

**UEM5/UEM5L/UEM5Z1**  
Series Moulded Case Circuit Breaker

**使用说明书**  
**Operation Instruction Manual**



## 引言 Introduction

非常感谢您选用我公司生产的塑料外壳式断路器。我们将以可靠的质量、良好的信誉，竭诚的服务让您放心的选择并使用本公司的产品。敬请您在安装、电路连接（配线）、运行、维护检查前必须熟读本说明书的内容和注意事项。 Thank you for selecting our UEM5 series Moulded Case Circuit Breakers. We will serve you with reliable quality and well-deserved reputation. Please read carefully this manual before you install, connect the circuit (layout), operate, and maintain checking.

有关我公司的详细产品的信息可以通过因特网查询，公司网址为：  
<http://www.hongfa.com>。 本公司的技术咨询热线：0592-5682966，  
投诉热线：0592- 6296088 ， 周一至周五：8:00~17:00。

For detailed product information of our company, please check our website: <http://www.hongfa.com>. Technical advise hotline:0592-5682966  
Complaint hotline:0592- 6296088, 8:00~17:00 Monday~Friday.

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## 1.0 使用前的提示与注意事项 Usage Notice

### 1.1 开箱前的提示及注意事项 Opening box notice

尊敬的用户，在你收到所订断路器后，请开箱检查以下各项：

Respectful user, pls check the following items when you receive the circuit breaker.

(1) 检查外观有无任何在运输环节过程中可能发生的损坏，比如外壳的破损等。Checking the appearance whether it has any damage during transportation, such as the broken housing.

(2) 包装盒内除断路器的规格、型号，此外还应包括：使用说明书、产品的合格证、安装所配的螺钉及其他的相关的附件。The box contains the specification and part no as well as instruction manual, quality certification, screws for mounting and other accessory.

1.2 产品外观和各部件的名称 Product appearance and name of each part showing as follows:

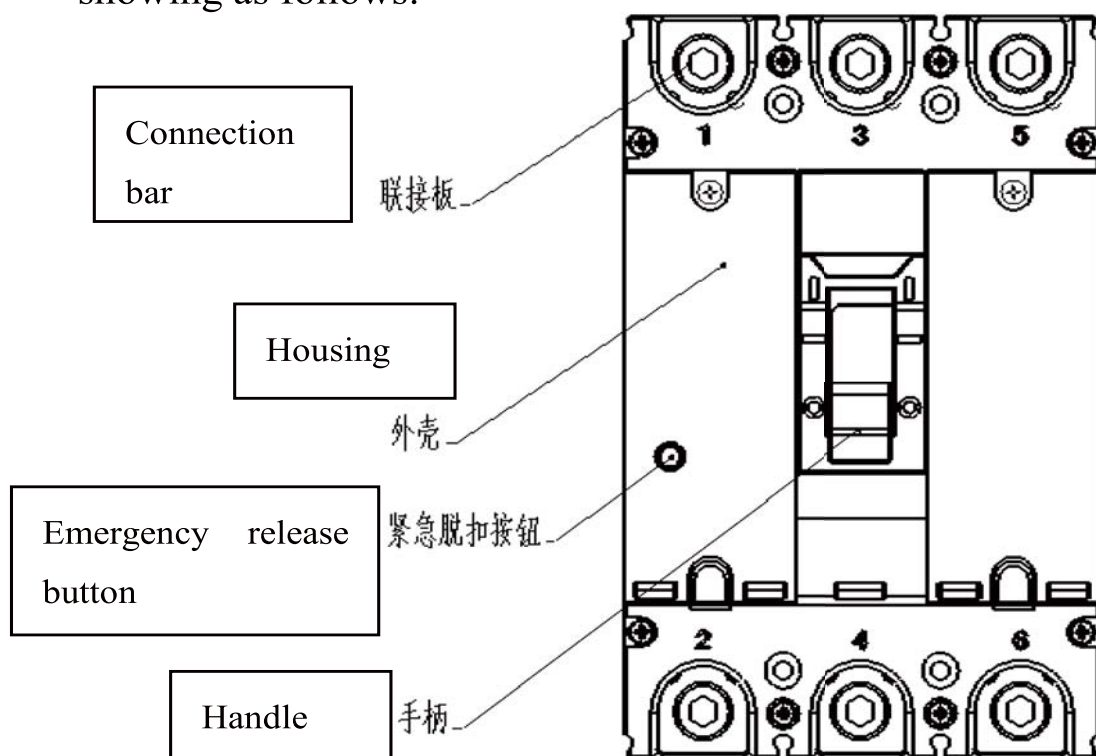


图 1： UEM5 系列塑壳断路器



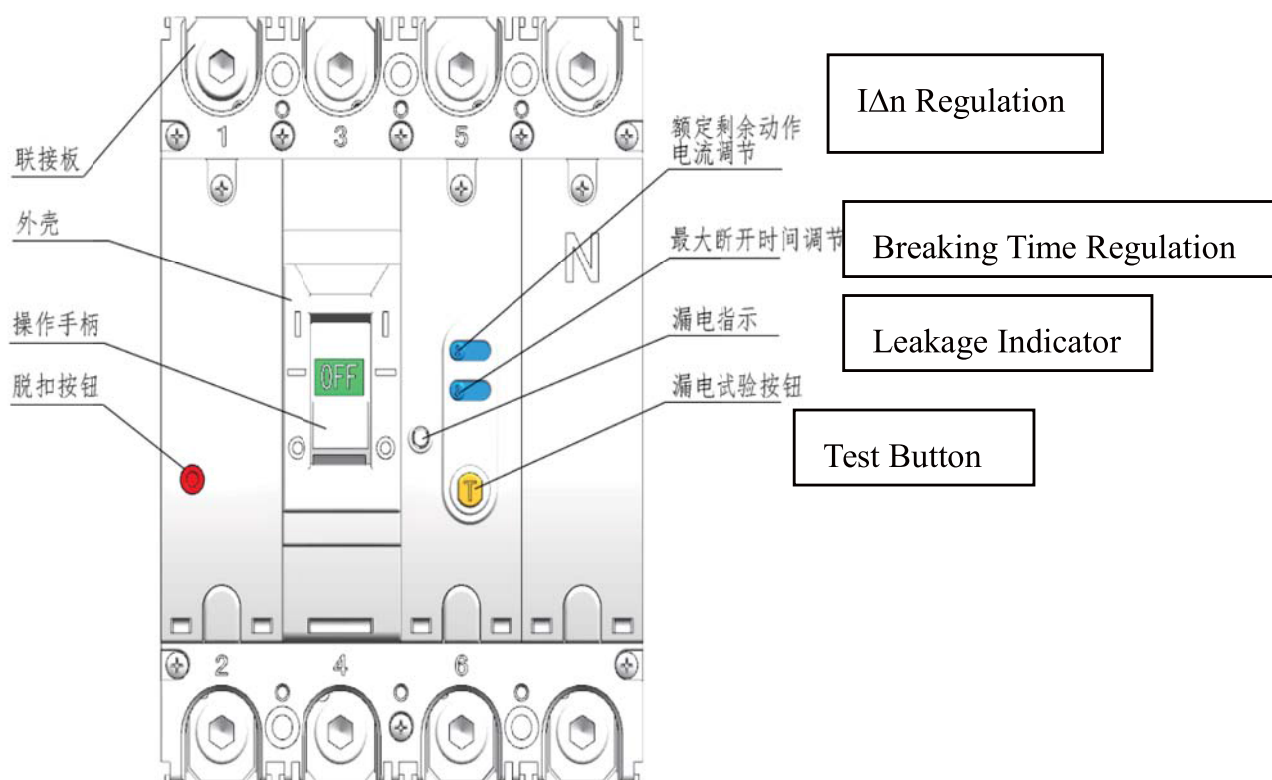


图 2: UEM5L 系列漏电断路器

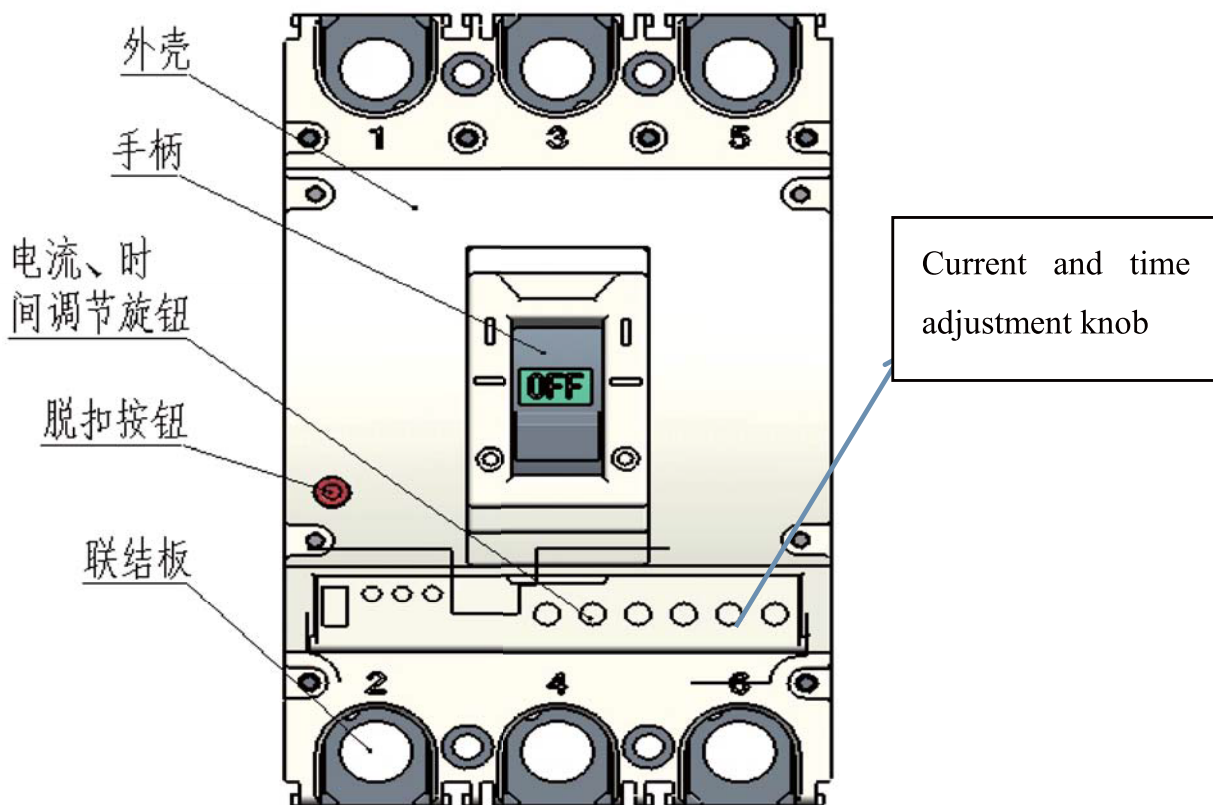


图 3: UEM5Z1 系列塑壳断路器

### 1.3 存储的环境条件见下表：Environment

环境指标名称 Name of environment index	指标要求 Index requirement
周围环境温度 Ambient temperature	-25℃~+55℃
周围相对湿度 Ambient relative humidity	When ambient temperature is 25℃ ≤ 95%

## 2.0 安装说明 Installation instructions

### 2.1 绝缘测试 Insulation test

此断路器在出厂前已经按照标准所规定的绝缘要求进行测试。若用户安装前需要进行复测，请按照如下步骤进行测试：

The circuit breaker has been tested according to the standard insulation requirement before delivery. If the user wants to test it before mounting, pls test according to the following steps.

- (1) 用 1000VDC 兆欧表（注：UEM5-63A 为 500VDC 兆欧表）。  
Use 1000VDC megaohm meter (note: UEM5-63A uses 500VDC megaohm meter)
- (2) 绝缘电阻应不小于 20MΩ。Insulation resistance should be no less than 20MΩ
- (3) 断路器在触头间、相间、相与外壳之间（外壳需要用金属箔覆盖）进行测试。Test between the contact, poles, poles and house (the housing should be covered by metal foil)
- (4) 对接至主电路的欠压脱扣器，在进线与断路器外壳间。For the undervoltage release on main circuit, test between line side and housing of circuit breaker.

提示：如果用户没有兆欧表的情况，可用工频耐压测试仪做代替

试验,测量部位参考绝缘测试方法,施加 2500V/min。Remark: If the user doesn't have megaohm meter, can use current withstand voltage tester as replacement. Refer the test method as above, applying 2500V/min.

## 2.2 使用环境 Operation environment

- ◆ 不要安装于含有爆炸气体的环境周围, 否则有引起爆炸的可能。

No installing the circuit breaker around the explosion gas place. Otherwise it may lead to explosion.

- ◆ 请勿安装于特别潮湿的地方。No installing circuit breaker in the extremely humid place.

◆不要安装于外磁场大于地磁场的 5 倍的地方, 否则断路器不能正常工作。No installing circuit breaker in the place that the external magnetic field is 5 times larger than geomagnetic field. Otherwise circuit breaker cannot work normally.

- ◆不要安装在振动大于 5g 的地方。No installing circuit breaker in the place that the vibration is larger than 5g.

◆ 不要安装在气体介质能腐蚀金属和破坏绝缘的地方。No installing circuit breaker in the place that the gas medium can rotten metal and destroy the insulation.

### 2.2.1 断路器安装场所的环境要求 The installation environment requirement.

具体参数见下表：Pls refer to following detail data sheet

环境类型 Type	环境要求及参数 Environment requirement and parameter
周围空气温度 Ambient temperature	-5℃——+40℃,且 24h 平均值不超过+35℃ -5℃——+40℃, Average tem. should be no exceed +35℃ in 24h
相对湿度 relative humidity	(在+40℃时)不高于 50%，最湿月的平均最低湿度不超过+25℃，且该月平均的最大相对湿度不超过 90%，并考虑因温度的变化而发生在产品表面上的凝露。(when the temperature is +40℃), RH should be lower than 50%. The AVG temperature of lowest humidity among wettest months should be lower than +25℃. And the relative max humidity should be lower than 90%. It should consider the condensation on product surface when the temperature changes.
海拔高度 Altitude	不超过 2000m No exceed 2000m
污染等级 Pollution class	3 级 class 3

### 2.2.2 断路器环境温度变化对阻容的影响 The effect to resistance capacitance by the environment temperature change.

环境温度变化时的降容系数关系如下表 3：The relation between resistance capacitance and the temperature change

温度℃ Tem. 系数 frame factor.	+40℃	+45℃	+50℃	+55℃	+60℃
63	1In	0.98In	0.95 In	0.92 In	0.88In
100/125/160	1In	0.96In	0.92In	0.88 In	0.85In
225/250	1In	0.97In	0.94In	0.92 In	0.88 In
400/630	1In	0.97In	0.95 In	0.92 In	0.89 In
800	1In	0.98In	0.95 In	0.93In	0.90 In

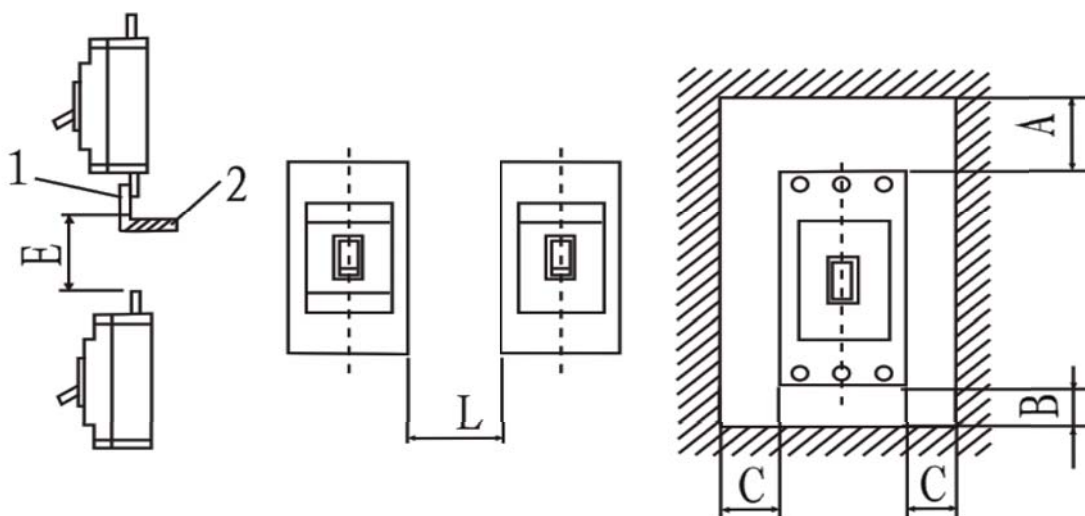
友情提示：尊敬的用户，以上降容系数均在壳架额定电流下测得。

Remark: The above factor got from the test results of frame rated current

### 2.3 安装方式 Installation method

◆请安装于金属等阻燃物上,且应有足够安全间隙。Pls install on the mental material or flame retardant and make sure the enough safety gap.

断路器安装安全间隙 safety gap



1. 电缆或铜排接线端子; Connection terminal of copper cable or copper bar.
2. 电缆或铜排; cable or copper bar.

壳架 Frame	L*	A	B	C	E
63/100/125/160	$\geq 30$	$\geq 50$	$\geq 25$	$\geq 25$	$\geq 50$
225/250	$\geq 30$	$\geq 50$	$\geq 25$	$\geq 25$	$\geq 50$
400/630	$\geq 30$	$\geq 100$	$\geq 25$	$\geq 25$	$\geq 100$
800	$\geq 30$	$\geq 100$	$\geq 25$	$\geq 25$	$\geq 100$

注：“L\*”表示两台相同壳架断路器之间可并紧安装，但中间需增加隔弧板。Remark: “L” means two MCCB with same housing can be mounted parallelly. But it needs to add arc barrier in the middle of circuit breakers.

2.3.1 断路器可以垂直安装也可以水平安装。The circuit breaker can be installed vertically or horizontally.

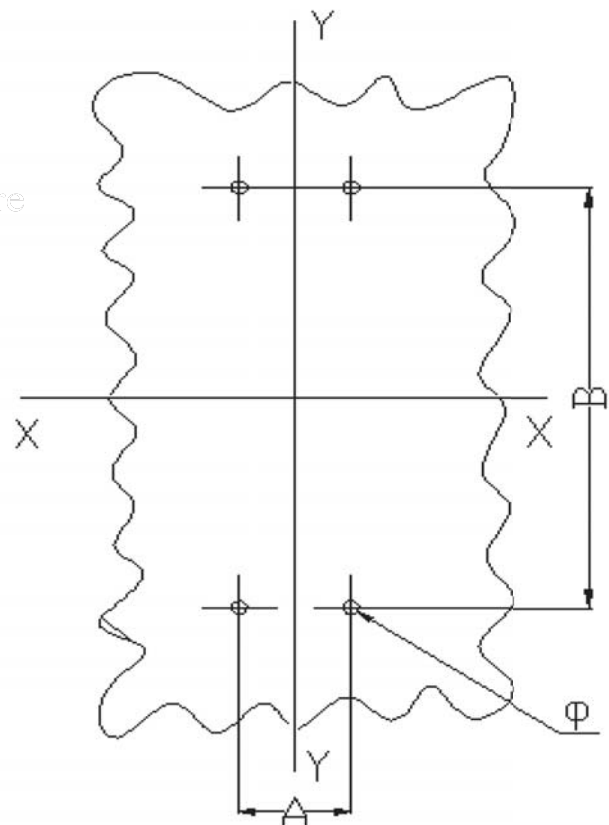
2.3.2 安装和连接 Installation and connection

2.3.2.1 安装板及开孔尺寸:

(1) 板前接线 Front fix

◆ X-X, Y-Y 为断路器中心

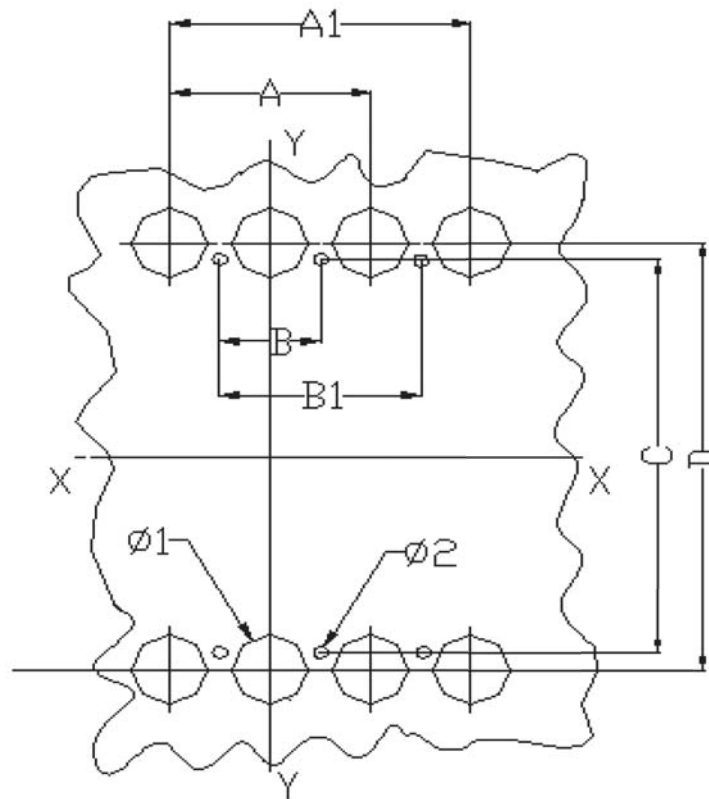
X-X, Y-Y are the circuit breaker centre



壳架 Frame		63	100/125/160		225/250		400/630		800	
极数 pole		3	3	4	3	4	3	4	3	4
开孔 尺寸 size of hole	A	25	30	60	35	70	44	88	70	140
	B	110	132	132	126	126	194	194	243	243
	Φ	Φ 5	Φ 5	Φ 5	Φ 5	Φ 5	Φ 7	Φ 7	Φ 8	Φ 8

(2) 板后接线 Rear fix

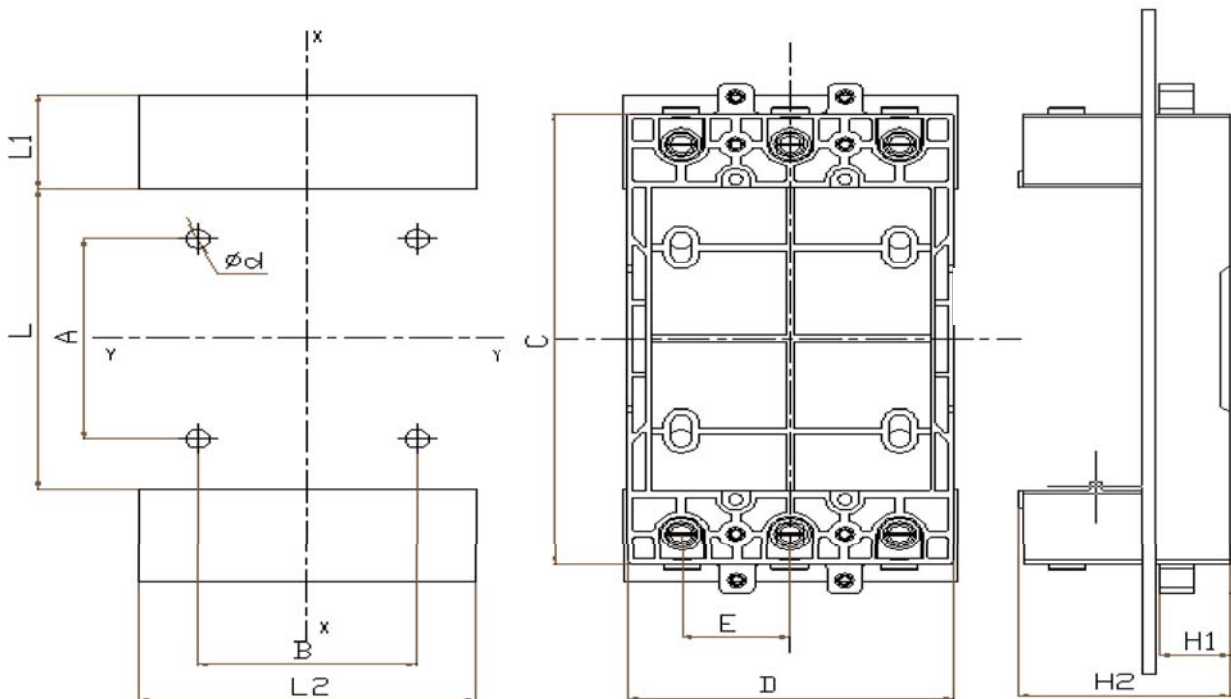
◆ X-X, Y-Y 为三极断路器中心 X-X, Y-Y is the centre of 3 poles circuit breaker



壳架 Frame	极数	A	A1	B	B1	C	D	Φ1	Φ2
63	3	50		25		110	114	Φ12	Φ5
100/125/160	3	60		30		132	134	Φ18	Φ5
	4		90		60	132	134	Φ18	Φ5
225/250	3	70		35		126	144	Φ24	Φ5
	4		105		70	126	144	Φ24	Φ5
400/630	3	88		44		194	225	Φ35	Φ7
	4		132		88	194	225	Φ35	Φ7
800	3	140		70		243	243	Φ45	Φ8
	4		210		140	243	243	Φ45	Φ8

(3) 插入式板后接线 Plug in

◆X-X, Y-Y 为三极断路器中心 X-X, Y-Y is the centre of 3 poles circuit breaker





型号 P/N	外形及安装尺寸 (mm) TYPE										
	A	B	L	L1	L2	d	C	D	E	H1	H2
BJT1-63	60	50	78	38	79	5.5	132	75	25	17	48.2
BJT1-100/160	67	60	90	51	94	6.5	162	90	30	20	56.2
BJT1-225	74	70	100	55	110	6.5	179	105	35	27	73.2
BJT1-400	141	88	178	70	135	7	275	132	44	45	85
BJT1-630	141	88	178	70	135	7	275	132	44	45	85
BJT1-800	143	140	181	87	213	7	311	210	70	50	125

注：若为四极开关，则尺寸 B, L2, D 均增加相距 E。Note: if it is a four pole switch, the sizes B, L2 and D are increased by E.

### 2.3.3 与主电路连接 connection to main-circuit

◆ 必须具有专业资格的人员进行配线作业。Should be connected by professional qualified operator.

◆ 确认输入电源处在完全断开的情况下，才能进行作业。Input power supply must be off during connection

◆ 必须在安装本体后再进行配线。Should be connected after main body assembled

◆ 断路器的配线必须符合上进下出。即 1、3、5 接线端接电源，2、4、6 接负载端，不允许倒进线。1,3,5 should be connected to line side/power supply, 2, 4, 6 should be connect with load side, don't connect in opposite way.

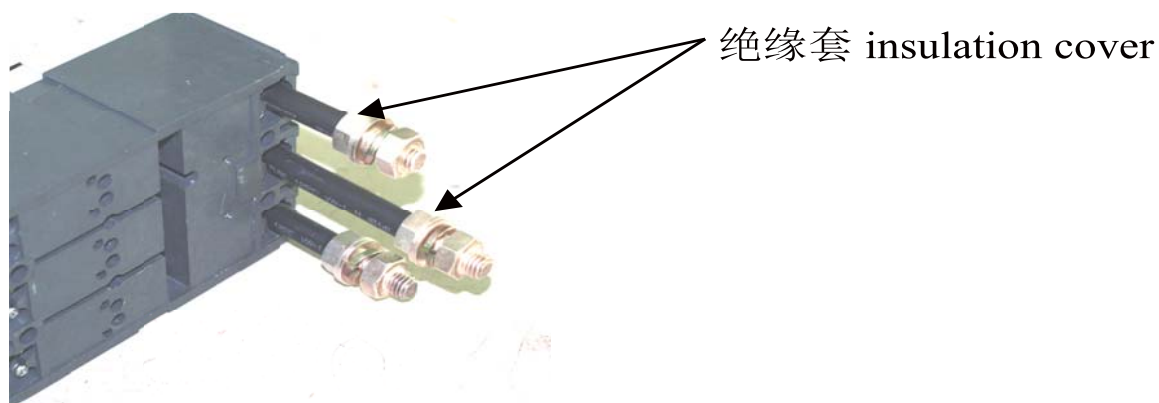
(1) 选择连接导线 choose wire/connection lead

连接导线采用的截面积与对应的额定电流见下表：Relation of wire cross-sectional area (csa) and rated current

额定 电流 rated current	10	16 20	25	32	40 50	63	80	100	125 140	160	180 200	225 250	315 350	400
导线 截面 积 Csa of wire	1.5	2.5	4	6	10	16	25	35	50	70	95	120	185	240

额定电流 rated current	电 缆 wire		铜 排 copper bar	
	数量 Qty	截面积 csa	数量 Qty	尺寸 size
500	2	150	2	30*5
630	2	185	2	40*5
700、800	2	240	2	50*5

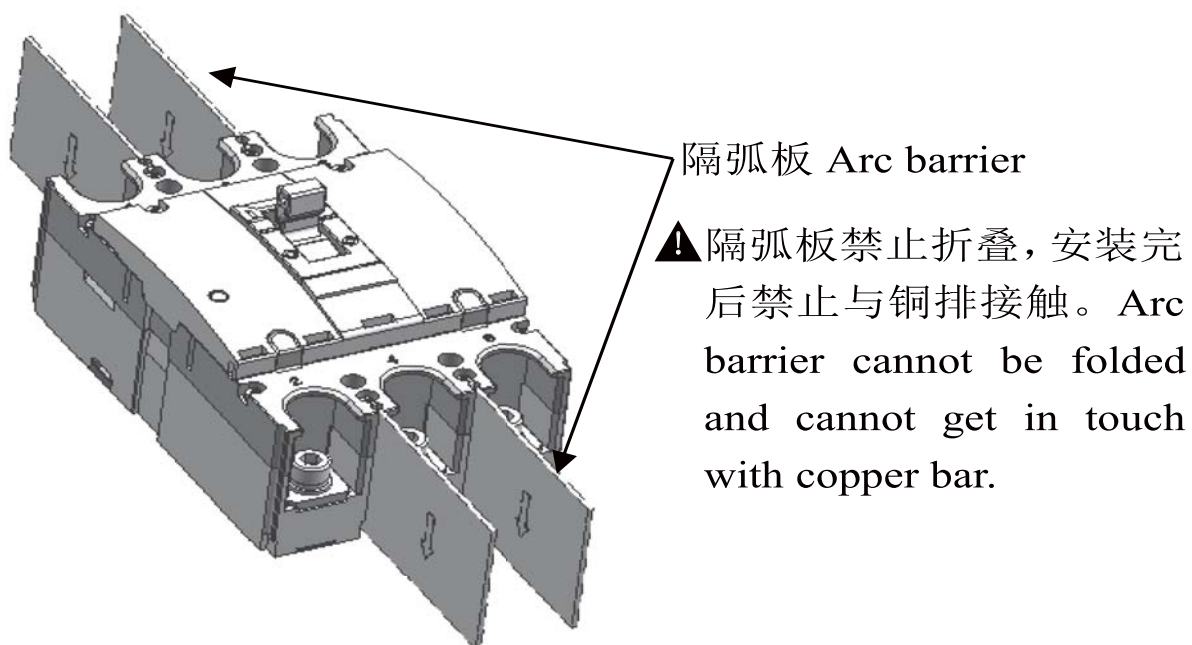
(2) 板后接线时，在接线柱上必须安装好绝缘套。During rear connection, the wiring stick should be installed with insulation cover



(3) 用螺栓把压接好的导线与断路器导电极连结, 并用力矩扳手拧紧, 施加力矩的大小见表: To use screw to connect lead and circuit breaker and to tighten up with torque wrench. See below torque of force spec:

壳架 Frame	螺栓规格 Bolt specification	力矩(N.m)moment
63	M6	8.8~10.8
100/125/160	M8	8.8~10.8
225/250	M8	8.8~10.8
400/630	M10	17.7~22.6
800	M12	31.4~39.2

(4) 在断路器相间安装隔弧板。To install arc barrier between circuit breaker.



#### 2.3.4 断路器内部附件的电气接线 Internal accessories wiring

##### (1) 欠电压脱扣器 Under-voltage release

根据外挂欠电压模块上的接线端子编号接入电源。Wiring base on the under-voltage module terminal wiring coding.

## (2) 分励脱扣器 Shunt release

根据引出的导线编号接入电源（直流电源不必区分正负极）。Connect to power supply per lead wires #/ serial number (For DC power supply, no need to distinguish positive pole or negative pole).

注：用户采用 DC24V 分励脱扣器时，铜导线最大长度须满足下表要求，电源功率须满足最小 50W 要求。Notes: When using DC24V shunt release, the copper lead wires max. length must meet below requirements in the table, and the power supply's power must be min. 50W.

铜导线长度 wire length	铜导线截面积 wire cross area	
	1.5mm <sup>2</sup>	2.5mm <sup>2</sup>
控制电源电压 power supply voltage		
100%Us	150m	250m
85%Us	100m	160m

## (3) 辅助开关、报警开关 Auxiliary switch, alarm switch

◆ 根据引出的导线编号接入相应外围控制电路。Connect into related peripheral control circuit per lead wires #/ serial number.

### 2.3.5 手动操作机构的安装 Installing manual operation mechanism

◆ 手动操作机构，须向本公司订货以保证质量，如用户自行购买，请先用质量可靠厂家配套。否则装配后发生的一切不良后果本公司不能负责。You must buy manual mechanism from our company, to ensure quality if you buy it by yourself, please make sure buy good one from reliable manufacturers. Or else, we can't be responsible for you for bad

results after assembling.

(1) 安装前,开关柜门板上操作机构的手柄开孔应根据所选的断路器操作机构的形式确定其相对应位置(开孔中心离铰链轴心线的距离不小于 200mm)。

Before installing, confirm its corresponding position for hand shank hole of function mechanism on lock handle of switch cabinet per selected breaker function mechanism.

(2) 把固定好操作机构的断路器安装于安装板上。

Install breaker which has been fixed with the function mechanism on the board.

(3) 把操纵杆方轴固定于操作机构方孔内。

Set square shaft of operation handle into square hole of operation mechanism.

(4) 调整其相对位置,使方轴中心与手柄开孔中心一致并固定

Adjust its corresponding position to make square shaft center consistent / aligned with hand shank hole center, and fix them.

(5) 合上安装好转动手柄的开关柜门板,试着操作手柄,转动应灵活自如,并且手柄在水平位置时,断路器应分闸,手柄在垂直位置时,断路器应合闸。Fold /close lock handle of switch cabinet with installed turning handle, try the turning handle which should turn flexibly, and when handle is in horizontal position, the breaker should be open; and when handle is in upright position, the breaker should be closed.

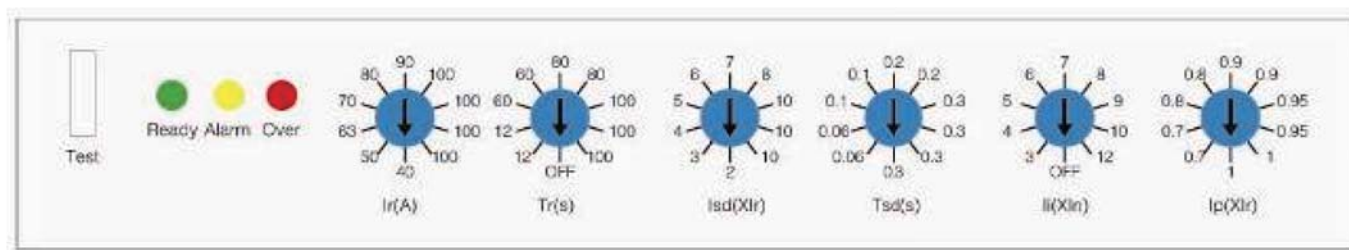
## 2.4 UEM5Z1 系列断路器各调节旋钮 Adjusting knob

### 2.4.1 调节旋钮及对应参数

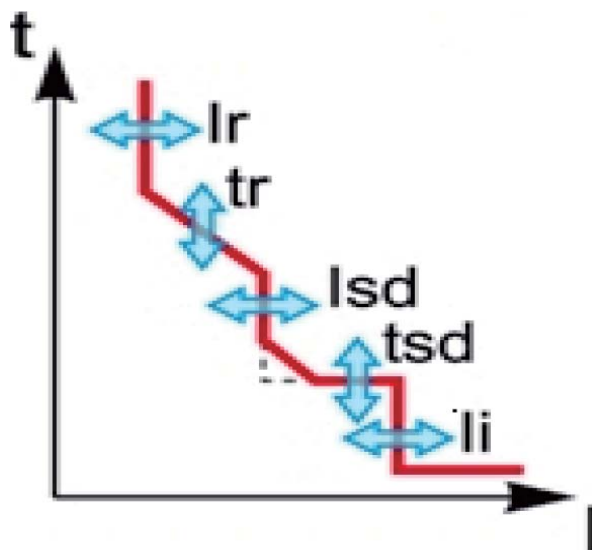
具体保护值范围:

- (1) 过载（长延时）保护：  $I_r = (0.4 \sim 1.0) I_n$
- (2) 过载长延时时间保护：  $T_r = 12S、60S、80S、100S + OFF$
- (3) 短路短延时保护：  $I_{sd} = (2 \sim 10) I_r$
- (4) 短延时时间保护：  $T_{sd} = 0.06S、0.1S、0.2S、0.3S$
- (5) 短路瞬时保护：  $I_i = (3 \sim 12) I_n + OFF$
- (6) 预报警保护：  $I_p = (0.7 \sim 1.0) I_r$

## 2.4.2 标牌图



## 2.4.3 保护曲线



### 3.0 运行 Operation

◆ 湿手不能操作断路器，否则可能发生电击事故。Don't touch and operate the circuit breaker with wet hands, or else you'll be electric shocked.

◆ 断路器不能频繁操作，否则会缩短断路器使用寿命。The circuit breaker can't be operated frequently, or else it will reduce its service life.

◆ 带电操机构的断路器跳闸后，电操须使断路器再扣，方能合闸。The breaker with motor-driven mechanism release, the mechanism should make the breaker reset then switch on.

#### 3.1 运行前检查和准备 Check and prepare before operation

运行前应检查以下各项 Check below items before operation

(1) 核对接线是否正确。Check wire connection whether are right.

(2) 确认端子间或暴露的带电部件没有短路或对地短路情况。

Make sure the electrified parts between terminals or naked should not short-circuit or shorted to earth.

(3) 确认端子连接和固定螺钉均应紧固无松动。

Confirm the terminal connection and screw fix are tight and not loose.

(4) 检查断路器的隔弧板是否安装完好。

Check the arc barrier is well mounted or not.

(5) 断路器带欠电压脱扣器，应使脱扣器先通电，断路器才允许合闸。

For the circuit breaker with under-voltage release, energize the tripper first and then switch on the circuit breaker.

#### 3.2 试运行 Trial-run

按 3.1 条各项全部确认无异常情况，可以进行试运行。Confirm ok as per 3.1 before trial run.

(1) 扳动操作手柄，操作应灵活。Pull the operation handle and power



on.

(2) 断路器在合闸位置时按紧急脱扣按钮，断路器应脱扣，操作手柄处于脱扣位置。Press the emergency tripper when the breaker is in switch on position.

### 3.3 运行 Operation

如果 3.2 能满足，可投入运行。If 3.2 is OK, the product can be operated.

## 4.0 维护 Maintenance

◆ 维护检查必须由专业技术人员负责。Maintaining and checking should be done by professional personnel.

◆ 用户如需选用内、外附件，按所订型号由本公司提供，以保证质量，如用户自行选购或改装，本公司不能负责。If you need to select and use internal and external accessories, please contact us and we can provide them per your ordered parts so as to ensure their quality. If you order them or change them by your self, we won't be responsible for you anything.

在执行维护操作之前必须完成下列操作：Finish below operations before maintenance

(1) 使断路器分闸 Switch off the circuit breaker。

(2) 断开电源与断路器的连接（包括主电路，辅助电路）。Break connections between power and circuit breaker (including main circuits & auxiliary circuits).

(3) 将断路器从安装位置上移开（一般用于插入式，固定式最好亦如此）。Remove circuit breaker from installing position (usually used for plug-in type, but for fixed type, you'd better also do this.).

### 4.1 维护内容 Maintenance content

断路器维护在正常操作条件下每年一次，在非正常条件下每半年一次，以下为维护内容：



(1) 再扣断路器，合、分断路器，在断路器合闸时用红色紧急脱扣按钮断开断路器，操作次数为 5 次，断路器应能可靠进行再扣、合、分、脱扣动作。Re-set the circuit breaker. Switch on and off the breaker. Break off the breaker by pressing the red emergency button when the breaker is on. The breaker should release. The operation knob should at “break off” position.

(2) 清除断路器表面及各连接处灰尘（用清洁、干燥的抹布）。Clean the dust on the circuit breaker surface and each connection parts (clean and dry cloth)

(3) 清洁隔弧板，如必要则更换隔弧板。Clean arc insulation board; change the arc insulation board if necessary.

(4) 绝缘测试：（见 2.1）。Insulation test (refer to 2.1)

(5) 检查所有的连接情况，用砂布擦除氧化物，用可溶解剂清洁，拧紧螺栓和螺母。Check the all connection situation, remove the oxidize; tighten up the screws and nuts.

(6) 如断路器安装有手操机构，则用手操对断路器进行 3 次分合闸（如断路器还安装了欠压脱扣器，则欠压脱扣器应先通电后操作），操作杆或手柄应运动自如。If circuit breaker installed manual operation mechanism, to open and close the circuit breaker 3 times by the manual operation mechanism (if circuit breakers also installed the under-voltage release, the under-voltage release should power on before the operation), the operation lever or handle should move freely.

(7) 如断路器安装有电操机构，则用电操对断路器进行 3 次分合闸（如断路器还安装了欠压脱扣器，则欠压脱扣器应先通电后操作），电操控制功能应正常。If circuit breaker is installed with motor-driven operation mechanism, to open and close the circuit breaker 3 times by the

motor-driven operation mechanism, electrically operated control function should be normal. (if circuit breakers also installed the under-voltage release, the under-voltage release should power on before the operation), the function of motor-driven operation should be normal.

(8) 如断路器安装有分励脱扣器, 应先使断路器处于合闸, 然后分励脱扣器通以额定电压, 断路器应可靠脱扣。If the circuit breaker installed shunt release, the circuit breaker should be in the closing status, and then shunt release through to the rated voltage, the circuit breakers should be reliable trip.

(9) 如断路器安装有欠压脱扣器, 欠电压脱扣器先通以额定电压后, 闭合断路器, 使断路器处于合闸状态, 然后使欠压脱扣器失电, 断路器应可靠脱扣, 使断路器处于脱扣状态, 并且此时断路器不能合闸。If circuit breakers installed under-voltage release, connect the under-voltage release to the rated voltage, close the circuit breaker, so that the circuit breaker in the closing state, then make the under-voltage release out of power, circuit breakers should be reliable tripping, make the circuit breaker in tripping state, and the circuit breaker can not be closed.

(10) 如断路器安装有辅助和报警开关, 分、合断路器, 辅助和报警转换信号应正常。If the circuit breakers installed the auxiliary and alarm switch, the closing and opening of circuit breaker, auxiliary and alarm converted signal should be normal.

(11) 如断路器安装有插入式和抽出式装置, 则应移动断路器 3~5 次, 其拉插和抽出部件的功能和滑行应正常无卡阻。If circuit breakers installed plug-in and draw-out devices, then should move the circuit breaker 3 to 5 times, the function and sliding of plug-in and draw-out parts should be no obstruction.

## 5.0 常见故障及处理 Faults and handle

内容 项目 序号	故障情况描述	可能产生的原因	故障处理
(1)	断路器用于电动机保护，起动过程中跳闸，起动失败。	1) 若电动机直接起动，则起动电流至少是正常运行电流的 8 倍，甚至可达 10 倍以上，若选用额定电流、瞬时保护电流整定倍数不当，则在起动过程中跳闸，不能完成起动。	1) 所带负载是否是电动机直接起动，起动电流多少； 2) 合理确定断路器额定电流及瞬时保护动作电流倍数。
		2) 配电柜若与设备距离很远，线路压降大，则电动机的端子电压低于电动机额定电压，起动电流将增大，造成跳闸。	1) 查明电动机端电压， $P=IU\cos\phi$ ； 2) 合理确定断路器的额定电流及瞬时保护动作电流倍数。
		3) 如果电动机带载起动，则应检查负载是否正常，如机械部分运行有堵转、杂音等现象，其运行不良将造成起动困难，电流值骤增，起动时间过长引起跳闸。另外，如水泵、输送带等设备若带负荷起动，起动时间过长而跳闸。	1) 检查电动机（负载）的机械部分运行情况； 2) 合理确定断路器的额定电流及瞬时保护动作电流倍数。

项目 内容 序号	故障情况描述	可能产生的原因	故障处理
(2)	运行中，断路器有时有跳闸现象发生。	1) 三相负载不平衡而造成过载跳闸。	查明三相电流是否平衡。
		2) 选用连接的电缆或铜排截面太小容易发热，使断路器跳闸。	1) 查明连接的电缆或铜排截面多大，长度多少； 2) 按样本正确选用连接电缆或铜排的截面； 3) 合理选择连接的电缆或铜排的长度。
		3) 若连接螺钉没拧紧或接触不良造成接触电阻升高，大量发热甚至烧熔，使断路器跳闸。	1) 查明断路器与电缆、铜排连接是否可靠； 2) 拧紧断路器与电缆、铜排的连接螺钉。
		4) 插入式安装时，接插件若松动接触不良，则会严重发热，引起跳闸。	1) 查明插件接触情况； 2) 可靠连接接插件。

内容 项目 序号	故障情况描述	可能产生的原因	故障处理
(3)	<p>断路器运行中发生短路越级跳闸，可能有以下情况：</p> <p>1) 塑壳断路器不跳闸，万能式断路器跳闸；</p> <p>2) 低压断路器（含塑壳断路器和万能式断路器）不跳闸，高压保护电器跳闸。</p>	<p>一般属各串接断路器保护特性匹配选择不当，没有合适的安全时间。分析时应了解线路情况，包括连接电缆的长度与截面，短路电流估算，断路器主电路通过电流估算，短路故障发生时间等。</p>	<p>1) 现场检查断路器状态，如无拒分现象，则产品应判为正常；</p> <p>2) 测试特性，判断断路器合格与否；</p> <p>3) 合理选用断路器。</p>
(4)	断路器漏电跳闸。	1) 选用断路器为三相断路器，而在断路器负载侧有带中性线的单相负载或控制回路的存在，导致负载侧电流矢量和大于剩余电流整定值，引起跳闸。	选用四极断路器。
		2) 系统中剩余电流总和超过剩余电流设定值。	正确设定剩余电流保护值。
		3) 断路器剩余电流保护动作速度比下级带剩余电流保护断路器动作速度快。	选用延时型断路器。

Content No.	Item Faults description	Potential faults cause	Faults handle
(1)	Circuit breaker used for motor protection, release during start-up, the start-up failure.	1) If motor direct start-up, the start-up current is at least 8 times of normal operation current, or even 10 times, if choose the wrong rated current and the multiple of instantaneous protection setting current, the circuit breaker release during start-up, which cannot finished the start-up.	1) If the load start-up directly by motor, what's the start-up current; 2) Judge the rated current and the multiple of instantaneous protection setting current correctly.
		2) The distribution cabinet is far away from equipments, the line voltage drop is large, then the voltage of motor side is lower than the motor rated voltage, the start-up current increase, cause the release.	1) Confirm the voltage of motor $P=IU\cos\phi$ ; 2) Judge the rated current and the multiple of instantaneous protection setting current
		3) If the motor start up on load, check if the load is normal, such as the mechanical parts if with locked motor or noise, which will cause the difficult start-up, the current increase, the start-up time too long, then cause release. The pumps or other conveyor equipment start-up with load, the start-up time is too long and cause release.	1) check the mechanical operation status of motor (on load) ; 2) Judge the rated current and the multiple of instantaneous protection setting current

Item Content No.	Faults description	Potential faults cause	Faults handle
(2)	During operation, the circuit breaker with tripping phenomenon sometimes.	1 ) The load of 3 poles is unbalance then cause release.	Check if the load of 3 poles is balance
		2 ) The section area of selective lead or copper bar is too small and cause heating, then lead to circuit breaker trip.	1 ) Check the section area and length of lead or copper bar. 2 ) Choose the section area of lead or copper bar base on catalogue; 3 ) Choose the proper length of lead or copper bar.
		3 ) If the connection screws are not tightened or connect properly cause the contact resistance increase, heating or even melt, make the circuit breaker trip.	1 ) Check if circuit breaker connect with lead or copper bar properly. 2 ) Tighten up the connection screw of circuit breaker and lead or copper bar.
		4 ) The plug in installation, if the plug in parts loosening, will cause serious heating and lead to trip.	1 ) Check the plug in parts status; 2 ) Connect the plug in parts properly.

Item Content No.	Faults description	Potential faults cause	Faults handle
(3)	If circuit breaker with the short circuit grade jumped tripping: 1) MCCB no trip, ACB trip; 2) Low-voltage (include MCCB and ACB) no trip, high-voltage protection circuit breaker trip.	Normally it belongs to that didn't select the proper protection characteristic, no suitable safety time. Know the line situation, include the length and section area of lead, short circuit current and faults time.	1) Check the circuit breaker situation, no trip-rejection phenomenon, the products is normal. 2) Test characteristic, judge if circuit breaker is qualified; 3) Select the circuit breaker properly.
(4)	Circuit breaker trip for residual current	1) Because of using 3-pole CBR and having 1-phase load with neutral, the circuit breaker trip	Using 4-pole circuit break
		The residual current in the system exceed $I_{\Delta n}$ setted in the circuit breaker.	Choose the right $I_{\Delta n}$ .
		The breaking speed of the CBR is faster than that of the load CBR	Setting the right time-delay of the CBR



## 6.0 产品装箱单 Packing list

序号	名称及规格	单位	数量									
			三极					四极				
			100/125/160	63 225L/250L	225M(H、R) 250M(H、R)	400 630	800	100/125/160	63 225L/250L	225M(H、R) 250M(H、R)	400 630	800
1	断路器本体	台	1	1	1	1	1	1	1	1	1	1
2	合格证	张	1	1	1	1	1	1	1	1	1	1
3	产品说明书	本	1	1	1	1	1	1	1	1	1	1
4	相间隔板	块	4	4	4	4	4	6	6	6	6	6
5	螺钉M4X40 GB/T9074.8	个	4	/	/	/	/	4	/	/	/	/
6	螺钉M4X70 GB/T9074.8	个	/	4	/	/	/	/	4	/	/	/
7	螺钉M4X90 (电 子式为M4X100) GB/T9074.8	个	/	/	4	/	/	/	/	4	/	/
8	螺钉M6X70 GB/T818	个	/	/	/	4	4	/	/	/	6	6
9	螺母M4 GB/T6170	个	4	4	4	/	/	4	4	4	/	/
10	螺母M6 GB/T6170	个	/	/	/	4	4	/	/	/	6	6
可选配件												
1	板前接线联结板	块										
2	电操机构	只										
3	手操机构	只										
4	分励脱扣器	只										
5	辅助触头	组										
6	报警触头	组										
7	辅报触头	组										
8	板后接线	套										
9	插入式	套										
10	抽出式装置	套										





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