



CW 1 系列

智能型万能式断路器

CW1 SERIES INTELLIGENT AIR CIRCUIT BREAKER

常熟开关 持续超越

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

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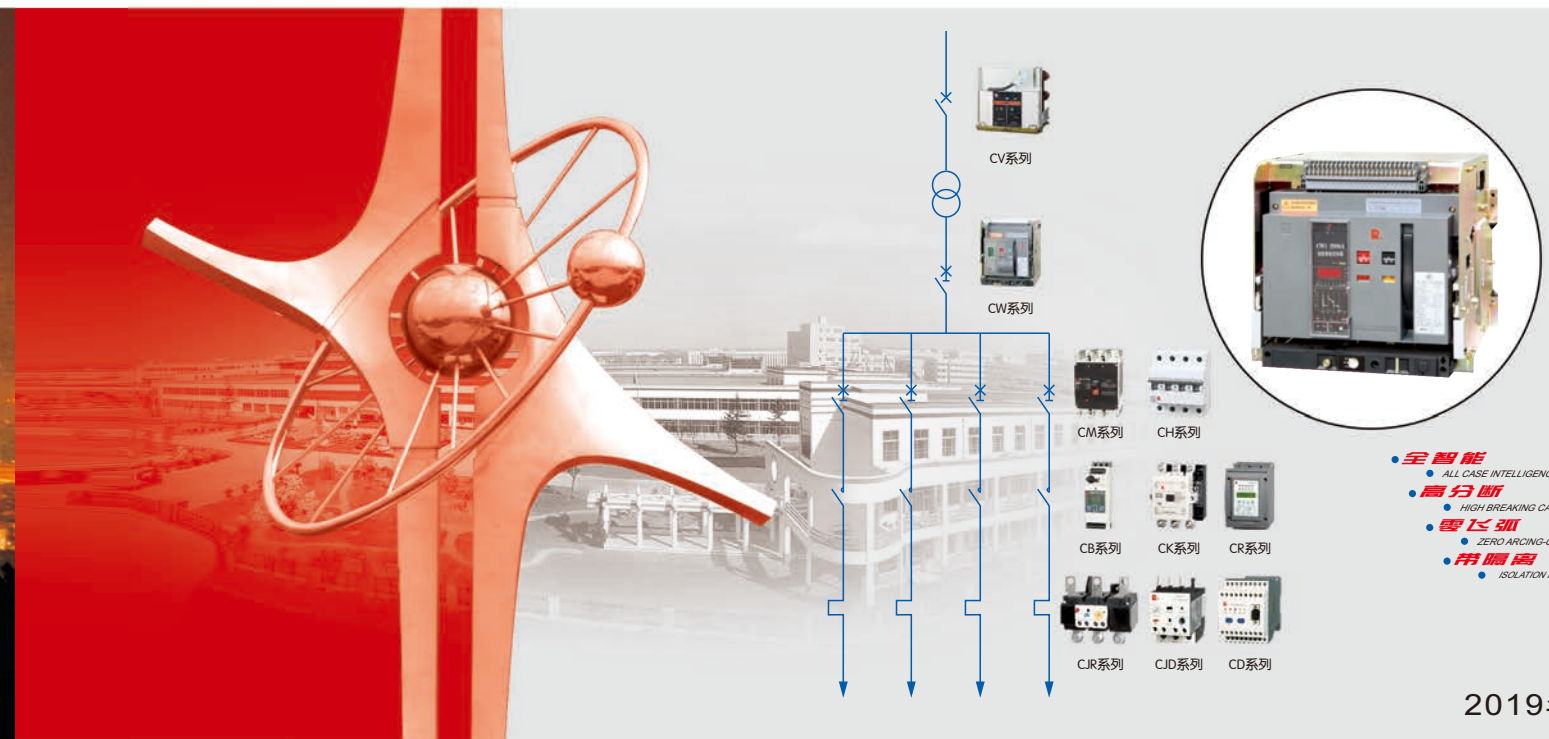
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国家科学技术进步奖证书
National Awards for Science and Technology Certificate



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



中国机械工业百强证书
Top 100 China Machinery Industry Companies



制造业单项冠军产品证书
ACBs award Individual Champion Product in Manufacture Industry



中国合格评定国家认可委员会实验室认可证书
Laboratory Accredited Certificate rewarded by China National Accreditation Service for Conformity Assessment (CNAS)



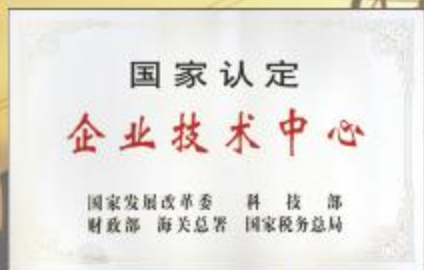
高新技术企业证书
High-tech Enterprise Certificate



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



国家级企业管理现代化创新成果
The Innovation Achievement of Management Modernization of National Enterprise



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



博士后技术创新中心
Postdoctoral Technical Innovation Centre



改革开放40周年机械工业杰出产品
Outstanding products of Machinery Industry for the 40th anniversary of Reform and Opening-up Policy

公司简介

Introduction

常熟开关制造有限公司是国有参股的电器研发制造领军企业，注册资本3.8亿，现有员工1700人，专业研发和制造中低压配电电器、工业控制电器、中低压成套装置、光伏逆变器及光伏发电配套电器和智能配电监控系统及配套测控器件。产品广泛应用于电力、机械、矿山、冶金、石化、建筑、船舶、核电和新能源发电等领域。

常熟开关坚持自主创新，持续完善创新平台，不断提升公司的创新能力。2002年起，公司建立“博士后科研工作站”；2010年，公司被国家科技部评为“国家创新型试点企业”；2011年，公司技术中心获国家发展改革委员会、科技部、财政部、海关总署、国家税务总局联合颁发的“国家认定企业技术中心”；2013年，公司获批建立“江苏省智能电网配用电关键技术研究重点实验室”。公司拥有一支300多人的创新团队，所研发的技术和产品先后获得多项省市级以上荣誉，其中“低压保护电器关键技术的研究应用”项目和“开关电器大容量开断关键技术及应用”项目荣获国务院颁发的国家科学技术进步二等奖。

常熟开关坚持质量第一，注重全过程的质量管理，拥有一批先进的智能化、数字化的研发和制造管理系统和设备，公司检测中心获中国合格评定国家认可委员会颁发的认可证书。公司产品以优秀的性能和品质，深受用户好评，多次获得省部级质量奖。公司从1994年起参加的产品质量责任保险，至今无一理赔。

常熟开关致力于为用户提供精品电器产品，为社会、客户创造更高价值，打造一流的民族电器品牌。

Changshu Switchgear MFG. Co., Ltd. (Former Changshu Switchgear Plant), a national-leading enterprise with state-owned equity, registered capital of 0.38 billion RMB and 1700 staffs, professionally researches, develops and manufactures medium and low voltage power distribution electrical appliances, industrial control products, medium and low voltage complete sets of equipments, photovoltaic inverters & power generation equipments and intelligent power distribution monitoring system & supporting devices for observation and control, all of which are widely used in the fields of electric power, machinery, mining, metallurgy, petrochemical, construction, shipbuilding, nuclear power and new energy power generation, etc.

Changshu Switchgear insists on independent innovation, continuously improves the innovation platform and constantly improve the innovation capability. In 2002, the Post-doctoral scientific research workstation was set up. In 2010, an honor of the National Innovative Pilot Enterprise, issued by the National Ministry of Science and Technology, was awarded. In 2011, the National Development and Reform Commission, the Ministry of Science and Technology, the Ministry of Finance, the General Administration of Customs and the State Administration of Taxation jointly recognized the company's technology center as the National-level Enterprise Technique Center. In 2013, the company was approved to establish the Key laboratory for Research on Key Technology of Intelligent Grid Power Distribution in Jiangsu Province.

The technology and products, developed by the innovation team consist of 300 engineers and technicians, have won a number of provincial and municipal honors, in which “The research and application on key technology of low voltage protection electrical device” and “The key technology and application of large capacity breaking of switching devices” have won the second prize of the National Science and Technology Progress Award.

Changshu Switchgear insists Quality-first and pays great attention on the quality management of the whole process. Advanced intelligent digital systems and equipments have been brought in for R & D and manufacture management. The company's testing center has been rewarded the accreditation certificate issued by the China National Accreditation Service for Conformity Assessment. The products have won praise from users and also several provincial or ministerial quality awards for the excellent performance and quality. Meanwhile, no claims arise since 1994 when the product quality liability insurance was been covered for all the products.

Changshu Switchgear is committed to providing customers with high-quality electrical products, creating higher value for society and customers and shaping a leading national electrical brand.





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/CVR1-12系列
高压真空断路器



CV2-12系列
高压真空断路器



CV1-24/CV2-24系列
高压真空断路器



CV1-40.5/CV2-40.5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



CW3X-1600系列
智能型万能式断路器



CW3R系列
智能型万能式断路器



CW3F-2500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



CM3系列
塑料外壳式断路器



CM3E系列
电子式塑壳断路器



CM3L系列
带剩余电流保护塑壳断路器



CM3Z系列
智能型塑壳断路器



CM3ZL系列
带剩余电流保护智能型塑壳断路器



CM3ZL/ZH自动重合闸
带剩余电流保护塑壳断路器



CM5系列
塑料外壳式断路器



CM5Z系列
智能型塑壳断路器



CM5Z-1600
智能型塑壳断路器



CM5L系列
带剩余电流保护塑壳断路器



CM5ZL系列
带剩余电流保护智能型塑壳断路器



CM5XL-125塑料外壳式断路器
CM5XL-125带剩余电流保护塑壳断路器



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

自动转换开关



CA1/CA1B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)

CAP3系列自动
转换开关

接触器和过载继电器



CK3/CK3B系列
接触器

CJR3/CJR3B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

电动机软起动器



CR1系列
电动机软起动器

CR2系列
智能型电动机软起动器

电动机保护器



CD3系列
电动机控制保护器

CD4系列
电动机控制保护器

控制和保护电器



CB1系列
控制和保护开关电器(CPS)

光伏发电用产品



CW3G系列
隔离开关 (AC, DC)

CW3DC系列
直流万能式断路器

CM3DC系列
直流塑壳断路器

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



AD128系列信号灯
LA168系列按钮



CH1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



FWX1无线温度测量模块

智能化通信低压配电网络监控系列



Riyea-PowerNet配电监控系统



CEPA3智能配电一体机



优秀特色

- 通过核工业条件（1E级）试验和船用条件的试验，可陆用、船用、核级用、风电用（低温-40℃、湿热带TH型）
- 通过了德国莱茵公司CE认证
- 获得国际认可的CB证书
- 智能化、零飞弧、带隔离功能
- 较高的分断和短时耐受能力
额定极限短路分断能力： I_{cu} ：400V：65kA ~ 120kA；690V：50kA ~ 75kA
额定运行短路分断能力： I_{cs} ：400V：65kA ~ 100kA；690V：50kA ~ 65kA
额定短时耐受电流 I_{ew} （1s）：400V：50kA ~ 100kA；690V：40kA ~ 65kA
- 具有过载长延时、短路短延时、短路瞬时及接地故障保护功能，保护丰富：可用于配电线路保护，马达保护、变压器和母线保护
- 抽屉座有“连接”、“试验”、“分离”三个位置指示
- 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FWD1温度上传模块，实现测量温度的上传；配置FWX1无线温度测量模块，实现测量温度的无线发送、显示和上传
- 光伏并网：带光伏并网专用欠电压脱扣器的CW1断路器满足国家电网公司Q/GDW1972、Q/GDW1973标准，实现检有压合闸功能



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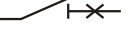
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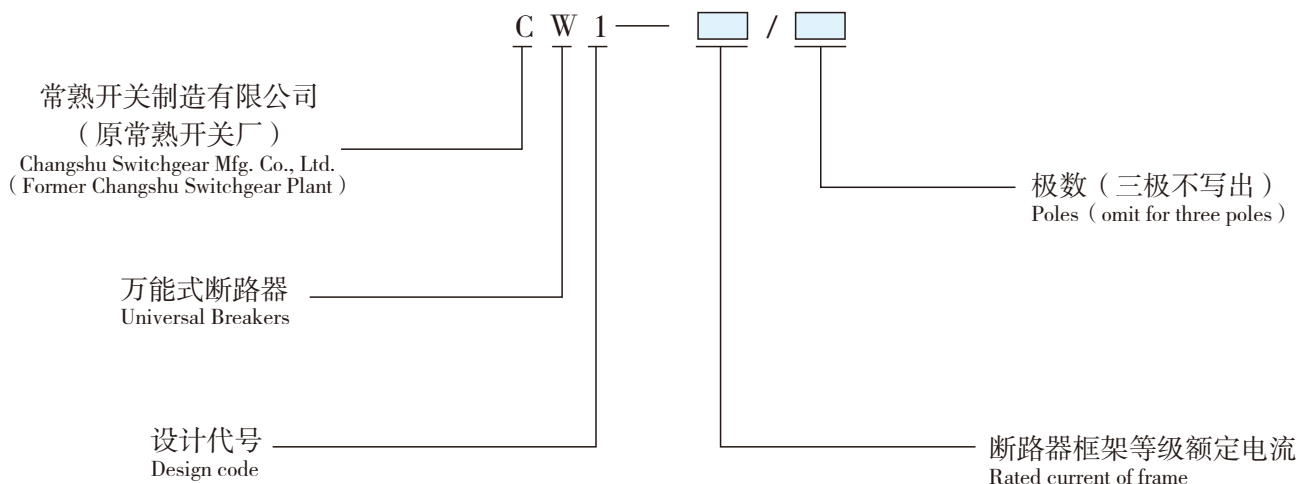
CW1系列智能型万能式断路器用于控制和保护低压配电网络。一般安装在低压配电柜中作主开关起总保护作用。产品可提供湿热带型（TH型）、船用型和1E级断路器，可提供低温至-40℃断路器，并可提供液晶显示及数码管显示断路器。

- 交流额定电流630A ~ 5000A；
- 短路分断能力65kA ~ 120kA（有效值）；
- 额定工作电压AC50Hz/60Hz，690V及以下；
- 使用类别B；
- 具有3极和4极；
- 抽屉式和固定式；
- 可倒进线安装；
- 多种智能控制器，提供不同功能；
- 具有隔离功能，符号为 “”；
- 执行IEC60947-2、GB/T14048.2-2008标准；
- 本断路器获国家强制性产品认证“CCC”标志。

CW1 series intelligent air circuit breakers could be used for controlling the low voltage distribution net and keeping it safety. Installing in the low voltage distribution panels, it works as master switch to play general safety role. The breaker can be provided for humid type、for ship type and 1E class, may be provided breaker of temperature down to -40℃, also can be provided LCD displayed type and LED displayed type.

- Rated current 630A ~ 5000A AC;
- Short circuit Breaking Capacity 65kA ~ 120kA (effective value);
- Rated working voltage 690V AC 50Hz/60Hz or below;
- Utilization category B;
- Three or four poles;
- Draw-out or Fixed Type;
- Can be in adverse direction;
- Varied Intelligent controller offering various function;
- The breaker has disconnecting function, its corresponding symbol is shown as “”;
- Comply with the demands of the following standards, IEC60947-2、GB/T14048.2-2008;
- The breaker is permitted to use the CCC marking of CQC.

● 型号含义 Type and Its Meaning





● 正常工作条件和安装条件

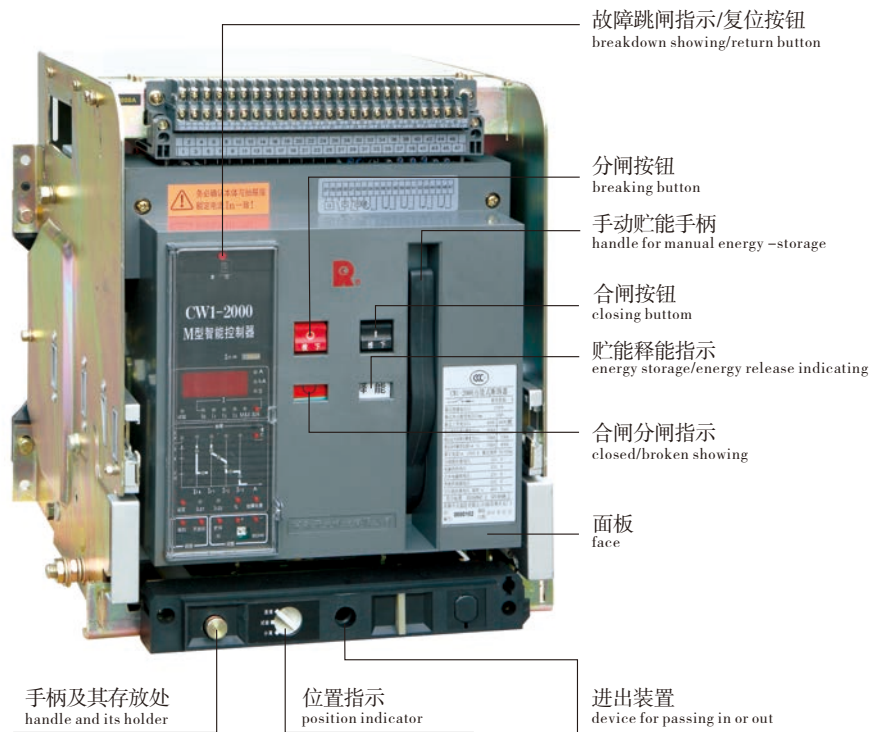
Environment Conditions For Operation And Installation

- 周围空气温度 $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
- 安装地点的海拔不超过2000m;
- 空气的相对湿度在最高温度为 $+40^{\circ}\text{C}$ 时不超过50%，在较低温度下可以有较高的相对湿度，例如 20°C 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；
- 断路器通过GB/T2423.10试验要求可耐受频率为 $2\text{Hz} \sim 13.2\text{Hz}$ 、位移为 $\pm 1\text{mm}$ 及频率为 $13.2\text{Hz} \sim 100\text{Hz}$ 、加速度为 $\pm 0.7\text{g}$ 的机械振动；
- 断路器主电路安装类别为IV，其余辅助电路、控制电路安装类别为III；
- 断路器适用于电磁环境A；
- 湿热带型（TH型）断路器通过GB/T2423.4、GB/T2423.18试验要求，能耐受潮湿空气、盐雾、油雾、霉菌的影响；
- 断路器安装的垂直倾斜度不超过 5° ；
- 断路器应安装在无爆炸危险和无导电尘埃、无足以腐蚀金属和破坏绝缘的地方；
- 断路器安装在柜体小室内，且加装门框，防护等级达IP40；
- 可运行条件：
断路器通过GB/T 2423.1和GB/T 2423.2的试验要求，周围空气温度可低至 -25°C 、高至 $+70^{\circ}\text{C}$ （超过 $+40^{\circ}\text{C}$ 降容使用，详见本样本中的断路器功耗及降容系数）；
断路器通过GB/T 2423.4试验Db（温度 $+55^{\circ}\text{C}$ 、相对湿度95%）要求；
海拔超过2000m降容使用，详见本样本中的高海拔降容；
- 储存条件：周围空气温度为 $-25^{\circ}\text{C} \sim +70^{\circ}\text{C}$ 。

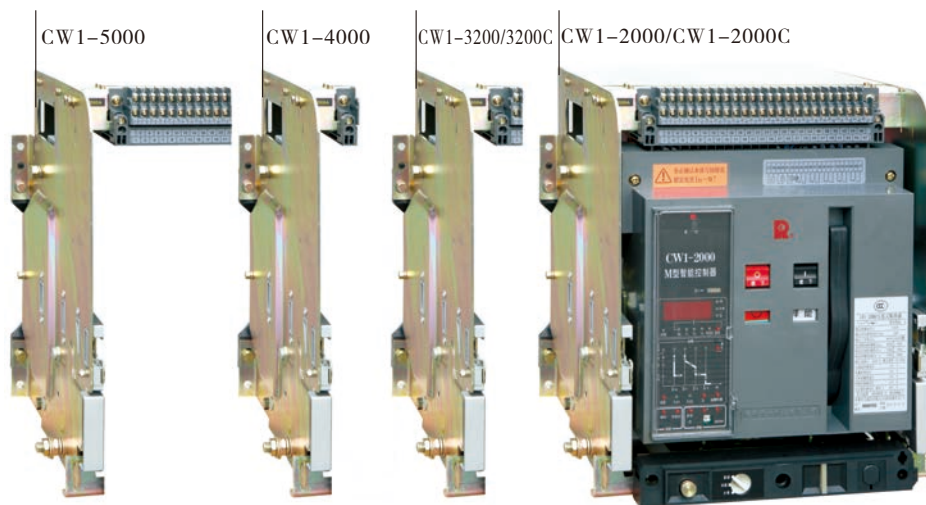
- Ambient temperature: $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
- Elevation $\leq 2000\text{m}$;
- Relative humidity: not exceed 50% at the maximum ambient temperature of $+40^{\circ}\text{C}$, but higher relative humidity at the lower temperature, for example, 90% at 20°C . Special measures should be taken considering the dews on product surface due to temperature change;
- Pollution protection: 3 grade;
- The breakers are tested by GB/T2423.10, can withstand vibration of frequency range $2\text{Hz} \sim 13.2\text{Hz}$, displacement 1mm and frequency range $13.2\text{Hz} \sim 100\text{Hz}$, acceleration 0.7g .
- Installing categories: IV for the main circuit; III for other auxiliary and control circuits;
- The breaker is suitable in electromagnetic environment A;
- Damp heat type (TH) breakers are tested by GB/T2423.4、GB/T2423.18, can bear the influence of moisture in the air of salt fog and oil fog or mould.
- The vertical gradient isn't more than 5° ;
- There must be not any explosive medium, and there must be not any gas which would corrode metal or any conducting dust which would destroy the insulation;
- The circuit breaker should be installed in the compartment of switchgear cabinet and doorframe should be fixed additionally. Protection grade up to Ip40.
- Service condition:
The breakers are tested by GB/T 2423.1 and GB/T2423.2, ambient temperature lower -25°C , higher $+70^{\circ}\text{C}$ (temperature over $+40^{\circ}\text{C}$, the breakers are used by reducing capacity; please seeing "power consumption and capacity lowering coefficient");
The breakers are tested by GB/T 2423.4 test Db (temperature $+55^{\circ}\text{C}$, relative humidity 95%);
Elevation over 2000m, the breakers are used by reducing capacity, please seeing "capacity-reducing for high-elevation".
- Storage condition: ambient temperature $-25^{\circ}\text{C} \sim +70^{\circ}\text{C}$.

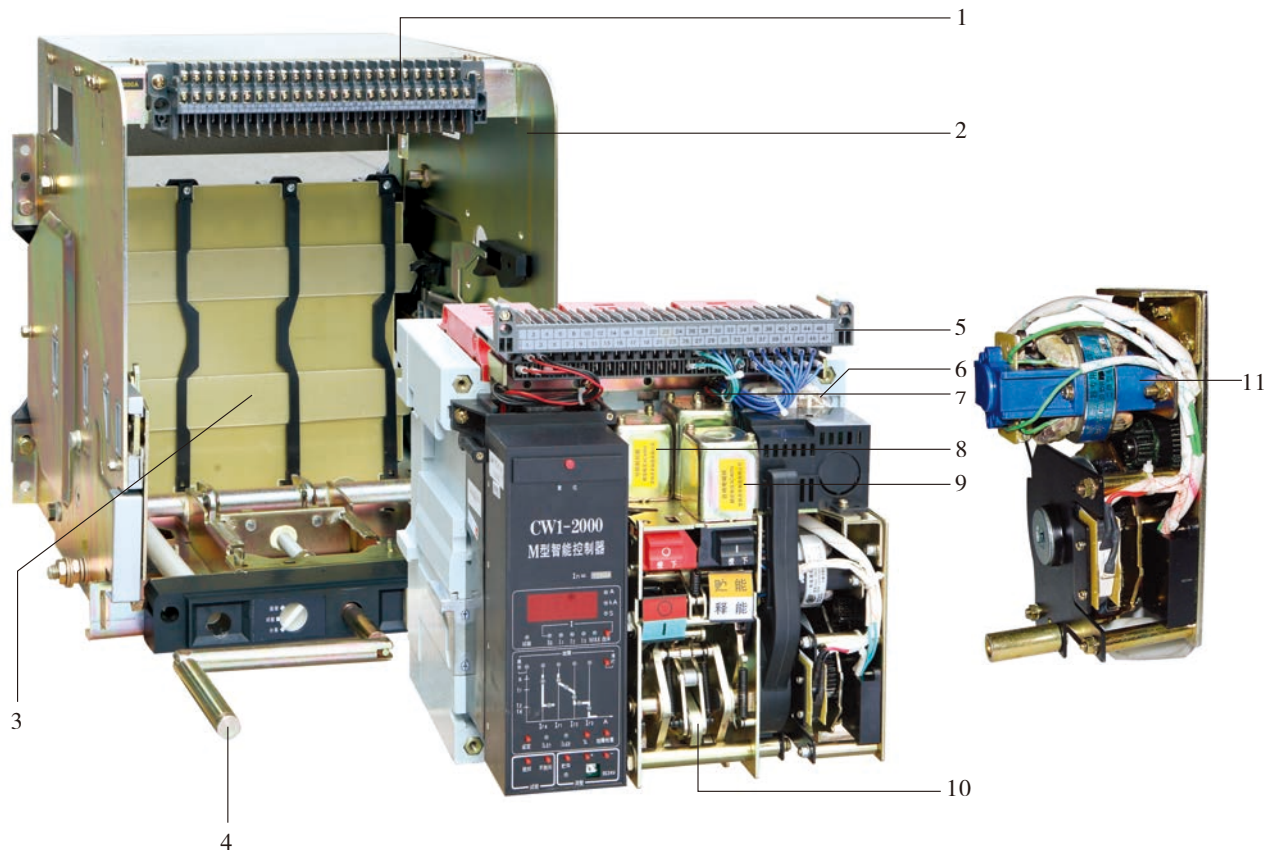


● 断路器正面指示 Front View of the Circuit Breaker



● CW1系列智能型万能式断路器 CW1 Series Intelligent Universal Circuit Breaker



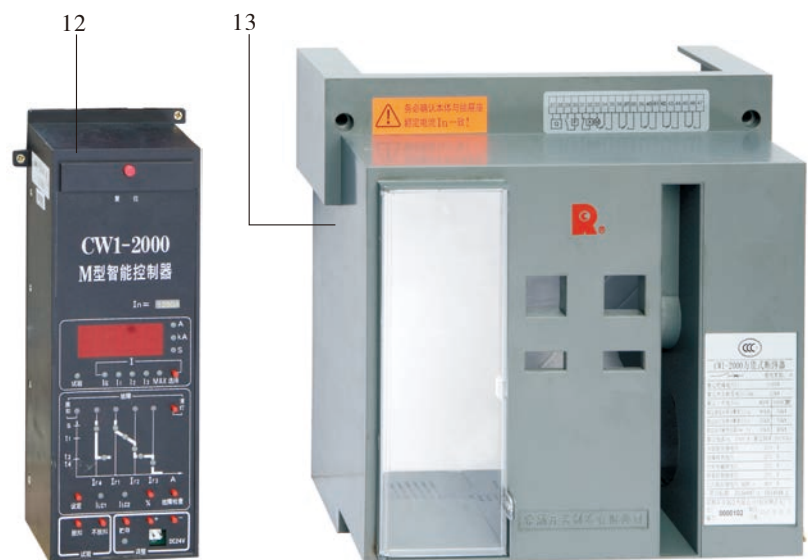


● 抽屉式断路器

1. 二次回路接线端子（静）
2. 抽屉座
3. 安全隔板
4. 手柄
5. 二次回路接线端子（动）
6. 辅助开关
7. 欠电压脱扣器
8. 分励脱扣器
9. 合闸电磁铁
10. 操作机构
11. 电动操作机构
12. 智能控制器
13. 面板

● Draw-out circuit breaker

1. Terminals of secondary circuit (fixed)
2. Drawer base
3. Safety separator
4. Handle
5. Terminals of secondary circuit (motional)
6. Auxiliary switch
7. Under-voltage release
8. Shunt release
9. Closing electromagnet
10. Operation mechanism
11. Motor-drive charging device
12. Intelligent controller
13. Panel



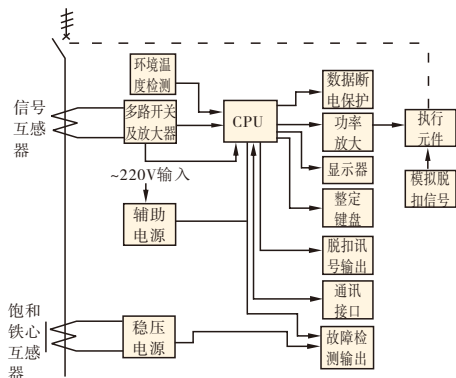


● 结构特点

- 断路器有固定式和抽屉式之分。断路器由触头系统、灭弧系统、操动机构、电流互感器、智能控制器和辅助开关、二次插接件、欠压、分励脱扣器等部件组成（其中抽屉式断路器还含有抽屉座）；抽屉座由带有导轨的左右侧板、底座和横梁等组成。
- 触头系统
 - 采用一挡触头系统，在同一触头的不同部位，触头单元既具有主触头的功能，也具有弧触头的功能；
 - 采用新型耐弧的触头材料，使触头在分断短路电流后不致过分发热而引起温升过高；
 - 触头系统采用多路并联，降低电动斥力，提高触头系统的电动稳定性。
- 灭弧室
 - 每个极均设有一个灭弧室，其作用是将各电极分隔开，并相互绝缘，与断路器的其它部分及操作人员相隔离；
 - 灭弧室全部置于断路器的绝缘底座内，增加了灭弧室壁的机械强度，不致在分断大短路电流时炸裂。
- 操作机构和电动操作机构（储能电机）

机构位于断路器正面。操作机构采用五连杆的自由脱扣机构，并设计成预贮能形式。在使用过程中，机构可处于预贮能位置，只要断路器一接到合闸命令，断路器就能立即瞬时闭合。预贮能的释放可用手动释能按钮或合闸电磁铁来完成。电动操作机构采用模块化设计，与操作机构连接配合，装拆方便。
- 智能控制器

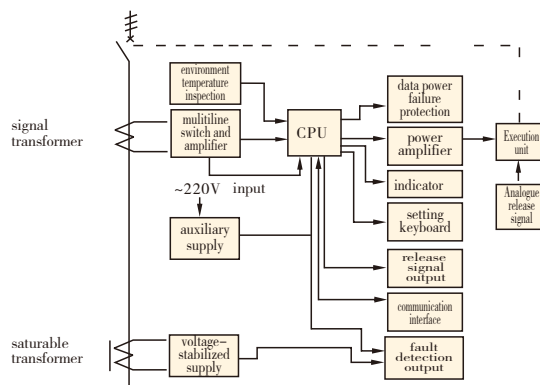
智能控制器的方框图如图



● Structure Feature

- The breakers could be classified two types: fixed type and draw-out type. The body of breaker consists of contacts system arc extinguish system operating device transformer intelligent controller and auxiliary switch secondary plug and socket units undervoltage and shunt release. The draw-out socket is made up of: the rightside plate and leftside plate (with guidway) base and cross member.
- Contacts system
 - One-gear system. The different part of the same contact is of the different function. The contacts unit is with both main contact function and arc-contact function;
 - The new-type arc-resistant material is to be chosen for making contacts. After breaking the short-circuit current, the contacts wouldn't be overheat to make the temperature overrising;
 - The contacts system is made of the multiple way parallel style, to reduce the electric repulsion and to rise the electric steady ability.
- Arc-extinguish chamber
 - There is a arc-extinguish chamber for each pole, to play the role of separating all the poles and isolating them for each other, and keeping it apart with other parts of the breaker and operating worker;
 - The arc-extinguish chamber is all in the insulation base, to increase the mechanical strength and would not to be crashed when breaking big short-circuit current.
- Operating device and motor-driven transmitting device. The device is sited on the front of the breaker. The free-release device, with five connecting rods, is used in the operating device, and it is designed energy-storage form. The device is always on energy-storage position, the breaker would be closed instantaneously as soon as the breaker is ordered to be closed. To release the pre-stored energy, it may be by means of pushing the release energy button manually or using the closing electro-magnet. The motor-driven transmitting device have the system of its own, linking the energy-storage shaft and main shaft movably with tenon and mortise, easily to assemble or disassemble.
- Intelligent controller

The scheme of intelligent controller



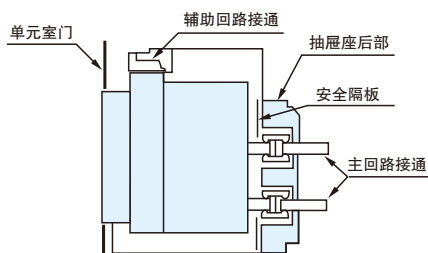


● 抽屉座

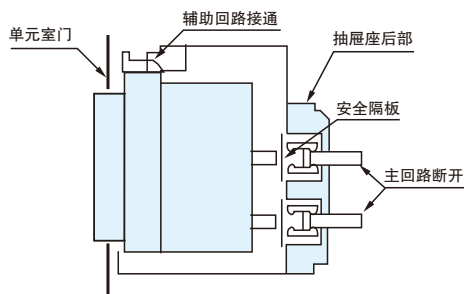
● 抽屉座由带有导轨的左右侧板、底座和横梁等组成，底座上设有推进机构，并装有位置指示，抽屉座的上方装有辅助电路静隔离触头。桥式主回路触头前方设置安全隔板。

● 断路器本体在抽屉座内的运动具有三个“位置”：

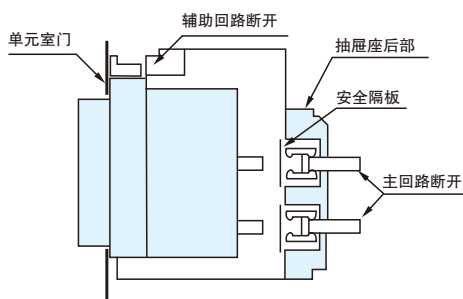
● “连接”位置：主回路和辅助回路均接通，此时隔离板开启；



“试验”位置：主回路断开，安全隔板关闭，仅辅助回路接通，可进行必要的动作试验；



“分离”位置：主回路与辅助回路全部断开，安全隔板关闭。

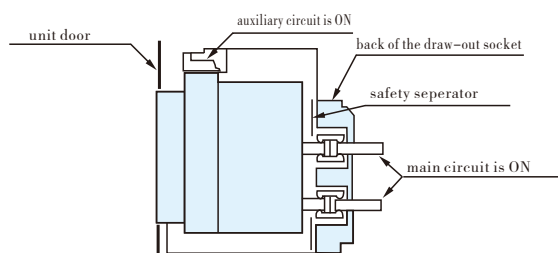


● Draw-out socket

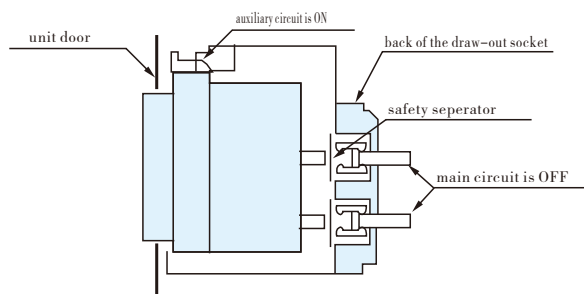
● The draw-out socket is made up of the rightside and leftside plates (with guided way),base and cross member.There are pushing device and position indicator on the base.There are static seperated contacts for auxiliary circuit on the top of the base.The safety seperator is set on the front of the bridge main contacts.

● It has three "position" for breaker body moving in the draw-out socket:

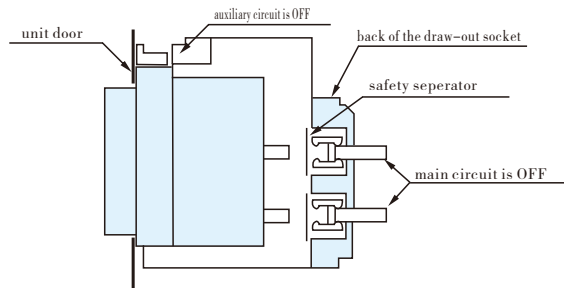
● "link" position:there are all "ON" for main circuit and auxiliary circuit.The seperator is open;



"test" position:The main circuit is "OFF",safety seperator is closed.Only auxiliary circuit is "ON",the necessary action test could be done;



"seperated" position:The main circuit and auxiliary circuit are all "OFF",safety seperator is closed.





● 智能控制器的选择

智能控制器按功能分有三种类型:

L型-电子型(电流柱状显示,拨盘调整),

M型-标准型(电流数字显示,按钮调整),

H型-通信型(电流数字显示,按钮调整并可通信)。

MY型-液晶显示标准型(电流液晶显示,按钮调整)

HY型-液晶显示通信型(电流液晶显示,按钮调整)

● L型(电子型)

● Type L (Electronic)

● Selecting the intelligent controller

It can be divided into three types according to its function:

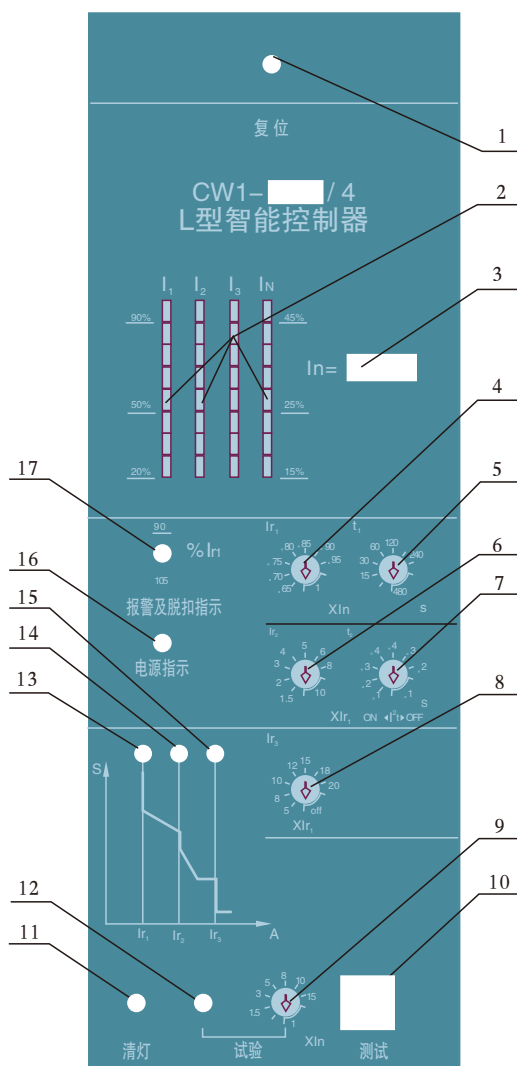
Type L, electronic type (current is indicated in columnar order, adjusted with knob),

Type M, normal type (digital indication for current, can be adjusted with push button.)

Type H, communicative type (digital indication for current, can be adjusted with push button and be communicative.)

Type MY, LCD displayed normal type (LCD indication for current, can be adjusted with push button.)

Type HY, LCD displayed communicative type (LCD indication for current, can be adjusted with push button and be communicative.)



面板说明:

- 故障脱扣复位按钮
- 光柱显示负载率(%Ir1)
- 断路器额定电流
- 长延时电流调节
- 长延时时间调节
- 短延时电流调节
- 短延时时间调节
- 瞬动电流调节
- 试验电流调节
- 测试端(制造厂测试检查用)
- "清灯"键
- 试验按钮
- 长延时故障指示
- 短延时故障指示
- 瞬时故障指示
- 电源指示
- 报警及脱扣指示

其它功能:

- 热模拟功能
- MCR功能

Panel caption:

- return button for fault releasing
- load indication in percentage(%Ir1)
- rated current of the breaker
- long-delay current setting
- long-delay time setting
- short-delay current setting
- short-delay time setting
- instantaneous action current setting
- test current setting
- test terminal (for the purpose of inspection by the manufacturer)
- "clean" key
- test key
- fault showing for long-delay
- fault showing for short-delay
- fault showing for instantaneous
- supply indication
- alarm and release showing

Other function:

- thermo-memory
- MCR function

注: 图示L型智能控制器面板表示断路器极数为四极, 且N极过电流保护为相极的50%; 当断路器N极过电流保护为相极的100%时, N极光柱右侧负载指示百分值(20%、50%及90%)因与相极相同而不再另外表示; 当断路器为三极时, 无IN光柱显示。

Note: The panel herein belongs to the circuit breaker of four poles, in which the over-current protection value in N pole is 50% that of in each phase. In case the former is 100% of the later, the percentage value indication (20%, 50% and 90%) of loading current to the right of column square will disappear. There is no indication of "In" column square in case of three phase breaker.



结构简介

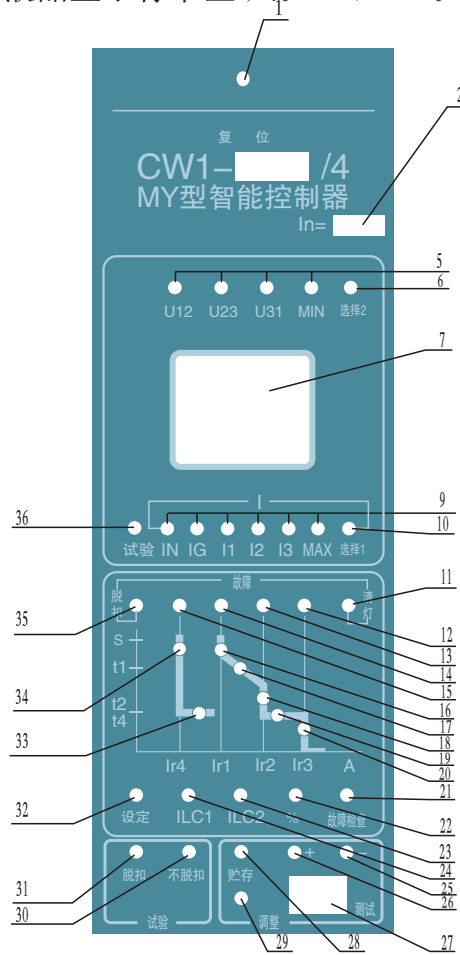
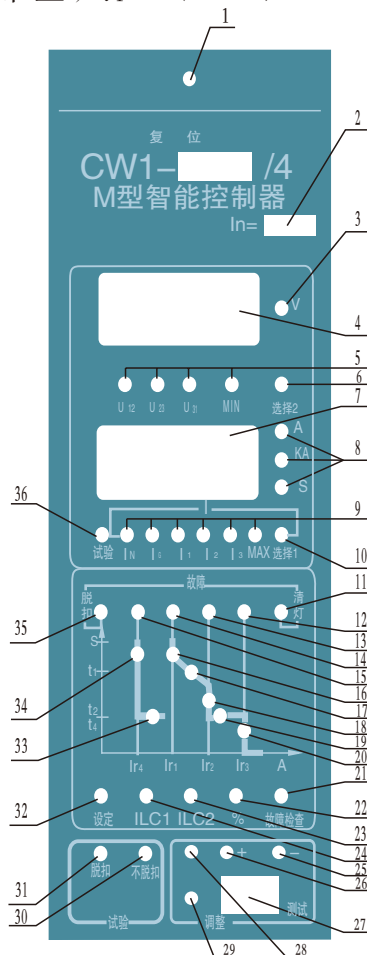
SYNOPSIS OF STRUCTURE

● 智能控制器的选择

● Selecting the intelligent controller

● M型 (标准型) Type M (Normal)

● MY型 (液晶显示标准型) Type MY (LCD displayed normal tpe)



面板说明:

1. 故障脱扣复位按钮
2. 断路器额定电流
3. 电压单位
4. 电压显示屏
5. 三相线电压及最小值指示
6. 电压选择键
7. 电流、时间显示屏 (M型), 电压、电流时间显示屏 (MY型)
8. 电流、时间单位
9. 三相电流、中性相电流、接地故障电流及最大值指示
10. 电流及时间选择键
11. “清灯”键
12. 瞬动故障指示
13. 短路短延时故障指示
14. 过载长延时故障指示
15. 接地故障指示
16. 长延时电流整定指示 (兼报警)
17. 长延时动作时间整定指示
18. 短延时电流整定指示 (兼报警)
19. 短延时动作时间整定指示

20.瞬动电流整定指示 (兼报警)

21. 故障检查键
22. 触头磨损检查按钮
23. 负载监控信号2电流整定 (兼报警)
24. 负载监控信号1电流整定 (兼报警)
25. 整定值递减
26. 整定值递增
27. 测试口 (制造厂测试检查用)
28. 贮存键
29. 贮存指示
30. 不脱扣试验按钮
31. 脱扣试验按钮
32. 各种保护值的设定按钮
33. 接地故障动作时间整定指示
34. 接地故障电流整定指示 (兼报警)
35. 脱扣指示
36. 试验指示

其它功能:

1. 自诊断功能
2. 热模拟功能
3. 故障记忆功能
4. MCR功能

Panel caption:

- 1.return button for fault releasing
- 2.rated current of the breaker
- 3.unit of voltage
- 4.voltage indicator
- 5.voltage of each line and the min. value
- 6.key for selecting voltage
- 7.current, time indicator (typeM), voltage, time indicator(type MY)
- 8.unit of current and time
- 9.indication of three phase current,neutral phase current,grounding fault -current and the max. value
- 10.key for selecting current
- 11."clean" key
- 12.fault showing for instantaneous
- 13.fault showing for short-circuit short- delay
- 14.fault showing for over-load long-delay
- 15.fault showing for earthed error
- 16.showing the long-delay currentsetting (alarm simultaneously)
- 17.showing the long-delay actiontime setting
- 18.showing the short-delay currentsetting (alarm simultaneously)
- 19.showing the short-delay actiontime setting
- 20.showing the instantaneouscurrent setting (alarm simultaneously)

21.key for inspecting fault

- 22.key for detecting wearing of contacts
- 23.load supervision signal 2(alarm simultaneously)
- 24.load supervision signal 1(alarm simultaneously)
- 25.setting's decrease progressively
- 26.setting's increase progressively
- 27.test terminal (for the purpose of inspection by the manufacturer)
- 28.memory key
- 29.memory indicator
- 30.non-release test key
- 31.release test key
- 32.setting key for various protection value
- 33.indication of the earthed fault action time setting
- 34.indication of the earthed fault current setting (alarm simultaneously)
- 35.release indicating
- 36.test indicating

Other function:

- 1.auto-diagnosis
- 2.thermo-memory
- 3.fault-memory
- 4.MCR

注: 图示M型智能控制器面板表示断路器极数为四极, 如断路器为三极, 则面板说明项9无中性相电流IN 另外, 本厂除提供带电压显示功能的M型智能控制器外 (图示), 还提供不带电压显示功能的M型智能控制器 (图示面板说明无3、4、5、6项)。

Note:The Panel herein belongs to the circuit breaker of four poles,If the breaker is of three poles,the mark "IN" in item "9" indicating current of neutral phase will disappear.Other than the type M intelligent controller with voltage indication,the other one without voltage indication is also available (there aren't items "3"、"4"、"5" and "6" on the panel in this case.)



结构简介

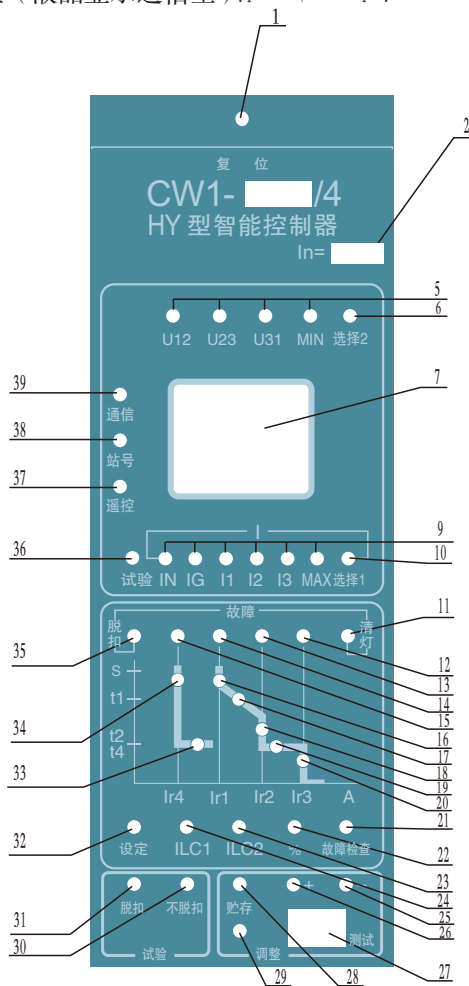
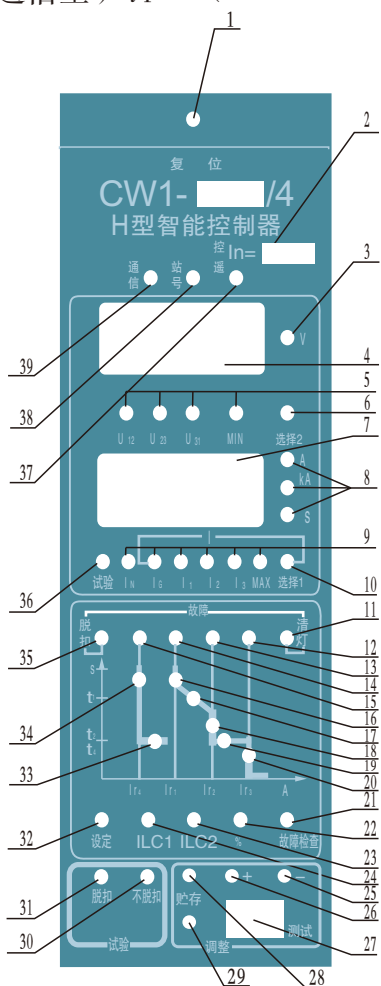
SYNOPSIS OF STRUCTURE

● 智能控制器的选择

● Selecting the intelligent controller

● H型 (通信型) Type H (Communicative)

● HY型 (液晶显示通信型) Type HY (LCD displayed communicative type)



面板说明:

- 1.故障脱扣复位按钮
- 2.断路器额定电流
- 3.电压单位
- 4.电压显示屏
- 5.三相线电压及最小值指示
- 6.电压选择键
- 7.电流、时间显示屏H型, 电压、电流时间显示屏 (HY型)
- 8.电流、时间单位
- 9.三相电流、中性相电流、接地故障电流及最大值指示
- 10.电流及时间选择键
- 11.“清灯”键
- 12.瞬动故障指示
- 13.短路短延时故障指示
- 14.过载长延时故障指示
- 15.接地故障指示
- 16.长延时电流整定指示 (兼报警)
- 17.长延时动作时间整定指示
- 18.短延时电流整定指示 (兼报警)
- 19.短延时动作时间整定指示
- 20.瞬动电流整定指示 (兼报警)
- 21.故障检查键
- 22.触头磨损检查按钮
- 23.负载监控信号2电流整定 (兼报警)
- 24.负载监控信号1电流整定 (兼报警)
- 25.整定值递减
- 26.整定值递增
- 27.测试口 (制造厂测试检查用)
- 28.贮存键
- 29.贮存指示
- 30.不脱扣试验按钮
- 31.脱扣试验按钮
- 32.各种保护值的设定按钮
- 33.接地故障动作时间整定指示
- 34.接地故障电流整定指示 (兼报警)
- 35.脱扣指示
- 36.试验指示
- 37.遥控
- 38.站号
- 39.通信

其它功能:

- 1.自诊断功能
- 2.热模拟功能
- 3.故障记忆功能
- 4.MCR功能

Panel caption:

- 1.return button for fault releasing
- 2.rated current maximum (could be protected)
- 3.voltage indicator
- 4.unit of voltage indicating
- 5.voltage phase and minimum
- 6.key for selecting voltage
- 7.Current, time, number indicator, voltage, current, time indicator (type HY)
- 8.unit of current, time indicating
- 9.indicating the maximum of current phase
- 10.key for selecting current
- 11."clean" key
- 12.fault showing for instantaneous
- 13.fault showing for short-circuit short-delay
- 14.fault showing for over-load long-delay
- 15.fault showing for earthed error
- 16.showing the long-delay current setting (alarm simultaneously)
- 17.showing the long-delay action time setting
- 18.showing the short-delay current setting (alarm simultaneously)
- 19.showing the short-delay action time setting
- 20.showing the instantaneous current setting (alarm simultaneously)
- 21.key for inspecting fault

- 22.key for detecting wearing of contacts
- 23.loading 2 current setting (alarm simultaneously)
- 24.loading 1 current setting (alarm simultaneously)
- 25.decrease progressively
- 26.increase progressively
- 27.test terminal (for the purpose of inspection by the manufacturers)
- 28.memory key
- 29.memory indicator
- 30.non-release test key
- 31.release test key
- 32.setting key for various protection value
- 33.showing the earthed action time setting
- 34.showing the earthed current setting (alarm simultaneously)
- 35.release indicating
- 36.test indicating
- 37.remote control
- 38.serial number
- 39.communication

Other function:

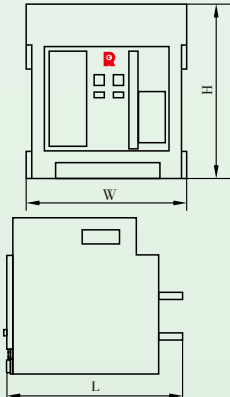
- 1.auto-diagnosis
- 2.thermo-memory
- 3.fault-memory
- 4.MCR

注: 图示H型智能控制器面板表示断路器极数为四极, 如断路器为三极, 则面板说明项9无中性相电流IN; H型智能控制器带电压显示功能。
Note: The panel herein belongs to the circuit breaker of four poles. If breaker is of three poles, the mark "IN" in item "9" on the panel indicating current of neutral phase will disappear. Type H intelligent controller is provided with voltage indication.



主要技术指标

MAIN TECHNICAL PARAMETERS

型号 Type		CW1-2000C	CW1-2000	CW1-3200C	CW1-3200	CW1-4000	CW1-5000																	
框架等级额定电流 Inm (A) Frame Rated Current Inm (A)		2000		3200		4000	5000																	
额定电流In(A) Rated Current In (A)		630、800、 1000、1250、 1600、2000		2000、2500、 2900、3200		2500、3200、 3600、4000	4000、5000																	
额定工作电压Ue(V) Rated Working Voltage Ue (V)		AC400 690 50Hz/60Hz																						
额定绝缘电压Ui(V) Rated Insulation Voltage Ui (V)		1000																						
额定冲击耐受电压 Uimp (kV) Rated Impulse Withstand able Voltage Uimp (kV)		12																						
工频耐受电压 U Working Frequency Withstandable Voltage U		3500																						
极数 Quantity of poles		3、4					3																	
N相额定电流In(A) Rated Current of N-phase Is (A)		100%In																						
额定极限短路分断能力Icu(kA)(有效值) Limited Short-circuit Breaking Capacity Icu(kA) (effective value)	AC400V	65	80	80	100	100	120																	
	AC690V	50	50	65	65	75	75																	
额定运行短路分断能力Ics(kA)(有效值) Operation Short-circuit Breaking Capacity Ics(kA) (effective value)	AC400V	65	65	65	80	80	100																	
	AC690V	50	50	65	65	65	65																	
额定短路接通能力Icm(kA)(峰值) Rated Making Capacity of Short Circuit Icm(kA) (peak)	AC400V	143	176	176	220	220	264																	
	AC690V	105	105	143	143	165	165																	
额定短时耐受电流(1s)Icw(kA)(有效值) Rated Stand Current For Short-time (1s) Icw(kA) (effective value)	AC400V	50	50	65	80	80	100																	
	AC690V	50	40	65	65	65	65																	
使用类别 Applicable catelogy		B																						
分断时间(ms) Break Time (ms)		< 30																						
闭合时间(ms) Closing Time (ms)		< 70																						
智能控制器 Intelligent Controller	电子型L Electronic Type	○																						
	标准型M Normal Type	○																						
	通信型H Communicative Type	○																						
	液晶显示标准型 MY LCD displayed normal type	○																						
	液晶显示通信型 HY LCD displayed commuicative type	○																						
电气寿命* (次 times) Electrical durability		AC400V	In=630A-1000A; 15000		In=2000A-2500A; 6000		In=2500A-3600A; 4000	In=4000A; 3000																
			In=1250A-1600A; 10000		In=2900A-3200A; 5000		In=4000A; 3000	In=5000A; 2000																
			In=2000A; 8000																					
		AC690V	In=630A-1000A; 10000		In=2000A-2500A; 3000		In=2500A-3600A; 2500	In=4000A; 1500																
In=1250A-1600A; 6500			In=2900A-3200A; 2500		In=4000A; 1500	In=5000A; 1000																		
In=2000A; 5000																								
机械寿命* (次 times) Mechanical durability		免维护 Non-maintenance	15000		10000		10000(3P)/5000(4P)	4000																
		有维护 Maintenance	30000		20000		20000(3P)/10000(4P)	8000																
安装 Installation 		外形尺寸(mm) H×W×L		H	W	L	H	W	L	H	W	L	H	W	L	H	W	L	H	W	L			
		抽屉式 Draw-out	水平联接 horizontal	3P	前置front set																			
				4P	前置front set	438	375	423	438	375	451	438	429	423	438	429	492	438	544	492	438	799	492	
				4P	后置back set	438	470	423	438	470	451	438	544	423	438	544	492	438	799	492				
			垂直联接 vertical	3P	前置front set				438	375	425													
				4P	前置front set				438	375	446	438	429	466										
				4P	后置back set	438	470	453	438	470	446	438	544	466										
		固定式 Fixed	水平联接 horizontal	3P	前置front set																			
				4P	前置front set	395	362	323	395	362	351	395	414	323	395	414	371	395	527	424	395	782	424	
				4P	后置back set	395	457	323	395	457	351	395	527	323	395	527	371	395	782	424				
			垂直联接 vertical	3P	前置front set						362	325												
				4P	前置front set																			
				4P	后置back set	395	362	353	353	362	375	395	414	366										
				4P	前置front set						395	457	325											
				4P	后置back set	395	457	353	395	457	375	395	527	366										
				4P	前置front set																			
				4P	后置back set	395	457	353	395	457	375	395	527	366										
				4P	前置front set																			
				4P	后置back set	395	457	353	395	457	375	395	527	366										
4P	前置front set																							

*注: 免维护寿命指电器在修理或更换部件前能完成的操作循环次数的期望值。

*Note:Non-maintenance durability expresses the expectancy of the number of operating cycles which can be performed by the equipment before repair or replacement parts.



● 功耗 (环境温度+40℃)

Power consumption (Ambient temp.+40℃)

型 号 Type	三极/四极功 耗 (W) Three poles/four poles	
	固定式 Fixed Type	抽屉式 Draw-out Type
CW1-2000C/CW1-2000	393	455
CW1-3200C/3200	695	879
CW1-4000	1075	1258
CW1-5000	849	1222

功耗是在断路器通以壳架电流 I_{nm} 情况下测量的总的损耗。Power loss is the overall consumption measured with the breaker which is electrified with current I_{nm} .

● 降容系数 Capacity Lower Coefficient

下表表示断路器在所处周围工作环境温度且满足GB/T14048.2中约定发热条件下持续承载电流的能力。

The following table shows continual current-loading capacity of circuit breakers at different ambient environment temperature and under the conditions of the satisfaction of conventional heating in GB/T14048.2

型 号 Type	额定电流(A) Rated current	周围环境温度(℃) Ambient environment temperature						
		+40	+45	+50	+55	+60	+65	+70
CW1-2000C CW1-2000	630	1	1	1	1	1	1	1
	800	1	1	1	1	1	1	1
	1000	1	1	1	1	1	1	1
	1250	1	1	1	1	1	1	1
	1600	1	1	1	1	1	1	0.94
	2000	1	1	1	1	1	0.94	0.89
CW1-3200C CW1-3200	2000	1	1	1	1	1	0.98	0.92
	2500	1	1	1	0.98	0.93	0.88	0.83
	2900	1	1	1	0.99	0.94	0.89	0.84
	3200	1	1	1	0.97	0.93	0.88	0.83
CW1-4000	2500	1	1	1	1	1	1	1
	3200	1	1	1	1	1	1	0.95
	3600	1	1	1	0.99	0.94	0.89	0.84
	4000	1	1	0.95	0.91	0.86	0.82	0.77
CW1-5000	4000	1	1	1	1	1	0.96	0.90
	5000	1	1	1	0.99	0.95	0.90	0.84

注:

1、表中参数仅作为一般选型指导, 鉴于开关柜形式和使用条件的多样性, 实际应用中不同的解决方案必须进行试验验证。

2、表中参数是基于推荐接线铜排规格参考表, 断路器主回路接线端子温度为120℃。

1、Parameter listed in the table is only for ordinary select guide, since switchgears have various forms and use condition, different solutions in real applications must be tested before.

2、Parameter listed in table is based on the recommended wiring copper bus bar, and wiring terminal temperature of breaker's main circuit is 120℃.



高海拔降容

CAPACITY-REDUCING FOR HIGH-ELEVATION

海拔超过适用工作环境的2000m，断路器电气性能可参照下表修正：

If elevation exceeds work environment 2000m, electric property of circuit breaker can correct according to following table:

海拔(m) Altitude		2000	3000	4000	4500	5000
工频耐压(V) Power freq-uency withstand voltage		3500	3500	3000	2500	2200
最大额定工作电压(V) MAX rated operational voltage		690	690	690	690	560
工作电流修正系数 Correction factor of operational current	Inm=2000A	1	1	1	1	0.97
	Inm=3200A	1	0.93	0.88	0.85	0.82
	Inm=4000A	1	0.93	0.88	0.85	0.82
	Inm=5000A	1	0.98	0.93	0.9	0.87



断路器主回路接线铜排规格参考表

REFERENCE TABLE OF MAIN CIRCUIT WIRING COPPER BAR FOR BREAKER

型号 type	额定电流(A) rated current	铜排规格 Specifications of copper bars	
		根数 Number	尺寸 (mm × mm) Size
CW1-2000C CW1-2000	630	2	50 × 5
	800	2	60 × 5
	1000	2	60 × 5
	1250	3	60 × 5
	1600	2	60 × 10
	2000	3	60 × 10
CW1-3200C CW1-3200	2000	3	100 × 5
	2500	4	100 × 5
	2900	3	100 × 10
	3200	4	100 × 10
CW1-4000	2500	4	100 × 5
	3200	4	100 × 10
	3600	4	100 × 10
	4000	4	120 × 10
CW1-5000	4000	4	120 × 10
	5000	6	100 × 10

表中规格为断路器处于周围环境温度最高40℃，敞开安装且满足GB/T14048.2中约定发热条件。

The specifications of copper bars in the above table are introduced under which the circuit breakers by open installation are at maximum ambient environment temperature of 40℃ and satisfy conventional heating in GB/T14048.2.



断路器主回路端子至外接铜排支架最大允许距离参考表

MAX DISTANCE REFERENCE TABLE OF BREAKER'S TERMINALS TO EXTERNAL COPPER BAR HOLDER

主电路端子至母线支架的最大允许距离 Max. Distance Of Main Circuit Terminals To Copper Bar Holder								
短路电流 (kA) Short Circuit Current		42	55	65	85	100	120	135
L (mm)	CW1-2000C CW1-2000	300	200	150	100	—	—	—
	CW1-3200C CW1-3200 CW1-4000	350	250	150	100	100	—	—
	CW1-5000	350	300	250	150	150	150	150

● CW1-2000C

水平接线
Horizontally Wire

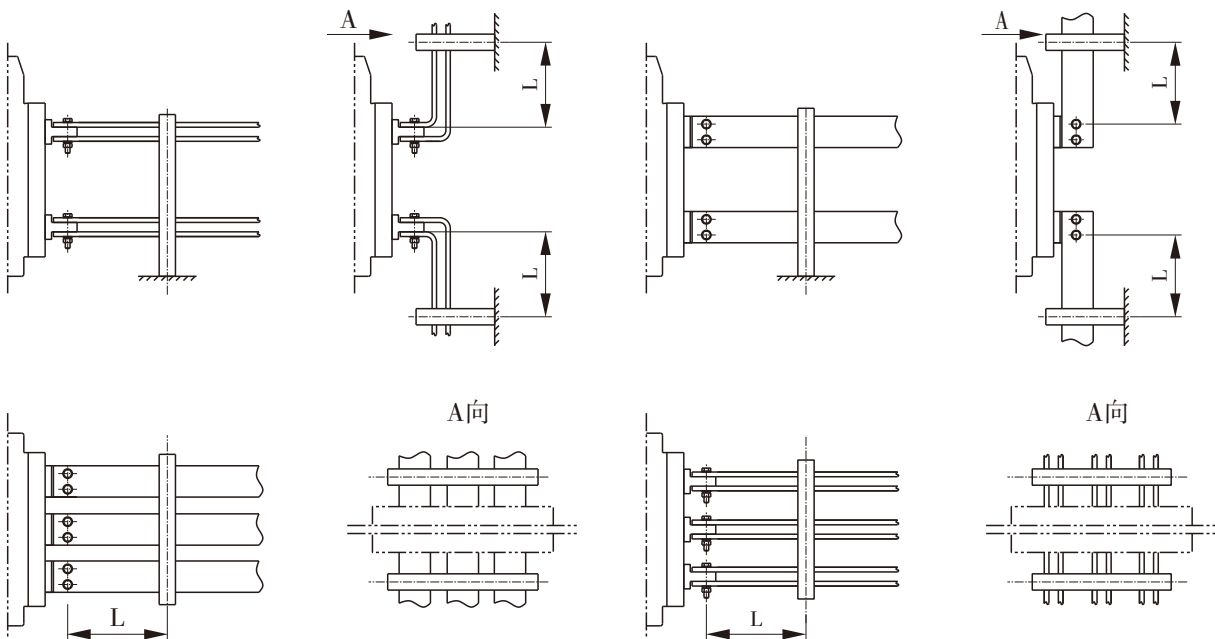
垂直接线
Vertically Wire

情形1

情形2

情形1

情形2

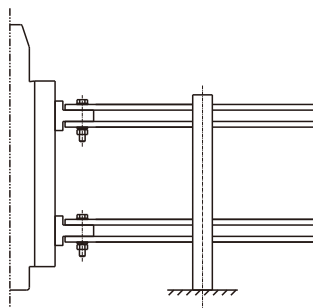




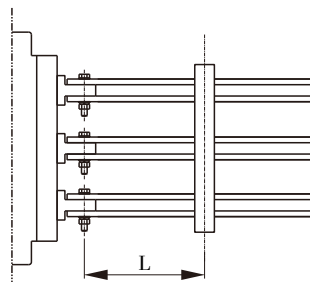
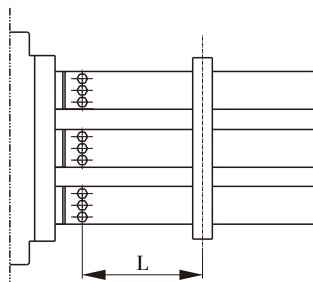
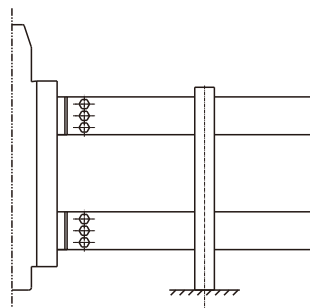
断路器主回路端子至外接铜排支架最大允许距离参考表 MAX DISTANCE REFERENCE TABLE OF BREAKER'S TERMINALS TO EXTERNAL COPPER BAR HOLDER

● CW1-3200C

水平接线
Horizontally Wire



垂直接线
Vertically Wire



● CW1-2000 ~ 5000

水平接线
Horizontally Wire

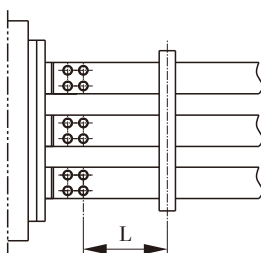
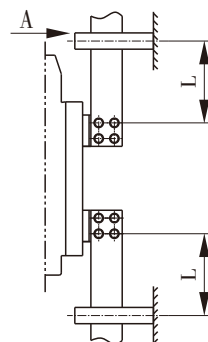
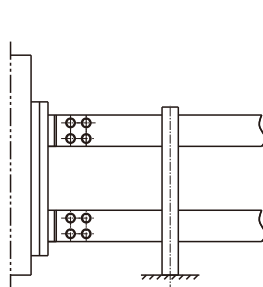
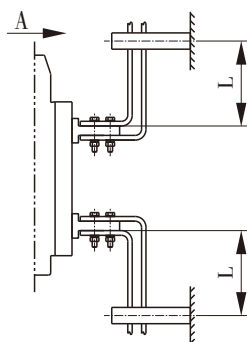
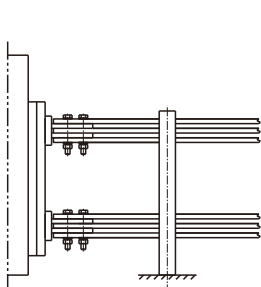
垂直接线
Vertically Wire

情形1

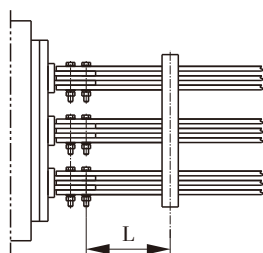
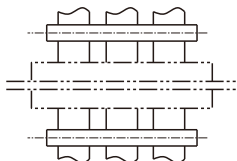
情形2

情形1

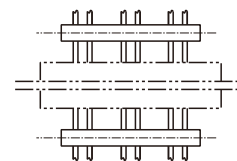
情形2



A向



A向

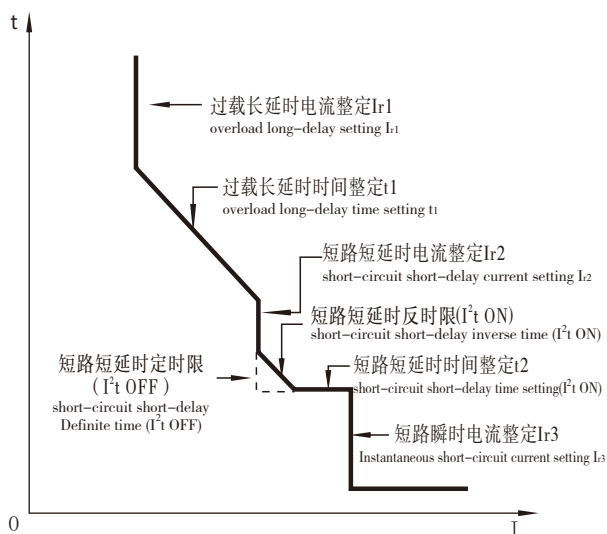


注：CW1-3200、4000、5000无垂直接线。
Note: no vertically wire for CW1-3200、4000、5000.



● 过电流保护特性

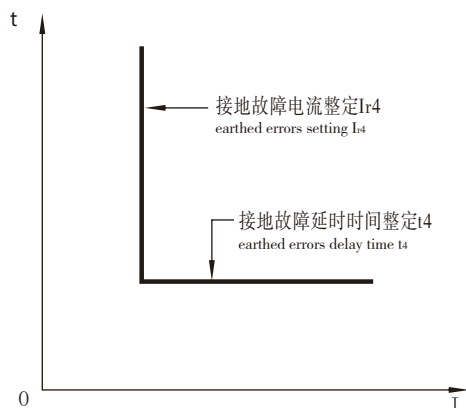
过电流保护由相线过电流保护和中性线过电流保护（四极断路器及三极断路器带外接中性线电流互感器具有中性线过电流保护）组成，相线过电流保护电流、时间参数一般由制造厂按用户订货要求整定（用户自己也可自行整定）；中性线过电流保护电流、时间参数按比例自动跟踪相线整定值，比例数由用户选择，即N极额定电流 I_N 为50% I_n 或100% I_n 两种。



长延时、短延时、瞬时保护特性
Long-delay, short-delay instantaneous protection Feature

● 接地故障保护(可关断-OFF)

● Earthed Errors Protection (can be "OFF")



接地故障保护特性
Earthed errors protection feature

● Over-current Protection Feature

Over-current protection refers to two kinds of protection: line protection and neutral protection (Four pole breaker and three pole breaker with current transformer linking externally to neutral N). In case of line over-current protection, current and time are set by the manufacturer conventionally as Per user's demands (user can also set the value themselves); In case of neutral over-current protection, current and time correspond to setting value of line automatically at the ratio of 50% or 100% I_n (rating of neutral phase), which can be determined by users.

● 过载保护

- 过载长延时反时限保护, 整定电流 I_{r1} 可调;
- 过载长延时延时时间 t_1 可调。

● 短路短延时保护

- 短路短延时反时限保护(I^2t ON), 整定电流 I_{r2} 可调;
- 短路短延时定时限保护(I^2t OFF), 整定电流 I_{r2} 可调;
- 短路短延时延时时间 t_2 可调。

● 短路瞬时保护

- 短路瞬时(可关断 - OFF)整定电流 I_{r3} 可调。

● Over-load Protection

- Inverse long-delay overload protection, setting current I_{r1} is adjustable;
- Long-delay overload time t_1 is adjustable.

● Short-circuit short-delay Protection

- Short-circuit short-delay inverse time protection (I^2t ON), setting current I_{r2} is adjustable;
- Short-circuit short-delay definite time protection (I^2t OFF), setting current I_{r2} is adjustable;
- Short-circuit short-delay time t_2 is adjustable.

● Instantaneous short-circuit protection

- Instantaneous short-circuit (can be "OFF") setting current I_{r3} is adjustable.

● 接地故障保护

- 接地故障定时限保护, 整定电流 I_{r4} 可调;
- 延时时间 t_4 可调;
- OFF后只报警, 不分断。

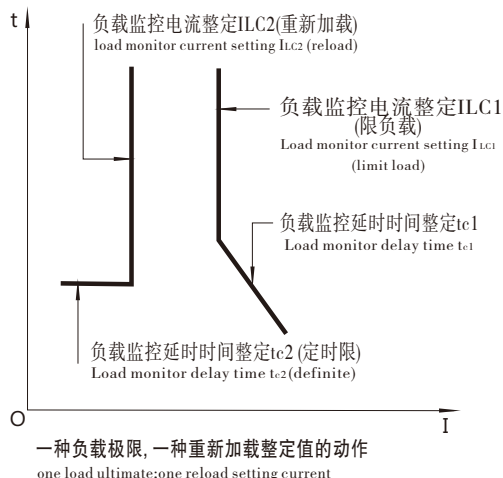
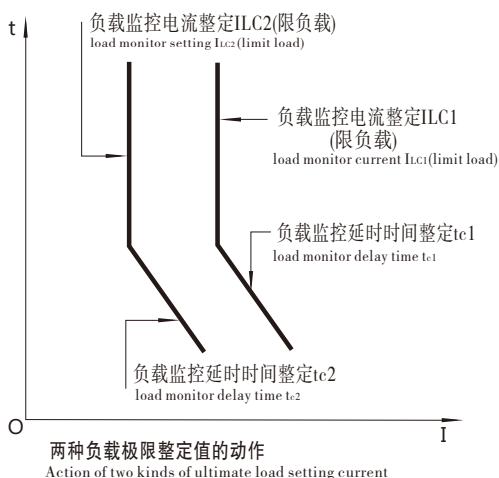
● Earthed errors protection

- Earthed errors definite time protection, setting current I_{r4} is adjustable.
- Delay time t_4 is adjustable.
- When this function is "OFF", circuit won't be broken off where as alarm will be sent out.



● 负载监控

● Load Monitor



● 负载监控

- 用于监控下级不重要负载, 保证主系统供电
- 负载监控有两种方式可选, 用户任选其一。监控电流整定值为ILC1及ILC2, 一般取 $ILC1 \geq ILC2$ 。

● Load monitor

- To monitor and control the next unimportant load, so as to ensure power supply of main system.
- There are two patterns of load monitoring from which users can choose one freely. The setting values of the load monitoring current are ILC1 and ILC2, normally ILC1 is larger than ILC2.

- 方式一: 可控制两路下级负载, 当主电路运行电流先后超过ILC1、ILC2时, 分别延时tc1、tc2后发出接点信号, 控制器指令分断两路受控负荷, 恢复受控负荷供电需手动控制。

- Pattern 1: two ways of downstream load circuit can be controlled. When operating current of the main circuit rises over the setting value ILC1 and ILC2, connection signal will be sent out after time duration tc1 and tc2 separately. Then the two ways of load circuits are broken off. Recovery requires human intervention.

- 方式二: 只控制一路下级负载, 当主电路运行电流超过ILC1时, 延时tc1后发出接点信号, 控制器指令分断此路负载。若分断此路负载后, 主电路运行电流低于ILC2且持续时间tc2后, 控制器可再发出信号, 指令接通已分断负荷(重新加载), 恢复该负载供电。

- Pattern 2: only one way of loading circuit can be controlled. When operating current of the main circuit rises over the setting value ILC1, connection signal will be sent out after time duration tc1 and the loading circuit will be broken off. After the breaking operation, if the main current decreases to the setting value ILC2 and connection signal is sent out again from the intelligent controller after time duration tc2, the open loading circuit will be closed (reload). So the power supply of the whole circuit is restored.

- 与ILC1、ILC2相对应的负载监控信号(1)、(2)分别通过断路器二次回路接线端子14、16和18、20输出接点信号, 信号发出时同时由智能控制器的发光二极管指示。

(控制器负载监控信号输出接点闭合0.5s后断开, 接点容量AC230V5A。)

- Load monitoring signals (1) and (2) corresponding to ILC1 and ILC2 separately are transmitted via the secondary terminals in the number of 14, 16 and 18, 20 separately. There will also be LED indication at the time when signals are being transmitted.

(The connection terminals which operate under order of load monitoring signal from the intelligent controller will open after half second and the output capacity is AC230V5A.)

● 过载长延时 I^2t 反时限动作特性● Inverse Long-delay I^2t Action Feature For Over-load

整定电流 I _{r1} 调整范围 Adjusting area of setting current I _{r1}		L	(0.65~1.0)I _n 按每级5%I _n 递变调整 (0.65~1.0)I _n adjusting successively with 5 percent I _n for each step					
		M、H型	(0.4~1.0)I _n 按每级20A递变调整 (0.4~1.0)I _n adjusting successively with 20A for each step					
		MY、HY型	(0.4~1.0)I _n 按每级10A递变调整 (0.4~1.0)I _n adjusting successively with 10A for each step					
动作时间允差 ±10% acting time tolerance ±10%	电 流 Current	动 作 时 间 Acting time						
	1.05 I _{r1}	2小时内不动作 2h no acting						
	1.30 I _{r1}	≤ 1h 动作 ≤ 1h acting						
	1.50 I _{r1} t ₁ (s)	15	30	60	120	240	480	
	2.00 I _{r1} T ₁ (s)	8.4	16.9	33.7	67.5	135	270	
	7.20 I _{r1} T ₁ (s)	0.65	1.30	2.60	5.20	10	21	
	脱扣级别※ Releasing rate corresponding	—	—	10A	10	20	30	
热模拟功能 Thermo-memory Function		≤ 30 min (Memory can be cleared in case of power failure)						

※注：脱扣级别对应于电动机保护型断路器。

Note Releasing rate corresponding to the motor protection circuit breaker.

● 短路短延时动作特性

● Short-delay Action Feature For Short-circuit

在低倍数电流时为 I^2t 反时限特性;当过载电流大于 $8I_{r1}$ 时自动转换为定时限特性。短延时 I^2t 特性可“OFF”，此时呈定时限特性。

I^2t Inverse action feature in low current value;switch to definite action feature automatically when the over-current is above $8I_{r1}$;definite action feature indicated when short-time action feature (I^2t) is OFF

整定电流 I_2 调整范围 Adjusting area of setting current I_2		L	(1.5~10) I_1 按1.5、2、3、4、5、6、8、10倍 I_1 递变调整 (1.5~10) I_1 adjusting successively in 1.5,2,3,4,5,6,8 and 10 times of I_1					
		M、H型	(0.4~15) I_n 按每级50A递变调整 (0.4~15) I_n adjusting successively with 50A for each step					
		MY、HY型	(0.4~15) I_n 按每级10A递变调整 (0.4~15) I_n adjusting successively with 10A for each step					
电流允差 $\pm 10\%$ setting current tolerance $\pm 10\%$ 动作时间允差 $\pm 10\%$ acting time tolerance $\pm 10\%$ 注：固有误差最大+20ms Note: Max. inherent tolerance +20ms	电 流 current	动作时间 Acting time						
	$I \geq I_2$, $I \leq 8 I_1$	反时限 Inverse time		$I^2 T_2 = (8 I_1)^2 t_2$				
	$I \geq I_2$, $I > 8 I_1$ (或 $I \geq I_2, I \leq 8 I_1$, 反时限OFF时)	定时限 definite	整定时间 t_2 (S) setting time	0.1	0.2	0.3	0.4	
			可返回时间 (S) returnable time	0.06	0.14	0.23	0.35	
热模拟功能 Thermo-analogue Function		$\leq 15min$ (Memory can be cleared in case of power failure)						

● 短路瞬时动作特性(可OFF)

● Instantaneous Action Feature For Short-circuit

整定电流 I_{r3} 调整范围 电流允差 $\pm 15\%$ Adjusting area of setting current I_{r3} setting current tolerance $\pm 15\%$	L	(5~20) I_{r1} (对CW1系列) 按5、8、10、12、15、18、20倍 I_{r1} 递变调整 (5~20) I_{r1} (for CW1 series) adjusting successively in step of 5,8,10,12,15 and 18 times of I_{r1}						
	M、H型	2~50kA (对CW1-2000C/CW1-2000) 4~65kA (对CW1-3200C) 4~80kA (对CW1-3200, 4000) 6~100kA (对CW1-5000) 按每级0.5kA递变调整 2~50kA (for CW1-2000C/CW1-2000) 4~65kA (for CW1-3200C) 4~80kA (for CW1-3200, 4000) 6~100kA (for CW1-5000) adjusting successively with 0.5kA for each step						
	MY、HY型	2~50kA (对CW1-2000C/CW1-2000) 4~65kA (对CW1-3200C) 4~80kA (对CW1-3200, 4000) 6~100kA (对CW1-5000) 按每级50A递变调整 2~50kA (for CW1-2000C/CW1-2000) 4~65kA (for CW1-3200C) 4~80kA (for CW1-3200, 4000) 6~100kA (for CW1-5000) adjusting successively with 50A for each step						



- 接地故障动作特性 (M、H、MY、HY型配置, 并可OFF) ● Action Feature For Earthed Fault (Only for M、H、MY and HY type controller, this function can be "OFF".)

整定电流 I_{d4} 调整范围 Adjusting area of setting current I_{d4}	CW1-2000C/CW1-2000		CW1-3200C/3200 4000		CW1-5000	
	0.2In或160A(取大者) ~0.8In或1200A(取小者) 0.2In or 160A(choose larger value) ~0.8In or 1200A(choose smaller value)		0.2In~0.6In或1600A(取小者) 0.2In ~ 0.6In or1600A (choose smaller value)		0.2In ~ 2000A	
	按每级10A递变调整					

- 负载监控动作特性 (M、H、MY、HY型配置, 选项, 并与电流不平衡/断相保护两者选一) ● Action Feature of Loading Monitor (Only for M H MY and HY type controller, optional and two selecting one for current unbalance/loss phase)

○ 方式一 Pattern 1	整定电流 I_{LC1} 、 I_{LC2} 调整范围 Adjusting area of setting current I_{LC1} 、 I_{LC2} 电流允差 $\pm 10\%$ Allowable clearance of setting current $\pm 10\%$	(0.2~1.0) In M、H型按每级20A递变调整; MY、HY型按每级10A递变调整 (0.2~1.0)In adjusting successively with 20A for each step for M H type and 10A for MY HY type
	延时特性 Delay feature	反时限特性 (自动跟踪 t_1): $t_{c1}=0.5t_1, t_{c2}=0.25t_1$ Inverse time feature (correspond to t_1 automatically) $t_{c1}=0.5t_1, t_{c2}=0.25t_1$
○ 方式二 Pattern 2	整定电流 I_{LC1} 、 I_{LC2} 调整范围 Adjusting area of setting current I_{LC1} 、 I_{LC2} 电流允差 $\pm 10\%$ Allowable clearance of setting current $\pm 10\%$	(0.2~1.0) In M、H型按每级20A递变调整; MY、HY型按每级10A递变调整 (0.2~1.0)In adjusting successively with 20A for each step for M H type and 10A for MY HY type
	延时特性 Delay feature	反时限特性 (自动跟踪 t_1): $t_{c1}=0.5t_1$ Inverse time feature (correspond to t_1 automatically) $t_{c1}=0.5t_1$ 定时限特性: $t_{c2}=60s$ Definit time feature $t_{c2}=60s$

- 电流不平衡/断相保护特性 (M、H、MY、HY型配置 并可OFF, 选项, 并与负载监控两者选一) ● Current unbalance and loss phase (M H MY HY controller, optional and two selecting one for loading monitor)

电流不平衡保护 Current unbalance 动作值允差 $\pm 10\%$ Acting value tolerance $\pm 10\%$ 动作时间允差 $\pm 10\%$ Acting time tolerance $\pm 10\%$	电流不平衡 $\varepsilon I1$ 调整范围	(20%~80%) 按每级1%递变调整 (20% ~ 80%) adjusting successively with 1% for each step
	动作特性 Acting feature	定时限整定时间 t_5 , (1~40) s 按每级1s递变调整 Definit time, (1~40s) adjusting successively with 1s for each step
断相保护 Loss phase 动作值允差 $\pm 10\%$ Acting value tolerance $\pm 10\%$ 动作时间允差 $\pm 10\%$ Acting time tolerance $\pm 10\%$ 注: 固有误差最大+20ms Note: Max. inherent tolerance +20ms	断相 $\varepsilon I2$ 调整范围	(90%~99%) 按每级1%递变调整 (90% ~ 99%) adjusting successively with 1% for each step
	动作特性 Acting feature	定时限整定时间 t_6 , (0.1~3) s 按每级0.1s递变调整 Definit time, (0.1~3s) adjusting successively with 0.1s for each step

- 显示功能 ● Indication Function

电流显示 Current indication	L型 L type	光柱显示 Light column	可显示 I_1 、 I_2 、 I_3 、 I_N (中性极) Showing I_1 、 I_2 、 I_3 、 I_N (N pole)
	M、H型 M H type	数码管显示 Nixie light	可显示 I_1 、 I_2 、 I_3 、 I_{max} 、 I_G (接地)、 I_N (中性极) Showing I_1 、 I_2 、 I_3 、 I_{max} 、 I_G (earthed), I_N (N pole)
	MY、HY型 MY HY type	液晶显示 LCD light	
电压显示 Voltage indication	M型(选项)、H型 M type(optional) H type	数码管显示 Nixie light	可显示 U_{12} 、 U_{23} 、 U_{31} 、 U_{min} Showing U_{12} 、 U_{23} 、 U_{31} 、 U_{min}
	MY、HY型 MY HY type	液晶显示 LCD light	



● 报警及指示功能

● Alarm and Prompt Function

过电流故障报警 Over-current alarm	L 型 L type	面板上相应发光二极管亮 Corresponding LED on the panel will be ON	过载或脱扣后“报警及脱扣指示”灯亮（各为黄色或红色） Alarm and release indication lights will be on after overload or tripping action(yellow or red)
	M、H 型 M H type		过载长延时、短路短延时、短路瞬时、接地故障脱扣后相应报警指示灯亮 After tripping by overload long-delay, short-circuit short-delay, instantaneous, short-circuit and earthed fault, corresponding alarm indicating lights will be on.
	MY、HY 型 MY HY type		
故障类型指示 Fault indication	L 型 L type	面板上相应发光二极管亮 Corresponding LED on the panel will be ON	过载长延时、短路短延时、短路瞬时脱扣后相应故障类型指示灯亮 After tripping by overload long-delay, short-circuit short-delay, instantaneous, short-circuit and earthed fault, corresponding fault indicating lights will be on.
	M、H 型 M H type		过载长延时、短路短延时、短路瞬时、接地故障脱扣后相应故障类型指示灯亮 After tripping by overload long-delay, short-circuit short-delay, instantaneous, short-circuit and earthed fault, corresponding fault indicating lights will be on.
	MY、HY 型 MY HY type		
故障相、故障电流、时间显示 Indication of faulty phase, current and time	M、H 型 M H type	数码管显示 Nixie light	显示故障相、分断故障电流值、分断时间 Showing fault phase, fault current breaking value and breaking time
	MY、HY 型 MY HY type	液晶显示 LCD light	
触头磨损指示（M、H 型） Contact wear indication	M、H 型 M H type	数码管显示 Nixie light	显示磨损百分比数值 Showing wear percentage
	MY、HY 型 MY HY type	液晶显示 LCD light	
自诊断功能（M、H 型） Auto-diagnosis function	M、H 型 M H type	数码管显示 Nixie light	发出出错信号 Outgoing signal to show error
	MY、HY 型 MY HY type	液晶显示 LCD light	

● 试验功能

● Test Function

面板按键 Press key on the panel	L、M、H 型 Type L、M、H	脱扣 to release	检验智能控制器的时间电流特性及断路器执行机构的完好情况 Inspect the T-I feature of the intelligent controller and the condition of breakers operating system
	M、H 型 Type M、H	不脱扣 Not to release	检验智能控制器的时间电流特性 Inspect the T-I feature of the intelligent controller
	M、H、MY、HY 型 Type M、H、MY、HY		

● MCR 功能

● MCR function

在闭合操作时，如接通电流超过预定值时，断路器无任何人为延时断开，且当断路器处于闭合位置时不动作。

During a closing operation, if making current exceeds a predetermined value, circuit breaker is opened without any intentional time-delay, and which is rendered inoperative when circuit breaker is in the closed position.

● 故障记忆功能（M、H、MY、HY 型配置）

● Fault memory function (only for M H MY HY type)

断路器遇故障分断后，智能控制器能显示出故障类别、故障相序及故障电流值、分断动作时间值，并记录最近一次故障的信息。

Type of fault, phase sequence, value of faulty current and breaking action time will be indicated on the intelligent controller promptly if breaker turns off because of faults. The controller records the last fault information.

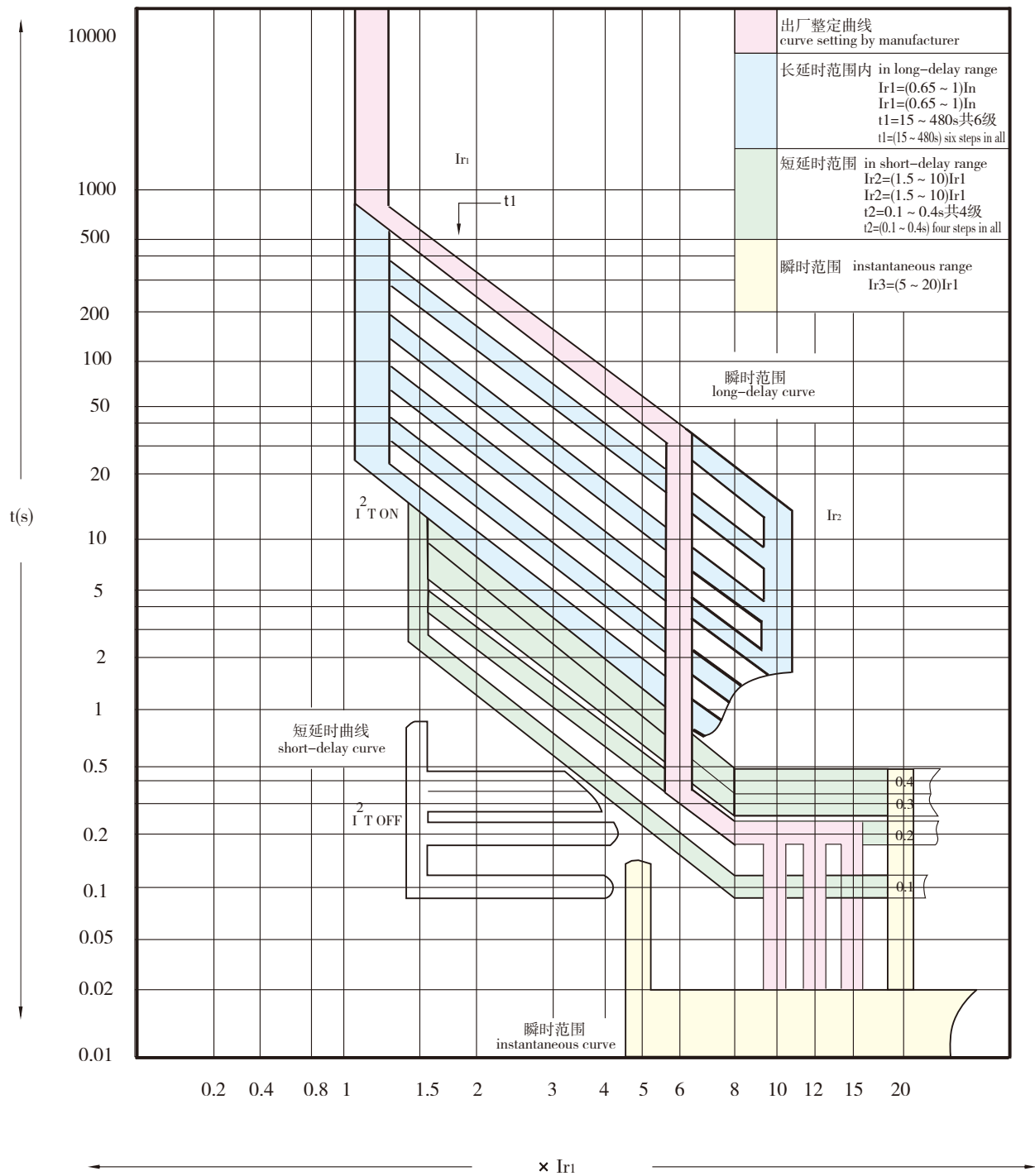
注：智能控制器可提供区域选择性联锁 ZSI 功能，请咨询本公司。

Note: can provide zone selective interlocking function for intelligent controller, please call us.



L型智能控制器时间/电流特性曲线(CW1系列)

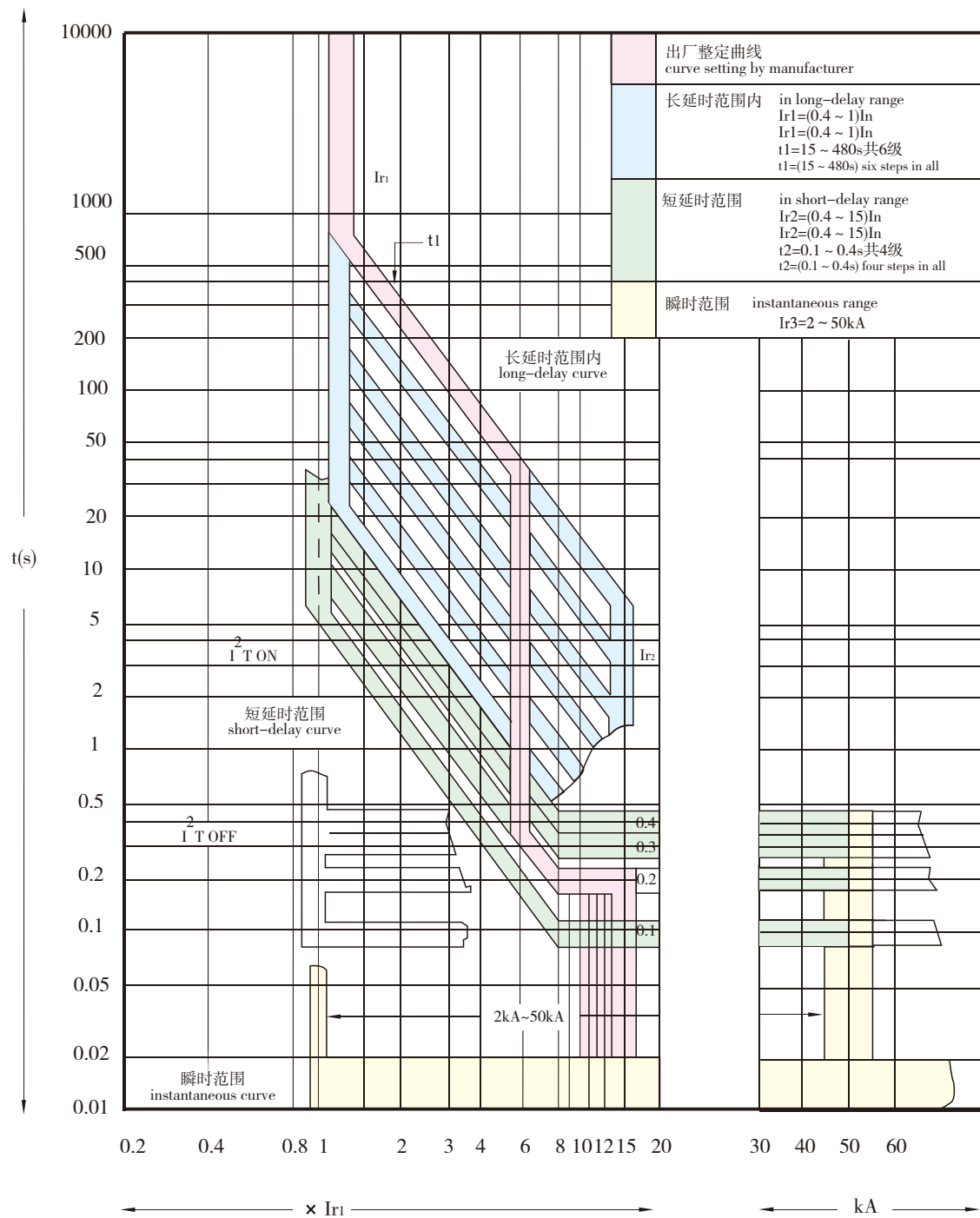
T/I (time/current) curve of type L intelligent controller (CW1 series)





M、H、MY、HY型智能控制器时间/电流特性曲线(CW1-2000C/CW1-2000)

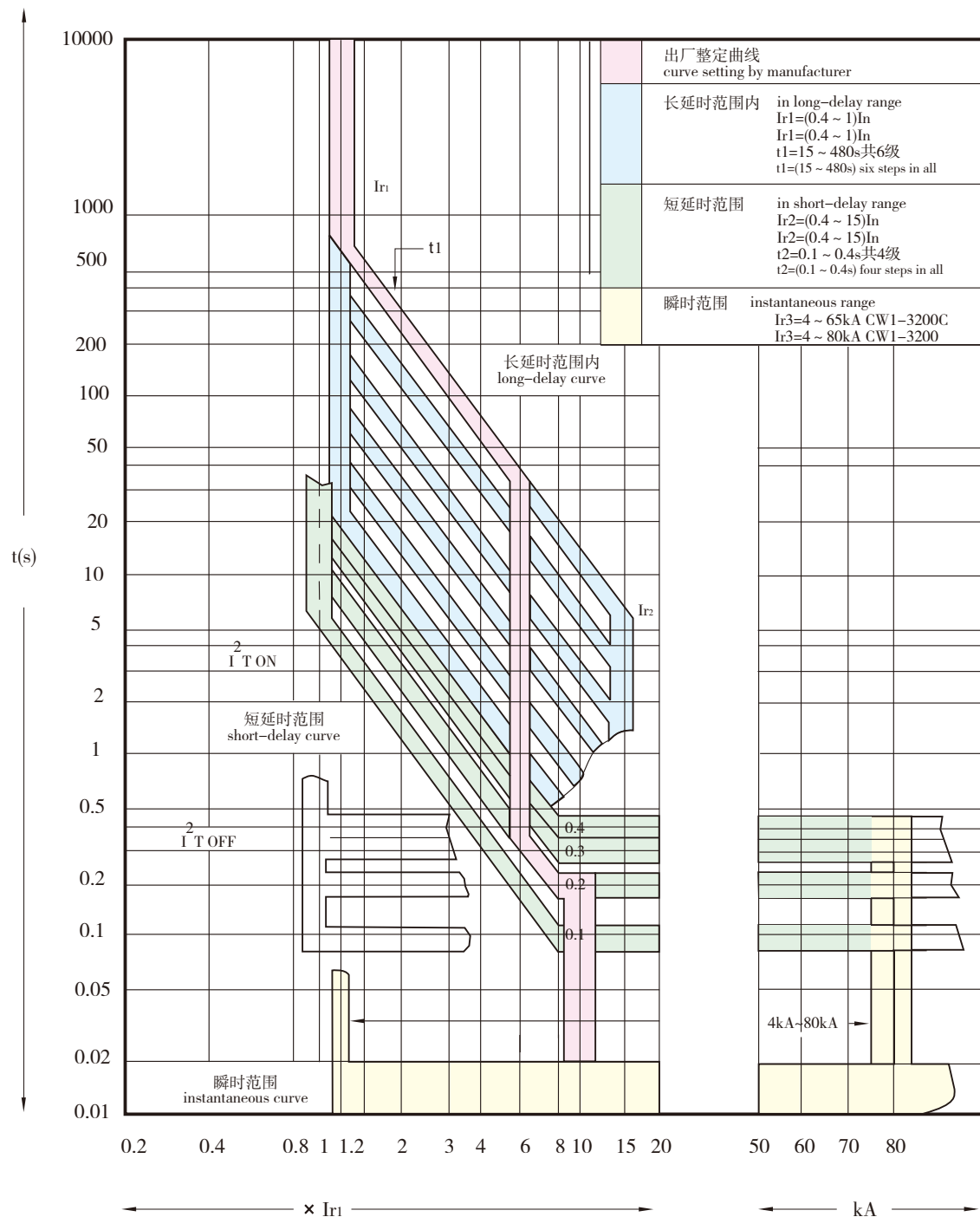
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type (CW1-2000C/CW1-2000)





M、H、MY、HY型智能控制器时间/电流特性曲线(CW1-3200C/CW1-3200)

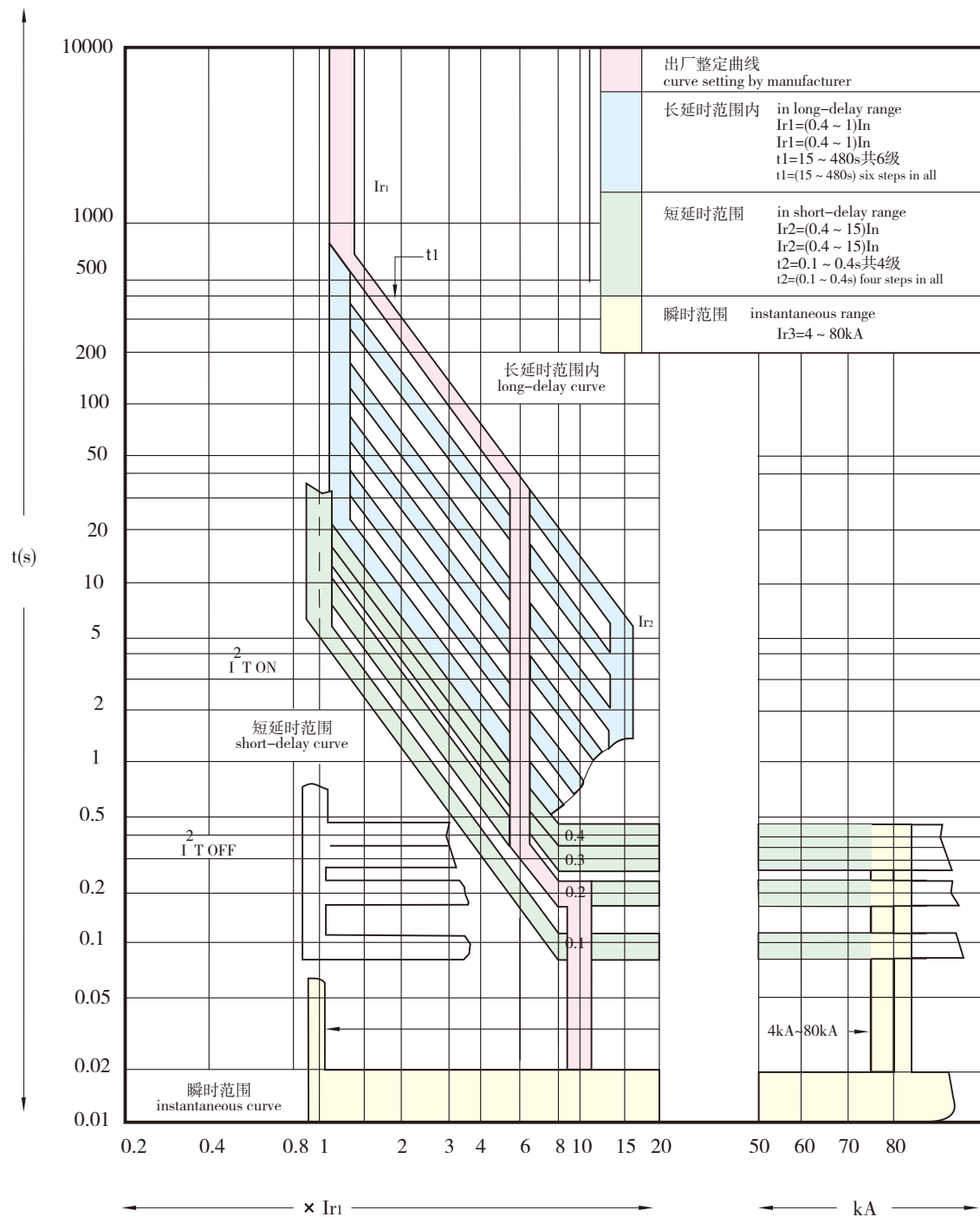
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type (CW1-3200C/CW1-3200)





M、H、MY、HY型智能控制器时间/电流特性曲线(CW1-4000)

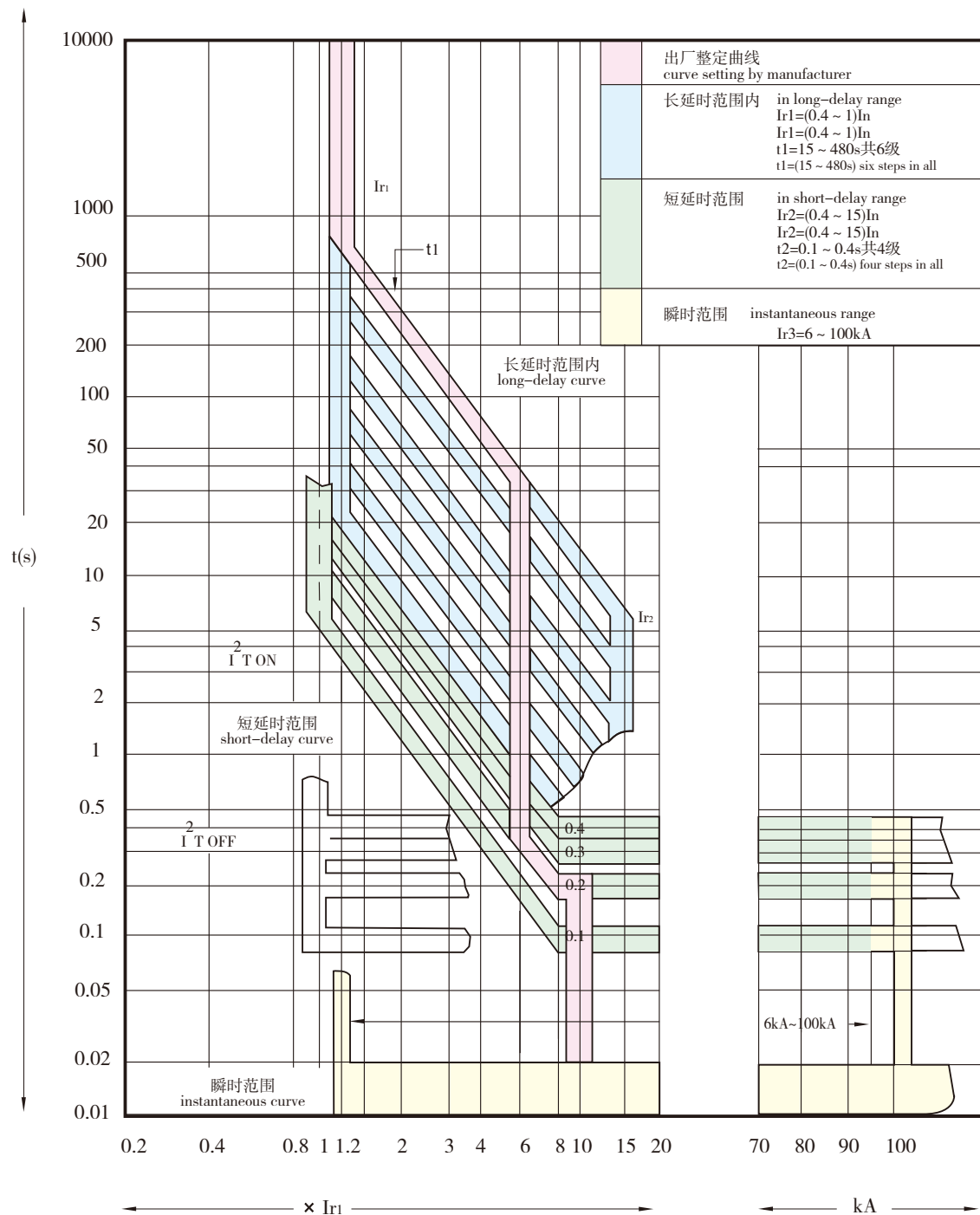
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type (CW1-4000)





M、H、MY、HY型智能控制器时间/电流特性曲线(CW1-5000)

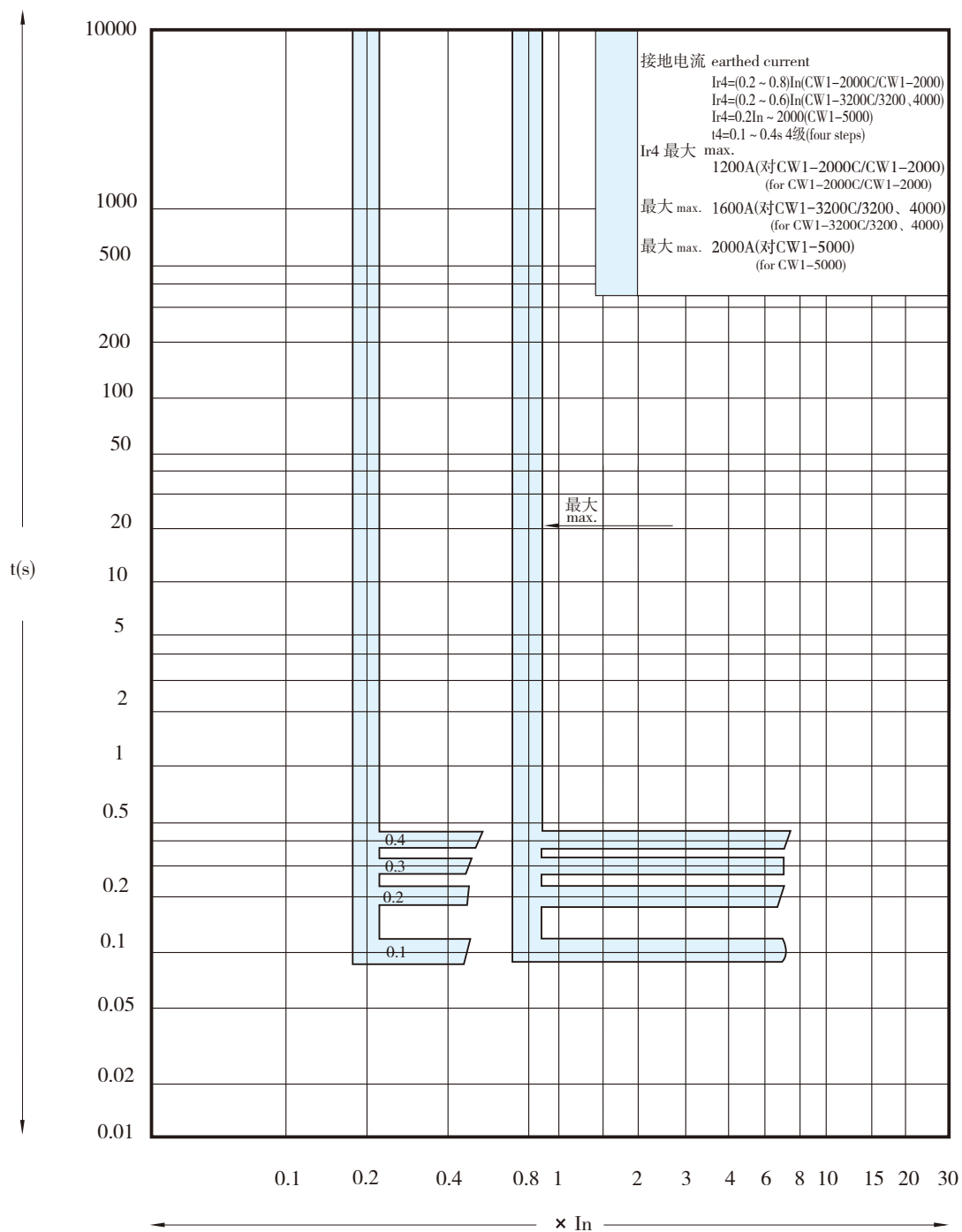
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type (CW1-5000)





M、H、MY、HY型智能控制器接地故障保护时间/电流特性曲线

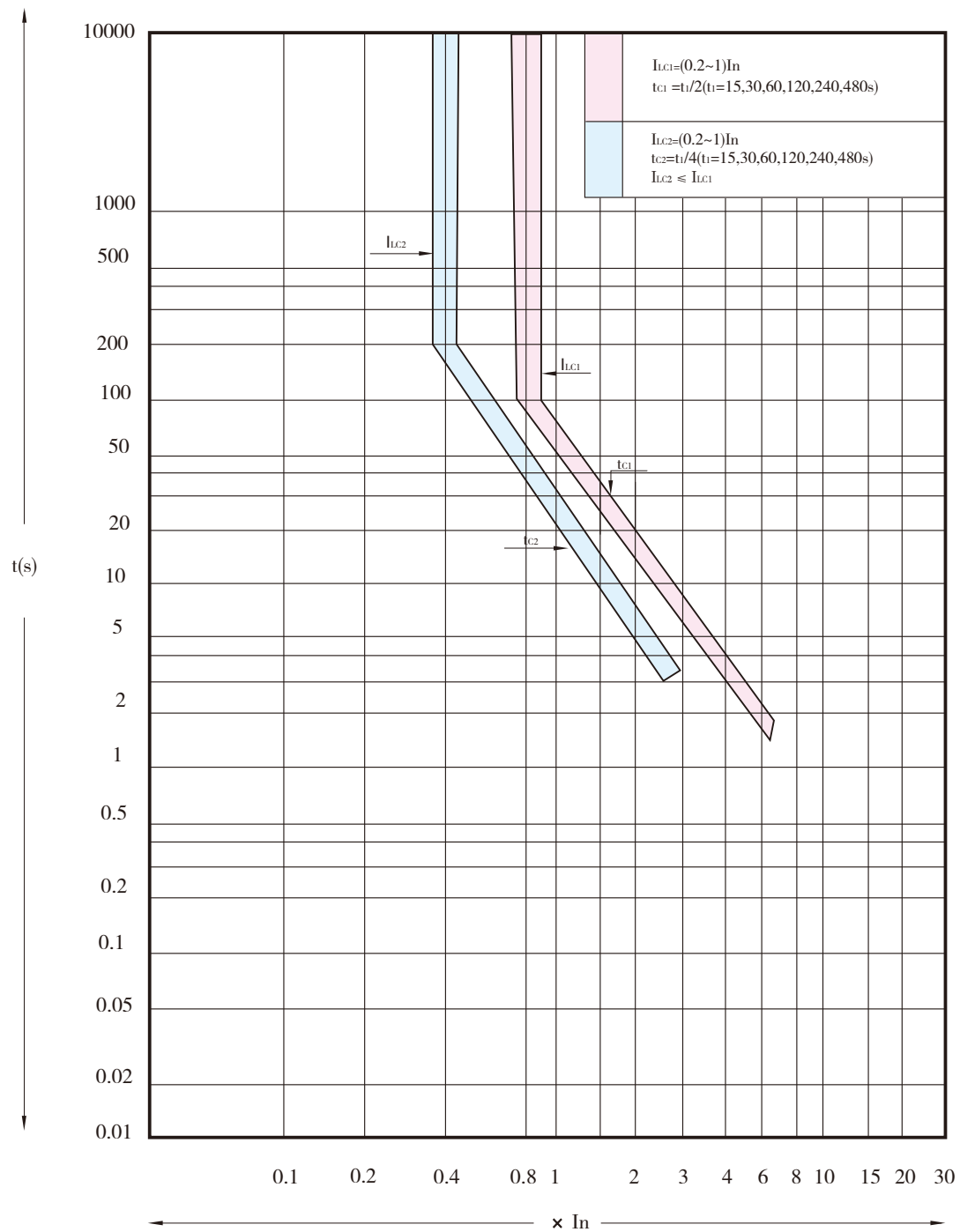
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type errors protection





M、H、MY、HY型智能控制器负载监控方式一时间/电流特性曲线

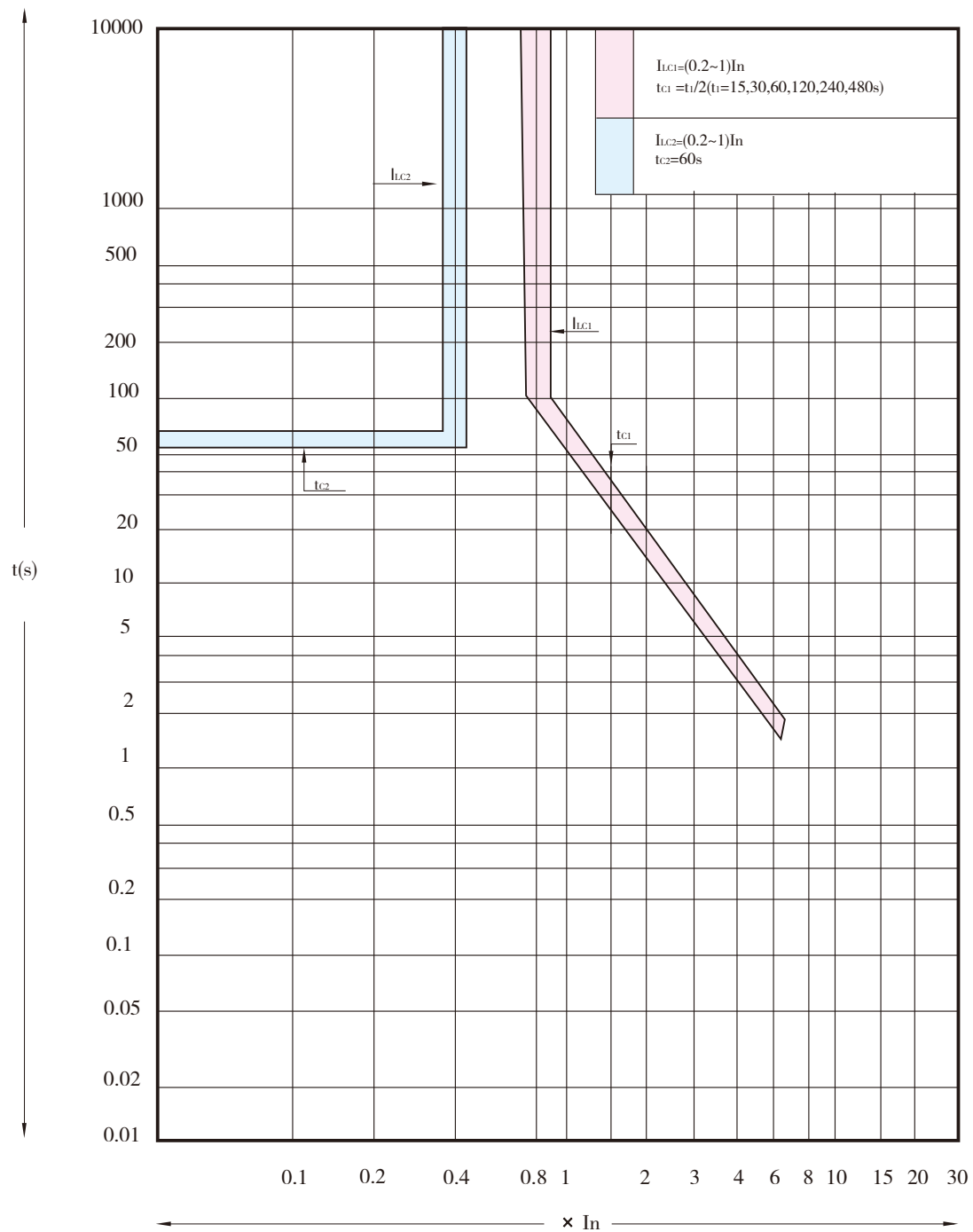
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type for load-monitor pattern 1

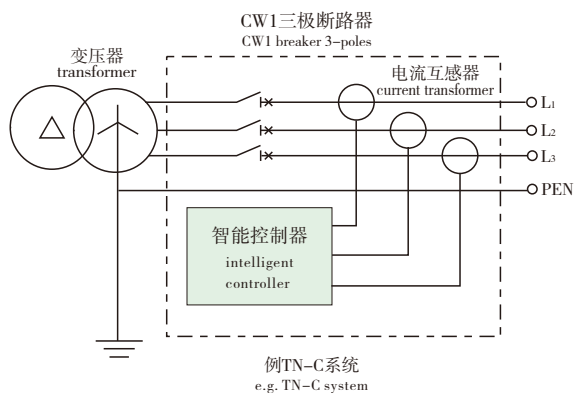




M、H、MY、HY型智能控制器负载监控方式二时间/电流特性曲线

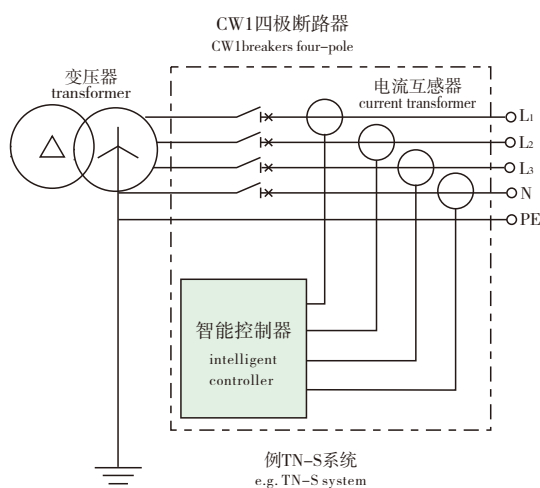
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type for load-monitor pattern 2



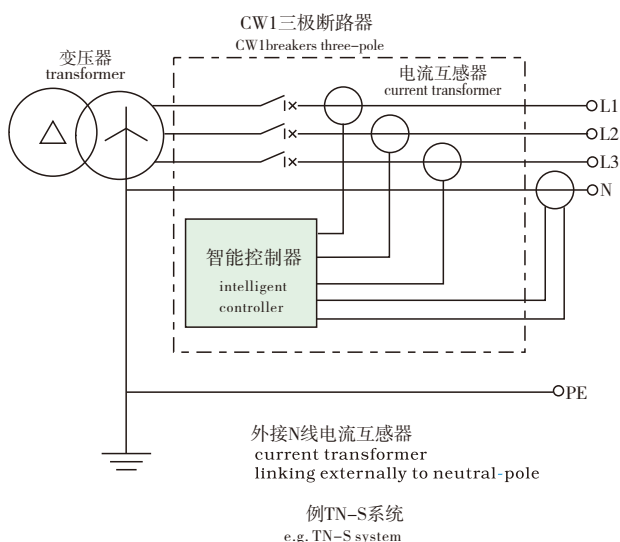


- TN-C、TN-C-S、TN-S配电系统中选用CW1三极断路器未接外接中性线N电流互感器
- 接地故障保护信号只取三相电流的矢量和
- 保护特性为定时限保护
- To select CW1 three-poles breakers for TN-C、TN-C-S and TN-S distribution system, no current transformer of N pole equipped externally
- The earthed fault protection signal only from sum of vectors of triphase current
- The protection feature is definite time protection

注：当系统的不平衡电流超过 I_{r4} 时，会引起断路器接地误跳闸。
Note the breaker is trip when imbalance current of distribution system is ground fault setting value.



- TN-S配电系统中选用CW1四极断路器
- 接地故障保护信号取三相电流及N极电流的矢量和
- 保护特性为定时限保护
- To select CW1 four-pole breakers for TN-S distribution system.
- The earthed fault protection signal from sum of vectors of triphase current and N-pole current.
- The protection feature is definite time protection.



- TN-S配电系统中选用CW1三极断路器
- 外接中性线N电流互感器作接地故障保护用(接6号、7号接线端子)，互感器安装地点距离断路器最大为2米
- 接地故障保护信号取三相电流及N相电流的矢量和
- 保护特性为定时限保护
- To select CW1 three-pole breakers for TN-S distribution system
- The current transformer, linking externally to N-pole, works for earthed fault protection (connected to terminals 6, 7). The maximum distance from the place where the current transformer is mounted to breaker is 2 meters.
- The earthed fault protection signal only from sum of vectors of triphase current and N-pole current.
- The protection feature is definite time protection.

注：图中电流互感器为有效值采样。
Note: current transformer in diagrams is r.m.s responsive.

注：可提供剩余电流（漏电）保护功能断路器，请咨询本公司。
Note: can provide breaker with residual current (leakage current) protection, please call us.



- 直流电源模块
- DC power supply module



- 当智能控制器外接二次回路电源为直流220V、110V时，须通过该模块转换成直流24V电源提供给智能控制器。
- In case power supply of the secondary circuit is DC220V、110V, it should be changed into DC24V via the power module before connecting with the intelligent controller.
- 特性 Features

型号 Type	配用断路器 Fitting breaker
FDY/WT	CW1-2000C/2000/3200C/3200/4000/5000

- 欠电压脱扣器
- Undervoltage Release



- 欠电压脱扣器由脱扣器线圈和控制单元组成，并按动作时间分为瞬时动作和延时动作两种；
- AC230V、400V欠电压延时脱扣器延时时间常规分0.5s、1s、2s、3s四种，5s以上直至9s作特殊规格处理，由用户与工厂协商解决，延时准确度0.5s时 $\pm 30\%$ ，其他时间准确度 $\pm 10\%$ ；
- 光伏并网专用AC220V、380V欠电压脱扣器（FQTPV/W）满足国家电网公司Q/GDW1972《分布式光伏并网专用低压断路器技术规范》和Q/GDW1973《分布式光伏并网专用低压断路器检测规程》标准，延时时间为0~10s用户可调（出厂默认设定值为3s），其步长为1s，当延时时间为0s时动作时间小于0.2s，其他延时时间时的动作时间准确度为 $+20\%$ 。

- The under-voltage release consists of release coil and control unit, and is divided to action or time delay action for action time.
- There are four specifications of time delay for AC230V、400V the under-voltage time delay release: 0.5s, 1s, 2s and 3s. Users should consult with the manufacturer in the light of their order about special time-delay specifications as from 3s and above up to 9s. The time delay accuracy is $\pm 30\%$ for 0.5s, other time delay accuracy is $\pm 10\%$.
- The special AC220V、380V under-voltage releases of grid-connected PV system is complied with the state Grid corporation standards: Q/GDW1972《specification for low-voltage circuit-breaker for distributed grid-connected PV system》and Q/GDW1973《test code for low-voltage circuit-breaker for distributed grid-connected PV system》. the delay time of release is 0~10s for user adjusting and step is 1s. the action time is less than 0.2s when delay time is 0s, and the other delay time accuracy is $+20\%$.

注：在雷雨多发地区或在供电电源电压不稳定的电网中，推荐使用带延时的欠电压脱扣器，可防止由于短时的电压降低而使断路器脱扣。延时时间一般为0.5s、1s、2s、3s，可供用户选择。

In the electrified wire netting where thunder and rain often happens or whose power supply is not stable, undervoltage release with time delay is recommended to protect circuit breaker from releasing by transient voltage-lowering. Delay time is 0.5s, 1s, 2s and 3s. It is selective by customers.

- 特性 Features

型号 Type	FQT/W120	FQT/W1203	FQT/W1209	FQTPV/W120	FQTPV/W12010
配用断路器 Fitting breaker	CW1-2000C/2000/3200C/3200/4000/5000				
延时时间(s) Delay time	瞬时 Instantaneous	0.5/1/2/3	4~9	瞬时 Instantaneous	0~10
额定工作电压 U_e (V) Rated working voltage	AC400 / AC230			AC380 / AC220	
动作电压(V) Operating voltage	$(0.35\sim 0.7)U_e$			$(0.2\sim 0.7)U_e$	
可靠合闸电压(V) Reliable closing voltage	$(0.85\sim 1.1)U_e$			$(0.85\sim 1.1)U_e$	
可靠不能合闸电压(V) Reliable impossible voltage	$\leq 0.35U_e$			$\leq 0.2U_e$	
功耗，吸合/保持(VA) Power Consumption	300/12			300/12	



- 分励脱扣器
- Shunt Release



- 可远距离操纵使断路器断开
They are available for operating remotely to break away.

- 特性 Features

型号 Type	FFT/W120			
配用断路器 Fitting breaker	CW1-2000C/2000/3200C/3200/4000/5000			
额定控制电源电压Us(V) Rated voltage of control power supply	AC400	AC230	DC220	DC110
瞬时电流(A) Instantaneous current	0.7	1.3	1.3	2.4
动作电压(V) Operating voltage	(0.7~1.1)Us			
分闸时间(ms) Opening time	不大于30 No more than 30			

注：电动分闸时必须保证断路器可靠分闸。若电动分闸时，断路器未进行分闸动作，必须立即断开分励脱扣器的电源。

- 合闸电磁铁
- Closing Electromagnet



- 贮能结束后，合闸电磁铁能使操作机构的贮能弹簧力瞬间释放，使断路器快速闭合。
- After the motor ended its energy stored, the closing electromagnet would make the charging spring to release its energy instantaneously, then to close the breaker quickly.

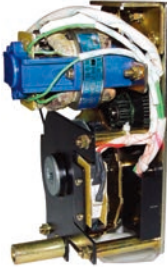
- 特性 Features

型号 Type	FHD/W120			
配用断路器 Fitting breaker	CW1-2000C/2000/3200C/3200/4000/5000			
额定控制电源电压Us(V) Rated voltage of control power supply	AC400	AC230	DC220	DC110
瞬时电流(A) Instantaneous current	0.7	1.3	1.3	2.4
动作电压(V) Operating voltage	(0.85~1.1)Us			
合闸时间(ms) Closing time	不大于70 No more than 70			

注：电动合闸时必须保证断路器可靠合闸。若电动合闸时，断路器未进行合闸动作，必须立即断开合闸电磁铁电源。



- 电动操作机构
- Motor-driven Energy-storage system



- 断路器具有电动机储能及自动再储能功能;
- 断路器也可手动储能。
- It has the functions of motor-driven to store energy and to restore energy automotively.
- The energy-storage of the device could be done with motor-driven or manually.

● 特性 Features

型号 Type	FDC/W120	FDC/W132	FDC/W140	FDC/W150
配用断路器 Fitting breaker	CW1-2000C/ 2000三极/四极 Three poles/ four poles	CW1-3200C/ 3200三极 three poles	CW1-3200C/3200 四极 four poles CW1-4000 三极 three poles	CW1-4000 四极 four poles CW1-5000 三极 three poles
额定控制电源电压Us(V) Rated voltage of control power supply	AC400/AC230/DC220/DC110			
动作电压(V) Operating voltage	(0.85~1.1)Us			
功耗(VA/W) Power consumption	192			
储能时间(s) Charging time	不大于5 No more than 5			

- 辅助开关
- Auxialary switch



CW1-2000 5000



CW1-2000C

● 额定值 Rated Value

型号 Type	FFC/W1204Z	FFC/W12044	FFC/W12062	FFC/W12026	FFC/W12033
型式 Specification	4组转换触头 4 groups of changeover contacts	4常开4常闭 4 pieces of normally-opened contacts(NO) and 4 pieces of normally-closed contacts(NC)	6常开2常闭 6 pieces of normally-opened contacts(NO) and 2 pieces of normally-closed contacts(NC)	2常开6常闭 2 pieces of normally-opened contacts(NO) and 6 pieces of normally-closed contacts(NC)	3常开3常闭 3 pieces of normally-opened contacts(NO) and 3 pieces of normally-closed contacts(NC)
配用断路器 Fitting breaker	CW1-2000C/2000/3200C/3200/4000/5000				
额定工作电压 (V) Rated operational voltage	AC400 AC230 DC220 DC110				
额定控制容量 (VA/W) Rated capacity	300 300 60 60				
约定发热电流Ith (A) Conventional thermal current	6				
注：辅助开关标准型式为4组转换触头，特殊型式为4常开4常闭、6常开2常闭、2常开6常闭、3常开3常闭。 Note: For the normal type of auxiliary switch, there are four pairs of change-over contacts. For the special type of auxiliary contacts, they are of 4NO(normal open) 4NC(normal close), 6NO2NC, 2NO6NC and 3NO3NC.					



● 抽屉座位置电气指示装置

● 抽屉式断路器本体与抽屉座分别处于“分离”、“试验”、“连接”三个位置时，三个位置电气指示装置可分别输出对应此三位置时电气状态信号，装置安装于抽屉座内。

● Electrical mechanism for the indication of draw-out socket's position

● When the main body of the draw-out circuit breaker and the draw-out socket are at the position of “separated”, “test” and “connected” respectively, three electrical mechanisms for the indication of draw-out socket's location can output the electrical signals corresponding with three positions above respectively. These mechanisms are installed inside the draw-out socket.

● 特性 Characteristics

型号 Type	FWZ/W120
配用断路器 Fitting breaker	CW1-2000C/2000/3200C/3200/4000/5000
额定工作电压 U_e (V) Rated operational voltage	AC 230
约定发热电流 I_{th} (A) Conventional thermal current	10
额定工作电流 I_e (A) Rated operational current	1.5

● 电压转换模块 Voltage changover module



● 当具有电压显示功能（M、MY型可选，H、HY型标配）并且输入电压大于AC400V时，需配备此模块，模块输入端A、B、C接至主回路，输出端A'、B'、C'接至断路器二次接线端子（端子号见断路器二次回路接线图）。

When there has voltage display function(selected for type M/MY or standard set for H/HY type)and the input voltage is higher than AC400V,there should have this module;the module input terminals A、B、C connect to the main circuit and the output terminals A'、B'、C' connect to the breaker's secondary circuit connection terminals

● 特性 Features

型号 Type	配用断路器 Fitting breaker
FDZ/WT	CW1-2000C/2000/3200C/3200/4000/5000

● 外接中性线N电流互感器 Current transformer with neutral line N connected externally

● TN-S配电系统中与三极断路器一起使用，安装于中性线N上，安装点距离最大2m。

● It is used together with circuit breaker with three poles in the power distribution system of TN-S and installed in the neutral line N with 2m at maximum far from the installation point.

● 特性 Features

型号 Type	配用三极断路器 Fitting breaker(three poles)
FDH-80b	CW1-2000C /2000 ($I_n=630A$ 、 $800A$)
FDH-80	CW1-2000C /2000 ($I_n=1000A \sim 2000A$)
FDH-120	CW1-3200C/3200/4000/5000
FDH-260	



- “分闸” 锁定装置
- “BREAKOFF” locked device



锁定装置
Locked device

- “分闸” 锁定装置可将断路器（抽屉式或固定式）的断开按钮锁定在分闸位置，此时，断路器不能进行闭合操作；
 - 用户选装后，工厂提供锁和钥匙
 - 一台断路器配独立的锁和钥匙；
 - 二台断路器配二把相同的锁和一把钥匙；
 - 三台断路器配三把相同的锁和二把相同的钥匙。
- 注：一台断路器可协商配置二把相同的锁和二把相同的钥匙或二把不同的锁和二把不同的钥匙。
- The “BREAKOFF” locked device could lock the “OFF” button of the breaker (draw-out or fixed type) on the opening position, making the breaker not to be closed.
 - After chosen by users, manufacturer would provide lock and key
 - One breaker would be outfitted with independent lock and key.
 - Two breakers would be outfitted with one key and two the same locks.
 - For three breakers, it would be outfitted with three the same locks and two the same keys.

● 特性 Characteristics

型号 Type	型式 Configuration
FFS/W11	1锁1钥匙 One lock and one key
FFS/W21	2锁1钥匙 Two lock and one key
FFS/W32	3锁2钥匙 Three lock and two key

- 抽屉式断路器 “分离” 位置安全挂锁装置
- DISCONNECT Position locked with padlock for draw-out breakers



锁定装置
Locked device

- 抽屉式断路器处于“分离”位置时，可拔出锁杆用挂锁来锁定，锁定后断路器无法摇至“试验”或“连接”位置；
- 挂锁用户自备，锁杆直径 $\phi 4\text{mm}-\phi 8\text{mm}$ 。
- When the draw-out breaker is on "DISCONNECT" position, the lock rod of the breaker could be pulled out and locked with a pad lock, after locking action the breaker would not be driven into to "TEST" or "CONNECT" position.
- The padlock would be prepared by users, and its rod diameter should be in between $\phi 4\text{mm}$ to $\phi 8\text{mm}$.



- 按钮锁定装置
- "Button" locking device



按钮锁定装置
"Button" locking device

- 加装按钮锁定装置可防止误操作合闸或分闸按钮。
- 挂锁用户自备，锁杆直径 $\Phi 4 \sim \Phi 8\text{mm}$ 。
- "Button" locking device can prevent user from operating "switching in" or "switching off" button.
- The padlock would be prepared by users, and its rod should be $\Phi 4 \sim \Phi 8\text{mm}$.

● 特性 Characteristics

型号 Type	配用断路器 Fitting breaker
FAN/W1	CW1-2000C/2000/3200C/3200/4000/5000

- 计数器
- Counter



- 计数器累计断路器机械操作的次数，用户一目了然。
- The counter can count mechanical operation times accumulatively, which makes users be clear at a glance.

● 特性 Characteristics

型号 Type	配用断路器 Fitting breaker
FJS/W1	CW1-2000C/2000/3200C/3200/4000/5000

- 相间隔板
- Barrier between phases



- 相间隔板加强了母排间绝缘，为断路器选择件，用户需要时可配置。
- Barrier between phases which is a selective accessory reinforced insulation among buses. When user needed, it can be provided.

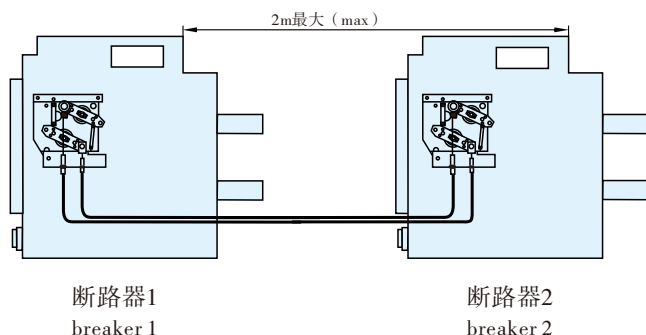
● 特性 Characteristics

型号 Type	配用断路器 Fitting breaker	安装方式 The method of installation	数量 (块) amount
FXG/W1203C	CW1-2000C/2000/3200C/3200/5000 三极 three poles	抽屉式 withdrawable	2
FXG/W1403C	CW1-4000 三极 three poles		2
FXG/W1204C	CW1-2000C/2000 四极 four poles		3
FXG/W1324C	CW1-3200C/3200/4000 四极 four poles		3
FXG/W1203G	CW1-2000C/2000/3200C/3200/4000/5000 三极 three poles	固定式 fixed	2
FXG/W1204G	CW1-2000C/2000/3200C/3200/4000 四极 four poles		3



- 两台断路器的钢缆联锁或两台叠装断路器的联杆联锁
(联杆联锁的底板开孔尺寸参见三台断路器的开孔尺寸)

Two breakers interlocked with steel cable or stacked and interlocked with connecting rod.(mounting dimension of two breakers with connecting rod interlocked see that of three breakers with connecting rod interlocked)

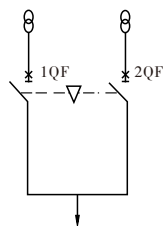


注：钢缆联锁的钢缆长度常规为2.5m，也可提供1.5m钢缆，但用户订货时需注明。

Note: Normally 2.5m steel cable of interlock is provided, either 1.5m is but an indication is needed wher marking order.

电路图

wiring diagram



可能的运行方式

possible operation pattern

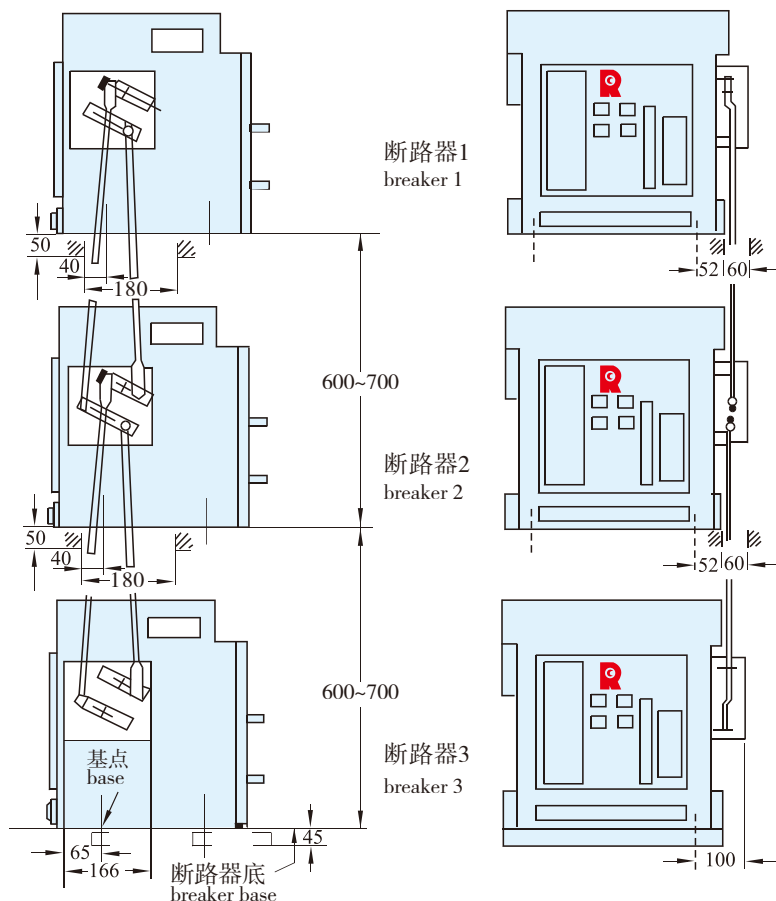
1QF	2QF
0	0
0	1
1	0

- 三台叠装断路器的联杆联锁或三台断路器的钢缆联锁

Three sets of breakers stacked and interlocked with connecting rods or three sets of circuit-breaker interlocked with steel cable.

- 抽屉式联杆联锁

Stacked and interlocked of withdrawable breaker



电路图

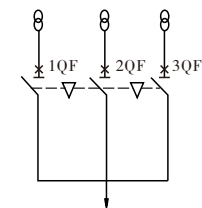
wiring diagram

可能的运行方式

possible operation pattern

方式一：三个电源只能合一台断路器

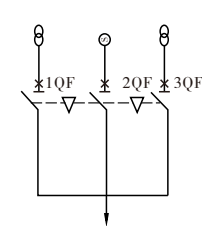
Pattern 1: three ways of power supply close one breaker



1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1

方式二：二个常用电源+一个备用电源

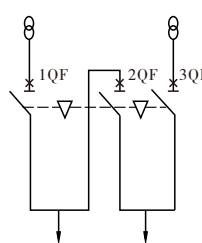
Pattern 2: two ways of power supply + one way of standby power supply



1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
1	0	1
0	0	1

方式三：二个电源一个分段

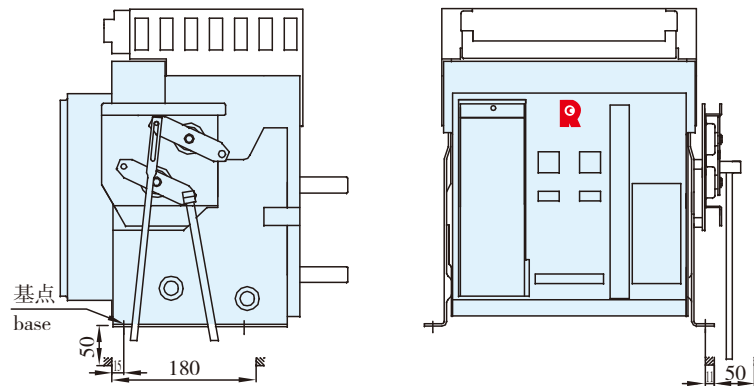
Pattern 3: two ways of power supply + one way of coupling busbar



1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1
1	1	0
0	1	1
1	0	1

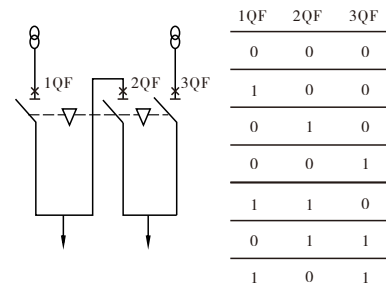


- 固定式联杆联锁（上下安装板间距参考抽屉式）
fixed breaker stacked and interlocked(distance from up to down,please seeing withdrawable)



- 钢缆联锁 Steel cable interlocked
三台断路器钢缆联锁的型式，参见两台断路器的型式，间距最大2m。
The style of interlock of three circuit breakers see the style of interlock between two sets of circuit breakers. The maximal distance of two circuit breakers is 2m.

电路图 可能的运行方式
Wiring diagram Possible operation pattern
二个电源一个分段
Two sets of power supply plus a piece of coupling busbar



- 特性 Characteristics

型号 Type	联锁型式 Configuration	配用断路器 Fitting breaker
FLS/WG2	2台钢缆联锁 2 sets of circuit breakers steel lock interlock	CW1-2000C/2000/3200C/3200/4000 /5000
FLS/WL2	2台联杆联锁 2 sets of circuit breakers link rod interlock	
FLS/WG3	3台钢缆联锁 3 sets of circuit breakers steel lock interlock	
FLS/WL31	3台联杆联锁方式一 3 sets of circuit breakers link rod interlock type 1	
FLS/WL32	3台联杆联锁方式二 3 sets of circuit breakers link rod interlock type 2	
FLS/WL33	3台联杆联锁方式三 3 sets of circuit breakers link rod interlock type 3	



自动电源转换系统可以实现两路AC400V电源之间或两进线一母联或三电源AC400V电源之间的转换，确保用户可靠供电。自动电源转换系统由自动转换控制器和转接器及控制电缆（厂方已提供）组成，同时可与机械联锁配合使用。当实现手动并联转换时，则不应机械联锁。自动转换控制器安装于开关柜门板上，转接器安装于开关柜安装板上，控制器至转接器/转接器至断路器电缆长度标准配置为：两路电源转换1.8 m /1.8 m，两进线一母联2 m /1.8m（超过标准配置电缆长度用户订货时应注明）。

Automatic power supply switch system guarantees reliable power supply for users by providing AC400V two lines or two incoming one bus couple of power supply or three supply alternatively. It consists automatic transfer controller, switching unit and cables (already prepared by the manufacture). The system may be used together with the mechanical interlock. But mechanical interlock can't be used when manual in parallel transfer is used. the switching unit is mounted on the mounting plate of switchboard while the controller is mounted on the panel door of the switchboard. the cable standard length of controller to switching unit and switching unit to breaker is 1.8m/1.8m for tow supply transfer or 2m/1.8m for two incoming one bus couple (user should make special order when they require for the length mor than standard).

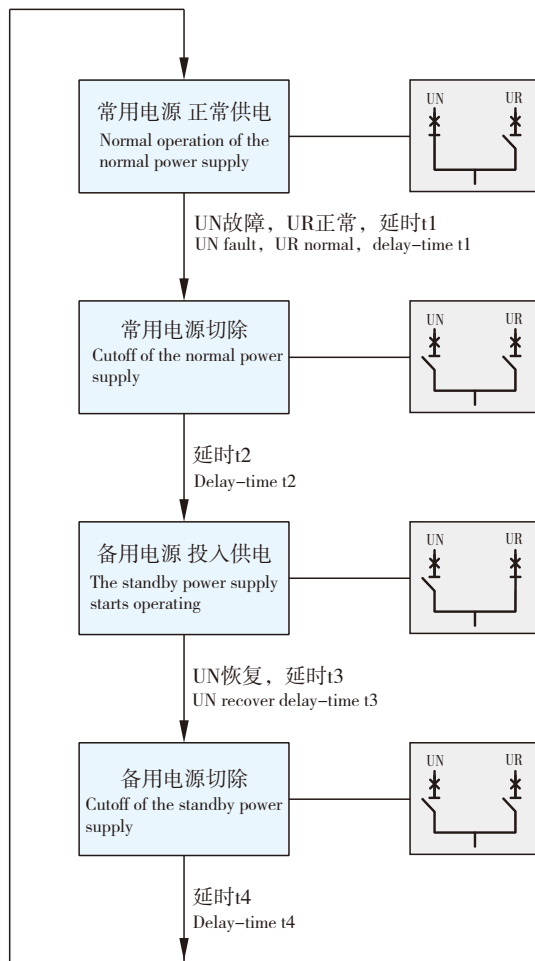
● FZZ两路电源转换 FZZ two supply transfer

▲ 功能汇总 function summary

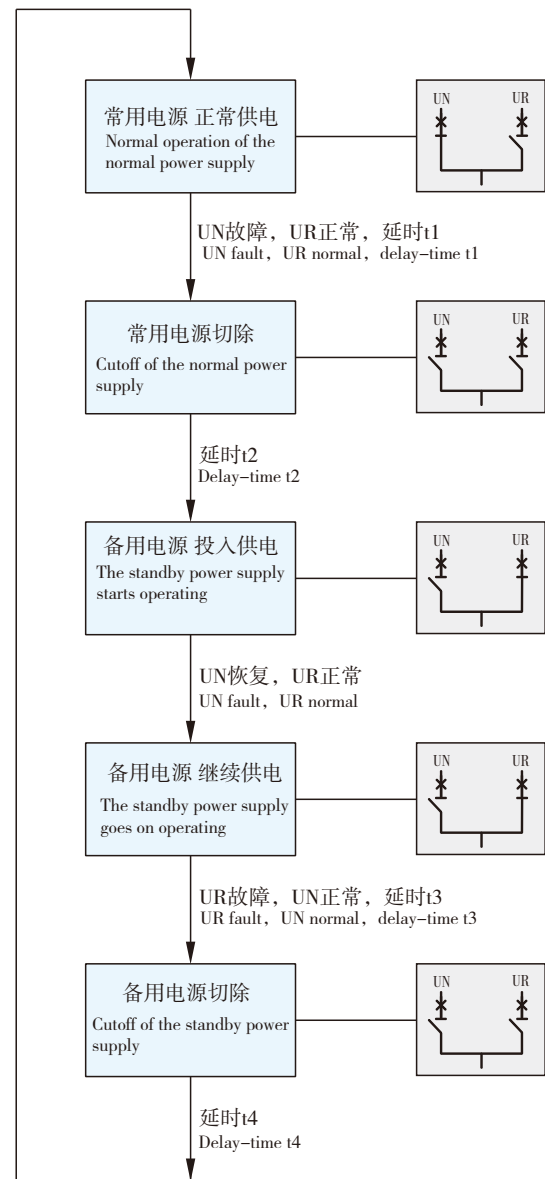
自动转换控制器型号 Automatic transfer controller type	电子型R、S、F Electronic	智能型ZR、ZS、ZF intelligent 智能可通信ZTR、ZTS、ZTF intelligent communicative																								
自动转换控制器示意 Automatic transfer controller indication																										
转接器示意 Adapter indication																										
监测 Monitor	对常用电源各相电压、备用（或发电）电源A相电压进行检测，若被检测相发生过电压、欠电压、失压则动作 Check the phase voltage of normal power supply and standby (or generator) power supply																									
自动转换 Automatic transfer	R、ZR、ZTR：常用备用电源间的自投自复 Automatic charge and automatic recovery between normal power supply and standby power supply S、ZS、ZTS：常用备用电源间的自投不自复（互为备用） Automatic charge and not automatic recovery between normal power supply and standby power supply (alterater each other) F、ZF、ZTF：常用发电电源间的自投自复 Automatic charge and automatic recovery between normal power supply and generator																									
强制转换 Forced transfer	强制常用、强制备用、强制断开 Forced to normal, forced to standby, forced to disconnected																									
复位操作 Reset operation	按钮复位 Reset button																									
试验功能 Test function	由强制转换功能实现 Implemented by forced transfer function																									
手动转换 Manual transfer	手动常用、手动备用、手动断开 Manual to normal, manual to standby, manual disconnect																									
发电控制 Generating control	F、ZF、ZTF有此功能 Only for F、ZF、ZTF type																									
负荷卸载 Load uninstall	F有此功能 Only for F type																									
显示方式 Display mode	LED指示：常备用电源状态，常备用断路器合、分及脱扣状态，操作模式 LED indicator: condition of normal/standby power supply,close, open or tripped condition and operationg mode of normal/standby breaker	（1）LCD指示：常备用电源状态，常备用断路器合、分状态及脱扣状态，参数设定，动作记录 LCD indication:condition of normal/standby power supply ,close、open and tripped condition parameter setting, history of normal/standby breaker （2）LED指示：常备用断路器合、分状态，操作模式 LED indication:close、open condition,operating mode of normal/standby breaker																								
设置方式 Setting mode	旋钮操作，可进行工作模式、延时时间等的设置 Set the working mode, delay time and others by knob	按键操作、全中文菜单引导，可进行工作模式、欠压动作值、延时时间、通信参数等的设置 All chinese menu guide, set the working mode、undervoltage operation value、delay time communication parameter and others by keyboard																								
参数设定 Parameter setting	欠压：75% Us 过压：115%Us 失压：30%Us Under voltage: 75% Us Overvoltage: 115%Us Voltage loss: 30%Us	欠压：（75%~85%）Us用户可调 过压：115%Us 失压：30%Us Under voltage: （75%~85%）User adjustable Overvoltage: 115%Us Voltage loss: 30%Us																								
	<table><tr><th>控制信号 Control signal</th><th>R、ZR、ZTR、S、ZS、ZTS</th><th>F、ZF、ZTF</th></tr><tr><td>延时时间（s）/Delay time</td><td></td><td></td></tr><tr><td>转换断开延时时间1 Transfer disconnection</td><td>0.5~64</td><td>0.5~64</td></tr><tr><td>转换接通延时时间2 Transfer closing</td><td>0.5</td><td>0.5~64</td></tr><tr><td>返回断开延时时间3 Return disconnection</td><td>0.5~64</td><td>0.5~240</td></tr><tr><td>返回接通延时时间4 Return closing</td><td>0.5</td><td>0.5~64</td></tr><tr><td>发电指令延时时间5 Generating indication</td><td></td><td>1~180</td></tr><tr><td>发电停机指令延时时间6 Generating stop indication</td><td></td><td>32~600</td></tr></table>		控制信号 Control signal	R、ZR、ZTR、S、ZS、ZTS	F、ZF、ZTF	延时时间（s）/Delay time			转换断开延时时间1 Transfer disconnection	0.5~64	0.5~64	转换接通延时时间2 Transfer closing	0.5	0.5~64	返回断开延时时间3 Return disconnection	0.5~64	0.5~240	返回接通延时时间4 Return closing	0.5	0.5~64	发电指令延时时间5 Generating indication		1~180	发电停机指令延时时间6 Generating stop indication		32~600
	控制信号 Control signal	R、ZR、ZTR、S、ZS、ZTS	F、ZF、ZTF																							
	延时时间（s）/Delay time																									
	转换断开延时时间1 Transfer disconnection	0.5~64	0.5~64																							
	转换接通延时时间2 Transfer closing	0.5	0.5~64																							
返回断开延时时间3 Return disconnection	0.5~64	0.5~240																								
返回接通延时时间4 Return closing	0.5	0.5~64																								
发电指令延时时间5 Generating indication		1~180																								
发电停机指令延时时间6 Generating stop indication		32~600																								
通信功能 Communication	实现遥调、遥测、遥控、通信。RS485通信接口，Modbus-RTU协议。 Tele-control,tele-communication,tele-adjustment,tele-detection, RS485 communication interface., Modbus-RTU protocol																									



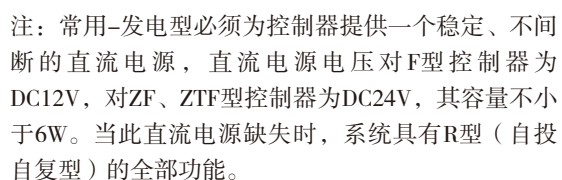
▲R、ZR、ZTR型--常用-备用间的自投自复
Automatic change and automatic recovery between
normal and standby supply



▲S、ZS、ZTS型--常用-备用间的自投不自复
Automatic change and not automatic recover between
normal and standby supply



Automatic change and automatic recovery between normal and generator supply

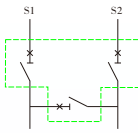
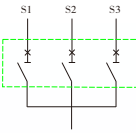


For the switch system used for normal power supply to power generation supply system, the controller should be supplied with a reliable and consecutive power supply of D.C. 12V (F type) or D.C.24V (ZF、ZTF type) and power capacity no less than 6W. If the D.C. supply is cut off, the switch system will have the function of automatic switch and restoration (type R).



● FLZ两进线一母联电源转换及三电源转换 FLZ two incoming line one bus couple supply transfer and three supplies transfer

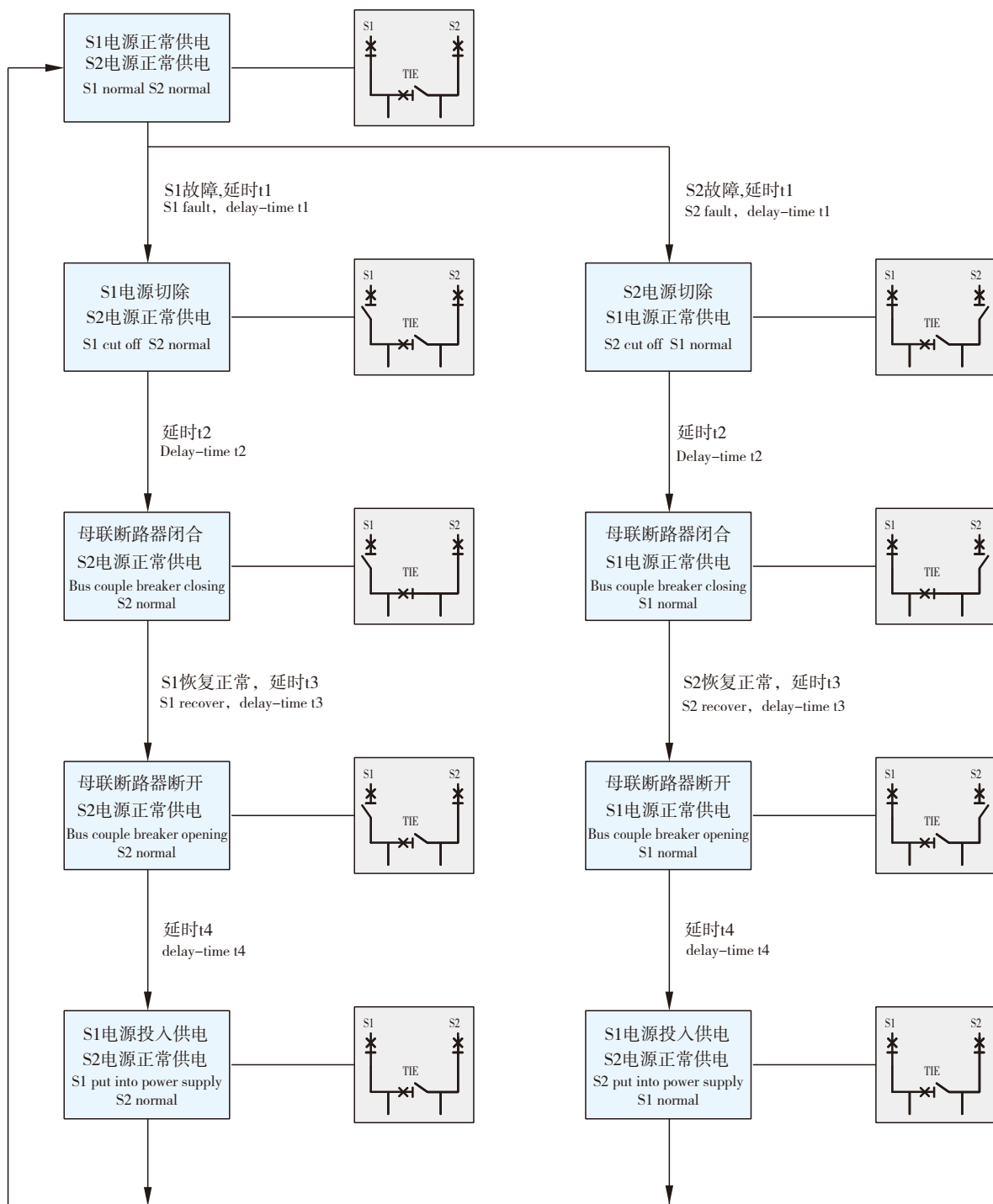
▲ 功能汇总 Function summary

自动电源转换系统型式 Automatic power supply switch system type		两进线一母联电源转换 Two incoming line one bus couple supply transfer		三电源转换 Three supplies transfer																																
主回路接线 Main circuit tie line																																				
自动转换控制器型号 Automatic transfer controller type		智能型WTT3 Intelligent		智能型带并联转换WTB3 Intelligent with parallel																																
自动转换控制器示意 Automatic transfer controller indication																																				
转换器示意 Adapter indication																																				
监测 Monitor		对常用(S1)、备用(S2)电源各相电压进行检测,若被检测相发生过电压、欠电压、失压则动作 Check the each phase voltage of normal, standby power supply.if there is overvoltage, undervoltage、voltage loss in the checker phase, transfer will operation		对常用(S1)、备用(S2)电源各相电压进行检测,若被检测相发生过电压、欠电压、失压则动作;具有常、备用电源频率、电压差、频率差和相位差检测 Check the each phase voltage of normal,standby power supply.if there is overvoltage、undervoltage、voltage loss in the checker phase, transfer will operation.this type can check frequency,voltage difference,frequency difference and phase difference of normal standby power supply.																																
自动转换 Automatic transfer		可设定自投自复或自投不自复 Automatic charge and automatic rocovery or automatic charge and not automatic recovery																																		
强制转换 Forced transfer		强制常用、强制备用、强制断开																																		
手动并联转换 Manual parallel transfer		——		√																																
复位操作 Reset operation		按钮复位 Reset button																																		
试验功能 Test function		由强制转换功能实现 Implemented by forced transfer function																																		
手动转换 Manual transfer		由强制转换功能实现 Implemented by forced transfer function																																		
显示方式 Display mode		(1) LCD指示: 常备用电源状态, 常备用断路器合、分状态及脱扣状态, 参数设定, 动作记录 LCD indication: condition of normal/standby power supply, close、open and tripped condition, parameter setting history of normal/standby breaker (2) LED指示: 常备用电源状态, 常备用断路器合、分及脱扣状态 LED indicator: condition of normal/standby power supply, close open or tripped condition and operating mode of normal/standby breaker		(1) LCD指示: 常备用电源状态, 常备用断路器合、分状态及脱扣状态, 参数设定, 动作记录 LCD indication: condition of normal/standby power supply, close、open and tripped condition, parameter setting history of normal/standby breaker (2) LED指示: 常备用电源状态, 常备用电源电压差、频率差、相位差状态, 常备用断路器合、分及脱扣状态 LED indication: close, open condition, operating mode of normal/standby breaker. condition: voltage difference, frequency difference, phase difference of normal/standby power supply																																
设置方式 Setting mode		按键操作、全中文菜单引导, 可进行工作模式、欠压动作值、延时时间、通信参数等的设置 All chinese menu guide, set the working mode, undervoltage operation value, delay time communication parameter and others by keyboard																																		
参数设定 Parameter setting		欠压: (70%~90%) Us用户可调; 过压: (105%~120%) Us用户可调; 失压: 30% Us, 步长: 5% undervoltage: (70%~90%) Us user adjustable; over voltage: (105%~120%) Us user adjustable; voltage loss: 30% Us; step: 5%																																		
延时时间 (s) Delay time		<table><tr><td>电源断开延时时间t1 Disconnection of power supply</td><td>0.1~100</td><td rowspan="4">步长0.1s Time step (≤10s时), 1s (>10s时)</td></tr><tr><td>母联断路器接通过延时时间t2 Closing of bus couple breaker</td><td>0.1~100</td></tr><tr><td>母联断路器断开延时时间t3 Disconnection of bus couple breaker</td><td>0.1~100</td></tr><tr><td>电源闭合延时时间t4 Closing of power supply</td><td>0.1~100</td></tr></table>		电源断开延时时间t1 Disconnection of power supply	0.1~100	步长0.1s Time step (≤10s时), 1s (>10s时)	母联断路器接通过延时时间t2 Closing of bus couple breaker	0.1~100	母联断路器断开延时时间t3 Disconnection of bus couple breaker	0.1~100	电源闭合延时时间t4 Closing of power supply	0.1~100	<table><tr><td>并联转换条件 Parallel transfer condition</td><td>并联转换电压差ΔU (V) Voltage difference</td><td>(0.02~0.12)Ue, 步长: 1V</td></tr><tr><td></td><td>并联转换频率差Δf (Hz) Frequency difference</td><td>0.1~1, 步长: 0.1Hz</td></tr><tr><td></td><td>并联转换相位差Δδ (°) Phase difference</td><td>5~20, 步长: 1</td></tr><tr><td>延时时间 (s) Delay time</td><td>电源断开延时时间t1 Disconnection of power supply</td><td>0.1~100</td><td rowspan="4">步长0.1s Time step (≤10s时), 1s (>10s时)</td></tr><tr><td></td><td>母联断路器接通过延时时间t2 Closing of bus couple breaker</td><td>0.1~100</td></tr><tr><td></td><td>母联断路器断开延时时间t3 Disconnection of bus couple breaker</td><td>0.1~100</td></tr><tr><td></td><td>电源闭合延时时间t4 Closing of power supply</td><td>0.1~100</td></tr></table>		并联转换条件 Parallel transfer condition	并联转换电压差ΔU (V) Voltage difference	(0.02~0.12)Ue, 步长: 1V		并联转换频率差Δf (Hz) Frequency difference	0.1~1, 步长: 0.1Hz		并联转换相位差Δδ (°) Phase difference	5~20, 步长: 1	延时时间 (s) Delay time	电源断开延时时间t1 Disconnection of power supply	0.1~100	步长0.1s Time step (≤10s时), 1s (>10s时)		母联断路器接通过延时时间t2 Closing of bus couple breaker	0.1~100		母联断路器断开延时时间t3 Disconnection of bus couple breaker	0.1~100		电源闭合延时时间t4 Closing of power supply	0.1~100
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	电源闭合延时时间t4 Closing of power supply	0.1~100																																		
延时时间 (s) Delay time		<table><tr><td>S1电源断开延时时间t1 S1 Disconnection of power supply</td><td>0.1~100</td><td rowspan="8">步长0.1s Time step (≤10s时), 1s (>10s时)</td></tr><tr><td>S1电源接通过延时时间t2 S1 Closing of bus couple breaker</td><td>0.1~100</td></tr><tr><td>S2电源断开延时时间t3 S2 Disconnection of bus couple breaker</td><td>0.1~100</td></tr><tr><td>S2电源接通过延时时间t4 S2 Closing of bus couple breaker</td><td>0.1~100</td></tr><tr><td>S3电源断开延时时间t5 S3 Disconnection of bus couple breaker</td><td>0.1~100</td></tr><tr><td>S3电源接通过延时时间t6 S3 Closing of bus couple breaker</td><td>0.1~100</td></tr><tr><td>发电启动延时时间t7 Generator starting delay-time</td><td>1~180</td></tr><tr><td>发电停止延时时间t8 Generator stop delay-time</td><td>1~180</td></tr></table>		S1电源断开延时时间t1 S1 Disconnection of power supply	0.1~100	步长0.1s Time step (≤10s时), 1s (>10s时)	S1电源接通过延时时间t2 S1 Closing of bus couple breaker	0.1~100	S2电源断开延时时间t3 S2 Disconnection of bus couple breaker	0.1~100	S2电源接通过延时时间t4 S2 Closing of bus couple breaker	0.1~100	S3电源断开延时时间t5 S3 Disconnection of bus couple breaker	0.1~100	S3电源接通过延时时间t6 S3 Closing of bus couple breaker	0.1~100	发电启动延时时间t7 Generator starting delay-time	1~180	发电停止延时时间t8 Generator stop delay-time	1~180																
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通信功能 Communication		实现遥调、遥测、遥控、遥信。RS485 通信接口, Modbus-RTU协议。 Tele-control,tele-comunication,tele-adjustment,tele-detection, RS485 communication interface., Modbus-RTU protocol																																		



▲WTT3、WTB3型--常用-备用间的自投自复

Automatic change and automatic recovery between normal and standby supply



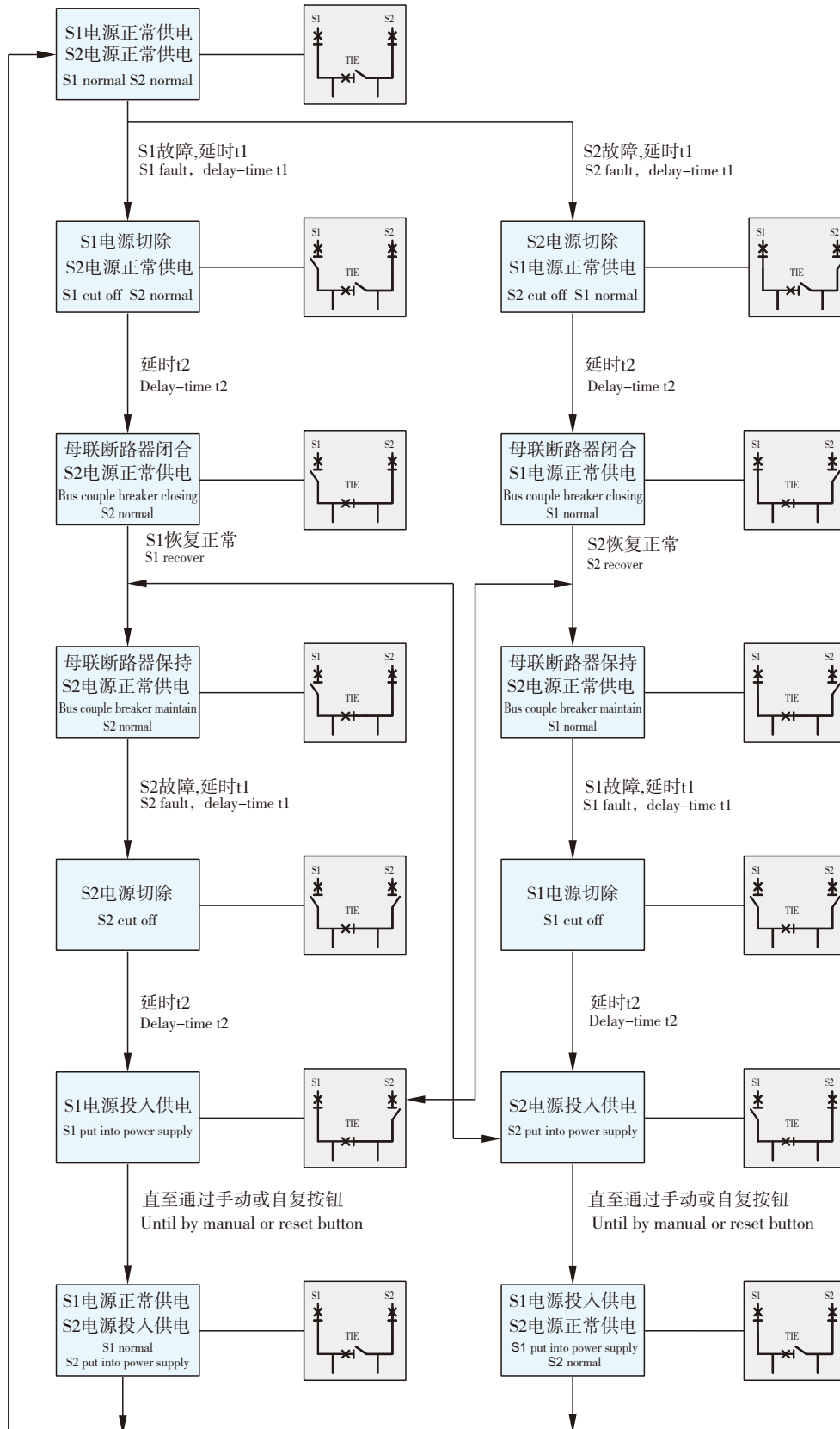
注：TIE为母联断路器

Note: TIE-bus couple breaker.



▲ WTT3、WTB3型--常用-备用间的自投不自复

Automatic change and not automatic recover between normal and standby supply



注：TIE为母联断路器

Note: TIE-bus couple breaker.



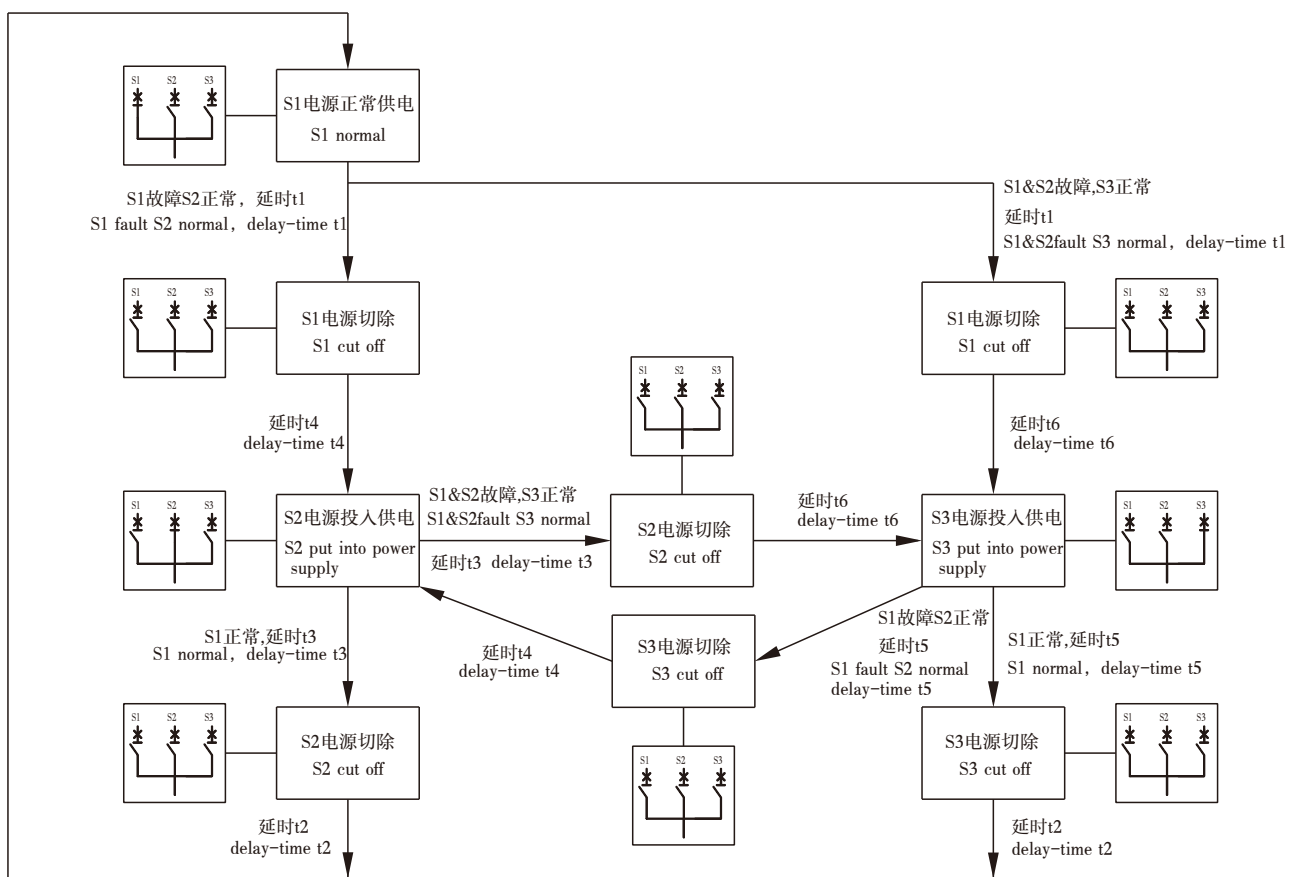
▲ WTB3手动并联转换 WTB3 manual parallel transfer

WTB3控制器手动模式为并联转换切换，即动作方式为断路器先合后分，断路器同时闭合时间 $<0.5s$ 。并联模式可设定为“最佳”和“常规”两种模式，“最佳”是指控制器检测到常备用电源相序、电压差、频率差满足条件的前提下自动搜索接近于同相角的时刻进行并联合闸，以最大限度的降低合环电流；“常规”是指控制器检测到常备用电源相序、电压差、频率差满足条件的前提下检测到相角差满足设定的阈值即进行并联合闸。

WTB3 controller,s manul mode uses parattel conuersion switchover,that is ,circuit breaker,s operation metliiol is "first male,then meat",meanushilie,circuit breaker,s making time is less than 0.5s ,Parallelmode can be set with in "optimiztion" means when the controller detects the phase order voltage difference and treguency different .the preconditions ,it cuatornat.cally searches the time which approaches in phase angle and it operates parallet making to maxiumly rechue loop current; "Normal" means when the controller detects the phase order,voltage difference and frequency difference of backup power meet the meconditions and phase angle difference meets setting,it operates paralled meching.

▲ WTT5型--三电网电源自投自复

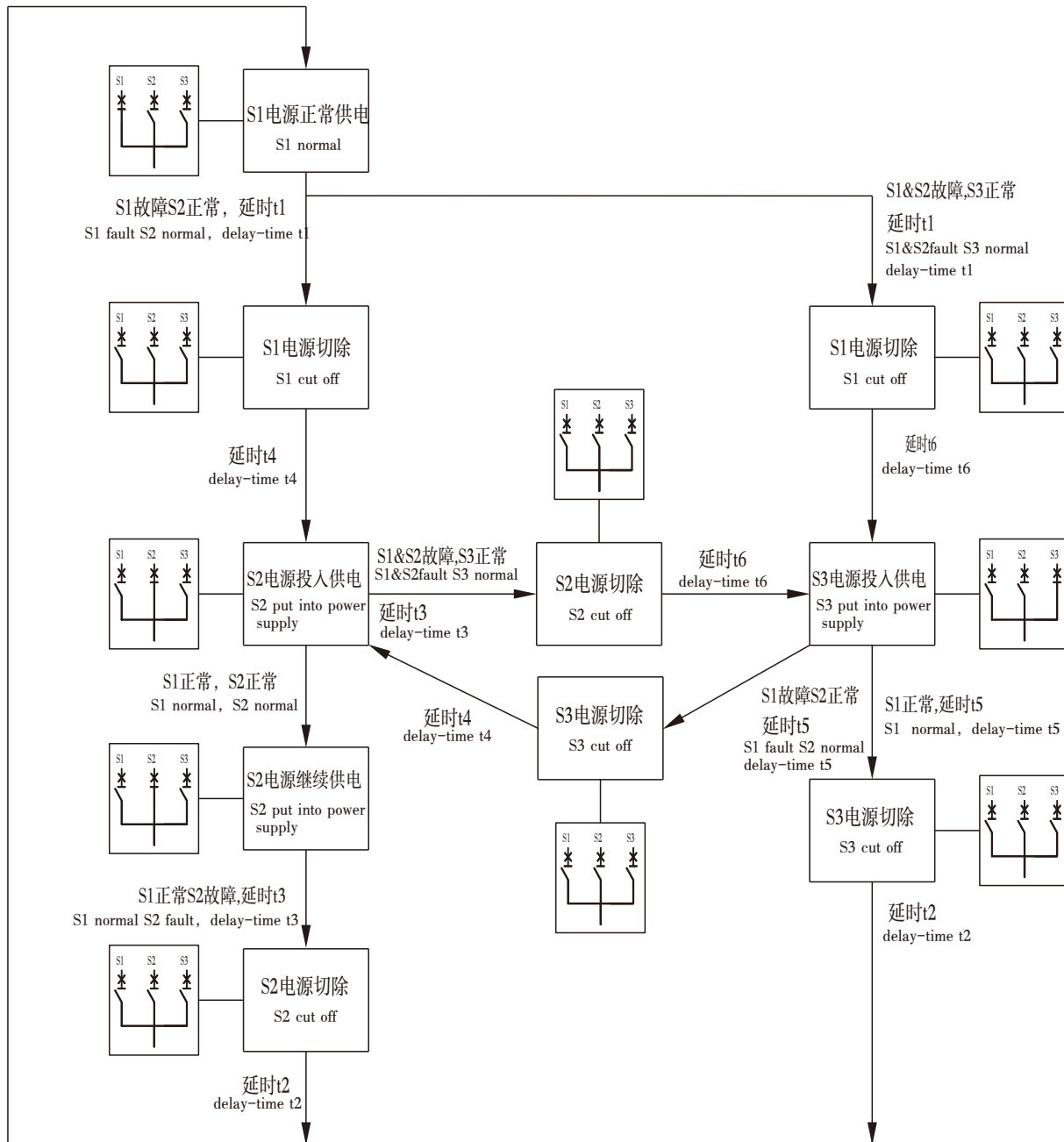
Automatic change and automatic recover between three network supplies





▲WTT5型--三电网电源自投不自复

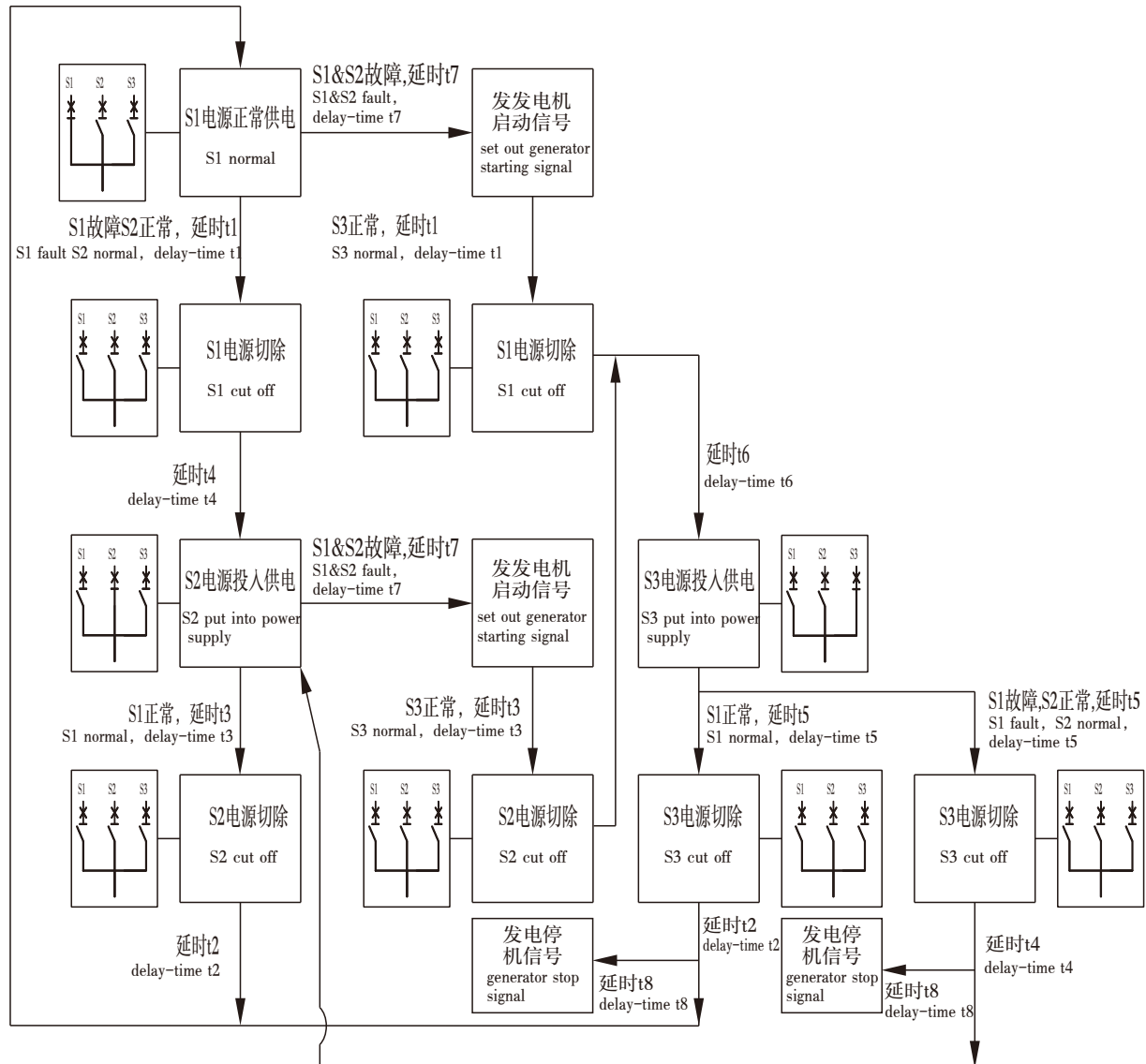
Automatic change and not automatic recover between three network supplies





▲ WTT5型--两个电网电源和一个发电电源自投自复

Automatic change and automatic recover between two network supplies with generating

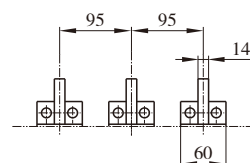
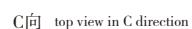
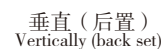
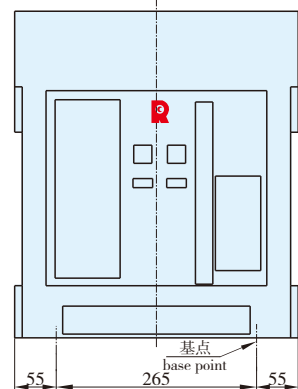
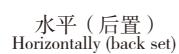
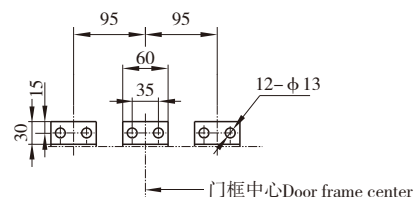


● 特性 Characteristics

型号 Type	自动转换控制器型号 Automatic controller type	配用断路器 Fitting breaker
FZZ两路电源转换 Two lines supply transfer	R、ZR、ZTR	CW1-2000C/2000/3200C/3200/4000/5000 两台 (可配其它CW系列断路器)
	S、ZS、ZTS	
	F、ZF、ZTF	
FLZ两进线一母联电源转换 Two incoming one bus comple	WTT3	CW1-2000C/2000/3200C/3200/4000/5000 三台 (可配其它CW系列断路器)
	WTB3	
FLZ三电源转换 Three supply transfer	WTT5	CW1-2000C/2000/3200C/3200/4000/5000 三台 (可配其它CW系列断路器)



A top view in A direction

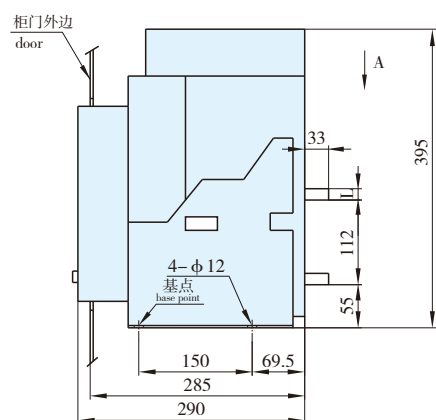


46

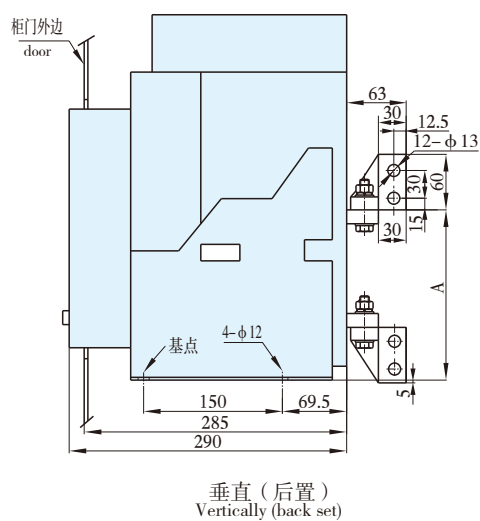
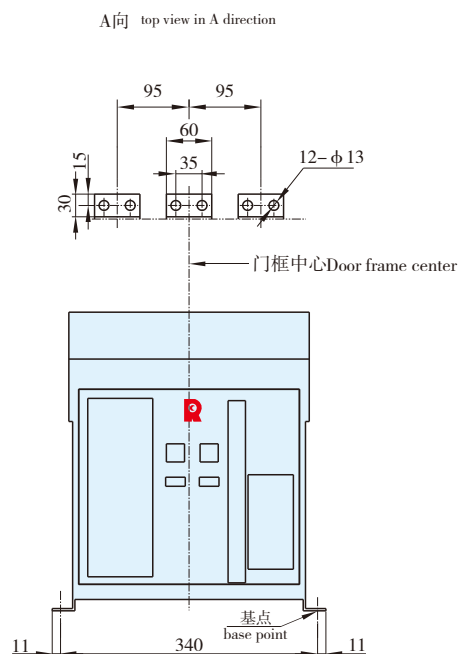


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

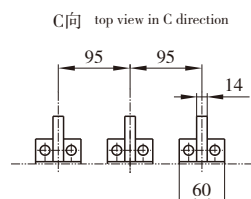
电流规格 Current spec.	L(mm)	A(mm)
2000A	15	182
630 ~ 1600A	10	177



水平 (后置)
Horizontally (back set)



垂直 (后置)
Vertically (back set)



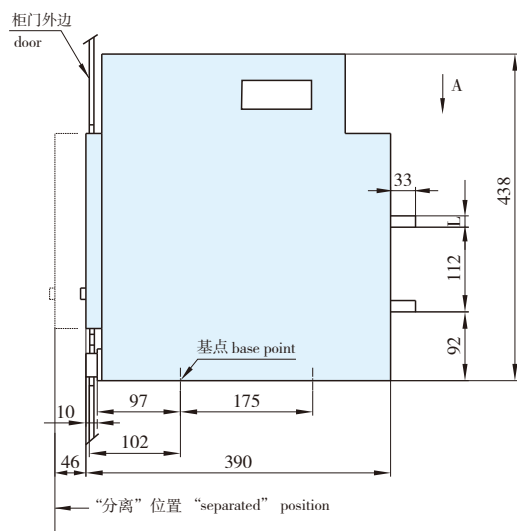
CW1-2000C三极智能型万能式断路器(固定式)

CW1-2000C Intelligent universal breaker ,3-poles (fixed)

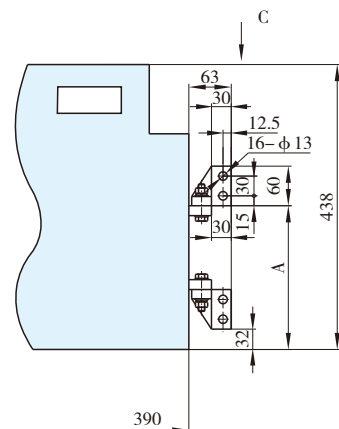
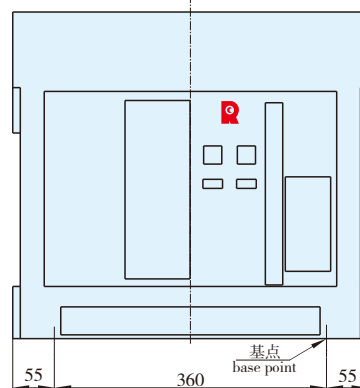
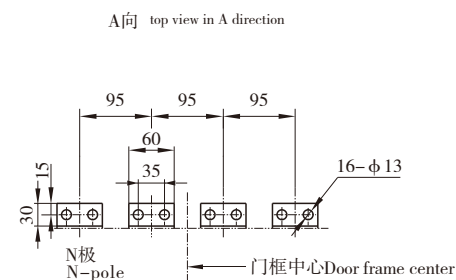
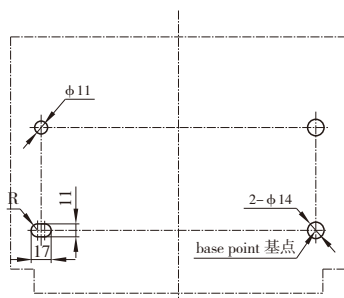


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

电流规格 Current spec.	L(mm)	A(mm)
2000A	15	219
630 ~ 1600A	10	214

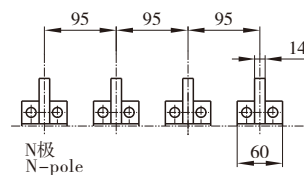


水平（后置）
Horizontally (back set)



垂直（后置）
Vertically (back set)

C[向] top view in C direction

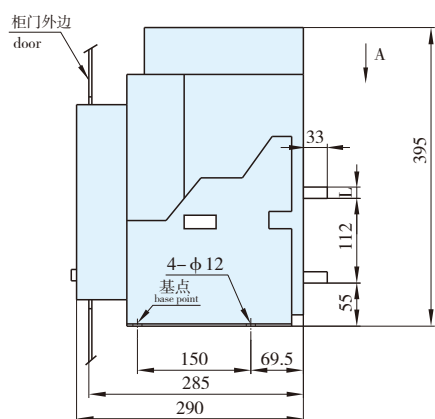


CW1-2000C四极智能型万能式断路器(抽屉式)
CW1-2000C Intelligent universal breaker, 4-poles (draw-out)

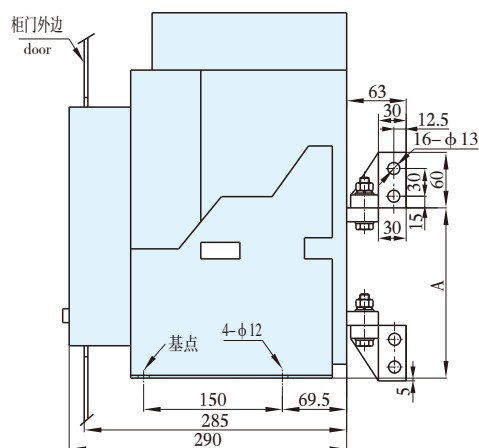
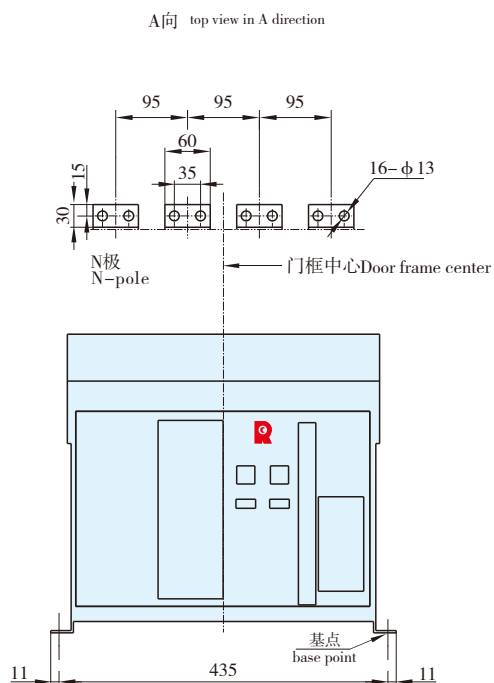


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

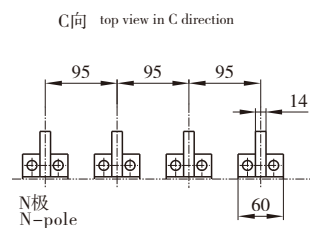
电流规格 Current spec.	L(mm)	A(mm)
2000A	15	182
630 ~ 1600A	10	177



水平（后置）
Horizontally (back set)



垂直（后置）
Vertically (back set)

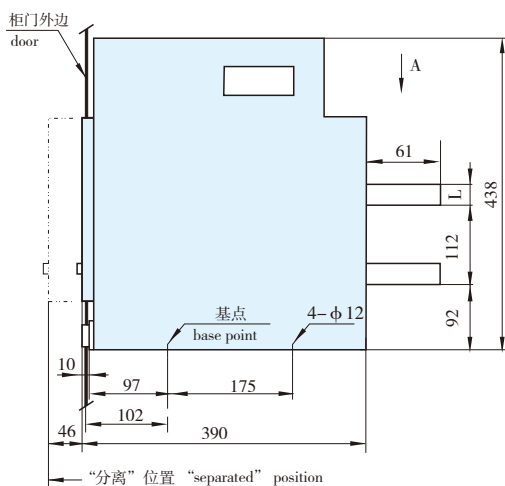
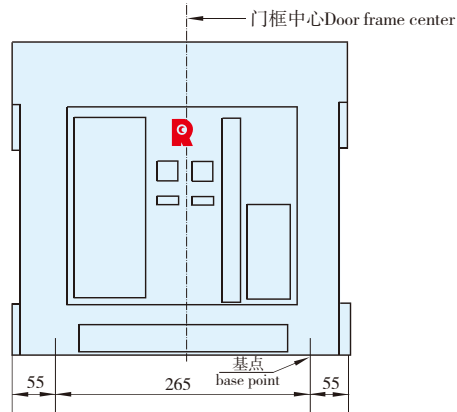
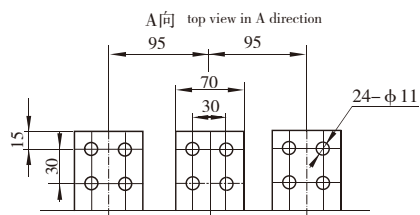


CW1-2000C四极智能型万能式断路器(固定式)
CW1-2000 Intelligent universal breaker ,4-poles (fixed)

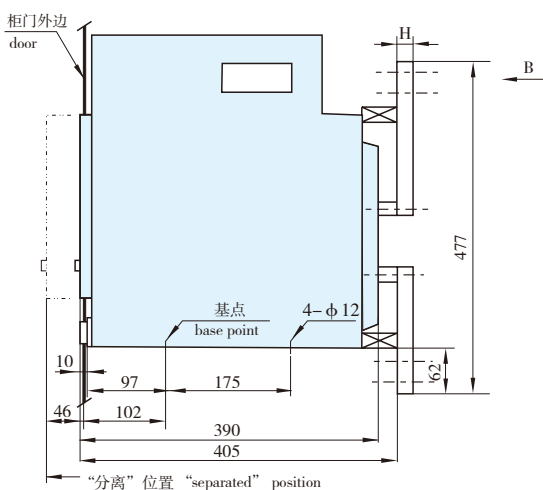


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

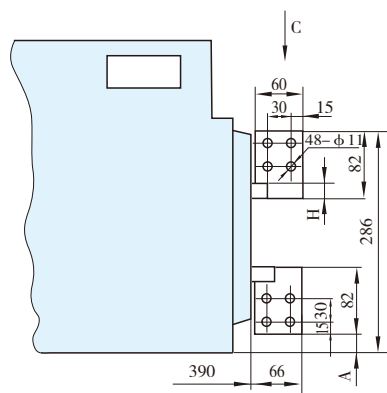
电流规格 Current spec.	L(mm)	H(mm)	A(mm)
2000A	20	20	30
800 ~ 1600A	15	15	25
630A	10	15	25



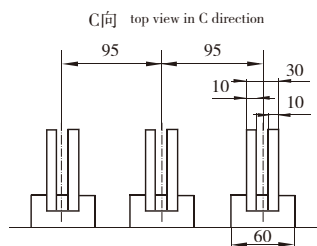
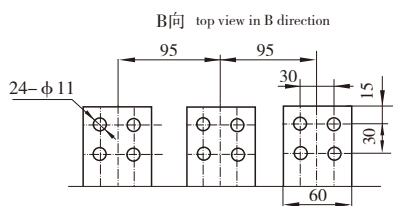
水平（后置）
Horizontally (back set)



垂直（前置）
vertically (front set)



垂直（后置）
Vertically (back set)

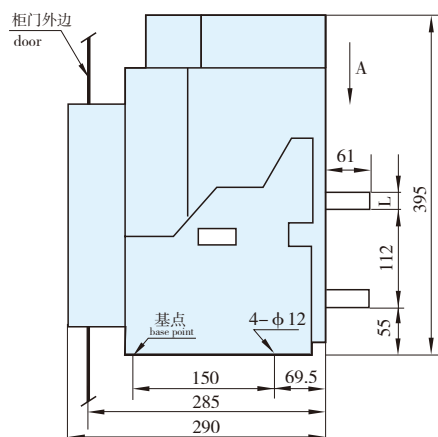
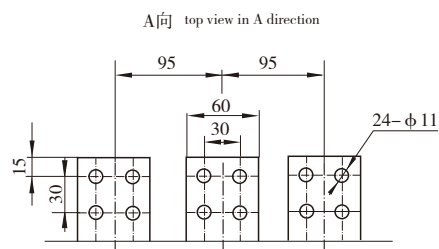


CW1-2000三极智能型万能式断路器(抽屉式)
CW1-2000 Intelligent universal breaker, 3-poles (drawn-out)

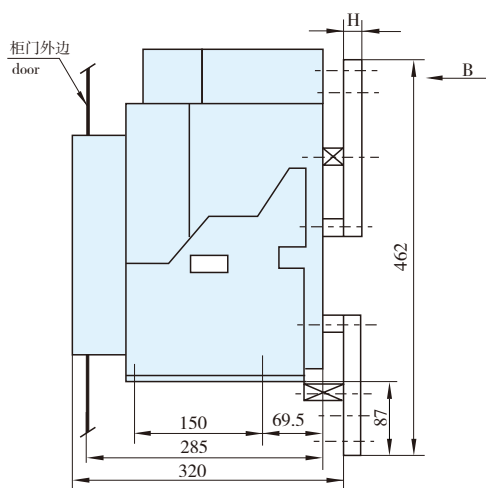
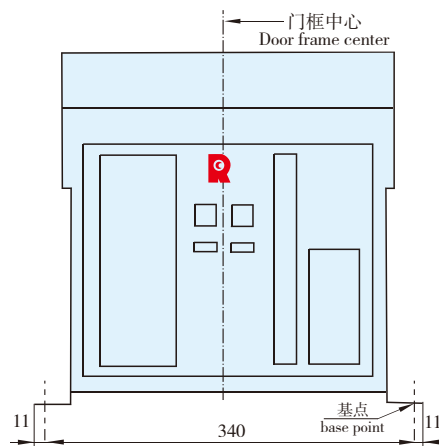


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

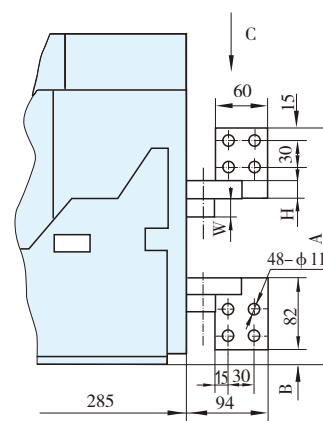
电流规格 Current spec.	L(mm)	H(mm)	A(mm)	W(mm)	B(mm)
2000A	20	20	269	20	13
800 ~ 1600A	15	15	264	15	3
630A	10	15	264	15	3



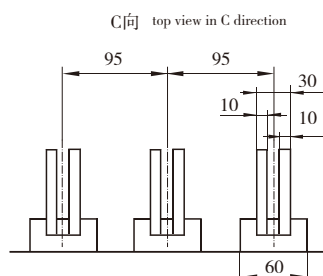
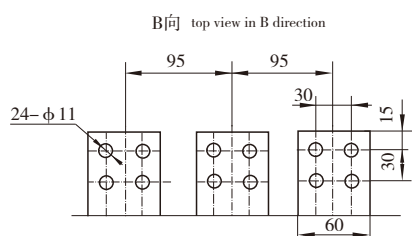
水平（后置）Horizontally (back set)



垂直（前置）
vertically (front set)



垂直（后置）
Vertically (back set)

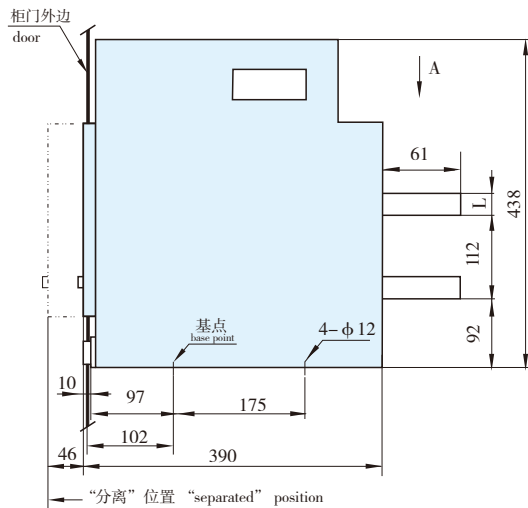


CW1-2000三极智能型万能式断路器(固定式)
CW1-2000 Intelligent universal breaker, 3-poles (fixed)

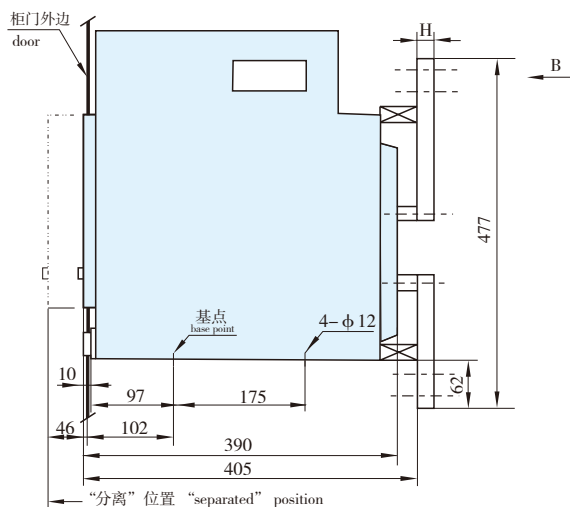


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

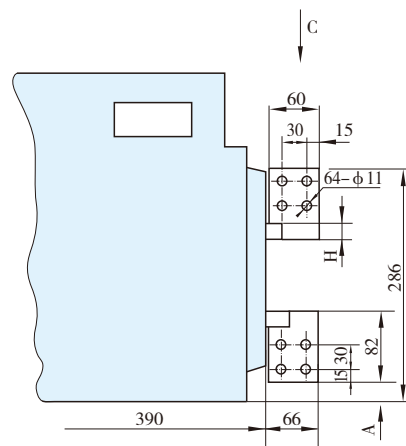
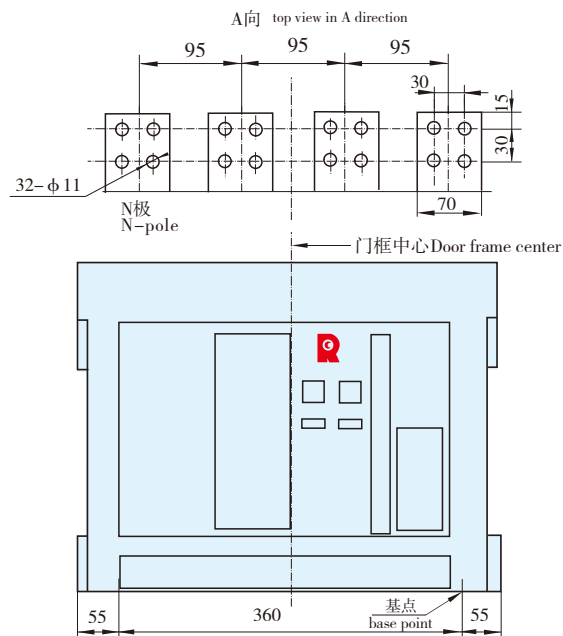
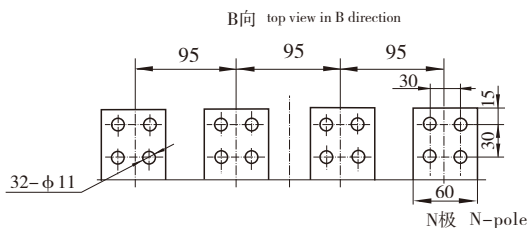
电流规格 Current spec.	L(mm)	H(mm)	A(mm)
2000A	20	20	30
800 ~ 1600A	15	15	25
630A	10	15	25



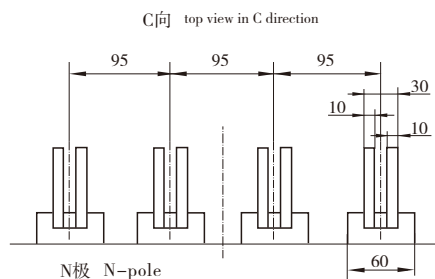
水平 (后置) Horizontally (back set)



垂直 (前置)
vertically (front set)



垂直 (后置)
Vertically (back set)

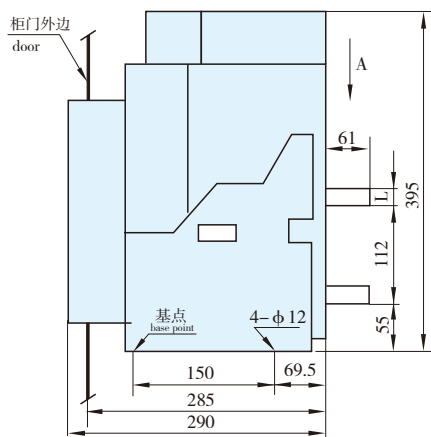
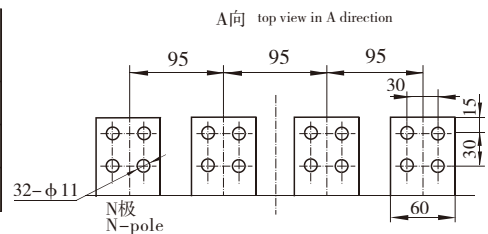


CW1-2000四极智能型万能式断路器(抽屉式)
CW1-2000 Intelligent universal breaker ,4-poles (draw-out)

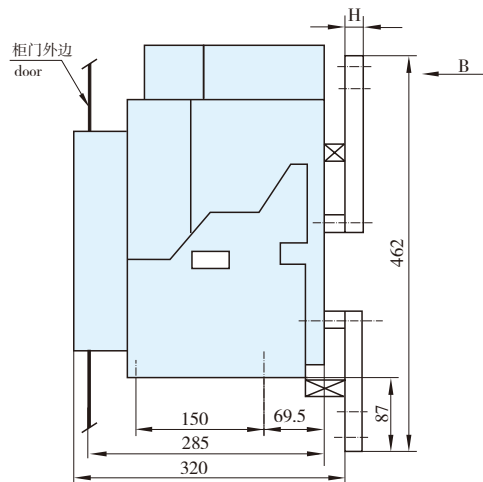
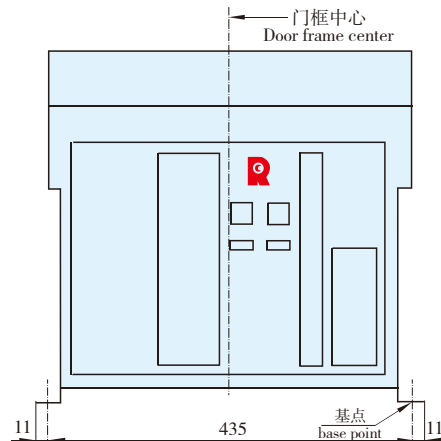


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

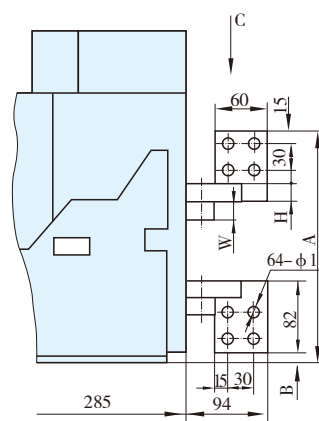
电流规格 Current spec.	L(mm)	H(mm)	A(mm)	W(mm)	B(mm)
2000A	20	20	269	20	13
800 ~ 1600A	15	15	264	15	3
630A	10	15	264	15	3



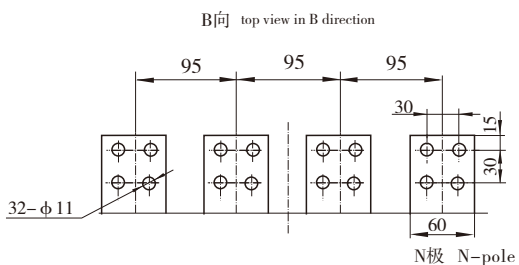
水平 (后置) Horizontally (back set)



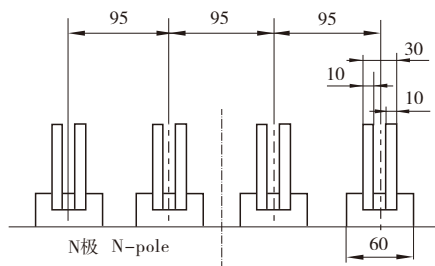
垂直 (前置)
vertically (front set)



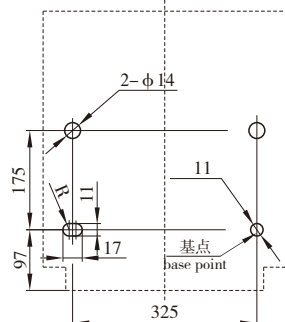
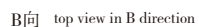
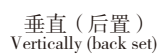
垂直 (后置)
Vertically (back set)



C向 top view in C direction



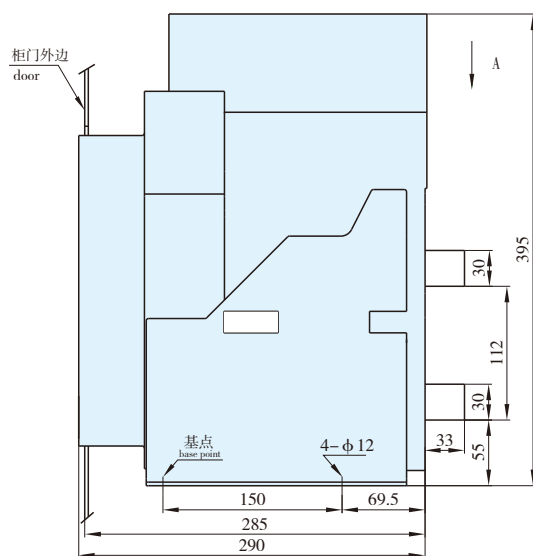
CW1-2000四极智能型万能式断路器(固定式)
CW1-2000 Intelligent universal breaker, 4-poles (fixed)



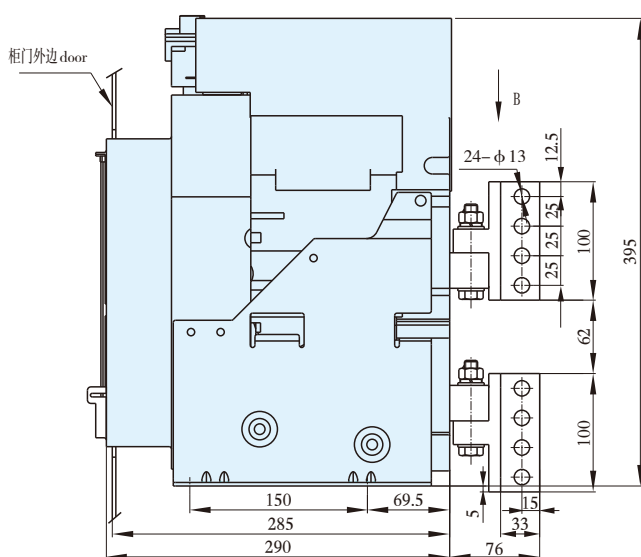
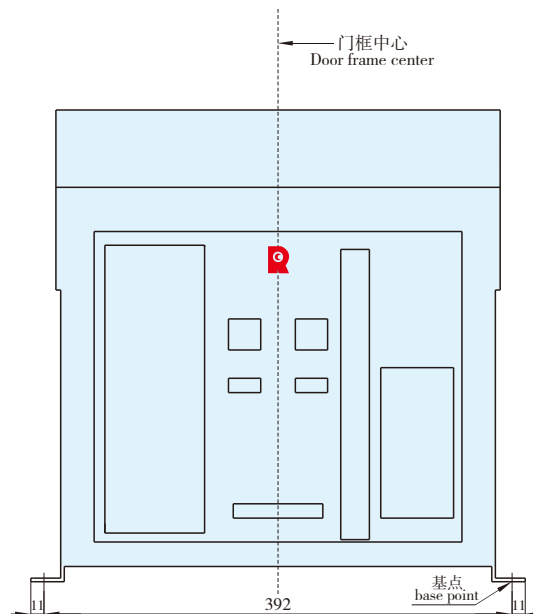
CW1-3200C三极智能型万能式断路器(抽屉式)
CW1-3200C Intelligent universal breaker ,3-poles(draw-out)



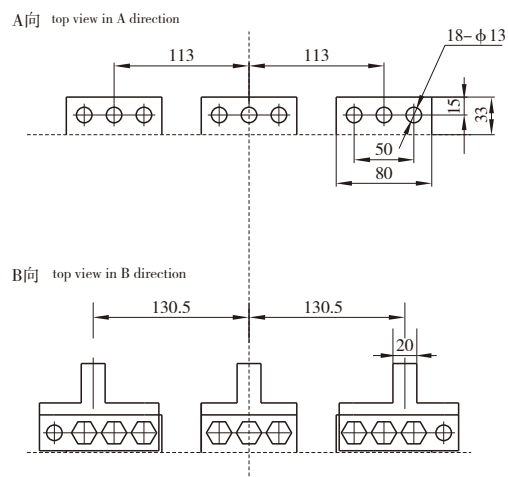
断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS



水平（后置）Horizontally (back set)



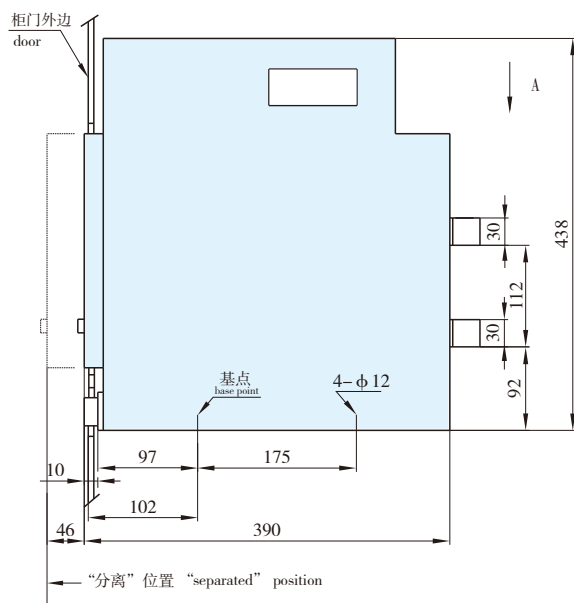
垂直（后置）
Vertically (back set)



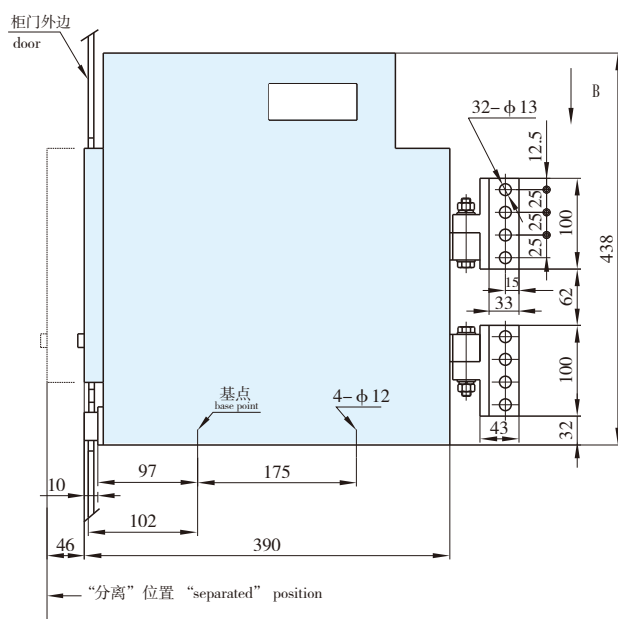
CW1-3200C三极智能型万能式断路器(固定式)
CW1-3200C Intelligent universal breaker, 3-poles (fixed)



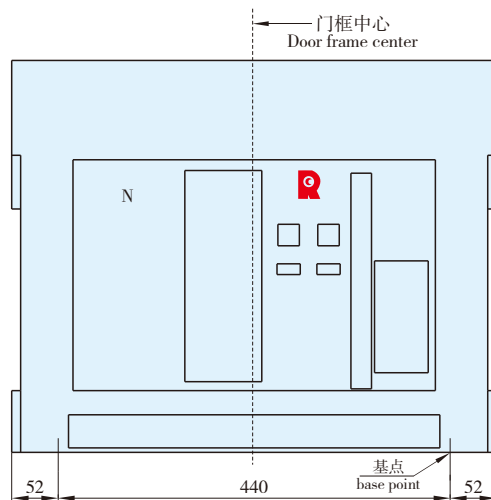
断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS



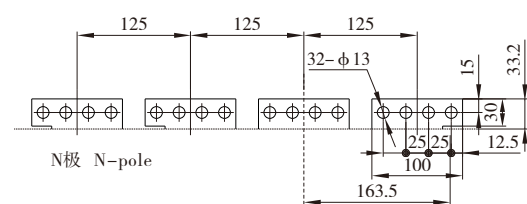
水平（后置）Horizontally (back set)



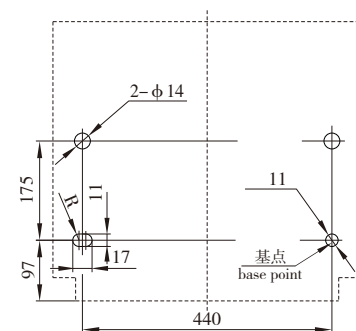
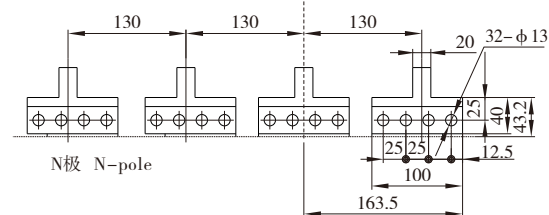
垂直（后置）Vertically (back set)



A向 top view in A direction



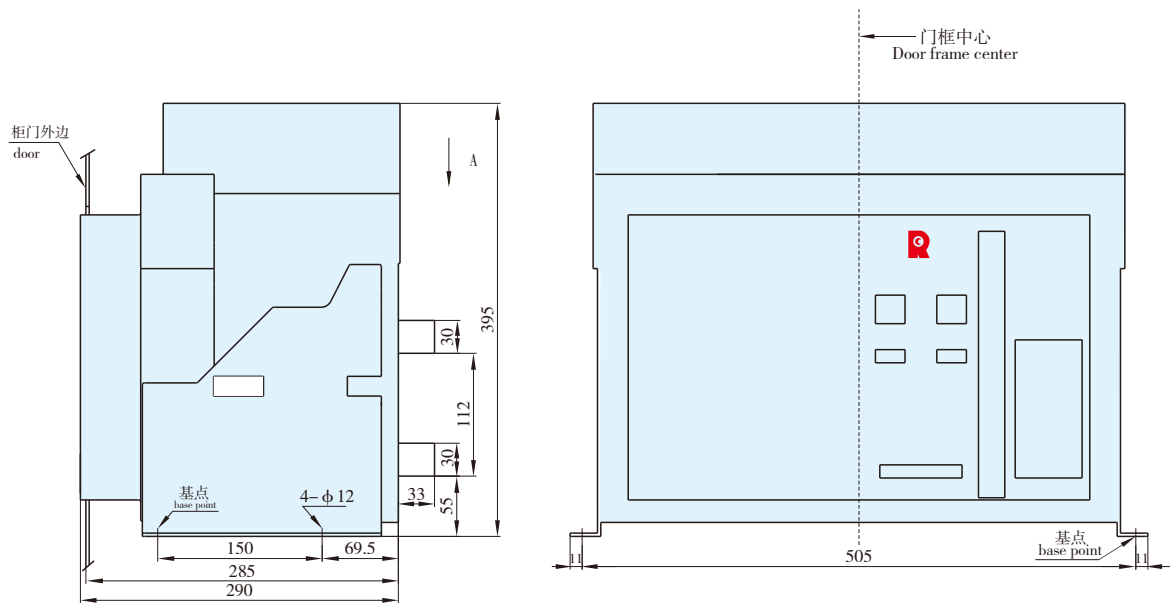
B向 top view in B direction



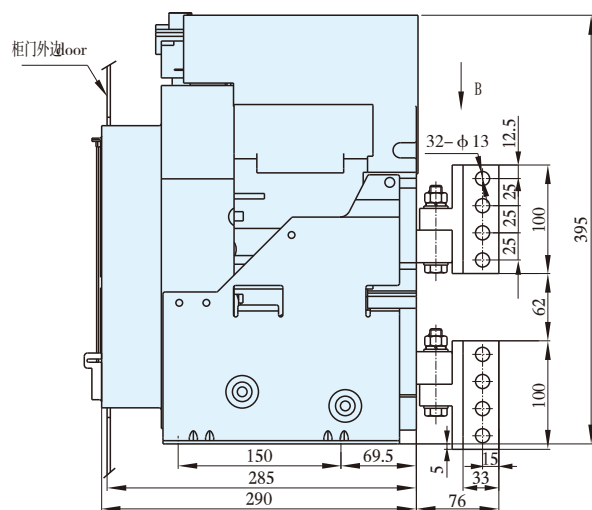
CW1-3200C四极智能型万能式断路器(抽屉式)
CW1-3200C Intelligent universal breaker ,4-poles(draw-out)



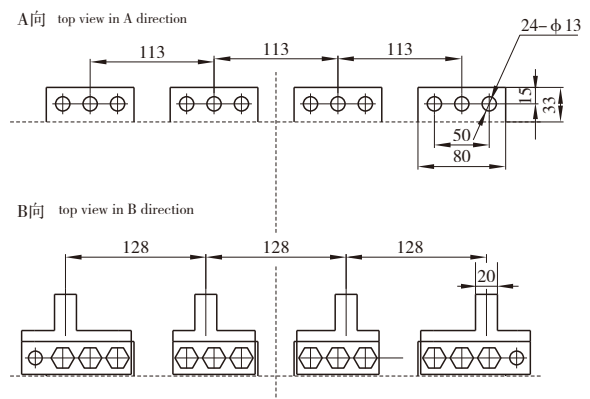
断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS



水平 (后置) Horizontally (back set)



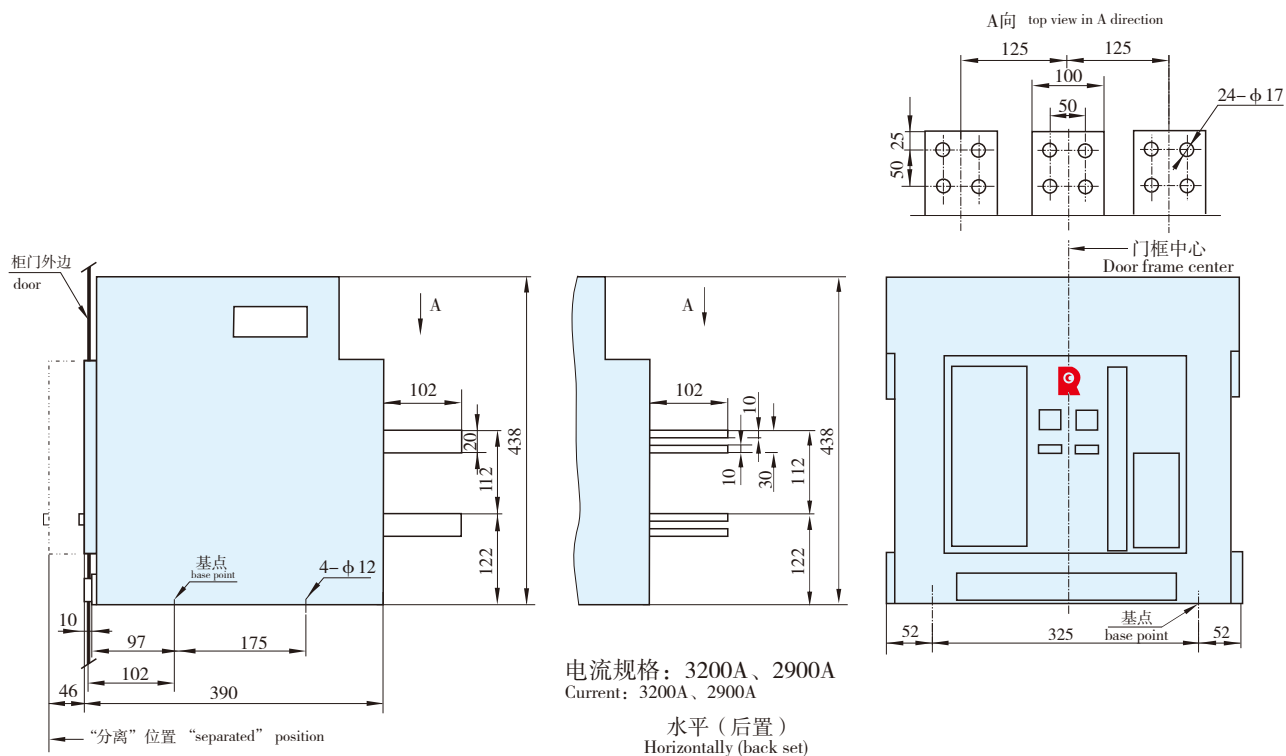
垂直 (后置)
Vertically (back set)



CW1-3200C四极智能型万能式断路器(固定式)
CW1-3200C Intelligent universal breaker, 4-poles (fixed)



断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

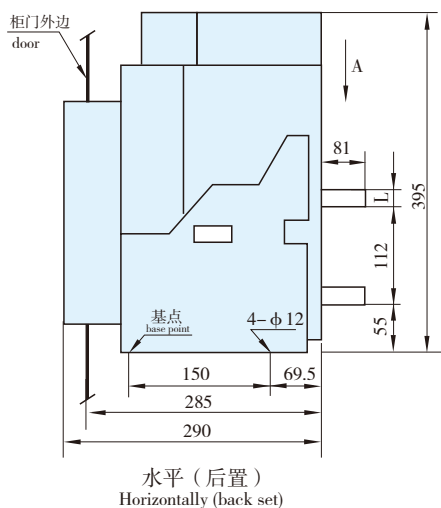


电流规格: 2500A、2000A
Current: 2500A、2000A

水平 (后置)
Horizontally (back set)

CW1-3200三极智能型万能式断路器(抽屉式)
CW1-3200 Intelligent universal breaker ,3-poles (draw-out)

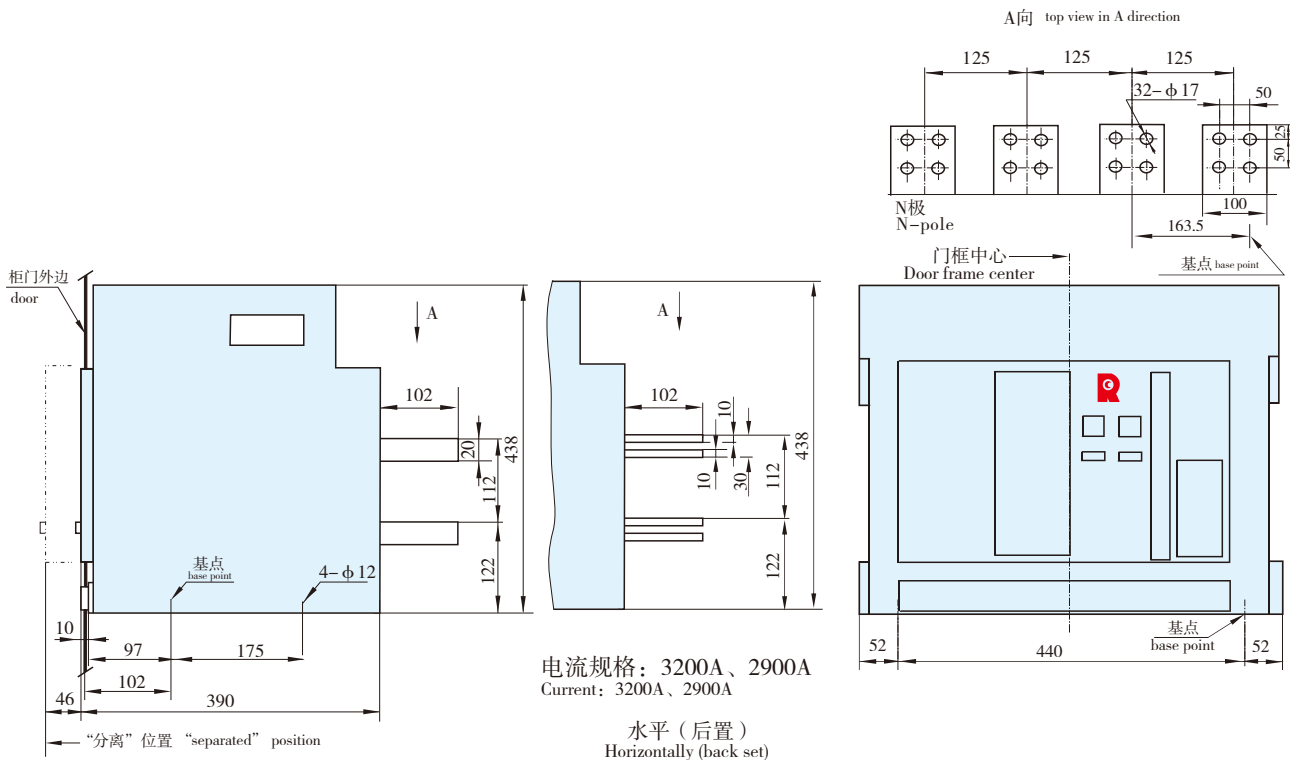
电流规格 Current spec.	L(mm)
3200A、2900A	30
2500A、2000A	20



CW1-3200三极智能型万能式断路器(固定式)
CW1-3200 Intelligent universal breaker ,3-poles (fixed)



断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

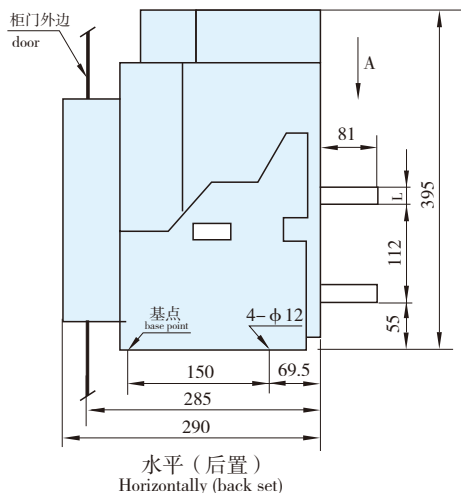
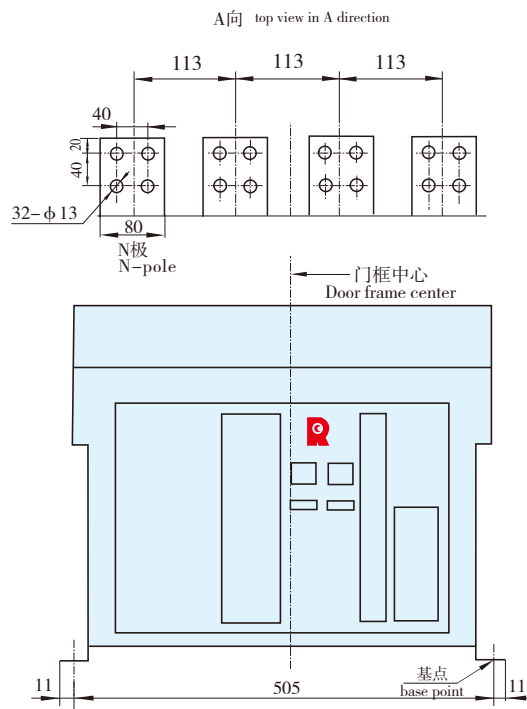


电流规格: 2500A、2000A
Current: 2500A、2000A

水平 (后置)
Horizontally (back set)

CW1-3200四极智能型万能式断路器(抽屉式)
CW1-3200 Intelligent universal breaker ,4-poles (draw-out)

电流规格 Current spec.	L(mm)
3200A、2900A	30
2500A、2000A	20

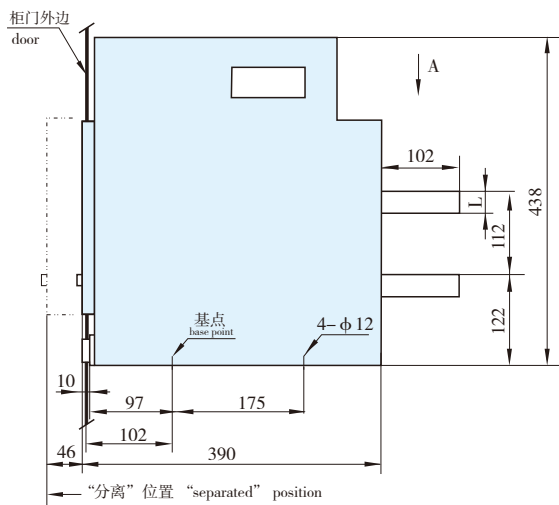


CW1-3200四极智能型万能式断路器(固定式)
CW1-3200 Intelligent universal breaker ,4-poles (fixed)



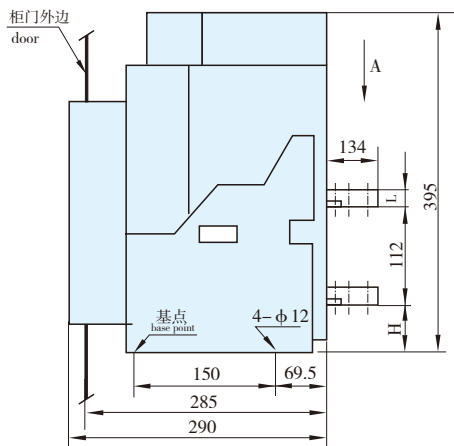
断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

电流规格 Current spec.	L(mm)
4000A	30
3600A、3200A	25
2500A	20



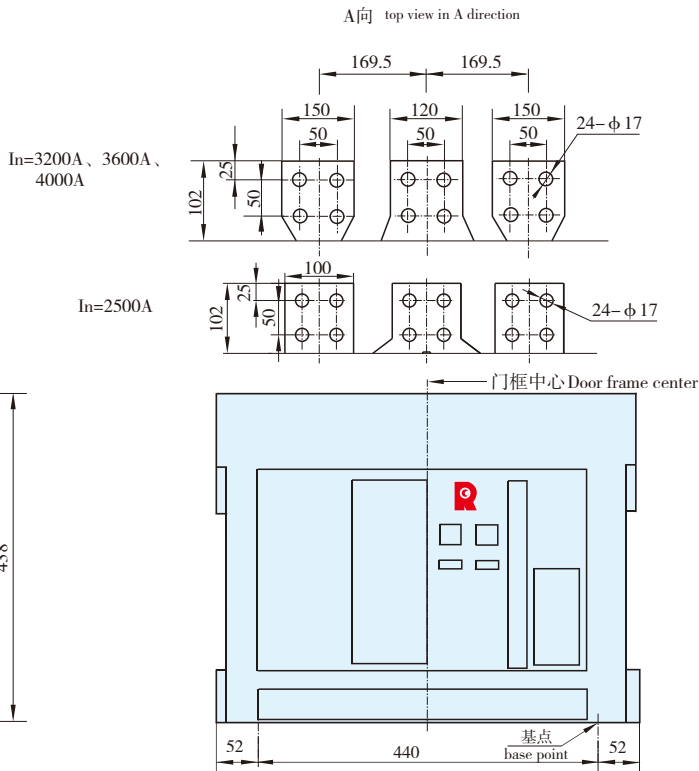
水平（后置）
Horizontally (back set)

电流规格 Current spec.	L(mm)	H(mm)
4000A、3600A、3200A	30	55
2500A	20	65

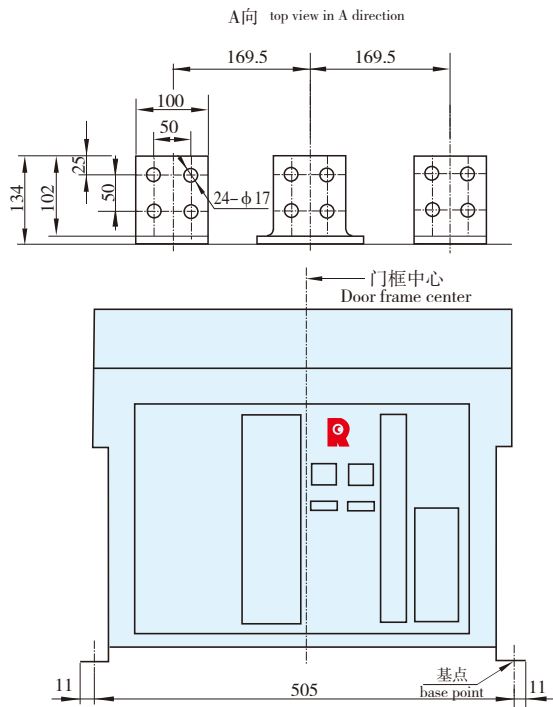


水平（后置）
Horizontally (back set)

CW1-4000三极智能型万能式断路器(固定式)
CW1-4000 Intelligent universal breaker, 3-poles (fixed)



CW1-4000三极智能型万能式断路器(抽屉式)
CW1-4000 Intelligent universal breaker, 3-poles (draw-out)



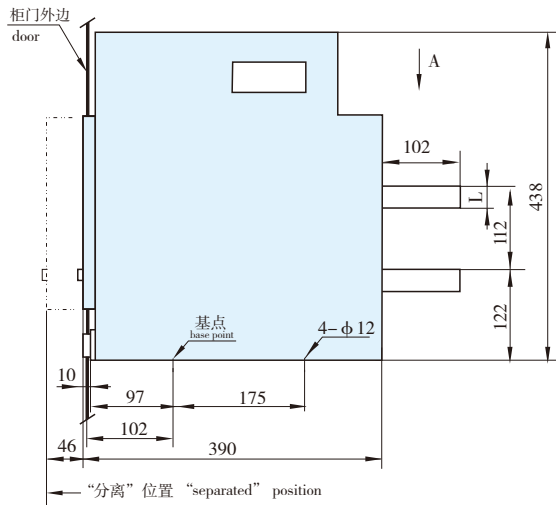
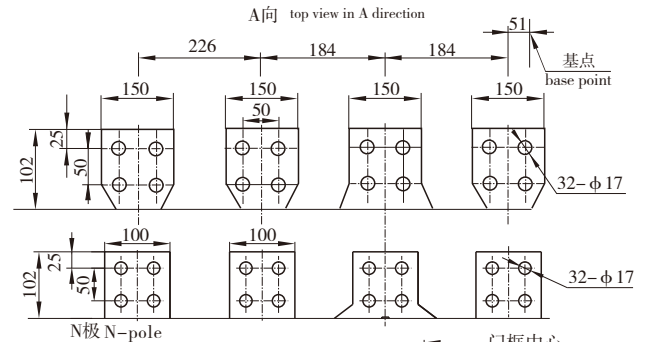


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

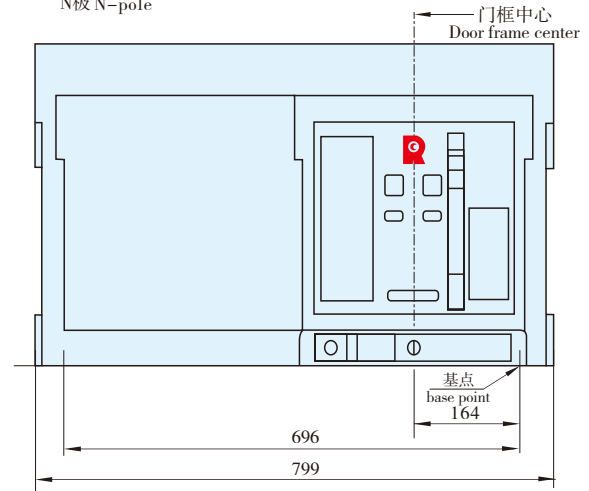
电流规格 Current spec.	L(mm)
4000A	30
3600A、3200A	25
2500A	20

$I_n=3200A、3600A、4000A$

$I_n=2500A$

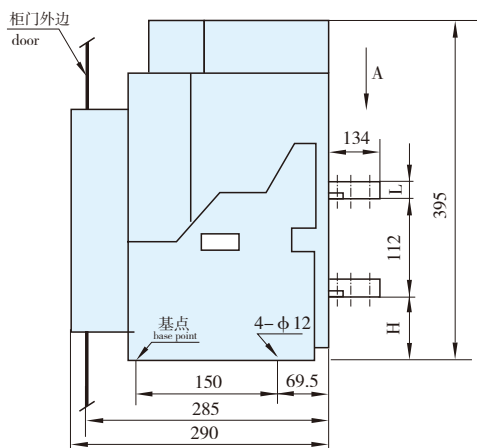
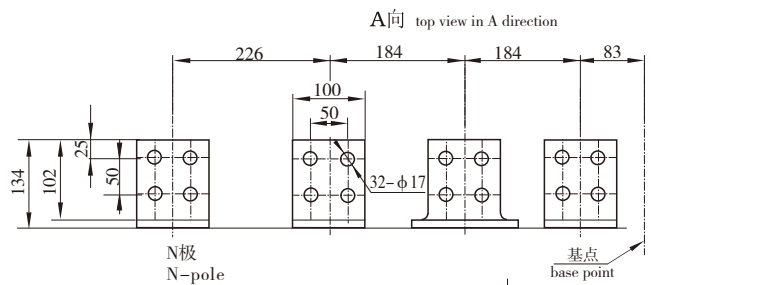


水平（后置）
Horizontally (back set)

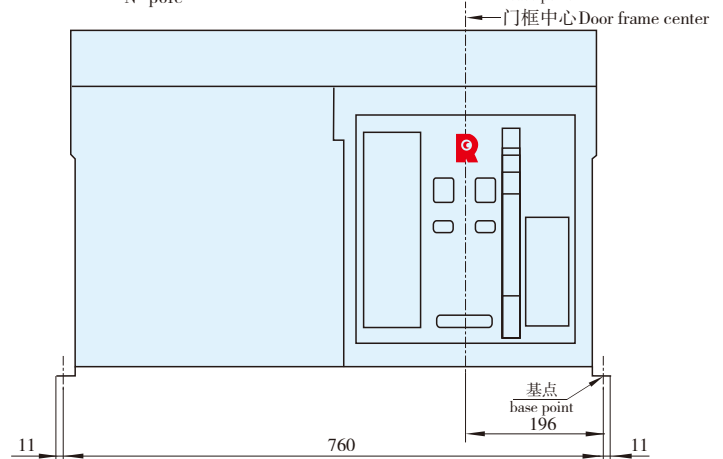


CW1-4000四极智能型万能式断路器(抽屉式)
CW1-4000 Intelligent universal breaker, 4-poles (draw-out)

电流规格 Current spec.	L(mm)	H(mm)
4000A、3600A、3200A	30	55
2500A	20	65



水平（后置）
Horizontally (back set)

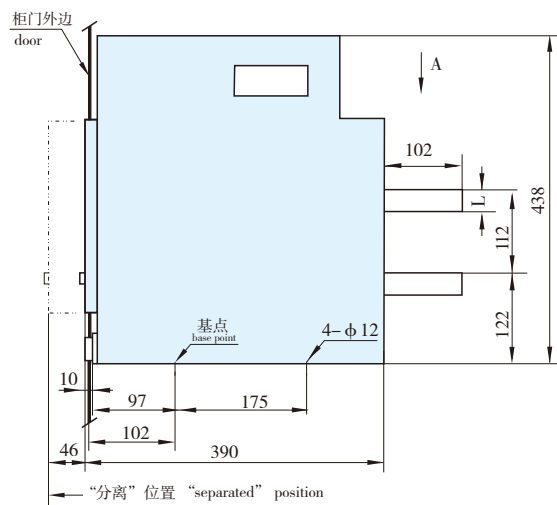


CW1-4000四极智能型万能式断路器(固定式)
CW1-4000 Intelligent universal breaker, 4-poles (fixed)



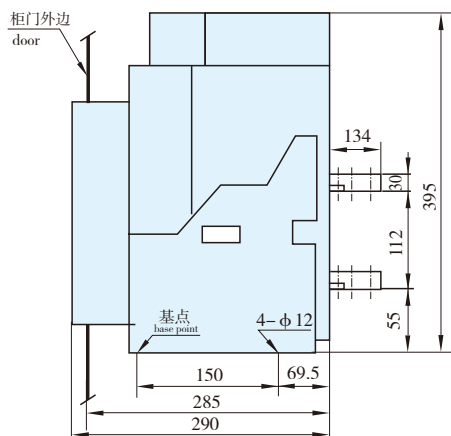
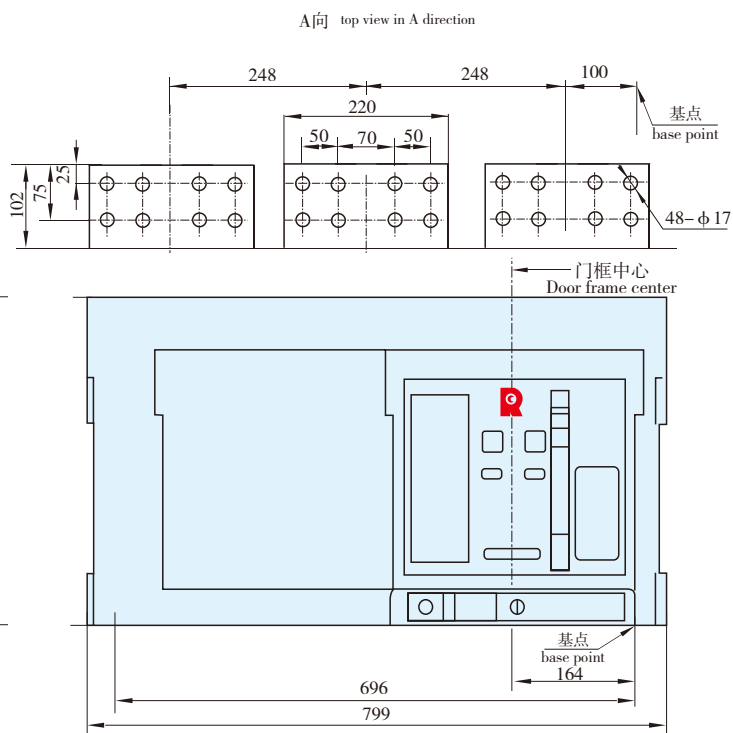
断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

电流规格 Current spec.	L(mm)
5000A	30
4000A	20



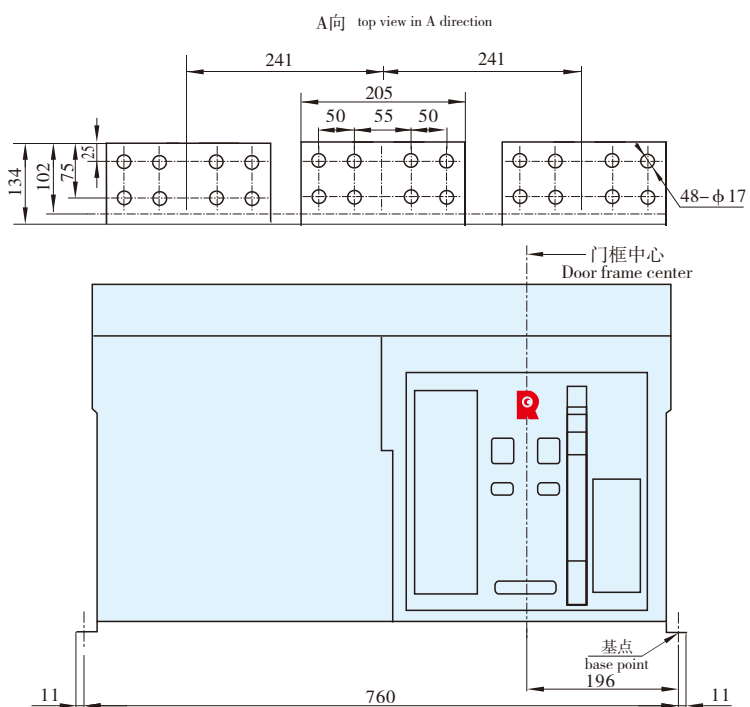
水平（后置）
Horizontally (back set)

CW1-5000三极智能型万能式断路器(抽屉式)
CW1-5000 Intelligent universal breaker, 3-poles (draw-out)



水平（后置）
Horizontally (back set)

CW1-5000三极智能型万能式断路器(固定式)
CW1-5000 Intelligent universal breaker, 3-poles (fixed)





断路器门框开孔尺寸

HOLING DIMENSIONS FOR MOUNTING DOOR FRAME

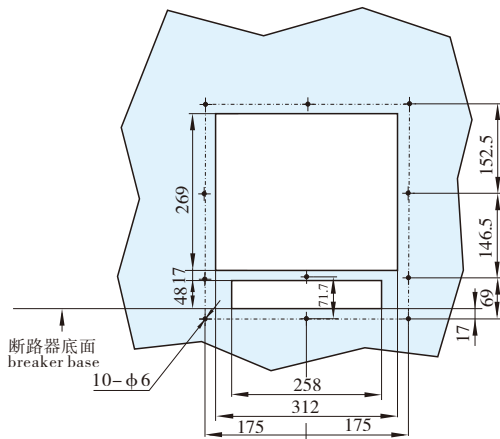
CW1-2000C/CW1-2000三极智能型万能式断路器(抽屉式)
CW1-2000C/CW1-2000 Intelligent universal breaker ,3-poles (draw-out)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为256mm

Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 256mm



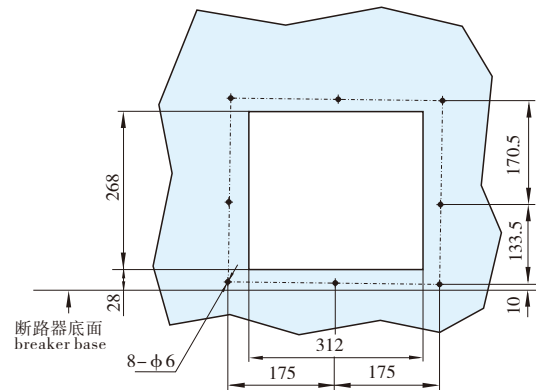
CW1-2000C/CW1-2000三极智能型万能式断路器(固定式)
CW1-2000C/2000 Intelligent universal breaker ,3-poles (fixed)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为256mm

Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 256mm



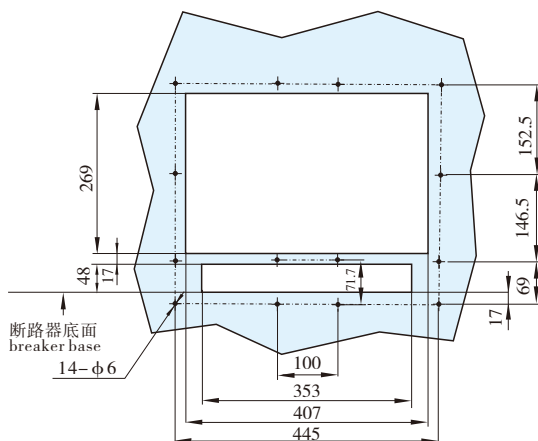
CW1-2000C/CW1-2000四极智能型万能式断路器(抽屉式)
CW1-2000C/CW1-2000 Intelligent universal breaker ,4-poles (draw-out)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为303.5mm

Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 303.5mm



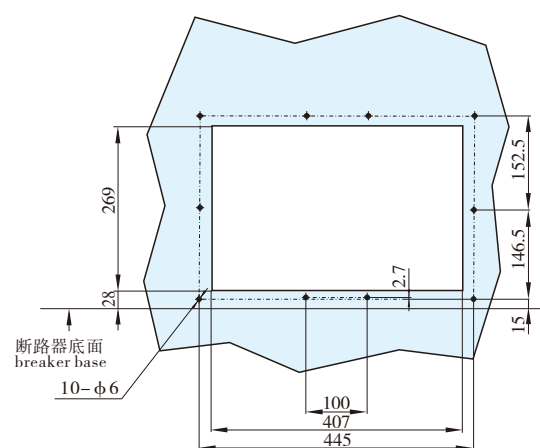
CW1-2000C/2000四极智能型万能式断路器(固定式)
CW1-2000C/2000 Intelligent universal breaker ,4-poles (fixed)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为303.5mm

Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 303.5mm





断路器门框开孔尺寸

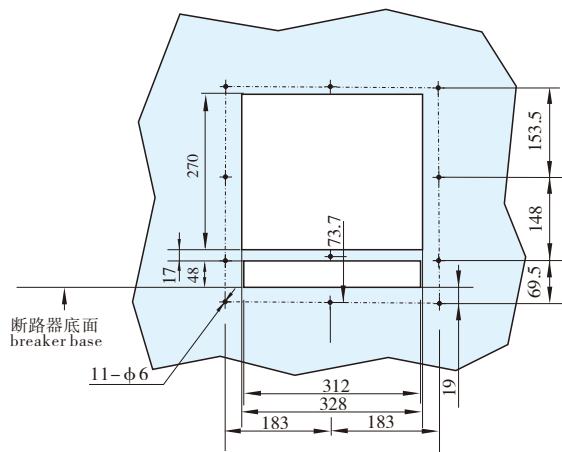
HOLING DIMENSIONS FOR MOUNTING DOOR FRAME

CW1-3200C/3200三极智能型万能式断路器(抽屉式)
CW1-3200C/3200 Intelligent universal breaker ,3-poles (draw-out)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为264mm
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 264mm

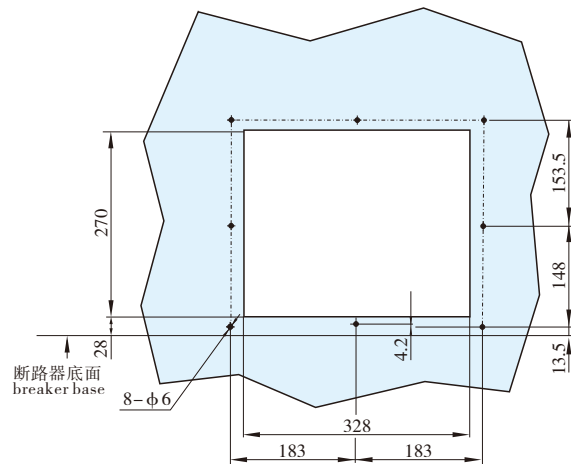


CW1-3200C/3200三极智能型万能式断路器(固定式)
CW1-3200C/3200 Intelligent universal breaker ,3-poles (fixed)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为264mm
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 264mm

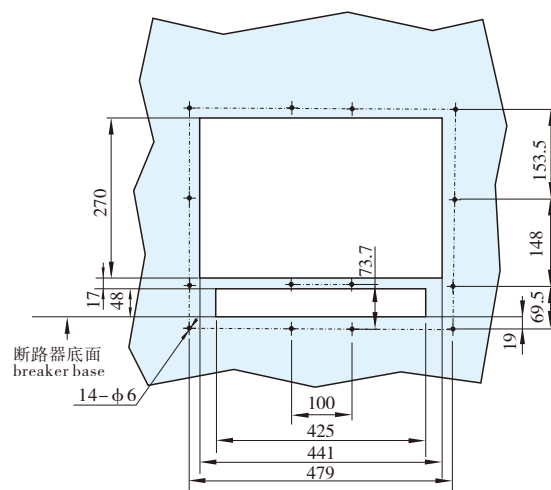


CW1-3200C/3200四极智能型万能式断路器(抽屉式)
CW1-3200C/3200 Intelligent universal breaker ,4-poles (draw-out)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为320.5mm
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 320.5mm

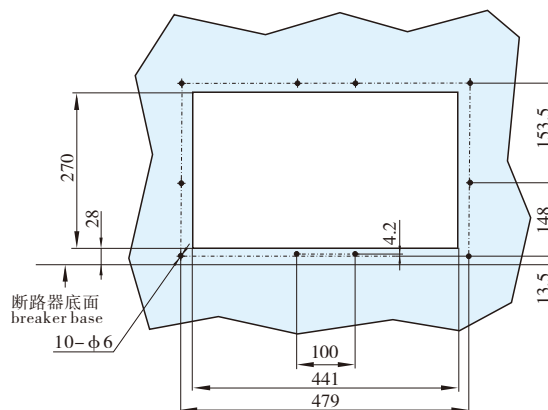


CW1-3200C/3200四极智能型万能式断路器(固定式)
CW1-3200C/3200 Intelligent universal breaker ,4-poles (fixed)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为320.5mm
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 320.5mm



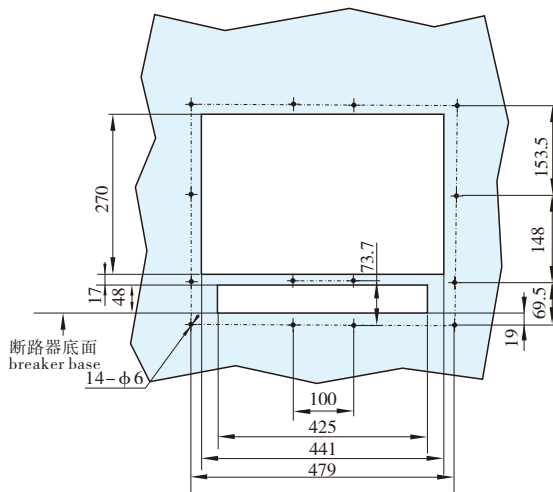


CW1-4000三极智能型万能式断路器(抽屉式)
CW1-4000 Intelligent universal breaker ,3-poles (draw-out)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为320.5mm
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 320.5mm

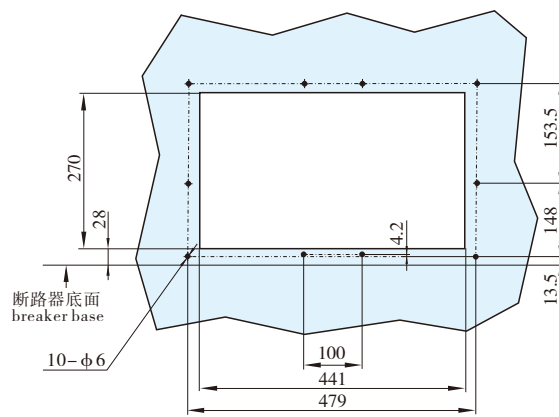


CW1-4000三极智能型万能式断路器(固定式)
CW1-4000 Intelligent universal breaker ,3-poles (fixed)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为320.5mm
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 320.5mm

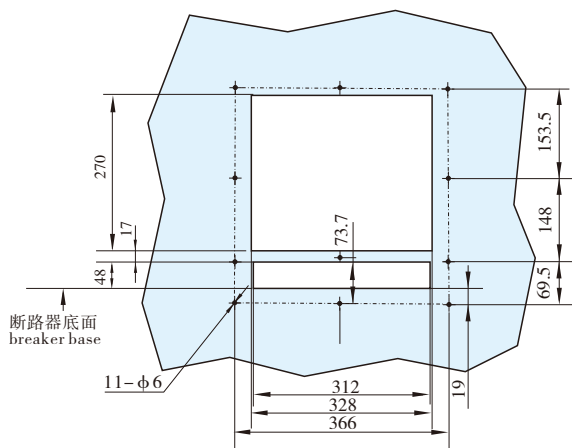


CW1-4000四极智能型万能式断路器(抽屉式)
CW1-4000 Intelligent universal breaker ,4-poles (draw-out)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为264mm
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 264mm

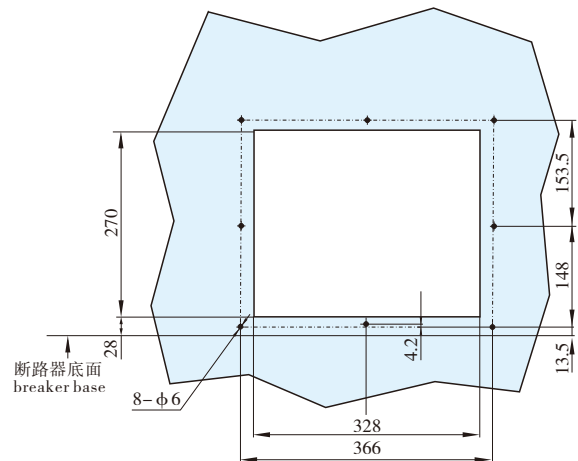


CW1-4000四极智能型万能式断路器(固定式)
CW1-4000 Intelligent universal breaker ,4-poles (fixed)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为264mm
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 264mm





断路器门框开孔尺寸

HOLING DIMENSIONS FOR MOUNTING DOOR FRAME

CW1-5000三极智能型万能式断路器(抽屉式)

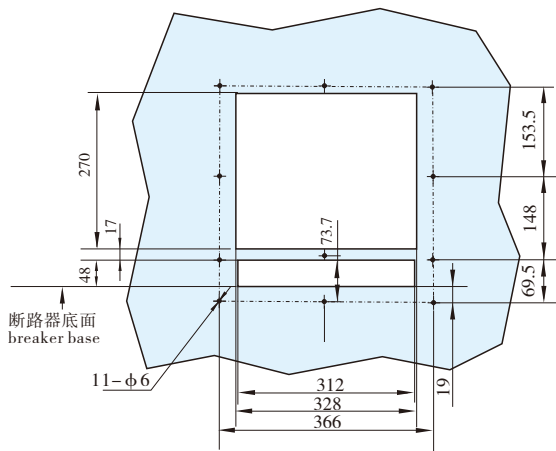
CW1-5000 Intelligent universal breaker ,3-poles (draw-out)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为264mm

Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 264mm



CW1-5000三极智能型万能式断路器(固定式)

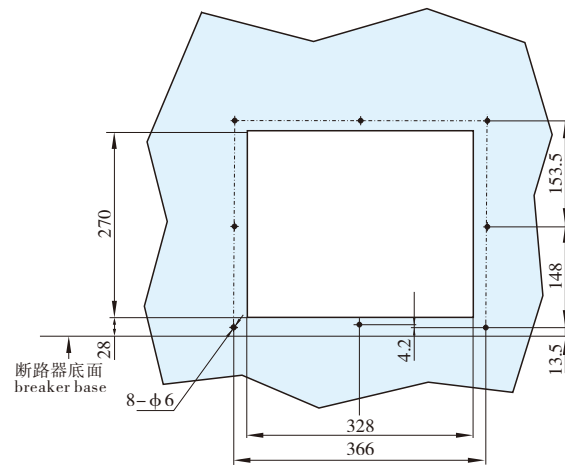
CW1-5000 Intelligent universal breaker ,3-poles (fixed)

安装门框前盖开孔图

Mounting door frame front cover holing dimensions drawing

控制面板中心离柜门右铰链最小距离为264mm

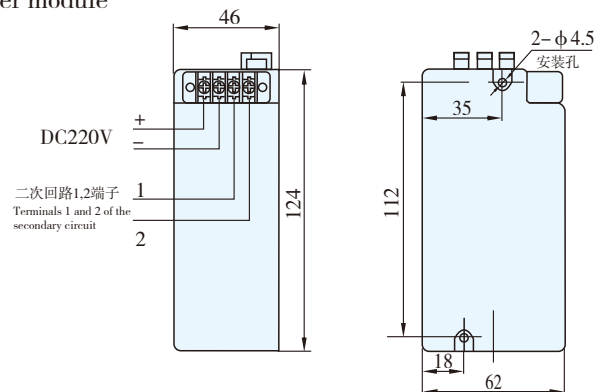
Distance from the panel center of the circuit breaker to the right hinge of switchboard door should be at least 264mm



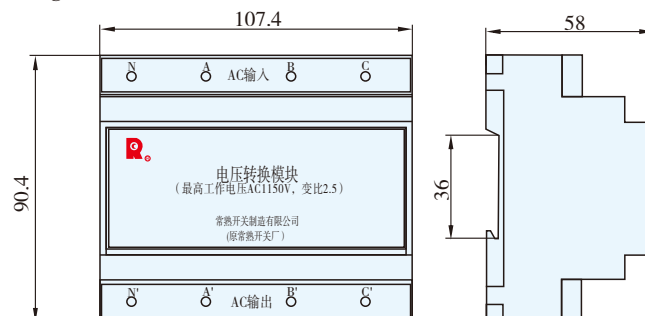
附件外形安装尺寸

OUTLINE AND MOUNTING DIMENSIONS OF ACCESSORIES

● 直流电源模块 DC power module



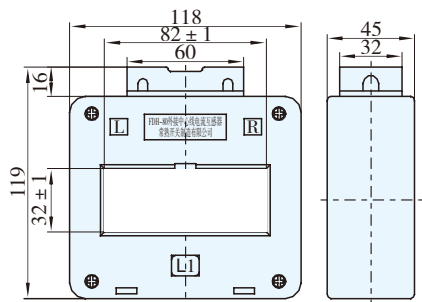
● 电压转换模块 Voltage changover module



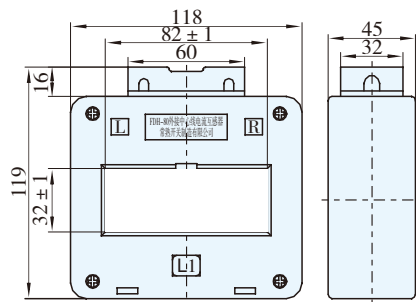


附件外形安装尺寸 OUTLINE AND MOUNTING DIMENSIONS OF ACCESSORIES

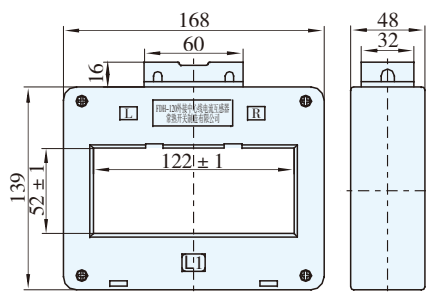
● 外接中性线互感器 Neutral trans former external connected



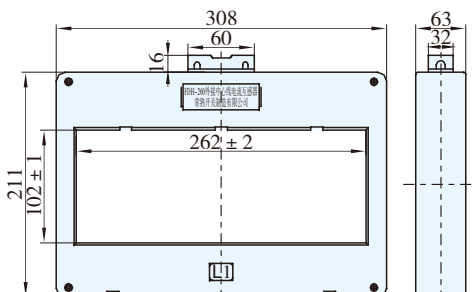
FDH-80b
配CW1-2000C/2000 (In=630A、800A)
三极 For three poles



FDH-80
配CW1-2000C/2000 (In=1000A ~ 2000A)
三极 For three poles



FDH-120
配CW1-3200C/3200/4000/5000
三极 For three poles



FDH-260
配CW1-3200C/3200/4000/5000
三极 For three poles

注：当断路器为CW1-3200C/3200/4000/5000三极时，用户可根据N极母线大小选择中性极互感器FDH-120或FDH-260。
Note:for CW1-3200C/3200/4000/5000 three breaker,please selecting FDH-120 or FDH-260 by N line cross-section.



安装使用

INSTALLATION AND APPLICATION

● 断路器安装使用

安装前先检查断路器的规格是否符合订货要求。并以1000V兆欧表检查断路器绝缘电阻，在周围介质温度20℃±5℃和相对湿度50%~70%应不小于20MΩ。

安装完毕，并按有关接线图接妥二次线后，对抽屉式断路器应抽出两侧导轨，将断路器本体可靠放入导轨中，推动断路器本体至分离位置，将摇手柄插入进出装置孔内，顺时针摇动手柄至试验位置，应进行下列操作试验。

a) 检查欠电压脱扣器，分励脱扣器，合闸电磁铁，电动储能机构及智能控制器，外接辅助电源的额定电压与所接电源电压是否相符，然后接通二次回路（此时欠电压脱扣器应吸合）；

b) 断路器储能分手动及电动两种：

对手动储能需上下扳动面板上手柄直至听到“咔嚓”声，面板上显示“储能”，即储能结束。对电动储能机构操作，亦听到“咔嚓”声，面板上显示“储能”即储能结束。

此时按动“T”按钮或用合闸电磁铁通电，均可使断路器可靠闭合，电动储能操作机构自动再储能。

c) 断路器闭合后，无论用欠电压脱扣器、分励脱扣器、面板上的“O”按钮或智能控制器的脱扣试验，均应使断路器断开。

● How to install and use the breaker

Check the specifications of breaker IN or OUT accordance with the requirements of order before installation. Check the insulating resistance with a 500V megameter, the resistance should not be less than 20M when ambient temperature is 20±5 and relative humidity is 50~70%.

After finished installation, and wiring the secondary circuit according with the wiring diagram, for drawout breaker, pull out the rails in two sides, push the breaker body to separated position, insert the handle into the hole of device, shake it clockwise, make it to the test position and do following operation test.

a) Check the rated voltage of undervoltage release, shunt release closing, electromagnet, motor-driven energy-storage system and intelligent controller, auxiliary supply (external) is IN or OUT accordance with the voltage of supply power, then energize the secondary circuit (at the time, the undervoltage release should be ON).

b) There are two ways for breaker energy-storage: manual and motor-driven.

For manual energy-storage, turn the handle on face until a click comes and indicator shows "energy-storage" that it tells the energy-storage process finished.

At the time, press the button "T" or energize the closing electromagnet, the breaker could be closed reliably. For motor-driven system, it would be recharged automatically.

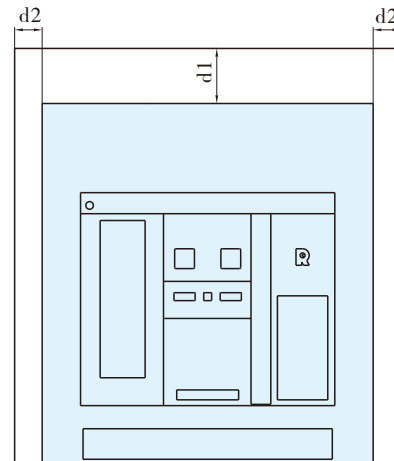
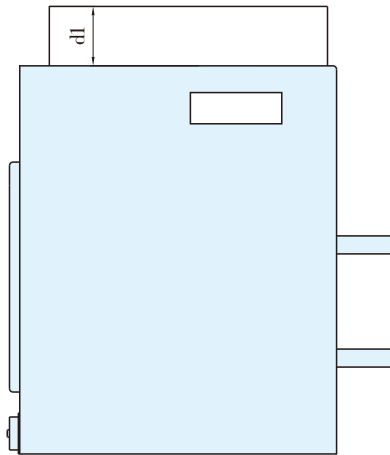
c) As the breaker closed, you could make the breaker released, whatever using the under-voltage release, shunt release, "O" button or tripping test of the intelligent controller.

⚠ 强干扰源远离断路器1000mm以上。

⚠ Strong interruptive device should be kept 1000mm far from the breaker at least.



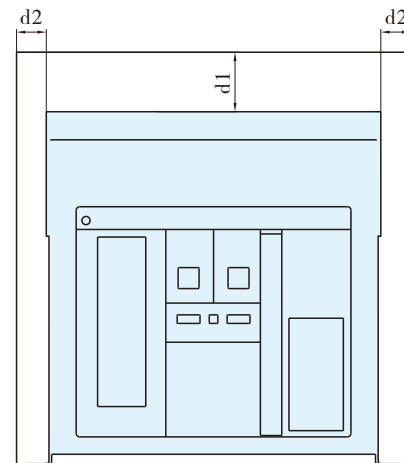
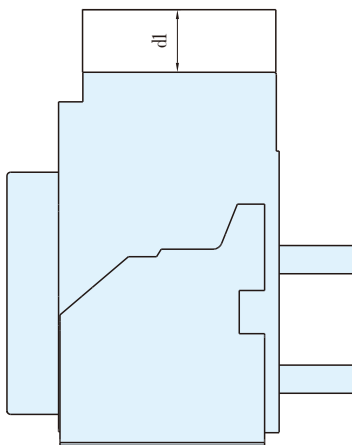
● 抽屉式断路器 Draw-out breaker



断路器与柜壁或带电部件最小距离
Minimn distance between breaker with switchboard wall or live part.

	柜壁 Switchboard wall	带电部分 Live part
d1(注note)(mm)	0	60
d2(mm)	0	60

● 固定式断路器 Fixed breaker



断路器与柜壁或带电部件最小距离
Minimn distance between breaker with switchboard wall or live part.

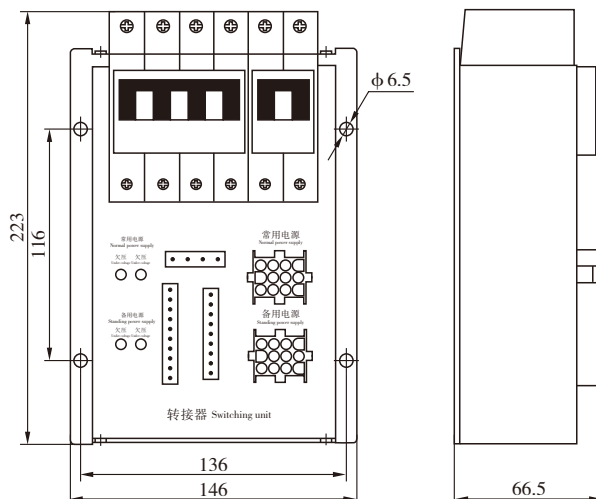
	柜壁 Switchboard wall	带电部分 Live part
d1(注note)(mm)	0	60
d2(mm)	0	60

注：安全间隙要考虑两次回路的走线。

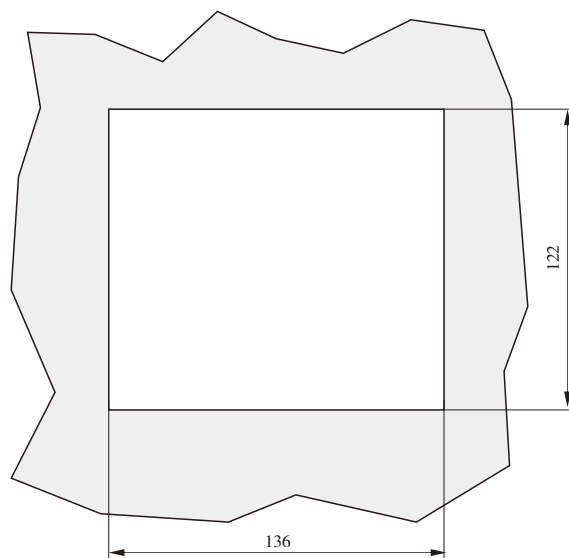
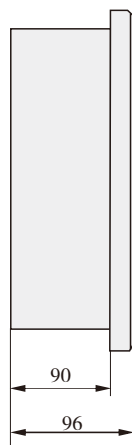
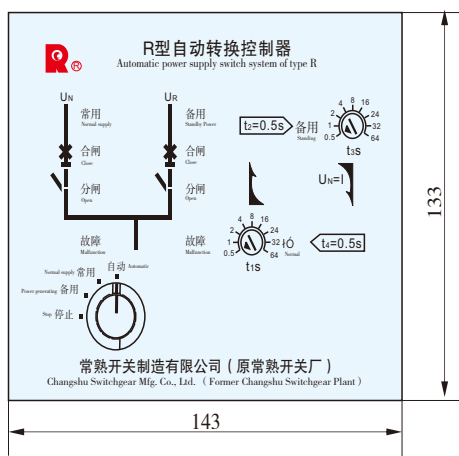
Note:secondary circuit wiring must be considered for safety clearance.



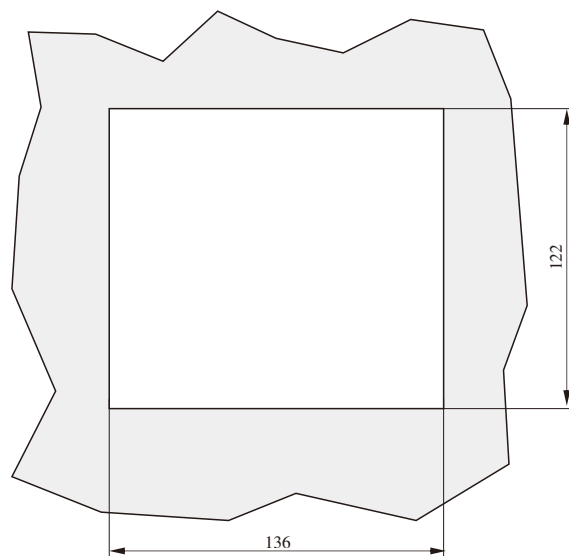
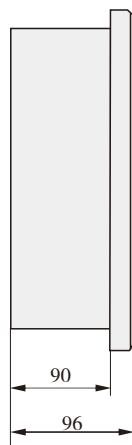
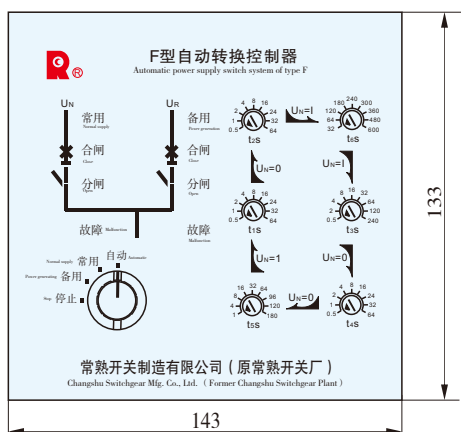
- FZZ两路电源转换 FZZ two supply transfer
- 转接器 (R、S、F、ZR、ZS、ZF、ZTR、ZTS、ZTF自动转换控制器用)
The switching unit (R、S、F、ZR、ZS、ZF、ZTR、ZTS、ZTF) automatic transfer controller



- R、S型自动转换控制器
Type R and S Automatic transfer controller



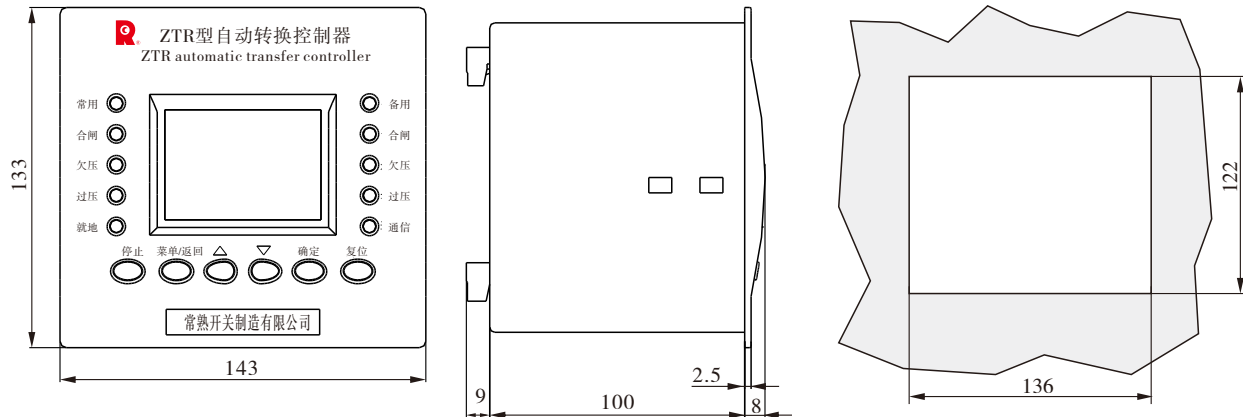
- F型自动转换控制器
Type F automatic controller





● ZR、ZS、ZF、ZTR、ZTS、ZTF自动转换控制器

Type ZR,ZS,ZF,ZTR,ZTS,ZTF automatic transfer controller

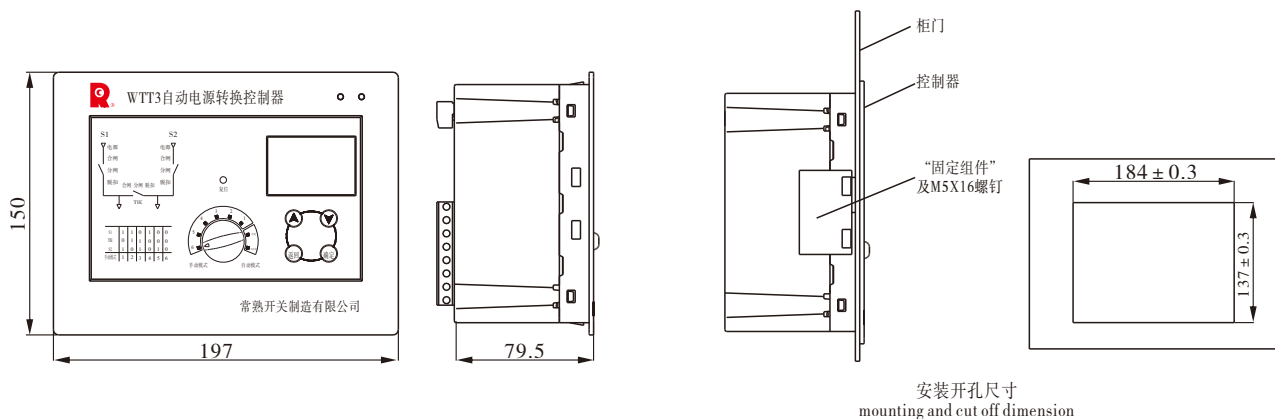


● FLZ两进线一母联和三电源转换

FLZ two incoming one bus couple supply and three supplies transfer

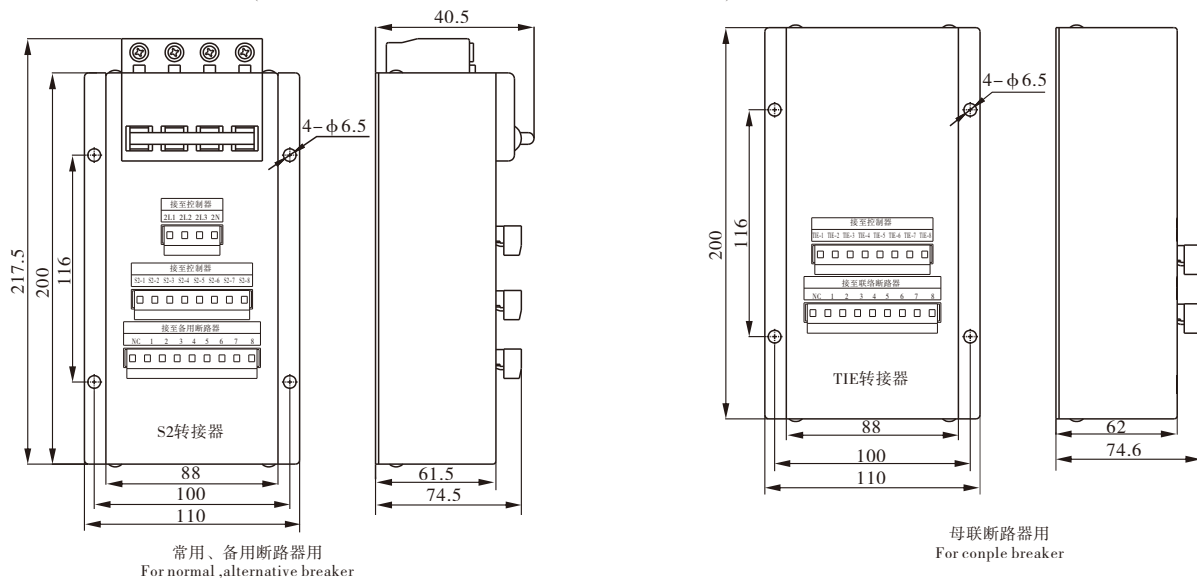
● WTT3/WTB3/WTT5 自动转换控制器

WTT3/WTB3/WTT5 automatic transfer controller



● 转接器 Adapter (WTT3/WTB3/WTT5 自动转换控制器用)

(WTT3/WTB3/WTT5 automatic transfer controller)



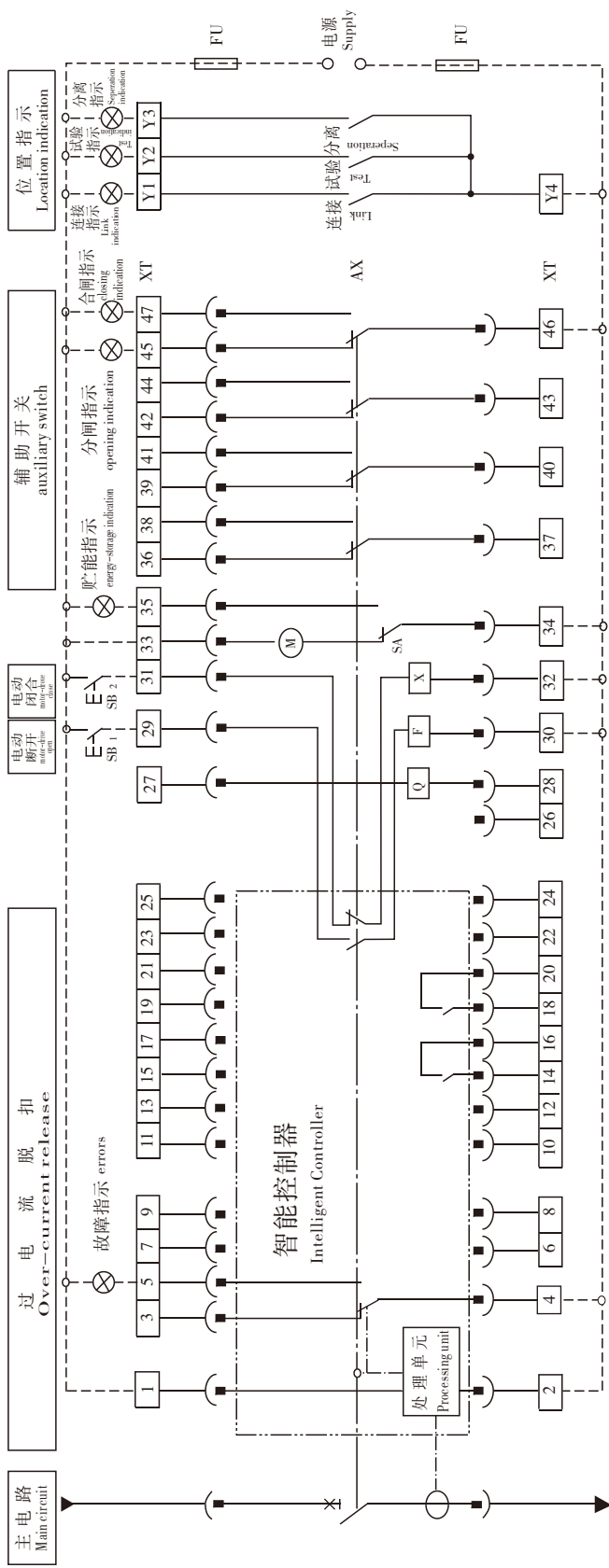


断路器二次回路接线图

BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

配L、M、MY型智能控制器的断路器二次回路接线图
辅助开关为四组转换触头

Wiring Diagram of the Secondary Circuit of the Breaker Equipped with Type L、M、MY Intelligent Controller
The auxiliary switch consists of four pairs of change-over contacts



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分闸脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。

Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X etc

下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该项功能。

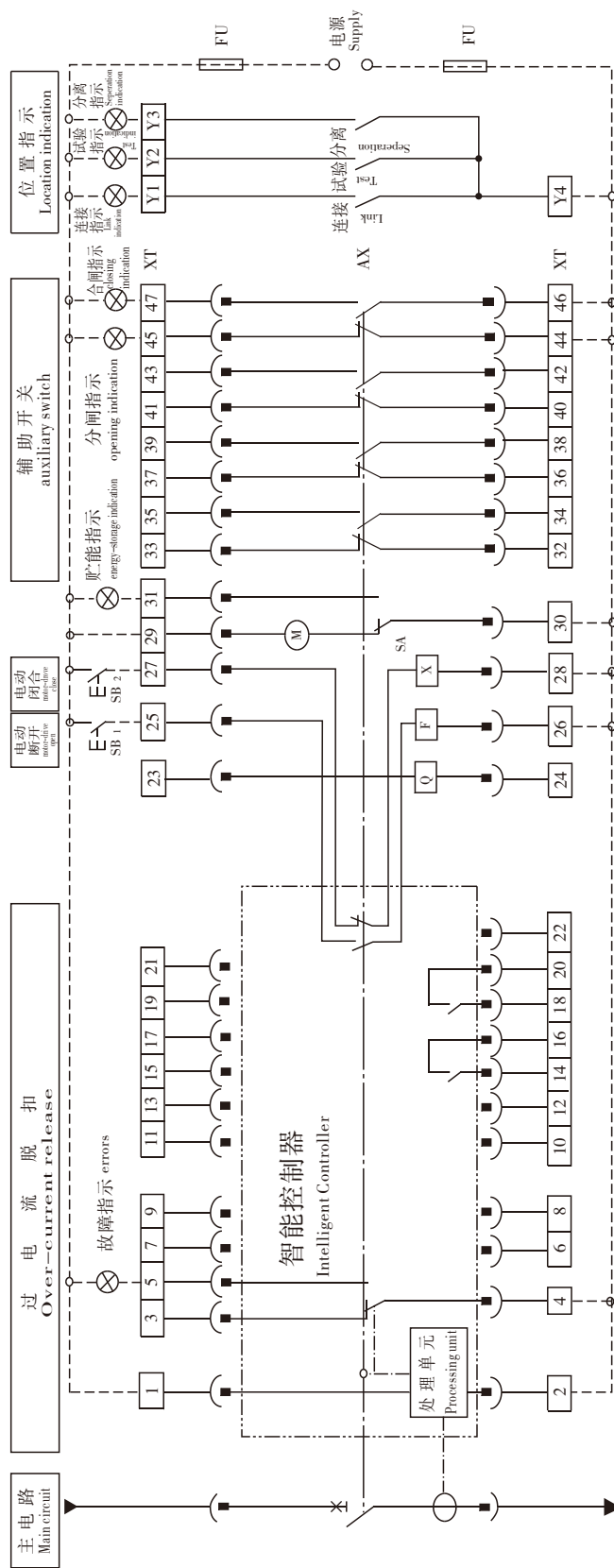
In the following table, √: standard configuration, ○: optional configuration, : none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type			
1, 2	智能控制器电源	L	M	MY	
3, 4, 5	故障指示触点 (AC250V 1A)	√	√	√	√
6, 7	当三极断路器选择外接中性线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子R，7接互感器端子L。	—	—	—	—
14, 16	负载监控信号 (1) 输出	—	—	—	—
18, 20	负载监控信号 (2) 输出	—	—	—	—
21, 23, 25	电压显示功能 (21、23、25端子分别接入A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)	—	—	—	—
27, 28	欠电压脱扣器 (应接在主电路中，当带有欠电压延时脱扣时，接到欠电压延时脱扣模块输出端)	○	○	○	○
29, 30	分闸脱扣器	√	√	√	√
31, 32	合闸电磁铁	√	√	√	√
33, 34, 35	电动操作机构。33, 34可直接接电源 (自动预储能)，也可串接常开按钮后接电源 (手动预储能)	√	√	√	√
36 ~ 47	辅助开关。当分闸脱扣器、合闸电磁铁的电压为直流时，常开触点3需常开3常闭	√	√	√	√
Y1, Y2, Y3, Y4	抽座位置电气指示 (AC250V 1A)	○	○	○	○

AX	断路器辅助开关	Auxiliary switch
SB1	分闸按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分闸脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse

配L、M、MY型智能控制器的断路器二次回路接线图
辅助开关为四常开四常闭触头

Wiring Diagram of the Secondary Circuit of the Breaker Equipped with Type L、M、MY Intelligent Controller
The auxiliary switch consists of 4 NO and 4 NC contacts



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。

Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X etc

下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该项功能。

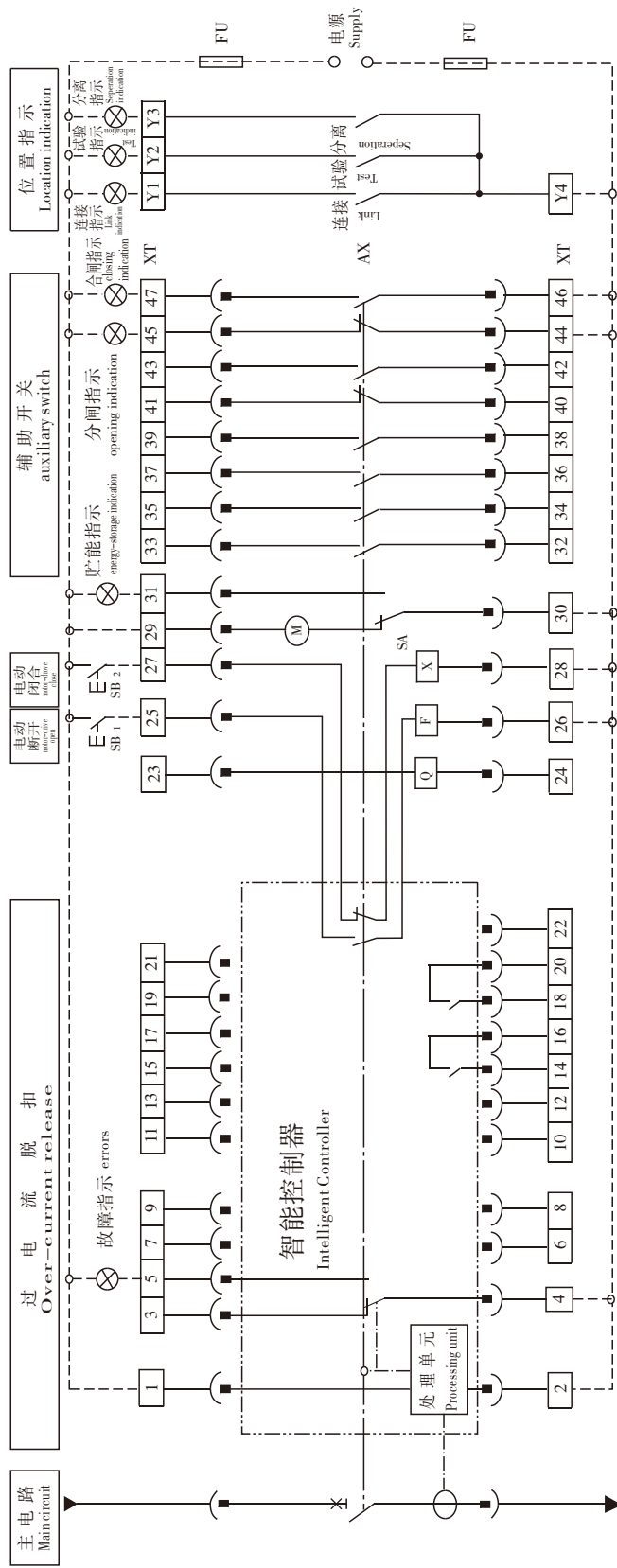
In the following table, √: standard configuration; ○: optional configuration; none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type			
		L	M	MY	
1, 2	智能控制器电源	√	√	√	
3, 4, 5	故障指示触点 (AC250V 1A)	√	√	√	
6, 7	当三相断路器选择外接中性线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子R，7接互感器端子L。	—	○	○	
14, 16	负载监控信号 (1) 输出	—	○	○	
18, 20	负载监控信号 (2) 输出	—	○	○	
17, 19, 21	电压显示功能 (17、19、21端子分别接入A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)	—	○	○	
23, 24	欠电压脱扣器 (应接在主电路中，当带有欠电压延时模块时，接到欠电压延时模块输出端)	○	○	○	
25, 26	分励脱扣器	√	√	√	
27, 28	合闸电磁铁	√	√	√	
29, 30, 31	电动操作机构。29、30可直接接电源 (自动预储能)，也可串接常开按钮后接电源 (手动预储能)	√	√	√	
32 ~ 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常规配置3常开3常闭	√	√	√	
Y1, Y2, Y3, Y4	抽屉位置电气指示 (AC250V 1A)	○	○	○	

AX	断路器辅助开关	辅助开关
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse

配L、M、MY型智能控制器的断路器二次回路接线图
辅助开关为六常开二常闭触头

Wiring Diagram of the Secondary Circuit of the Breaker Equipped with Type L、M、MY Intelligent Controller
The auxiliary switch consists of 6 NO and 2 NC contacts



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。

Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X, etc

下表为必备附件的功能接线；○为选择附件的功能接线；为无该附件功能。

In the following table, √: standard configuration, ○: optional configuration, : none.

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1, 2	智能控制器电源	√	√	√
3, 4, 5	故障指示触点 (AC250V 1A)	√	√	√
6, 7	当三相断路器选择外接中性线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子R，7接互感器端子L。	—	○	○
14, 16	负载监控信号 (1) 输出	—	○	○
18, 20	负载监控信号 (2) 输出	—	○	○
17, 19, 21	回路显示功能 (17、19、21端子分别接入A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)	—	○	○
23, 24	欠电压脱扣器 (应接在主电路中，当带有欠电压延时模块时，接到欠电压延时模块输出端)	○	○	○
25, 26	分励脱扣器	√	√	√
27, 28	合闸电磁铁	√	√	√
29, 30, 31	电动操作机构。29, 30可直接接电源 (自动预储能)，也可串接常开按钮后接电源 (手动预储能)	√	√	√
32 ~ 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常规配置3常开3常闭	√	√	√
Y1, Y2, Y3, Y4	抽插座位置电气指示 (AC250V 1A)	○	○	○

AX	断路器辅助开关	辅助开关
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse

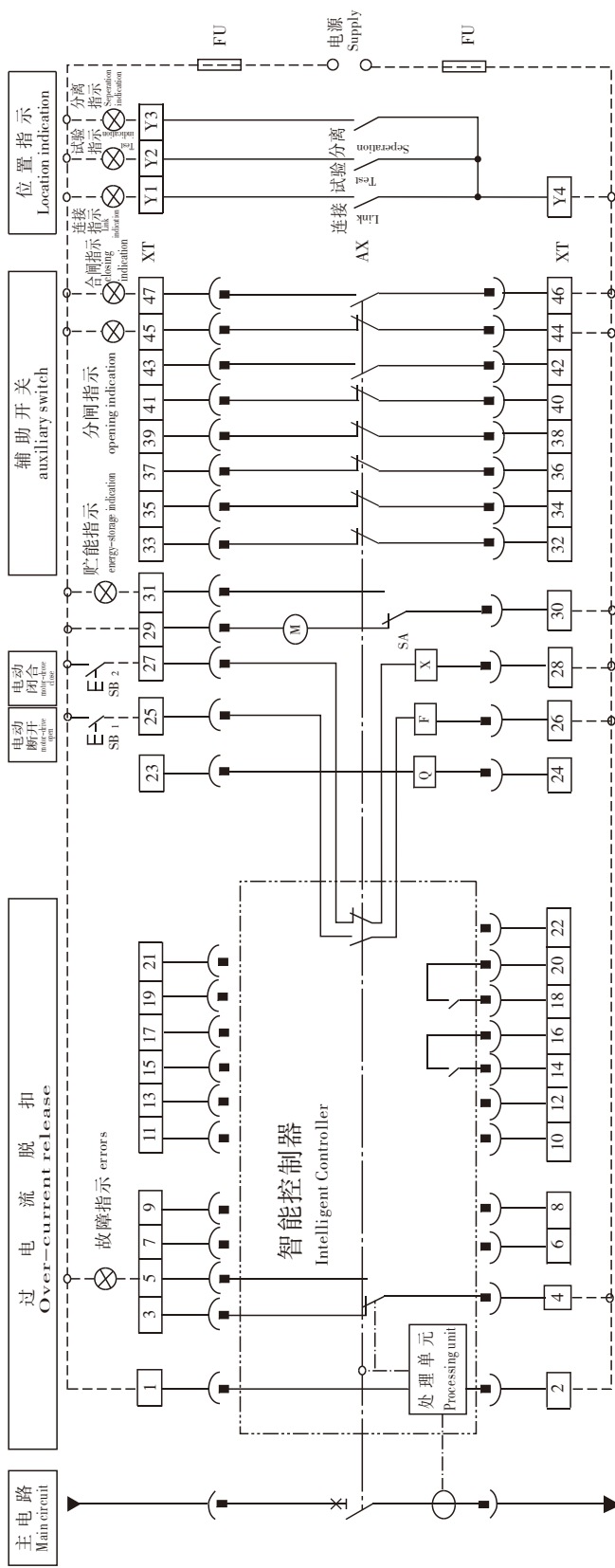


断路器二次回路接线图

BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

Wiring Diagram of the Secondary Circuit of the Breaker Equipped with Type L、M、MY Intelligent Controller
The auxiliary switch consists of 2 NO and 6 NC contacts

配L、M、MY型智能控制器的断路器二次回路接线图
辅助开关为二常开六常闭触头



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。
Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X, etc.

下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该功能。

In the following table, √: standard configuration, ○: optional configuration, : none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type		
		L	M	MY
1, 2	智能控制器电源	√	√	√
3, 4, 5	故障指示触点 (AC250V 1A)	√	√	√
6, 7	当三极断路器选择外接中性线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子R，7接互感器端子L。	—	○	○
14, 16	负载监控信号 (1) 输出	—	○	○
18, 20	负载监控信号 (2) 输出	—	○	○
17, 19, 21	电压显示功能 (17、19、21端子分别接入A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)	—	○	○
23, 24	欠电压脱扣器 (应接在主电路中，当带有欠电压延时脱扣时，接到欠电压延时脱扣模块输出端)	○	○	○
25, 26	分励脱扣器	√	√	√
27, 28	合闸电磁铁	√	√	√
29, 30, 31	电动操作机构。29、30可直接接电源 (自动预储能)，也可串接常开按钮后接电源 (手动预储能)	√	√	√
32 ~ 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常配置3常开3常闭	√	√	√
Y1, Y2, Y3, Y4	抽屉位置电气指示 (AC250V 1A)	○	○	○

AX	断路器辅助开关	辅助开关
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse

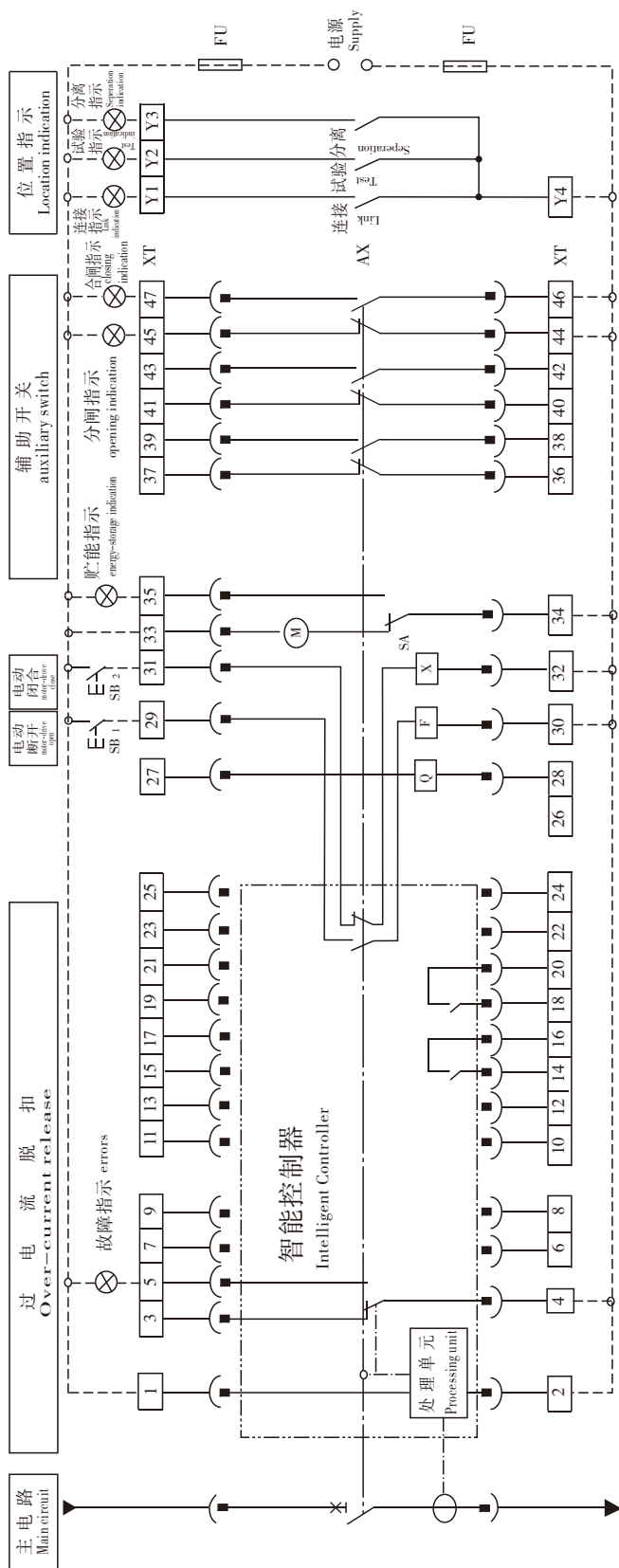


断路器二次回路接线图

BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

Wiring Diagram of the Secondary Circuit of the Breaker Equipped with Type L、M、MY Intelligent Controller
The auxiliary switch consists of 3 NO and 3 NC contacts

配L、M、MY型智能控制器的断路器二次回路接线图
辅助开关为三常开三常闭触点



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。

Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X etc

下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该功能。

In the following table, √: standard configuration, ○: optional configuration, : none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type		
		L	M	MY
1, 2	智能控制器电源			
3, 4, 5	故障指示触点 (AC250V 1A)	√	√	√
6, 7	当三极断路器选择外接中性线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子R，7接互感器端子S。	√	√	√
14, 16	负载监控信号 (1) 输出	—	○	○
18, 20	负载监控信号 (2) 输出	—	○	○
21, 23, 25	电压显示功能 (21、23、25端子分别接入A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)	—	○	○
27, 28	欠电压脱扣器 (应接在主电路中，当带有欠电压延时模块时，接到欠电压延时模块输出端)	○	○	○
29, 30	分励脱扣器	√	√	√
31, 32	合闸电磁铁	√	√	√
33, 34, 35	电动操作机构。33, 34可直接接电源 (自动预储能)，也可串接常开按钮后接电源 (手动预储能)	√	√	√
36 ~ 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常开配置3常开3常闭	√	√	√
Y1, Y2, Y3, Y4	抽座位置电气指示 (AC250V 1A)	○	○	○

AX	断路器辅助开关	Auxiliary switch
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse

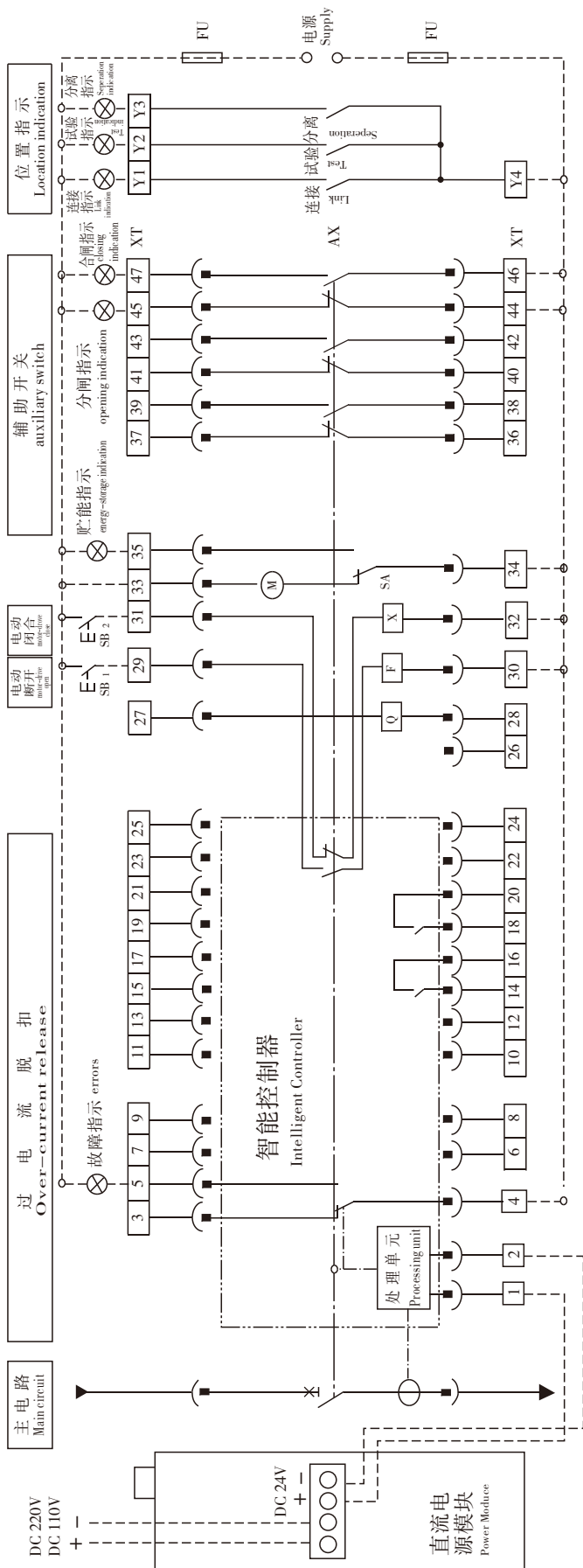


断路器二次回路接线图

BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

Wiring Diagram of the Secondary Circuit of the Breaker Equipped with Type L、M、MY Intelligent Controller
DC power supply module is available

配L、M、MY型智能控制器的断路器二次回路接线图
带直流电源模块



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。

Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X, etc

下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该功能。

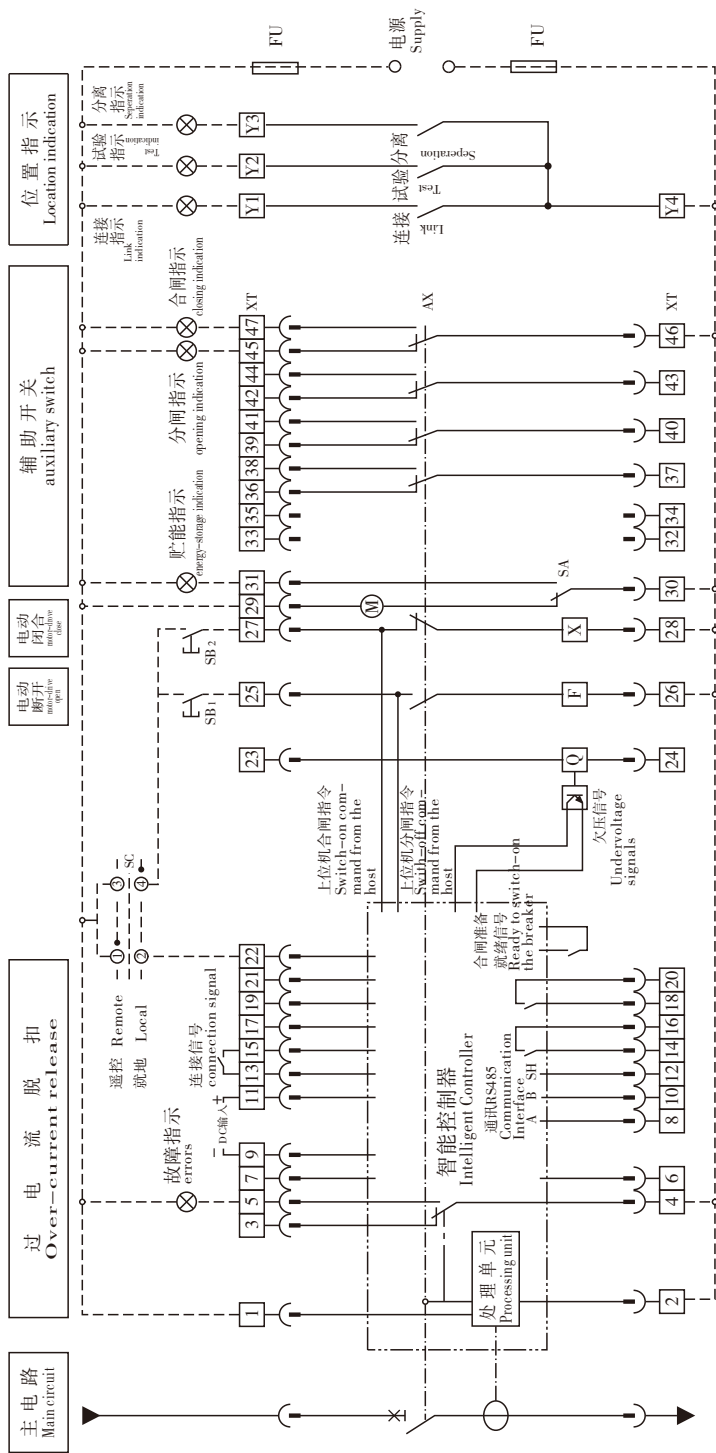
In the following table, √: standard configuration, ○: optional configuration, : none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type		
		L	M	MY
1, 2	智能控制器电源	√	√	√
3, 4, 5	故障指示触点(AC250V 1A)	√	√	√
6, 7	当三相断路器选择外接中性线电流互感器时，接至外接线中性线电流互感器。其中6接互感器端子R，7接互感器端子L。	—	○	○
14, 16	负载监控信号 (1) 输出	—	○	○
18, 20	负载监控信号 (2) 输出	—	○	○
21, 23, 25	电压显示功能(21、23、25端子分别接入A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)	—	○	○
27, 28	欠电压脱扣器 (应接在主电路中，当带有欠电压延时模块时，接到欠电压延时模块输出端)	○	○	○
29, 30	分励脱扣器	√	√	√
31, 32	合闸电磁铁	√	√	√
33, 34, 35	串接常开按钮后接电源 (自动预储能)，也可串接常开按钮后接电源 (手动预储能)	√	√	√
36 ~ 47	辅助开关	√	√	√
Y1, Y2, Y3, Y4	抽屉座位置电气指示 (AC250V 1A)	○	○	○

AX	断路器辅助开关	辅助开关
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse

配H、HY型智能控制器的断路器二次回路接线图
辅助开关为四组转换触头

Wiring Diagram of the Secondary Circuit of the Breaker Equipped with Type H、HY Intelligent Controller
The auxiliary switch consists of 4 pairs of change-over contacts



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。
Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X, etc
下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该项功能。
In the following table, √: standard configuration, ○: optional configuration, none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type
1, 2	智能控制器电源	H
3, 4, 5	故障指示触点(AC250V 1A)	HY
6, 7	当三相断路器选择外接中性线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子R，7接互感器端子S。	√
8, 10, 12	A、B相RS485通信接口，SH接屏蔽层，其中8接A，10接B，12接H。	○
9, 11	可接入DC24V电源，其中9接正极，11接负极，控制器无电源输入。	√
14, 16	负载监控信号(1)输出	○
18, 20	负载监控信号(2)输出	○
17, 19, 21	电压显示功能(17、19、21端子分别接A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)	√
22	接入与分励脱扣器、合闸电磁铁工作电压相同的电源电压(此时分励脱扣器、合闸电磁铁工作电压必须相同)	√
23, 24	欠电压脱扣器(应接在主电路中，当带有欠电压延时脱扣时，接到欠电压延时模块输出端)	○
25, 26	分励脱扣器	√
27, 28	合闸电磁铁	√
29, 30, 31	电动操作机构。29、30可直接接电源(自动预储能)，也可串接常开按钮后接电源(手动预储能)	√
36~47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常规配置3需开3常闭	√
Y1, Y2, Y3, Y4	抽屉位置电气指示(AC250V 1A)	○

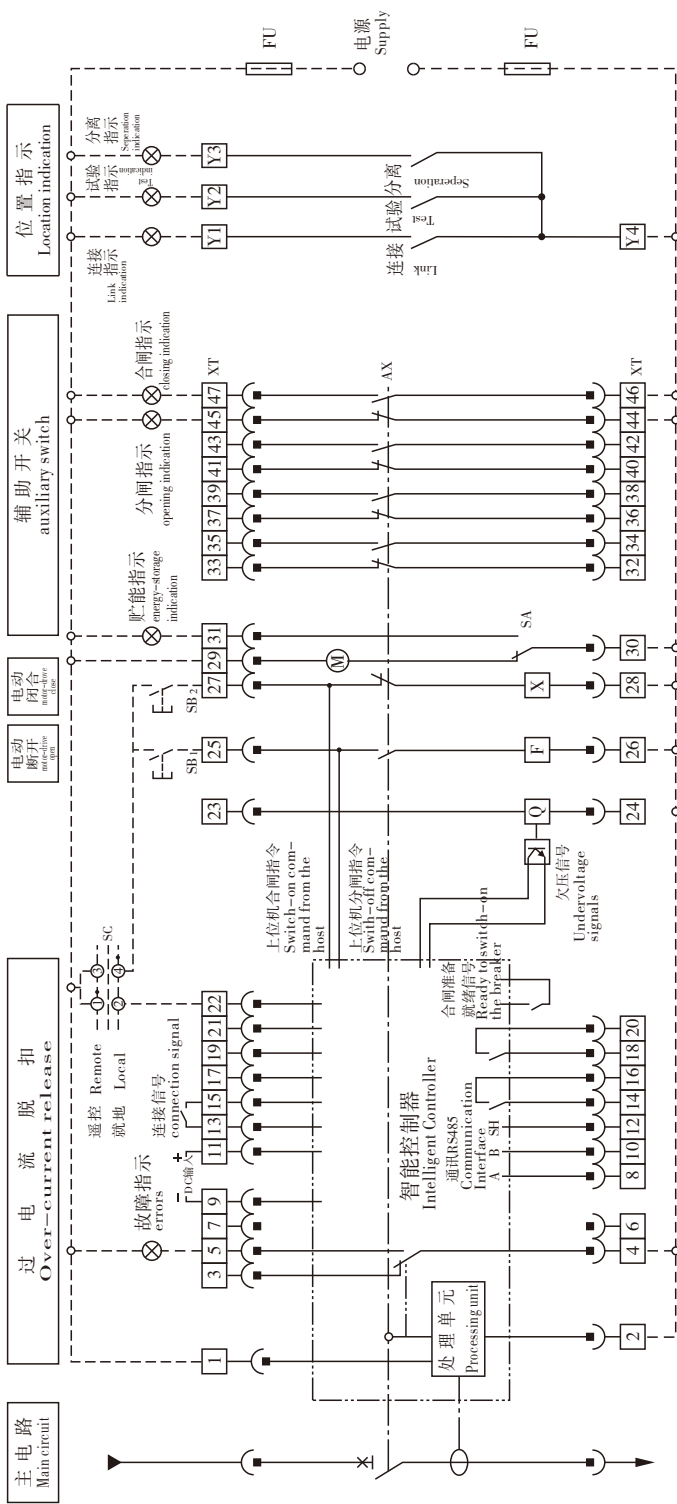
AX	断路器辅助开关	辅助开关
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse



断路器二次回路接线图

BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

配H、HY型智能控制器的断路器二次回路接线图
辅助开关为四常开四常闭触头



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。

Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X, etc

下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该项功能。

In the following table, √: standard configuration, ○: optional configuration, : none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type
1, 2	智能控制器电源	H
3, 4, 5	故障指示触点(AC250V 1A)	√
6, 7	当三相断路器选择外接中性线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子R，7接互感器端子L。	√
8, 10, 12	A、B为RS485通信接口，SH接屏蔽层，其中8接A，10接B，12接SH。	○
9, 11	可接入DC24V电源，其中9接正极，11接负极，控制器无电通信用。	√
14, 16	负载监控信号(1) 输出	○
18, 20	负载监控信号(2) 输出	○
17, 19, 21	电压显示功能(17、19、21端子分别接入A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)。	√
22	接入与分励脱扣器、合闸电磁铁工作电压相同的电源电压(此时分励脱扣器、合闸电磁铁工作电压必须相同)。	√
23, 24	欠电压脱扣器(应接在主回路中，当带有欠电压延时模块时，接到欠电压延时模块输出端)。	○
25, 26	分励脱扣器	√
27, 28	合闸电磁铁	√
29, 30, 31	电动操作机构 29、30可直接接电源(自动预储能)，也可串接常开按钮后接电源(手动预储能)。	√
32 ~ 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常规配置3常开3常闭。	√
Y1, Y2, Y3, Y4	抽屉位置电气指示 (AC250V 1A)	○

AX	断路器辅助开关
SB1	分励按钮
SB2	合闸按钮
Q	欠电压脱扣器
F	分励脱扣器
X	合闸电磁铁
M	储能电机
SA	电动机行程开关
XT	断路器两次回路接线端子
Fu	熔断器

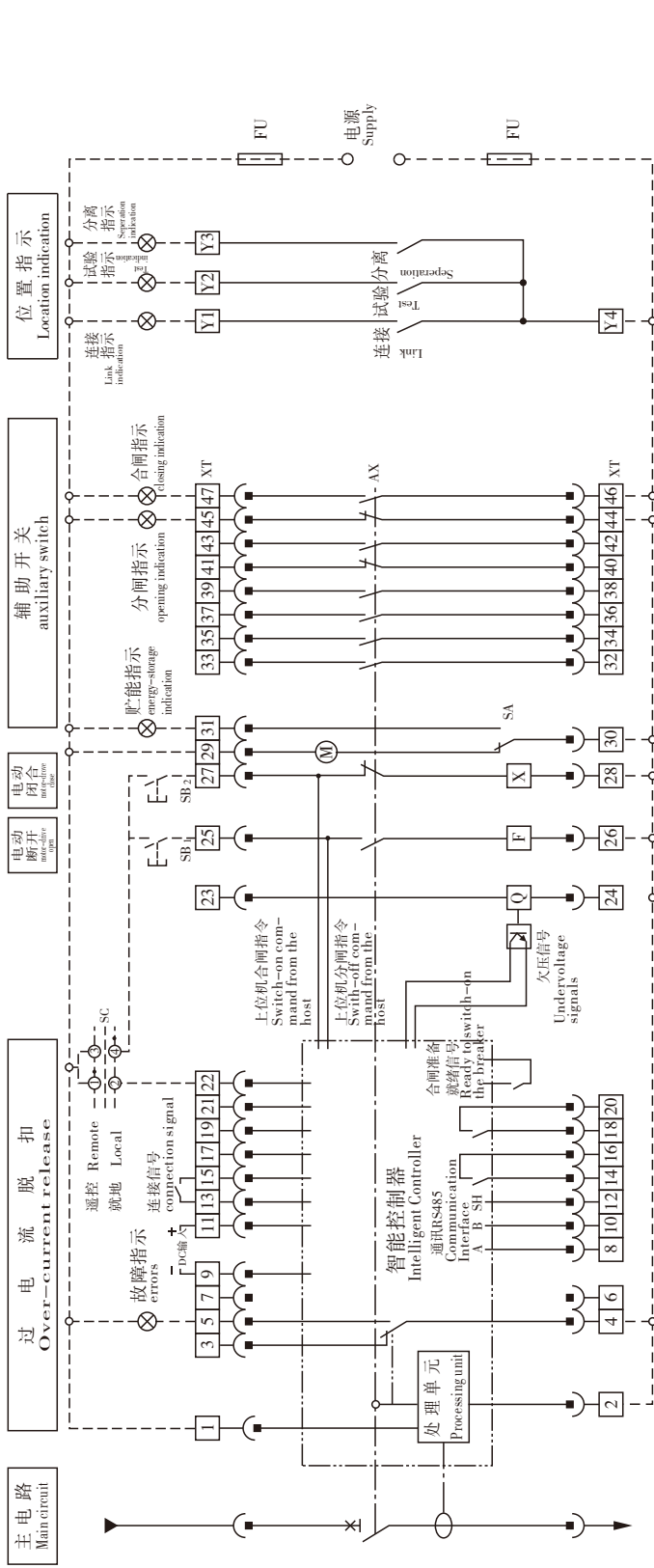


断路器二次回路接线图

BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

Wiring Diagram of the Secondary Circuit Equipped with Type H、HY Intelligent Controller
Auxiliary switch 6NO+2NC

配H、HY型智能控制器的断路器二次回路接线图
辅助开关为六常开二常闭触头



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。

Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X etc.
下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该项功能。

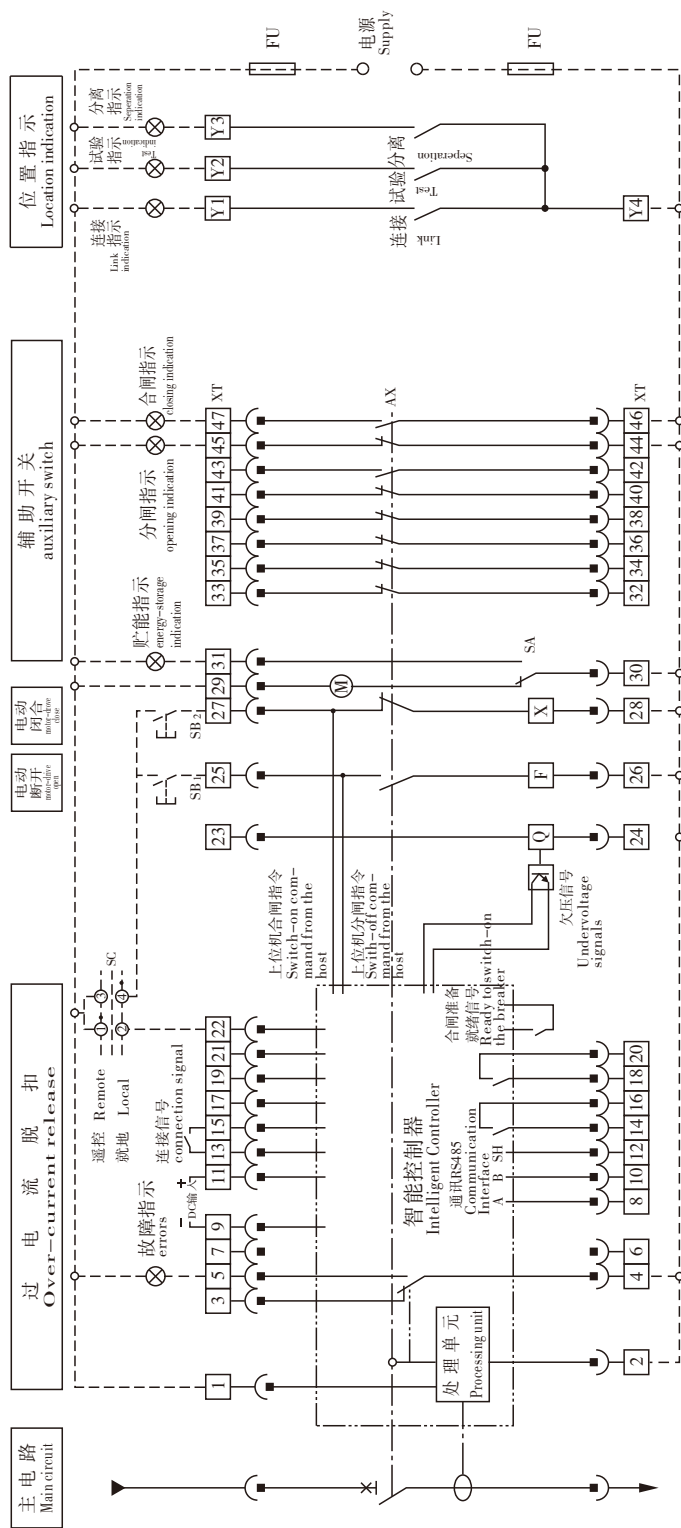
In the following table, √: standard configuration, ○: optional configuration, : none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type	
		H	HY
1, 2	智能控制器电源	√	√
3, 4, 5	故障指示触点(AC250V 1A)	√	√
6, 7	当三相断路器选择外接中性线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子L ₁ ，7接互感器端子L ₂ 。	○	○
8, 10, 12	A、B为RS485通信接口，SH接屏蔽层，其中8接A，10接B，12接SH。	√	√
9, 11	可接AC24V电源，其中9接负极，11接正极，控制器无电通信用。	√	√
14, 16	负载监控信号(1) 输出	○	○
18, 20	负载监控信号(2) 输出	○	○
17, 19, 21	电压显示功能(17、19、21端子分别接A、B、C三相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)。	√	√
22	接入与分励脱扣器、合闸电磁铁工作电压相同的电源电压(此时分励脱扣器、合闸电磁铁工作电压必须相同)。	√	√
23, 24	欠电压脱扣器(应接在主电路中，当带有欠电压延时模块时，接到欠电压延时模块输出端)。	○	○
25, 26	分励脱扣器	√	√
27, 28	合闸电磁铁	√	√
29, 30, 31	电动操作机构。29、30可直接接电源(自动预储能)，也可串接常开按钮后接电源(手动预储能)。	√	√
32 ~ 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常规配置5常开3常闭。	√	√
Y1, Y2, Y3, Y4	抽屉座位置电气指示 (AC250V 1A)	○	○

AX	断路器辅助开关
SB1	分励按钮
SB2	合闸按钮
Q	欠电压脱扣器
F	分励脱扣器
X	合闸电磁铁
M	储能电机
SA	电动机行程开关
XT	断路器两次回路接线端子
Fu	熔断器

配H、HY型智能控制器的断路器二次回路接线图
辅助开关为二常开六常闭

Wiring Diagram of the Secondary Circuit Equipped with Type H、HY Intelligent Controller
Auxiliary switch 2NO+6NC



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。
Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X etc

下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该附件功能。

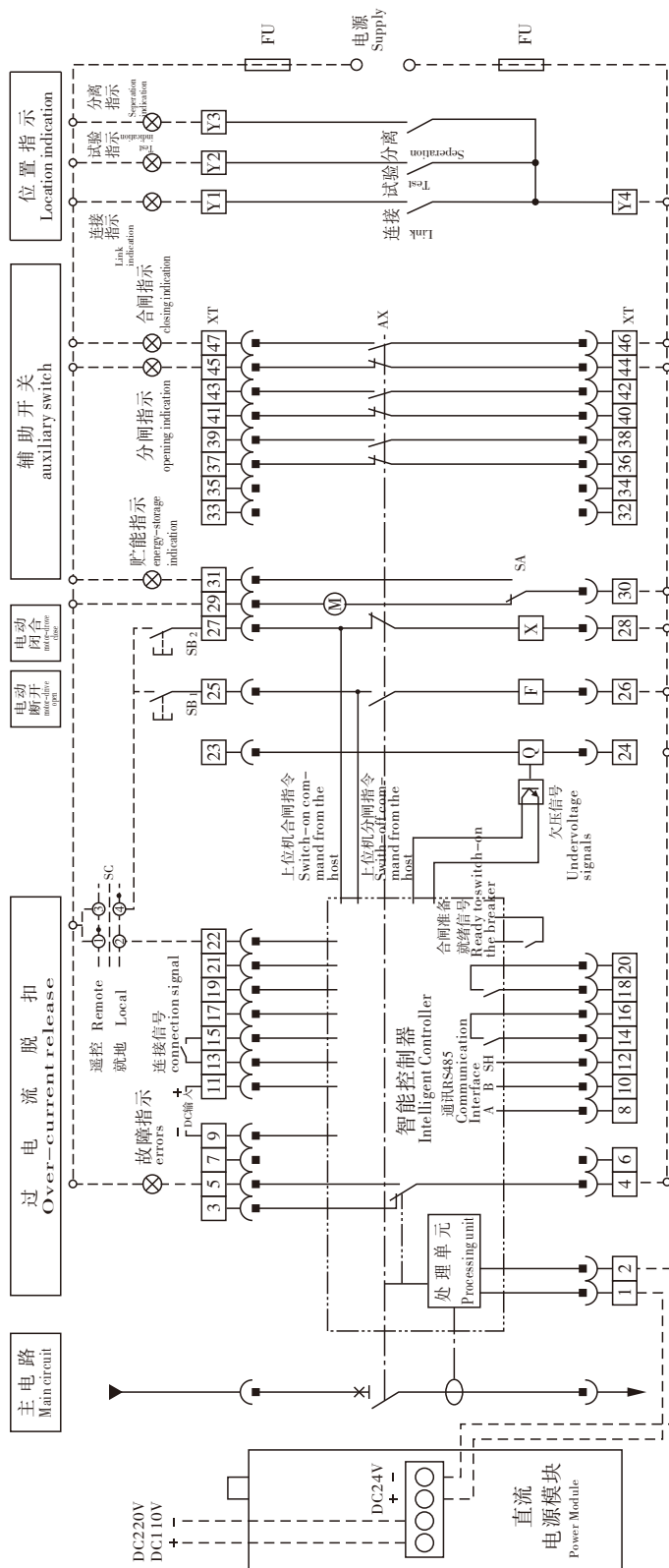
In the following table, √: standard configuration, ○: optional configuration, : none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type
1, 2	智能控制器电源	H
3, 4, 5	故障指示触点 (AC250V 1A)	HY
6, 7	当三极断路器选择外接线电流互感器时，接至外接中性线电流互感器。其中6接互感器端子R，7接互感器端子S。	√
8, 10, 12	A、B为RS485通信接口，SH接屏蔽层，其中8接A，10接B，12接SH。	○
9, 11	可接AC24V电源，其中9接正极，11接负极，控制器无电通信用。	√
14, 16	负载监控信号 (1) 输出	○
18, 20	负载监控信号 (2) 输出	○
17, 19, 21	电压显示功能 (17、19、21端子分别接A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换器进行电压转换)	√
22	接入与分励脱扣器、合闸电磁铁工作电压相同的电源电压 (此时分励脱扣器、合闸电磁铁工作电压必须相同)	√
23, 24	欠电压脱扣器 (应接在主电路中，当带有欠电压延时模块时，接到欠电压延时模块输出端)	○
25, 26	分励脱扣器	√
27, 28	合闸电磁铁	√
29, 30, 31	电动操作机构。29、30可直接接电源 (自动储能)，也可串接常开按钮后接电源 (手动储能)	√
32 ~ 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常规配置3常开3常闭	√
Y1, Y2, Y3, Y4	抽屉位置电气指示 (AC250V 1A)	○

AX	断路器辅助开关
SB1	分励按钮
SB2	合闸按钮
Q	欠电压脱扣器
F	分励脱扣器
X	合闸电磁铁
M	储能电机
SA	电动机行程开关
XT	断路器二次回路接线端子
Fu	熔断器

配H、HY型智能控制器的断路器二次回路接线图 带直流电源模块

Wiring Diagram of the Secondary Circuit Equipped with Type H、HY Intelligent Controller
DC power supply module is available



注：虚线部分由用户自接。若处理单元、欠电压脱扣器、分励脱扣器、合闸电磁铁等额定电压不同应分别接不同电源。

Wiring in the dashed line is done by users themselves. Power supply is different for different rated voltage of controller, Q, F, X etc

下表中，√为必备附件的功能接线；○为选择附件的功能接线；为无该选项。

In the following table, √: standard configuration, ○: optional configuration, : none.

端子号 Terminal	功能 Function	适用控制器类型 Controller type			
1, 2	智能控制器电源		H	HY	
3, 4, 5	故障指示触点(AC250V 1A)	√	√	√	√
6, 7	当三极断路器选择外接线电流互感器时，接至外接线电流互感器。其中6接互感器端子R，7接互感器端子L。	○	○	○	○
8, 10, 12	A、B为RS485通信接口，SI接屏蔽层，其中8接A，10接B，12接SH。	√	√	√	√
9, 11	可接入DC24V电源，其中9接负极，11接正极，控制器无电源。	○	○	○	○
14, 16	负载监控信号(1) 输出	○	○	○	○
18, 20	负载监控信号(2) 输出	○	○	○	○
17, 19, 21	电压显示功能(17、19、21端子分别接入A相、B相、C相主回路电压，当接入电压大于AC400V时，须通过电压转换模块进行电压转换)	√	√	√	√
22	接入与分励脱扣器、合闸电磁铁工作电压相同的电源电压(此时分励脱扣器、合闸电磁铁工作电压必须相同)	√	√	√	√
23, 24	欠电压脱扣器(应接在主电路中，当带有欠电压延时脱扣时，接到欠电压延时模块输出端)	○	○	○	○
25, 26	分励脱扣器	√	√	√	√
27, 28	合闸电磁铁	√	√	√	√
29, 30, 31	电动机操作机构。29、30可直接接电源(自动预储能)，也可串接常开按钮后接电源(手动预储能)	√	√	√	√
36 ~ 47	辅助开关	√	√	√	√
Y1, Y2, Y3, Y4	抽压位置电气指示 (AC250V 1A)	○	○	○	○

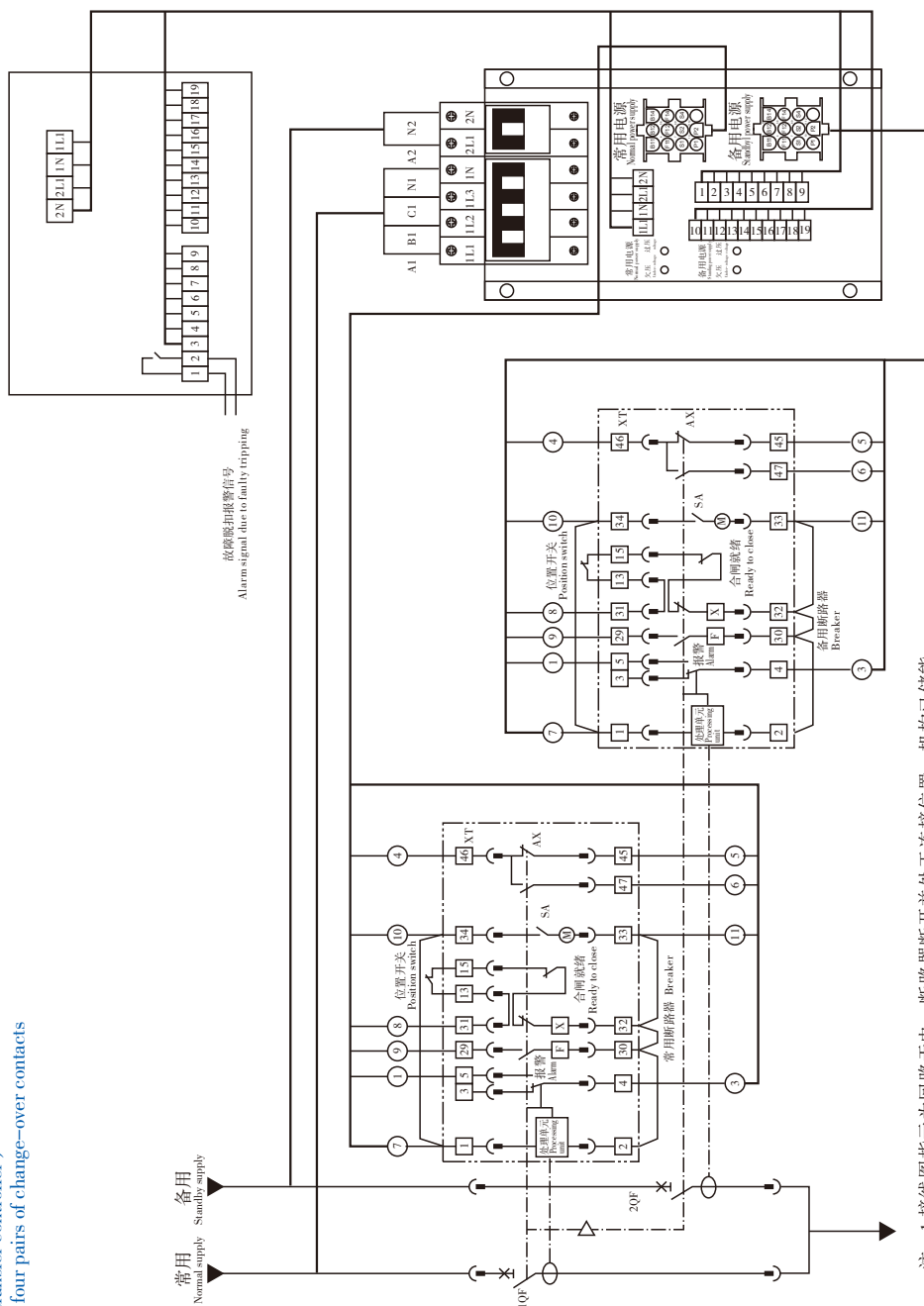
AX	断路器辅助开关	辅助开关
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器两次回路接线端子	Terminals
Fu	熔断器	Fuse



常用-备用自动电源转换系统电气线路图 (R型、S型自动转换控制器)
辅助开关为四组转换触头

Wiring diagram of the automatic power supply system for normal supply to standby supply system
(R、S type automatic transfer controller)

The auxiliary switch has four pairs of change-over contacts



注: 1.接线图指示为回路无电, 断路器断开并处于连接位置, 机构已储能。
2.当采用自动电源转换系统供电时, 断路器智能控制器、分励脱扣器、合闸电磁铁、电动机磁铁、电动操作机构电压为AC230V。
Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.
2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

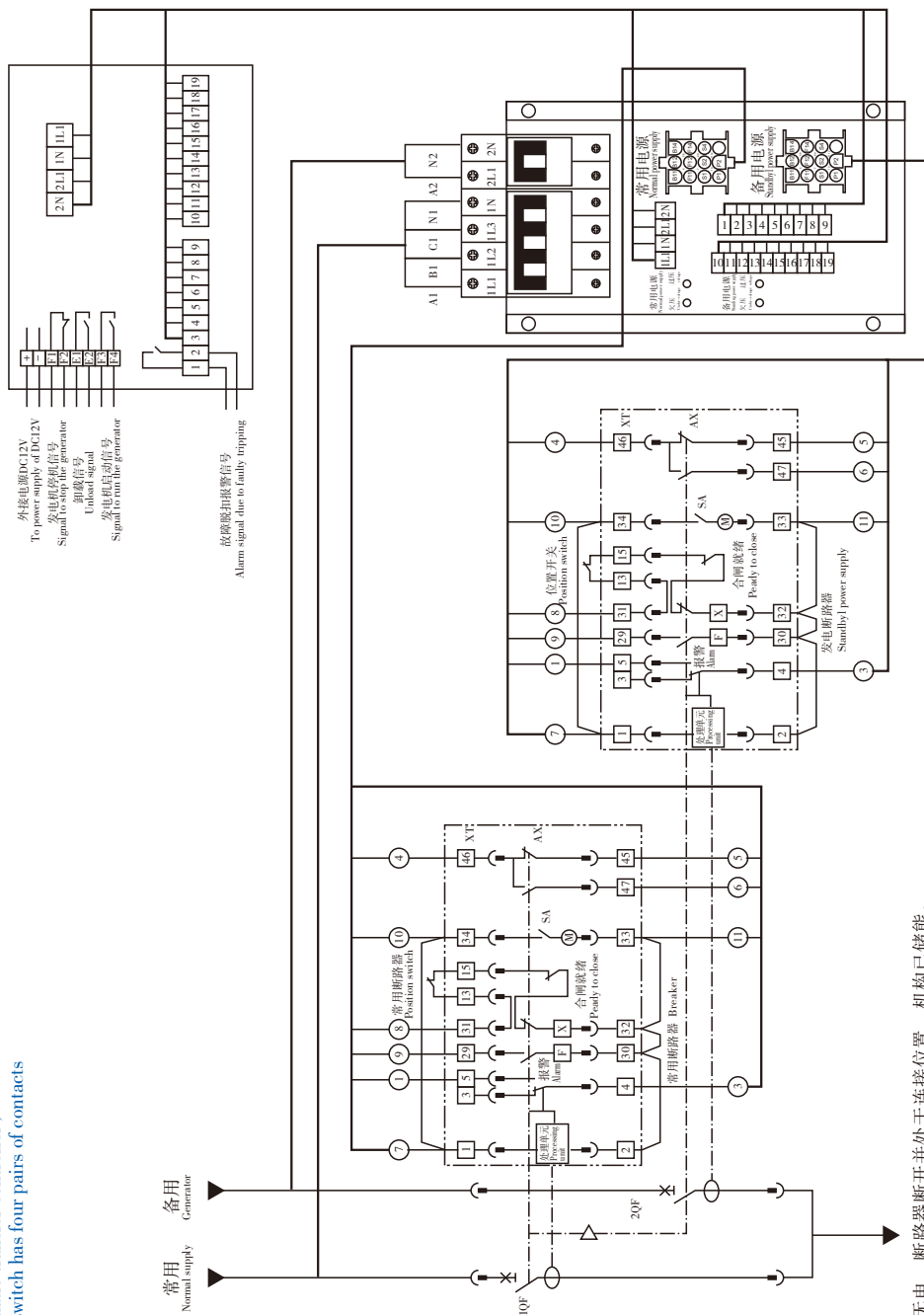
AX-断路器辅助开关
F-断路器分励脱扣器
X-断路器合闸电磁铁
M-断路器储能电机
SA-断路器储能电动机行程开关
XT-断路器二次回路接线端子

AX-Auxiliary switch
F-Shunt release
X-The electro-magnet to close the breaker
M-Charging motor
SA-Overtravel-limit switch for the charging motor of the breaker
XT-Terminals for the secondary circuit of the breaker



常用-发电自动电源转换系统电气线路图 (F型自动转换控制器) 辅助开关为四组转换触点

Wiring diagram of the automatic power supply switch system for normal supply to power generating supply system
(F type automatic transfer controller)
The auxiliary switch has four pairs of contacts



注：1.接线图指示为回路无电，断路器断开并处于连接位置，机构已储能。

2.当采用自动电源转换系统供电时，断路器智能控制器、分励脱扣器、合闸电磁铁、电动操作机构电压为AC230V。

Note: 1.As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.

2.When ATS is used all voltage ratings are AC230V for intelligent controller,shunt release,closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

AX-Auxiliary switch

F-Shunt release

X-The electro-magnet to close the breaker

M-Charging motor

SA-Overtravel-limit switch for the charging motor of the breaker

XT-Terminals for the secondary circuit of the breaker

说明：当常用电源正常时，发电机启动信号 (F3、F4)、发电机停机信号

(F1、F2)、卸载信号 (E1、E2) 均处于断开位置。

当常用电源失电后，发电机停机信号 (F1、F2) 立即闭合，发电机启动

信号 (F3、F4) 经5延时后闭合。

当发电机电源发出后，发电机启动信号 (F3、F4) 立即断开，卸载信

号 (E1、E2) 经1延时后闭合。

当常用电源恢复后，卸载信号 (E1、E2) 立即断开，发电机停机信号

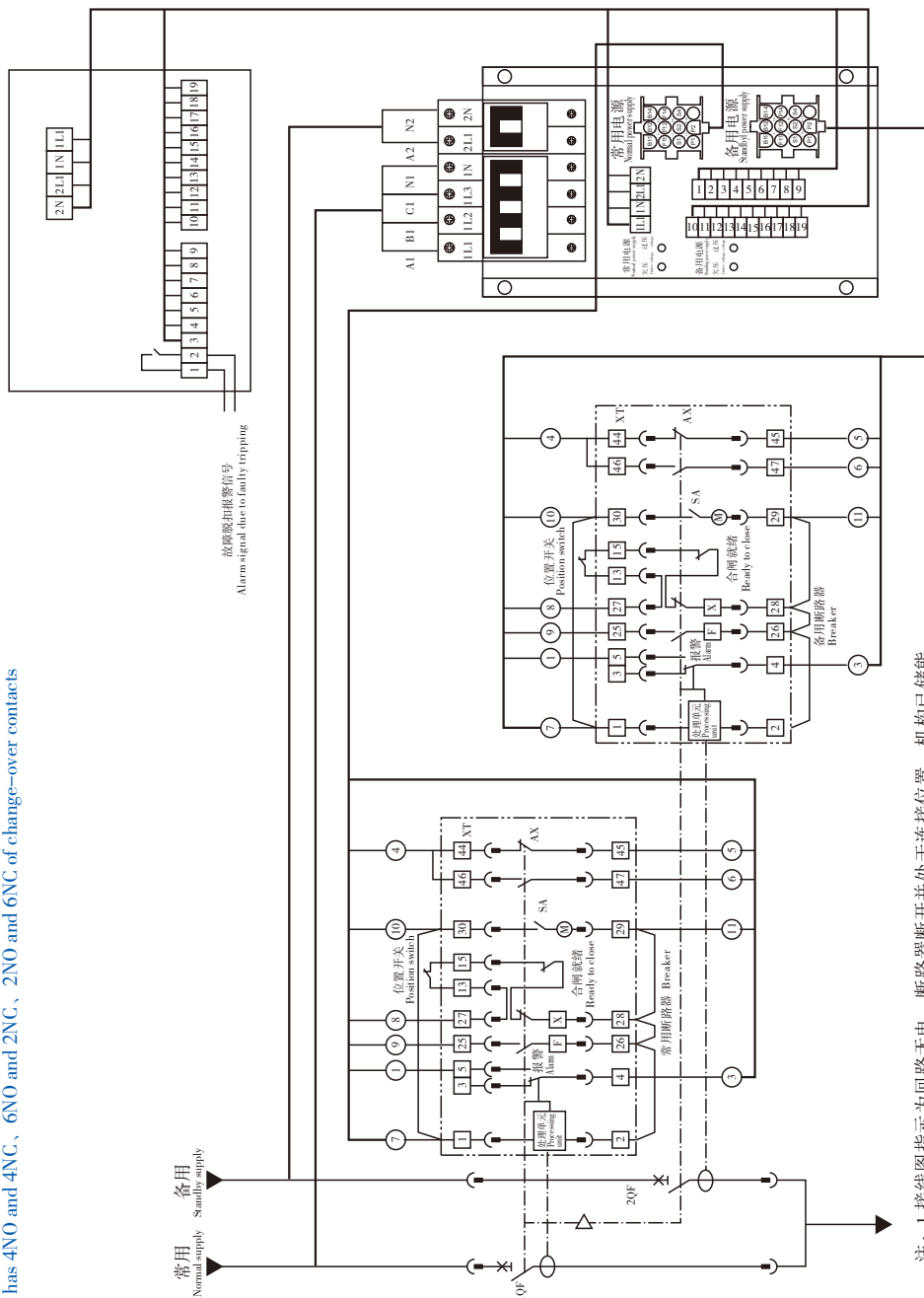
(F1、F2) 经6延时后断开。



常用-备用自动电源转换系统电气线路图 (R型、S型自动转换控制器) 辅助开关为四常开四常闭、六常开二常闭、二常开六常闭触头

Wiring diagram of the automatic power supply system for normal supply to standby supply system
(R, S type automatic transfer controller)

The auxiliary switch has 4NO and 4NC, 6NO and 2NC, 2NO and 6NC of change-over contacts



注：1.接线图指示为回路无电，断路器断开并处于连接位置，机构已储能。
2.当采用自动电源转换系统供电时，断路器智能控制器、分励脱扣器、合闸电磁铁、电动机磁铁、电动操作机构电压为AC230V。

Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.
2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

AX-Auxiliary switch

F-Shunt release

X-The electro-magnet to close the breaker

M-Charging motor

SA-Overtravel-limit switch for the charging motor of the breaker

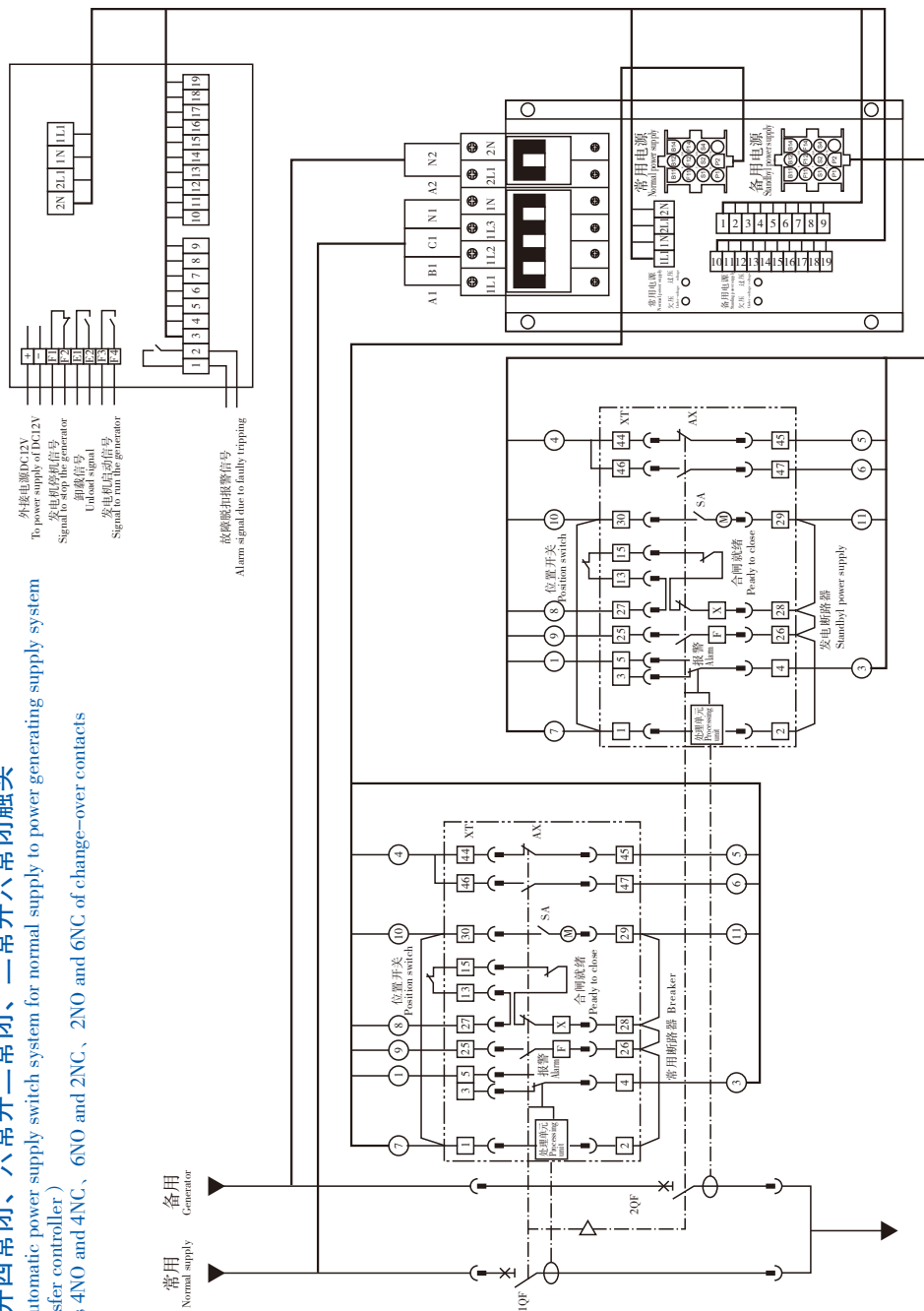
XT-Terminals for the secondary circuit of the breaker



常用-发电自动电源转换系统电气线路图 (F型自动转换控制器) 辅助开关为四常开四常闭、六常开二常闭、二常开六常闭触头

Wiring diagram of the automatic power supply switch system for normal supply to power generating supply system
(F type automatic transfer controller)

The auxiliary switch has 4NO and 4NC, 6NO and 2NC, 2NO and 6NC of change-over contacts



注：1.接线图指示为回路无电，断路器断开并处于连接位置，机构已储能。

2.当采用自动电源转换系统供电时，断路器智能控制器、分励脱扣器、合闸电磁铁、电动操作机构电压为AC230V。
Note: 1. As shown in the above diagram the breaker is open and connecting, it hasn't been charged and there is no current in the loop.
2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

AX-Auxiliary switch

F-Shunt release

X-The electro-magnet to close the breaker

M-Charging motor

SA-Overtravel-limit switch for the charging motor of the breaker

XT-Terminals for the secondary circuit of the breaker

说明：当常用电源正常时，发电机启动信号 (F3、F4)、发电机停机信号 (F1、F2)、卸载信号 (E1、E2) 均处于断开位置。

当常用电源失电后，发电机停机信号 (F1、F2) 立即闭合，发电机启动信号 (F3、F4) 经5延时后闭合。

当发电机电源发出后，发电机启动信号 (F3、F4) 立即断开，卸载信号 (E1、E2) 经11延时后闭合。

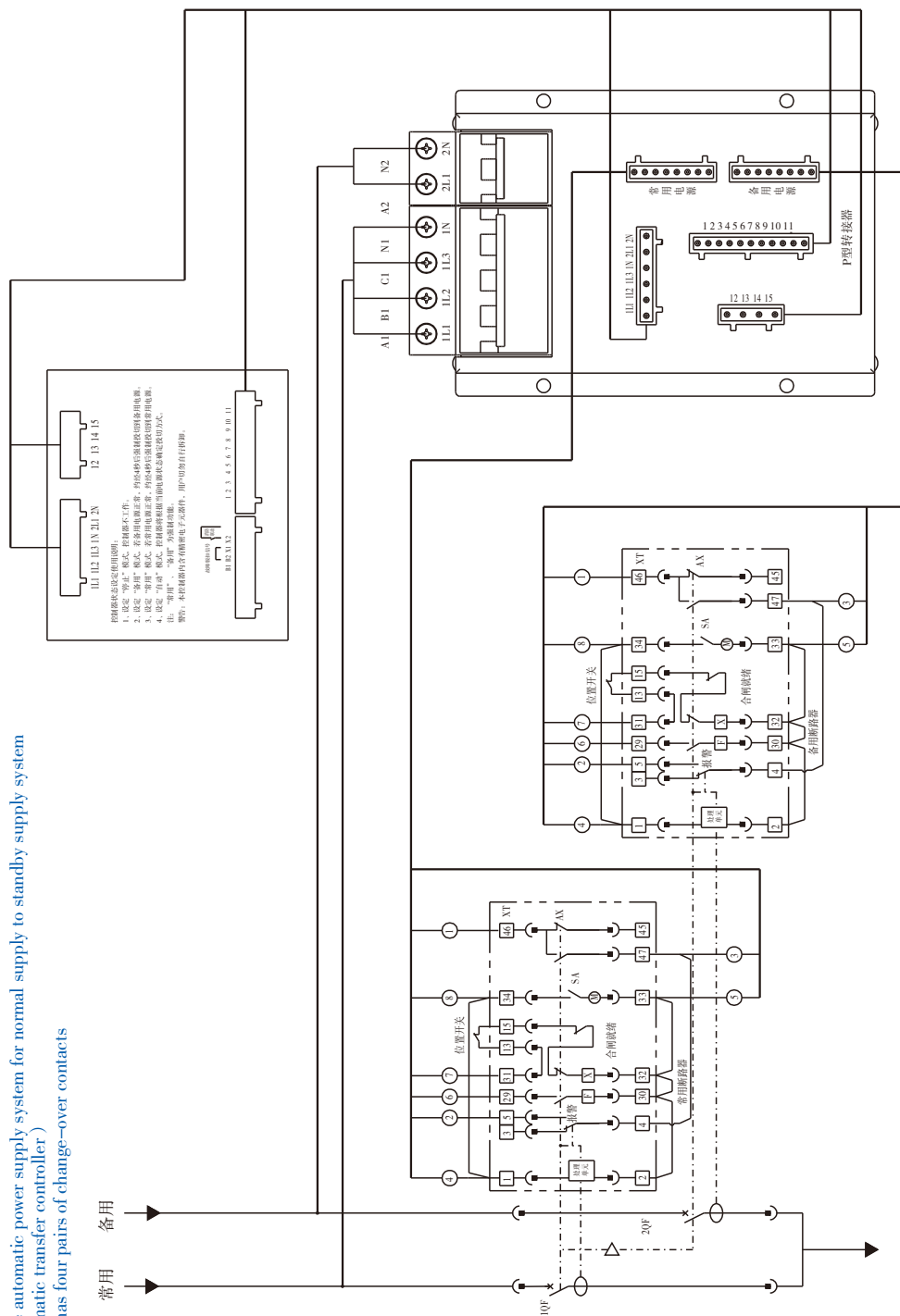
当常用电源恢复后，卸载信号 (E1、E2) 立即断开，发电机停机信号 (F1、F2) 经6延时后断开。



常用-备用自动电源转换系统电气线路图 (ZR型、ZS型自动转换控制器)
辅助开关为四组转换触头

Wiring diagram of the automatic power supply system for normal supply to standby supply system
(ZR、ZS type automatic transfer controller)

The auxiliary switch has four pairs of change-over contacts



注: 1. 接线图指示为回路无电, 断路器断开并处于连接位置, 机构已储能。

2. 当采用自动电源转换系统供电时, 断路器智能控制器、分励脱扣器、合闸电磁铁、电动机机构电压为AC230V。

Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.

2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

AX-Auxiliary switch

F-Shunt release

X-The electro-magnet to close the breaker

M-Charging motor

SA-Overtravel-limit switch for the charging motor of the breaker

XT-Terminals for the secondary circuit of the breaker

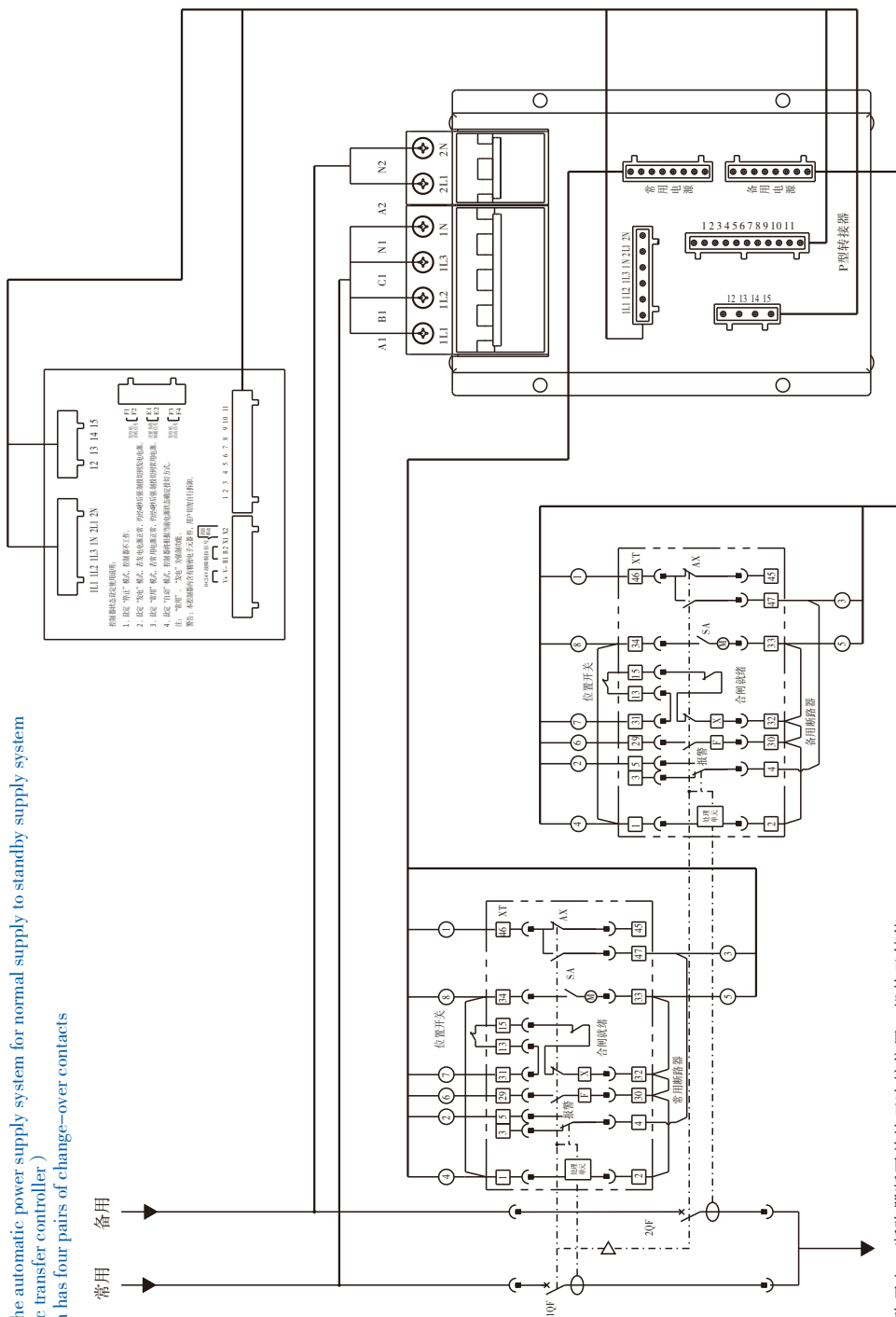


常用-备用自动电源转换系统电气线路图 (ZF型自动转换控制器) 辅助开关为四组转换触头

Wiring diagram of the automatic power supply system for normal supply to standby supply system

(ZF type automatic transfer controller)

The auxiliary switch has four pairs of change-over contacts



注：1.接线图指示为回路无电，断路器断开并处于连接位置，机构已储能。

2.当采用自动电源转换系统供电时，断路器智能控制器、分励脱扣器、合闸电磁铁、电动操作机构电压为AC230V。

Note: 1. As shown in the above diagram the breaker is open and connecting, it hasn't been charged and there is no current in the loop.

2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

AX-Auxiliary switch

F-Shunt release

X-The electro-magnet to close the breaker

M-Charging motor

SA-Overtravel-limit switch for the charging motor of the breaker

XT-Terminals for the secondary circuit of the breaker

说明：当常用电源正常时，发电机启动信号 (F3、F4)、发电机停机信号 (F1、F2)、卸载信号 (E1、E2) 均处于断开位置。

当常用电源失电后，发电机停机信号 (F1、F2) 立即闭合，发电机启动信号 (F3、F4) 经5延时后闭合。

当发电机电源发出后，发电机启动信号 (F3、F4) 立即断开，卸载信号 (E1、E2) 经1延时后闭合。

当常用电源恢复后，卸载信号 (E1、E2) 立即断开，发电机停机信号 (F1、F2) 经6延时后断开。



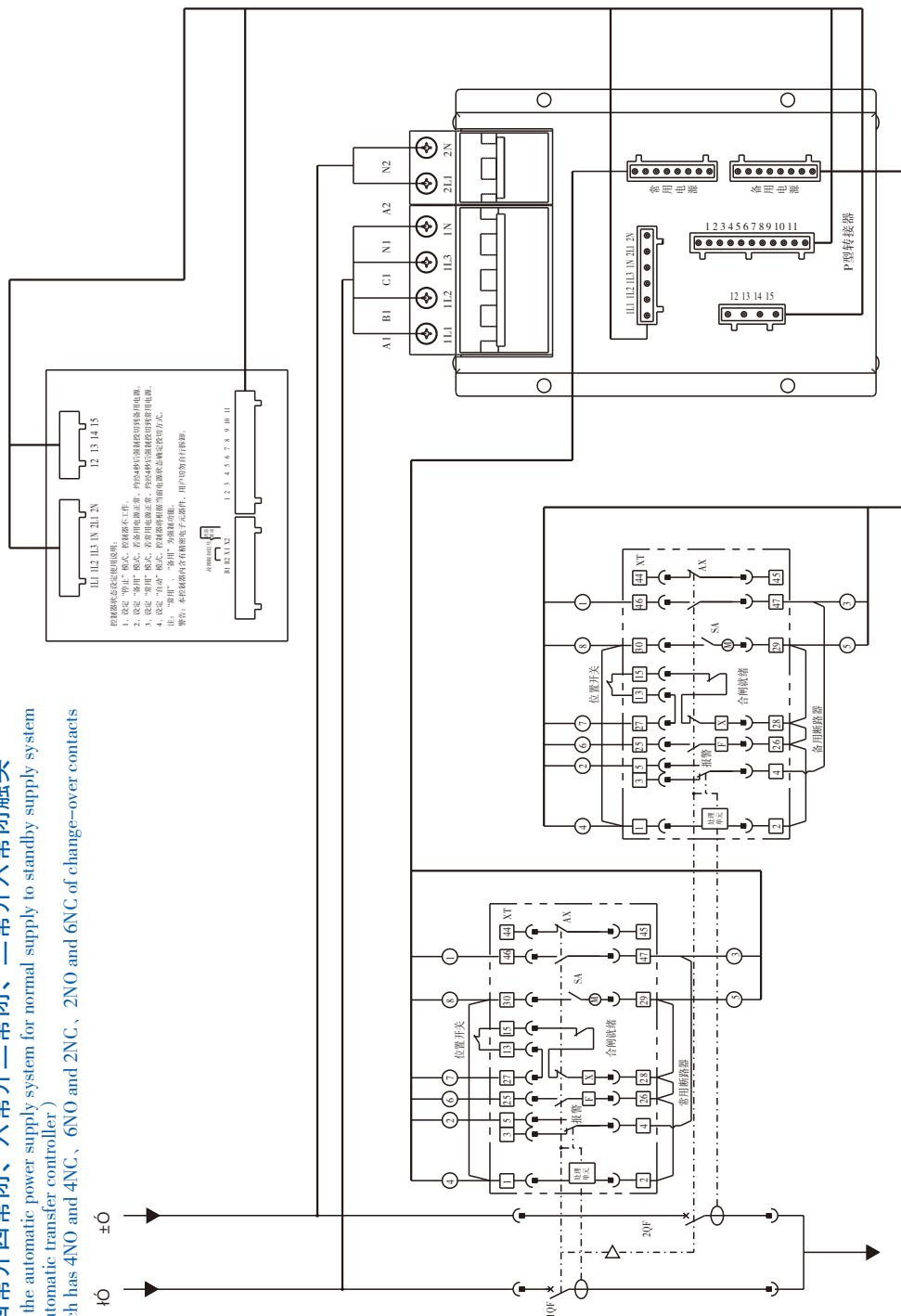
常用-备用自动电源转换系统电气线路图 (ZR型、ZS型自动转换控制器)

辅助开关为四常开四常闭、六常开二常闭、二常开六常闭触头

Wiring diagram of the automatic power supply system for normal supply to standby supply system

(ZR、ZS type automatic transfer controller)

The auxiliary switch has 4NO and 4NC, 6NO and 2NC, 2NO and 6NC of change-over contacts



注: 1.接线图指示为回路无电, 断路器断开并处于连接位置, 机构已储能。

2.当采用自动电源转换系统供电时, 断路器智能控制器、分励脱扣器、合闸电磁铁、电动机操作机构电压为AC230V。

Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.

2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

AX-Auxiliary switch

F-Shunt release

X-The electro-magnet to close the breaker

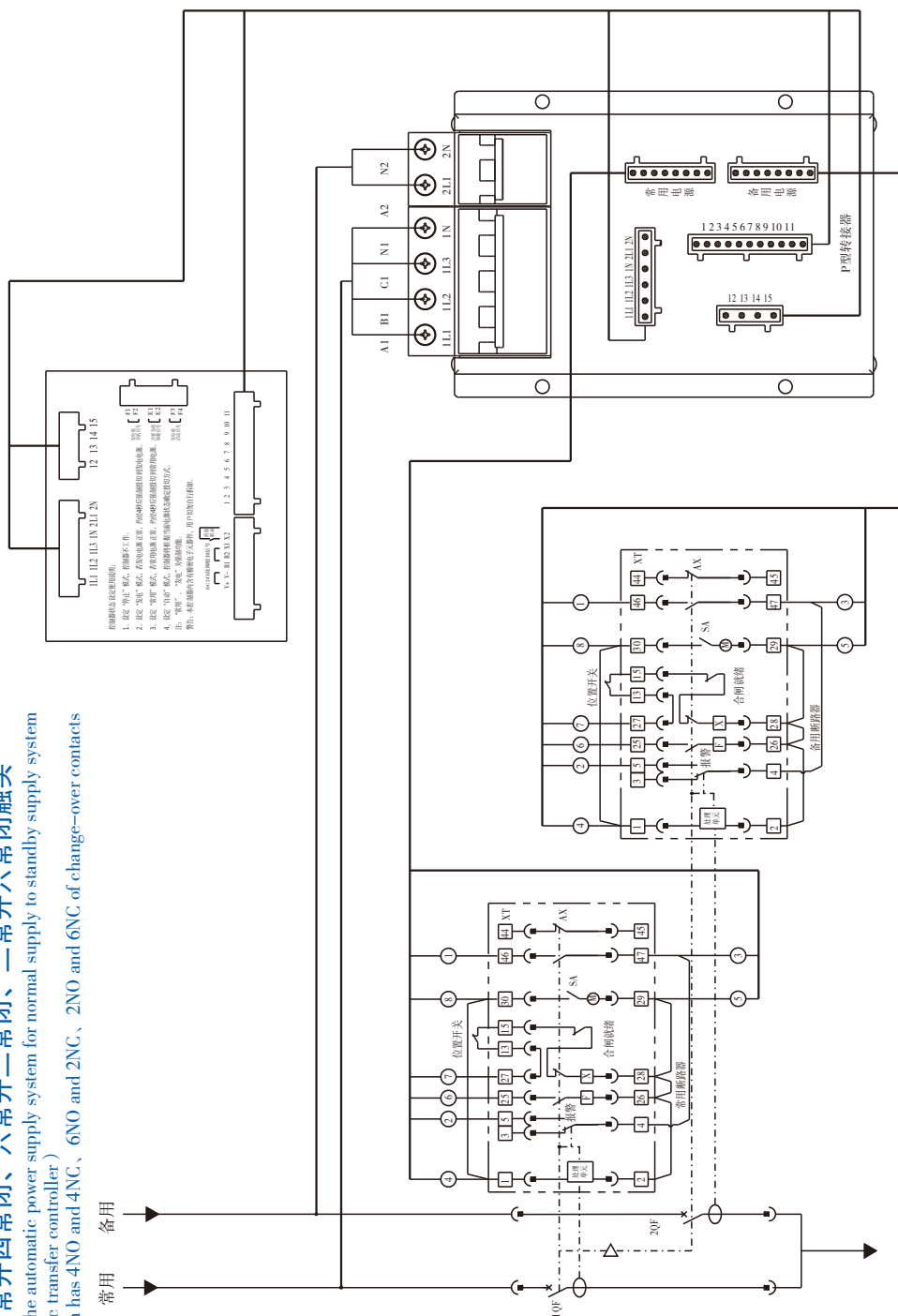
M-Charging motor

SA-Overtravel-limit switch for the charging motor of the breaker

XT-Terminals for the secondary circuit of the breaker



常用-备用自动电源转换系统电气线路图 (ZF型自动转换控制器)
 辅助开关为四常开四常闭、六常开二常闭、二常开六常闭触点
 Wiring diagram of the automatic power supply system for normal supply to standby supply system
 (ZF type automatic transfer controller)
 The auxiliary switch has 4NO and 4NC, 6NO and 2NC, 2NO and 6NC of change-over contacts



注: 1.接线图指示为回路无电, 断路器断开并处于连接位置, 机构已储能。

2.当采用自动电源转换系统供电时, 断路器智能控制器、分励脱扣器、合闸电磁铁、电动机操作机构电压为AC230V。
 Note: 1.As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.
 2.When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关
 F-断路器分励脱扣器
 X-断路器合闸电磁铁
 M-断路器储能电机
 SA-断路器储能电动机行程开关
 XT-断路器二次回路接线端子

AX-Auxiliary switch
 F-Shunt release
 X-The electro-magnet to close the breaker
 M-Charging motor
 SA-Overtravel-limit switch for the charging motor of the breaker
 XT-Terminals for the secondary circuit of the breaker

说明: 当常用电源正常时, 发电机启动信号 (F3、F4)、发电机停机信号 (F1、F2)、卸载信号 (E1、E2) 均处于断开位置。
 当常用电源失电后, 发电机停机信号 (F1、F2) 立即闭合, 发电机启动信号 (F3、F4) 经t5延时后闭合。
 当发电机电源发出后, 发电机启动信号 (F3、F4) 立即断开, 卸载信号 (E1、E2) 经t1延时后闭合。
 当常用电源恢复后, 卸载信号 (E1、E2) 立即断开, 发电机停机信号 (F1、F2) 经t6延时后断开。

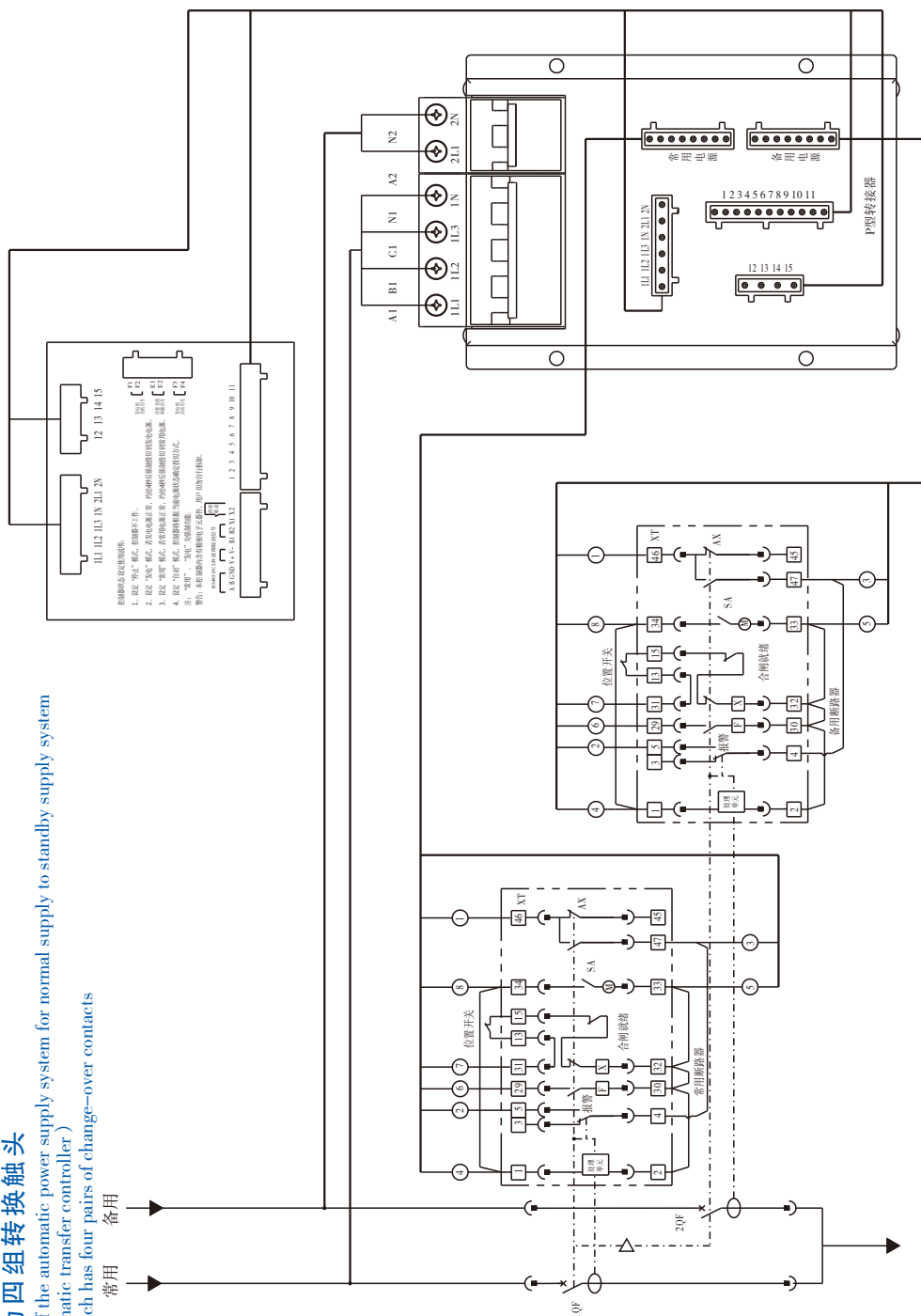


常用-备用自动电源转换系统电气线路图 (ZTF型自动转换控制器)

Wiring diagram of the automatic power supply system for normal supply to standby supply system
(ZTF type automatic transfer controller)

The auxiliary switch has four pairs of change-over contacts

常用 备用



注：1. 接线图指示为回路无电，断路器断开并处于连接位置，机构已储能。

2. 当采用自动电源转换系统供电时，断路器智能控制器、分闸脱扣器、合闸电磁铁、电动机磁铁、电动操作机构电压为AC230V。

Note: 1. As shown in the above diagram the breaker is open and connecting, it hasn't been charged and there is no current in the loop.

2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分闸脱扣器

X-断路器合闸电磁铁

M-断路器储能电动机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

说明：当常用电源正常时，发电机启动信号 (F3、F4)、发电机停机信号

(F1、F2)、卸载信号 (E1、E2) 均处于断开位置。

当常用电源失电后，发电机停机信号 (F1、F2) 立即闭合，发电机启动信号 (F3、F4) 经5延时后闭合。

当发电机电源发出后，发电机启动信号 (F3、F4) 立即断开，卸载信号 (E1、E2) 经1延时后闭合。

当常用电源恢复后，卸载信号 (E1、E2) 立即断开，发电机停机信号 (F1、F2) 经6延时后断开。

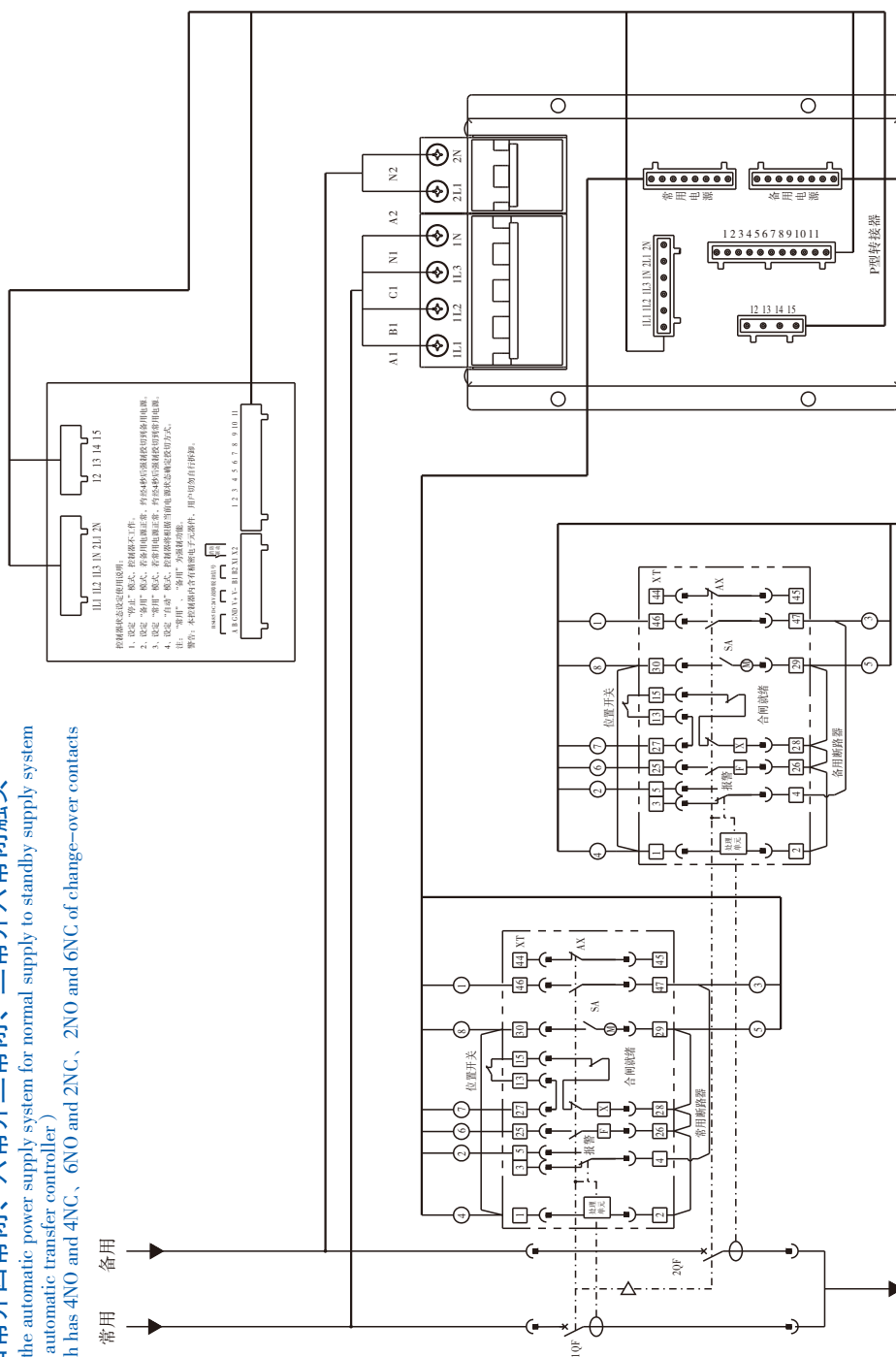


常用-备用自动电源转换系统电气线路图 (ZTR型、ZTS型自动转换控制器)

辅助开关为四常开四常闭、六常开二常闭、二常开六常闭触头

Wiring diagram of the automatic power supply system for normal supply to standby supply system (ZTR, ZTS type automatic transfer controller)

The auxiliary switch has 4NO and 4NC, 6NO and 2NC, 2NO and 6NC of change-over contacts



注: 1.接线图指示为回路无电, 断路器断开并处于连接位置, 机构已储能。
2.当采用自动电源转换系统供电时, 断路器智能控制器、分励脱扣器、合闸电磁铁、电动机作机构电压为AC230V。
Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.
2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

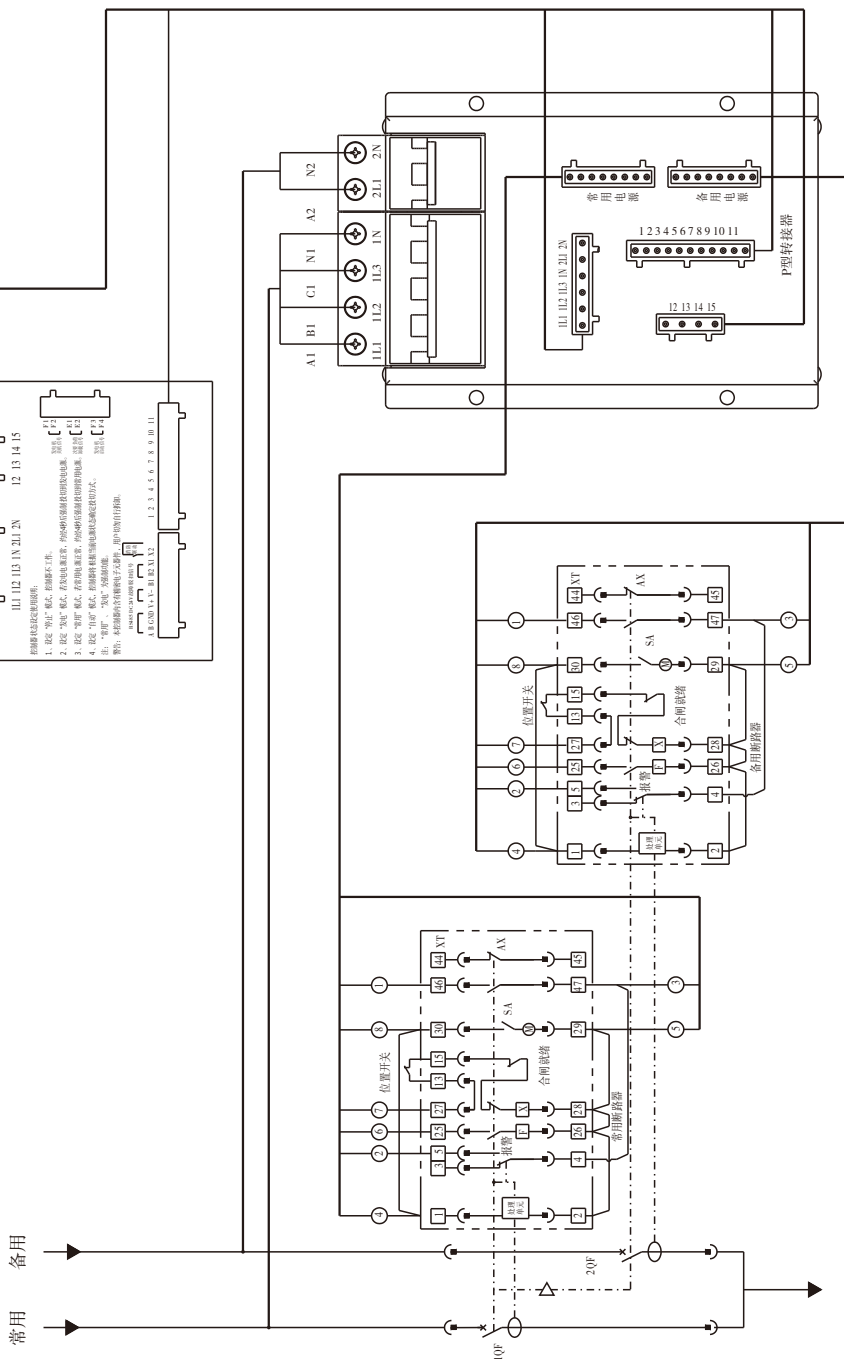
AX-断路器辅助开关
F-断路器分励脱扣器
X-断路器合闸电磁铁
M-断路器储能电动机
SA-断路器储能电动机行程开关
XT-断路器二次回路接线端子

AX-Auxiliary switch
F-Shunt release
X-The electro-magnet to close the breaker
M-Charging motor
SA-Overtravel-limit switch for the charging motor of the breaker
XT-Terminals for the secondary circuit of the breaker



常用-备用自动电源转换系统电气线路图 (ZTF型自动转换控制器) 辅助开关为四常开四常闭、六常开二常闭、二常开六常闭触点

Wiring diagram of the automatic power supply system for normal supply to standby supply system
(ZTF type automatic transfer controller)
The auxiliary switch has 4NO and 4NC, 6NO and 2NC, 2NO and 6NC of change-over contacts



注：1.接线图指示为回路无电，断路器断开并处于连接位置，机构已储能。

2.当采用自动电源转换系统供电时，断路器智能控制器、分励脱扣器、合闸电磁铁、电动机储能机构已储能。

Note: 1.As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.

2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

说明：当常用电源正常时，发电机启动信号 (F3、F4)、发电机停机信号 (F1、F2)、卸载信号 (E1、E2) 均处于断开位置。

当常用电源失电后，发电机停机信号 (F1、F2) 立即闭合，发电机启动信号 (F3、F4) 经5延时后闭合。

当发电机电源发出后，发电机启动信号 (F3、F4) 立即断开，卸载信号 (E1、E2) 经1延时后闭合。

当常用电源恢复后，卸载信号 (E1、E2) 立即断开，发电机停机信号 (F1、F2) 经6延时后断开。

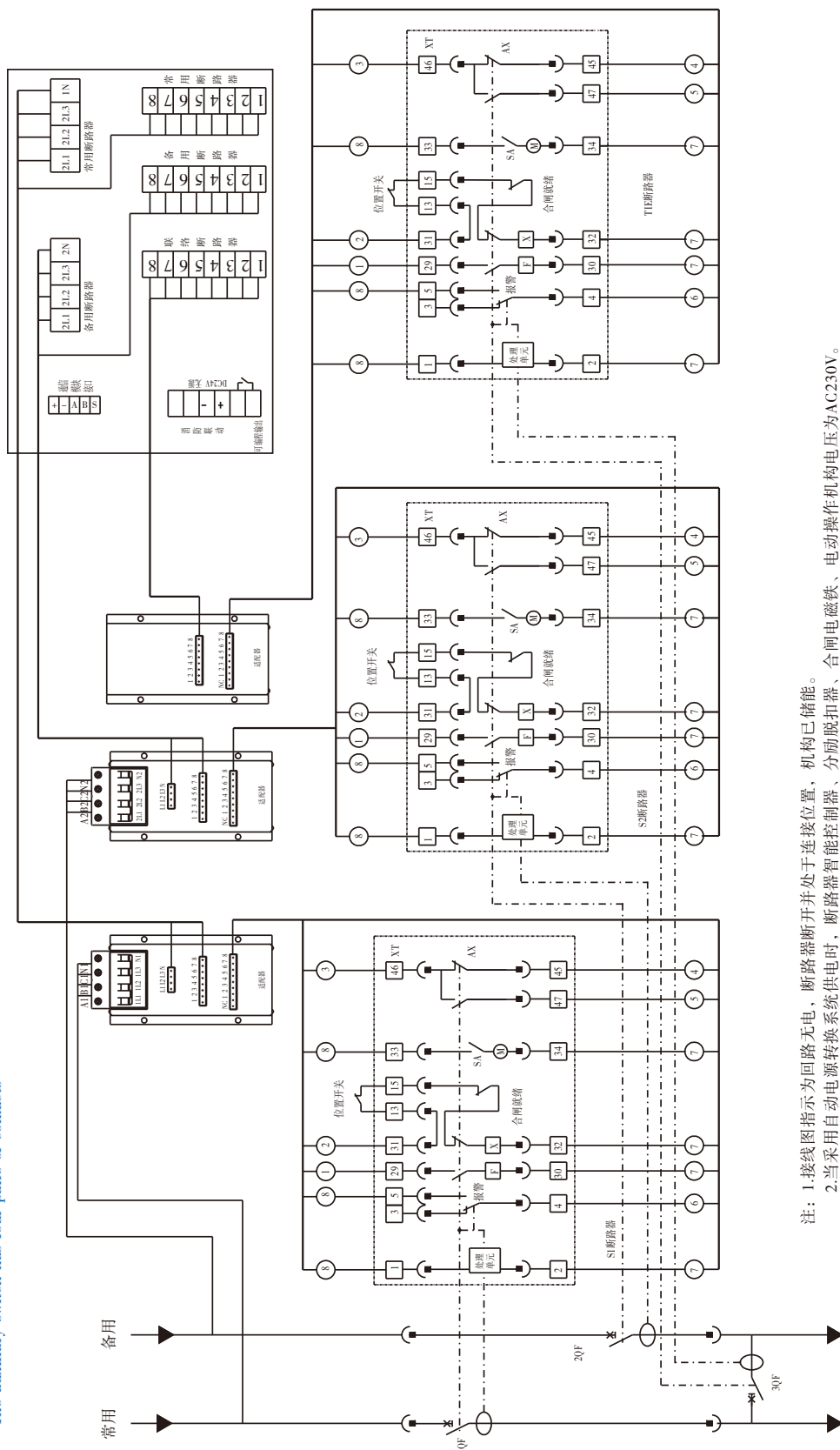


两进线一母联自动电源转换系统电气线路图 (WTT3/WTB3 自动转换控制器)

辅助开关为四组转换触头

Wiring diagram of the automatic power supply for two incoming one couple (WTT3/WTB3 automatic transfer controller)

The auxiliary switch has four pairs of contacts



注: 1.接线图指示为回路无电, 断路器断开并处于连接位置, 机构已储能。

2.当采用自动电源转换系统供电时, 断路器智能控制器、分励脱扣器、合闸电磁铁、电动机操作机构电压为AC230V。

Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.

2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

AX-Auxiliary switch

F-Shunt release

X-The electro-magnet to close the breaker

M-Charging motor

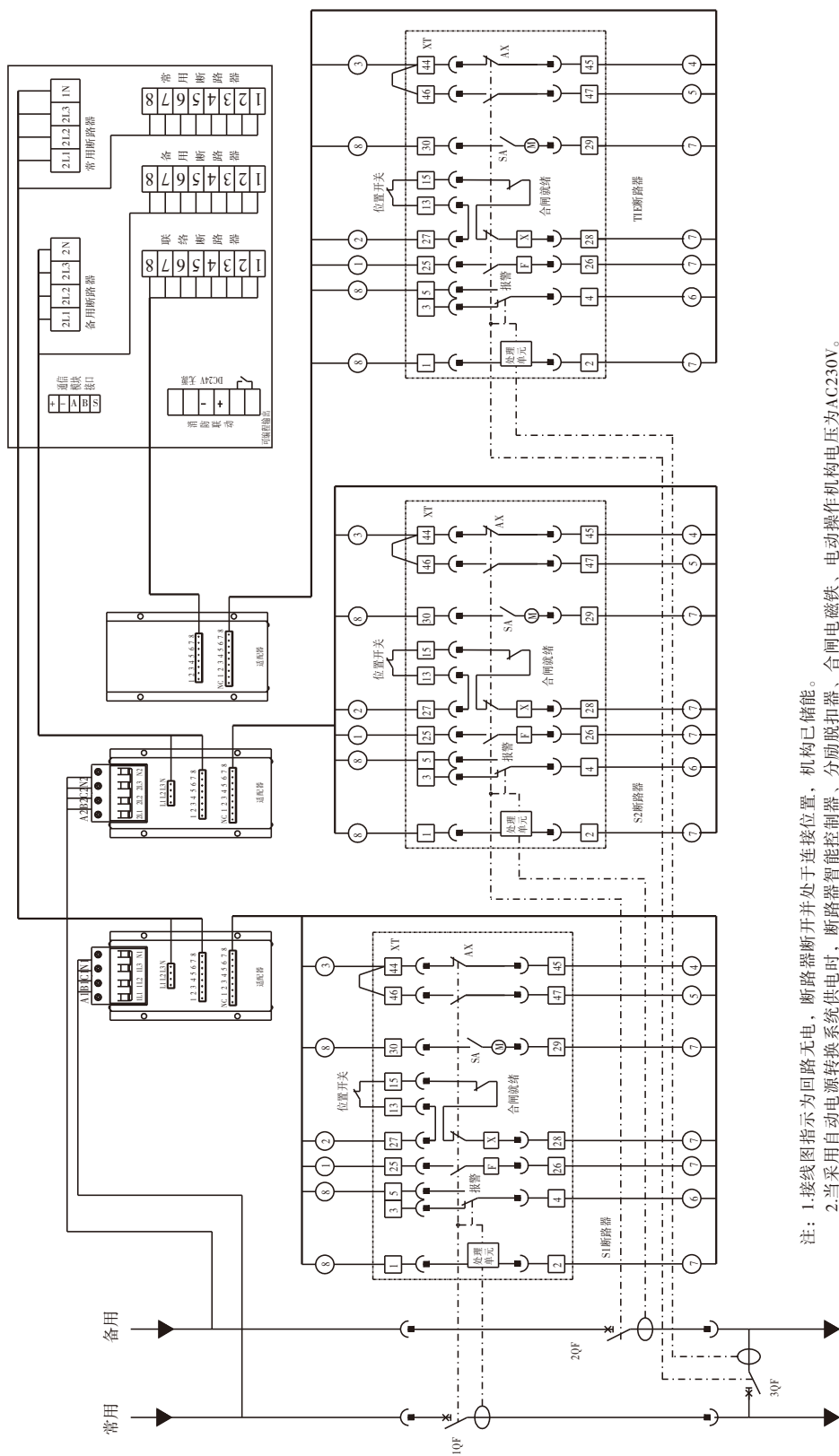
SA-Overtravel-limit switch for the charging motor of the breaker

XT-Terminals for the secondary circuit of the breaker



两进线一母联自动电源转换系统电气线路图 (WTT3/WTB3 自动转换控制器) 辅助开关为四常开二常闭、六常开二常闭、二常开六常闭触头

Wiring diagram of the automatic power supply for two incoming one couple (WTT3/WTB3 automatic transfer controller)
The auxiliary switch has 4NO4NC, 6NO2NC, 2NO6NC of contacts



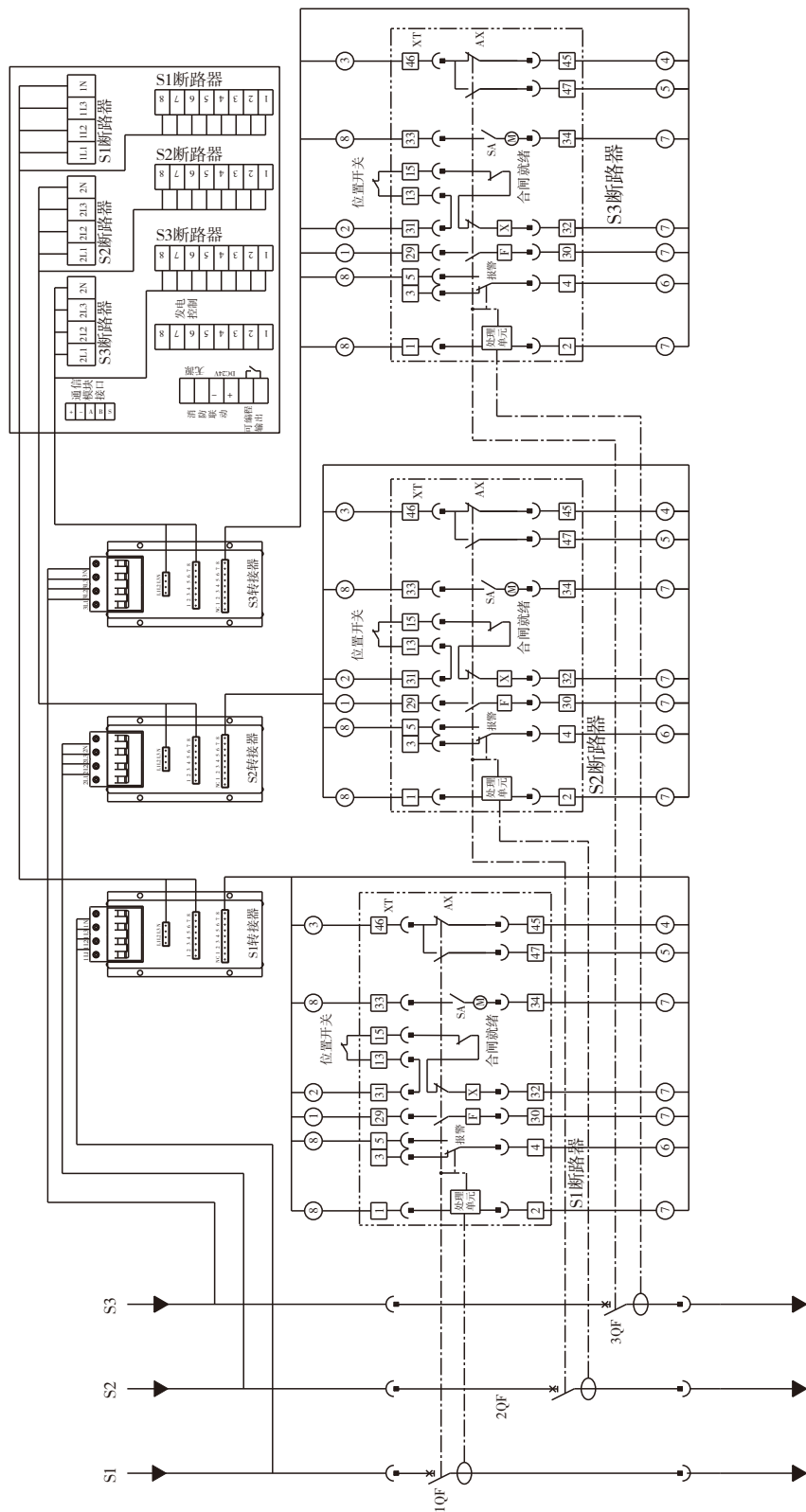
注：1.接线图指示为回路无电，断路器断开并处于连接位置，机构已储能。
2.当采用自动电源转换系统供电时，断路器智能控制器、分励脱扣器、合闸电磁铁、电动机操作机构电压为AC230V。
Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.
2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

- AX-断路器辅助开关
- F-断路器分励脱扣器
- X-断路器合闸电磁铁
- M-断路器储能电机
- SA-断路器储能电动机行程开关
- XT-断路器二次回路接线端子
- AX-Auxiliary switch
- F-Shunt release
- X-The electro-magnet to close the breaker
- M-Charging motor
- SA-Overtravel-limit switch for the charging motor of the breaker
- XT-Terminals for the secondary circuit of the breaker



三电源自动电源转换系统电气线路图 (WTT5 自动转换控制器)
辅助开关为四组转换触头

Wiring diagram of the automatic power supply for three supplies (WTT5 automatic transfer controller)
The auxiliary switch has four pairs of change-over



注: 1.接线图指示为回路无电, 断路器断开并处于连接位置, 机构已储能。

2.当采用自动电源转换系统供电时, 断路器智能控制器、分励脱扣器、合闸电磁铁、电动机磁铁、电动操作机构电压为AC230V。

Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.

2. When ATS is used all voltage ratings are AC230V for intelligent controller, shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关

F-断路器分励脱扣器

X-断路器合闸电磁铁

M-断路器储能电机

SA-断路器储能电动机行程开关

XT-断路器二次回路接线端子

AX-Auxiliary switch

F-Shunt release

X-The electro-magnet to close the breaker

M-Charging motor

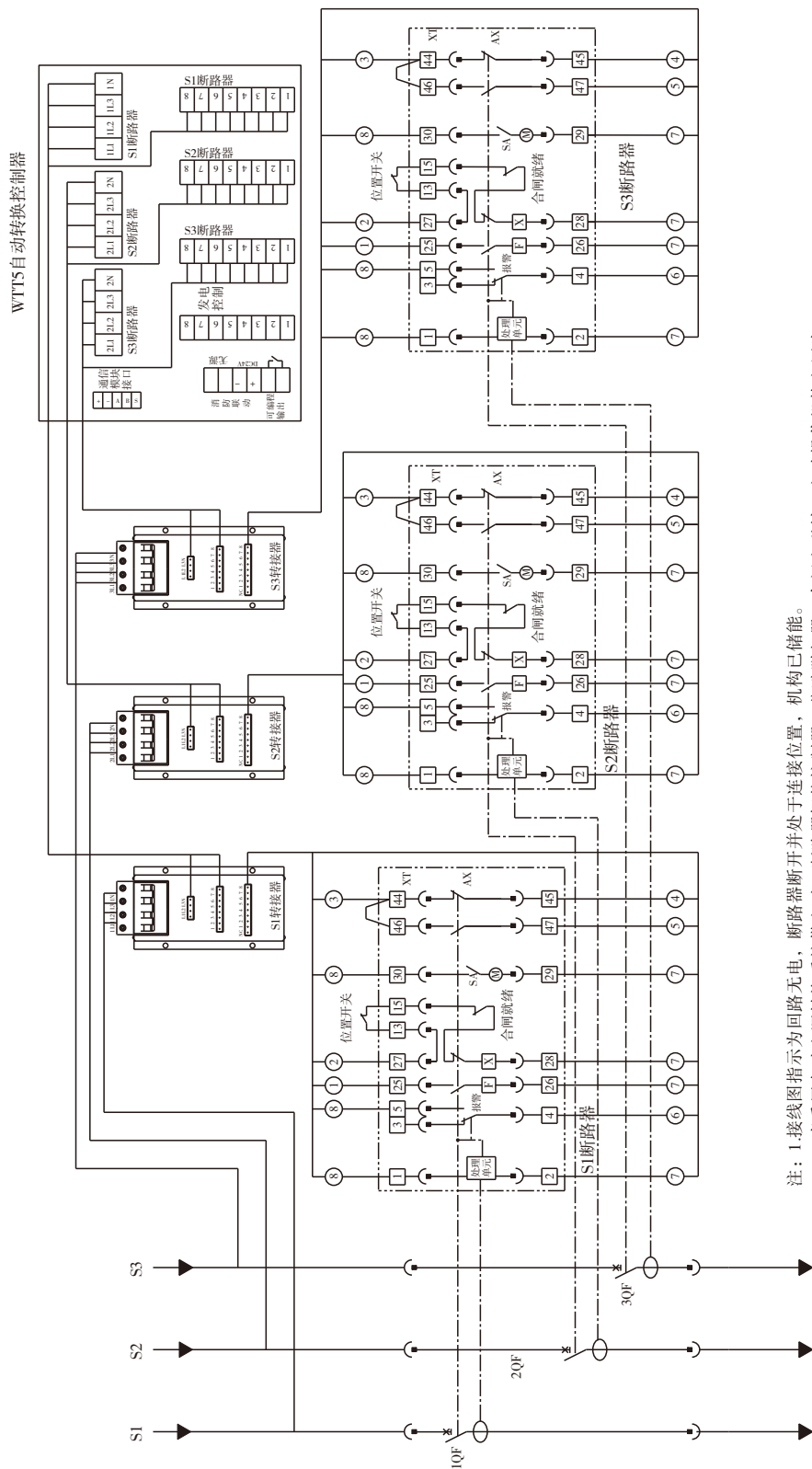
SA-Overtravel-limit switch for the charging motor of the breaker

XT-Terminals for the secondary circuit of the breaker



三电源自动转换系统电气线路图 (WTT5 自动转换控制器)
辅助开关为四常开四常闭、六常开二常闭、二常开六常闭触头

Wiring diagram of the automatic power supply for three supplies (WTT5 automatic transfer controller)
The auxiliary switch has 4NO4NC, 6NO2NC, 2NO6NC of contacts



注：1.接线图指示为回路无电，断路器断开并处于连接位置，机构已储能。

2.当采用自动电源转换系统供电时，断路器智能控制器、分励脱扣器、合闸电磁铁、电动操作机构电压为AC230V。

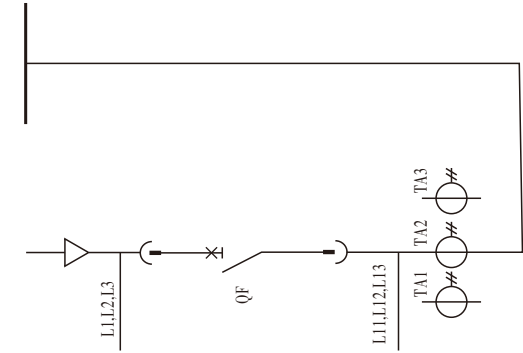
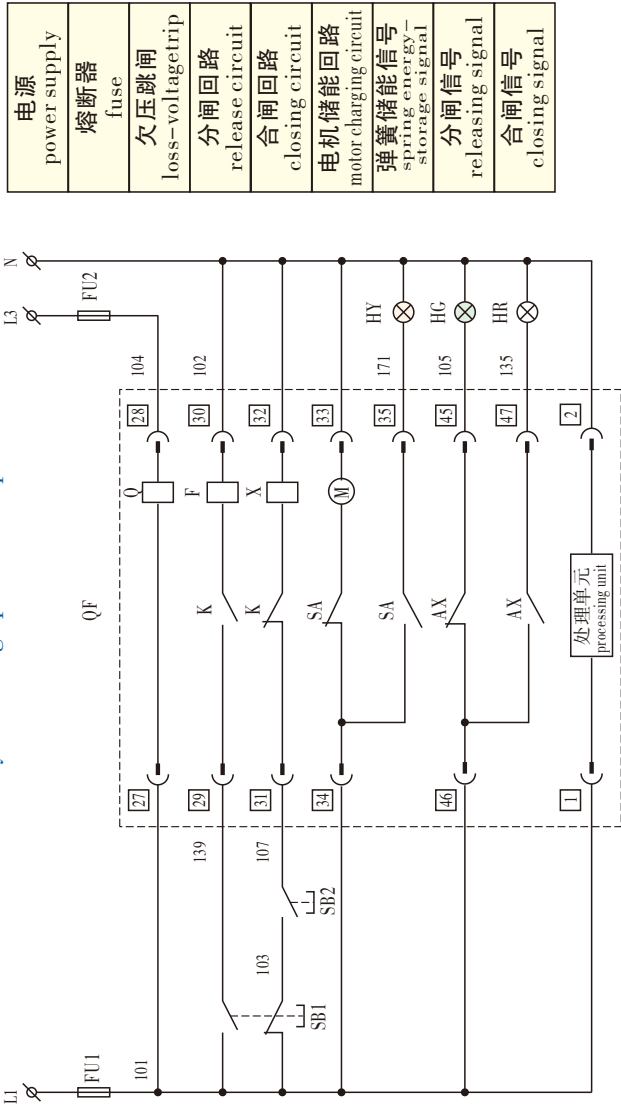
Note: 1. As shown in the above diagram the breaker is open and connecting it hasn't been charged and there is no current in the loop.

2. When ATS is used all voltage ratings are AC230V for intelligent controller-shunt release, closing magnet and automatic operation mechanism.

AX-断路器辅助开关
F-断路器分励脱扣器
X-断路器合闸电磁铁
M-断路器储能电机
SA-断路器储能电机行程开关
XT-断路器二次回路接线端子

AX-Auxiliary switch
F-Shunt release
X-The electro-magnet to close the breaker
M-Charging motor
SA-Overtravel-limit switch for the charging motor of the breaker
XT-Terminals for the secondary circuit of the breaker

单路受电操作回路 One-way incoming operation loop



- (CW1内部元件)
Q: 断路器欠压线圈 ~ 400V
F: 断路器分励线圈 ~ 230V
X: 断路器合闸电磁铁 ~ 230V
M: 储能电动机 ~ 230V
SA: 电动机限位开关
AX: 断路器辅助开关
K: 智能控制器内部控制接点
- (Inside elements of CW1)
Q: shunt-voltage coil of the breaker 400V
F: shunt coil of the breaker 230V
X: closing electromagnet of the breaker 230V
M: energy-storage motor 230V
SA: over travel-limit switch to motor
AX: auxiliary switch of the breaker
K: control point in the intelligent release
- QF: 断路器CW1-
FU1 ~ 2: 熔断器RT14-20/10A
SB1 ~ 2: 按钮LA18-22红绿各一
HY: 信号指示灯AD11-25 ~ 230V黄色
HG: 信号指示灯AD11-25 ~ 230V绿色
HR: 信号指示灯AD11-25 ~ 230V红色
虚线框内部件为CW1断路器本体部件, 框内编号为二次回路接线端子排上的端子编号。
- QF: breaker CW1-
FU1 2: fuse RT14-20/10A
SB1 2: button LA 18-22 one red and one green
HY: signal lamp AD11-25 230V Yellow
HG: signal lamp AD11-25 230V Green
HR: signal lamp AD11-25 230V Red
Parts in the dotted line frame belong to CW1 breaker.
Numbers written in the frame indicate their corresponding terminals of wiring terminal bus-bar in the secondary circuit.

敬告: 该图按智能控制器为L或M型、辅助开关为四组转换触头的接线图设计, 选用其他型式, 原理图需相应作调整。

Note: According to the wiring diagram above, the auxiliary switches are composed of four pairs of alternation contacts. In case the auxiliary switches are of other types, the wiring diagram should be changed correspondingly.

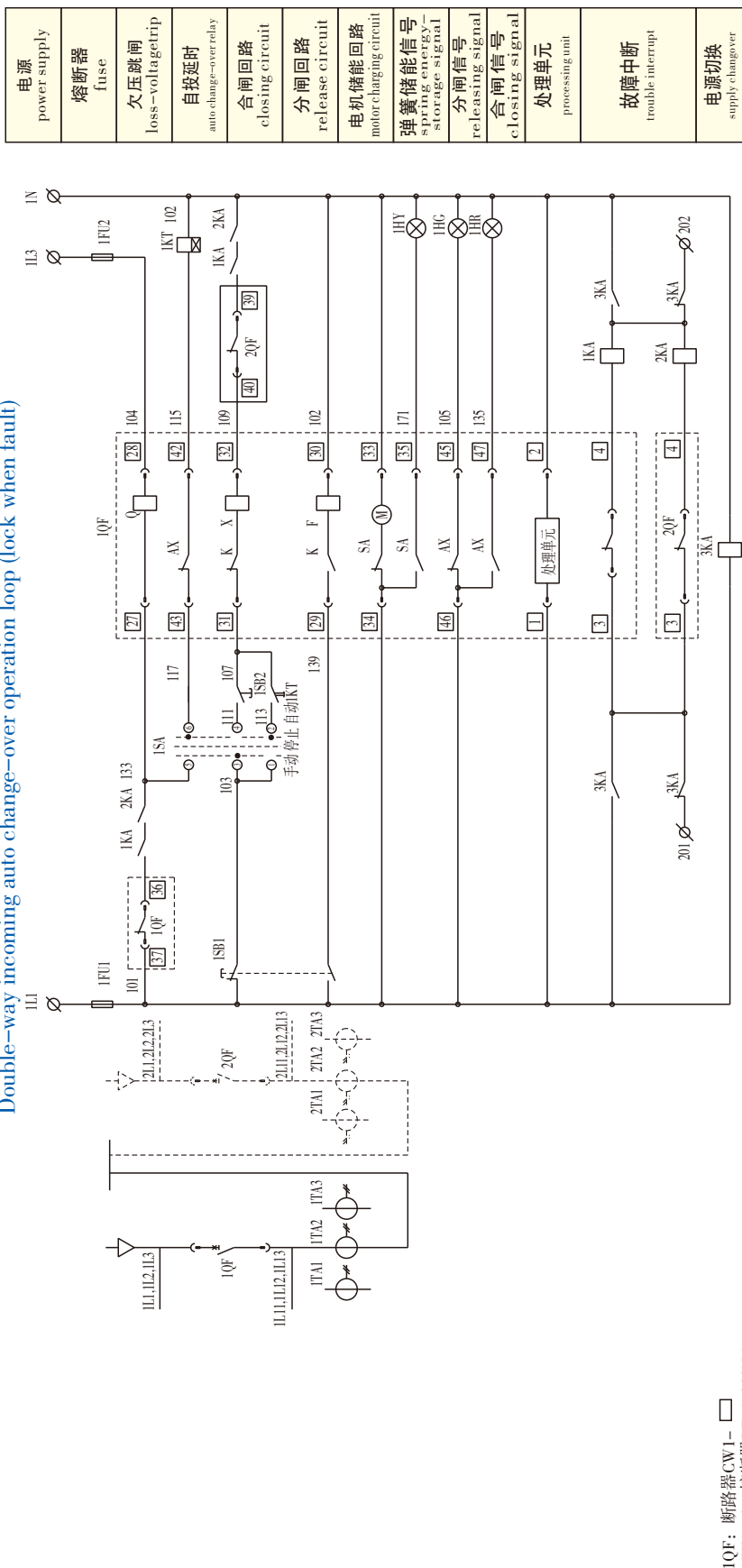


断路器二次接线典型方案举例

BREAKER EXAMPLE OF TYPICAL SCHEME FOR SECONDARY WIRING

双路受电自投操作回路（故障锁定）

Double-way incoming auto change-over operation loop (lock when fault)



(CW1内部元件)

Q: 断路器欠压线圈 ~ 400V

F: 断路器分励线圈 ~ 230V

X: 断路器合闸电磁铁 ~ 230V

M: 电动机 ~ 230V

SA: 电动机限位开关

AX: 断路器辅助开关

K: 智能控制器内部控制接点

(Inside elements of CW1)

1FU1 2: fuse RT14-20/10A

1SA 2: button LA 18-22 one red and one green

1KT: time relay ST3PA-A

1 3KA: intermediate relay 3TH8244

1HY: signal lamp AD11-25 230V Yellow

1HG: signal lamp AD11-25 230V Green

1HR: signal lamp AD11-25 230V Red

Parts in the dotted line frame belong to CW1 breaker.

Numbers written in the frame indicate their corresponding terminals of wiring terminal bus-bar in the secondary circuit.

1QF: 断路器CW1- □

1FU1 ~ 2: 熔断器RT14-20/10A

1SA: 转换开关LA18-22红绿各一

1KT: 时间继电器ST3PA-A

1 ~ 3KA: 中间继电器3TH8244

1HY: 信号指示灯AD11-25 ~ 230V 黄色

1HG: 信号指示灯AD11-25 ~ 230V 绿色

1HR: 信号指示灯AD11-25 ~ 230V 红色

虚线框内部件为CW1断路器本体部件, 框内

编号为二次回路接线端子排上的端子编号。

1QF: breaker CW1- □

1FU1 2: fuse RT14-20/10A

1SA 2: button LA 18-22 one red and one green

1KT: time relay ST3PA-A

1 3KA: intermediate relay 3TH8244

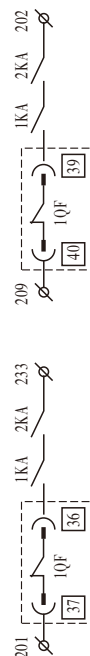
1HY: signal lamp AD11-25 230V Yellow

1HG: signal lamp AD11-25 230V Green

1HR: signal lamp AD11-25 230V Red

Parts in the dotted line frame belong to CW1 breaker.

Numbers written in the frame indicate their corresponding terminals of wiring terminal bus-bar in the secondary circuit.



警告: 1.该图按智能控制器为L或M型、辅助开关为四组转换触头的接线图设计,

选用其他型式,原理图需相应作调整。

2.备用电源自投延时回路中的延时继电器的延时时间应大于常用电源自

投延时回路中的延时继电器的延时时间。

Note: 1. According to the wiring diagram above, the auxiliary switches are composed of four

pairs of alternation contacts. In case the auxiliary switches are of other types, the

wiring diagram should be changed correspondingly.

2. The delay time of time-delay relay in the standby power supply auto change-over

loop should be greater than delay time of time-delay relay in the normal power

supply auto change-over loop.



本公司结合开发智能电器、成套设备和控制系统的经验，推出了三位一体的Riyea-PowerNet配电监控系统，满足了智能电网对用户端系统智能控制的要求。这套系统以高性能的可通信智能配电元件为基础，将现场的低压配电系统和计算机网络紧密结合，集遥测、遥信、遥控、遥调等功能于一体，是传统配电系统的理想升级。

监控系统除支持本公司所有的可通信元件外，也支持各种不同厂商的具有标准协议的可通信元件，支持包括ModBus、ModBus TCP、Profibus-DP、DeviceNet等各种标准通信总线，还提供简单配电、网络型配电、无线型配电、混合型配电系统等各种连接方式，是功能强大、开放灵活的监控系统。用户可根据实际需要建立适合自己的完善的监控系统，实现远程掌控整个配电系统的运行情况。

监控系统主要包括可靠的系统控制软件、丰富的通信网络和高性能的各类可通信配电元件：系统控制软件实现系统管理功能；通信网络提供现场智能元件和上位监控主机间的连接，进行数据传输，协议的转换；可通信配电元件负责采集现场信息和现场控制，通过通信接口提供给监控系统进行远程管理。

● 断路器通信功能

可通信型CW1智能型万能式断路器采用标准ModBus-RTU协议，通过RS485接口与上位机连接，用户可实现对断路器远距离的遥控、遥信、遥调、遥测功能。

可通信数据：

遥测：实时电流、电压。

遥信：报警、故障脱扣、断路器本体位置、合闸准备就绪、分合闸位置等断路器状态数据。

遥控：远程分合断路器。

遥调：远程保护参数读取和修改。

通信参数：

波特率19200 bps（支持1200、2400、4800、9600、38400bps）。

通信地址：1-247。

帧格式：1位起始位，8位数据，2位停止位，偶校验（支持无校验、奇校验）。

网络特性：

通信线路为双绞屏蔽线。

一条线路可同时连接32台可通信断路器。

最大接线距离1200米，可通过加装中继器延长通信距离。

On the experience of developing intelligent equipment,complete equipment and control system,we release the Trinity Riyea-PowerNet power distribution monitoring system to fulfill the requirements of intelligent electrified wire netting on the intelligent control of user's terminal system.This system,on the basis of high-performance communicative intelligent power distribution component,deeply combine the power distribution system on-the-spot with the computer network and has the function of tele-detection,tele-communication,tele-control and tele-adjustment.It is a fantastic upgrade of conventional power distribution system.

The monitoring system not only supports all kinds of communicative components of our company,but also supports every kind of communicative components made by different manufacturers according to the standard protocol.It supports ModBus,ModBus TCP,Profibus-DP,DeviceNet and every kind of standard communication buses.Thus, it provides simple power distribution,mixed type power distribution and every kind of connection ways.It is a functionally strong,open and flexible monitoring system.Users can build their own complete monitoring system fits to themselves according to the need in practice to achieve mastering the whole power distribution's operation condition remotely.

The monitoring system mainly includes reliable systematic control software,complete communication network and all kinds of communicative power distribution component of high performance;the system control software to achieve system management function;the communication network to provide the connection between the intelligent component on-the-spot and the up-position monitoring host,to perform data transmission and the transformation of the protocol;the communicative power distribution component to handle the gathering of the information on-the-spot,the control on-the-spot and the remote management provided to the monitoring system through the communication interface.

● Communication function of breaker

Communicative CW1 intelligent universal communicative circuit breaker adopts standard ModBus-RTU protocol.Through the connection of the RS485 interface and the upper machine,the function of tele-control,tele-communication,tele-adjustment and tele-detection to the circuit breaker can be achieved.

Communication data:

Remote detection:real-time current、voltage.

Remote communication:state: data of breakers such as alarm,fault,body's position,ready-for-closing,opening or closing position.

Remote control:long-distance opening or closing,operation.

Remote adjustment:the fetching and modification of setting values.

Communication parameter:

Baud rate:19200bps(in favour of 1200,2400,4800,9600,38400bps)

Communication address:1-247.

Byte format:first bit as start bit,eighth bit as data bit,second bit as stop bit,even check(in favour of non-check,odd check).

Network characteristic:

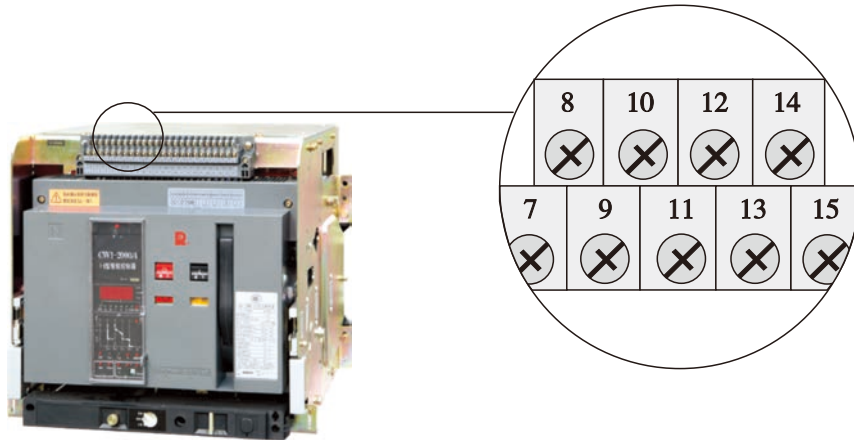
Twisted-pair shielded cables serve as communication lines.

One line can link up 32 pieces of communicative breakers.

Wiring distance is 1200m.at maximum,but the distance of communication can be extended by equipping with repeaters additionally.

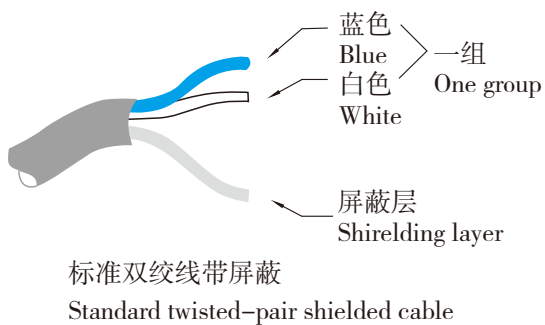


● 通信接线端子 Wiring terminals for communication



端子 Terminals	信号 Signal	功能 Function
8	DATA+(A+)	接收/发送数据+ Receive/transmit data+
10	DATA-(B-)	接收/发送数据- Receive/transmit data-
12	GND	接通信线屏蔽层 Connecting shielded layer of communication line

● 通信电缆连接 Communication cable connected



颜色/color		信号signal	功能 Function
蓝色blue		DATA+	接收/发送数据+ Receive/transmit data
白色white		DATA-	接收/发送数据- Receive/transmit data
通信线屏蔽层 Shielding layer		GND	接地 Grounding

如上图中使用通信电缆中的一组双绞线作为485通信线，屏蔽层用于接地。用户实际所使用的可能会有所差异，如双绞线颜色。用户可根据实际情况自行定义，但应事先明确每一通信电缆线的信号定义情况。

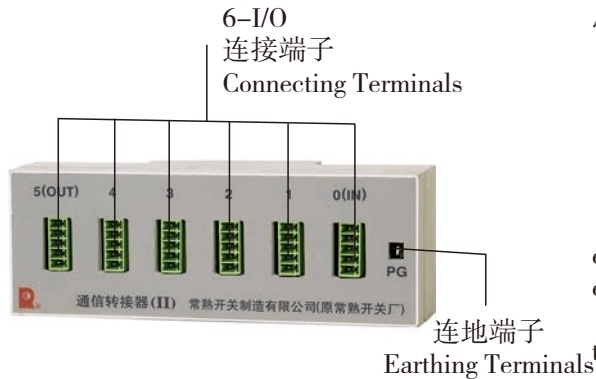
注意：通信电缆请使用带屏蔽的型号，在柜内走线时尽量远离强电线路。

As the above diagram shows,a group of twisted-pair lines in the standard communication cable is employed as the communication line of 485 and the sheilding lager is grounded.The actual pratice should be possibly different such as the application of the colour of the twisted-pair line.Users could define the ways of cable's usage by themselves but the definition of the signal of each line in the cable shoule be made clear in advance.

Note:please use the type of communication cable with the shielding lager and approach to circuits with strongelectricity should be advoided as far as possible when wiring in the cabinet.



● 通信连接扩展 Communication connection extend



注：可多次扩展，但一条线路不应连接超过32台设备。

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

通信转换器可以提高用户现场接线的效率和可靠性，它具有以下特点：

6个RS485通信接口，最多可扩展5个可通信设备；

多个通信转换器可互联进行扩展（参见注）；

配有通信线接地端子；

可直接安装在标准35mm导轨上。

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

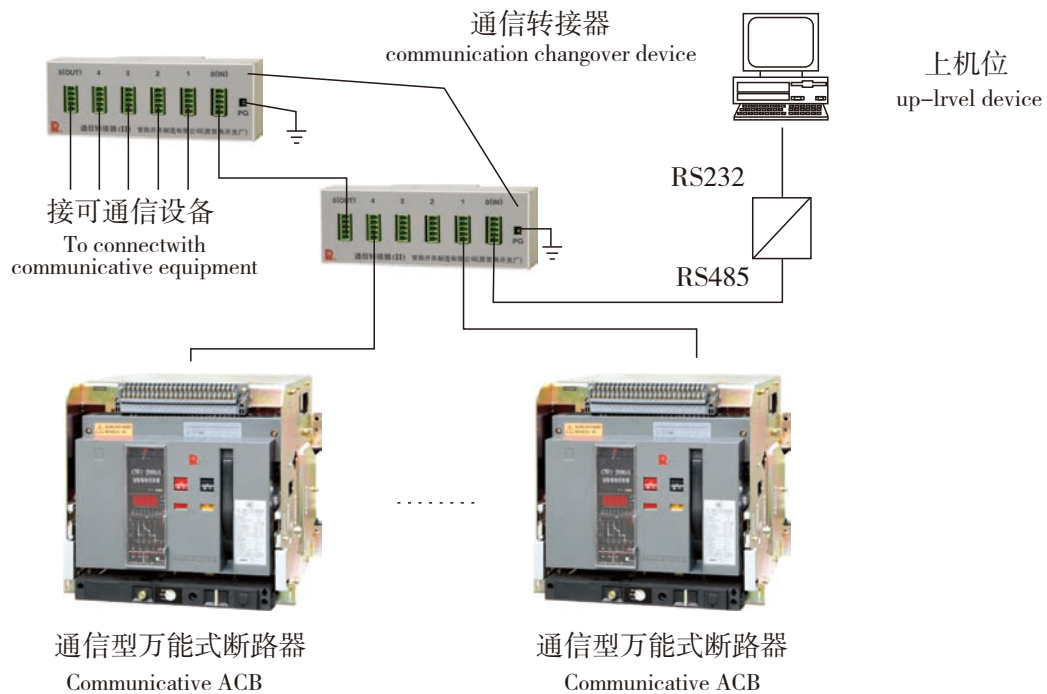
Six pieces of RS485 Communication Interfaces, can join together with 5 sets of Communicative Devices at most

Several Communication Adapters can realize the expansions by their networking (Refer to Note)

Equipped with earthing terminals of communication line

Can be installed directly on the standard slideway in 35mm width

连接示意图 Connection figure diagram





● 网络通信

我公司还提供多种通信适配器实现对Profibus-DP、DeviceNet、CAN及以太网ModBus /TCP协议的支持，为用户提供了丰富的解决方案。

用户也可使用CEPA3智能配电一体机，同我公司的可通信断路器进行连接，实现远程对断路器各项参数显示、监控、配置、历史数据保存等。同时我们还率先推出通信断路器的无线监视功能，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的远程信息监视。

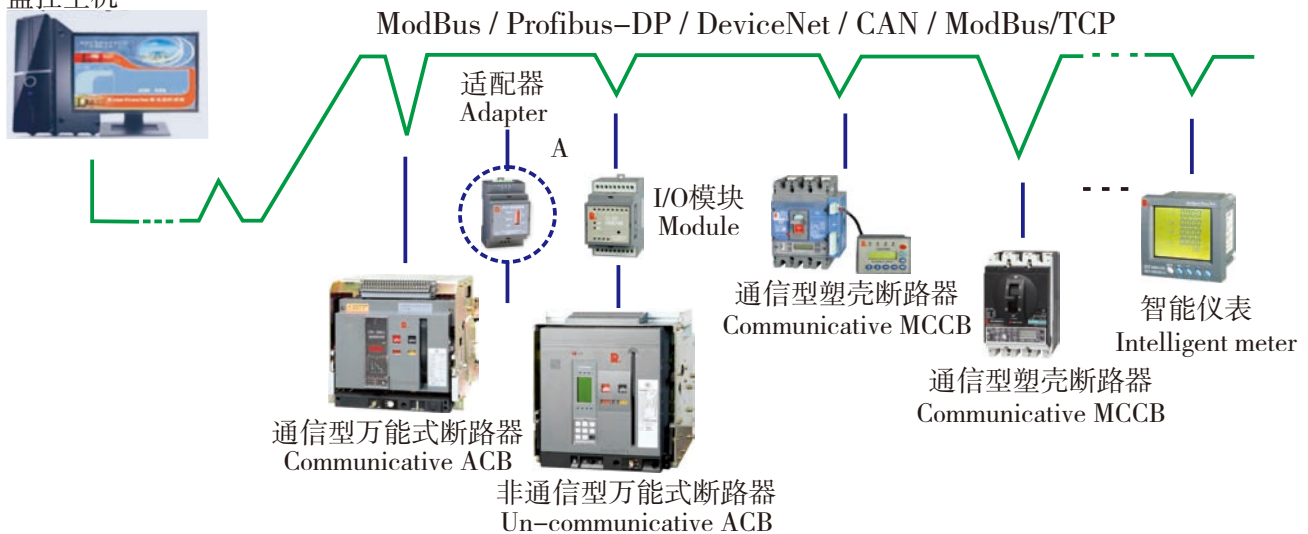
用户还可通过CI1系列远程智能I/O模块连接非通信型断路器，实现远程监测断路器合分闸状态、故障状态等重要信息。

Our company also offers several kinds of communication adapters to achieve the support of Profibus-DP, DeviceNet, CAN and Ethernet ModBus/TCP protocol and to supply the customers with lots of solutions.

The users can also connect CEPA3 intelligent power distribution monitor with our company's communicative circuit breaker to achieve the display, monitor, configuration and the previous data's maintenance of the circuit breaker's parameter remotely. At the same time, we also promote the radio monitoring function of the communicative circuit breaker. By the configuration of the short message informing module, we can achieve the information's remote monitoring of the circuit breaker's failure release or alarm.

The users can connect the uncommunicative circuit breaker through CI1 series remote intelligent I/O module to achieve remotely monitoring the circuit breaker's switching-on or -off state, failure state and other important information.

Monitoring main computer
监控主机



注A：本公司通信元件采用标准的ModBus-RTU协议，可直接接入ModBus总线，当使用其它协议时采用相应的通信适配器转接。

Note A: The communicative components of my company adopt standard ModBus-RTU protocol, may be connected ModBus field bus. If adopting other protocol, using communicative adapters changeover.



● 通信适配器 Communication adaptor



FTM61



CN1DP-MD



CN1DP-MP



CN1DP-MC



CN1EG/10

FTM61、CN1DP-MD、CN1DP-MP、CN1DP-MC和CN1EG/10为具有通信转换功能的适配器，与本公司具有标准ModBus-RTU协议接口的通信型智能产品连接，实现不同协议的转换，使通信型智能产品能在DeviceNet、Profibus-DP、CAN现场总线上或以太网TCP/IP网络上实现遥信、遥调、遥控及遥测功能。

FTM61通信模块实现从ModBus-RTU协议向IEC61850协议的转换。

CN1DP-MD通信适配器实现从ModBus-RTU协议向DeviceNet协议的转换；

CN1DP-MP通信适配器实现从ModBus-RTU协议向Profibus-DP协议的转换；

CN1DP-MC通信适配器实现从ModBus-RTU协议向CAN总线协议的转换；

CN1EG/10以太网适配器实现ModBus协议在串行链路和以太网TCP/IP网络间进行数据传输；

CN1DP-MD、CN1DP-MP只支持单台设备通信，CN1EG/10、CN1DP-MC最多可支持32台设备通信。

CN1DP-MD,CN1DP-MP,CN1DP-MC and CN1EG/10 are four types of adapters which have the function of communicative transformation.They can be connected to our company's communicative intelligent products which have the standard ModBus-RTU protocol interface to achieve the transformation of different protocols,and further to make the communicative intelligent product achieve tele-communication,tele-adjustment tele-control and tele-detection unction on DeviceNet,Profibus-DP,CAN field bus or Ethernet TCP/IP network.

FTM61 communicative module achieves the transformation from ModBus-RTU protocol to IEC61850 protocol.

CN1DP-MD communicative adaptor achieves the transformation from ModBus-RTU protocol to DeviceNet protocol;

CN1DP-MP communicative adaptor achieves the transformation from ModBus-RTU protocol to Profibus-DP protocol.

CN1DP-MC communicative adaptor achieves the transformation from ModBus-RTU protocol to CAN bus protocol

CN1EG/10 Ethernet adaptor make ModBus protocol transmit data between the serial chain circuit and the Ethernet TCP/IP network.

CN1DP-MD、CN1DP-MP can only support single equipment communication, CN1EG/10、CN1DP-MC can support 32 equipment's communication at most.



- 短消息通知模块
short message alarm module



FDM3短消息通知模块采用标准RS485通信方式直接连接一台或多至16台可通信断路器，当断路器发生预先设置的事件时，通过GSM网络发送短消息到一部或多至10部手机提示用户及时处置，预设的事件可以是各种故障脱扣和电力参数异常报警。用户可通过我公司提供的计算机配置软件对短消息通知模块进行配置，包括通信参数、手机号码、设备名称、报警类型等，运行时无需计算机。

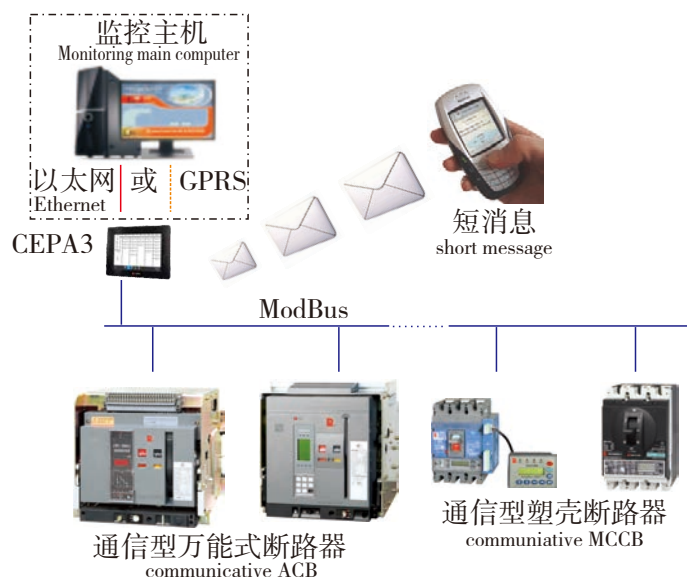
FDM3 short message informing module adopts the standard RS485 communication method to connect one or at most 16 communicative circuit breaker directly. When the circuit breaker encounter an incident previously set, the module sends short message to one or at most ten mobile phones through GSM network to cue the users to handle in time. The previously set incident can be all kinds of failure release and electric parameter abnormal alarm. The users can configure the short message informing module with the computer configuration software offered by our company, including communication parameter, mobile phone number, equipment name, alarm type and so on. When working, no need of computer.

- 智能配电一体机
intelligent power distribution monitor



CEPA3智能配电一体机是我公司专门为设备数量不多的用户研发的高性价比监控解决方案，也同样适用于大型分布式配电监控系统中。

CEPA3 intelligent power distribution monitor is a high cost-effective monitor solution specially developed for users have less devices, it also suit for large-scale power distribution monitor



CEPA3是软硬件一体的产品，集监控主机、监控软件、数据采集器和Modbus TCP网关为一体，用户只需将我公司的智能化元器件与CEPA3相连接，然后经过简单的设置即可投入运行，实现“遥信、遥测、遥调、遥控”功能，用户无需编程也无需另外购买及安装软件。

CEPA3智能配电一体机与我公司智能通信型产品通过RS-485总线连接，最多支持128台设备，支持我公司大部分智能通信型产品。CEPA3具有7寸、10寸彩色液晶触摸屏，无按键设计，图形化操作界面，简洁明了，是一种低成本高效率的配电监控方案。

CEPA3 is a software and hardware integration product which integrated master computer monitoring、software monitoring、data collecting and Modbus TCP into one. User only need to connect our intelligent components to CEPA3, then it can be put into operation and it can provide "tele-comunication、tele-detection、tele-adjustment and tele-control" after some simple set-up.

There is no need for user to program or buy additional software.

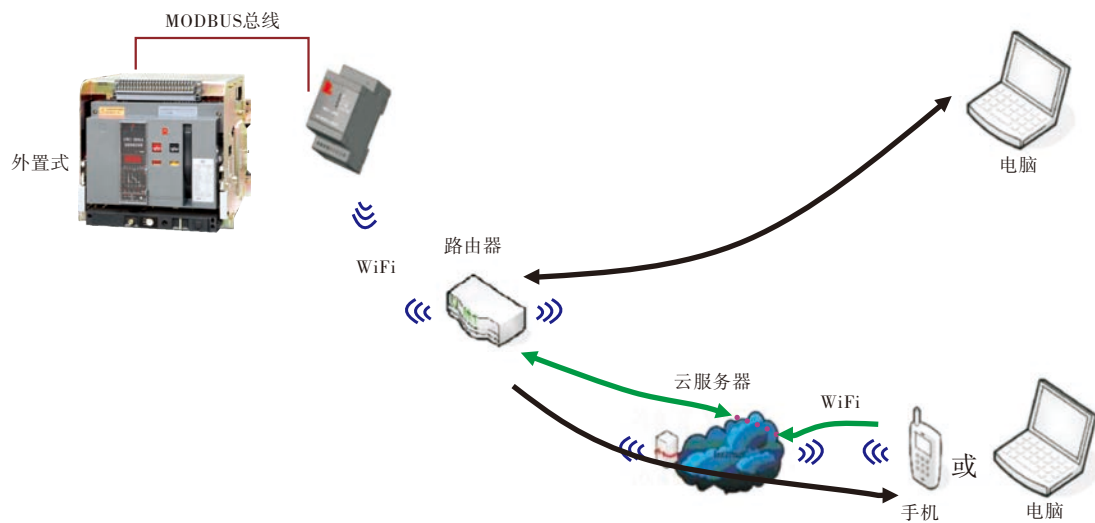
CEPA3 intelligent power distribution monitor can connect to our intelligent communication products via RS-485 bus, it supports most of our intelligent communication products, maximum capacity can be 128. CEPA3 has 7inch or 10inch color liquid touch screen, no button design and graphic operation interface make operation simpler, it is also a low-cost and high-efficiency power distribution solution.



● WiFi通信模块 communicative module

FWF1 WiFi通信模块通过Modbus总线下连通信型断路器，通过WiFi无线信号上连路由器组建无线局域网模式或连接至互联网组建云服务模式。用户可通过WiFi无线方式远程监测断路器运行状态和参数，并可在局域网模式下实现遥测、遥信、遥调、遥控的四遥功能，在云模式下实现遥测、遥信功能。

FWF1 WiFi communicative module are connected down communicative breaker by modbus bus, and are connected upper router by WiFi wireless signal to build wireless local area network or cloud services mode. user remotely monitor breaker's state and parameter by WiFi wireless mode. and achieve tele-communication, tele-detection, tele-adjustment and tele-control at local area network or achieve tele-communication, tele-detection.





● 远程智能I/O模块



CI1系列远程智能I/O模块是一种简洁实用可靠的可通信监控模块，通过标准RS485接口、ModBus-RTU协议可实现系统的遥信、遥控及遥测功能。用户使用非通信型断路器时，可以通过该模块实现对相应配电回路的监测。用户能远程监测该回路电流、断路器合分闸状态、故障状态等重要的信息。

CI1-SCM423具有4路共端开关量输入、2路继电器输出、3路5A电流输入。用户通过它并且配合断路器的输入输出及线路中的标准电流互感器，能知道馈电线路的3相电流和4路开关量（如：开关合分闸状态，故障状态等）。

CI1-S12具有12路共端开关量输入。用户通过它可以了解到最多12台断路器的合分闸状态，或者6台断路器的合分闸状态、故障状态。

CI1-C8具有4组8路继电器输出，可以控制4台断路器的合分闸。

CI1-SC64具有6路开关量输入和4路继电器输出，可以在控制断路器的同时，对其重要状态进行监测。

CI1 series remote intelligent I/O module is a convenient, practical and reliable communication monitoring module. It can achieve the system's telecommunication, tele-control and tele-detection function through standard RS485 interface, ModBus-RTU protocol. When the users use the uncommunication circuit breaker, the monitoring of respective distributing circuit can be achieved by the module. The users can monitor the current of the circuit, the switching -on or -off state, failure state and other important information remotely.

CI1-SCM423 has four-circuit co-terminal switching times output, two-circuit 5A current input. The users can be informed of the feeder's three-phase current and four-circuit switching times (for example: switching -on and -off state, failure state and so on) through CI1-SM423 and with the help of circuit breaker's input, output and standard current mutual inductor in the circuit.

CI-S12 has twelve-circuit co-terminal switching times input. The users can know the switching -on or -off state of at most twelve circuit breakers or six circuit breakers' switching -on or -off state, failure state by it.

CI1-C8 has four groups of eight-circuit relay output and it can control the switching -on or -off of four circuit breakers.

CI1-SC64 has six-circuit switching times input and four relay output. It not only controls the circuit breaker, but also monitors circuit breaker's state at the same time.



温度监测可采用二种方式：

①FWD1温度上传模块+FRG热传感器

②FWX1无线温度测量模块

The temperature monitor can be acheived by two modes:

a.FWD1 temperature upload module + FRG heat sensor

b.FWX1 wireless temperature measuring module

● FWD1温度上传模块

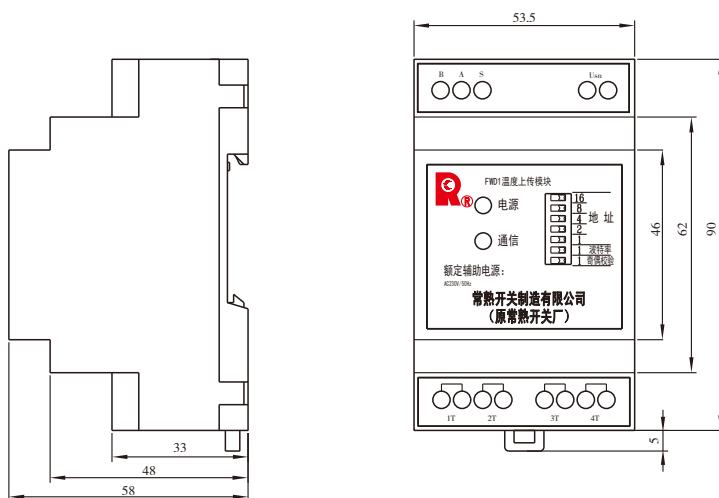
F W D 1温度上传模块采用FRG热传感器直接安装在连接点位置在线检测温度，最多监测4路连接位置温度(热传感器连接至上传模块的输入端子分别为1T、2T、3T、4T)。采用Modbus-RTU协议，通过RS485接口将温度信息上传到监控主机，实现温度的网络监测。

● FWD1 temperature upload module

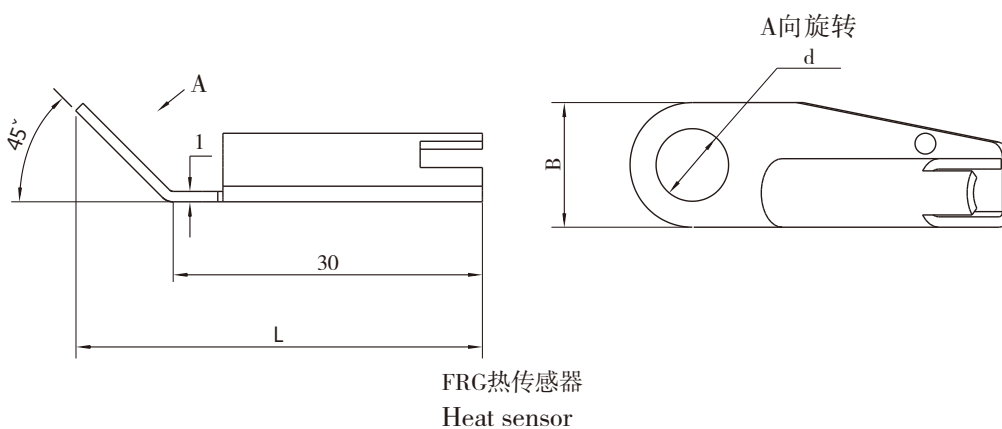
FWD1 temperature upload module's FRG thermal sensor is installed directly at connecting position to monitor the temperature online, it can monitor up to 4 connecting positions(the input terminal which connect to upload module of thermal sensor are 1T、2T、3T、4T respectively). Modbus-RTU protocol used it uploads temperature information to computer by RS485 interface and network monitoring is acheived.

温度上传模块参数
temperature upload module parameters

测温范围 temperature detection range	0~150℃
精度 precision	± 5℃
热时间常数 precision	≤7s
传感器绝缘耐压 sensor insulation withstand voltage	AC3500V/1min
测温点数 temperature detection points	最多4路 4 points at most
工作电源 operatiing current	AC230V，范围range195~253V
输出触头容量 output contace capacity	3A/AC250V（AC-15），3A/DC24V（DC-13）
工作温度 operating temperature	- 20℃~+70℃



● FRG热传感器
FRG heat sensor



FRG热传感器尺寸
heat sensor dimensions

热传感器型号 heat sensor type	B (mm)	L (mm)	d (mm)
FRG-7	12	40	φ 7
FRG-9	14	41	φ 9
FRG-11	16	42	φ 11
FRG-13	18	44	φ 13
FRG-17	22	47	φ 17



● FWX1无线温度测量模块

FWX1无线温度测量模块由FWX1-C无线温度传感器和FWX1-J接收显示单元组成，传感器用于测量主回路温度并以无线通信方式发送至接收显示单元，接收显示单元显示接收到的温度实测值并可通过RS485通信接口上传至监控主机，同时当接收显示单元接收到的温度实测值大于整定值时，输出报警接点信号。

FWX1 wireless temperature measuring module

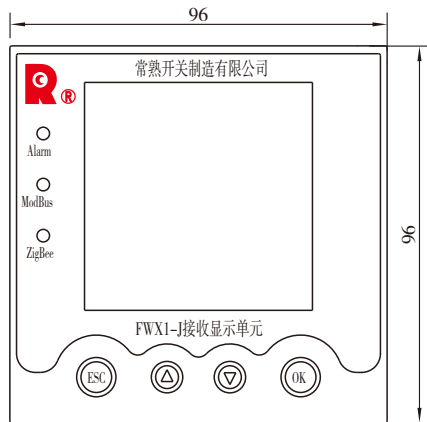
FWX1 wireless temperature measuring module is made up of FWX1-C wireless temperature sensor and FWX1-J receiving and display unit. The sensor measures main loop circuit temperature and sends information to receiving and display unit by wireless communication. The receiving and display unit displays receiving temperature measuring value and uploads to computer by RS485 communicative interface. And receiving and display unit outputs alarm signal when measuring temperature value received is more than value set .

无线温度测量模块参数
wireless temperature measuring module parameters

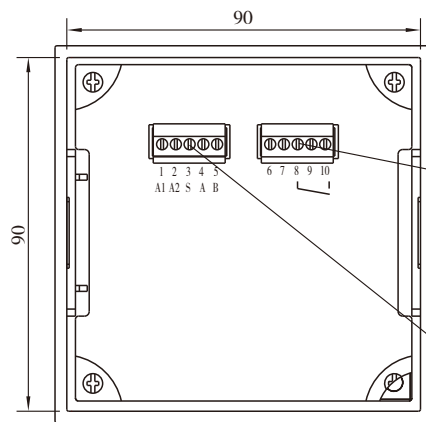
无线温度传感器 wireless temperature sensor	温度测量范围 temperature measuring range		0℃ ~ 130℃，在130℃ ~ 150℃范围内，传感器能稳定运行30min。 At 130℃ ~ 150℃ range, the sensor can service 30min.
	精度 precision		± 4℃
	分辨率 resolution		0.1℃
	温度测量周期 temperature measuring cycle		60s
	供电方式 supply mode		自供电，启动电流100A，启动时间≤10min self-supply, starting current 100A, starting time ≤10min
	通信方式 communicative mode		Zigbee, 2.4GHz
	工作温度 operating temperature		-25℃ ~ +70℃，被测点温度 measured point temperature ≤150℃
接收显示单元 receiving and display unit	温度报警整定值 temperature alarm setting values		90℃ ~ 130℃，步长 step 1℃
	报警复位温度 alarm reset temperature		(报警整定值-4)℃ alarm setting value
	可连接传感器数 connecting sensor number		20
	输出接点容量 output contact capacity		1NO, AC-15:5A/250VAC; DC-13:5A/30VDC
	工作电源 operating supply		DC24V ± 10%
	通信方式 communicative mode	与传感器 with sensor	Zigbee, 2.4GHz
		与上位机 with computer	Rs485, Modbus RTU
	功耗 power loss		≤5W
	工作温度 operating temperature		-10℃ ~ +60℃



温度模块 TEMPERATURE MODULE



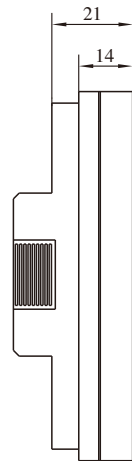
正面
Front view



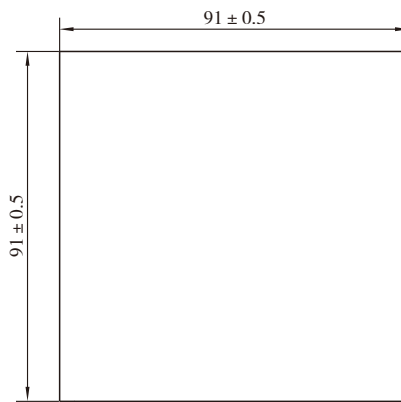
背面
Back view

- 6:空 void
- 7:空 void
- 8:报警输出13 alarm output 13
- 9:空 void
- 10:报警输出14 alarm output 14

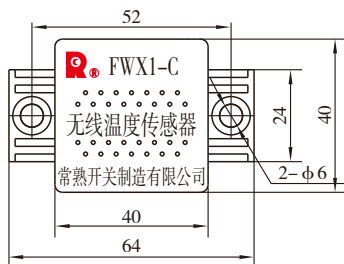
- 1:DC24V+
- 2:DC24V-
- 3:屏蔽地(S) shielded ground
- 4:接收/发送数据(A) receive/send data(A)
- 5:接收/发送数据(B) receive/send data(B)



左视
left view



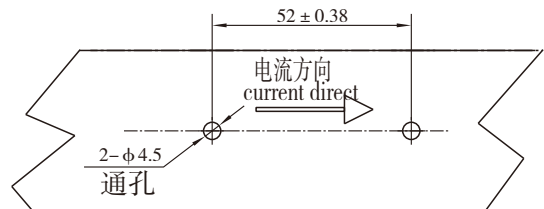
参考开孔尺寸
Reference cutout dimensions



正面
Front view



侧面
Side view



母排参考开孔尺寸 (使用配套螺钉)
Reference cutout dimensions of busbar
(using matching screws)

注：传感器需按图示方向安装。
Note: sensor must be mounted by diagram form.



断路器订货规范

断路器订货规范

用户单位			订货台数		订货日期	
型号	CW1-					
用途	☐ 陆用 ☐ 湿热带型 (TH) ☐ 船用型 ☐ 1E级			注: 船用型、1E级仅供CW1-2000、3200断路器, 并且1E级断路器智能控制器仅为M型		
极数	☐ 三极 ☐ 四极					
额定电压	☐ AC 400V ☐ AC 690V					
额定电流	In= A			N极额定电流In ☐ 50%In ☐ 100%In		
连接	固定式 ☐ 水平 (后置) ☐ 垂直 (前置) ☐ 垂直 (后置)			注: 垂直 (前置) 仅供CW1-2000断路器、垂直 (后置) 仅供CW1-2000、2000C、3200C断路器		
	抽屉式 ☐ 水平 (后置) ☐ 垂直 (前置) ☐ 垂直 (后置)					
智能控制器	类型选择	☐ L型 (电子型)	☐ M型 (标准型)	☐ MY型 (液晶显示标准型)	☐ H型 (通信型)	☐ HY型 (液晶显示通信型)
	基本功能	过载长延时保护 I ₁ t ₁		短路短延时保护 I ₂ t ₂		短路瞬时保护 I ₃
		试验功能		报警及故障区段		热模拟功能
	选择功能	接地故障保护 I ₄ t ₄		电压数字显示功能		
		负载监控功能		☐ 方式一 ☐ 方式二		注: 负载监控和电流不平衡/断相两选一
智能控制器电压	☐ AC230V ☐ AC400V		☐ DC220V ☐ DC110V			
必备附件	FFT分励脱扣器	☐ AC230V ☐ AC400V		☐ DC220V ☐ DC110V		
	FHD合闸电磁铁	☐ AC230V ☐ AC400V		☐ DC220V ☐ DC110V		
	FDC电动操作机构	☐ AC230V ☐ AC400V		☐ DC220V ☐ DC110V		
	FFC辅助开关	标准型式 ☐ 4组转换触头 特殊型式 ☐ 4常开4常闭 ☐ 6常开2常闭 ☐ 2常开6常闭 ☐ 3常开3常闭				
选择附件	☐ FQT欠电压脱扣器	☐ AC230V ☐ AC400V		光伏专用型 ☐ AC220V ☐ AC380V		
		☐ 欠电压瞬时脱扣器		☐ 欠电压瞬时脱扣器		
		☐ 欠电压延时脱扣器 ☐ 0.5s ☐ 1s ☐ 2s ☐ 3s		☐ 欠电压0~10s延时脱扣器 (出厂默认值3s)		
	☐ FFS分闸锁定装置	☐ 一锁一钥匙 ☐ 二锁一钥匙 ☐ 三锁二钥匙				
	☐ FLS机械联锁	两台断路器 ☐ 钢缆联锁 ☐ 联杆联锁				
		三台断路器 ☐ 钢缆联锁连锁方式三 ☐ 联杆联锁方式一 ☐ 联杆联锁方式二 ☐ 联杆联锁方式三				
	☐ FZZ两路电源自动电源转换系统	电子型自动转换控制器 ☐ R型 ☐ S型 ☐ F型 智能型自动转换控制器 ☐ ZR型 ☐ ZS型 ☐ ZF型 智能可通信自动转换控制器 ☐ ZTR型 ☐ ZTS型 ☐ ZTF型				
	☐ FLZ两进线一母联自动电源转换系统	智能型自动转换控制器 ☐ WTT3型 ☐ 通信功能 智能型带并联转换自动转换控制器 ☐ WTB3型				
	☐ FLZ三电源自动电源转换系统	智能型自动转换控制器 ☐ WTT5 ☐ 通信功能				
	☐ 外接中性线N 电流互感器	☐ FDH-80b ☐ FDH-80 ☐ FDH-120 ☐ FDH-260				
	☐ FWZ抽屉座位置电气指示装置					
	☐ FDY/WT直流电源模块	☐ DC220V ☐ DC110V				
	☐ FAN按钮锁定装置	☐ FJS计数器 ☐ FXG相间隔板				

注1: 标准配置为智能控制器M型, 四组转换触头及水平后置。
注2: 工作电压大于AC400V需电压显示功能时, 请配接配置的电压转换模块, 并准确按400V侧输出接至相应接线图的端子上。
注3: 可提供CW1系列低温至-40℃断路器。
注4: CW1-4000、5000用于AC690V IT配电系统时, 请与本公司联系。
注5: 当分励脱扣器、合闸电磁铁电压为DC220V或DC110V, 辅助开关标配三开三闭, 其余型式按下页订货。
注6: 选择FLZ自动电源转换系统时断路器标配FAN按钮锁定装置
注7: 选择FZZ、FLZ自动电源转换系统时, 智能控制器、分励脱扣器、合闸电磁铁、电动操作机构电压均为AC230V。



下列内容为均可供货的项目，需要时请在 内填上数字, ☐ 打√

母线连接方式		固定式 ☐ 上水平下垂直（后置） ☐ 下水平上垂直（后置） ☐ 上水平下垂直（前置） ☐ 下水平上垂直（前置）	注：仅供Inm=2000A的断路器， 但CW1-2000C仅供上水平下垂直（后置）及下水平上垂直（后置）
		抽屉式 ☐ 上水平下垂直（后置） ☐ 下水平上垂直（后置） ☐ 上水平下垂直（前置） ☐ 下水平上垂直（前置）	
FFC辅助开关	交流工作电压	☐ 3常开5常闭 ☐ 5常开3常闭 ☐ 5常开5常闭 ☐ 6常开6常闭	
	直流工作电压	☐ 2常开4常闭 ☐ 4常开2常闭 ☐ 4组转换触头 ☐ 4常开4常闭 ☐ 3常开5常闭 ☐ 5常开3常闭 ☐ 5常开5常闭 ☐ 2常开6常闭 ☐ 6常开2常闭 ☐ 6常开6常闭	
FQT欠电压脱扣器		☐ AC230V ☐ AC400V	
		☐ 欠电压延时脱扣器 s 在4s~9s内选择并填上数值	
FFS分闸锁定装置		一台断路器 ☐ 二锁（二相同锁） ☐ 二锁（二不同锁）	
注1：当断路器选择负载监控功能或选择H型智能控制器时，不能选择5常开5常闭及6常开6常闭型式辅助开关； 注2：对智能控制器、分励脱扣器、合闸电磁铁和电动操作机构的控制电源电压为AC110V、200V等规格等级要求，请咨询本公司。			



ORDER FORM OF BREAKER

Order Form Of Breaker

(Please filled figures in
or sign✓ in ☐)

Name		Order Amount		Date		
Type	CW1-					
Use	☐ On land ☐ Tropical (TH) ☐ On ship ☐ Class 1E Note:for the breakers used on ship and class 1E, condition, the frame current Inm only 2000A and 3200A.					
Pole Quality	☐ three-poles ☐ four-poles					
Rated Voltage	☐ AC 400V ☐ AC 690V					
Rated current	In= A Rated current of N Pole (In) ☐ 50%In ☐ 100%In					
Connection Type	Fixed ☐ Horizontal (back mounted) ☐ Vertical (front mounted) ☐ Vertical (back mounted)				Note:Only for the breaker with Inm 2000A, connection type are vertical(front mounted) and vertical (back mounted).	
	Draw-out ☐ Horizontal (back mounted) ☐ Vertical (front mounted) ☐ Vertical (back mounted)					
Intelligent Controller	Type choosing	☐ L Type (Electronic Type) ☐ M Type (Typical Type) ☐ MY Type (LCD displayed normal type) ☐ H Type (Communication Type) ☐ HY Type (LCD displayed communicative type)				
	Basic Function	Overload Long-time Delay I ₁ t ₁ Short Circuit Short-time Delay I ₂ t ₂ Short Circuit Instantaneous I ₃ Test Over Load Alarm Thermo-analogue MCR Function				
		Earthed Fault I ₄ t ₄				
	Choosing Function	☐ Digital indication of voltage				
		Load Monitoring ☐ Pattern One ☐ Pattern Two Note:Two selecting one for load monitoring and current unbalance/loss phase Current unbalance/loss phase ☐				
Power supply	☐ AC230V ☐ AC400V ☐ DC220V ☐ DC110V					
Attachments	FFT Shunt Release	☐ AC230V ☐ AC400V ☐ DC220V ☐ DC110V				
	FHD Closing Magnet	☐ AC230V ☐ AC400V ☐ DC220V ☐ DC110V				
	FDC Motor-driven	☐ AC230V ☐ AC400V ☐ DC220V ☐ DC110V				
	FFC Auxiliary Switch	Normal type ☐ Four pairs of change-over contacts Special type ☐ 4 NO4NC ☐ 6NO2NC ☐ 2 NO6NC ☐ 3 NO3NC				
Accessory	☐ FQT Under Voltage Release	☐ AC230V ☐ AC400V				
		☐ Undervoltage Instantaneous Release Special for PV ☐ AC220V ☐ AC380V ☐ Undervoltage Time Delay release ☐ 0.5s ☐ 1s ☐ 2s ☐ 3s ☐ under-voltage instantaneous release ☐ under-voltage 0~10s delay-time release (factory set 3s)				
		☐ FFS OFF locked device ☐ One lock and one key ☐ Tow locks, one key ☐ 3-locks 2-keys				
	☐ FLS Interlock	Two breakers ☐ Cable Interlock ☐ Rod Interlock				
		Three breakers ☐ Cable interlock ☐ Rod interlock, pattern 1 ☐ Rod interlock, pattern 2 ☐ Rod interlock, pattern 3				
	☐ FZZ Automic power supply switch system	Automatic controller ☐ Type R ☐ Type S ☐ Type F				
	☐ FLZ two incoming one couple automatic power supply switch	Intelligent automatic switch controller ☐ WTT3 type ☐ communication Intelligent in parallel automatic switch controller ☐ WTB3 type				
	☐ FLZ three supply automatic power supply switch	Intelligent automatic switch controller ☐ WTT5 type ☐ communication				
	☐ Current transformer connected to N pole externally	☐ FDH-80b ☐ FDH-80 ☐ FDH-120 ☐ FDH-260				
	☐ FWZ Electrical indication mechanism of draw-out socket position					
	☐ FDY/WT DC power supply module	☐ DC220V ☐ DC110V				
	☐ FAN "Button" locking device	☐ FJS Counter ☐ FXG Barrier between phases				

Note1: standard set is M type intelligent controller, four pairs of changover contacts and horizontal back set.

Note2:When there has voltage display function and the input voltage is higher than AC400V,there should have this module.

Note3:CW1 series breaker can be provided temperature down to -40℃.

Note4:When order the IT power distribution system breakers of CW1-4000、5000 used in AC690V,please call us.

Note 5:When shunt release and closing magnet voltage is DC220V or 110V,auxiliary switch is 3NO3NC, othe type is ordered by next page.



ORDER FORM OF BREAKER

Items may be provided under table, please filling figure in or signing ☒ in ☐

Bar connecting type		Fixed	☐ Upper horizontal-down vertical(back) ☐ Upper horizontal-down vertical(front)	☐ Down horizontal-upper vertical(back) ☐ Down horizontal-upper vertical(front)	Note: only for the Inm=2000A breaker
		Draw-out	☐ Upper horizontal-down vertical(back) ☐ Upper horizontal-down vertical(front)	☐ Down horizontal-upper vertical(back) ☐ Down horizontal-upper vertical(front)	
FFC Auxiliary switch	AC-voltage	☐ 3NO5NC ☐ 5NO3NC ☐ 5NO5NC ☐ 6NO6NC			
	DC-voltage	☐ 2NO4NC ☐ 4NO2NC ☐ Four pairs of chang over contacts ☐ 4NO4NC ☐ 3NO5NC ☐ 5NO3NC ☐ 5NO5NC ☐ 2NO6NC ☐ 6NO2NC ☐ 6NO6NC			
FQT Under voltage release		☐ AC230V ☐ AC400V			
		☐ Under voltage time delay release s please filling value in 4s~9s			
FFS OFF locked device		One breaker ☐ Two lockes(two same lockes) ☐ Two lockes(two different lockes)			
Note1: load monitoring and communication functions are not selected for breaker with 5NO5NC or 6NO6NC auxiliary switch. Note2: when order control supply voltage of AC110V or 200V and so on for intelligent controller、shunt release、closing magnet and motor driven mechanism, please call us.					



如用户订货时无特殊要求，智能控制器出厂整定值按如下配置:

The intelligent controller would be configured as follows, if no special demands was put forward when ordering:

过载长延时 Overload long-delay	电流整定值 I_{r1} Current setting I_{r1}	I_n		
	延时时间整定值 t_1 Delay time setting t_1	480s		
短路短延时 Short-circuit short-delay	电流整定值 I_{r2} Current setting I_{r2}	$6I_{r1}$		
	延时时间整定值 t_2 Delay time setting t_2	0.2s		
短路瞬时电流整定值 I_{r3} Short-circuit instantaneous current setting I_{r3}		$15I_n$ (对 $I_n \leq 1000A$)(for $I_n \leq 1000A$) $12I_n$ (对 $I_n = 1250A, 1600A$)(for $I_n = 1250A, 1600A$) $10I_n$ (对 $I_n \geq 2000A$)(for $I_n \geq 2000A$)		
接地故障 Earthed errors	电流整定值 I_{r4} Current setting I_{r4}	CW1-2000C/2000	CW1-3200C/3200 4000	CW1-5000
		0.8 I_n 或1200A (取小者) (choose smaller value)	0.6 I_n 或1600A (取小者) (choose smaller value)	2000A
	延时时间整定值 t_4 Delay time setting t_4	0.4s		
负载监控 Load monitoring	监控电流 I_{LC1} Monitoring current I_{LC1}	I_n		
	监控电流 I_{LC2} Monitoring current I_{LC2}	I_n		
电流不平衡 Current unbalance	不平衡整定值 ε I1 Unbalance value ε I1	60%		
	整定时间 t_5 Setting time t_5	40s		
断相 Loss phase	断相整定值 ε I2 Loss phase setting ε I2	95%		
	整定时间 t_6 Setting time t_6	3s		



通信可选元件订货规范

用户单位		订货日期	
产品型号		订货数	
通信转接器（Ⅱ）			
CN1通信适配器	FTM61		
	CN1DP-MD		
	CN1DP-MP		
	CN1DP-MC		
	CN1EG/10		
FDM3短消息通知模块			
FWF1 WiFi通信模块			
CEPA智能配电一体机	本体		
	可选模块： 短消息扩展模块		
CI1远程智能I/O模块	CI1-SCM423		
	CI1-S12		
	CI1-C8		
	CI1-SC64		

Order Form Of Communication Component

Name		order a date	
product type communicative		order amount	
Communicative chargover derice			
communicative adapter	FTM61		
	CN1DP-MD		
	CN1DP-MP		
	CN1DP-MC		
	CN1EG/10		
short message			
WiFi communicative module			
intelligent power distribution monitor	Main body		
	Selecting module short message extend module		
Remoter intelligent I/O module	CI1-SCM423		
	CI1-S12		
	CI1-C8		
	CI1-SC64		



温度模块订货规范

请在 内填上数字

用户单位		订货日期				
FWD1温度上传模块 +	热传感器	FRG-7	FRG-9	FRG-11	FRG-13	FRG-17
	数量					
FWX1无线温度测量模块	1只 FWX1-J接收显示单元+ FWX1-C无线温度传感器					

注：若用户采用自有ZigBee接收单元与FWX1-C无线温度传感器进行组网，请咨询本公司。

Order Form of temperature module

please fill number in

User		order date				
FWD1 temperature upload module +	Heat sensor	FRG-7	FRG-9	FRG-11	FRG-13	FRG-17
	Number					
FWX1 wireless temperature measuring module	One FWX1-J receiving and display unit+ FWX1-C wireless temperature sensor					

Note: if user use self-ZigBee receiving unit with FWX1-C wireless temperature sensor to network, please call us.

全国一级经销商明细表

北京

北京欣凯通机电有限公司 010-66162644
北京市北方森源电气有限责任公司 010-87581702
众业达电气(北京)有限公司 010-67315343

天津

天津市强强电器科技有限公司 022-83715527
天津众业达电气有限公司 022-86326008

上海

上海企开电器设备有限公司 021-56319844
上海森昊电气有限公司 021-54791857
上海泰耀机电设备有限公司 021-57428230
上海华启电气设备有限公司 021-56319844
上海斐格电气有限公司 021-24205696
上海众业达电器有限公司 021-56988198

重庆

重庆众业达电器有限公司 023-63056952

福建

泉州市恒源电力设备有限公司 0595-22587087
厦门亿合电器有限公司 0592-5223466
众业达电气(厦门)有限公司 0592-5976058
福州众业达电器有限公司 0591-83802051

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
杭州众业达电器有限公司 0571-88260931
乐清市新格电气有限公司 0577-62727313
宁波市江东腾辉电器有限公司 0574-87890910
宁波众业达电器有限公司 0574-87052331
宁波安能电气有限公司 0574-87239079
金华三变电气有限公司 13605798321
众业达电气温州有限公司 0577-88919098

安徽

合肥皖为电气设备安装工程有限责任公司 0551-62884402
合肥环亚机电贸易有限责任公司 0551-62871030
众业达电气安徽有限公司 0551-65670231

江苏

南京扬力电器有限公司 025-84585297
南京兰珀电气工程有限公司 025-85283021
众业达电气南京有限公司 025-58833275
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
苏州苏新机电设备有限公司 0512-67571866
苏州市中信机电设备有限公司 0512-65236366
苏州华夏华通电气有限公司 0512-67702333
常熟普利通电气有限公司 0512-52781789
常熟市中通电力设备有限责任公司 0512-52853511
常熟市润源电气设备销售有限公司 0512-52110269
常熟市创达电气物资有限责任公司 0512-52728292
无锡智帆达商贸有限公司 0510-82736734
无锡众业达电器有限公司 0510-85431468
南通正源电气有限公司 18751322091
扬州易尔法电气有限公司 0514-87895515
连云港市希门自动化电器设备有限公司 0518-85013959
徐州泛得电子有限公司 0516-83861527
海安巨龙工贸有限公司 0513-88839628
淮安康泰电气设备有限公司 0517-89897555
宿迁市常开电气有限公司 0527-88803336

山东

莱芜汇鑫实业有限公司 13563400899
山东亘源电力工程有限公司 0531-86018833
淄博新能机电设备有限公司 0533-2186118
济南久业电气设备有限公司 0531-85869178
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
济南众业达电器有限公司 0531-81216270
青岛众业达电器有限公司 0532-55557512

江西

江西佳创实业有限公司 0791-88317951
九江安力达电气有限公司 0792-7031115
南昌众业达电气有限公司 0791-88205101

广东

广州市友朋电气设备有限公司 020-34527080
广州市众业达电器有限公司 020-81279615
佛山市君鹏机电设备有限公司 0757-83811990
佛山市嘉合贸易有限公司 0757-83397660
东莞市运通泰电气科技有限公司 0769-22028877
深圳市华冠电器销售有限公司 0755-83928099
众业达电气(深圳)有限公司 0755-25874404
众业达电气股份有限公司(含子公司) 0754-88739376
汕头市新兴工业配套材料有限公司 0754-88681888
汕头市众业达机电设备有限公司 0754-88739149

湖南

长沙市康发电器有限公司 0731-84422858
长沙众业达电器有限公司 0731-85453248

湖北

武汉万千新能电气有限公司 027-87312243
武汉圣天科技有限公司 027-82706552
武汉众业达机电设备有限公司 027-87929423
众业达电气襄阳有限公司 0710-3721652

广西

南宁市德控机电设备有限责任公司 0771-3212829
广西众业达电气有限公司 0771-3809503

河北

河北华尔电气有限公司 0311-87227761
石家庄市众业达电气自动化有限公司 0311-89624271
石家庄市晓赛电气设备贸易有限公司 13803115659
唐山众业达电气设备有限公司 0315-5772709

河南

河南中电电器有限公司 0371-66965984
河南百望电气设备有限公司 0371-63329025
郑州众业达电器有限公司 0371-68772833
众业达电气洛阳有限公司 0379-60697679

四川

成都慧永电器成套设备有限公司 028-68003527
成都众业达电器有限责任公司 028-87560470

陕西

陕西新力源电气有限公司 029-88348188
陕西众业达电器有限公司 029-87452381
西安西菱电器机械设备有限公司 029-88320213

云南

昆明惠尔电气有限公司 0871-63835808
昆明众业达自动化设备有限公司 0871-68065589

宁夏

银川同正电气有限公司 0951-6014483

山西

山西三为电控设备成套有限公司 0351-6521630
山西常顺电器销售服务有限公司 0351-7023860
山西众业达电器有限公司 0351-6386456

新疆

众业达新疆电气有限公司 0991-4523128

辽宁

沈阳市新业物资实业公司 024-22734762
众业达电气(沈阳)有限公司 024-88505149
鞍山市耐特机电系统工程公司 0412-5230221
众业达电气(大连)有限公司 0411-86713487

吉林

长春市金蟾经贸有限公司 0431-84788961

黑龙江

哈尔滨北低日月机电设备有限公司 0451-88387734
众业达电气哈尔滨有限公司 0451-83336586

内蒙古

包头市杰德自动化工程有限公司 0472-6180955
内蒙古宇欣机电科技有限公司 0471-6512281

海南

海南华胜电气设备有限公司 0898-66226803

甘肃

甘肃众业达电器有限公司 0931-8406069