



UEM5DC/DH

Series Moulded Case Circuit Breaker

使用说明书

Operation Instruction Manual

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厦门宏发开关设备有限公司

Xiamen Hongfa Electroacoustic Co.,Ltd.



引 言/Introduction

非常感谢您选用我公司生产的 UEM5DC/DH 系列直流塑料外壳式断路器。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 UEM5DC/DH 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：0592-5601988，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.

谢谢 Thank you!

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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 产品外观示意图 Product Appearance Diagram

具体见图 1、图 2、图 3 Please refer to Figure 1, Figure 2, and Figure

3 for details

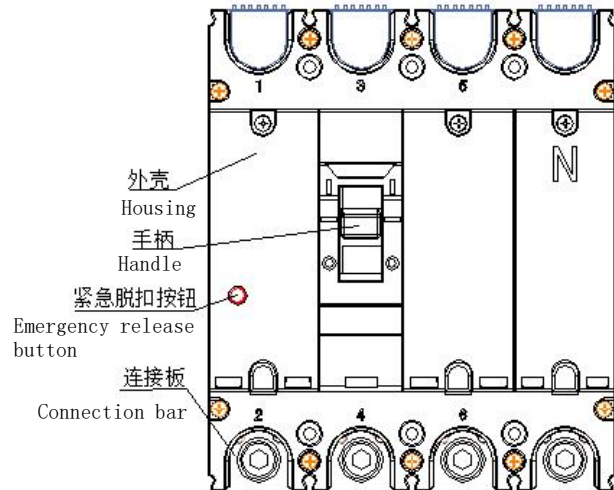


图 1: UEM5DC-250 DC MCCB

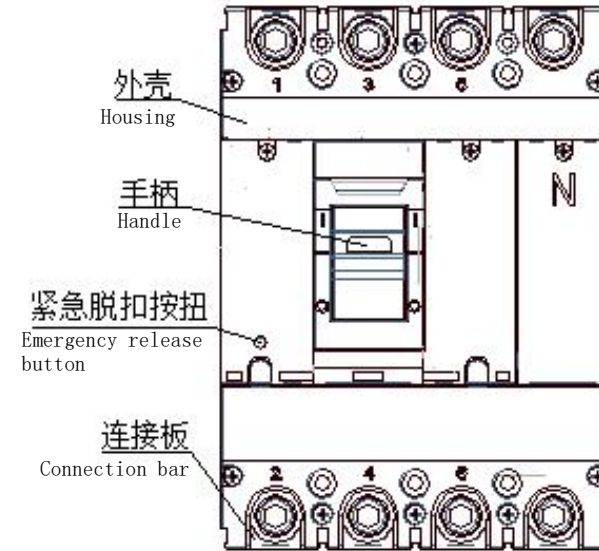
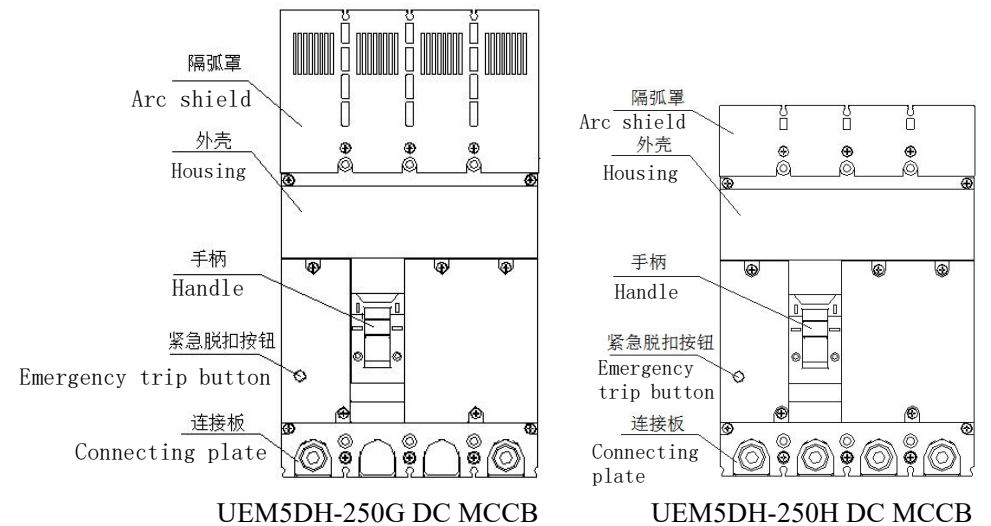


图 2: UEM5DC-630 DC MCCB



UEM5DH-250G DC MCCB

UEM5DH-250H DC MCCB

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	-40°C~+70°C
周围相对湿度 Ambient relative humidity	环境温度 When ambient temperature 25°C时 ≤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 2000V DC 兆欧表。Use 2000VDC megaohm meter
- (2) 绝缘电阻应不小于 20MΩ。Insulation resistance should be no less than 20MΩ.
- (3) 在断路器极间、极与外壳之间(外壳需要用金属箔覆盖)。Test between 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 3820V/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 3820V /min.

2.2 使用环境 Operation environment

- ◆ 不要安装于含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 5 g.
- ◆ 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、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 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表面凝露。 (when the tempera re is +40"C), RH should be lower than 50%. The AVG temperature of lowest humidity among wettest months should be lower than +25"C. 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 Altitllde	2000m
污 染 等 级 Pollution class	3 级 class 3

当高于 2000m 时随着海拔高度的增加, 大气成分、冷却性能、绝缘性能及气压都发生变化需要考虑降 容使用。此时断路器的性能将有所降低, 主要表现在一些主要参数上, 如额定工作电流以及介电强度。
When it is higher than 2000m, with the increase of altitude, atmospheric composition, cooling performance, insulation performance and air pressure all change, and it is necessary to consider the use of capacity reduction. At this time, the performance of the circuit breaker will be reduced, mainly in some major parameters, such as rated operating current and dielectric stren

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

海拔高度 (m) Altitllde	2000	3000	4000
工作电压修正系数 Working voltage correction parameter	100%	100%	100%
40℃ 额定运行电流 (A) 40℃ Rated operating current(A)	1×In	0.9×In	0.83×In
介电强度 (V) Dielectric strength(V)	3000	2500	2000

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: The relation between resistance capacitance and the temperature change

型号 Type	温度℃ Tem	系数 factor						
		40℃	45℃	50℃	55℃	60℃	65℃	70℃
UEM5DC-250		1In	0.976In	0.942In	0.914In	0.85 In	0.82 In	0.78 In
UEM5DH-250		1In	0.976In	0.942In	0.914In	0.85In	0.82In	0.78In
UEM5DC-630		1In	0.965 In	0.948In	0.925In	0.887In	0.824In	0.793In

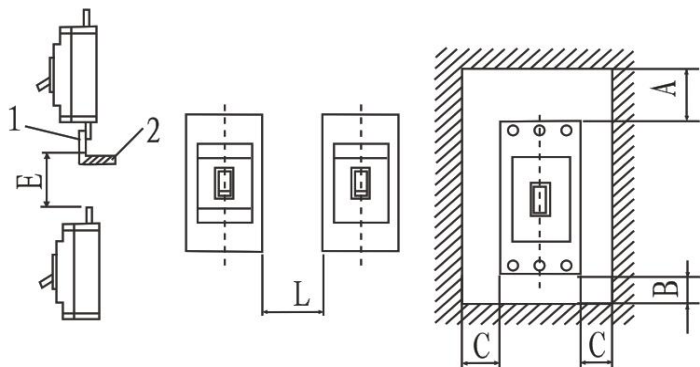
友情提示: 尊敬的用户, 以上降容系数均在壳架额定电流下测得。

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 fine retardant and make sure 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 tenninal of copper cable or Copper bar.
2. 电缆或铜排。cable or copper bar.

断路器型号 Type	L*	A	B	C	E
UEM5DC-250	≥30	≥50	≥25	≥25	≥50
UEM5DH-250	≥30	≥50	≥25	≥25	≥50
UEM5DC-630	≥30	≥100	≥25	≥25	≥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。Rem k: "L" means two MCCB with same housing can be mounted parallely. But it needs to add arc barrier in the middle of circuit breakers.

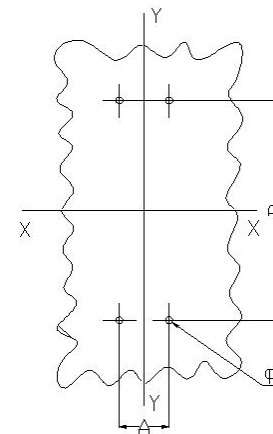
2.3.1 断路器可以垂直安装也可以水平安装。The circuit breaker can be installed vertically or horizontally.

2.3.2 安装和连接 Installation and connection

2.3.2.1 安装板及开孔尺寸: Installation plate and hole size:

板前接线 Front fix

- ◆ X-X, Y-Y 为断路器中心 X-X, Y-Y are the circuit breaker cent



断路器型号 Type		UEM5DC-250		UEM5DH-250		UEM5DC-630	
级数 pole		3	4	4	3	4	
开孔尺寸 size of hole	A	35	70	70	44	88	
	B	126	126	151	194	194	
	Φ	Φ5	Φ5	Φ5	Φ7	Φ7	

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

(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

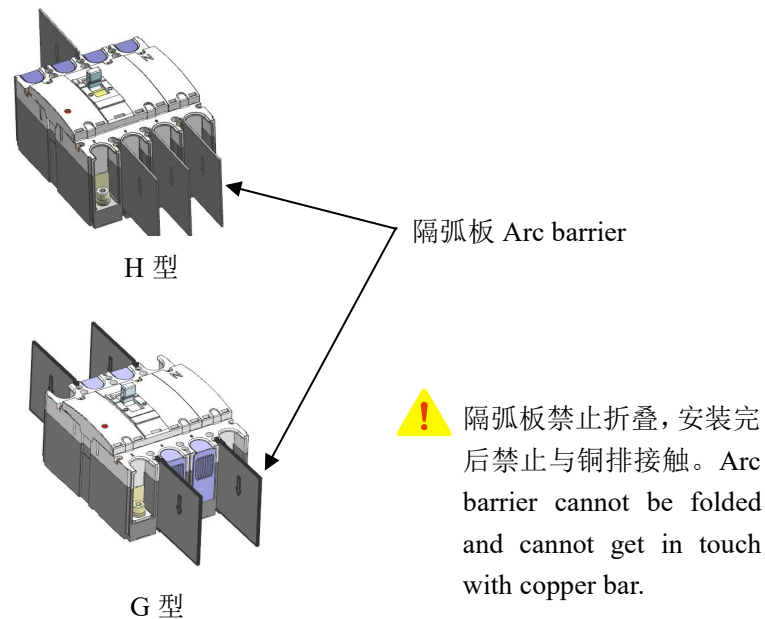
额定电流 rated current	100	125 140	160	180 200 225	250	315 350	400
导线截面积 Csa of wire	35	50	70	95	120	185	240

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

(2)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:

断路器型号 Type	螺栓规格 Bolt specification	力矩(N.m)moment
UEM5DC-250	M8	8.8~10.8
UEM5DH-250	M8	8.8~10.8
UEM5DC-630	M10	17.7~22.6

(3) 在断路器相间安装隔弧板 (示意图如下)。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 ²	2.5mm ²
	控制电源电压 Power supply voltage	150m	250m
	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 nstalling 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 om 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 tuming handle, try the tuming handle which should tum 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.

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) 用兆欧表在极间、极地间测量绝缘电阻。Measure insulation resistance between poles by using a megohmmeter.

(3) 确认端子连接和固定螺钉均应紧固无松动。Confmn 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后, 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) 将断路器从安装位上移开(一般用于插入式, 固定式最好如此)。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: The maintenance of circuit breakers is carried out once a year under normal operating conditions and once every six months under abnormal conditions. The following are the maintenance contents:

(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 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 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,使断路器处于合闸装态,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

故障情况描述 Faults description	可能产生的原因 Potential faults cause	故障处理 Faults handle
运行中,断路器有时有跳闸现象发生。 During operation, the circuit breaker with	1) 选用连接的电缆或铜排截面太小容易发热,使断路器跳闸。The section area of selective lead or copper bar is too small and cause heating, then lead to circuit breaker trip.	1) 查明连接的电缆或铜排截面多大,长度多少 Check the section area and length of lead or copper bar. 2) 按样本正确选用连接电缆或铜排的截面 Choose the section area of lead or copper bar base on catalogue; 3) 合理选择连接的电缆或铜排的长度 Choose the proper length of lead or copper bar.



tripping phenomenon sometimes.	2) 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。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) 查明断路器与电缆、铜排连接是否可靠 Check if circuit breaker connect with lead or copper bar properly. 2) 拧紧断路器与电缆、铜排的连接螺钉 Tighten up the connection screw of circuit breaker and lead or copper bar.
	3) 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。The plug in installation, if the plug in parts loosening, will cause serious heating and lead to trip.	1) 查明插件接触情况 Check the plug in parts status; 2) 可靠连接接插件 Connect the plug in parts properly.

6.0 关于保修期与售后服务 Regarding the warranty period and after-sales service

本产品是在完善的品质管理体系下制造的,当万一发生故障时,对保修期与售后服务特作如下说明: This product is manufactured under a comprehensive quality management system. In the event of a malfunction, the warranty period and after-sales service are explained as follows:

6.1 保修期 Warranty period

要用户遵守保管和使用条件下,从本公司发货之日起,未超过18个月,断路器如因制造质量问题而发生损坏或不能正常使用时,本公司负责无偿修理或更换。但是,如由于下述原因引起的故障,即使在保修期内亦作有偿修理或更换: If the circuit breaker is damaged or cannot be used normally due to manufacturing quality issues within 18



months from the date of shipment by our company, we are responsible for repairing or replacing it free of charge. However, if the malfunction is caused by the following reasons, it will be repaired or replaced for a fee even during the warranty period:

- (1) 由于使用错误,自行改造及不适当的维修等原因。Due to usage errors, self modification, and improper maintenance.
- (2) 超过标准规范要求使用。Use beyond standard specifications.
- (3) 购买后由于摔落及运输中发生损坏等原因。Due to reasons such as falling or damage during transportation after purchase.
- (4) 地震、火灾、雷电、异常电压、其它天灾及二次灾害等原因。Earthquake, fire, lightning, abnormal voltage, other natural disasters, and secondary disasters.

6.2 售后服务 After-sale service

(1) 出现故障时,请与供货商或本公司售后服务部门联系。When a malfunction occurs, please contact the supplier or our company's after-sales service department.

(2) 保修期内的修理或更换:由于本公司制造上的问题所造成的故障,作无偿修理,以至更换。Repair or replacement during the warranty period: Any malfunction caused by manufacturing issues within our company shall be repaired or replaced for free.

(3) 超过保修期后的修更或更换:在修理后能维持功能的场合下,作有偿修理;修理后不能正常工作,作有偿更换。Repair or replacement beyond the warranty period: In situations where the function can be maintained after repair, paid repairs shall be carried out; If it cannot function properly after repair, replace it with a paid replacement.



7.0 产品装箱单 Product packing list

No.	名称及规格/Name and specifications	单位 Unit	数量 Quantity		
			四极/4 Poles		
			UEM5DC-250	UEM5DH-250	UEM5DC-630
1	断路器本体/Circuit breaker	台 Pcs	1	1	1
2	合格证/Certificate	张 Paper	1	1	1
3	产品说明书/Product manual	本 Volume	1	1	1
4	相间隔板/Interphase partition	块 Set	4	6	4
5	螺钉 M4X40/Screws M4X40 GB/T9074.8	个 Pcs	/	/	/
6	螺钉 M4X70/Screw M4X70 GB/T9074.8	个 Pcs	/	/	/
7	螺钉 M4X90/Screw M4X90 GB/T9074.8	个 Pcs	4	/	/
8	螺钉 M4X100/Screw M4X100 GB/T9074.8	个 Pcs	/	4	/
8	螺钉 M6X70/Screw M6X70 GB/T818	个 Pcs	/	/	6
9	螺母 M4/Nut M4 GB/T6170	个 Pcs	4	4	/
10	螺母 M6/Nut M6 GB/T6170	个 Pcs	/	/	6
11	弹垫 6/Washer 6 GB/T93	个 Pcs	/	/	6
12	平垫 6/Washer 6 GB/T848	个 Pcs	/	/	6
可选配件/Optional Accessories					
1	板前接线联结板/Front wiring connection board	块 Set			
2	电操机构/Electric operating mechanism	只 Pcs			
3	手操机构/Hand operated mechanism	只 Pcs			
4	分励脱扣器/Shunt release	只 Pcs			
5	辅助触头/Auxiliary contact	组 Group			
6	报警触头/Alarm contact	组 Group			
7	辅报触头/Auxiliary alarm contact	组 Group			
8	板后接线/Backboard wiring	套 Set			
9	插入式/Plug-in	套 Set			
10	抽出式装置/Withdrawable device	套 Set			