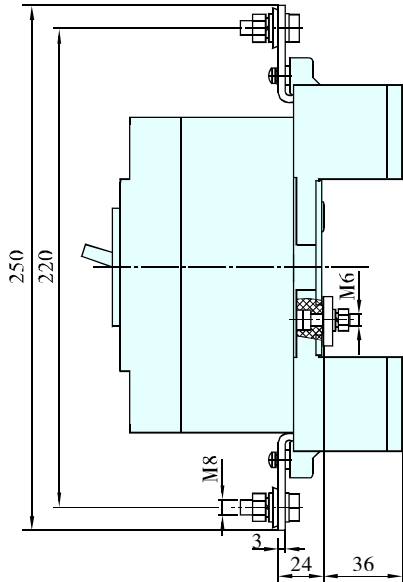
板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of rear connected



## 外形尺寸及安装尺寸 *Outline Dimensions and Installation Dimensions*

CM1z-100插入式板前接线 (三极)  
X-X、Y-Y为三极断路器中心

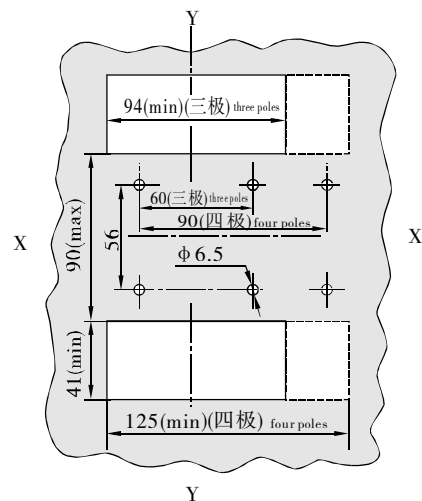
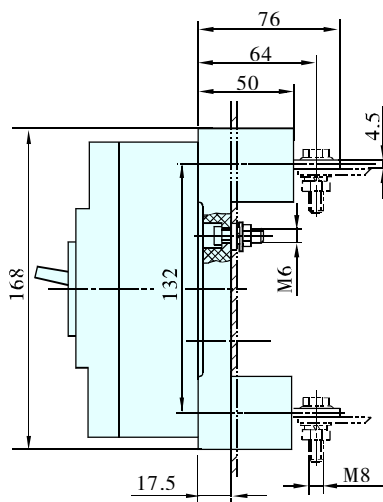
Plug-in front connected(three poles)  
X-X、Y-Y as the center of three poles breaker



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

CM1z-100插入式板后接线 (三极、四极)  
X-X、Y-Y为三极断路器中心

Plug-in rear connected(three, four poles)  
X-X、Y-Y as the center of three poles breaker



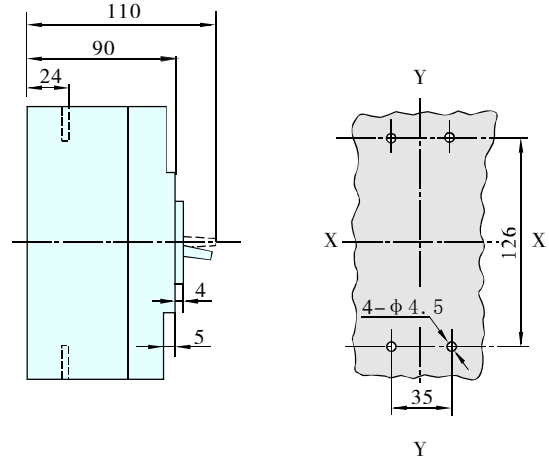
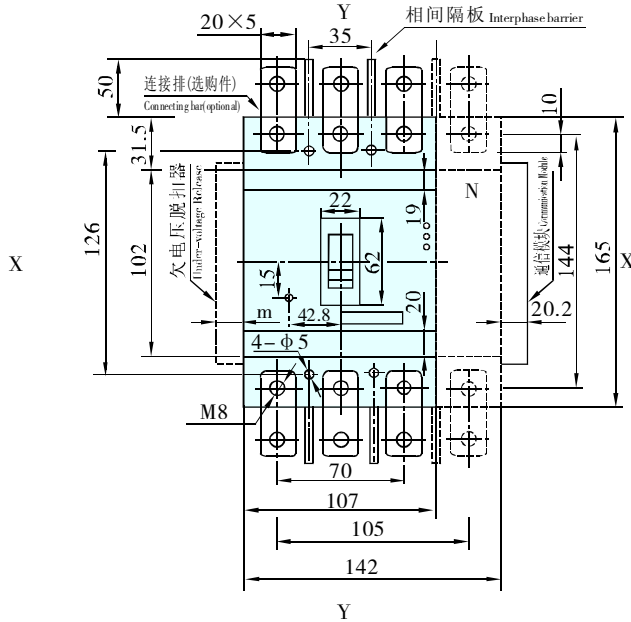
插入式板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in rear connected



## 外形尺寸及安装尺寸 *Outline Dimensions and Installation Dimensions*

CM1z-225板前接线（三极、四极）  
X-X、Y-Y为三极断路器中心

Front connected(three、 four poles)  
X-X Y-Y as the center of 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:

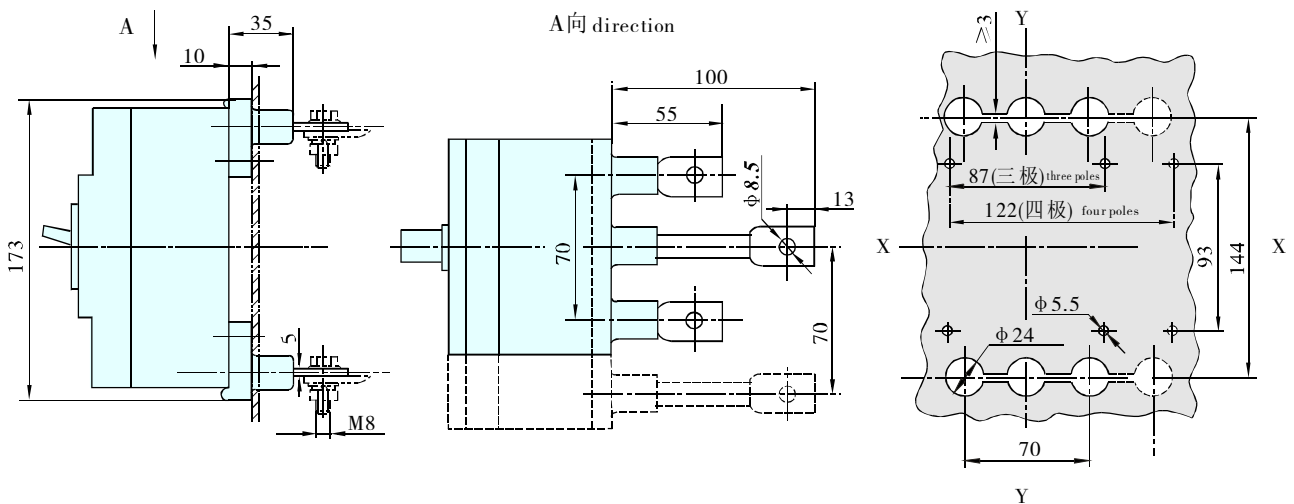
C型 m=21

The width of under-voltage release

Type m=21

CM1z-225板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心

Rear connected (three、 four poles)  
X-X、 Y-Y as the center of three poles breaker



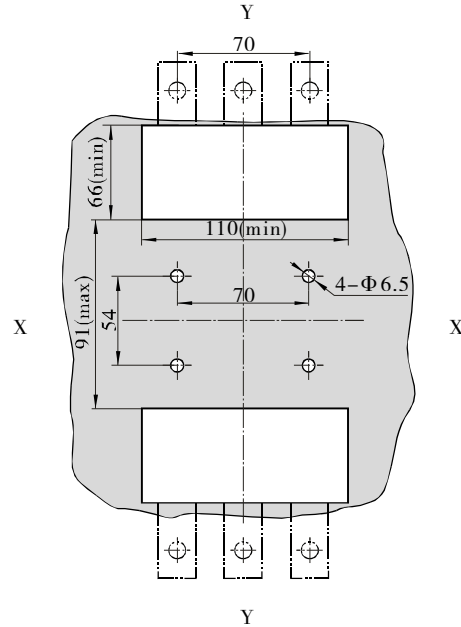
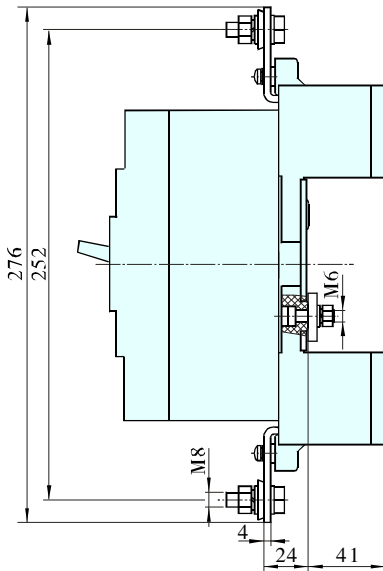
板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of rear connected



## 外形尺寸及安装尺寸 *Outline Dimensions and Installation Dimensions*

CM1z-225插入式板前接线（三极）  
X-X、Y-Y为三极断路器中心

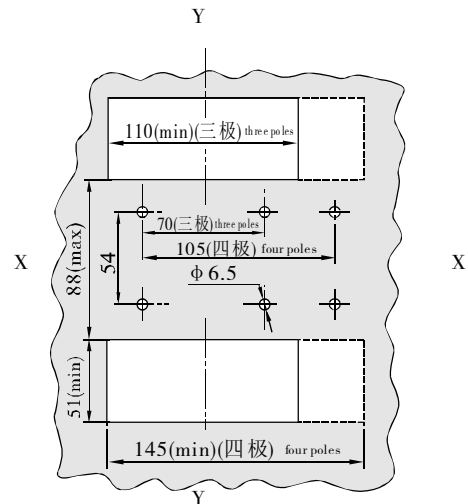
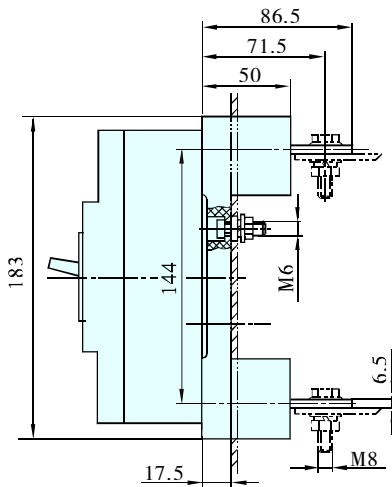
Plug-in front connected(three poles)  
X-X、Y-Y as the center of three poles breaker



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

CM1z-225插入式板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心

Plug-in rear connected(three、four poles)  
X-X、Y-Y as the center of three poles breaker



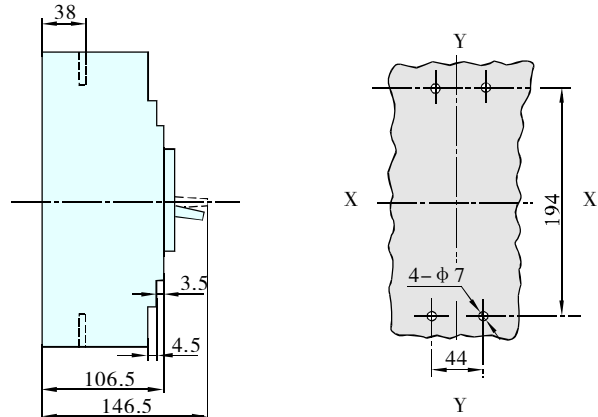
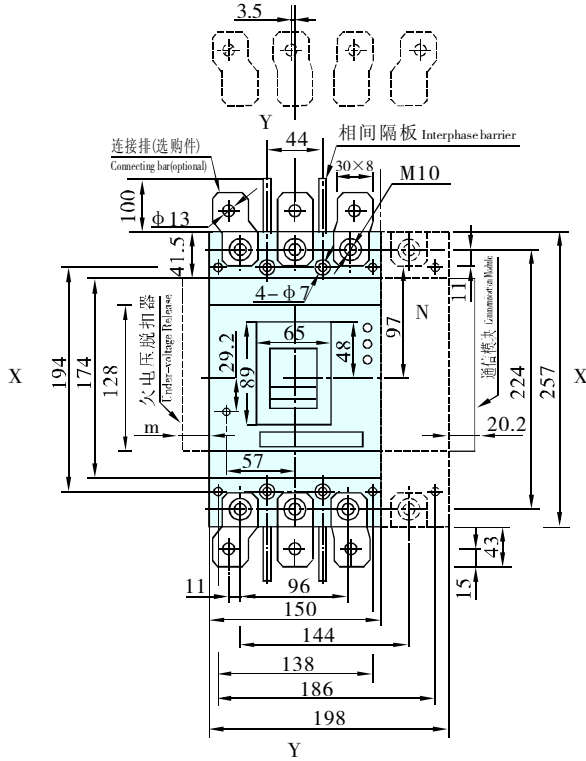
插入式板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in rear connected



## 外形尺寸及安装尺寸 *Outline Dimensions and Installation Dimensions*

CM1z-400板前接线（三极、四极）  
X-X、Y-Y为三极断路器中心

Front connected(three、 four poles)  
X-X Y-Y as the center of 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:

C型 m=21

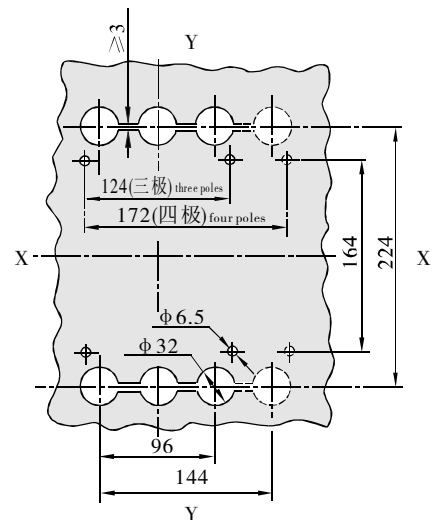
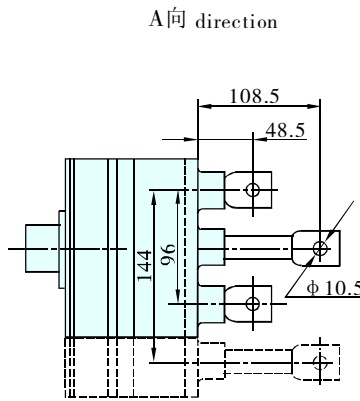
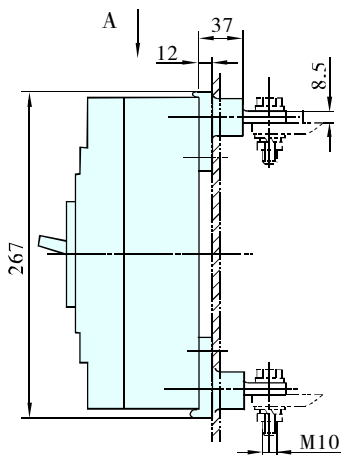
The width of under-voltage release

Type m=21

CM1z-400板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心

Rear connected (three、 four poles)

X-X、 Y-Y as the center of three poles breaker



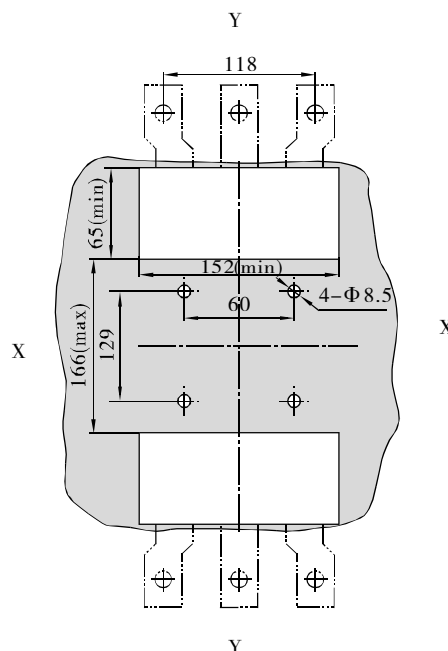
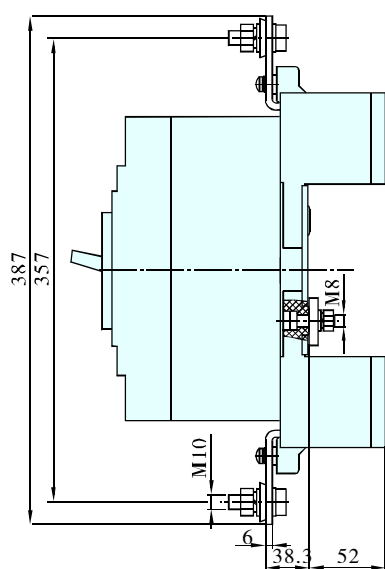
板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of rear connected



## 外形尺寸及安装尺寸 *Outline Dimensions and Installation Dimensions*

CM1z-400插入式板前接线（三极）  
X-X、Y-Y为三极断路器中心

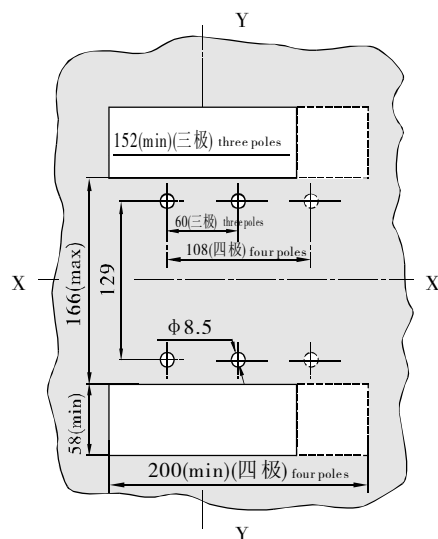
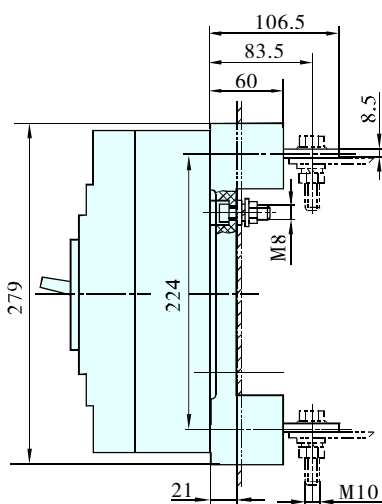
Plug-in front connected(three poles)  
X-X、Y-Y as the center of three poles breaker



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

CM1z-400插入式板后接线（三极、四极）  
X-X、Y-Y为三极断路器中心

Plug-in rear connected(three, four poles)  
X-X、Y-Y as the center of three poles breaker



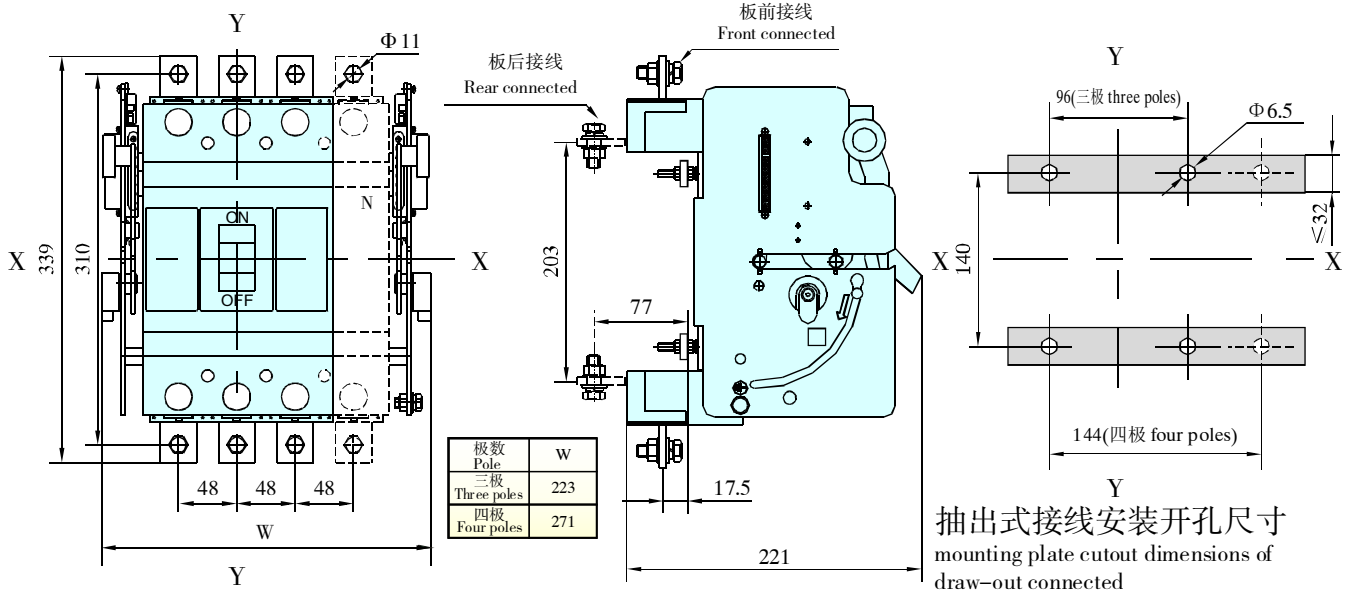
插入式板后接线安装板开孔尺寸  
Mounting plate cutout dimensions of plug-in rear connected



## 外形尺寸及安装尺寸 Outline Dimensions and Installation Dimensions

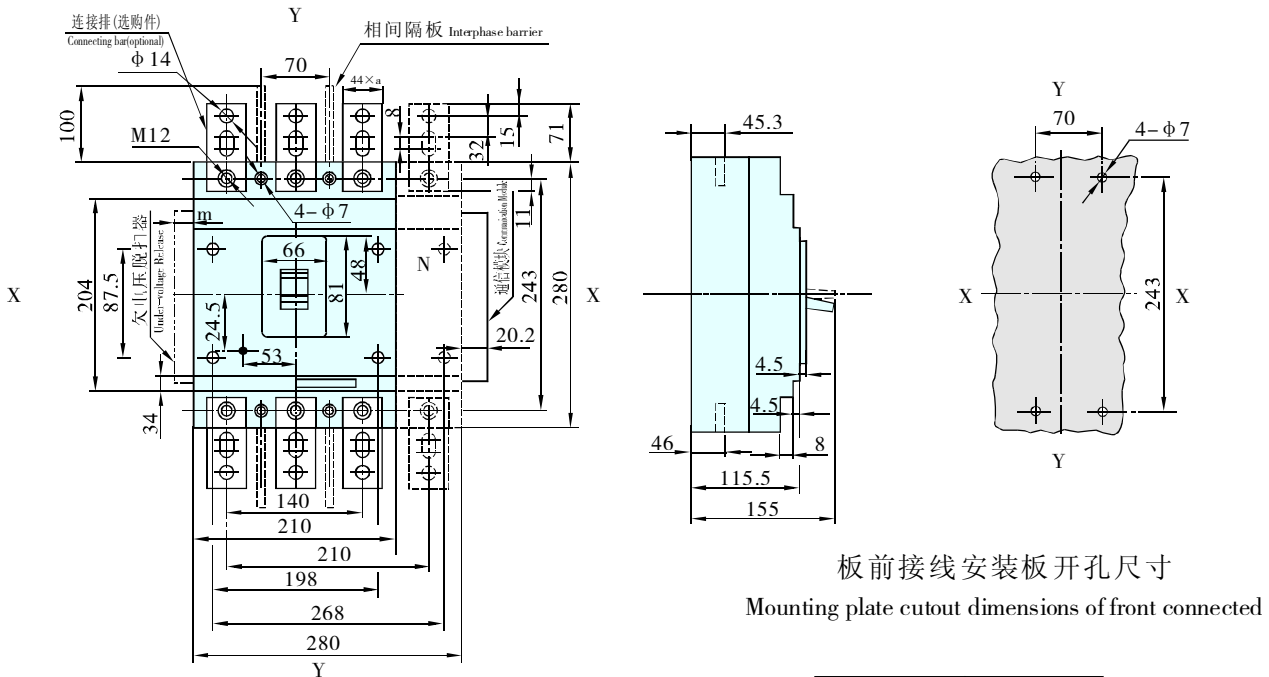
CM1z-400抽出式接线（三极、四极）  
X-X、Y-Y为三极断路器中心

Draw-out connected (three, four poles)  
X-X-Y-Y center for three poles breaker



CM1z-630  
CM1z-800板前接线（三极、四极）  
X-X、Y-Y为三极断路器中心

Front connected (three, four poles)  
X-X Y-Y as the center of three poles breaker



欠电压脱扣器厚度:  
C型 m=0

The width of under-voltage release  
Type m=0

型号 Type	a(mm)
CM1z-630	7
CM1z-800	10





# 外形尺寸及安装尺寸 *Outline Dimensions and Installation Dimensions*

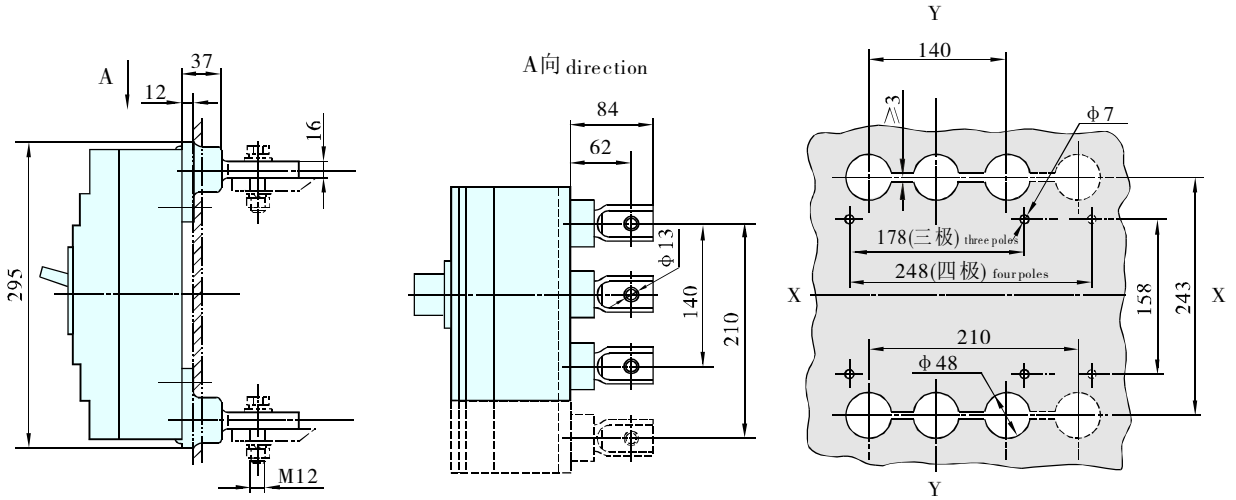
CM1z-630

CM1z-800板后接线（三极、四极）

X-X、Y-Y为三极断路器中心

Rear connected(three poles)

X-X、Y-Y as the center of three poles breaker



插入式板前接线安装板开孔尺寸  
Mounting plate cutout dimensions of rear connected

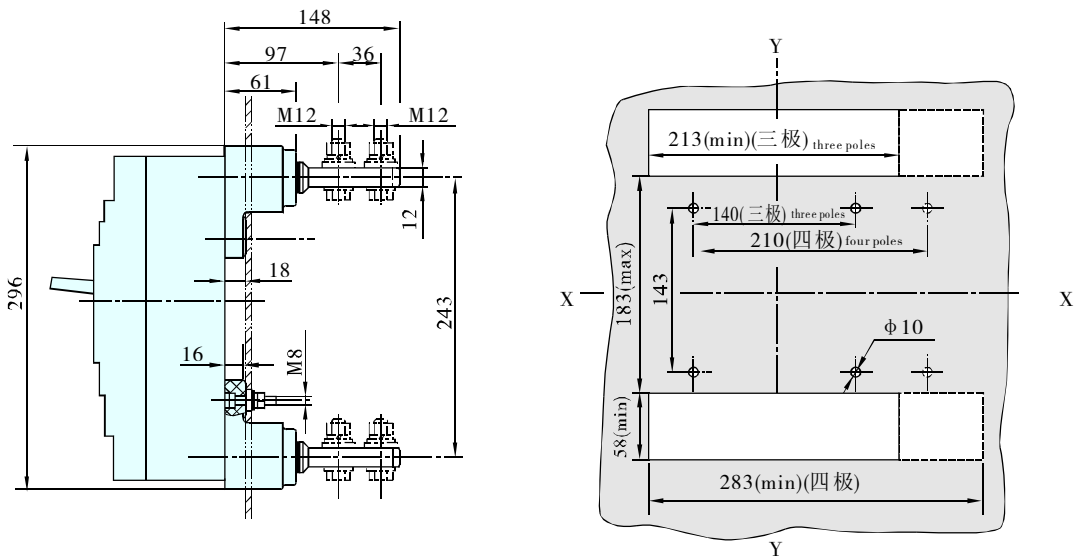
CM1z-630

CM1z-800插入式板后接线（三极、四极）

X-X、Y-Y为三极断路器中心

Plug-in rear connected(three, four poles)

X-X、Y-Y as the center of 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



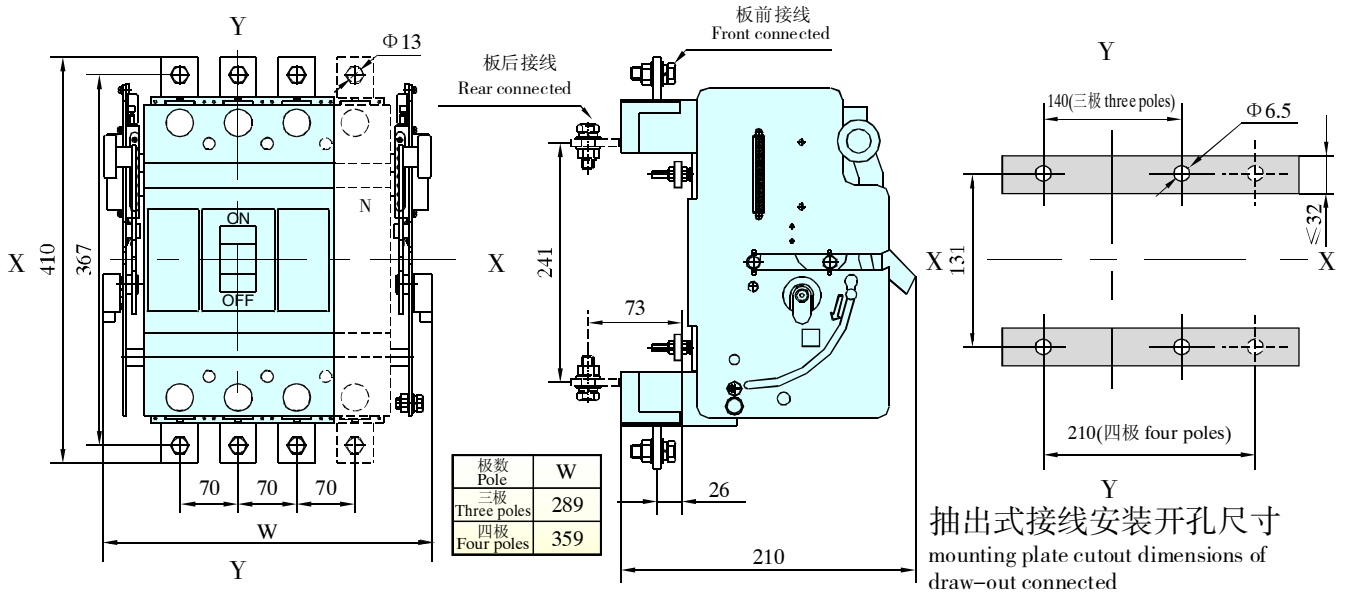
## 外形尺寸及安装尺寸 Outline Dimensions and Installation Dimensions

CM1z-630

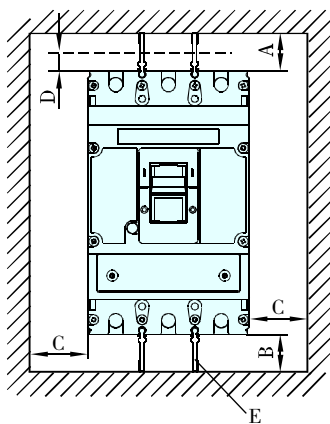
CM1z-800抽出式接线（三极、四极）draw-out connected（three、four poles）

X-X、Y-Y为三极断路器中心

X-XY-Y center for three poles breaker



## 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。

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, should be installed

单位: mm  
Measurement

型号 Type	A		B	C	D
	不需零飞弧罩 without zero arcing cover	带零飞弧罩 with zero arcing cover			
CM1z-100	50	25	25	25	25
CM1z-225	50	25	25	25	25
CM1z-400	100	25	25	25	25
CM1z-630、800	100	—	25	25	25

注: CM1z-100、255、400必须安装相间隔板或零飞弧罩，可选择。

The interphase barriers or zero arcing covers should be installed, may be selected.



1、断路器的内外部附件

根据用户需要断路器附件可直接导线引出，或加装接线端子排（加装接线端子排，用户订货时注明）。

● 欠电压脱扣器，符号○ Under-voltage release

C型：AC50Hz 230V或400V。

外挂欠电压模块接线图

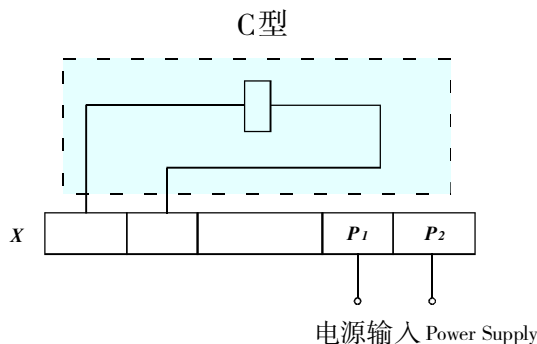
（虚框内为断路器内部附件接线图）

1、Internal and External Accessories

In terms of users' requirements, accessories could lead out by direct wire or by line wiring terminals additionally equipped (please mark out in case of making order)

C Type:

Wiring diagram of the under-voltage module connected externally (Wiring diagram of internal accessories are indicated in the dotted square)



欠电压脱扣器型号 Under-voltage release type	配用断路器Fitting breaker	安装位置 Mounting position	欠电压脱扣器功率(VA) under voltage release power	
			AC230V	AC400V
QTCM1L-100Z	CM1z-100 三极、四极three/four poles	左面 left	2.6	3.3
QTCM1E-225Z	CM1z-225 三极、四极three/four poles	左面 left	3.8	3.3
QTCM1L-400Z	CM1z-400 三极、四极three/four poles	左面 left	3.7	2.7
QTCM1L-630Z	CM1z-630 三极、四极three/four poles	左面 left	2.5	2.8
QTCM1-800Z	CM1z-800 三极、四极three/four poles	左面 left	2.5	2.8

符号说明：X为接线端子排

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

Code indication: X for line wiring terminals

With the operating voltage of 35%~70% of the rated voltage, the under-voltage release should make the circuit breaker trip reliably.

With the operating voltage of 85%~110% of the rated voltage, the under-voltage release should make the circuit breaker be switched on.

In case of the operating voltage less than 35% of the rated voltage, the under-voltage release should prevent the circuit breaker from being switched on.



**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!**

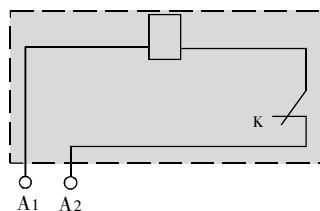
Warning: Only after the under-voltage release is electrified, the circuit breaker can be re-cramped and switched on. Otherwise, the circuit breaker would be damaged. Warning: Only after the under-voltage release is electrified, the circuit breaker can be re-cramped and switched on. Otherwise, the circuit breaker would be damaged.



● 分励脱扣器, 符号 ● Shunt release

分励脱扣器型号 Shunt release type	配用断路器 Fitting breaker	安装位置 Mounting position
FTCM1L-100Z	CM1z-100 三极、四极 three/four poles	左面left
FTCM1L-225Z	CM1z-225 三极、四极 three/four poles	左面left
FTCM1-400Z	CM1z-400 三极、四极 three/four poles	左面left
FTCM1L-630Z	CM1z-630 三极、四极 three/four poles	左面left
FTCM1-800Z	CM1z-800 三极、四极 three/four poles	左面left

接线图 (虚框内为断路器内部附件) Scheme of wiring (the internal accessories in the dotted frame)



电源输入 power supply

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" is the slow motion switch normal-close contact conneted the coil in series in the shunt release. It turns-on or turns-off voluntarily as soon as the breaker on or off.

电压规格: AC50Hz 230V、400V; DC220V、24V。

在额定控制电源电压 $U_s$ 的70~110%之间时, 分励脱扣器应可靠使断路器脱扣。

Voltage rating: AC50Hz 230V or 400V; DC220V or 24V.

The shunt release should make the breaker trip reliably when the operation voltage is 70% ~ 110% of the rated control voltage.

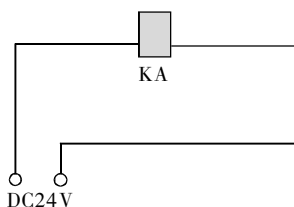
注: 当采用额定控制电源电压DC24V规格分励脱扣器时, 铜导线最大长度 (两根导线中每根长度) 须满足右表条件:

Note: While selecting DC24V (the rated control power-supply voltage) release, the maximum copper wire length (single copper wire) must satisfy requirements right table:

额定控制电源电压 $U_s$ (DC24V) The rated control voltage	导线截面积 Wire area	
	1.5mm <sup>2</sup>	2.5mm <sup>2</sup>
100% $U_s$	150m	250m
85% $U_s$	100m	160m

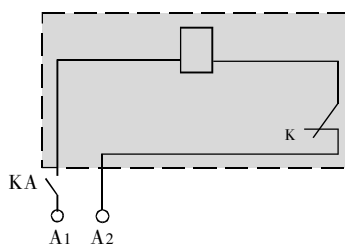
注: 当不满足上述表中要求时, 推荐采用下图进行分励控制回路设计。

Note: While don't satisfy the table, it's recommeaded to design the shunt circuit according to the following diagrammatic sketch.



KA: 为DC24V中间继电器, 触点电流容量为1A

KA: stands for intermediate relay of DC24V, the current capacity of its contact is 1A



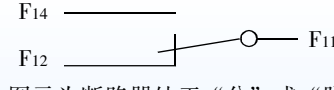
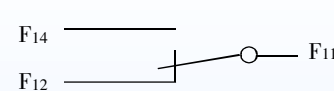
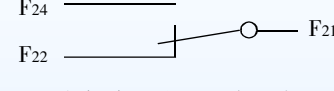
电源输入 power supply




● 报警触头, 符号 □ Alarm contact

报警触头型号 alarm contact type	配用断路器 Fitting breaker	安装位置 Mounting position	状态 status
BCCM1L -100Z	CM1z -100 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， The status of the breaker in “off” or “on”， 当断路器处于“脱扣”时，图示状态转换。 If breaker is “tripped”，the status is changovered.</p>
BCCM1L -225Z	CM1z -225 三极、四极 three/four poles	左面 left	
BCCM1 -400Z	CM1z -400 三极、四极 three/four poles	左面 left	
BCCM1L -630Z	CM1z -630 三极、四极 three/four poles	左面 left	
BCCM1 -800Z	CM1z -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 Auxiliary contact type	配用断路器 Fitting breaker	安装位置 Mounting position	状态 status
FCCM1L -100Z	CM1z -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。 The status of breaker is “off” or “tripped”，if breaker is “on”，the status is changovered.</p>
FCCM1L -225Z	CM1z -225 三极、四极 three/four poles	左面 left	
FCCM1L -100ZS	CM1z -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。 The status of breaker is “off” or “tripped”，if breaker is “on”，the status is changovered.</p>
FCCM1L -225ZS	CM1z -225 三极、四极 three/four poles	左面 left	
FCCM1 -400ZS	CM1z -400 三极、四极 three/four poles	左面 left	
FCCM1L -630ZS	CM1z -630 三极、四极 three/four poles	左面 left	
FCCM1 -800ZS	CM1z -800 三极、四极 three/four poles	左面 left	



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

辅助触头+报警触头型号 Auxiliary and alarm contact type	配用断路器 Fitting breaker	安装位置 Mounting position	状态 status
FBCM1L-100Z	CM1z-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。The status of breaker is “off” or “tripped”, if breaker is “on”, the status is changovered.</p>
FBCM1L-225Z	CM1z-225 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， The status of the breaker in “off” or “on”， 当断路器处于“脱扣”时，图示状态转换。 If breaker is “tripped”, the status is changovered.</p>
FBCM1-400Z	CM1z-400 三极、四极 three/four poles	左面 left	
FBCM1L-630Z	CM1z-630 三极、四极 three/four poles	左面 left	
FBCM1-800Z	CM1z-800 三极、四极 three/four poles	左面 left	

● 辅助触头、报警触头额定工作电流 Rated operational current of Auxiliary,Alarm contact

分类 Classification	壳架等级额定电流 $I_{nm}(A)$ Frame size rated current	约定发热电流 $I_{th}(A)$ Conventional thermal current	额定工作电流 $I_e(A)$ Rated operational current	
			AC400V	DC220V
辅助触头 Auxiliary Contact	$I_{nm} \leq 225$	3	0.3	0.15
报警触头 Alarm Contact	$I_{nm} \geq 400$	3	0.4	0.15

2、断路器的外部附件 External Accessories

● CM1z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CM1z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。

CM1z tester(Please mark out in making order)

For the users'convenience to make sure of the breaker's setting parameters,we can supply CM1z tester (inner fixed one 9V alkaline cell, prepared by users),connecting with the breaker's main body by "TEST" face of the electric release.

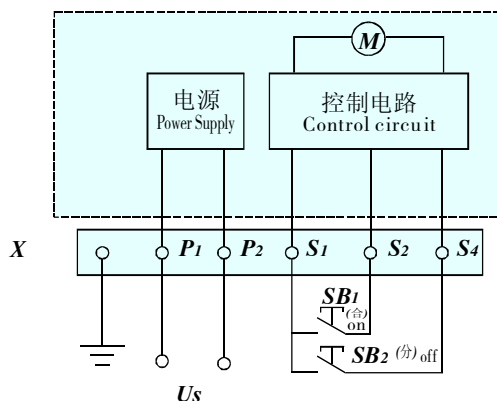




● DCCM1E 电动操作机构 Motor operator

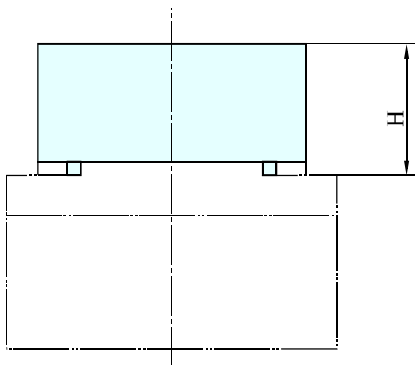
电动操作机构接线图见右图，与CM1z智能型断路器的接线见P29页。

Wiring diagram of motor operator see the following,Its Wiring diagram with CM1z Intelligent MCCB see Page 29.



电源输入电压规格：AC50Hz110V、230V  
DC24V、110V、220V

● 电动操作机构相关参数 Parameters of motor operator



电动操作机构型号 Motor operator type	配用断路器For circuit breaker	动作电流(A) Operating current	Motor power电 动机功率(W)	寿命(次) Durability (times)	高度 Height(mm)
DCCM1E -100	CM1z -100 三、四极 three/four poles	$\leq 0.5$	14	20000	89.5
DCCM1E -225	CM1z -225 三、四极 three/four poles	$\leq 0.5$	14	20000	93
DCCM1E -400	CM1z -400 三、四极 three/four poles	$\leq 2$	35	10000	142
DCCM1E -800	CM1z -630 三、四极 three/four poles	$\leq 2$	35	10000	146
	CM1z -800 三、四极 three/four poles	$\leq 2$	35	10000	

注：断路器脱扣跳闸后，电动操作机构必须先使断路器再扣，然后才能合闸，若由智能型脱扣器控制，已考虑此种情况。

Note:After the circuit breaker trips,motor operator has to make the circuit breaker recamped,then it can be turned on.If the circuit breaker is controlled by the intelligent release,this situation has already been taken into account.



## 不同额定电流的连接导线参考截面 Referential Cross-section wiring conductor corresponding rated current

- 不同额定电流的连接导线参考截面  
Referential Cross-section wiring conductor corresponding rated current

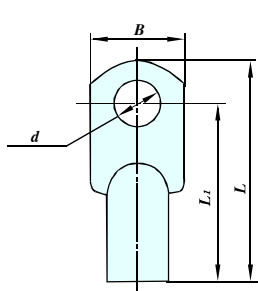
壳架电流(A) Frame size current	额定电流(A) Rated Current	至少能连接的导线截面(或铜排截面) (mm <sup>2</sup> ) Cross-section cable at least (Cross-section copper bar)
100	32、63、100	6、16、35
225	225	95
400	400	240

壳架电流(A) Frame size current	额定电流值(A) Rated Current	电 缆 Cable		铜 排 Copper bar	
		截面积(mm <sup>2</sup> ) Cross-section	数量 Quantity	尺寸 Size (mm × mm)	数量 Quantity
630	630	185	2	40 × 5	2
800	800	240	2	50 × 5	2

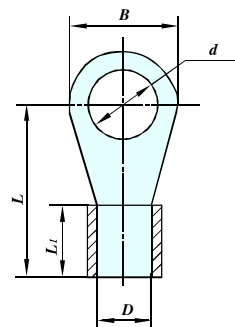
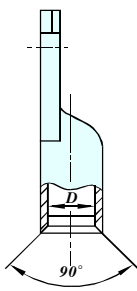


## 接线端子型号 Terminal type

- 接线端子分JGC及JBC二种型号供用户选用  
Two types of terminal are supplied: JGC and JBC



JGC型 Type



JBC型 Type

型号 Type	电流(A) Current	导线截面积(mm <sup>2</sup> ) Cross-section	端子型号 Terminal Type	B	L	L <sub>1</sub>	D	d
CM1z-100	32	6	JBC6-8	15	24.5	10	φ 3.5	φ 8.2
	63	16	JGC16-8	12.5	41	33.5	φ 6	φ 8.2
	100	35	JGC35-8	15.5	52	44.5	φ 8	φ 8.2
CM1z-225	225	95	JGC95-8	22	66	57	φ 13	φ 8.2





## 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。

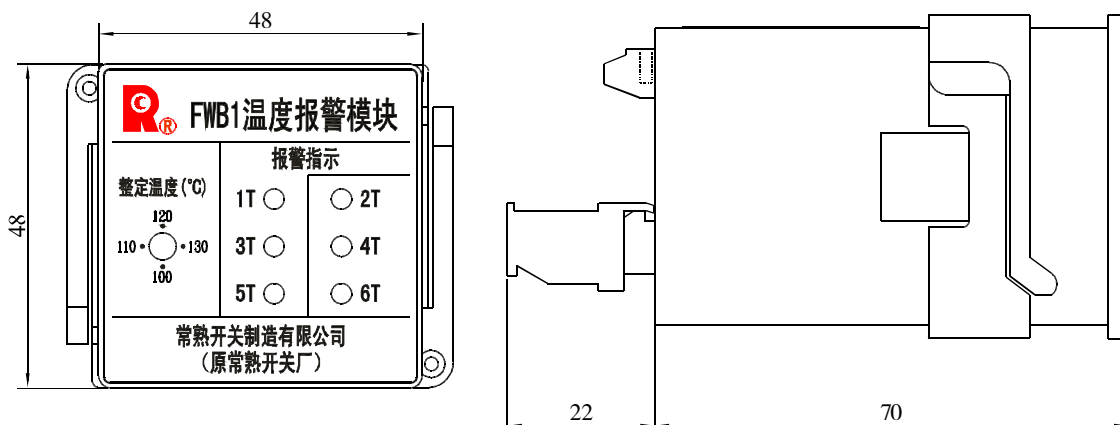
FWB1 temperature alarm module adopts online temperature detection that the FRG heat sensor directly mounted on the connection position. It can detect at most six points connection position (the input terminals on the back of the temperature alarm module, which the heat sensor is connected to, are 1T、2T、3T、4T、5T、6T 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 temperature detection range	0~150℃
动作温度To action temperature	100/110/120/130℃
复位温度Tr resetting temperature	To-5℃
精度 precision	±5℃
传感器绝缘耐压 sensor insulation withstand voltage	AC3500V/1min
测温点数 temperature detection points	最多6路 6 points at most
工作电源 operating current	AC230V, 范围range 195~253V
输出触头容量 output contact capacity	3A/AC250V, 3A/DC24V
工作温度 operating temperature	-20℃~+70℃

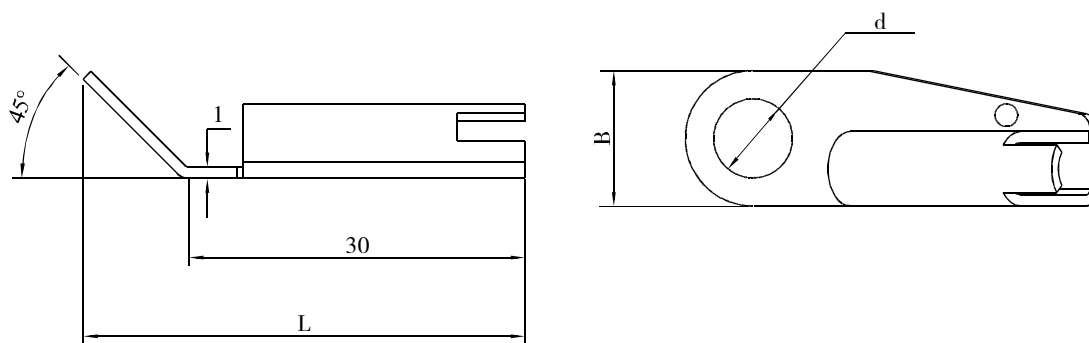


# FWB1温度报警模块 TEMPERATURE ALARM MODULE

- 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  
Hest sensor

热传感器型号 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



带电动操作机构的CM1z断路器与上位机(如计算机)连接,可实现远距离“四遥”功能。

另外,加装CM1z断路器控制器(选购配件)还可在现场直接读取断路器的各项参数并进行修改。

(下表中“●”表示在该组网状态下具有此功能)

CM1z, equipped with motor operator, can realize its function of “four kinds of remote operation” at long distance by its connecting of upper-level device (for example, computer). In addition, CM1z MCCB Controller additionally equipped (optional) can read all kinds of parameters directly on site and make some modifications.

(● shown in the following table indicates that this network has this kind of function)

断路器组网状态 Network Status		CM1z断路器+上位机 CM1z MCCB +Upper-level Device	CM1z断路器+断路器控制器 CM1z MCCB + Circuit Breaker Controller
断路器识别 Identification of Circuit breaker	断路器型号 Type of Circuit Breaker	●	
	通信地址 Communication Address	●	●
状态指示 Status Indication	合闸/分闸 On/Off	●	●
	报警、故障指示 Indication of Alarm and Fault	●	●
	允许/禁止网络控制 Networked Control (permissible/forbiddable)	●	
	本地参数修改 Modifications of Local Parameters	●	
断路器控制 Controlling of Circuit Breakers	合闸/分闸 On/Off	● (需安装CD2E电操) CD2E motor operator requires to be installed	● (需安装CD2E电操) CD2E motor operator requires to be installed
	过载长延时动作整定电流 $I_{r1}$ 、 整定时间 $t_1$ (调整步长为1A) Overload Long-time Delayed Operating Setting Current $I_{r1}$ , Setting Time $t_1$ (1A for the adjustment step)	●	●
整定保护值 读取/修改 Read/Modify the setting protection values	短路短延时动作整定电流 $I_{r2}$ 、 整定时间 $t_2$ (调整步长为1A) Short-circuit Short-time Delayed Operating Setting Current $I_{r2}$ , Setting Time $t_2$ (1A for the adjustment step)	●	●
	短路瞬时动作整定电流 $I_{r3}$ (调整步长为1A) Short-circuit Instantaneous Operating Setting Current $I_{r3}$ (1A for the adjustment step)	●	●
	中性极电流整定值 $I_N$ (调整步长为1A) Setting Current $I_N$ of neutral phase (1A for the adjustment step)	● (4极型断路器) (Circuit Breaker with 4 poles)	● (4极型断路器) (Circuit Breaker with 4 poles)
	不平衡保护设定值 (调整步长:不平衡度为1%,动作时间1s) Setting Value of Disequilibrium protection (adjustment step; 1% for the disequilibrium level, Operating time 1s)	●	
	三相电流值 $I_A$ 、 $I_B$ 、 $I_C$ Current Value $I_A, I_B, I_C$ of three phases	●	●
工作参数 Operation Parameters	N相电流值 $I_N$ Current Value $I_N$ of N phase	● (4极型断路器) (Circuit Breaker with 4 poles)	● (4极型断路器) (Circuit Breaker with 4 poles)
	报警类型 Alarm Type	●	●
	故障类型 Fault Type	●	●
	分断电流 Breaking Current	●	●
	分断时间 Breaking Time	●	●
	存储器状态 Memory Device Status	●	●
	最近一次故障记录 The Last Fault Record	●	●

注:断路器在连接电源正常工作时,保护的设定值可以通过上位机软件、断路器控制器以及断路器自带的调节设定旋钮三种方式来进行修改。

在断路器未通电的情况下,并且在上次调整保护设定值时是使用上位机或者断路器控制器这两种方式进行的修改,这时调节设定旋钮的读数可能与实际保护值不一致,此刻使用调节设定旋钮来调节保护设定值是无效的,断路器在得电后仍然按照上次保存的设定值执行保护功能。

Note: When the circuit breaker is operating with power supply, the setting values of protection can be modified by three kinds of ways: Upper-level device Software, Circuit Breaker Controller and Adjustment Knob Self-equipped on the Circuit Breaker.

When the circuit breaker is not electrified and the last adjustment of setting values has been made by using the upper-level device or the controller, the setting value of adjustment knob will not be accordance with the actual protection value at this moment so that it is not valid to adjust the protection value by using the adjustment knob. The circuit breaker will still operate the protection function according to the last preserved setting value after its being electrified.

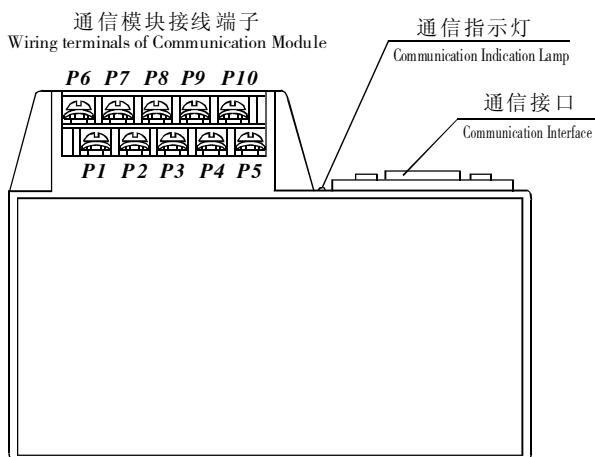


● 断路器通信接口及附件 Communication Interface and Accessories

● 通信模块 Communication Module

通信模块接线端子的接线:

The connection of Wiring terminals of Communication Module



端子 Terminals	连接 Connection
P5、P10	接电源DC24V/AC21V (推荐DC) In connection with Power Supply DC24V/AC21V (Recommendable DC)
P2	电操机构ON端子 ON Terminal of motor operator
P3	电操机构OFF端子 OFF Terminal of motor operator
P7	电操机构COM端子 COM Terminal of motor operator
P1、P6	网络控制选择 (参见注) The selection of network control (Refer to Note)

注: 1、如果P1和P6短接,则为本地控制状态。上位机此时无法对断路器进行操作和修改参数,只能读取数据,在此状态时可使用断路器控制器对断路器进行控制和参数调节。

2、如果P1和P6开路,则为远程控制状态。此时断路器控制器无法对断路器进行操作,只能查询数据,而上位机能够对断路器完成全部操作。

Note:1. If P1 and P6 are short-circuited, the circuit breaker is in the status of local control. At this time, the upper-level device can't operate the circuit breaker and make modifications of its parameters but read the data. On the current status, the circuit breaker can be operated by the circuit breaker controller and its parameters can be modified.

2. If P1 and P6 are circuted, the circuit breaker is in the status of remote control. At this time, the circuit breaker controller can't operate the circuit breaker but check out the data, and the upper-level host can fully operate the circuit breaker.

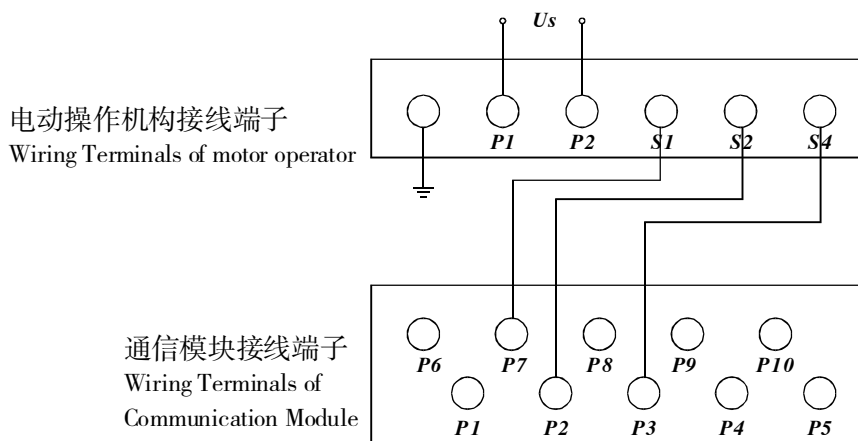
● 通信模块与电动操作机构的连接

根据电动操作机构的额定控制电源 $U_s$ 电压接线

$U_s=100 \sim 240VAC/100 \sim 220VDC$

● The connection between Communication Module and motor operator

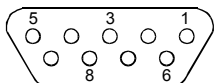
Wiring according to the rated voltage  $U_s$  of control power supply for motor operator





通信接口信号定义

Definition of Communication Interface Signal



针脚 Stitch	功能 Function
1	屏蔽/保护地 Shielding/Protection
3	接收/发送数据 (+) Receive/Send out data
8	接收/发送数据 (-) Receive/Send out data

CM1z断路器控制器 CM1z Controller

可通过专用通信线（控制器附带）连接CM1z断路器。无须外接电源，可直接操作CM1z断路器合分闸，查看实时电流数据及工作状态、故障信息，并能修改各种整定参数。与CM1z断路器搭配可取代各种繁琐的控制按钮及电流表，极大的简化柜内布线。

CM1z 断路器控制器为选购配件，可对应全系列CM1z 断路器。

The controller can be connected with the CM1z Circuit Breaker by the exclusive communication line (Supplementary). Without additional power supply , the controller can directly operate the CM1z Circuit Breaker to be switched on and off, check out real-time current data and operating status, fault information, and modify all kinds of setting parameters. The controller with CM1z Circuit Breaker can substitute for all kinds of complicated control button and Current Meter, which can greatly simplify the wiring in cabinet.

CM1z Controller is optional and can satisfy full series of CM1z Circuit Breakers.



正面 Front

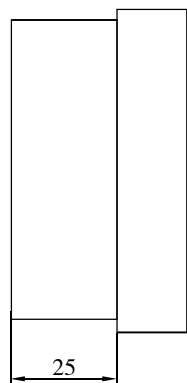


背面 Back

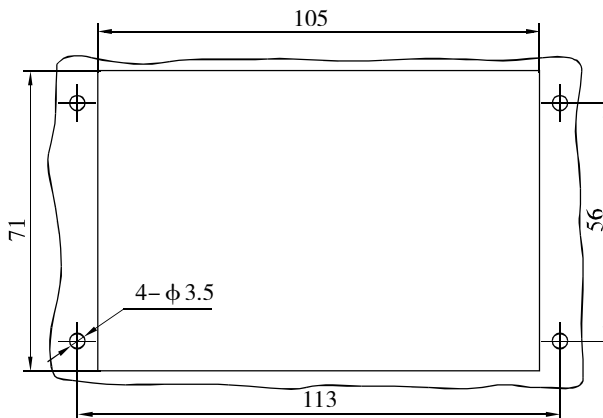


专用通信线  
Exclusive Communicatio Line

左视  
Left View



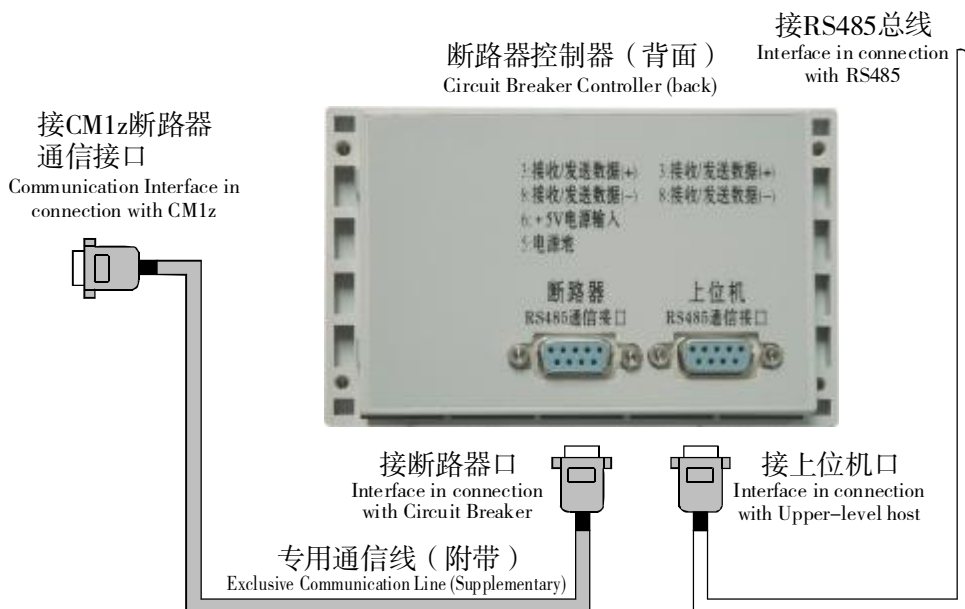
面板开孔尺寸  
Cutout dimensions of the panel





- CM1z断路器控制器的连接:

The connection of CM1z Circuit Breaker Controller



上图为断路器控制器与断路器一对一连接，其中断路器和控制器之间的专用通信线为附带配件，标准长度为2m，用户只需将该专用通信线两端分别按上图分别连接即可。需上位机通信时，只需将连接上位机的通信线按上图接到控制器背面的上位机口，上位机就可以和CM1z断路器进行通信。

CM1z断路器控制器还能与断路器实现一对多连接，此时一台控制器最多可以连接32台CM1z断路器，通过面板的选择访问连接到控制器的多台断路器的数据，但这种情况下远程通信功能将被屏蔽，上位机无法与这些断路器进行通信。

注：连接控制器和断路器时请使用附带的专用通信线，如因使用非正规的通信线而造成断路器损坏，不在本公司保修范围。

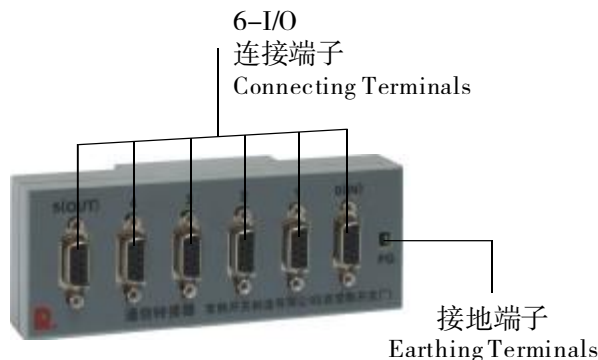
The drawing shown above indicates the one-to-one connection of Controller with Circuit Breaker. The exclusive communication line is supplementary between the Controller and the Circuit Breaker and its standard length is 2m. For customers, the two sides of the exclusive communication line are respectively connected with Communication Interface of CM1z and Circuit Breaker Interface on Controller according to the drawing shown above. If CM1z is required to communicate with upper-level device, communication line is joined with the Controller by its back interface in connection with upper-level device, which can communicate with CM1z Circuit Breaker afterwards. Compared with its direct connection with circuit breaker without Controller, the upper-level host needn't be made any changes to operate CM1z Circuit Breaker by customers.

The CM1z Controller can join together with several pieces of Circuit Breakers. At this time, one piece of Controller can join together with 32 pieces of Circuit Breakers at most and its panel can be set in order to learn the data from several pieces of Circuit Breakers. But under this circumstance, the function of remote communication will be nullified so that the Upper-level device will not communicate with these Circuit Breakers.

Note: Please use the exclusive communication line when connecting Controller with Circuit Breaker. If the circuit breaker is damaged due to the adoption of irregular communication line, the company will not certify its repair free of charge.



● 通信转接器 Communication Adapter



通信转接器可以大幅提高用户现场接线的效率和可靠性，它具有以下特点：

- ①6个RS485通信接口，最大连接5个可通信设备
- ②多个通信转接器可互联进行扩展(参见注)
- ③配有通信线接地端子
- ④可直接安装在标准35mm导轨上

注：可多次扩展，但一条线路不应连接超过32台设备。

The Communication Adapter can largely improve the efficiency and reliability of wiring on site by customers, which embraces the characteristics of:

- 1.six pieces of RS485 Communication Interfaces, can join together with 5 sets of Communicative Devices at most
- 2.Several Communication Adapters can realize the expansions by their networking (Refer to Note)
- 3.Equipped with earthing terminals of communication line
- 4.can be installed directly on the standard slideway in 35mm width

Note: can be expanded by several times, but one piece of circuit can not connect with 32 sets of devices at most.

● 免焊连接器 Connector free of being welded

免焊连接器可以让用户在现场快速、可靠的连接通信线路，无需焊接，只需将相应通信线接入接线端子即可。每套免焊连接器包括一个带DB9插座的连接模块、标准DB9插座外壳以及固定螺丝。

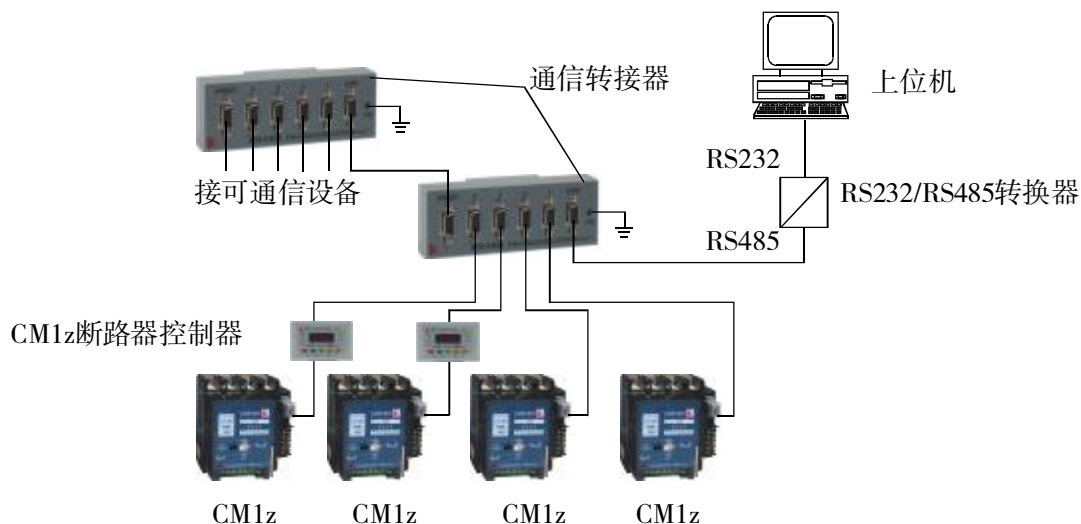
The Connector can connect with communication line quickly and reliably on site by customers, and it is free of being welded but made only by joining the corresponding communication line with wiring terminals. Each connector includes the connecting block with DB9 socket, standard DB9 socket case and fixing screw.

外形：Outline





● 断路器通信系统连接示意图



注：1.图中通信系统使用一条RS485（ModBus协议）总线，每条总线最多连接32台设备，最长接线距离1200米，并可通过中继器延长；

2.用户可通过加装RS485串口扩展卡的方式对系统方便的进行扩展；

3.用户通过上位机可对网络上每一台断路器进行实时的监视和遥控，并将数据进行分析处理，实现自动化监控功能（需上位机软件支持）；

4.若装协议转换器(选购件)，可将ModBus转成DeviceNet、Profibus等。

Note:1. One piece of RS485 Busbar is adopted in the Communication System indicated in the above scheme, each can connect with 32 sets of device at most and 1200m in length at most but can stretch its length by using the repeater;

2. The customers can expand the system conveniently by equipping with RS485 Series Interface Expansion Card;

3. The customers can realize the real-time monitoring and remote control of each pieces of Circuit Breaker in the network, and analyze and deal with the data to realize the function of automatic monitoring. (under the support of Upper-level device)

4. If the protocol converter (optional) is equipped, Modbus can be converted into DeviceNet, Profibus etc.





# 订货须知

# Ordering Notice

(一) 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。

(二) 如用户订货时对智能型脱扣器保护参数不作要求, 本公司将按“智能型脱扣器出厂整定值”表配置。

Users should make sure of their detailed acquaintance of the products' technological materials and make ordering by the ordering notice in terms of future applicable situations of the circuit breakers.

The company would configure by "Factory" s setting values of the intelligent release" if users had no requirements of protection parameters of CM1z circuit breakers when making order.

## 订货规范

Ordering Notice

(请在 \_\_\_ 内填上数值, □内打√)

Please fill figures in \_\_\_, mark √ in □

用户单位 Name		订货总数 Order Amount	订货日期 Date			
规格 Specification	配电型 Power distribution	CM1z- ___ / ___ , In= ___ A, 对CM1z-100、225、400、630、800	接线 方式 Wiring ways	板前接线 Wiring in front of the board	<input type="checkbox"/>	
	电动机保护型 Motor protection	CM1z- ___ / ___ 2, In= ___ A, 对CM1z-100、225、400、630		板后接线 Wiring on back of the board	<input type="checkbox"/>	
脱扣器 整定值 Release Setting Value	过载长延时动作电流 Ir1 _____ A Overload Long-time Delayed Operating Current	长延时动作时间 t1 _____ s Long-time Delayed Operating Time				
	短路短延时动作电流 Ir2 _____ × Ir1 Short-circuit Short-time Delayed Operating Current	短延时动作时间 t2 _____ s Short-time Delayed Operating Current				
	短路瞬动动作电流 Ir3 _____ × Ir1 Short-circuit Instantaneous Operating Current					
	预报警动作电流 Iro _____ × Ir1 Pre-alarm Working Current					
	四极断路器 N相电流整定值 In Setting Value of N-phase Current for 4-pole Circuit Breakers	0 (关闭) <input type="checkbox"/>	50%Ir1 <input type="checkbox"/>	100%Ir1 <input type="checkbox"/>		
	电动机保护型断路器 不平衡功能 Disequilibrium Function of Circuit Breakers for motor protection	<input type="checkbox"/>	不平衡度 _____ % Disequilibrium Level	不平衡动作时间 _____ s Disequilibrium Operating Time		
附件 Accessories	欠电压脱扣器 Under-voltage Release	C型 C Type	AC400V <input type="checkbox"/>	AC230V <input type="checkbox"/>		
	分励脱扣器 Shunt Release		AC400V <input type="checkbox"/>	AC230V <input type="checkbox"/>	DC220V <input type="checkbox"/> DC24V <input type="checkbox"/>	
	电动操作机构 Motor operator		AC230V <input type="checkbox"/>	AC110V <input type="checkbox"/>	DC220V <input type="checkbox"/> DC110V <input type="checkbox"/> DC24V <input type="checkbox"/>	
	CM1E专用测试器 CM1E tester	<input type="checkbox"/> 只 pieces				
	断路器控制器 Circuit Breaker Controller	<input type="checkbox"/> 只 pieces				
	通信转接器 Communication Adapter	<input type="checkbox"/> 只 pieces				
	免焊D-SUB连接器 D-SUB Adapter free of being welded	<input type="checkbox"/> 只 pieces				
	零飞弧罩 Zero arcing cover	<input type="checkbox"/> 只 (仅CM1z-100、225、400具有) pieces (Only for CM1z-100、225、400)				
	FWB1温度报警模块 <input type="checkbox"/> 和 Temperature alarm module	热传感器型号 Type 数量 (只) Number	FRG-7	FRG-9	FRG-11	FRG-13
备注 Note						



## 智能型脱扣器出厂整定值

Factory's Setting Value of Intelligent Release

配电型断路器  
Circuit Breakers for distribution

过载长延时 Overload Long-time Delay	整定电流 $I_{r1}$ Setting Current	$I_n$	
	延时 $t_1$ Time-delay	60s	
短路短延时 Short-circuit Short-time Delay	整定电流 $I_{r2}$ Setting Current	$8I_{r1}$	
	延时 $t_2$ Time-delay	0.3s	
短路瞬时 Short-circuit Instantaneous	整定电流 $I_{r3}$ Setting current	$I_{nm}=100、225、400、630$	$12I_{r1}$
		$I_{nm}=800$	$10I_{r1}$
预报警 Pre-alarm	整定电流 $I_{ro}$ Setting current	$0.9I_{r1}$	
中性极电流整定值（四极） Setting Value of neutral phase (4-pole)	整定电流 $I_n$ Setting current	$100\%I_{r1}$	

电动机保护型断路器  
Circuit Breakers for motor protection

过载长延时 Overload Long-time Delay	整定电流 $I_{r1}$ Setting Current	$I_n$	
	延时 $t_1$ Time-delay	100s	
短路短延时 Short-circuit Short-time Delay	整定电流 $I_{r2}$ Setting Current	$10I_{r1}$	
	延时 $t_2$ Time-delay	0.3s	
短路瞬时 Short-circuit Instantaneous	整定电流 $I_{r3}$ Setting Current	$I_{nm}=100、225、400、630$	$14I_{r1}$
预报警 Pre-alarm	整定电流 $I_{ro}$ Setting Current	$0.9I_{r1}$	
不平衡功能 Disequilibrium Function	不平衡度 Disequilibrium Level	0（关闭） Shut off	
	不平衡动作时间 Disequilibrium Operating Time	0	

# 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  
北方森源电气有限公司 010-87581701

## 天津

天津市强强电器科技有限公司 022-83715527

## 上海

上海常开电器设备有限公司 021-56319090  
上海企开电器设备有限公司 021-56319090  
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  
上海三樱电气有限公司 021-56032616

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重庆宏腾物资有限公司 023-68615538

## 福建

泉州市恒源电力设备有限公司 0595-22587087

## 浙江

杭州华森电器有限公司 0571-86947817  
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 0577-61722717  
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 0551-4668867

## 江苏

南京扬力电器有限公司 025-84605256  
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 0512-65225732  
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 0518-85452767  
徐州泛得电子有限公司 0516-83846977  
南通正源电气有限公司 0513-85030391  
扬州通润电气设备有限公司 0514-87856707  
常熟市中通电力设备有限责任公司 0512-52853511  
常熟市欧亚机电产品销售有限公司 0512-52221970  
常熟市润源电气设备销售有限公司 0512-51580510

## 山东

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 0531-85869188  
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

## 广东

广州市友朋电气设备有限公司 020-34528679  
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 0755-83928001  
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 027-87256467  
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 0311-87834870

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河南中电电器有限公司 0371-66974968  
河南航天机电数字有限公司 0371-63329025

## 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

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昆明惠尔电气有限公司 0871-7367961

## 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 0991-5818361

## 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

## 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创建单位
- 全国守合同重信用企业
- 国家科学技术进步二等奖获得者

2011.04

## 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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