



CW 1 系列

智能型万能式断路器

CW1 SERIES INTELLIGENT AIR CIRCUIT BREAKER

- **全智能**
ALL CASE INTELLIGENCE
- **高分断**
HIGH BREAKING CAPACITY
- **零飞弧**
ZERO ARCHING-OVER DISTANCE
- **带隔离**
ISOLATION FUNCTION

2014.04

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



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：80kA ~ 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_{cw} （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FWB1温度报警模块，实现连接点在线超温报警

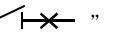


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
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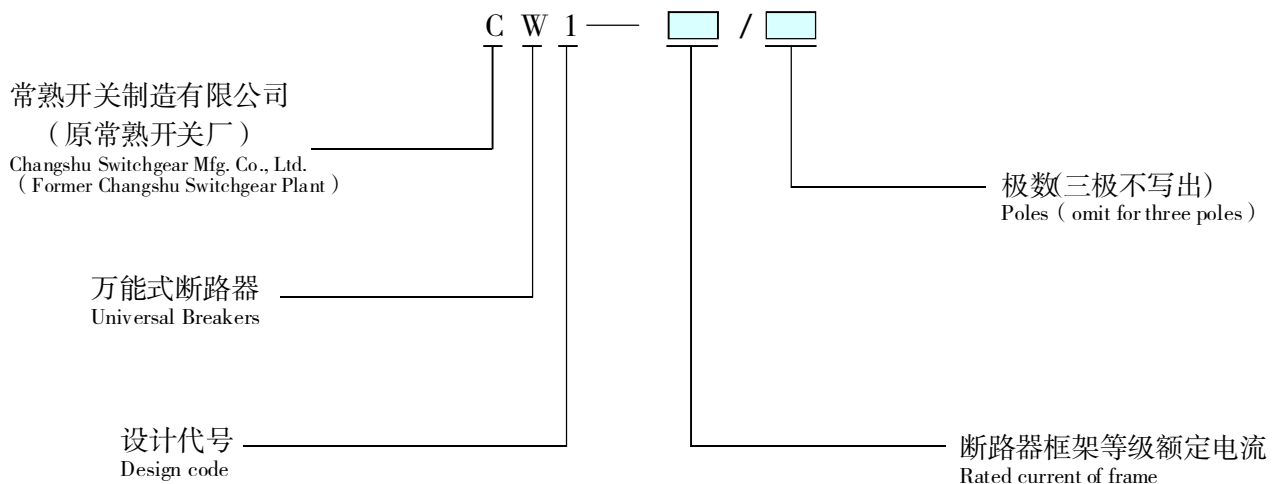
CW1系列智能型万能式断路器用于控制和保护低压配电网络。一般安装在低压配电柜中作主开关起总保护作用。额定电流1000A及以下的断路器，还可作电动机保护用。产品可提供湿热带型（TH型）、船用型和1E级断路器，可提供低温至-40℃断路器，并可提供液晶显示及数码管显示断路器。

- 交流额定电流630A ~ 5000A；
- 短路分断能力80kA ~ 120kA（有效值）；
- 额定工作电压AC50Hz/60Hz，690V及以下（不适用于690V IT系统）；
- 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、GB14048.2-2008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 circuit breaker, with rated current 1000A and below, can also protect motor. 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~5000AAC;
- Short circuit Breaking Capacity 80kA~120kA(effective value);
- Rated working voltage 690V AC50Hz/60Hz or below(ben't suit for 690V IT system);
- 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、GB14048.2-2008;
- 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2Hz~13.2Hz、位移为 $\pm 1\text{mm}$ 及频率为13.2Hz~100Hz、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/T2423.2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）；

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 $-40^{\circ}\text{C}\sim+70^{\circ}\text{C}$ 。

- 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 2Hz~13.2Hz, displacement $\pm 1\text{mm}$ and frequency range 13.2Hz~100Hz, acceleration $\pm 0.7\text{g}$.
- 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.
- Sevice 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");

Elevation over 2000m, the breakers are used by reducing capacity, please seeing " capacity-reducing for high-elevation " .
- Storage condiction: ambient temperature $-40^{\circ}\text{C}\sim+70^{\circ}\text{C}$.

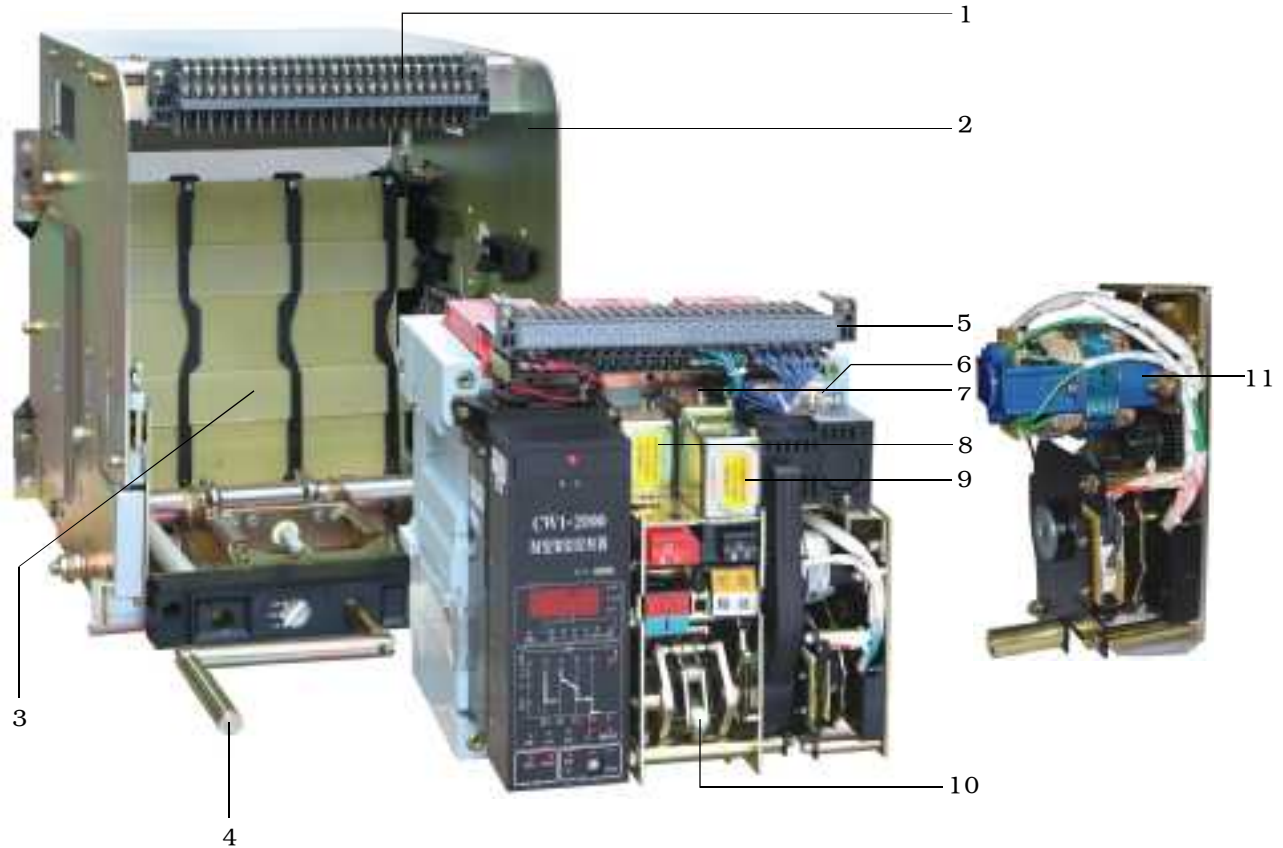


● 断路器正面指示 Front View of the Circuit Breaker



● 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



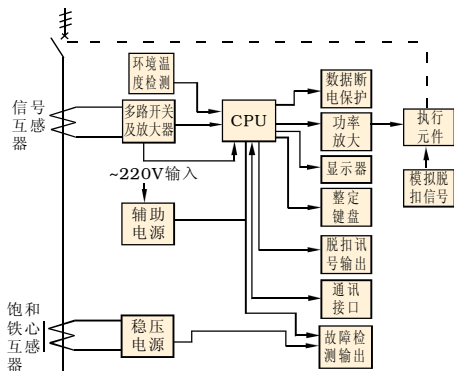


● 结构特点

- 断路器有固定式和抽屉式之分，把固定式断路器本体装入专用的抽屉座就成为抽屉式断路器。断路器本体由触头系统、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；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。
- 操作机构和手动、电动传动机构

机构位于断路器正面。操动机构采用五连杆的自由脱扣机构，并设计成贮能形式。在使用过程中，机构总是处于预贮能位置，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。电动传动机构自成一体，贮能轴与主轴之间通过凹凸形楔口活动联结，装拆方便。
- 智能控制器

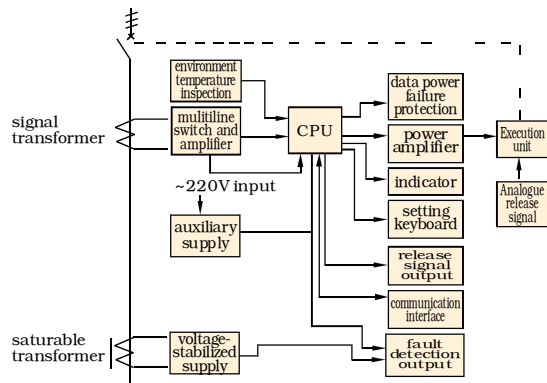
智能控制器的方框图如图



● Structure Feature

- The breakers could be classified two types:fixed type and draw-out type.It would become the draw-out type breaker to put the body of a fixed type breaker into the special draw-out socket.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-extiguish chamber
 - There is a arc-extiguish chamber for each pole,to play the role of seperating 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 strenth and would not to be crashed when breaking big short-circuit current.
 - Operating device and manual、 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



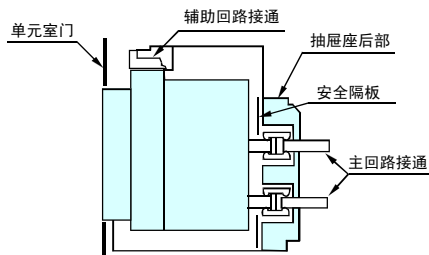


● 抽屉座

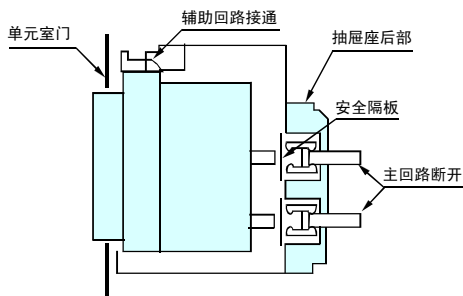
● 抽屉座由带有导轨的左右侧板、底座和横梁等组成，底座上设有推进机构，并装有位置指示，抽屉座的上方装有辅助电路静隔离触头。桥式主回路触头前方设置安全隔板。

● 断路器本体在抽屉座内的运动具有三个“位置”：

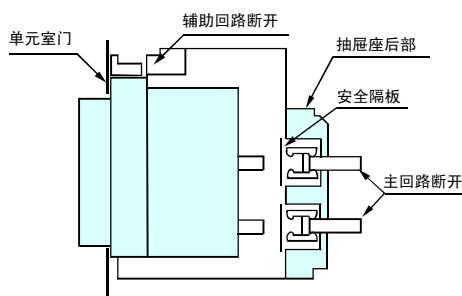
● “连接”位置：主回路和辅助回路均接通，此时隔离板开启；



“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。

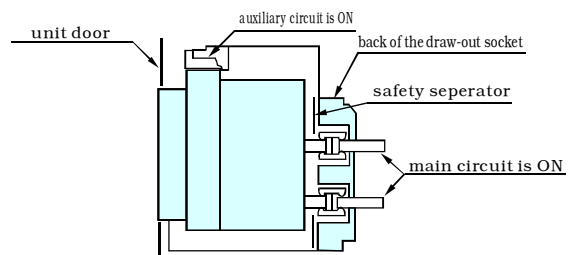


● Draw-out socket

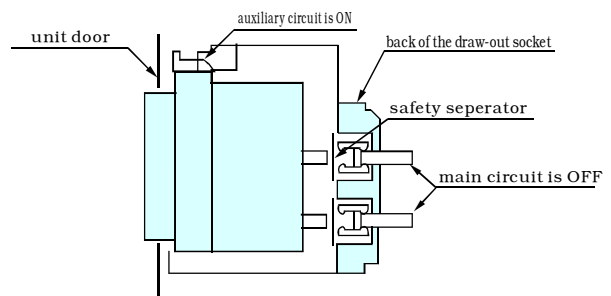
● The draw-out socket is made up of the rightside and leftside plates (with guided way),base and cross member. There are pushing device and position indicator on the base. There are static separated contacts for auxiliary circuit on the top of the base. The safety separator is set on the front of the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

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

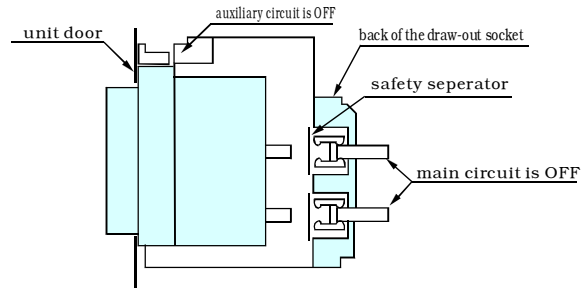
● "link" position: there are all "ON" for main circuit and auxiliary circuit. The seperator is open;



"test" position: The main circuit is "OFF", safety separator 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 separator 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 (电流液晶显字, 按钮调整)
- HY型-液晶显示通信型 (电流液晶显字, 按钮调整并可通信)

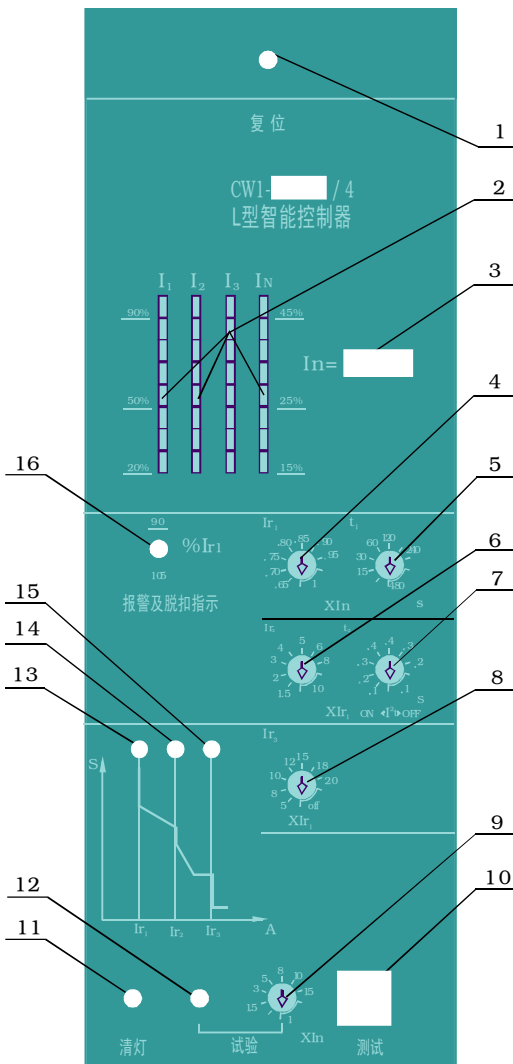
● L型 (电子型)

● 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.)

● Type L (Electronic)



面板说明:

- 故障脱扣复位按钮
- 光柱显示负载率 (%I_{r1})
- 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
- 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(%I_{r1})
- 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
- alarm and release showing

Other function:

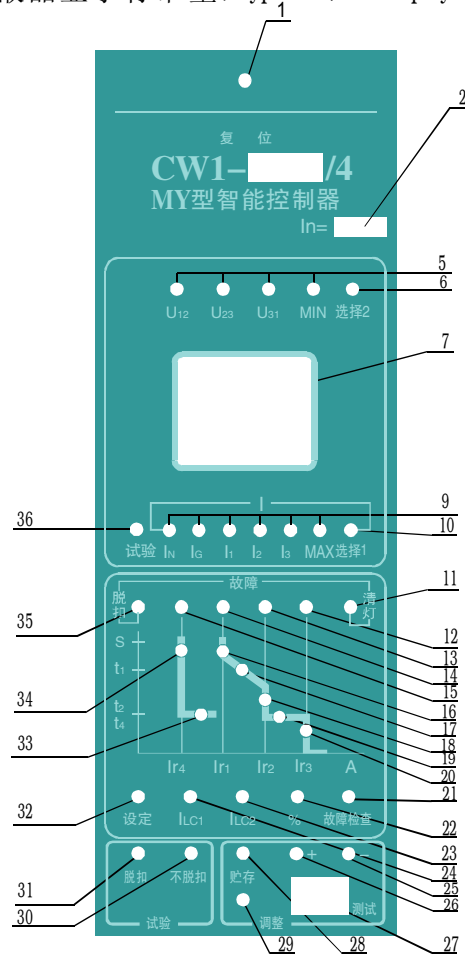
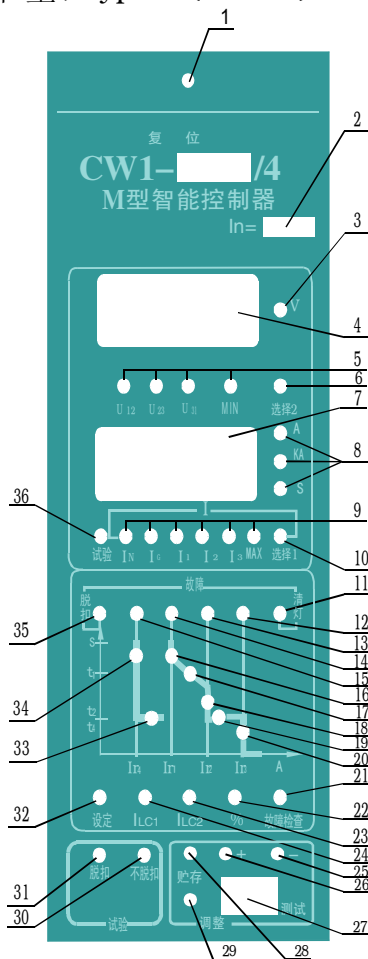
- thermo-memory
- MCR function

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I_N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 "I_N" column square in case of three phase breaker.



- 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:

- 故障脱扣复位按钮
- 断路器额定电流
- 电压单位
- 电压显示屏
- 三相线电压及最小值指示
- 电压选择键
- 电流、时间显示屏 (M型), 电压、电流时间显示屏 (MY型)
- 电流、时间单位
- 三相电流、中性相电流、接地故障电流及最大值指示
- 电流及时间选择键
- “清灯”键
- 瞬动故障指示
- 短路短延时故障指示
- 过载长延时故障指示
- 接地故障指示
- 长延时电流整定指示 (兼报警)
- 长延时动作时间整定指示
- 短延时电流整定指示 (兼报警)
- 短延时动作时间整定指示

- 瞬动电流整定指示 (兼报警)
- 故障检查键
- 触头磨损检查按钮
- 负载监控信号2电流整定 (兼报警)
- 负载监控信号1电流整定 (兼报警)
- 整定值递减
- 整定值递增
- 测试口 (制造厂测试检查用)
- 贮存键
- 贮存指示
- 不脱扣试验按钮
- 脱扣试验按钮
- 各种保护值的设定按钮
- 接地故障动作时间整定指示
- 接地故障电流整定指示 (兼报警)
- 脱扣指示
- 试验指示

其它功能:

- 自诊断功能
- 热模拟功能
- 故障记忆功能
- MCR功能

Panel caption:

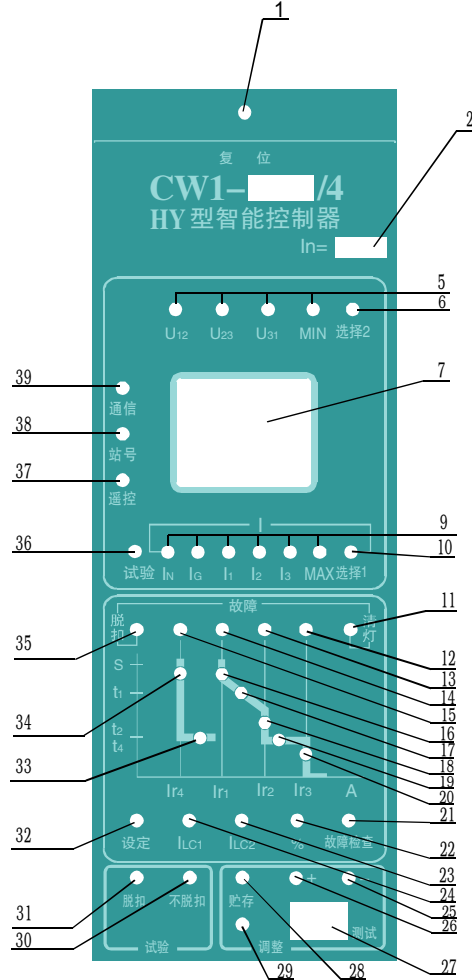
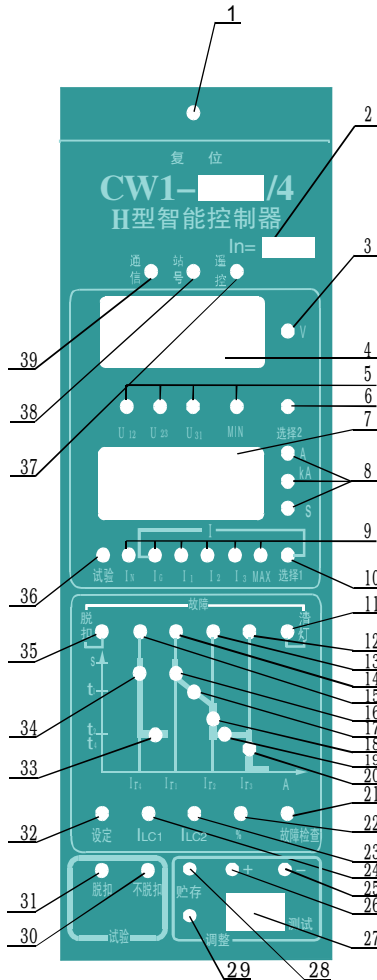
- return button for fault releasing
- rated current of the breaker
- unit of voltage
- voltage indicator
- voltage of each line and the min. value
- key for selecting voltage
- current, time indicator typeM voltage time indicator(type MY)
- unit of current and time
- indication of three phase current,ne-utral phase current,grounding fault -current and the max. value
- key for selecting current
- “clean” key
- fault showing for instantaneous
- fault showing for short-circuit short-delay
- fault showing for over-load long-delay
- fault showing for earthed error
- showing the long-delay currentssetting (alarm simultaneously)
- showing the long-delay actiontime setting
- showing the short-delay currentssetting (alarm simultaneously)
- showing the short-delay actiontime setting
- showing the instantaneouscurrent setting (alarm simultaneously)
- key for inspecting fault
- key for detecting wearing of contacts
- load supervision signal 2(alarm simultaneously)
- load supervision signal 1(alarm simultaneously)
- setting's decrease progressively
- setting's increase progressively
- test terminal (for the purpose of inspection by the manufacturer)
- memory key
- memory indicator
- non-release test key
- release test key
- setting key for various protection value
- indication of the earthed fault action time setting
- indication of the earthed fault current setting (alarm simulta neously)
- release indicating
- test indicating
- Other fuction:
- auto-diagnosis
- themo-memory
- fault-memory
- 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.)



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

- 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 | 21. key for inspecting fault |
| 2. rated current maximum (could be protected) | 22. key for detecting wearing of contacts |
| 3. voltage indicator | 23. loading 2 current setting (alarm simultaneously) |
| 4. unit of voltage indicating | 24. loading 1 current setting (alarm simultaneously) |
| 5. voltage phase and minimum | 25. decrease progressively |
| 6. key for selecting voltage | 26. increase progressively |
| 7. Current、time、number indicator; voltage、current、time indicator(type HY) | 27. test terminal (for the purpose of inspection by the manufacturer) |
| 8. unit of current、time indicating | 28. memory key |
| 9. indicating the maximum of current phase | 29. memory indicator |
| 10. key for selecting current | 30. non-release test key |
| 11. "clean" key | 31. release test key |
| 12. fault showing for instantaneous | 32. setting key for various protection value |
| 13. fault showing for short-circuit short-delay | 33. showing the earthed action time setting |
| 14. fault showing for over-load long-delay | 34. showing the earthed current setting (alarm simultaneously) |
| 15. fault showing for earthed error | 35. release indicating |
| 16. showing the long-delay current setting (alarm simultaneously) | 36. test indicating |
| 17. showing the long-delay action time setting | 37. remote control |
| 18. showing the short-delay current setting (alarm simultaneously) | 38. serial number |
| 19. showing the short-delay action time setting | 39. communication |
| 20. showing the instantaneous current | |

- 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	CW1-2000 ¹⁾		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		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 In (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	80	100	100	120													
	AC690V	50	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	80	80	100													
	AC690V	50	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	176	220	220	264													
	AC690V	105	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	80	80	100													
	AC690V	40	50	65	65													
使用类别 Applicable catelogy	B																	
全分断时间(无附加延时)(ms) Full Disconnection Time (without additional time-delay) (ms)	25~30																	
闭合时间(ms) Closing Time (ms)	最大70 max. 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	6500	3000	1500	500													
	AC690V	3000	1500	750	500													
机械寿命*(次 times) Mechanical durability	免维护 Non-maintainance	15000	10000	10000(3P)/5000(4P)	4000													
	有维护 Maintanance	30000	20000	20000(3P)/10000(4P)	8000													
安装 Installation 	抽屜式 Draw-out	水平联袂 horizontal	3P	前置 front set														
			后置 back set	438	375	451	438	429	492	438	544	492	438	799	492			
		垂直联袂 vertical	3P	前置 front set	494	375	425											
			后置 back set	438	375	446												
		固定式 Fixed	水平联袂 horizontal	3P	前置 front set													
				后置 back set	395	362	351	395	414	371	395	527	424	395	782	424		
	垂直联袂 vertical		3P	前置 front set	395	457	351	395	527	371	395	782	424					
			后置 back set	482	362	325												
	3P	前置 front set	395	362	375													
		后置 back set	482	457	325													
	4P	前置 front set	395	457	375													
		后置 back set	395	457	375													

注: In=630A、800A、1000A断路器具有电动机保护型, 其Ue=400V。

Note: Motor protection type will be available for the breakers whose rated current(In) is 630A,800A or 1000A and rated working voltage (Ue) is 400V.

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

*Note: For GB14048.1-2006, the term "durability" expresses the expectancy of the number of operating cycles which can be performed by the equipment before repair or replacement parts.



断路器功耗及降容系数 POWER CONSUMPTION AND CAPACITY LOWER COEFFICIENT

● 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
CW1-2000	307.2W	452.4W
CW1-3200	550W	877.4W
CW1-4000	1060.8W	1468.8W
CW1-5000	848.8W	1221.8W

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

断路器降容系数 The circuit breaker capacity lower coefficient

环境温度 Environment temperature		+40℃	+45℃	+50℃	+55℃	+60℃
允许持续工作电流 Permission continual working current	2000A	1In	0.95In	0.9In	0.85In	0.8In
	3200A	1In	0.92In	0.86In	0.80In	0.74In
	4000A	1In	0.93In	0.87In	0.81In	0.75In
	5000A	1In	0.94In	0.88In	0.82In	0.76In

注：周围空气温度与允许持续工作电流关系以在各种环境温度条件下，实测断路器进出线端温度达到110℃为基准。超过+60℃的降容系数，请咨询本公司。

Note: Relationship between ambient temperature and permission continual working current (Under each ambient temperature condition, basing on the circuit breaker inlet and outlet's acting temperature reaching 110.capacity lower coefficient of breakers when over +60℃, please call us.



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：

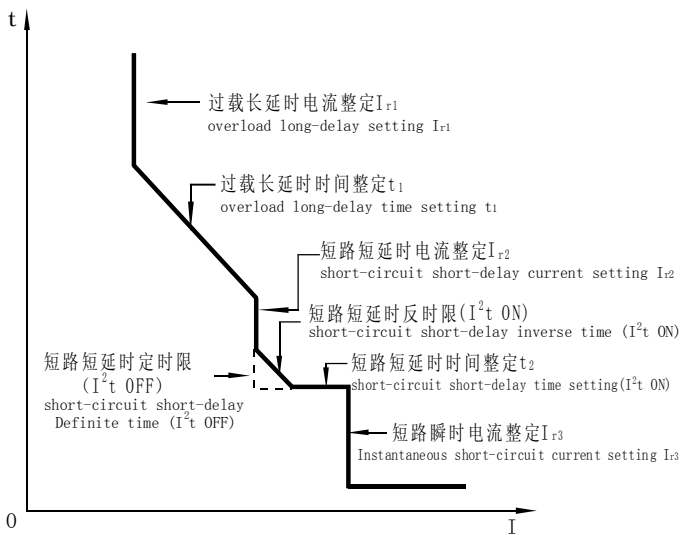
If elevation exceeds work environment 2000m, electric property of circuit breaker can correct according to following table:

海拔 (m) elevation	2000	3000	4000	4500	5000
工频耐压(V) Power-frequency 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	1	0.93	0.88	0.85	0.82



● 过电流保护特性

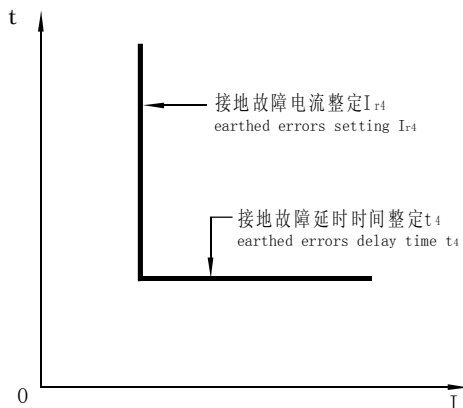
过电流保护由相线过电流保护和中性线过电流保护（四极断路器及三极断路器带外接中性线电流互感器具有中性线过电流保护）组成，相线过电流保护电流、时间参数一般由制造厂按用户订货要求整定（用户自己也可自行整定）；中性线过电流保护电流、时间参数按比例自动跟踪相线整定值，比例数由用户选择，即N极额定电流 I_N 为50% I_n 或100% I_n 两种。



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
Eartheed 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 setted 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 overlaod 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-ciucuit (can be “OFF”) setting current I_{r3} is adjustable.

● 接地故障保护

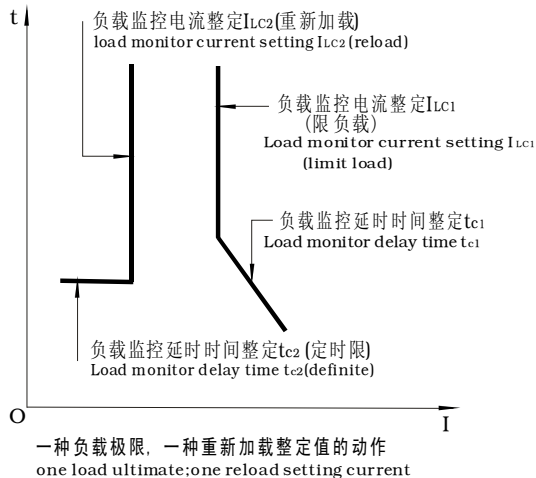
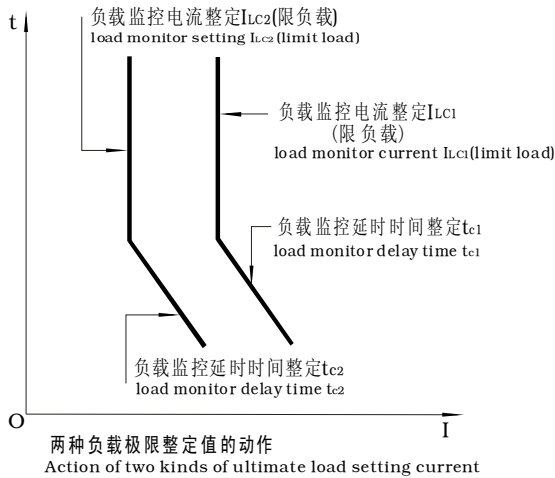
- 接地故障定时限保护, 整定电流 I_{r4} 可调;
- 延时时间 t_4 可调;
- OFF后只报警, 不分开。

● 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” ,ciucuit 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 I_{LC1} 及 I_{LC2} , 一般取 $I_{LC1} \geq I_{LC2}$ 。

● 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 I_{LC1} and I_{LC2} , normally I_{LC1} is larger than I_{LC2} .

- 方式一: 可控制两路下级负载, 当主电路运行电流先后超过 I_{LC1} 、 I_{LC2} 时, 分别延时 t_{c1} 、 t_{c2} 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 I_{LC1} and I_{LC2} , connection signal will be sent out after time duration t_{c1} and t_{c2} 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 I_{LC1} 时, 延时 t_{c1} 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 I_{LC2} 且持续时间 t_{c2} 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 I_{LC1} , connection signal will be sent out after time duration t_{c1} and the loading circuit will be broken off. After the breaking operation, if the main current decreases to the setting value I_{LC2} and connection signal is sent out again from the intelligent controller after time duration t_{c2} , the open loading circuit will be closed (reload). So the power supply of the whole circuit is restored.

- 与 I_{LC1} 、 I_{LC2} 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 I_{LC1} and I_{LC2} 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型	(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 $\pm 15\%$ Allowable error of acting time $\pm 15\%$	电流 Current	动作时间 Acting time						
	$1.05 I_{r1}$	2小时内不动作 2h no acting						
	$1.30 I_{r1}$	$\leq 1h$ 动作 $\leq 1h$ 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		$\leq 30 \text{ min}$ (断电可清除) (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_{r2} 调整范围 Adjusting area of setting current I_{r2}		L型	(1.5~10) I_{r1} 按1.5、2、3、4、5、6、8、10倍 I_{r1} 递变调整 (1.5~10) I_{r1} adjusting successively in 1.5,2,3,4,5,6,8 and 10 times of I_{r1}					
		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 $\pm 10\%$ 动作时间允差 $\pm 15\%$ Allowable error of setting current $\pm 10\%$ Allowable error of acting time $\pm 15\%$	电流 current	动作时间 Acting time						
	$I \geq I_{r2}, I \leq 8I_{r1}$	反时限	Inverse time	$I^2T_2=(8I_{r1})^2t_2$				
	$I \geq I_{r2}, I > 8I_{r1}$ (或 $I \geq I_{r2}, I \leq 8I_{r1}$, 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		$\leq 15 \text{ min}$ (断电可清除) (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} Tolerance of setting current $\pm 15\%$	L型	(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 CW1-2000) 4~80kA (对 CW1-3200、4000) 6~100kA (对 CW1-5000) 按每级0.5kA递变调整 2~50kA (for CW1-2000) 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 CW1-2000) 4~80kA (对 CW1-3200、4000) 6~100kA (对 CW1-5000) 按每级50A递变调整 2~50kA (for CW1-2000) 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_{r4} 调整范围 Adjusting area of setting current I_{r4}	CW1-2000	CW1-3200, 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 or 1600A (choose smaller value)	0.2In~2000A			
按每级10A递变调整 adjusting successively with 10A for each step						
电流允差 $\pm 10\%$ 动作时间允差 $\pm 15\%$ Allowable clearance of setting current $\pm 10\%$ Allowable clearance of acting time $\pm 15\%$	动作时间 Acting time					
	定时限 definite	整定时间 $t_{4(s)}$ setting time $t_{4(s)}$	0.1	0.2	0.3	0.4
		可返回时间(s) returnable time	0.06	0.14	0.23	0.35

- 负载监控动作特性 (M、H、MY、HY型配置, 选项) ● Action Feature of Loading Monitor (Only for M、H、MY and HY type controller, optional)

○ 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 $t_{c2}=60s$

- 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
	MY、HY型 MY、HY type		After tripping by overload long-delay,short-circuit short-delay,instantaneous,short-circuit and earthed fault,corresponding alarm indicating lights will be on.
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
	M、H型 M、H type		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		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
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

断路器在合闸过程中或控制器在通电初始化时，遇到短路短延时故障能立即转为瞬时分闸。

The breaker can change from closed (or being closed) into instantaneous breaking instantly while short-circuit short-delay fault occurs.(In this case the controller is being closed or has just been electrified.)

● 故障记忆功能（M、H、MY、HY型配置） ● Fault memory function (only for M、H、MY、HY type)

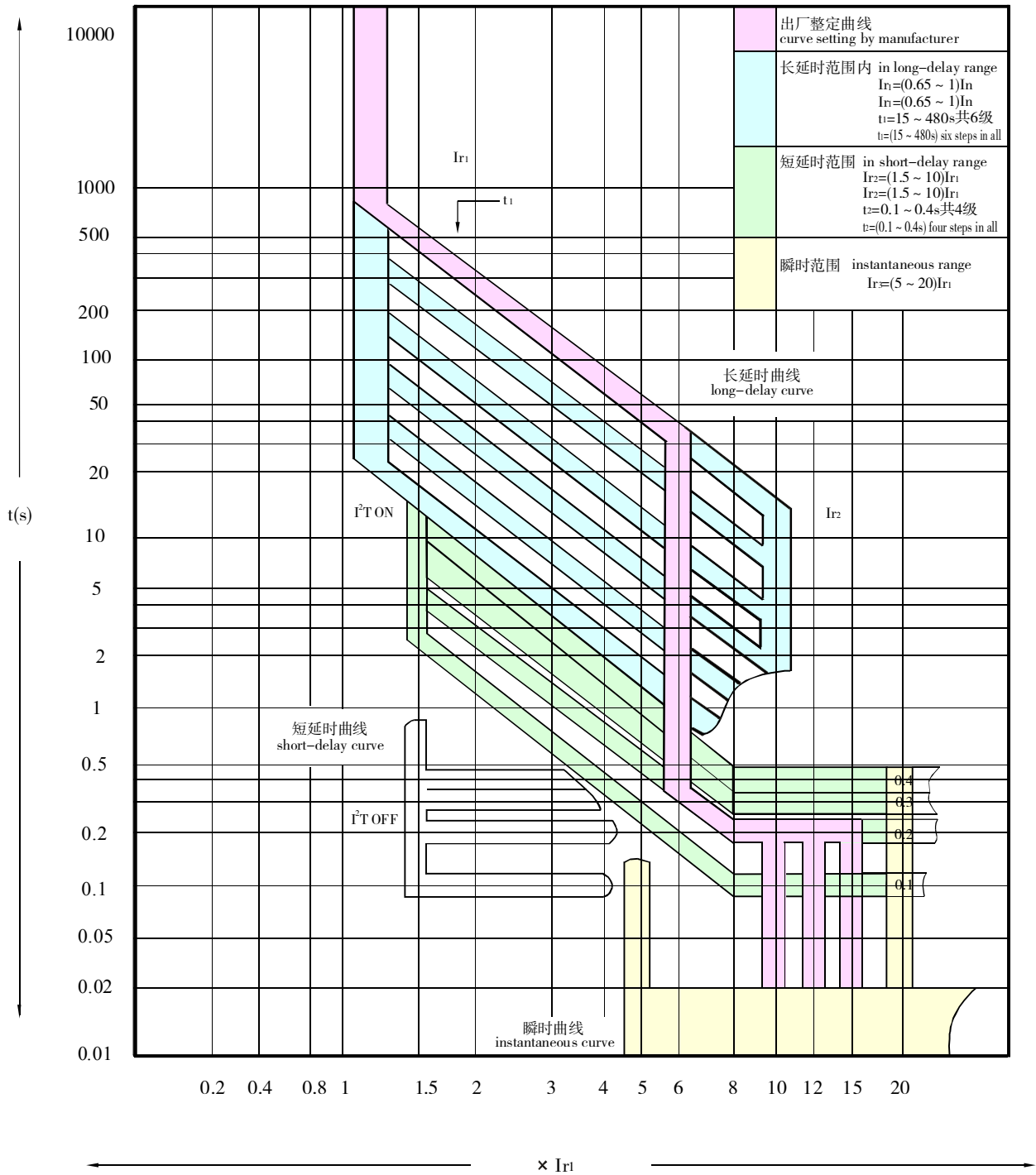
断路器遇故障分断后，智能控制器能显示出故障类别、故障相序及故障电流值、分断动作时间值，并记录最近一次故障的信息。

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.



L型智能控制器时间/电流特性曲线(CW1系列)

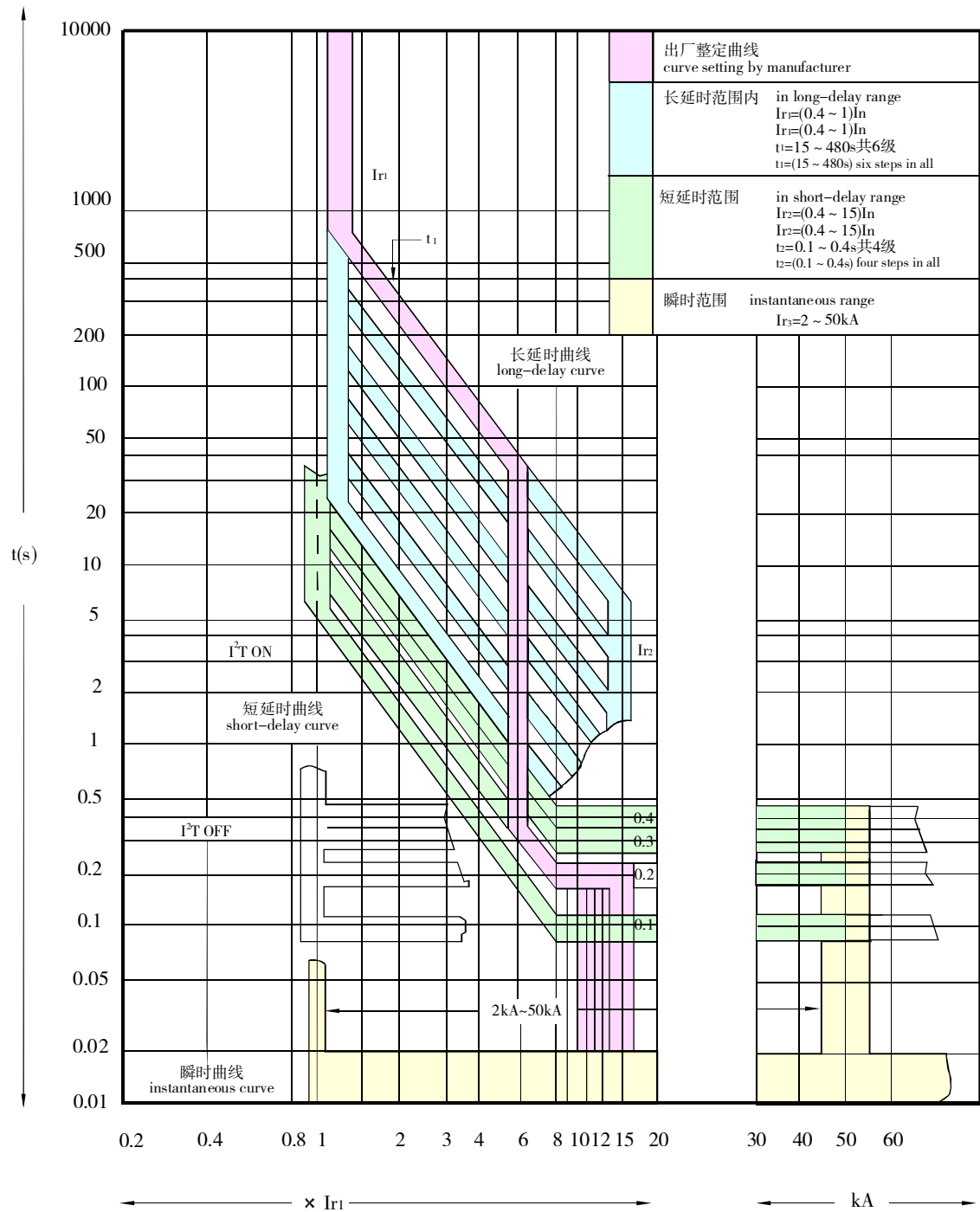
T/I (time/current) curve of type L intelligent controller (CW1 series)





M、H、MY、HY型智能控制器时间/电流特性曲线(CW1-2000)

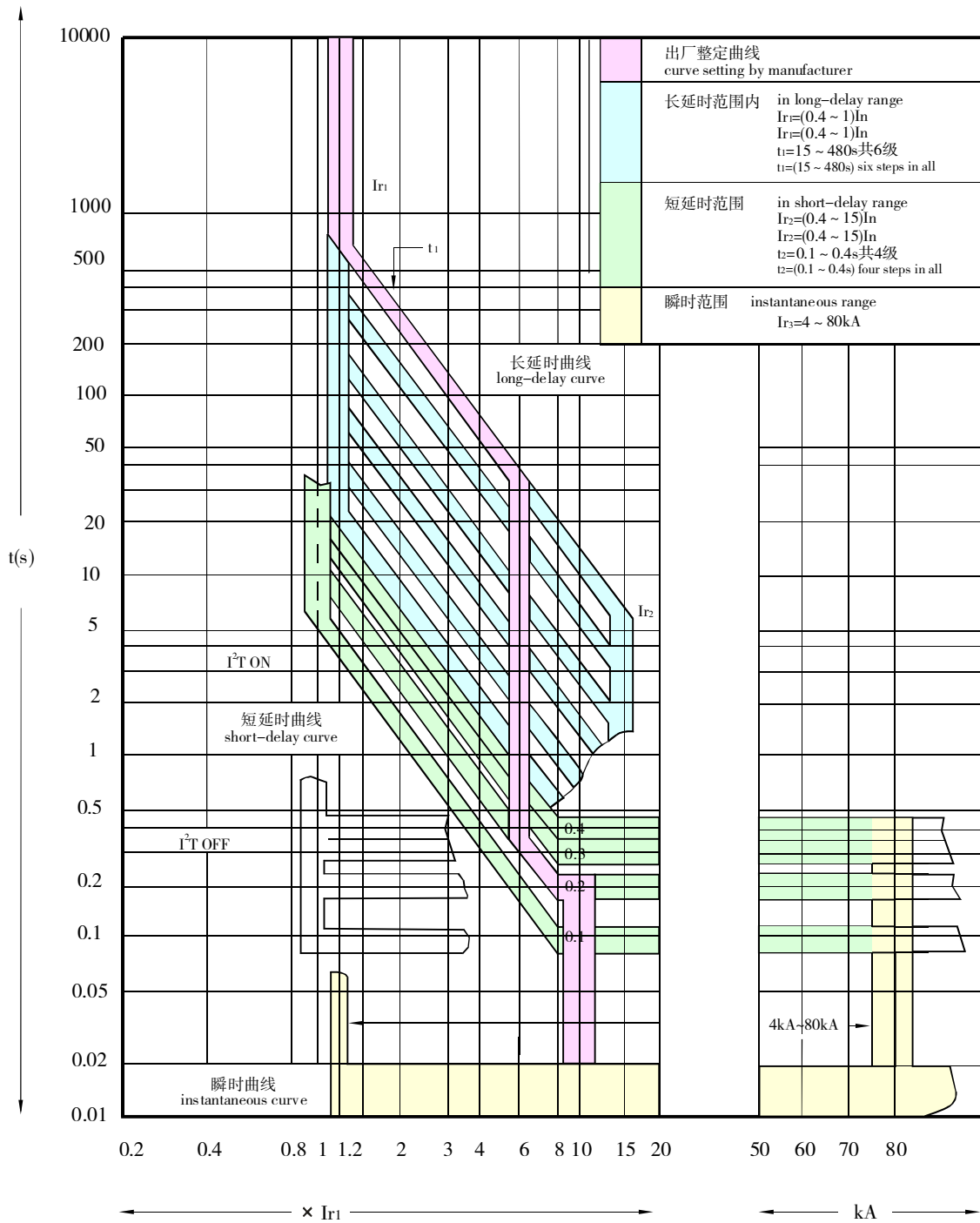
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type (CW1-2000)





M、H、MY、HY型智能控制器时间/电流特性曲线(CW1-3200)

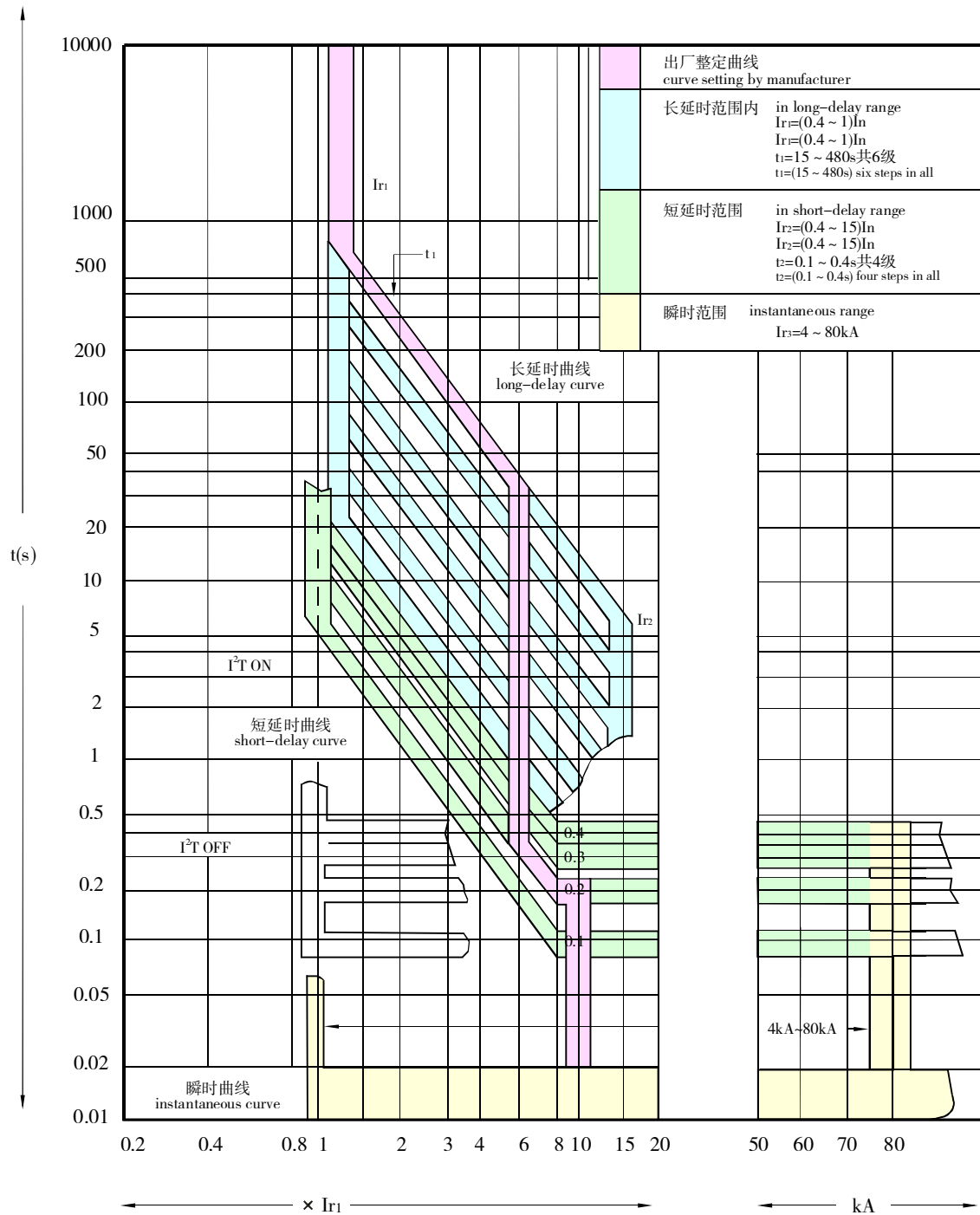
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type (CW1-3200)





M、H、MY、HY型智能控制器时间/电流特性曲线(CW1-4000)

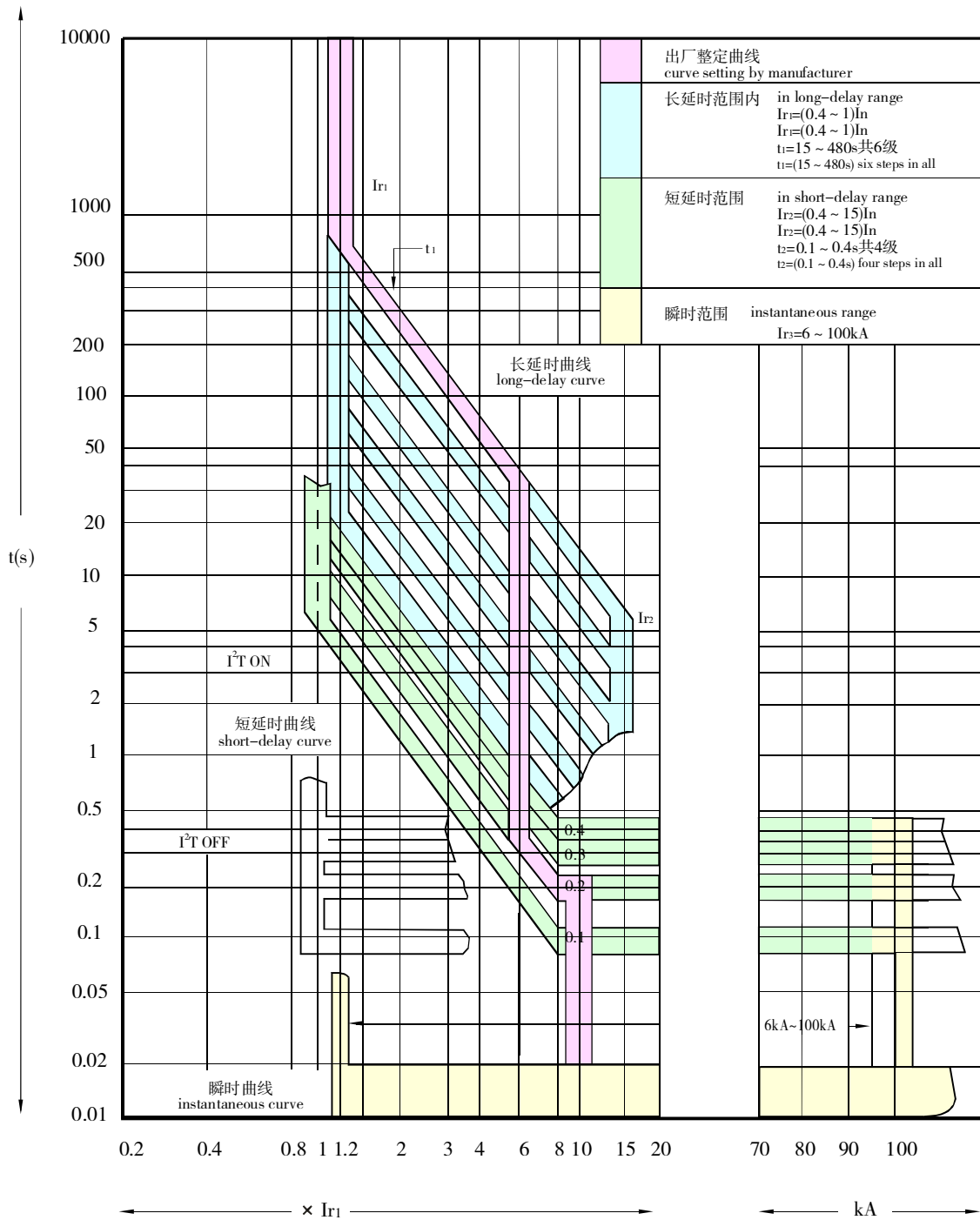
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type (CW1-4000)





M、H、MY、HY型智能控制器时间/电流特性曲线(CW1-5000)

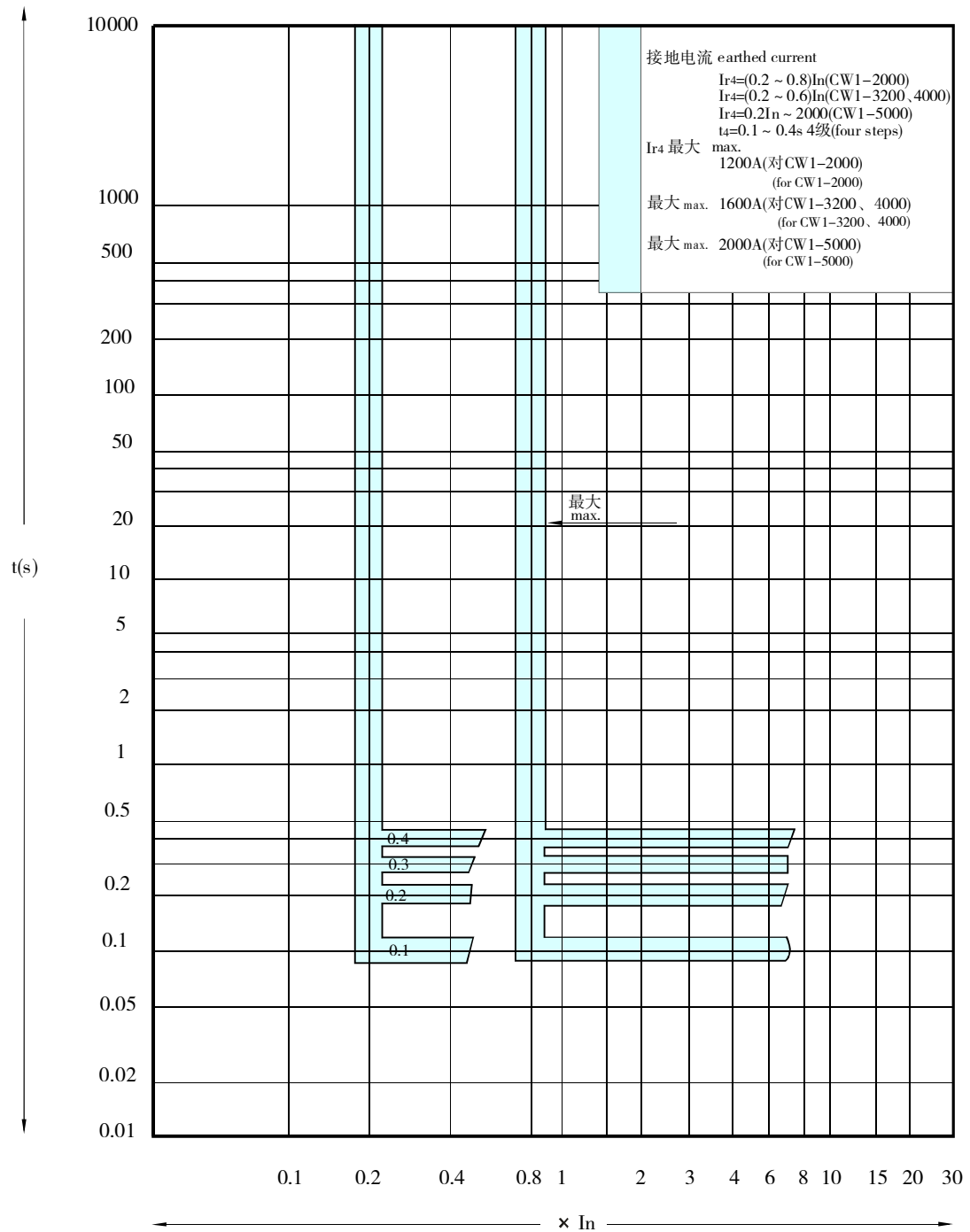
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type (CW1-5000)





M、H、MY、HY型智能控制器接地故障保护时间/电流特性曲线

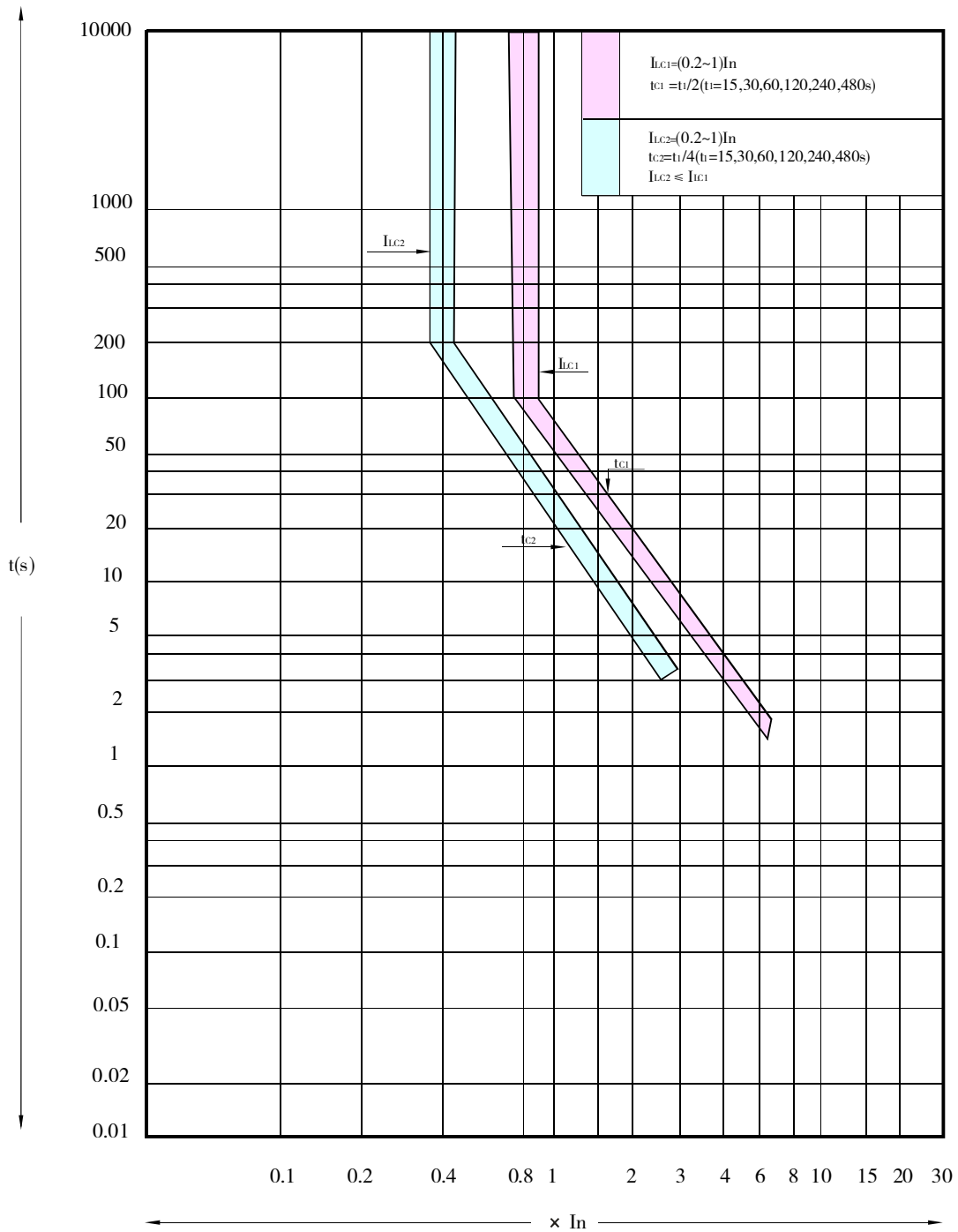
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type errors protection





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

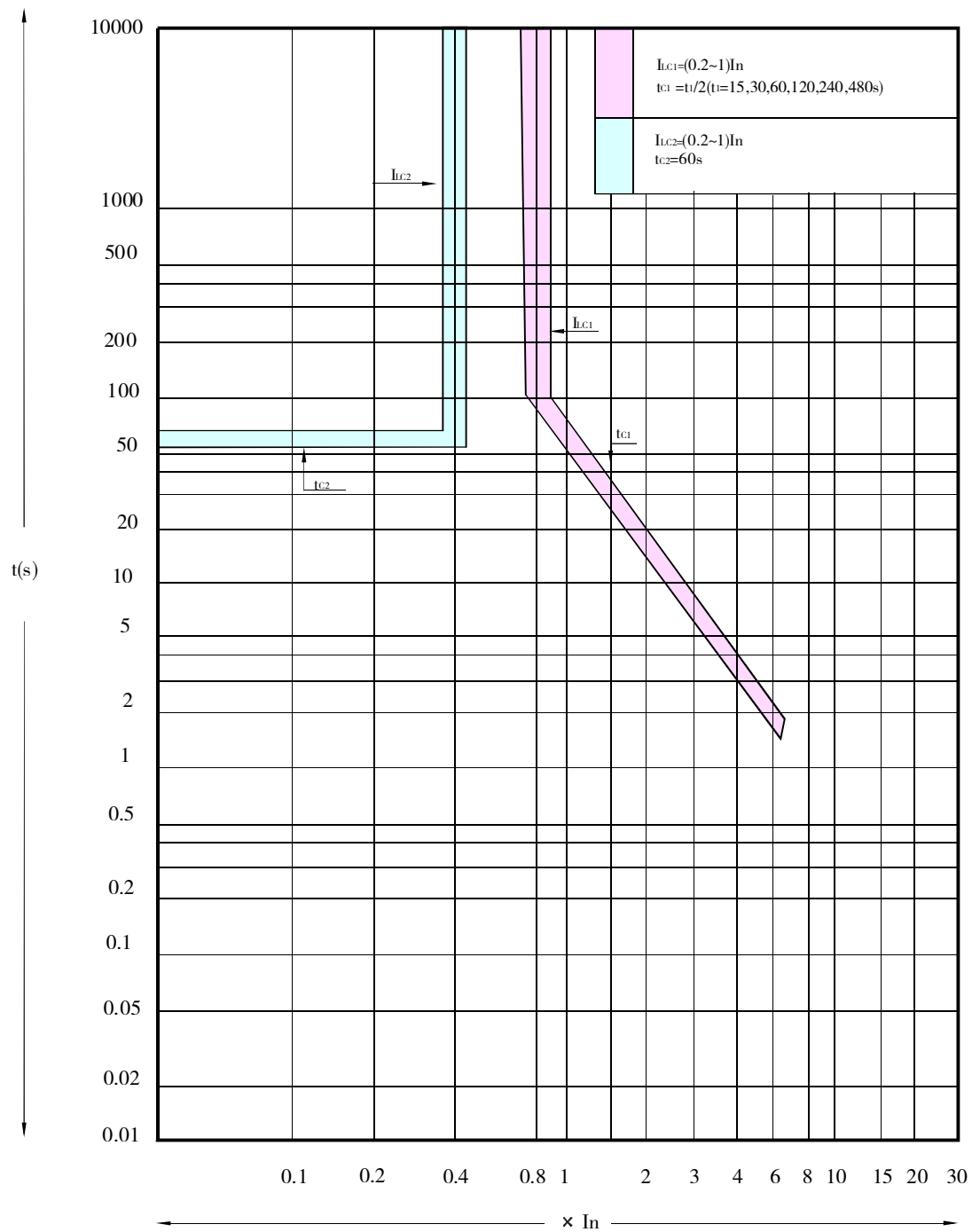
T/I (time/current) curve of the intelligent controller of M、H、MY、HY type for load-monitor pattern 1

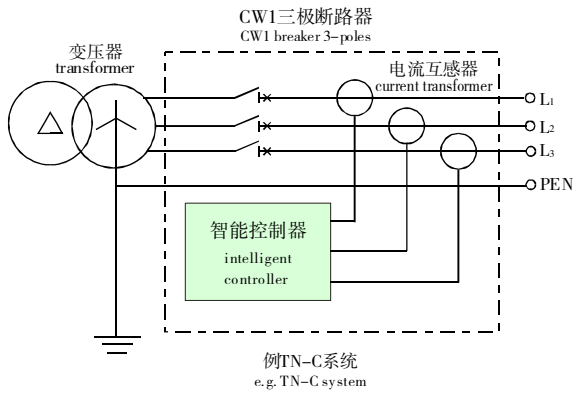




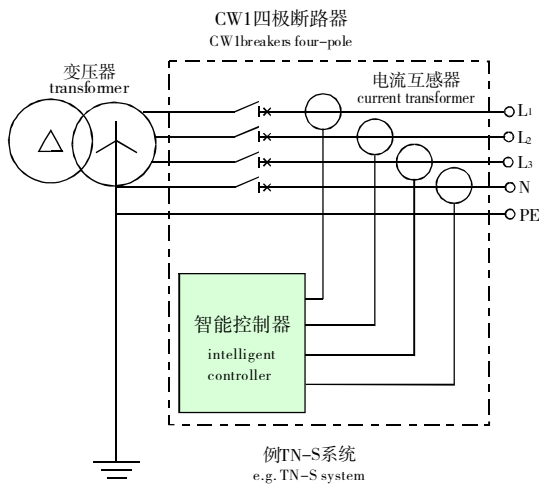
M、H、MY、HY型智能控制器负载监控方式二时间/电流特性曲线

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

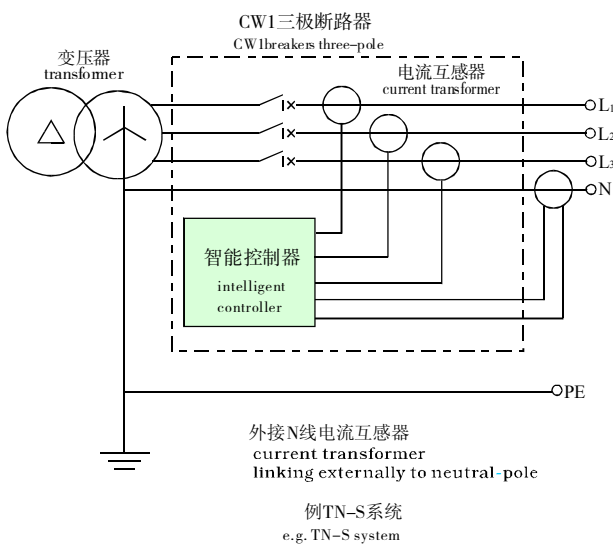




- TN-C、TN-C-S、TN-S配电系统中选用CW1三极断路器未接外接中性线N电流互感器
- 接地故障保护信号只取三相电流的矢量和
- 保护特性为定时限保护
- To select CW1 three-poles breakers for TN-C、TN-C-S and TN-S distribution system, no current transformer of N pole equipped externally
- The earthed fault protection signal only from sum of vectors of triphase current
-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



- 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.



- 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	CW1-2000 / 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；
- 欠电压脱扣器动作分为瞬时动作和延时动作两种；
- 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 $\pm 10\%$ 。

- The undervoltage release consists of release coil and control unit;
- The undervoltage release works in two ways: acting instantaneously and time delay.
- There are four time delay specifications for the undervoltage time delay release: 0.5s, 1s, 2s and 3s. It would be dealt with as special standards, if users require 5s-9s, and should consult with manufacturer. The time-delay accuracy is $\pm 10\%$.

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
配用断路器 Fitting breaker	CW1-2000 / 3200 / 4000 / 5000		
延时时间(s) Delay time	瞬时 Instantaneous	0.5/1/2/3	4~9
额定工作电压 U_e (V) Rated working voltage	AC400 / AC230		
动作电压(V) Operating voltage	$(0.35\sim 0.7)U_e$		
可靠合闸电压(V) Reliable closing voltage	$(0.85\sim 1.1)U_e$		
可靠不能合闸电压(V) Reliable impossible voltage	$\leq 0.35U_e$		
功耗(VA) Power Consumption	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	CW1-2000 / 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			
分断时间(ms) Breaking time	不大于30 No more than 30			

- 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	CW1-2000 / 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			



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



- 断路器具有电动机贮能及自动再贮能功能;
- 断路器也可手动贮能。
- 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/W 120	FDC/W 132	FDC/W 140	FDC/W 150
配用断路器 Fitting breaker	CW1-2000 三极/四极 Three poles/ four poles	CW1-3200 三极 three poles	CW1-3200 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
- Auxialiary switch



- 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	CW1-2000 / 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	CW1-2000 / 3200 / 4000 / 5000
额定工作电压 Ue (V) Rated operational voltage	AC 230
约定发热电流 Ith (A) Conventional thermal current	10
额定工作电流 Ie (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 conection terminals

● 特性 Features

型号 Type	配用断路器 Fitting breaker
FDZ/WT	CW1-2000 / 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-80	CW1-2000
FDH-120	CW1-3200 / 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）的断开按钮锁定在按下位置上，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 pressed 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”位置锁定挂锁器
- “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，锁杆直径不大于 $\phi 4\text{mm}$ 。
- "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 no larger than $\phi 4\text{mm}$.

● 特性 Characteristics

型号 Type	配用断路器 Fitting breaker
FAN/W1	CW1-2000 / 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	CW1-2000 / 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.

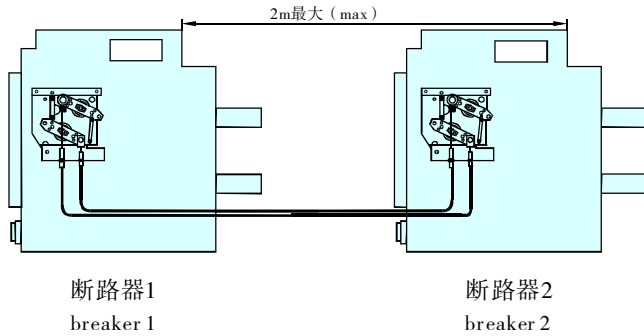
● 特性 Characteristics

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



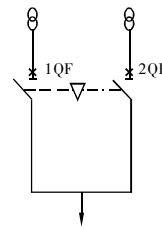
- 两台平放断路器的钢缆联锁或两台叠装断路器的联杆联锁
(联杆联锁的底板开孔尺寸参见三台断路器的开孔尺寸)

Two breakers put horizontally and 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)



电路图

wiring diagram



可能的运行方式

possible operation pattern

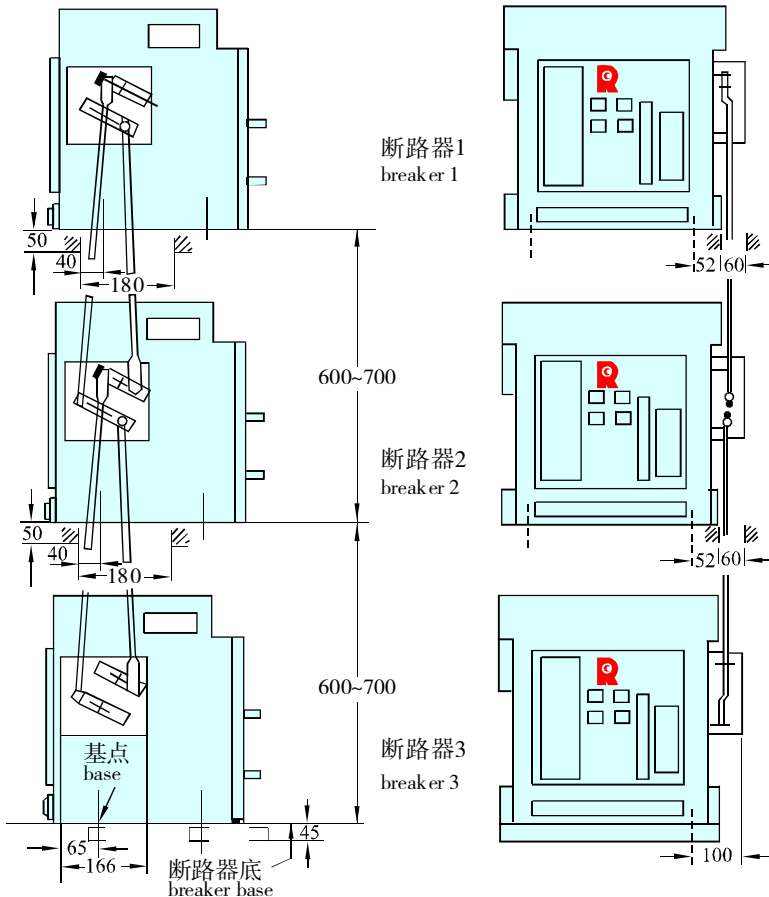
1QF	2QF
0	0
0	1
1	0

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 when marking order.

- 三台叠装断路器的联杆联锁或三台平放断路器的钢缆联锁
Three sets of breakers stacked and interlocked with connecting rods or three sets of circuit-breaker put horizontally and interlocked with steel cable.

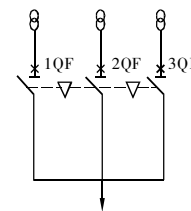
- 抽屉式联杆联锁
Stacked and interlocked of withdrawable breaker



电路图

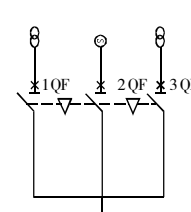
wiring diagram

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



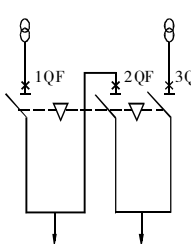
1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1

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

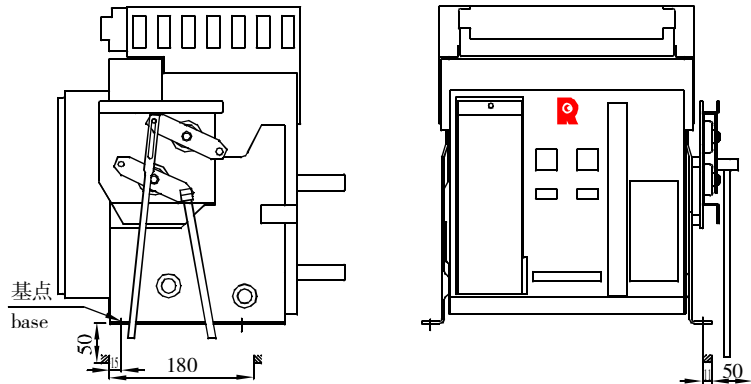
方式三：二个电源一个分段
Pattern 3: two ways of power supply + one way of coupling busbar



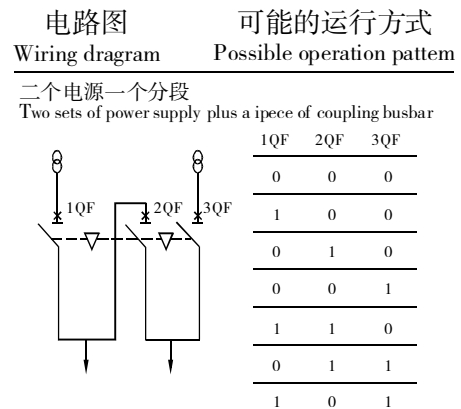
1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1
1	1	0
0	1	1
1	0	1



- 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.



- 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	CW1-2000 / 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电源之间的转换供电，确保用户供电可靠性。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（厂方已连接）组成，同时，需与机械联锁配合使用。

- Automatic power supply switching system guarantees reliable power supplying for users by providing two lines of power supply alternatively. It consists of automatic controller, switching unit and cables (already prepared by the manufacturer). The system should be used together with the mechanical interlock.

- 转接器和自动转换控制器

- Switching Unit and Automatic Controller

转接器和自动转换控制器一起使用。转接器外形如图，它对常用电源的各相电压、备用电源的任一相电压进行检测，若被检测相发生115%Us过电压、75%Us欠电压、缺相或电源断电则发出动作指令。

Switching unit works with the automatic controller. The switching unit detects voltage value on all phases of the normal power supply and the value on each phase of the standby power supply. In case of over-voltage of 115% U_s , under-voltage of 75% U_s , phase loss or power shortage happen for any phases, an operation command will be given out. As for figure of the switching unit, see the next page.

自动转换控制器外形如图，可工作于四个状态：“自动”操作、强制采用“常用”电源、强制采用“备用”电源、“停止”（常用电源和备用电源均关断）。

The automatic controller is shown as on the next page. It has four working positions. i.e. “Automatic” control, “Normal” power supply, “Standby” power supply and “Stop” (Both the normal power supply and the standby power supply can be turned off.)

转接器安装于开关柜安装板上，自动转换控制器安装于开关柜门板上，控制器至转接器及转接器至断路器的电缆长度为1.8m（超过1.8m用户订货时应注明）。

The switching unit is mounted on the mounting plate of switchboard while the controller is mounted on the panel door of the switchboard. There is cable connection between the two with the distance no more than 1.8 meters. (Users should make special order when they require for the distance more than 1.8 meters.)



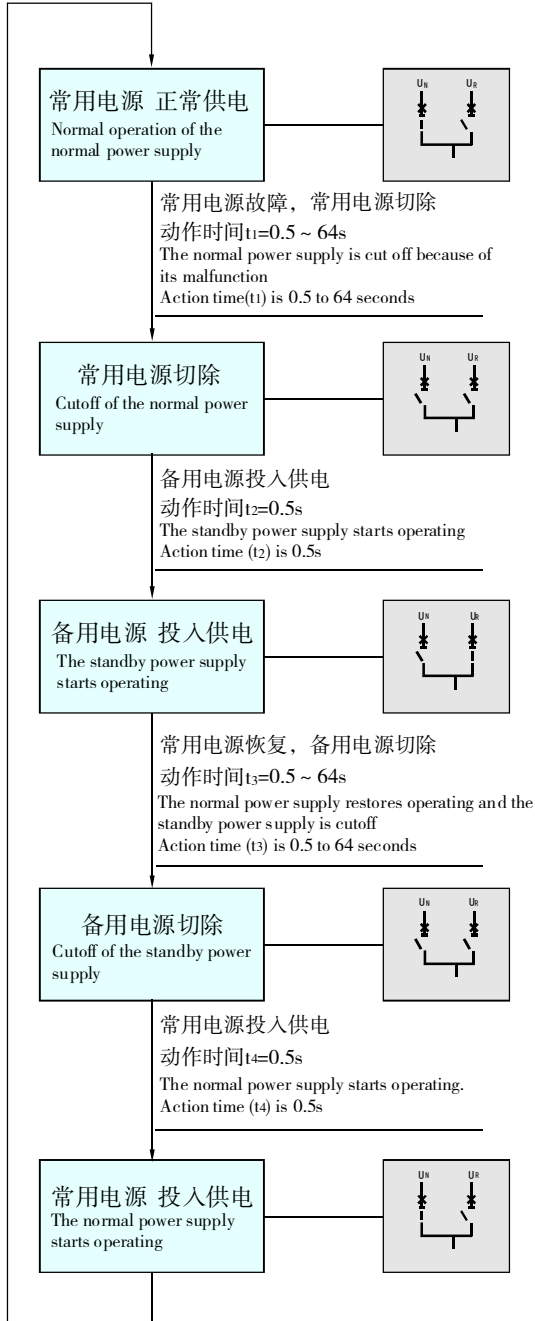
- 自动转换控制器按自动转换程序分：常用-备用间的自投自复（R型）、常用-备用间的自投不自复（S型）、常用-发电间的自投自复（F型）三种。自动转换控制器R型、S型、F型三种“自动”控制功能逻辑图如下：

- According to operation order, the controller can be classified as Type R with automatic switch and restore function for normal supply to standby supply system, Type S with automatic switch without restoration function for normal supply to standby supply system, Type F with automatic switch and restore function for normal supply to power generation supply system. The logic control diagram of the automatic controller of Type R, S and F as follows:



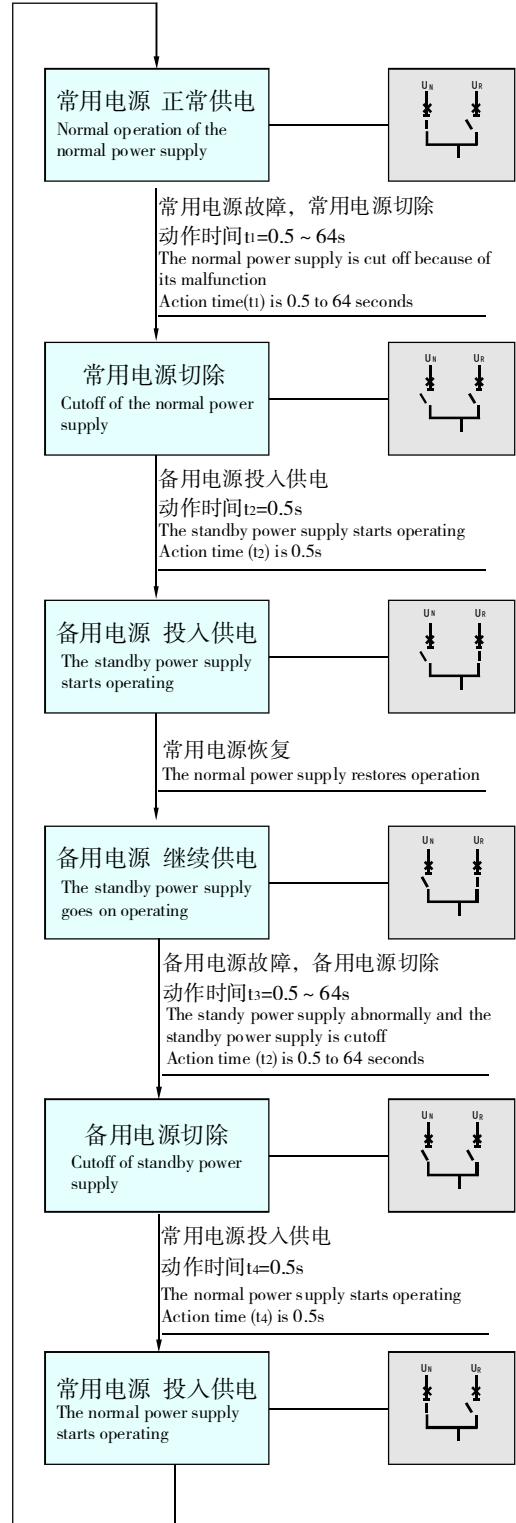
● 常用-备用间的自投自复 (R型)

Automatic switch and restore for the normal power supply to standby power supply system (type R)



● 常用-备用间的自投不自复 (S型)

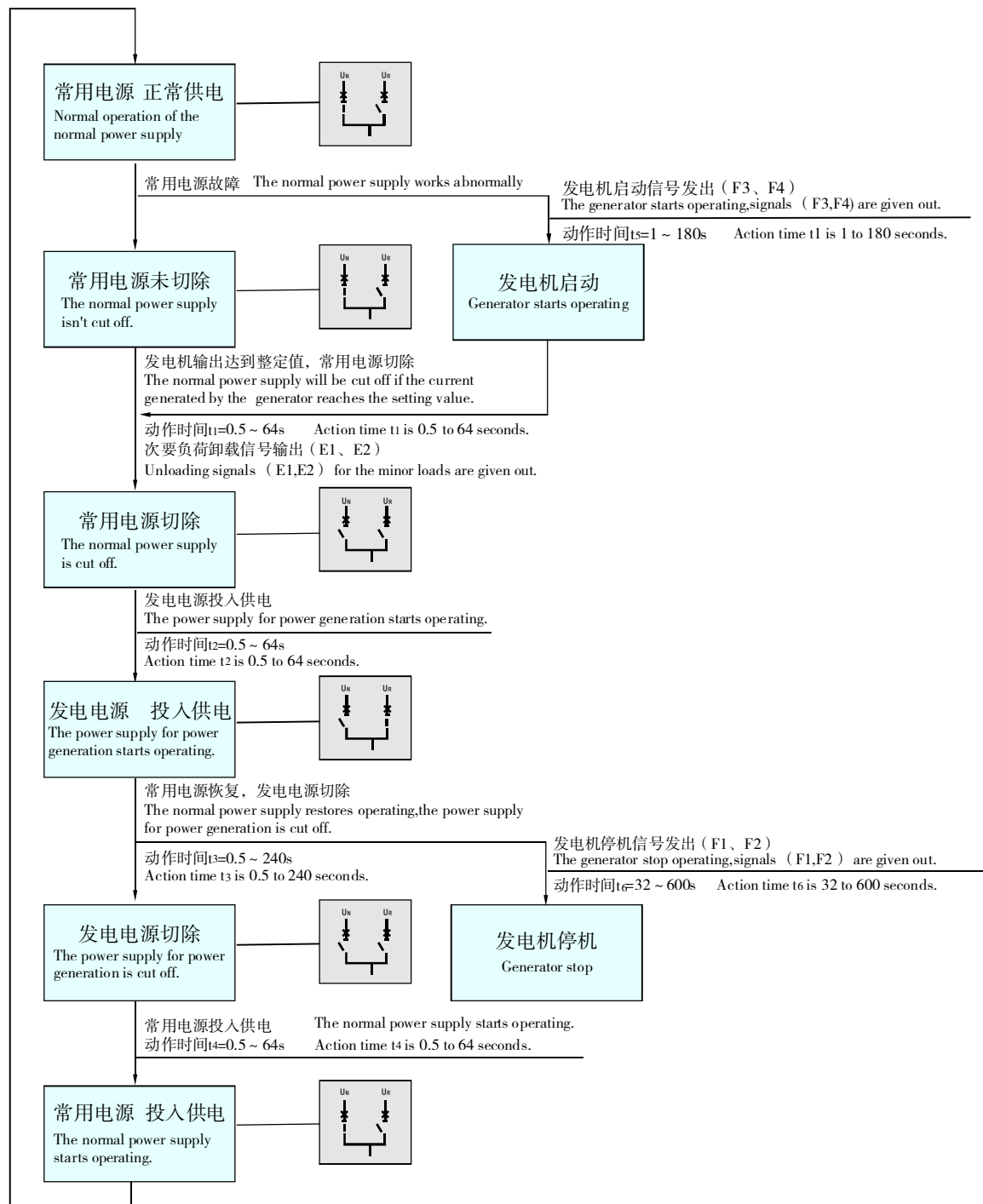
Automatic switch without restoration for the normal power supply to standby power supply system (type S)





● 常用-发电电源间的自投自复（F型）

Automatic switch and restore for the normal power supply to standby power supply system (type F)



常用-发电型必须为控制器提供一个稳定、不间断的DC12V直流电源，其容量不小于6W。当此直流电源缺失时，系统具有R型（自投自复型）的全部功能。

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 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).



● R型、S型、F型自动转换控制器控制特性：
Characteristics of the automatic controllers of type R,S and F

控制器种类 Controller Type	额定控制电源电压 Us (V) Rated voltage of power supply	转换断开延时时间 t ₁ (s) Delay time before switching to open t ₁ (s)	转换接通延时时间 t ₂ (s) Delay time before switching to close t ₂ (s)	返回断开延时时间 t ₃ (s) Delay time before restoring opening t ₃ (s)	返回接通延时时间 t ₄ (s) Delay time before restoring closing t ₄ (s)	发电指令延时时间 t ₅ (s) Delay time before giving out the command to generate power	发电停机指令延时时间 t ₆ (s) Delay time before giving out the command to stop power generation
R型 S型 Type R Type S	AC230	0.5 ~ 64 用户可调 Adjustable for users	0.5	0.5 ~ 64 用户可调 Adjustable for users	0.5	—	—
F型 Type F	AC230	0.5 ~ 64 用户可调 Adjustable for users	0.5 ~ 64 用户可调 Adjustable for users	0.5 ~ 240 用户可调 Adjustable for users	0.5 ~ 64 用户可调 Adjustable for users	1 ~ 180 用户可调 Adjustable for users	32 ~ 600 用户可调 Adjustable for users

● 特性 Characteristics

型号 Type	自动转换控制器型号 Automatic switch controller	配用断路器 Fitting breaker
FZZ/WTR	R	CW1-2000 / 3200 / 4000 / 5000
FZZ/WTS	S	
FZZ/WTF	F	

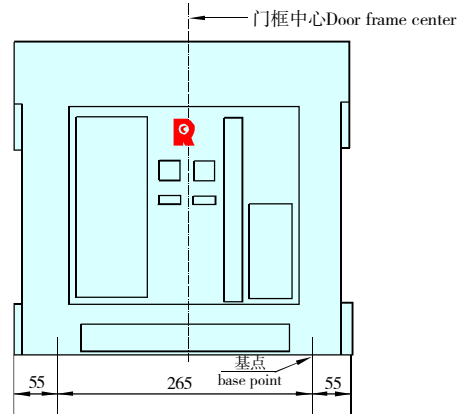
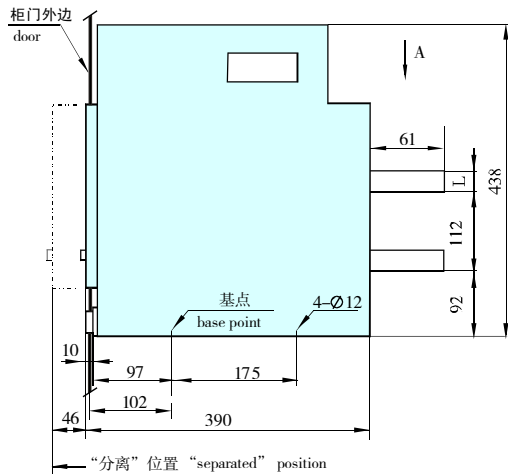
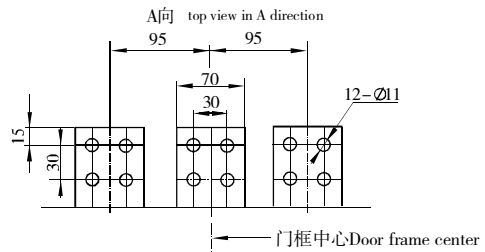
注：可提供FLZ/WTT3两进线一母联自动电源转换系统，用户需要时请咨询本公司。

Note: can provide FLZ/WTT3 two incoming line one link automatic power supply switch system, please call us.

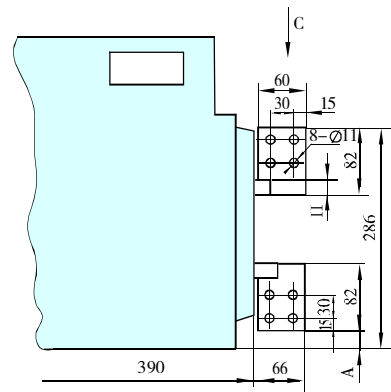
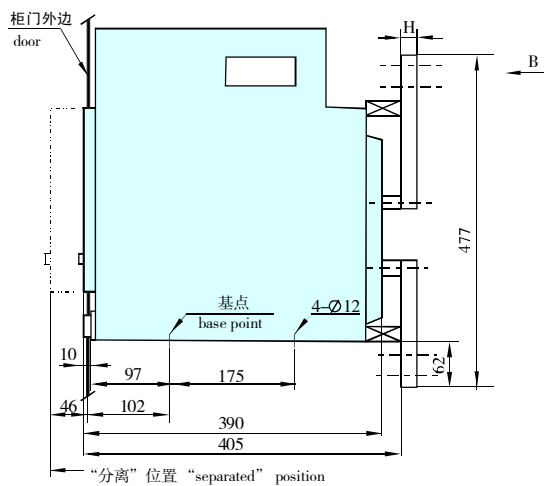


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

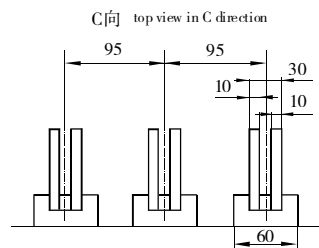
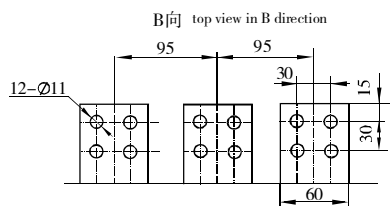
电流规格 Current spec.	L(mm)	H(mm)	A(mm)
2000A	20	20	30
800 ~ 1600A	15	15	25
630A	10	15	25



水平 (后置)
horizontally (back set)



垂直 (后置)
Vertically (back set)

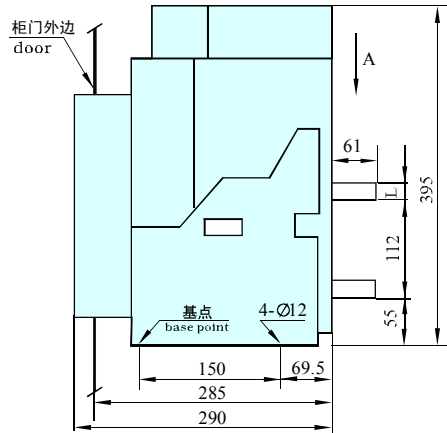
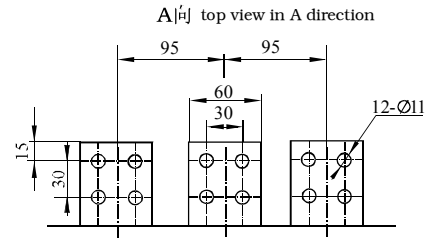


CW1-2000三极智能型万能式断路器(抽屉式)
CW1-2000 Intelligent universal breaker ,3-poles (drawn-out)

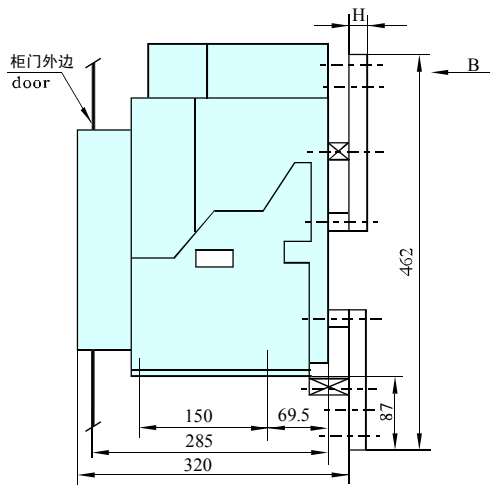
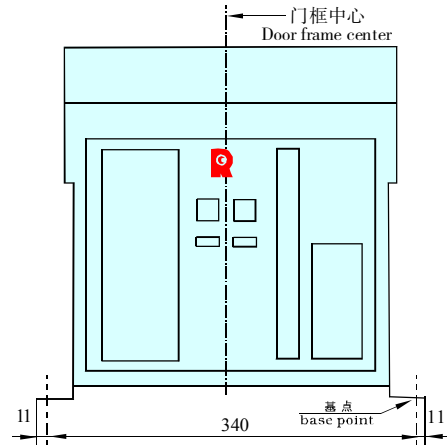


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

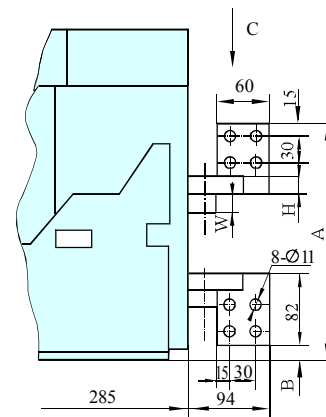
电流规格 Current spec.	L(mm)	H(mm)	A(mm)	W(mm)	B(mm)
2000A	20	20	269	20	13
800~1600A	15	15	264	15	3
630A	10	15	264	15	3



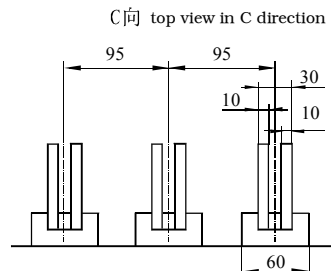
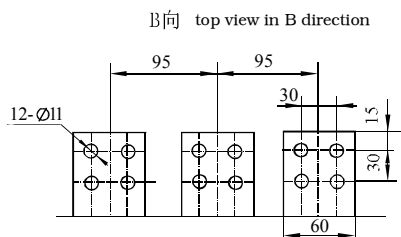
水平(后置) horizontally (back set)



垂直(前置)
Vertically (front set)



垂直(后置)
vertically (back set)

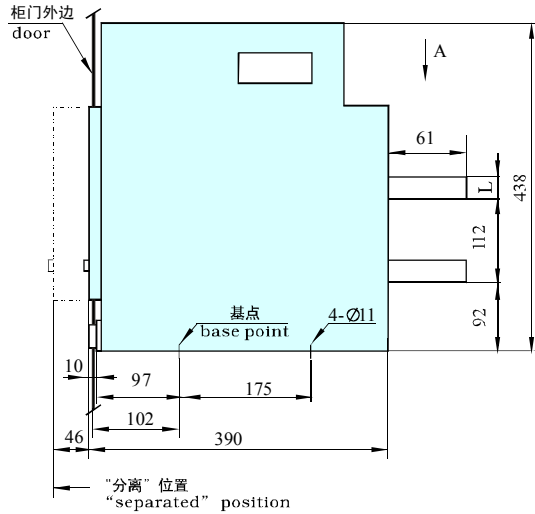
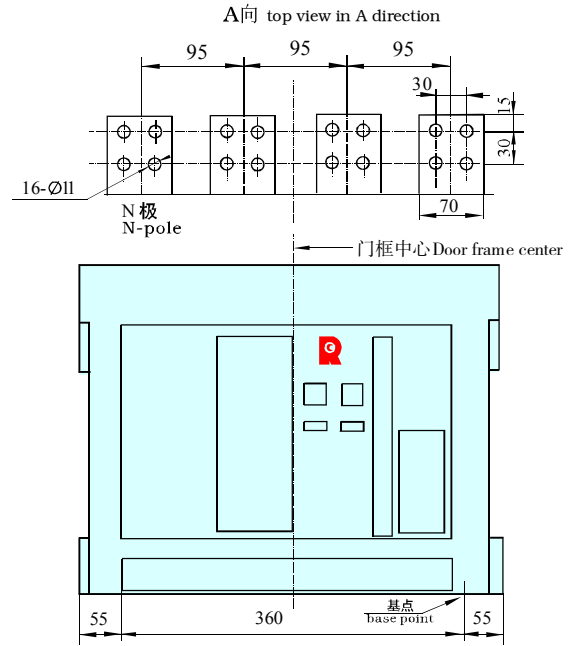


CW1-2000三极智能型万能式断路器(固定式)
CW1-2000 Intelligent universal breaker ,3-poles (fixed)

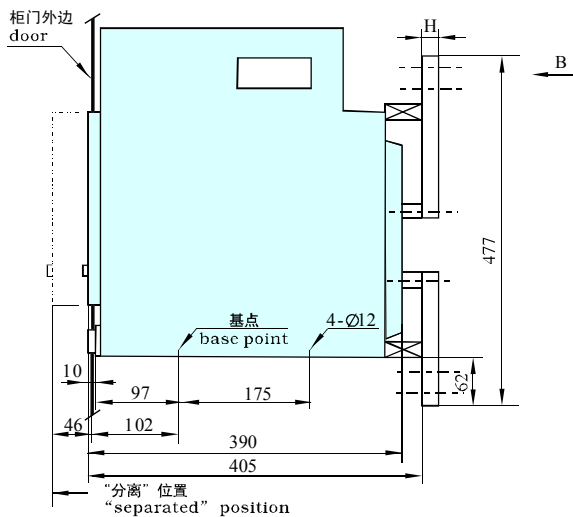


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

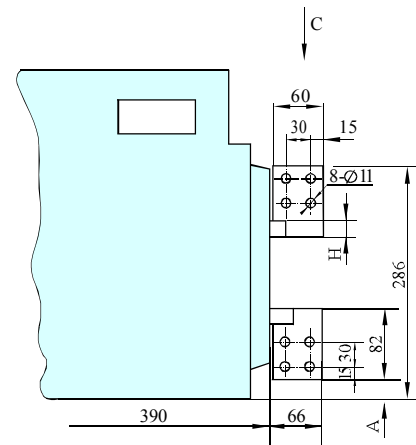
电流规格 Current spec.	L(mm)	H(mm)	A(mm)
2000A	20	20	30
800~1600A	15	15	25
630A	10	15	25



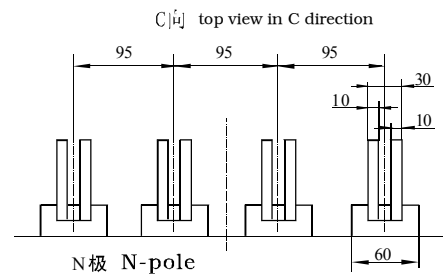
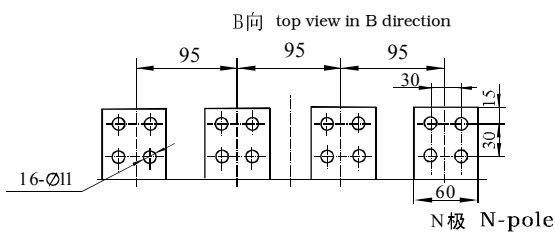
水平(后置) horizontally (back set)



垂直(前置)
Vertically (front set)



垂直(后置)
vertically (back set)

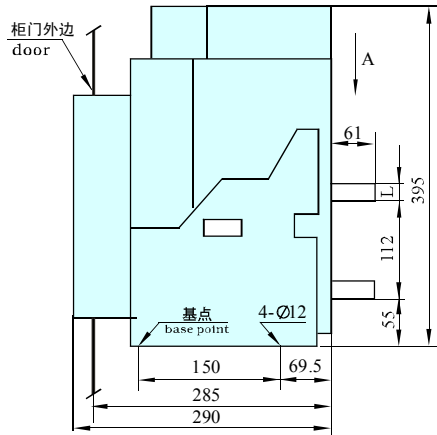
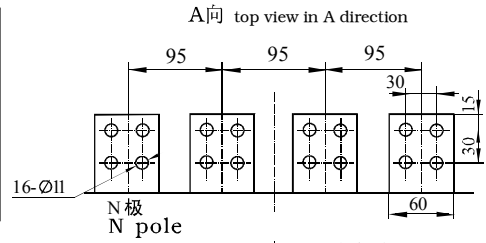


CW1-2000四极智能型万能式断路器(抽屉式)
CW1-2000 Intelligent universal breaker, 4-poles (draw-out)

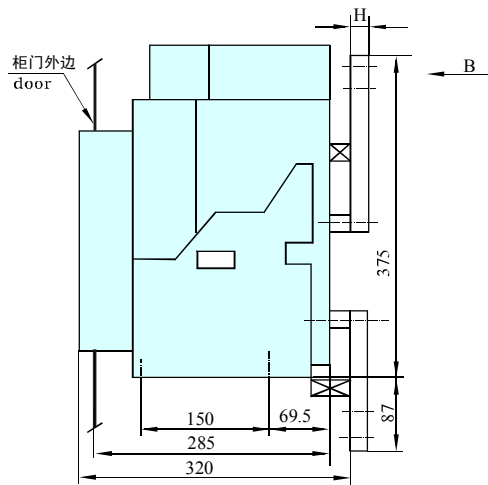
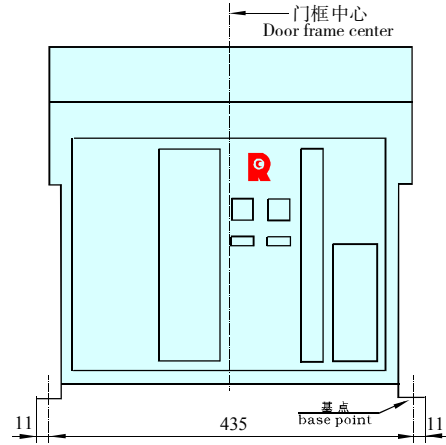


断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

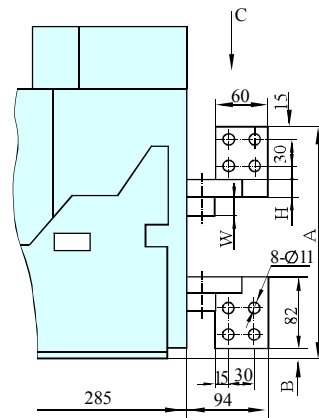
电流规格 Current spec.	L(mm)	H(mm)	A(mm)	W(mm)	B(mm)
2000A	20	20	269	20	13
800~1600A	15	15	264	15	3
630A	10	15	264	15	3



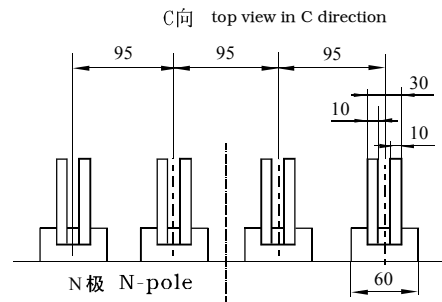
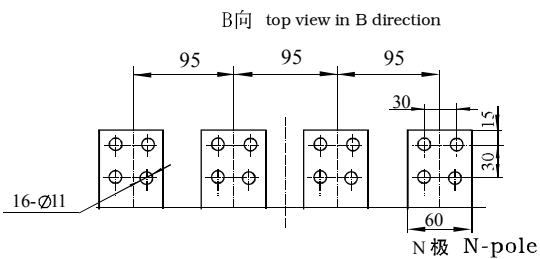
水平(后置) horizontally (back set)



垂直(前置)
Vertically (front set)



垂直(后置)
vertically (back set)

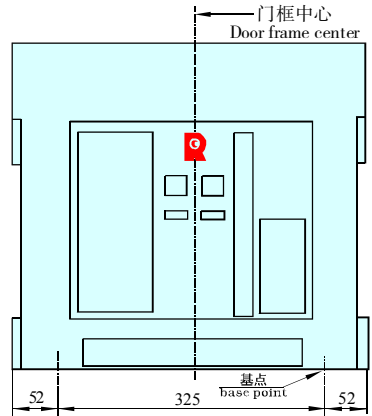
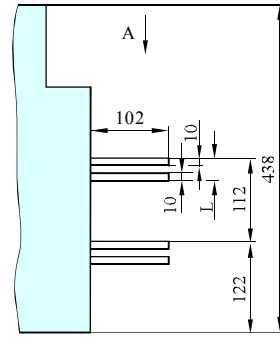
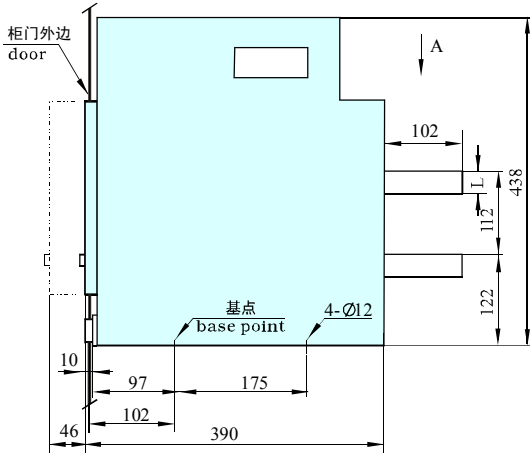
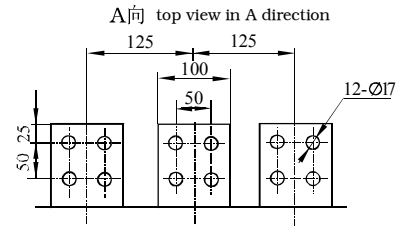


CW1-2000四极智能型万能式断路器(固定式)
CW1-2000 Intelligent universal breaker, 4-poles (fixed)



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)
3200A(2900A)	30
2500A(2000A)	20



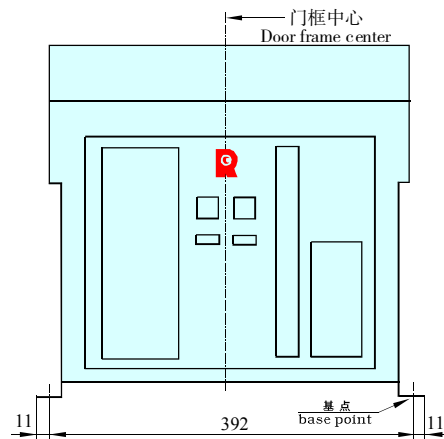
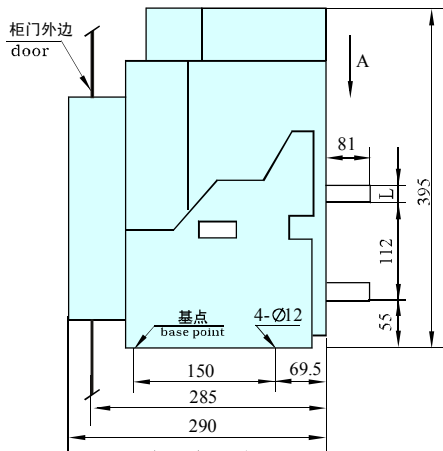
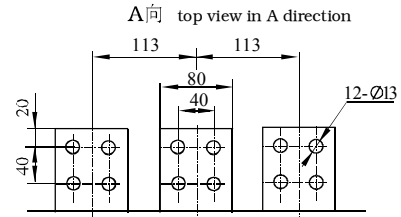
电流规格: 3200A(2900A)
Current: 3200A(2900A)

水平(后置)
horizontally (back set)

“分离”位置
“separated” position
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



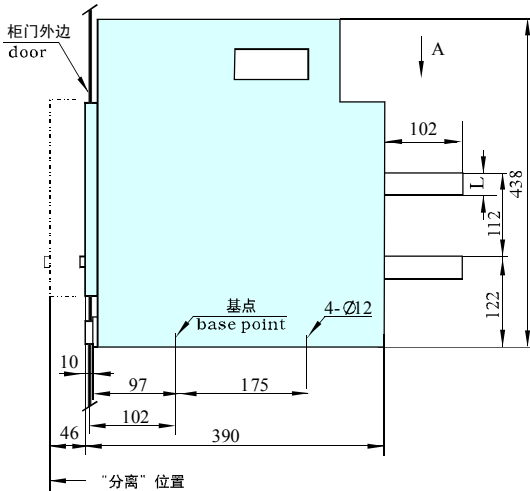
水平(后置)
horizontally (back set)

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



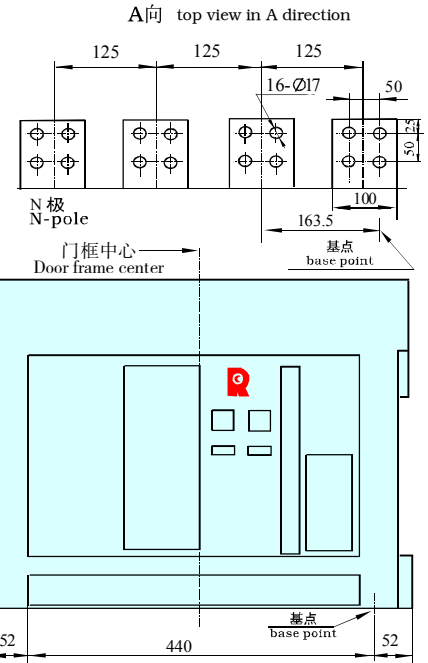
断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

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



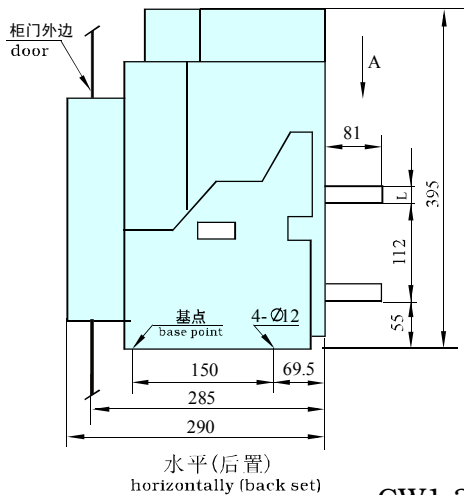
电流规格: 2500A(2000A)
Current: 2500A(2000A)
水平(后置)
horizontally (back set)

电流规格: 3200A(2900A)
Current: 3200A(2900A)
水平(后置)
horizontally (back set)

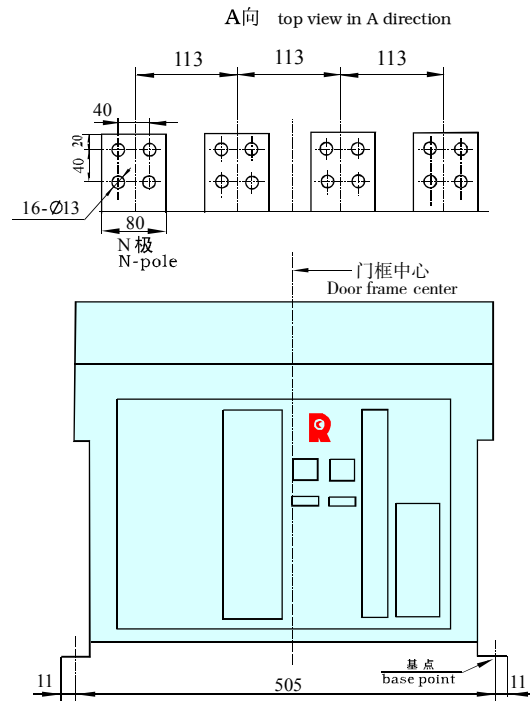


CW1-3200四极智能型万能式断路器(抽屉式)
CW1-3200 Intelligent universal breaker ,4-poles (draw-out)

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



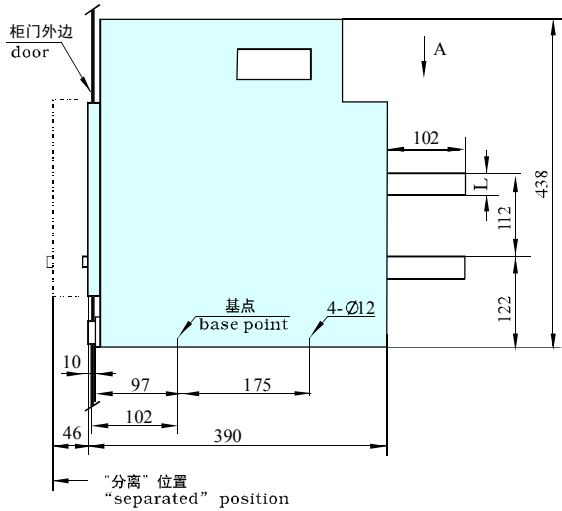
CW1-3200四极智能型万能式断路器(固定式)
CW1-3200 Intelligent universal breaker ,4-poles (fixed)





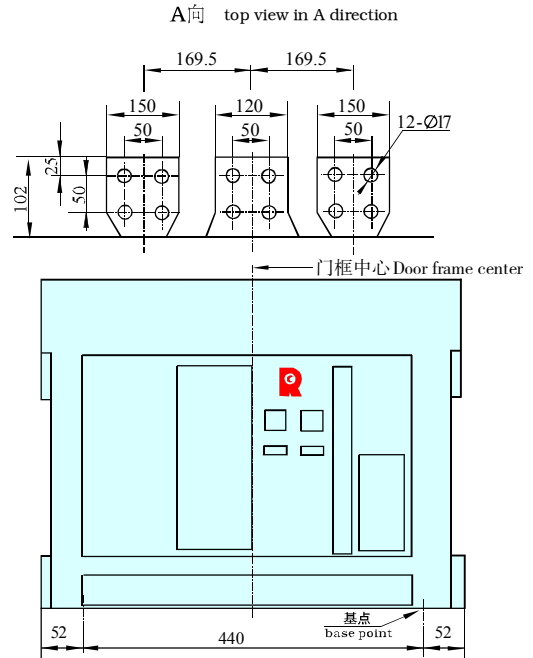
断路器外形尺寸及安装尺寸 BREAKER OUTLINE DIMENSIONS AND MOUNTING DIMENSIONS

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

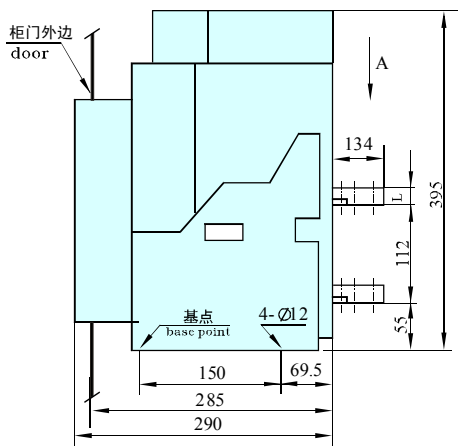


水平(后置)
horizontally (back set)

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)

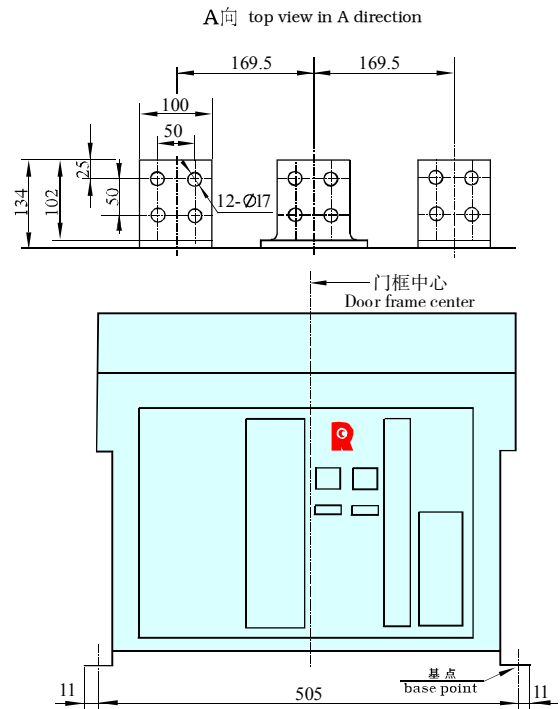


电流规格 Current spec.	L(mm)
4000A	30
3600A	30
3200A	30



水平(后置)
horizontally (back set)

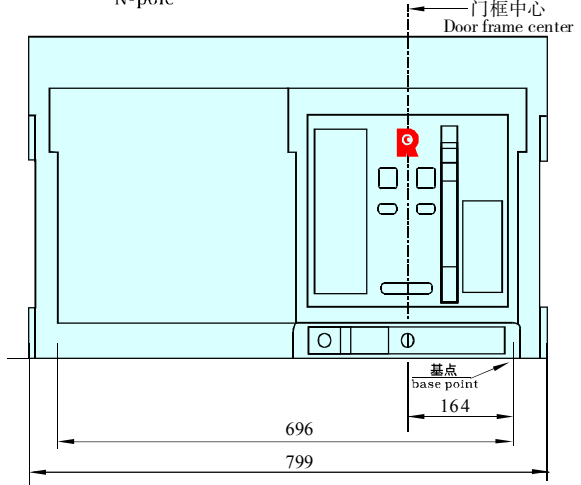
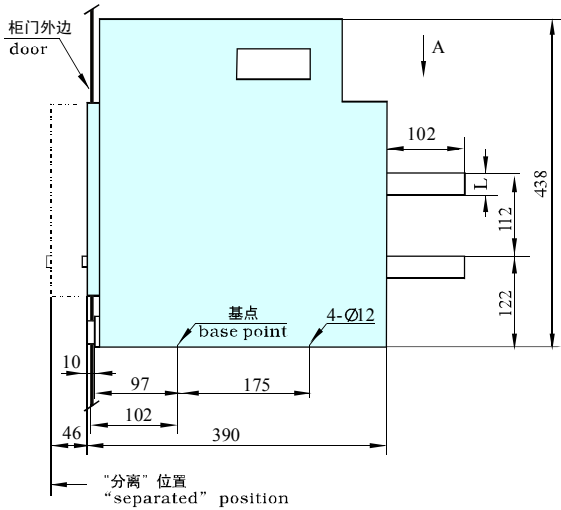
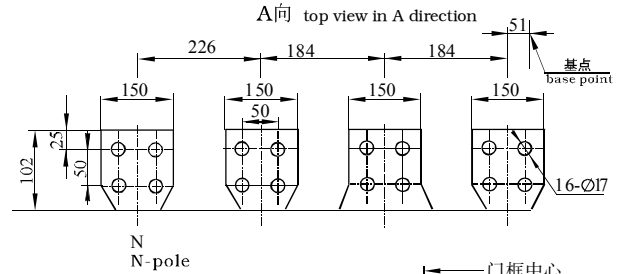
CW1-4000三极智能型万能式断路器(固定式)
CW1-4000 Intelligent universal breaker ,3-poles (fixed)





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

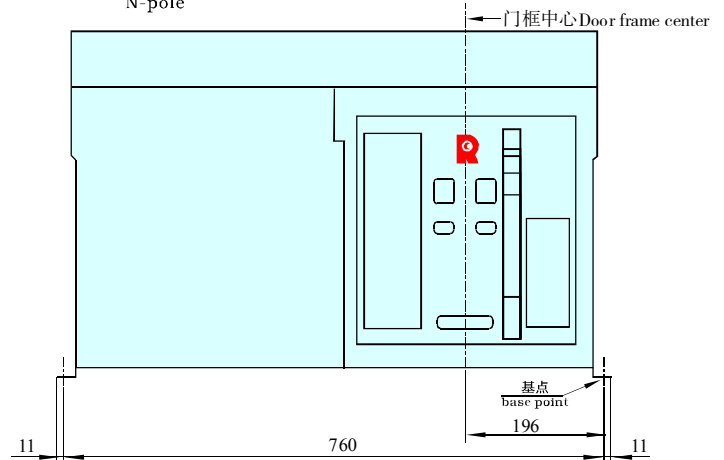
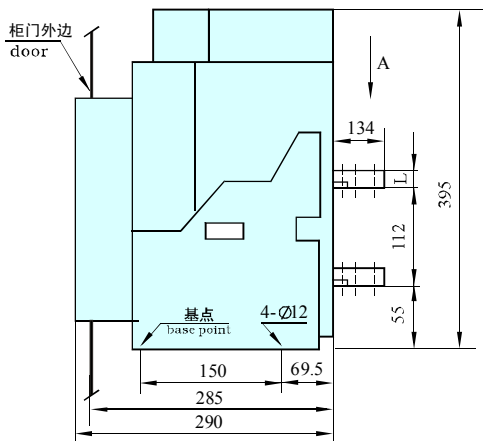
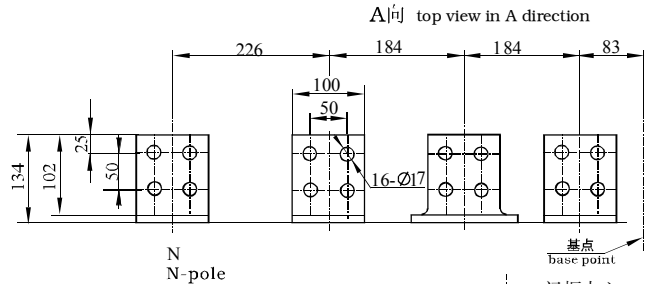
电流规格 Current spec.	L(mm)
4000A	30
3600A	25
3200A	25



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)
4000A	30
3600A	30
3200A	30



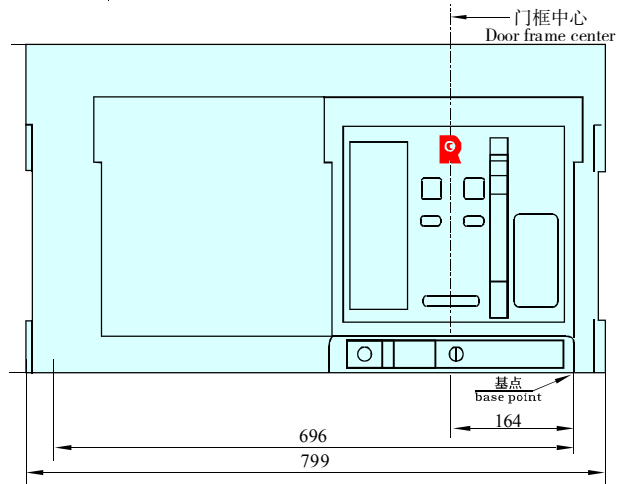
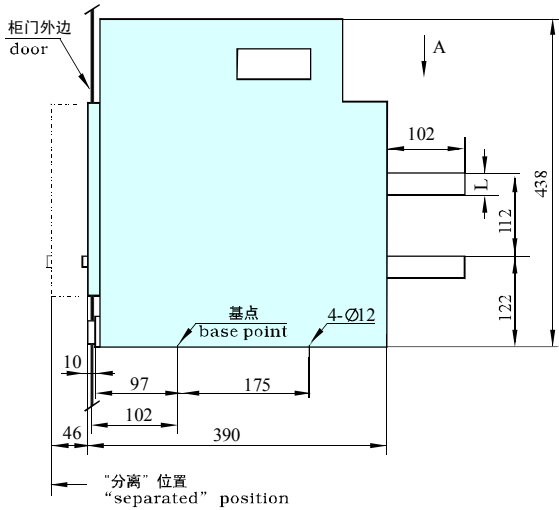
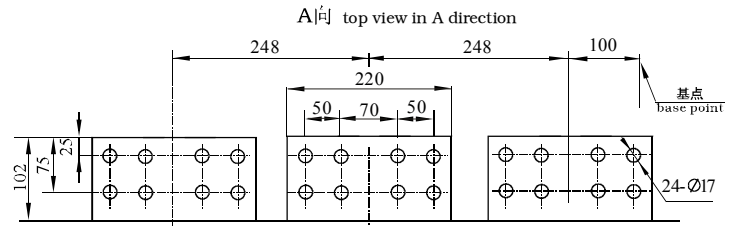
水平(后置)
horizontally (back set)

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

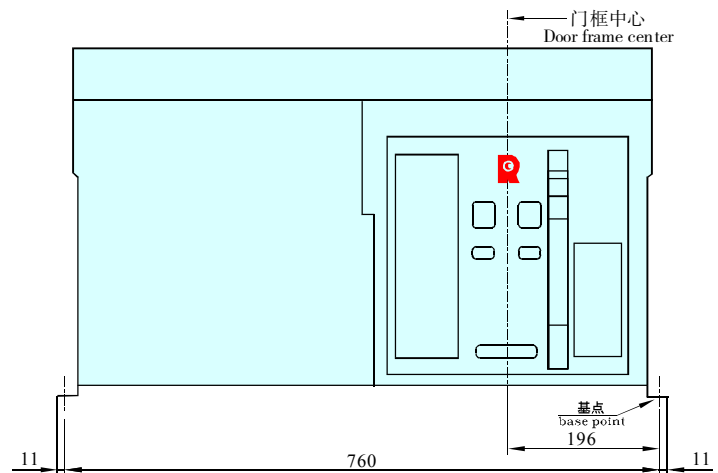
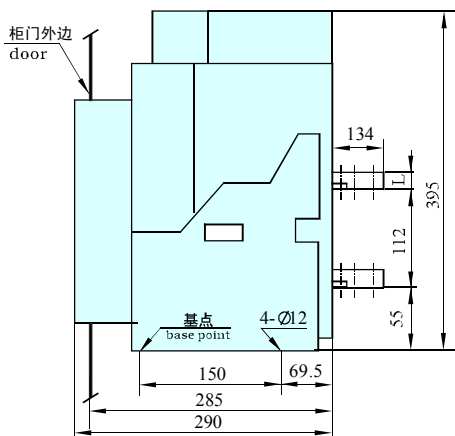
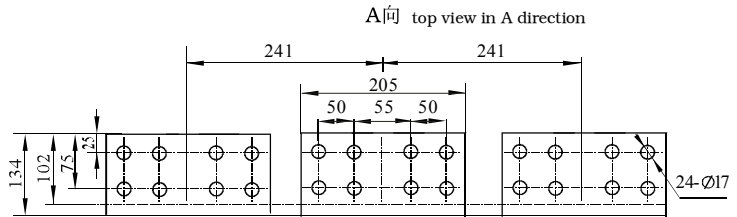
电流规格 Current spec.	L(mm)
5000A	30
4000A	20



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)

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



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

CW1-2000三极智能型万能式断路器(抽屉式)

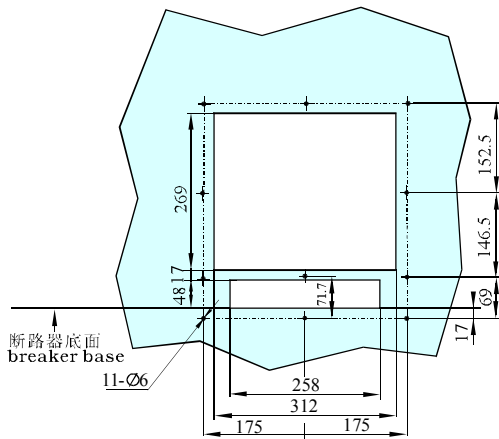
CW1-2000 Intelligent universal breaker ,3- poles (draw-out)

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



CW1-2000三极智能型万能式断路器(固定式)

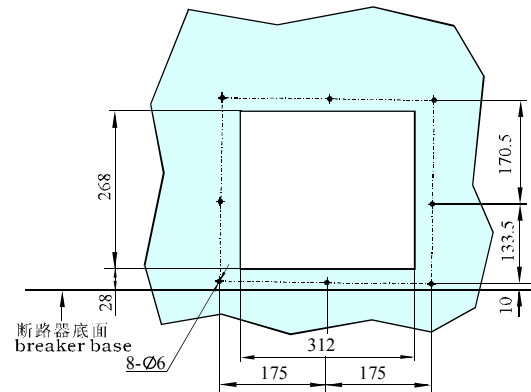
CW1-2000 Intelligent universal breaker ,3- poles (fixed)

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



CW1-2000四极智能型万能式断路器(抽屉式)

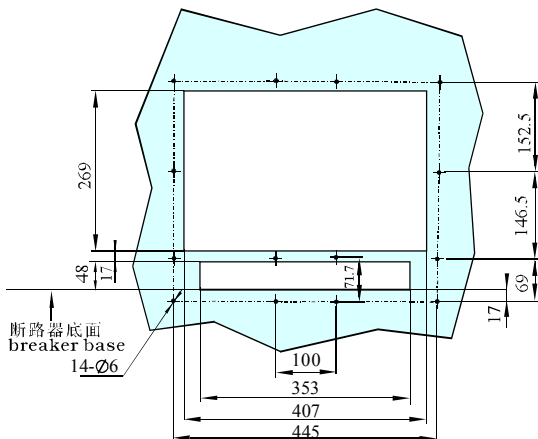
CW1-2000 Intelligent universal breaker ,4- poles (draw-out)

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



CW1-2000四极智能型万能式断路器(固定式)

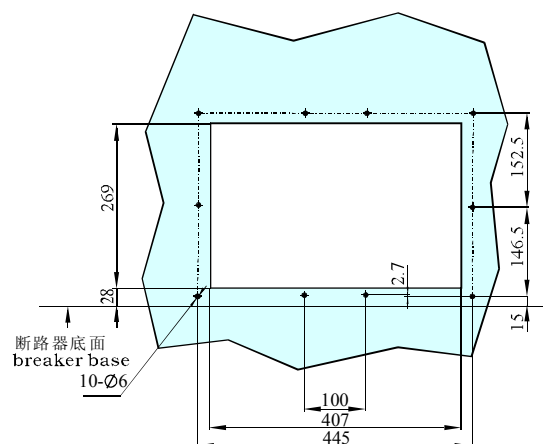
CW1-2000 Intelligent universal breaker ,4- poles (fixed)

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





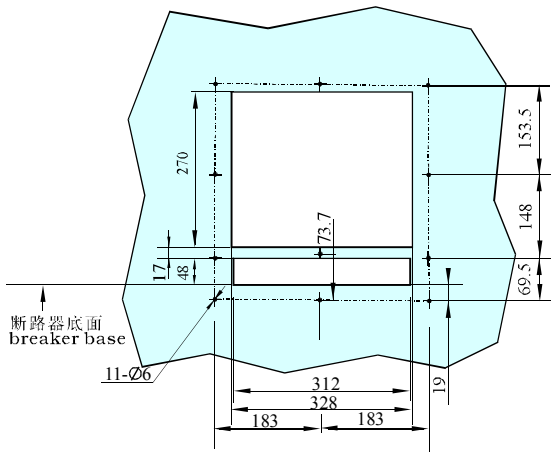
断路器门框开孔尺寸

HOLING DIMENSIONS FOR MOUNTING DOOR FRAME

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

安装门框前盖开孔图
 Mounting door frame front cover
 holing dimensions drawing

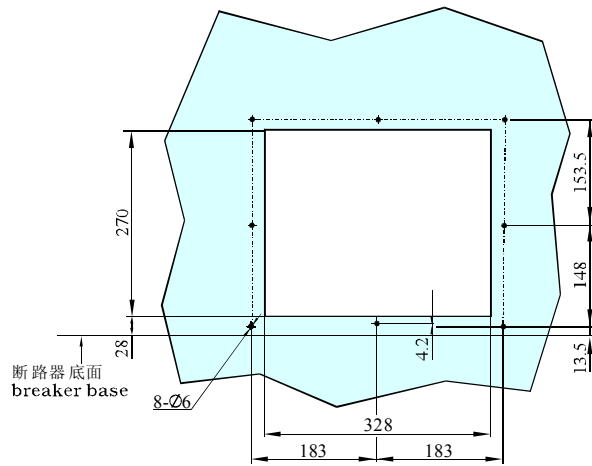
控制面板中心离柜门右铰链最小距离为**264mm**
 Distance from the panel center of the circuit breaker
 to the right hinge of switchboard door should be at
 least 264mm



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

安装门框前盖开孔图
 Mounting door frame front cover
 holing dimensions drawing

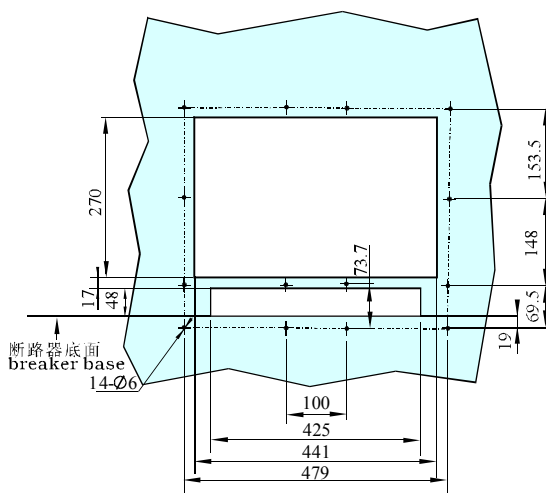
控制面板中心离柜门右铰链最小距离为**264mm**
 Distance from the panel center of the circuit breaker
 to the right hinge of switchboard door should be at
 least 264mm



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

安装门框前盖开孔图
 Mounting door frame front cover
 holing dimensions drawing

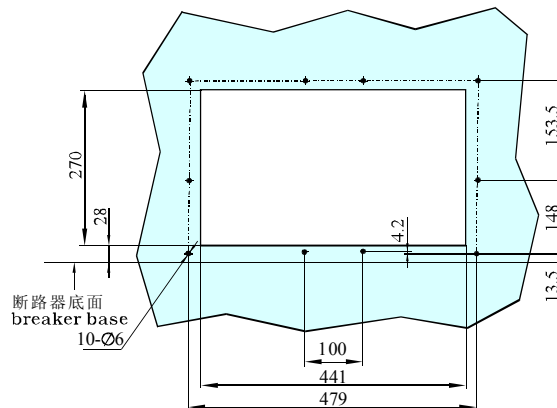
控制面板中心离柜门右铰链最小距离为**320.5mm**
 Distance from the panel center of the circuit breaker
 to the right hinge of switchboard door should be at
 least 320.5mm



CW1-3200四极智能型万能式断路器(固定式)
 CW1-3200 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





断路器门框开孔尺寸

HOLING DIMENSIONS FOR MOUNTING DOOR FRAME

CW1-4000三极智能型万能式断路器(抽屉式)

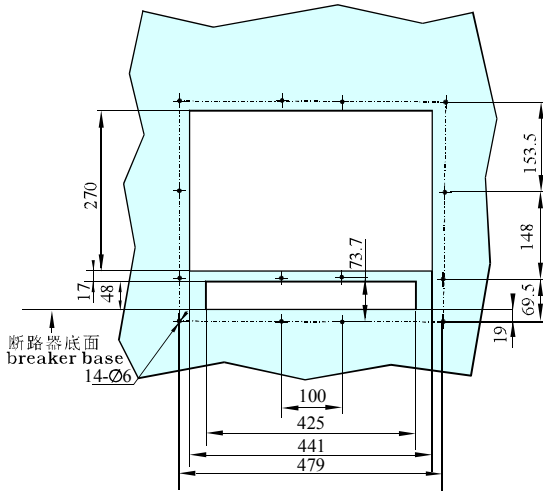
CW1-4000 Intelligent universal breaker ,3-poles (draw-out)

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)

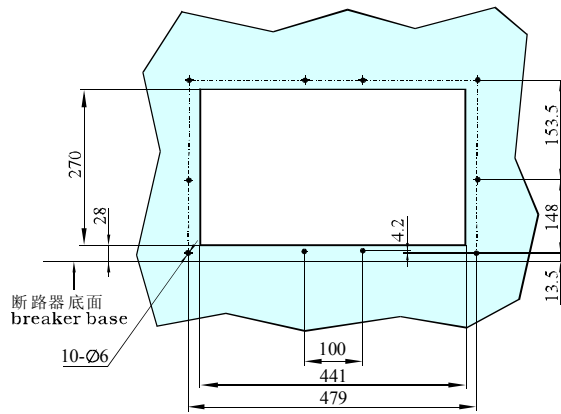
CW1-4000 Intelligent universal breaker ,3-poles (fixed)

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)

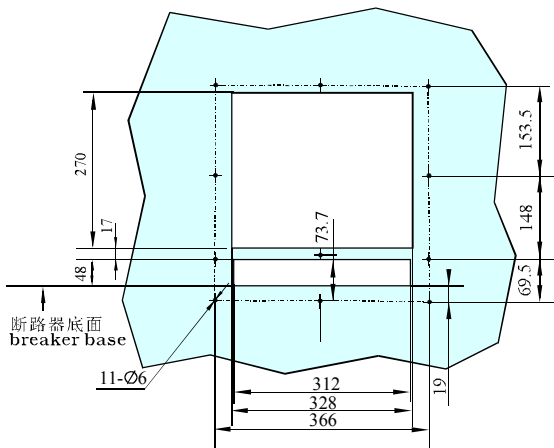
CW1-4000 Intelligent universal breaker ,4-poles (draw-out)

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)

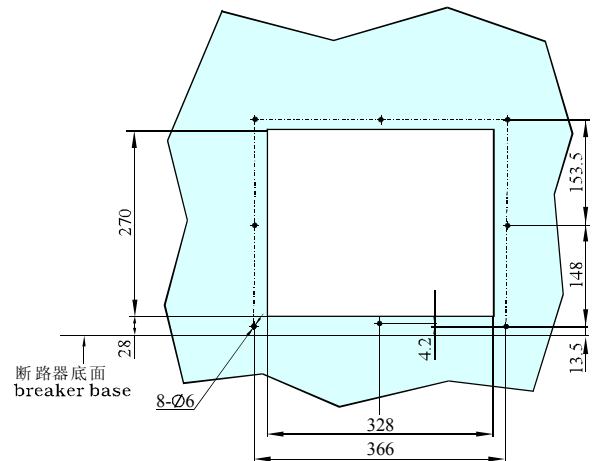
CW1-4000 Intelligent universal breaker ,4-poles (fixed)

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)

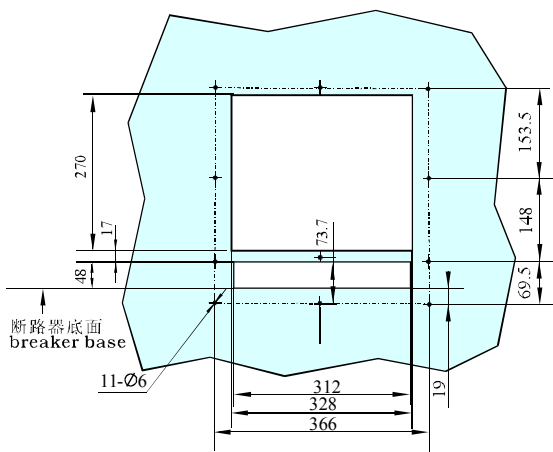
CW1-5000 Intelligent universal breaker ,3-poles (draw-out)

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)

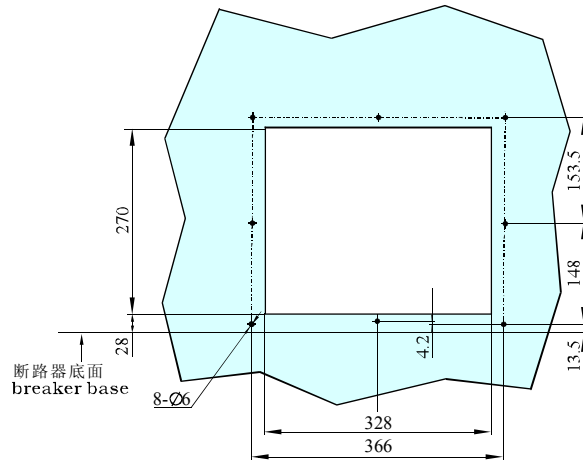
CW1-5000 Intelligent universal breaker ,3-poles (fixed)

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**

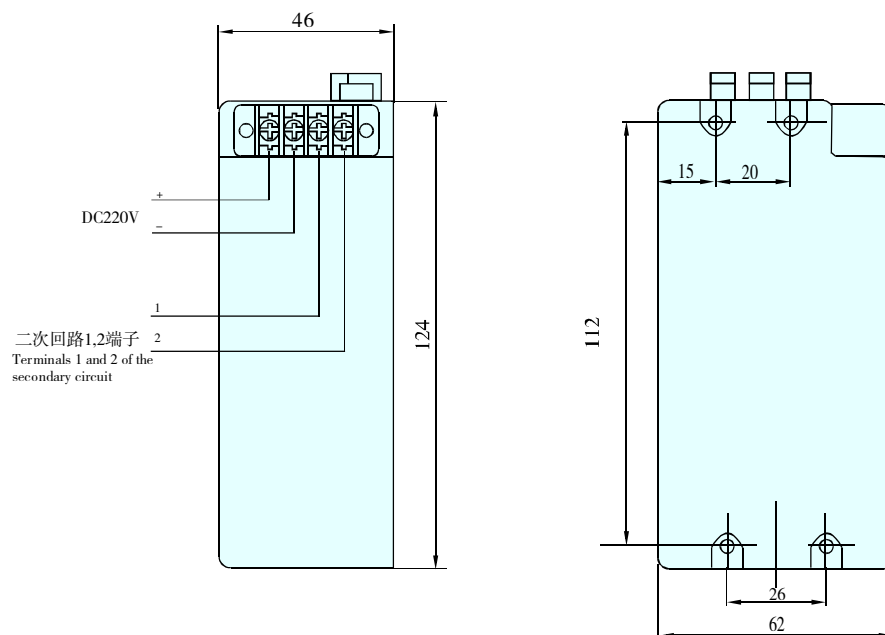
Distance from the panel center of the circuit breaker
to the right hinge of switchboard door should be at
least 264mm



附件外形安装尺寸

OUTLINE AND MOUNTING DIMENSIONS OF ACCESSORIES

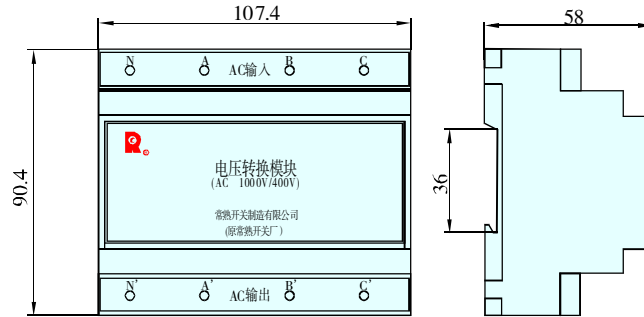
● 直流电源模块 DC power module



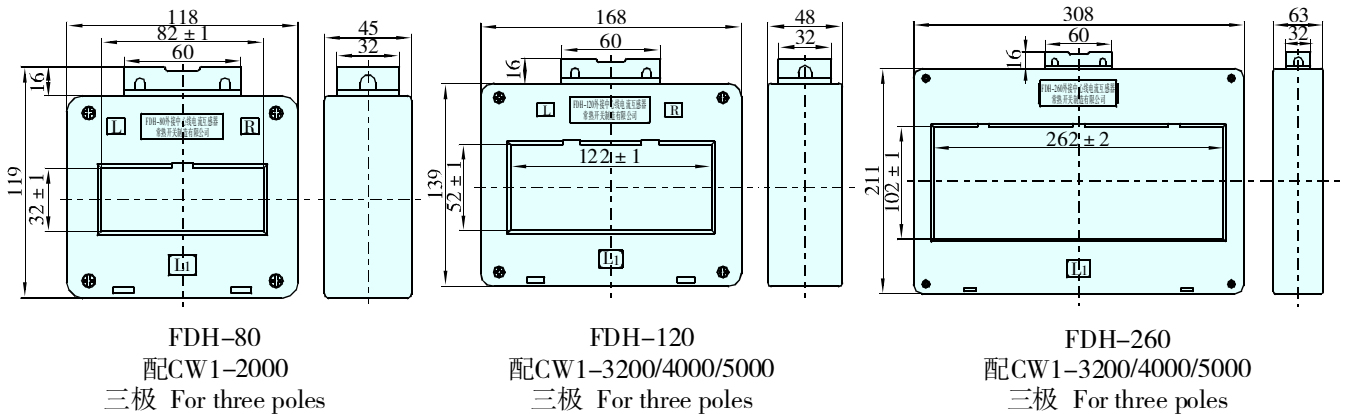


附件外形安装尺寸 OUTLINE AND MOUNTING DIMENSIONS OF ACCESSORIES

● 电压转换模块 Voltage chngover module



● 外接中性线互感器 Neutral transformer external connected



注：当断路器为CW1-3200/4000/5000三极时，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 CW1-3000/4000/5000 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 $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 和相对湿度50%~70%应不小于 $20\text{M}\Omega$ 。

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“I”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。

⚠ 强干扰源远离断路器1000mm以上。

● 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 insulation resistance with a 500V megameter, the resistance should not be less than $20\text{M}\Omega$ when ambient temperature is $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 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.

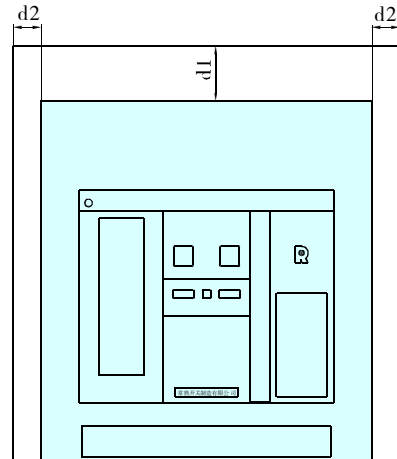
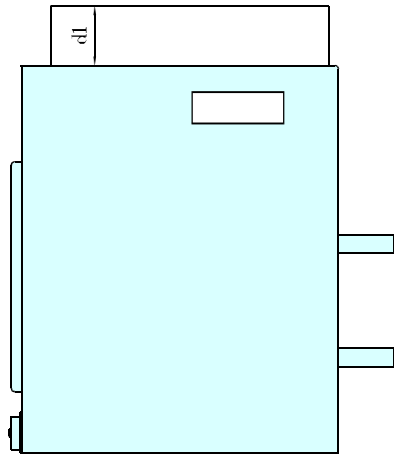
At the time, press the button "I" or energize the closing electromagnet, the breaker could be closed reliably. For motor-driven system, it would be recharged automatically.

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.

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



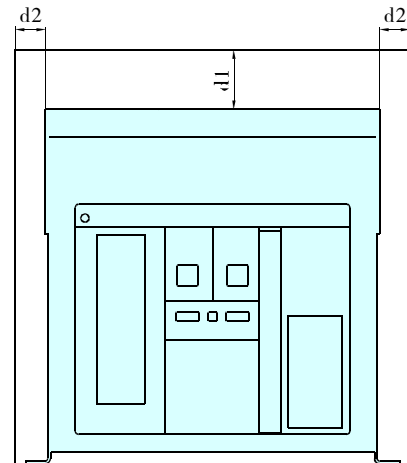
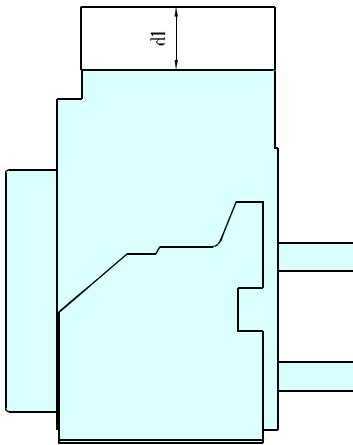
● 抽屉式断路器 Draw-out breaker



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

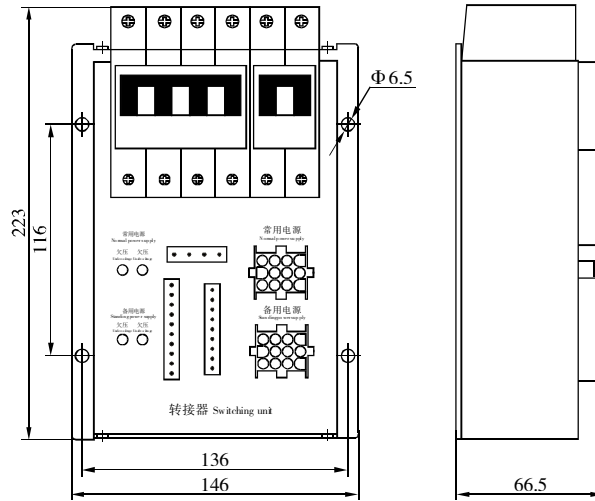
	柜壁 Switchboard wall	带电部分 Live part
d1(注note)(mm)	0	60
d2(mm)	0	60

注：安全间隙要考虑二次回路的走线。
Note:secondary circuit wiring must be considered for safety clearance.



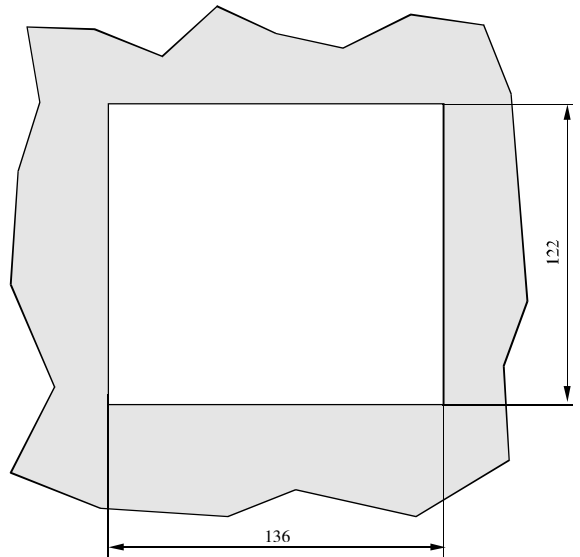
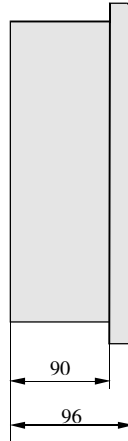
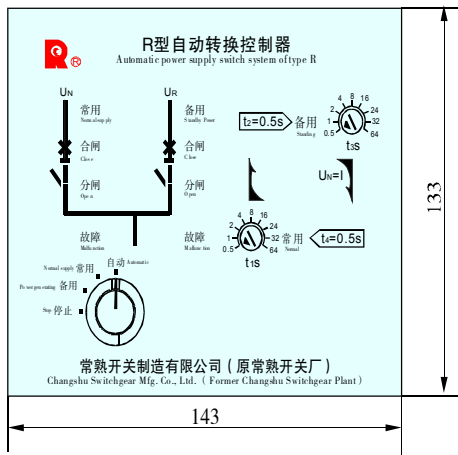
● 转接器

The switching unit



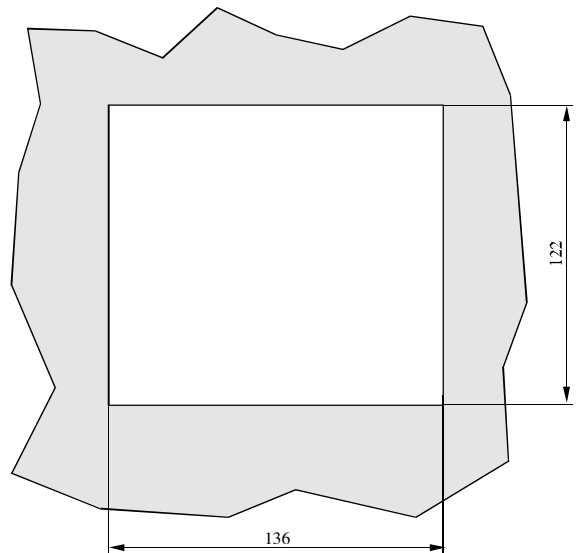
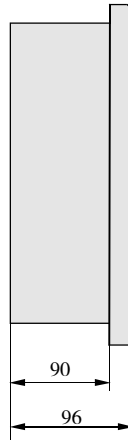
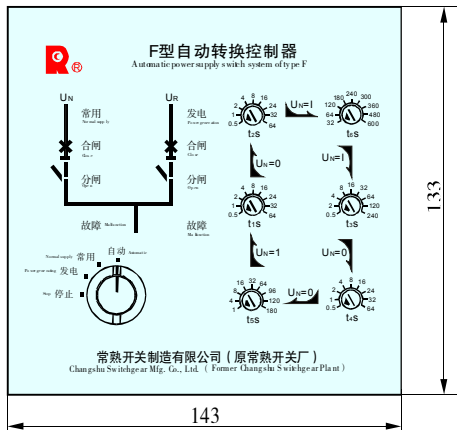
● R、S型自动转换控制器

Type R and S Automatic Power Supply Switch System



● F型自动转换控制器

Type F automatic controller

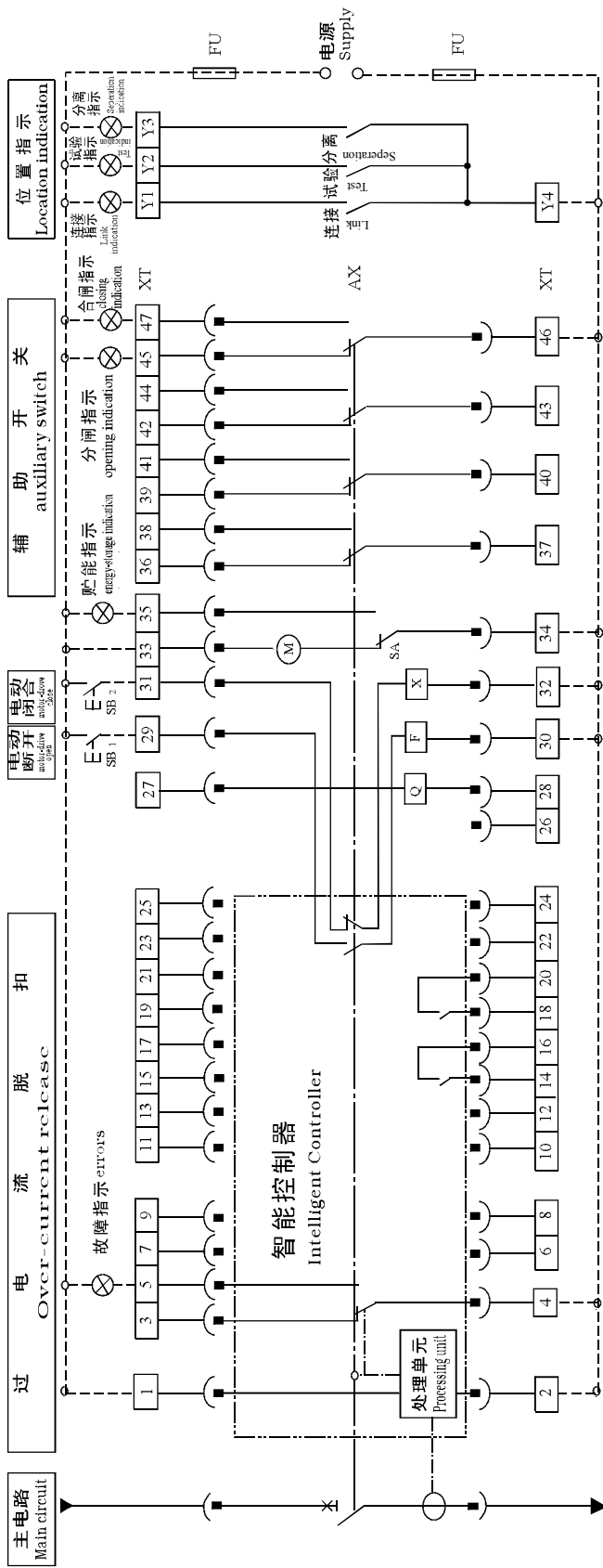




断路器二次回路接线图 BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

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

配L、M、MY型智能控制器的断路器二次回路接线图
辅助开关为四组转换触头



注：虚线部分为用户自接。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1, √为必备附件的功能接线; ○为选接附件的功能接线; 为无该选项功能。
In the following table, √: standard configuration, ○: optional configuration, : none.

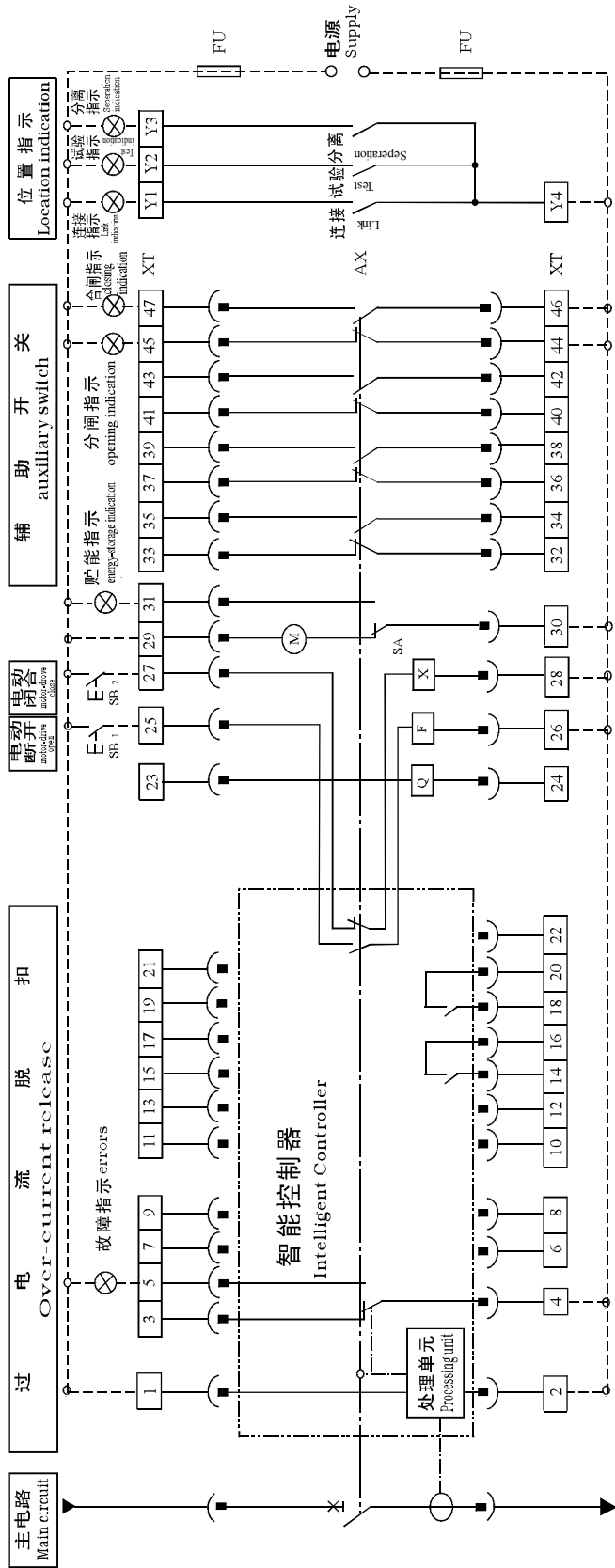
端子号 Terminal	功能 Function	适用控制器类型 Controller type	
		L	M
1, 2	智能控制器电源 Power supply for controller	√	√
3, 4, 5	故障指示触点(AC250V 1A) Fault indicator (AC250V 1A)	√	√
6, 7	当三极断路器选择外核中性线电流互感器时, 接至外核中性线电流互感器, 其中6接互感器端子R, 7接互感器端子L。 When three-pole circuit breaker with current transformer with neutral line N, 6 to R, 7 to L.	—	○
14, 16	负载监控信号 (1) 输出 Output of load monitoring signals 1	—	○
18, 20	负载监控信号 (2) 输出 Output of load monitoring signals 2	—	○
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) Voltage display (21 to phase A, 23 to phase B, 25 to phase C)	—	○
27, 28	欠电压脱扣器 (应接在主回路中) Connect with under-voltage release	○	○
29, 30	分励脱扣器 Connect with shunt release	√	√
31, 32	合闸电磁铁 Connect with closing electromagnet	√	√
33, 34, 35	电动操作机构, 33, 34可直接接电源(手动预储能), 也可串接常开接钮后接电源(手动预储能) Connect with Motor driven operating mechanism, Power supply directly (auto energy persore) or power supply with a NO(normal open) button simultaneously (manual energy persore) with 33, 34	√	√
36 ~ 47	辅助开关, 当分励脱扣器、合闸电磁铁的电压为直流时, 带额定电压3常开3常闭(AC/DC) Auxiliary switch, 3NO/3NC for DC of Shunt release, Closing electromagnet	√	√
Y1, Y2, Y3, Y4	位置指示 Location indication	○	○

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	电动执行机构
XT	断路器二次回路接线端子
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 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、电动操作机构、合闸电压指示器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	智能控制电源 Power supply for controller	L, M, MY
3, 4, 5	故障指示触点 (AC250V 1A) Fault indication (AC250V 1A)	√, √, √
6, 7	当三极断路器选择外接中性线电流互感器时，接至外接线中性线电流互感器。其中6接互感器端子B，7接互感器端子L。 When a three-pole circuit breaker is selected with an external transformer with neutral line N, 6 to B, 7 to L.	√
14, 16	负载监控信号 (1) 输出 Output of load monitoring signals 1	—
18, 20	负载监控信号 (2) 输出 Output of load monitoring signals 2	—
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) Voltage display (17 to phase A, 19 to phase B, 21 to phase C)	—
23, 24	欠电压脱扣器 (应接在主回路中) Connect with under-voltage release	○
25, 26	分励脱扣器 Connect with shunt release	√
27, 28	合闸电磁铁 Connect with closing electromagnet	√
29, 30, 31	电动操作机构, 29, 30可直接接电源 (白动预储能), 也可串接常开按钮后接电源 (手动预储能) Connect with Motor driven operating mechanism, Power supply (Automatic energy storage), or connect with normally open button after power supply (Manual energy storage) with 29, 30	√
32-47	辅助开关, 当分励脱扣器、合闸电磁铁的电压为直流时, 需配置3常开3常闭(光p59) Auxiliary switch, 3NO/3NC for DC of Shunt release, Closing electromagnet	√
Y1, Y2, Y3, Y4	位置指示 (Y1, Y2, Y3, Y4) Location indication	○

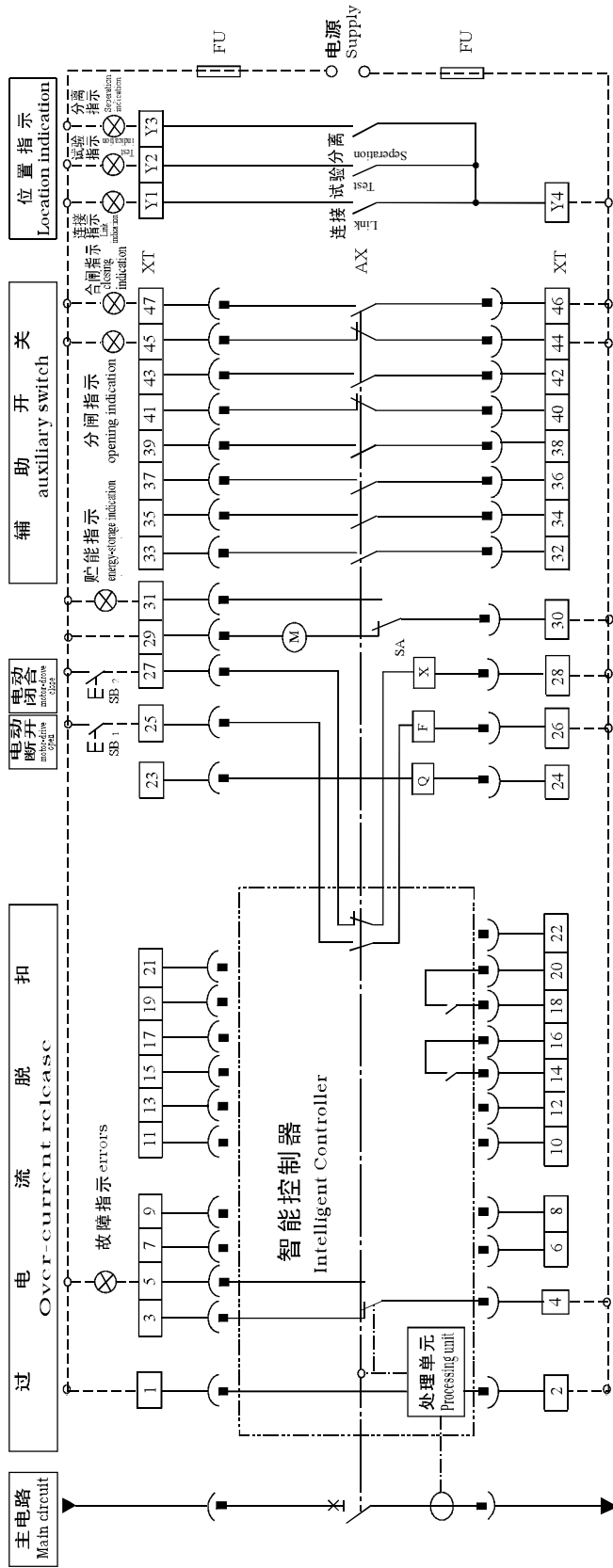
AX	断路器辅助开关	Auxiliary switch
SB1	分励按钮 <td>Shunt button</td>	Shunt button
SB2	合闸按钮 <td>Closing button</td>	Closing button
Q	欠电压脱扣器 <td>Under-voltage release</td>	Under-voltage release
F	分励脱扣器 <td>Shunt release</td>	Shunt release
X	合闸电磁铁 <td>Closing electromagnet</td>	Closing electromagnet
M	储能电机 <td>Charging motor</td>	Charging motor
SA	电动执行机构开关 <td>Limit switch</td>	Limit switch
XT	断路器二次回路端子 <td>Terminals</td>	Terminals
Fu	熔断器 <td>Fuse</td>	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 6 NO and 2 NC contacts

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



注：虚线部分为用户自接。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1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 Power supply for controller	√	√
3, 4, 5	故障指示触点(AC250V 1A) Fault indication (AC250V 1A)	√	√
6, *	当二极断路器选择外核中相续电流互感器时，接至外核中相续电流互感器。其中6核互感器端子R, 7核互感器端子L。 When two-pole circuit breaker with current transformer with neutral line N, 6 to R, 7 to L.	—	○
14, 16	负载监控信号 (1) 输入 Output of load monitoring signals 1	—	○
18, 20	负载监控信号 (2) 输出 Output of load monitoring signals 2	—	○
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) Voltage display (17 to phase A, 19 to phase B, 21 to phase C)	—	○
23, 24	欠电压脱扣器 (应接在主回路中) Connect with under-voltage release	○	○
25, 26	分励脱扣器 Connect with shunt release	√	√
27, 28	合闸电磁铁 Connect with closing electromagnet	√	√
29, 30, 31	电动操作机构。29, 30可直接接电源(手动预储能)，也可串接带灭弧触头接电源(手动预储能) Connect with Motor driven operating mechanism. Power supply directly (auto energy prestore) or power supply with a NO(normal open) button simultaneously (manual energy prestore) with 29, 30	√	√
32 ~ 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常开触点3常开(带闭点P9) Auxiliary switch. 3 NO/3 NC for DC of Shunt release. Closing electromagnet	√	√
Y1, Y2, Y3, Y4	捕展位置电气指示 (AC250V 1A) Electrical mechanism for the indication of draw-out socket position (AC250V 1A)	○	○

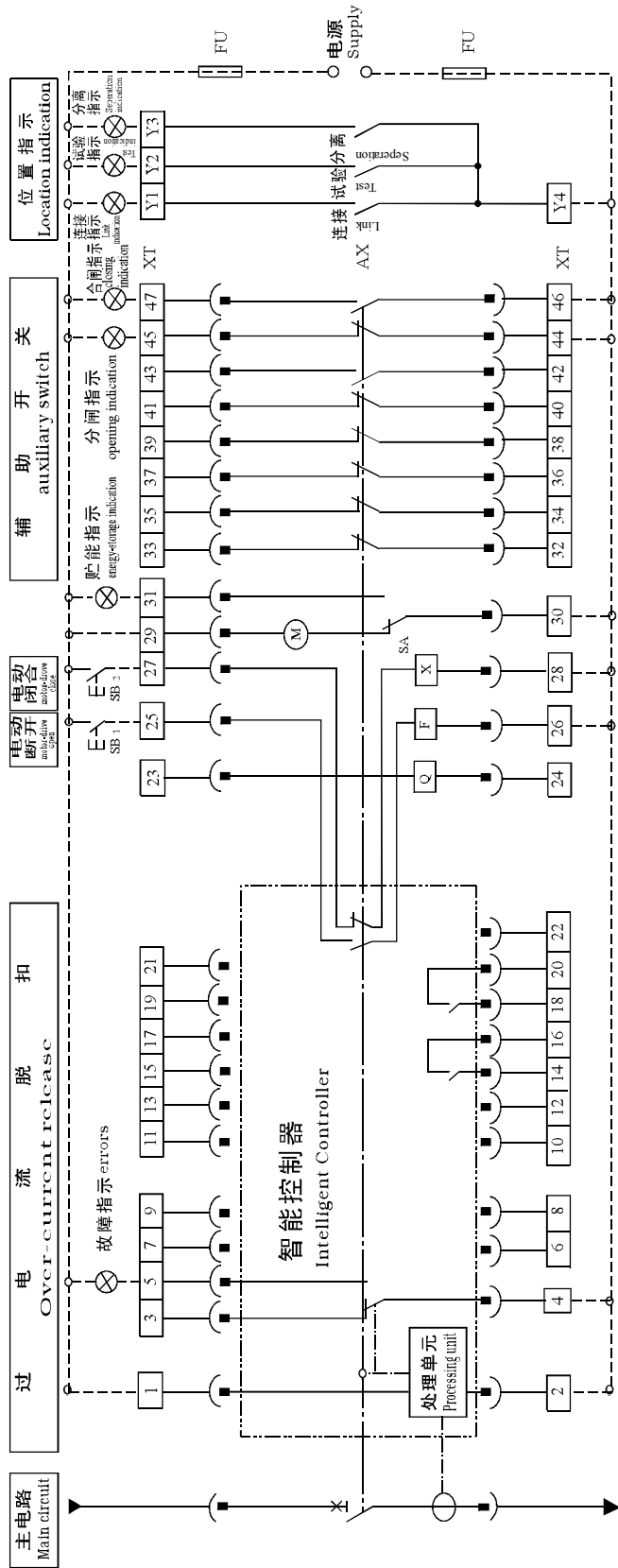
AX	断路器辅助开关
SB1	分励按钮
SB2	合闸按钮
Q	欠电压脱扣器
F	分励脱扣器
X	合闸电磁铁
M	储能电机
SA	电动机行程开关
XT	断路器二次回路接线端子
Fu	熔断器



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：虚线部分由用户连接。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1, √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		
		L	M	MY
1, 2	智能控制器电源 Power supply for controller	√	√	√
3, 4, 5	故障指示触点(AC250V 1A) Fault instruction (AC250V 1A)	√	√	√
6, 7	当二极断路器选择外接中相电流互感器时, 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。 Connect with Meter when operating non-hubless. Power supply directly (into energy presetter) or power supply with a NO (normal open) function simultaneously (manual energy presetter) with 29,30.	—	√	√
14, 16	负载监控信号 (1) 输出 Output of load monitoring signals 1	—	○	○
18, 20	负载监控信号 (2) 输出 Output of load monitoring signals 2	—	○	○
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) Voltage display (17 to phase A, 19 to phase B, 21 to phase C)	—	○	○
23, 24	欠电压脱扣器 (应接在主回路中) Connect with under-voltage release	○	○	○
25, 26	分励脱扣器 Connect with shunt release	√	√	√
27, 28	合闸电磁铁 Connect with closing electromagnet	√	√	√
29, 30, 31	电动操作机构, 29, 30可直接接电源 (自动预储能), 也可半接常开按钮后接电源 (手动预储能) Connect with Motor when operating non-hubless. Power supply directly (into energy presetter) or power supply with a NO (normal open) function simultaneously (manual energy presetter) with 29,30.	√	√	√
32~47	辅助开关, 当分励脱扣器、合闸电磁铁的电压为重流时, 常配常开3常闭(见p59) Auxiliary switch, 3NO/3NC for DC of Shunt release. Closing electromagnet	√	√	√
Y1, Y2, Y3, Y4	抽屜位置电气指示 (AC250V 1A) Electrical mechanism for the indication of drawer-out-work position (AC250V 1A)	○	○	○

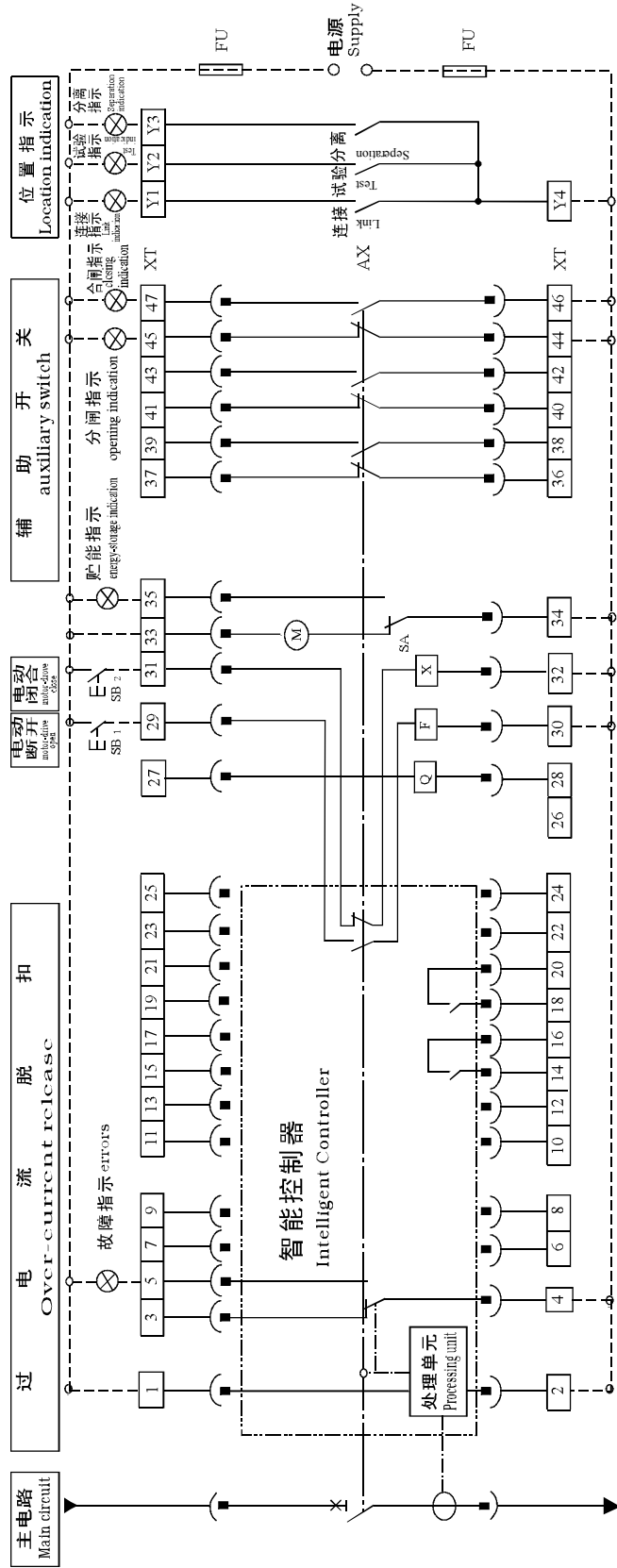
AX	断路器辅助开关	Auxiliary switch
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
FU	熔断器	Fuse



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
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1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.

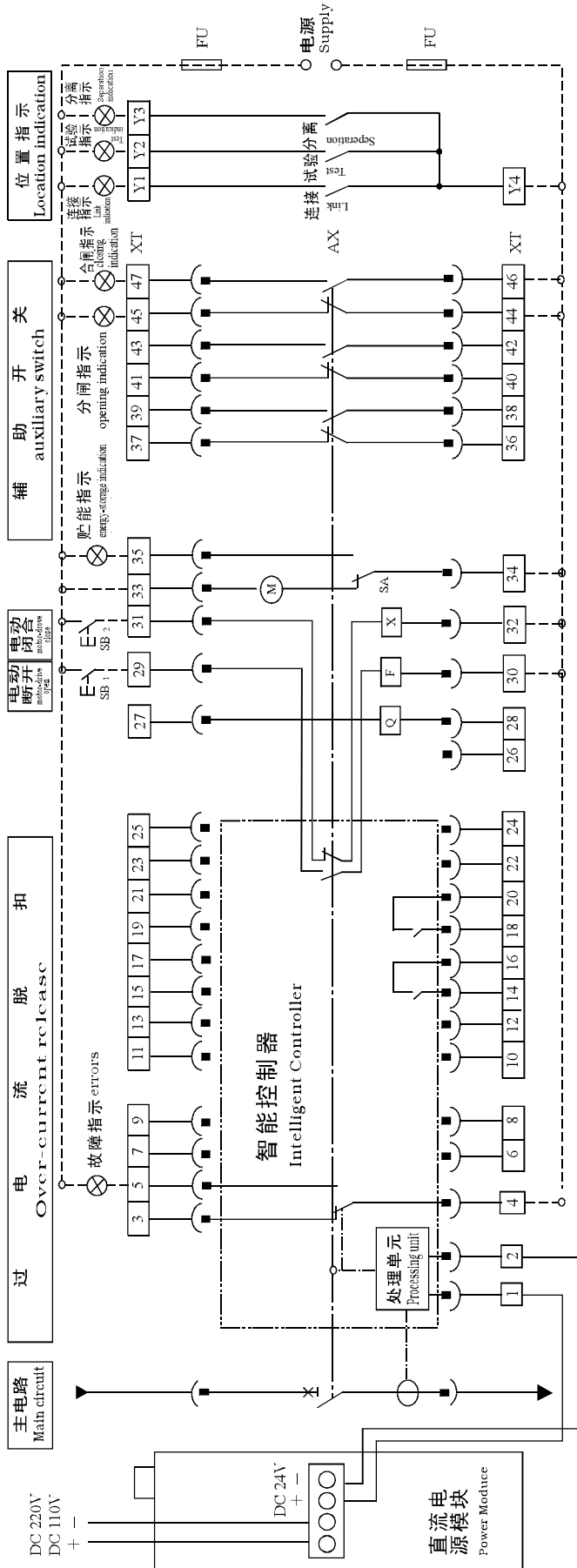
端子号 Terminal	功能 Function	适用控制器类型 Controller type		
		L	M	MY
1, 2	智能控制器电源	√	√	√
3, 4, 5	故障指示触头(AC250V 1A)	√	√	√
6, 7	当二极断路器选择外嵌中性线电流互感器时，接于外嵌中性线电流互感器。其中6接互感器端子K, 7接互感器端子L。	—	○	○
14, 16	负载监控信号 (1) 输出	—	○	○
18, 20	负载监控信号 (2) 输出	—	○	○
21, 23, 25	电压显示功能(21, 23, 25端子分别接入A相、B相、C相主回路电压)	—	○	○
27, 28	欠电压脱扣器 (应接在主回路中)	○	○	○
29, 30	分励脱扣器	√	√	√
31, 32	电动闭锁	√	√	√
33, 34, 35	电动闭锁机构。33, 34可直接接电源(手动预储能), 也可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, 常闭触点3常开触点4(p59)	√	√	√
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	贮能电机
SA	电动闭锁行程开关
XT	断路器二次回路接线端子
Fu	熔断器



断路器二次回路接线图 BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

配L、M、MY型智能控制器的断路器二次回路接线图
 Wiring Diagram of the Secondary Circuit of the Breaker Equipped with Type L、M、MY 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；○为选接附件的功能接线；为无该选项功能。
 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 Power supply for controller	√	√	√
3, 4, 5	故障指示触点 (AC250V 1A) Fault instruction (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B，7接互感器端子L。 When three-pole circuit breaker with current transformer with neutral line N, 6 to B, 7 to L.	—	○	○
14, 16	负载监控信号 (1) 输出 Output of load monitoring signals 1	—	○	○
18, 20	负载监控信号 (2) 输出 Output of load monitoring signals 2	—	○	○
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) Voltage display (21 to phase A, 23 to phase B, 25 to phase C)	—	○	○
27, 28	欠电压脱扣器 (应接在主回路中) Connect with under-voltage release	○	○	○
29, 30	分励脱扣器 Connect with shunt release	√	√	√
31, 32	合闸电磁铁 Connect with closing electromagnet	√	√	√
33, 34, 35	电动机操作机构。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) Connect with Motor driven operating mechanism. Power supply for energy precharge on just supply power (Automatic energy precharge) or on just supply power after button (manual energy precharge) with 33, 34	√	√	√
36-47	辅助开关 Auxiliary switch	√	√	√
Y1, Y2, Y3, Y4	抽能位置电气指示 (AC250V 1A) Electric indication for the indication of draw-out socket position (AC250V 1A)	○	○	○

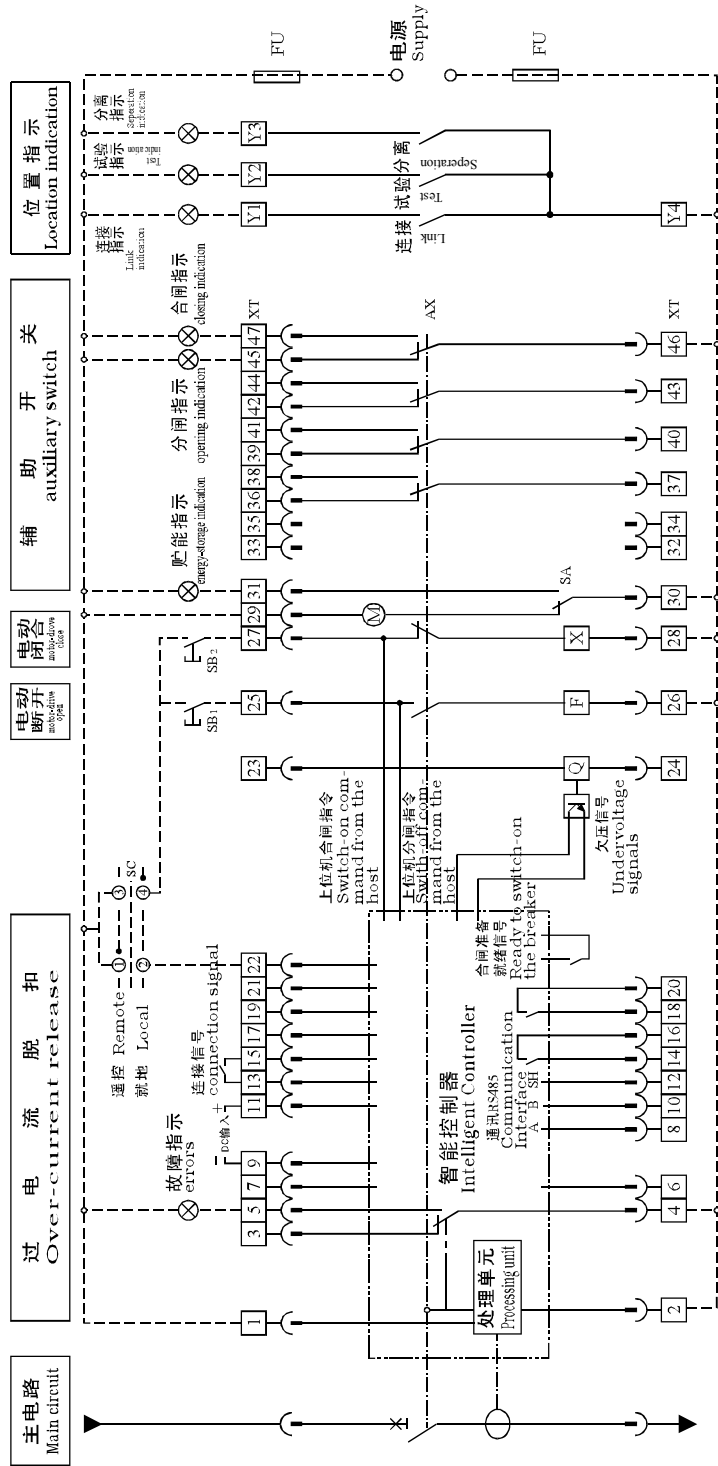
AX	断路器辅助开关	Auxiliary switch
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	储能电机	Charging motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse



断路器二次回路接线图 BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

配H、HY型智能控制器的断路器的二次回路接线图
 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

配H、HY型智能控制器的断路器的二次回路接线图
 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：虚线部分为用户自接。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：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 Power supply for controller	II
3, 4, 5	故障指示触点(AC250V 1A) Fault instruction (AC250V 1A)	✓
6, 7	当三极断路器选择外控中性线电流互感器时，接至外控中性线电流互感器端子，其中6接互感器端子B，7接互感器端子L。 Three-pole circuit breaker with current transformer with neutral line N, 6 to B, 7 to L.	✓
8, 10, 12	A、B为RS485通信接口，S1接屏蔽层，其中8接A，10接B，12接SH。 A/B is RS485 interface, 8 to A, 10 to B, 12 to SH	○
9, 11	可接入AC24V电源，其中9接正极，11接正极，控制器无电通信。 DC24V, 9 to negative pole, 11 to positive pole	✓
14, 16	负载监控信号(1) 输出 Output of load monitoring signals 1	○
18, 20	负载监控信号(2) 输出 Output of load monitoring signals 2	○
17, 19, 21	电击显示功能(17, 19, 21端子分别接入A相、B相、C相主回路电压) Voltage display (17 to phase A, 19 to phase B, 21 to phase C)	✓
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) The voltage rating equal to working voltage of shunt release and closing electromagnet (F & X must be same)	✓
23, 24	接入与分励脱扣器(应接在主回路中) Connect with shunt release	○
25, 26	分励脱扣器 Connect with closing electromagnet	✓
27, 28	合闸电磁铁 Connect with shunt release	✓
29, 30, 31	电动操作机构，29, 30可直接接电源(手动储能)，也可串接常开按钮后接电源(手动储能) Connect with Motor driven operating mechanism, Power supply directly (auto energy prestoring) or power supply with a NO(normal open) button simultaneously (manual energy prestoring) with 29, 30	✓
36 - 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常开触点接端子36(常开p64) Auxiliary switch, 3NO/NC for DC of F, X	✓
Y1, Y2, Y3, Y4	抽展位置电气指示 (AC250V 1A) Electric arc-burn-in for the indication of draw-out socket position (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

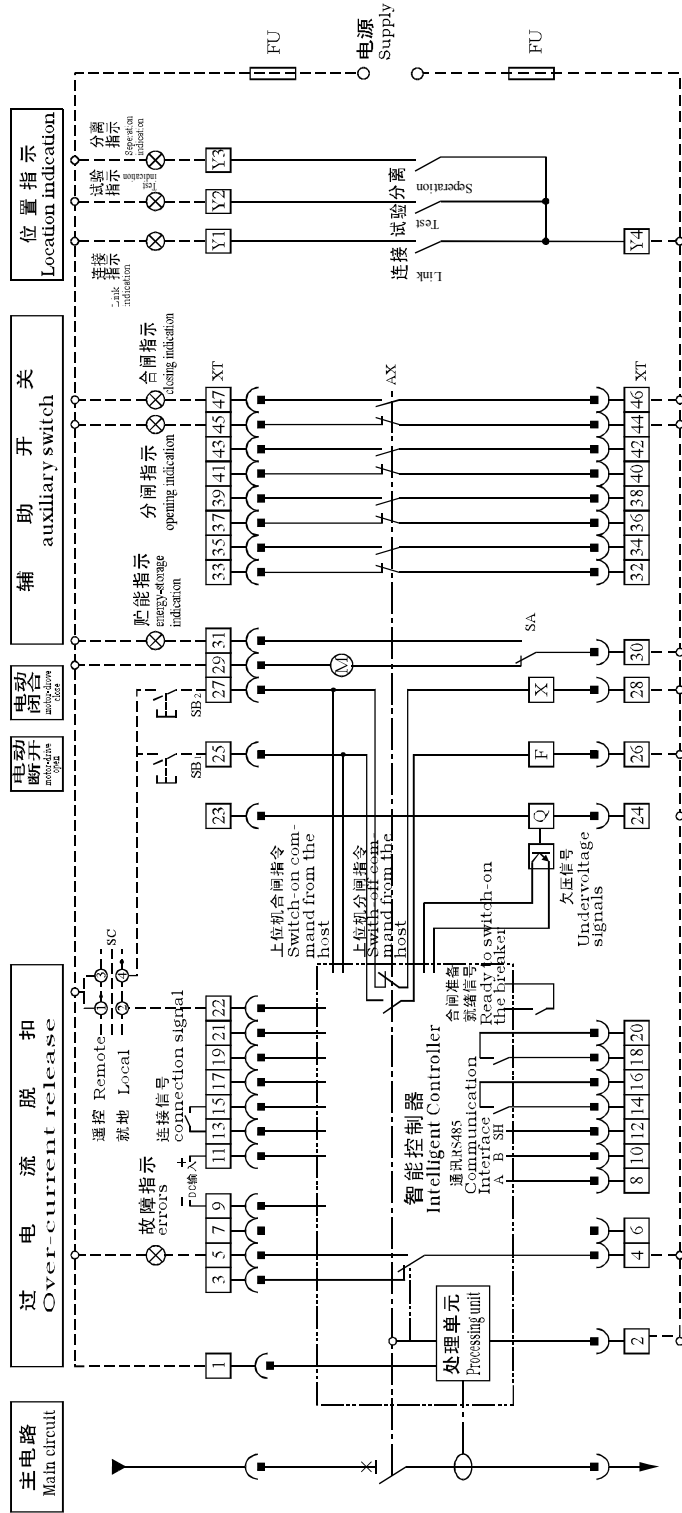


断路器二次回路接线图

BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

Wiring diagram of the secondary circuit equipped with Type H, HY intelligent controller

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点



注：虚线部分为用户自接。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	Controller type
1, 2	智能控制器电源 Power supply for controller	II	HY
3, 4, 5	故障指示触点(AC250V 1A) Fault indication (AC250V 1A)	√	√
6, 7	当二极断路器选择外接中相电流互感器时, 按室外接中相电流互感器端子R, 7接互感器端子L。 When two-pole circuit breaker is selected with external current transformer, connect to phase R terminal of current transformer when outdoor, and to phase L terminal of current transformer when indoor.	√	√
8, 10, 12	A、B为RS485通信接口, S1接屏蔽层, 10接B, 12接S11 A, B are RS485 interface, S1 is shield, 10 to B, 12 to S11	○	○
9, 11	可接入DC24V电源, 其中9接负极, 11接正极, 控制器无电通信 DC24V power supply can be connected, 9 to negative pole, 11 to positive pole, controller has no power communication	√	√
14, 16	负载监控信号 (1) 输出 Load monitoring signal 1 output	○	○
18, 20	负载监控信号 (2) 输出 Load monitoring signal 2 output	○	○
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) Voltage display (17 to phase A, 19 to phase B, 21 to phase C)	√	√
22	接入分励脱扣器、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) Connect to the same voltage as the shunt release and closing electromagnet (at this time, the working voltage of the shunt release and closing electromagnet must be the same)	√	√
23, 24	欠电压脱扣器 (应接在主回路中) Connect with under-voltage release	○	○
25, 26	分励脱扣器 Connect with shunt release	√	√
27, 28	合闸电磁铁 Connect with closing electromagnet	√	√
29, 30, 31	电动机操作机构, 29, 30可直接接电源 (手动预储能), 也可半接常开按钮后接电源 (手动预储能) Motor driven operating mechanism, 29, 30 can be connected directly to power supply (manual energy storage), or connected to normally open button after power supply (manual energy storage)	√	√
32 ~ 47	辅助开关, 当分励脱扣器、合闸电磁铁的电压为直流时, 常开常闭端子3常开(如J64) Auxiliary switch, 3 NO/3 NC for DC of F, X	√	√
11, 12, 13, 14	机械位置电气指示 (AC250V 1A) Electrical mechanism for the indication of close-out switch position (AC250V 1A)	○	○

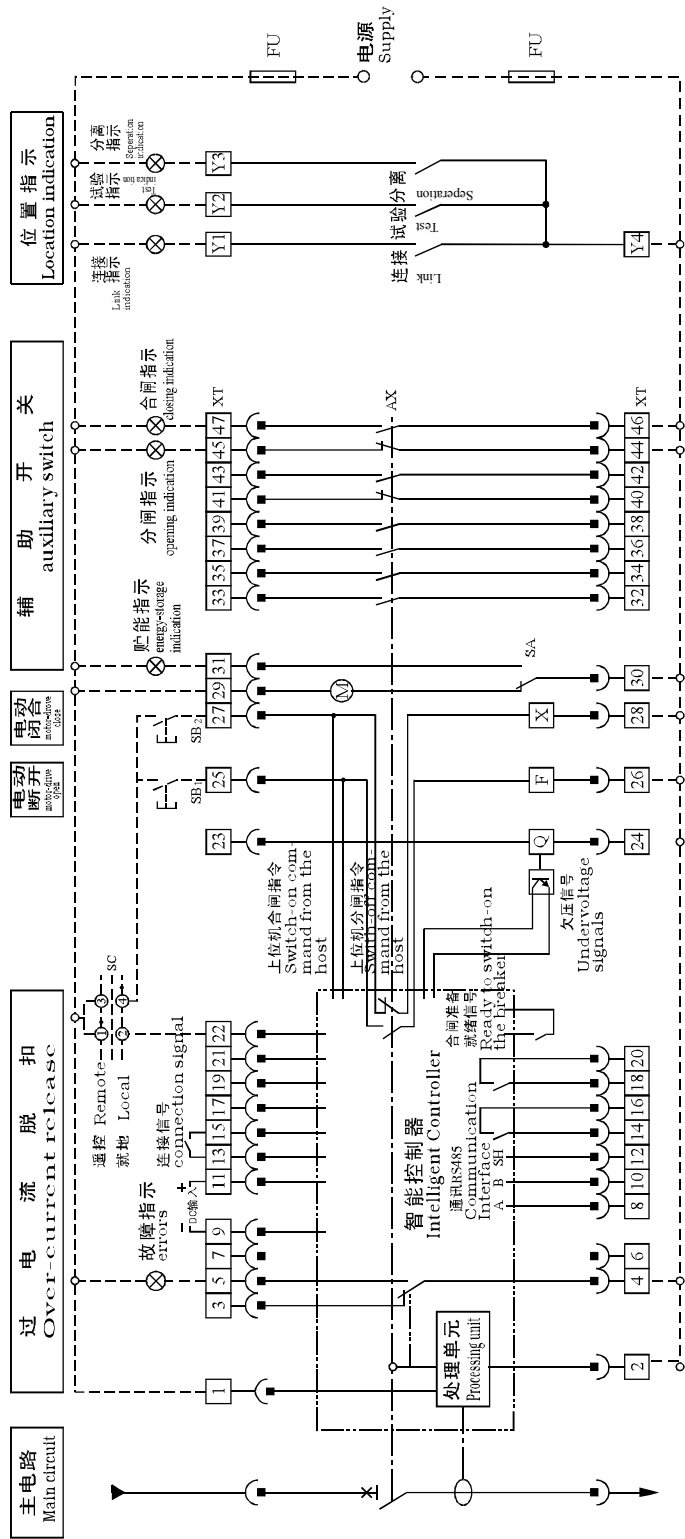
AX	断路器辅助开关	Auxiliary switch
SB1	分励按钮	Shunt button
SB2	合闸按钮	Closing button
Q	欠电压脱扣器	Under-voltage release
F	分励脱扣器	Shunt release
X	合闸电磁铁	Closing electromagnet
M	电动机	Closing motor
SA	电动机行程开关	Limit switch
XT	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse



断路器二次回路接线图 BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

Wiring Diagram of the Secondary Circuit 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点



注：虚线部分为用户自接。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

下表为必需附件的功能接线；○为选择附件的功能接线；为无该选项功能。

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	控制器类型 Controller type
1, 2	智能控制电源 Power supply for controller	√	IIY
3, 4, 5	故障指示触点(AC250V 1A) Fault Instruction (AC250V 1A)	√	√
6, 7	当三极断路器选择外部电流互感器时，接空外接入性电流互感器。其中6接互感器端子K，7接互感器端子L。 Three-pole circuit breaker with current transformer with neutral line N, 6 to K, 7 to L.	○	○
8, 10, 12	A、B为BS485通信接口，SI接屏显，其中8接A，10接B，12接SI。 A/B is RS485 interface, 8 to A, 10 to B, 12 to SI.	√	√
9, 11	可接入DC24V电源，其中9接负极，11接正极，控制器无通信用。 DC24V, 9 to negative pole, 11 to positive pole.	√	√
14, 16	负载监控信号 (1) 输出 Output of load monitoring signals 1	○	○
18, 20	负载监控信号 (2) 输出 Output of load monitoring signals 2	○	○
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) Voltage display (17 to phase A, 19 to phase B, 21 to phase C)	√	√
22	接入分励脱扣器、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) The voltage rating equal to working voltage of shunt release and closing electromagnet (X & X must be same)	√	√
23, 24	欠电压脱扣器(应接在主回路中) Connect with undervoltage release	○	○
25, 26	分励脱扣器 Connect with shunt release	√	√
27, 28	合闸电磁铁 Connect with closing electromagnet	√	√
29, 30, 31	电动机操作机构。29, 30可直接接电源(自动储能)，也可串接常开按钮接电源(手动储能) Connect with Motor driven operating mechanism. Power supply directly (auto energy prestoring) or power supply with a NO(normal open) button simultaneously (manual energy prestoring) with 29, 30	√	√
32 - 47	辅助开关。当分励脱扣器、合闸电磁铁的电压为直流时，常闭触点3常开5常闭(光64) Auxiliary switch, 3NO3NC for DC of F.X	√	√
31, 32, 33, 34	捕展位置电气指示 (AC250V 1A) Electrical mechanism for the indications of draw-out socket position (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	Undervoltage 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
X1	断路器二次回路接线端子	Terminals
Fu	熔断器	Fuse

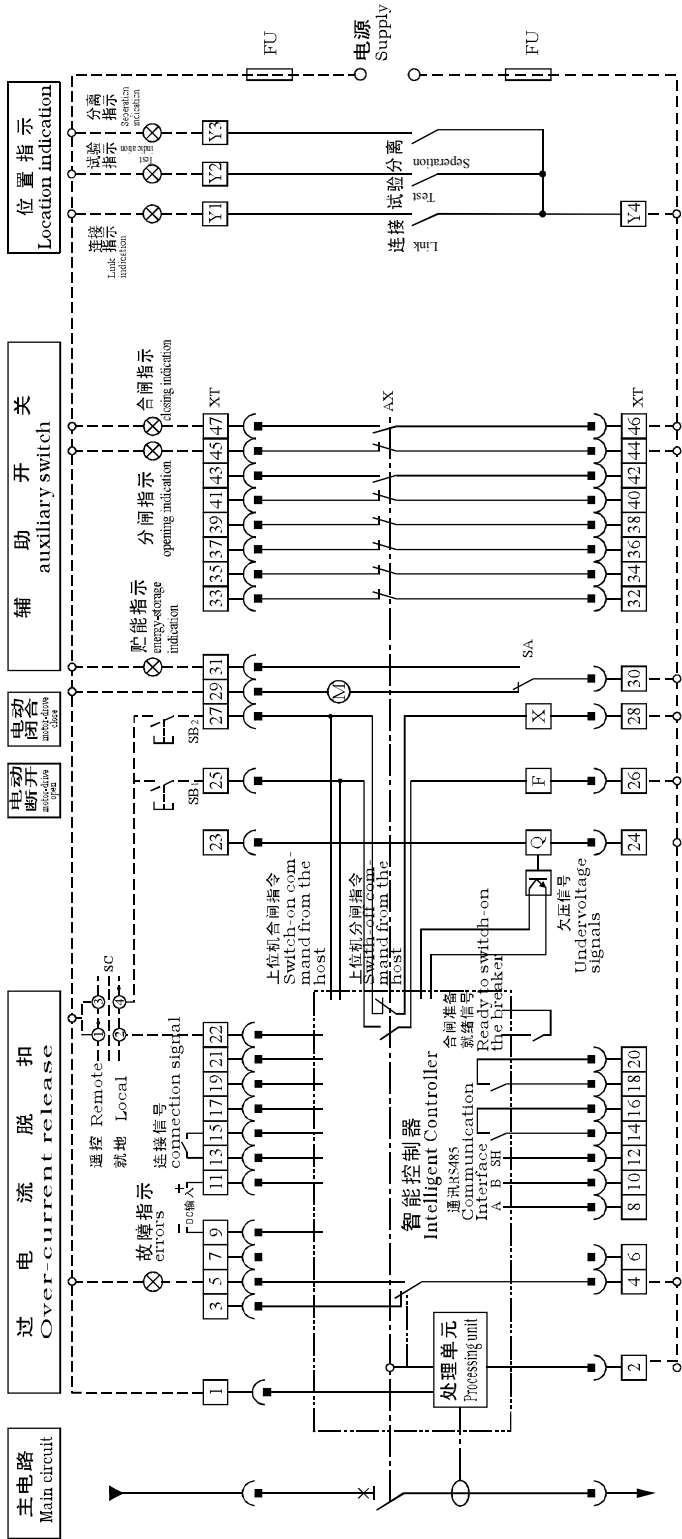


断路器二次回路接线图

BREAKER SECONDARY CIRCUIT WIRING DIAGRAM

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

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



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.

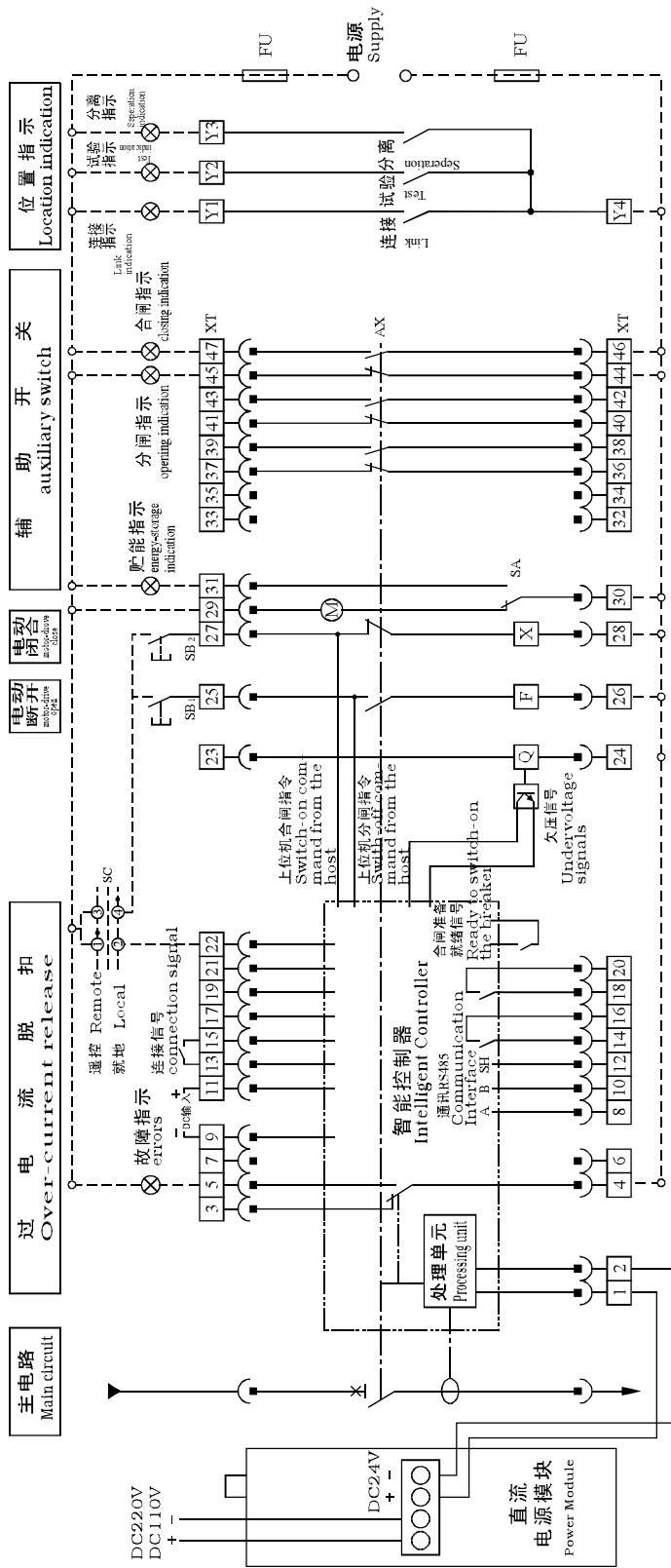
端子号 Terminal	功能 Function	适用控制器类型 Controller type	Controller type
1, 2	智能控制器电源 Power supply for controller	√	HY
3, 4, 5	故障指示触点(AC250V 1A) Fault indication (AC250V 1A)	√	√
6, 7	当三极断路器选择外接中性线电流互感器时，接至外接线性线电流互感器。其中6接互感器端子R，7接互感器端子L。 When three-pole circuit breaker with current transformer with neutral line N, 6 to R, 7 to L.	○	○
8, 10, 12	A、B为RS485通信线1，S1接屏蔽层，其中8接A，10接B，12接SH A/B is RS485 interface, 8 to A, 10 to B, 12 to SH	√	√
9, 11	可接入DC24V电源，其中9接正极，11接正极，控制器无电源信号 DC24V, 9 to negative pole, 11 to positive pole	○	○
14, 16	负载监控信号 (Q1) 输出 Output of load monitoring signals 1	○	○
18, 20	负载监控信号 (Q2) 输出 Output of load monitoring signals 2	○	○
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) Voltage display (17 to phase A, 19 to phase B, 21 to phase C)	√	√
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) The voltage rating equal to working voltage of shunt release and closing electromagnet (X must be same)	√	√
23, 24	欠电压脱扣器 (应接在回路中) Connect with under-voltage release	○	○
25, 26	分励脱扣器 Connect with shunt release	√	√
27, 28	合闸电磁铁 Connect with closing electromagnet	√	√
29, 30, 31	电机操作机构，29, 30可直接接电源(手动预储能)，也可半接常开接箱后接电源(手动预储能) Connect with Motor driven operating mechanism, Power supply directly (auto energy prestorer) or power supply with a NO(normal open) location simultaneously (manual energy prestorer) with 29, 30	√	√
32 ~ 47	辅助开关，3常开3常闭(配64) Auxiliary switch, 3NO/3NC for DC of F.X	√	√
Y1, Y2, Y3, Y4	位置指示电气指示 (AC250V 1A) Electrical mechanism for the indication of draw-out socket position (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

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：虚线部分为用户自接。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：√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	连门控制器类型 Controller type	Controller type
1, 2	智能控制器电源	II	HY
3, 4, 5	故障指示触点(AC250V 1A)	√	√
6, 7	当二极断路器选择外接中相电流互感器时, 接至外相中相性电流互感器端子R, 7接互感器端子L。	√	√
8, 10, 12	A、B为RS485通信线1, S1接屏蔽层, 其中8接A, 10接B, 12接S1	○	○
9, 11	n, 接入DC24V电源, 其中9接负极, 11接正极, 控制器无电通信	√	√
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)	√	√
22	接入分励脱扣器、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)	○	○
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(手动预储能), 也可并接常开按钮后接电源(手动预储能)	√	√
36~47	辅助开关	√	√
11, 12, 13, 14	抽屉位置电气指示 (AC250V 1A)	○	○

端子号 Terminal	功能 Function	连门控制器类型 Controller type	Controller type
23	上位机分闸指令 Switch-off command from the host	√	√
24	欠压信号 Under-voltage signals	○	○
26	F	√	√
28	X	√	√
30	SA	○	○
31	SA	○	○
33, 35, 37, 39, 41, 43, 45, 47	分闸指示 opening indication	√	√
34, 36, 38, 40, 42, 44, 46	合闸指示 closing indication	√	√
32	能量指示 energy storage indication	○	○
48	连接指示 Link indication	○	○
49	连接指示 Link indication	○	○
50	连接指示 Link indication	○	○
51	连接指示 Link indication	○	○
52	连接指示 Link indication	○	○
53	连接指示 Link indication	○	○
54	连接指示 Link indication	○	○
55	连接指示 Link indication	○	○
56	连接指示 Link indication	○	○
57	连接指示 Link indication	○	○
58	连接指示 Link indication	○	○
59	连接指示 Link indication	○	○
60	连接指示 Link indication	○	○
61	连接指示 Link indication	○	○
62	连接指示 Link indication	○	○
63	连接指示 Link indication	○	○
64	连接指示 Link indication	○	○
65	连接指示 Link indication	○	○
66	连接指示 Link indication	○	○
67	连接指示 Link indication	○	○
68	连接指示 Link indication	○	○
69	连接指示 Link indication	○	○
70	连接指示 Link indication	○	○
71	连接指示 Link indication	○	○
72	连接指示 Link indication	○	○
73	连接指示 Link indication	○	○
74	连接指示 Link indication	○	○
75	连接指示 Link indication	○	○
76	连接指示 Link indication	○	○
77	连接指示 Link indication	○	○
78	连接指示 Link indication	○	○
79	连接指示 Link indication	○	○
80	连接指示 Link indication	○	○
81	连接指示 Link indication	○	○
82	连接指示 Link indication	○	○
83	连接指示 Link indication	○	○
84	连接指示 Link indication	○	○
85	连接指示 Link indication	○	○
86	连接指示 Link indication	○	○
87	连接指示 Link indication	○	○
88	连接指示 Link indication	○	○
89	连接指示 Link indication	○	○
90	连接指示 Link indication	○	○
91	连接指示 Link indication	○	○
92	连接指示 Link indication	○	○
93	连接指示 Link indication	○	○
94	连接指示 Link indication	○	○
95	连接指示 Link indication	○	○
96	连接指示 Link indication	○	○
97	连接指示 Link indication	○	○
98	连接指示 Link indication	○	○
99	连接指示 Link indication	○	○
100	连接指示 Link indication	○	○



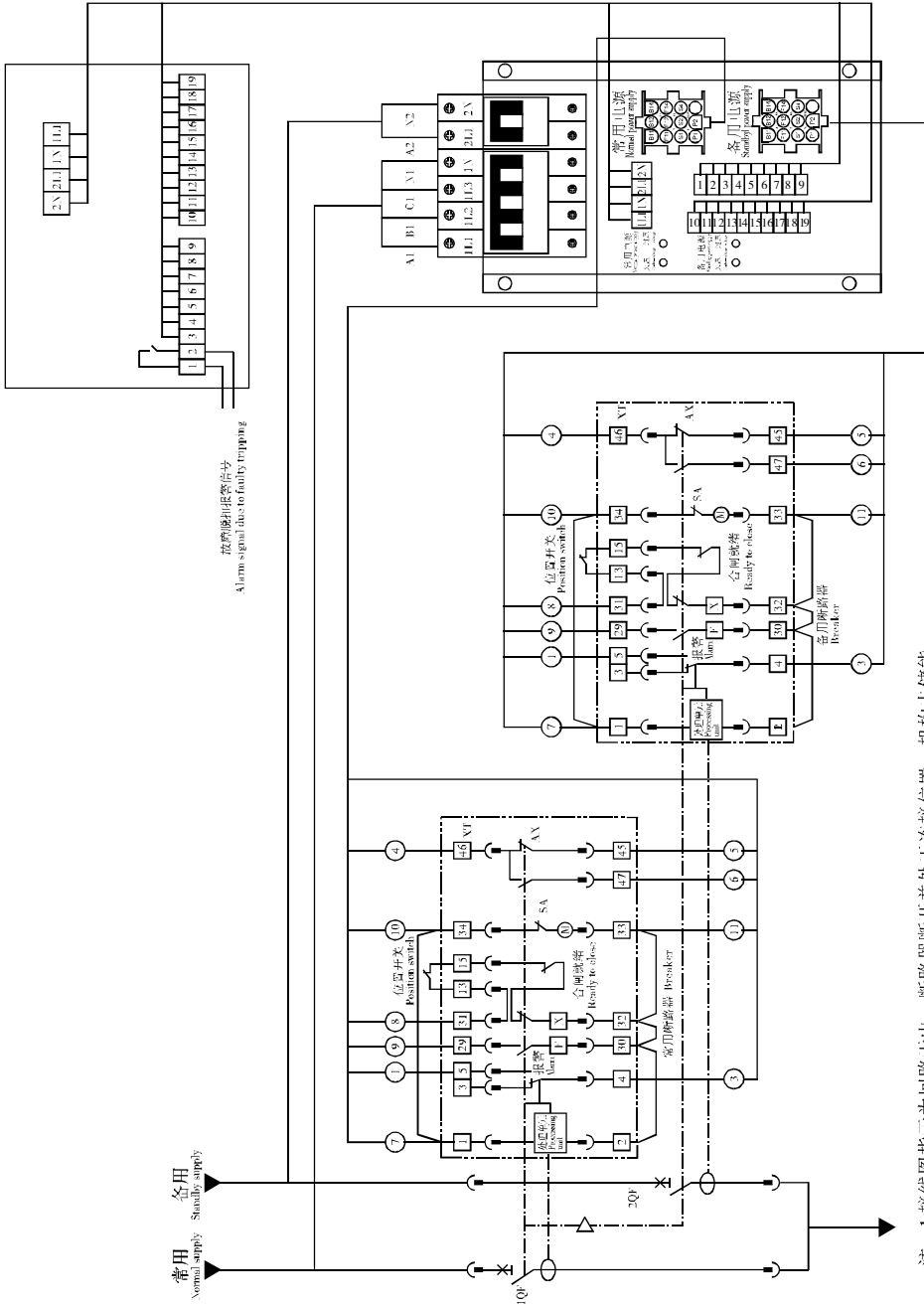
自动电源转换系统电气线路图

WIRING DIAGRAM OF THE AUTOMATIC POWER SUPPLY SYSTEM

Wiring diagram of the automatic power supply system for normal supply to standby supply system
The auxiliary switch has four pairs of change-over contacts

常用-备用自动电源转换系统电气线路图
辅助开关为四组转换触头

R型, S型自动转换控制器
Type R and S automatic controllers



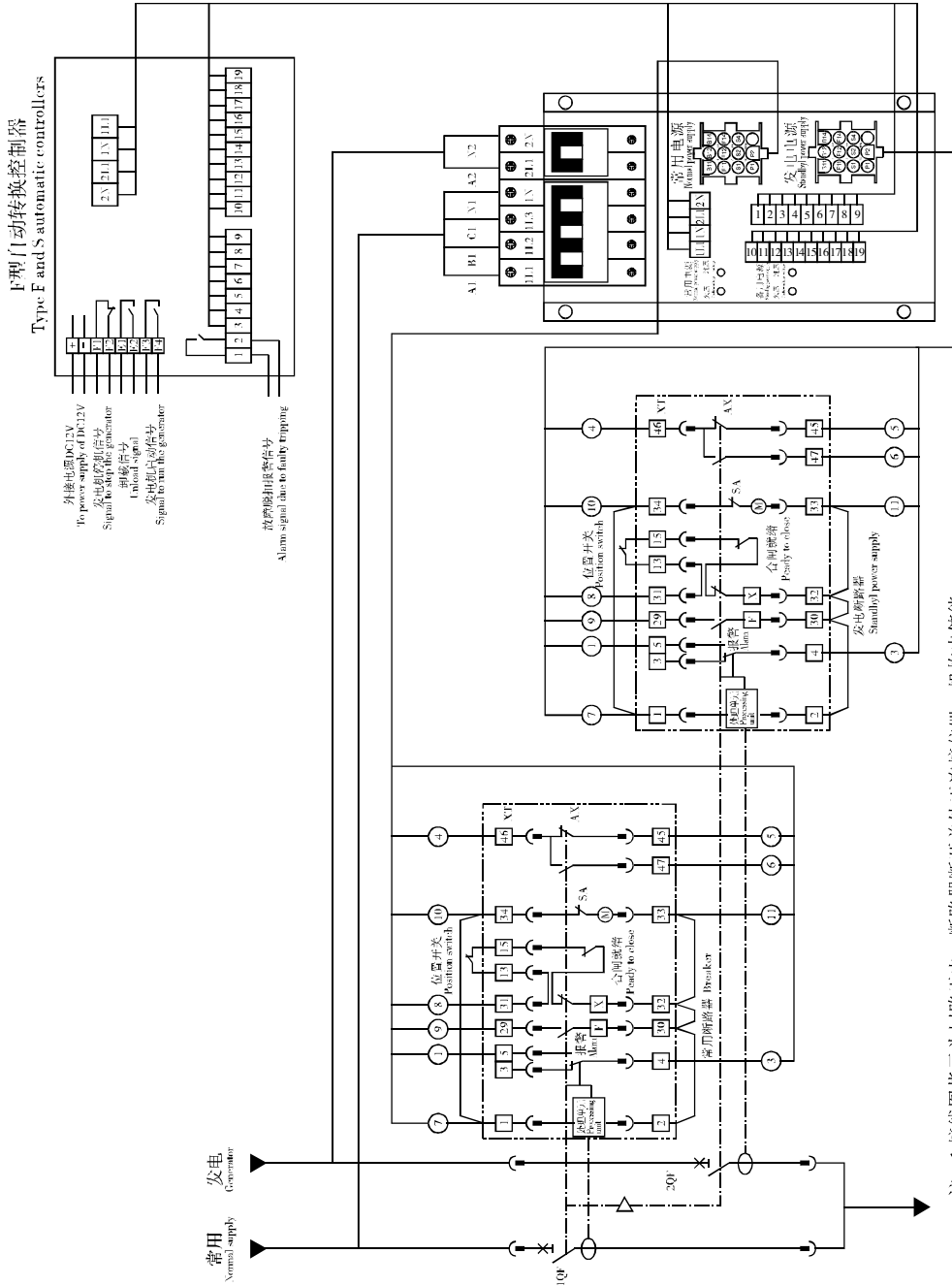
注: 1.接线图指示为回路无电, 断路器断开并处于连接位置, 机构未储能。
 2.当采用自动电源转换系统供电时, 断路器智能控制器、分励脱扣器、合闸电磁铁、电动机机构电压为AC230V。
 Note: 1.As shown in the above diagram the breaker is open and connecting, it hasn't been charged and there is no current in the loop.
 2. When ATS is used all voltage ratings are AC230V for intelligent controller, 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-发电自动电源转换系统电气线路图
The auxiliary switch has four pairs of contacts

常用-发电自动电源转换系统电气线路图
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，机构未储能。
 2.当采用自动电源转换系统供电时，断路器智能控制器、分闸磁铁、电动机智能控制器、分闸磁铁、电动机智能控制器、合闸磁铁、电动机智能控制器机构电压为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-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



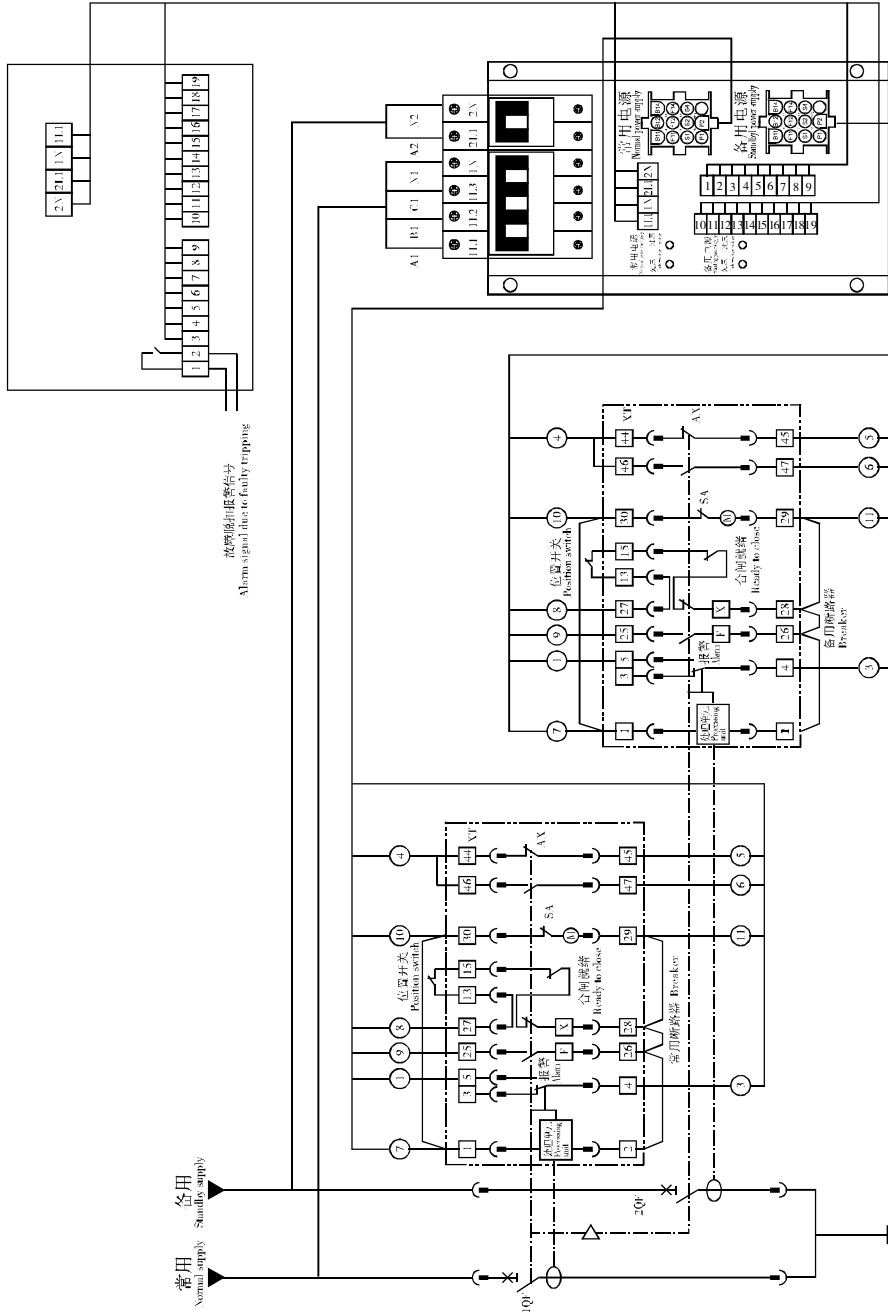
自动电源转换系统电气线路图

WIRING DIAGRAM OF THE AUTOMATIC POWER SUPPLY SYSTEM

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

常用-备用自动电源转换系统电气线路图
 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

R型, S型自动转换控制器
 Type R and S automatic controllers



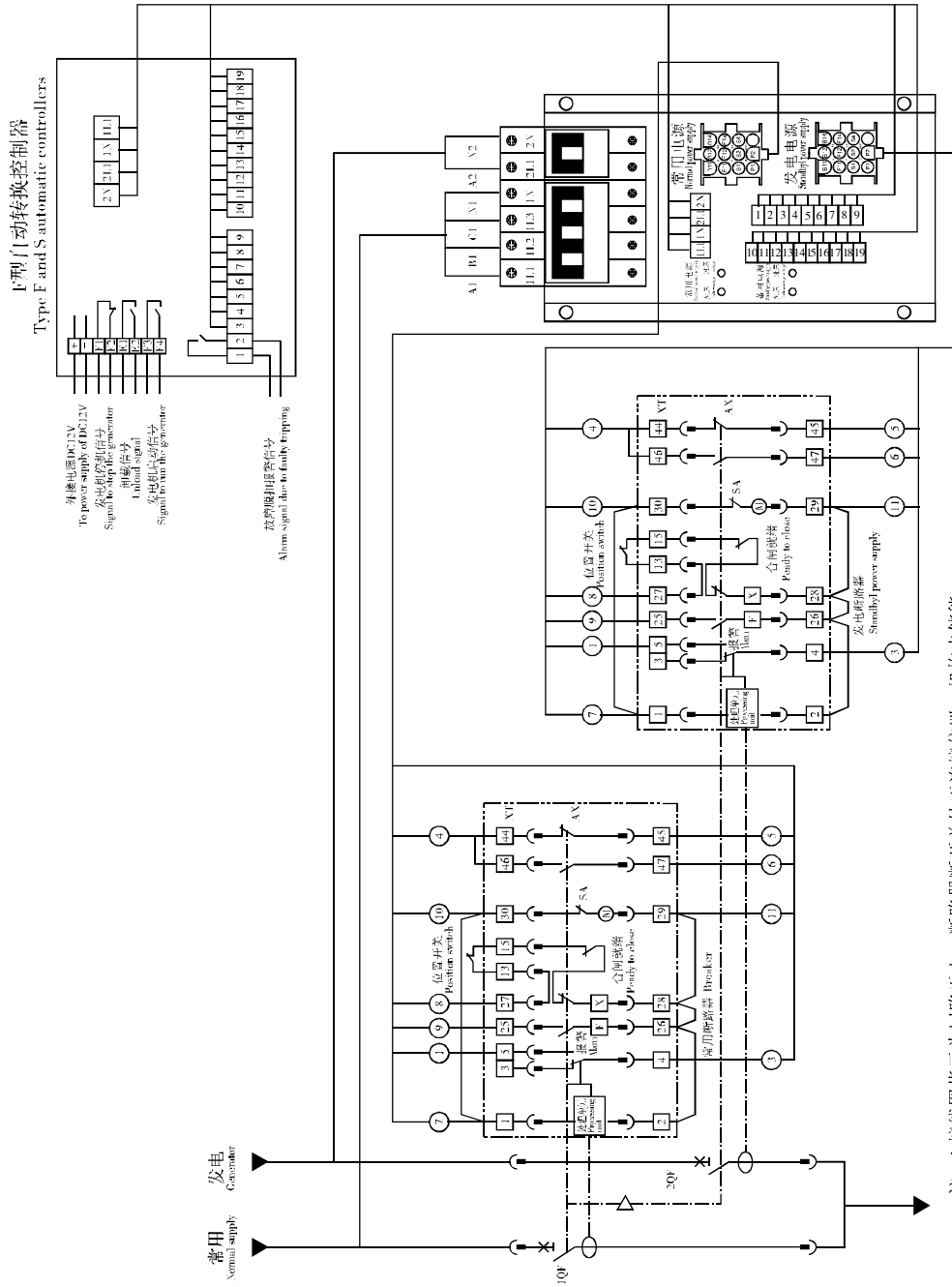
注: 1-接线图指示为回路无电, 断路器断开并处于连接位置, 机构未储能。
 2-当采用自动电源转换系统供电时, 断路器智能控制器、合闸电磁铁、电动操作机构电压为AC230V。
 Note: 1.As shown in the above diagram the breaker is open and connecting it hasn't been changed and there is no current in the loop.
 2.When ATS is used all voltage ratings are AC230V for intelligent controller,shunt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

常用-发电自动电源转换系统电气线路图
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



注: 1.接线图指示为回路无电, 断路器断开并处于连接位置, 机构未储能。
 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、合闸按钮、电动机磁铁、电动机行程开关、电动机二次回路接线端子。
 Note: 1.As shown in the above diagram the breaker is open and connecting it hasn't been changed and there is no current in the loop.
 2.When ATS is used all voltage ratings are AC230V for intelligent controller,shunt release magnet and automatic operation mechanism.

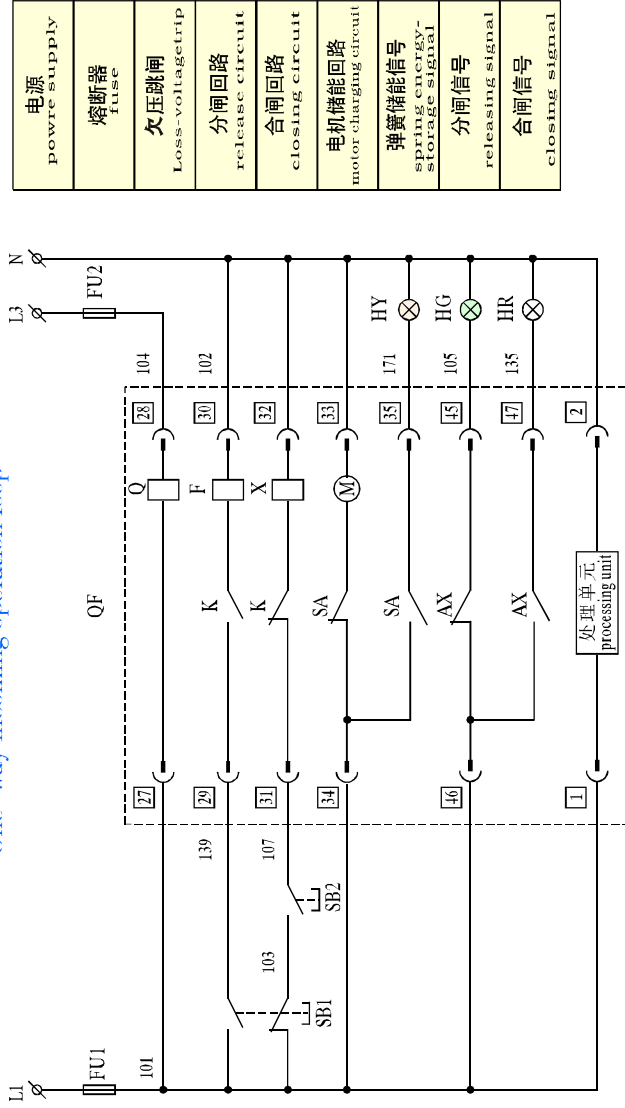
- AX-断路器辅助开关
- F-断路器分励脱扣器
- X-断路器合闸电磁铁
- M-断路器储能电机
- SA-断路器智能电动机行程开关
- XT-断路器二次回路接线端子
- AX-Auxiliary switch
- F-Shunt release
- X-The electro-magnet to close the breaker
- M-Charging motor
- SA-Overtravel-limit switch for the charging motor of the breaker
- XT-Terminals for the secondary circuit of the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



断路器二次接线典型方案举例

BREAKER EXAMPLE OF TYPICAL SCHEME FOR SECONDARY WIRING

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



(CW1 内部元件)

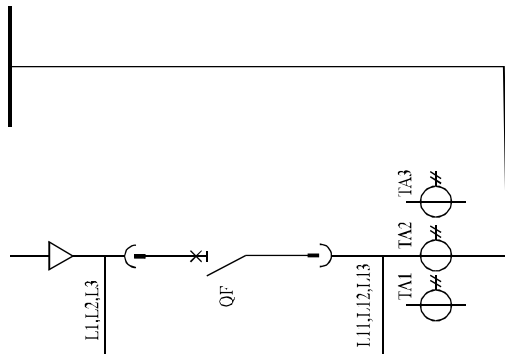
- Q: 断路器欠压线圈 ~400V
- F: 断路器分励线圈 ~230V
- X: 断路器合闸电磁铁 ~230V
- M: 储能电动机 ~230V
- SA: 电动机限位开关
- AX: 断路器辅助开关
- K: 智能控制器内部控制接点

(inside elements of CW1)

- Q: loss-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

警告：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.



- 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.

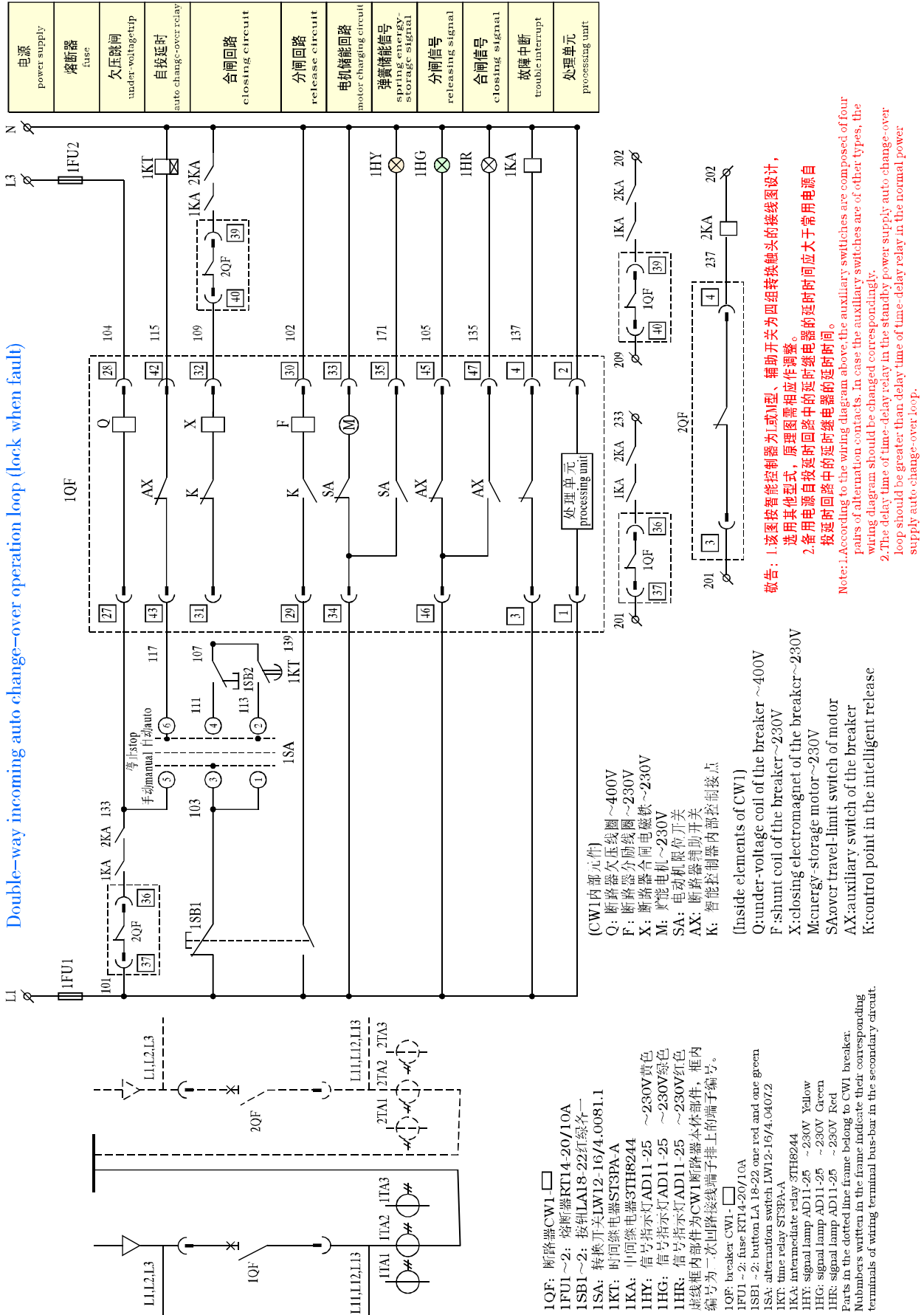


断路器二次接线典型方案举例

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)



敬告:

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. 常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Riyear-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 Riyear-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: 19200 bps (in favour of 1200, 2400, 4800, 9600, 38400 bps)

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:

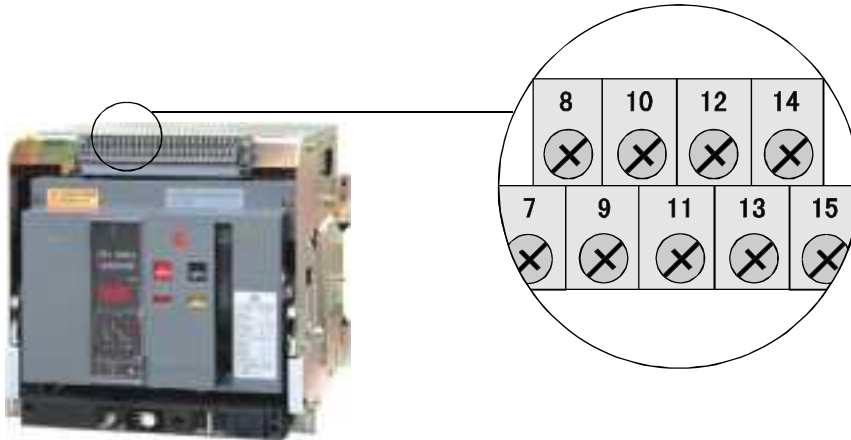
Twisted-pair shielded cables serve as communication lines.

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.

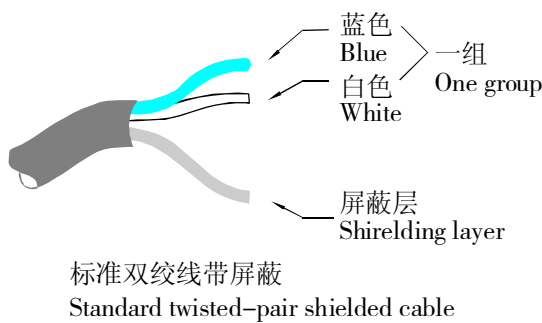


● 通信接线端子 Wiring terminals for communication



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。

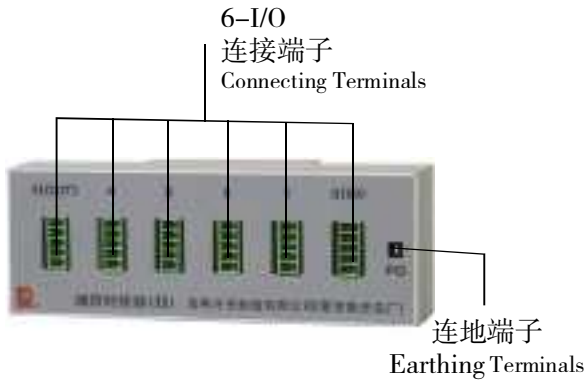
注意：通信电缆请使用带屏蔽的型号，在柜内走线时尽量远离强电线路。

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 advcance.

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



通信转接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；
 多个通信转接器可互联进行扩展（参见注）；
 配有通信线接地端子；
 可直接安装在标准35mm导轨上。

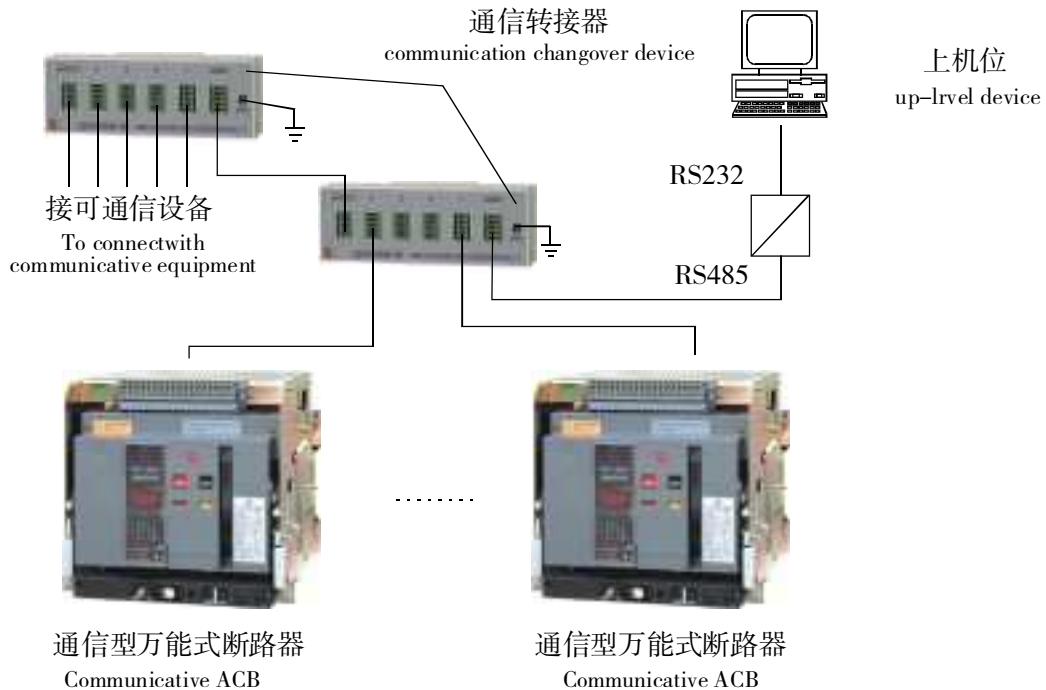
The Communication Adapter can largely improve the efficiency and reliability of wiring on site by customers, which embraces the characteristics of :

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

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.

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FCX3智能配电监控器，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。

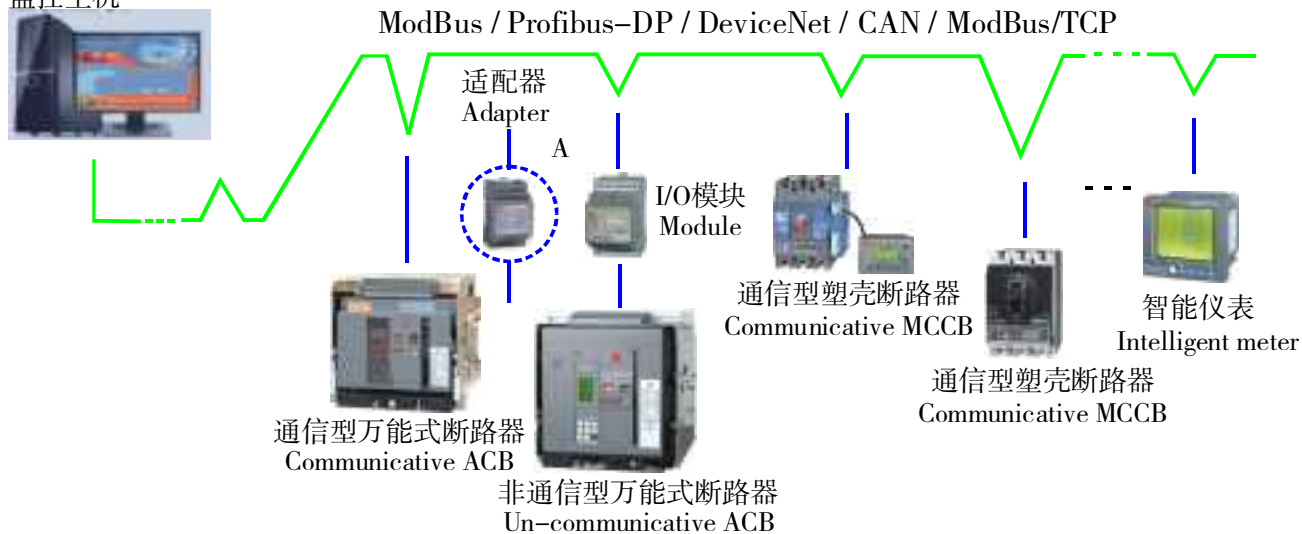
用户还可通过CI1系列远程智能I/O模块连接非通信型断路器，实现远程监测断路器合分闸状态、故障状态等重要信息。

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 FCX3 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 communicaiton circuit breaker. By the configuration of the short message informing module, we can achieve the information's remote monitoring of the ctircuit 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 compents of my company adopts standard ModBus-RTU protocol, may be connected ModBus field bus. if adopting other protocol, using communicative adapters changover.



● 通信适配器 Communication adaptor



CN1DP-MD



CN1DP-MP



CN1DP-MC



CN1EG/10

CN1DP-MD、CN1DP-MP、CN1DP-MC 和CN1EG/10为四款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现场总线或以太网TCP/IP网络上实现遥信、遥调、遥控及遥测功能。

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.

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。

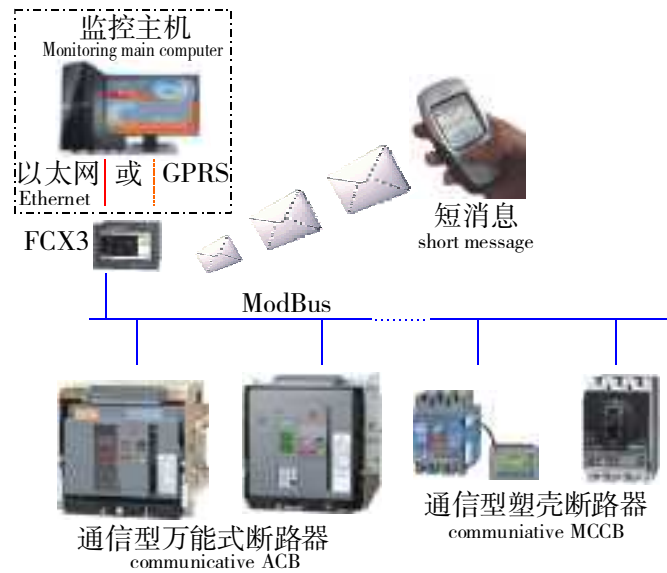
FDM3 short message informing module adopts the standard RS485 communication method to connect one or at most 16 communicative circuit breaker directly. When the circuit breaker encounter an incident previously set, the module sends short message to one or at most ten mobile phones through GSM network 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.

● 智能配电监控器 intelligent power distribution monitor



FCX3智能配电监控器是我公司为用户提供的采用彩色图形化显示、触摸式操作的简洁实用的配电监控产品，它采用标准ModBus-RTU协议，通过RS485接口与我公司可通信断路器连接，方便实现“四遥”功能。

Every FCX3 intelligent power distribution monitor can connect to at mosr 16 communicative circuit breaker at the same time. We can build power distribution monitoring system without computer configuration. At the same time, we can achieve short message informing or GPRS wireless function through expanding the module.



每台FCX3智能配电监控器可同时连接最多16台可通信断路器，无需配置计算机即可组建配电监控系统，同时还可通过扩展模块实现短信通知或GPRS无线功能。

FCX3智能配电监控器还内置WEB服务器，方便用户通过局域网或以太网实现远程访问。用户在远程计算机可以监测通信型断路器的各项数据，如：设备状态、测量数据、整定数据、事件记录、历史数据等。

Every FCX3 intelligent power distribution monitor can connect to at most 16 communicative circuit breaker at the same time. We can build power distribution monitoring system without computer configuration. At the same time, we can achieve short message informing or GPRS wireless function through expanding the module.

FCX3 intelligent power distribution monitor also integrate WEB server, ModBus/TCP function. The monitoring main machine also can be connected to monitor through Ethernet interface to achieve remote monitoring such as: state of equipment, measurement data, setting data, story records, history data etc.



- 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.



FWB1温度报警模块 *Temperature alarm module*

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

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

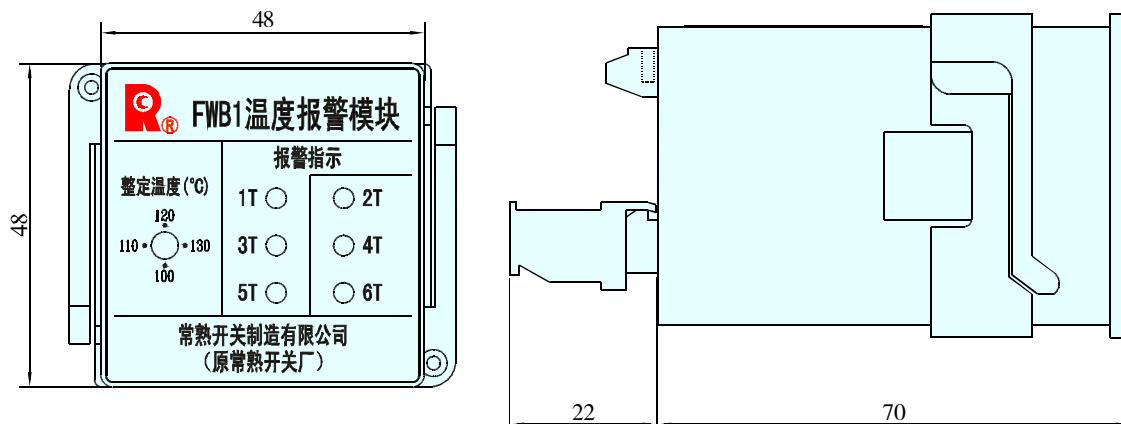
● 特性 Characteristics

测温范围 temperature detection range	0~150℃
动作温度 T_o action temperature	100/110/120/130℃
复位温度 T_r resetting temperature	$T_o-5℃$
精度 precision	$\pm 5℃$
传感器绝缘耐压 sensor insulation withstand voltage	AC3500V/1min
测温点数 temperature detection points	最多6路 6 points at most
工作电源 operating current	AC230V, 范围range 195~253V
输出触头容量 output contact capacity	3A/AC250V, 3A/DC24V
工作温度 operating temperature	- 20℃~+70℃

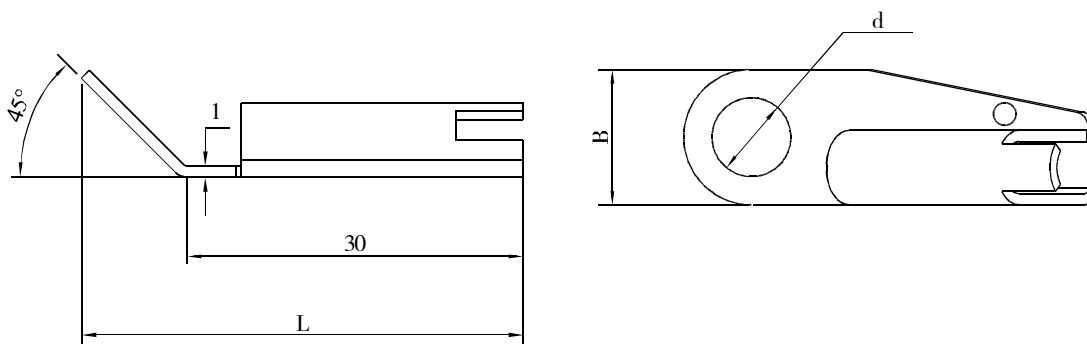


FWB1温度报警模块 *Temperature alarm module*

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



FWB1温度报警模块
Temperature alarm module



FRG热传感器
Heat sensor

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



断路器订货规范

断路器订货规范

(请在□内填上数字, □打√)

用户单位			订货台数			订货日期				
型号	CW1-□									
用途	<input type="checkbox"/> 陆用 <input type="checkbox"/> 湿热带型 (TH) <input type="checkbox"/> 船用型 <input type="checkbox"/> 1E级		注: 船用型、1E级仅供Inm=2000A、3200A的断路器							
极数	<input type="checkbox"/> 三极 <input type="checkbox"/> 四极									
额定电压	<input type="checkbox"/> AC 400V <input type="checkbox"/> AC 690V									
额定电流	In=□ A		N极额定电流IN		<input type="checkbox"/> 50%In <input type="checkbox"/> 100%In					
连接	<input type="checkbox"/> 固定式 <input type="checkbox"/> 水平 (后置) <input type="checkbox"/> 垂直 (前置) <input type="checkbox"/> 垂直 (后置)				注: 垂直 (前置)、垂直 (后置) 仅供Inm=2000A的断路器					
	<input type="checkbox"/> 抽屉式 <input type="checkbox"/> 水平 (后置) <input type="checkbox"/> 垂直 (前置) <input type="checkbox"/> 垂直 (后置)									
智能控制器	类型选择	<input type="checkbox"/> L型 (电子型)	<input type="checkbox"/> M型 (标准型)	<input type="checkbox"/> MY型 (液晶显示标准型)	<input type="checkbox"/> H型 (通信型)	<input type="checkbox"/> HY型 (液晶显示通信型)				
	基本功能	过载长延时保护 <input type="checkbox"/> I ₁ □ t ₁ □		短路短延时保护 <input type="checkbox"/> I ₂ □ t ₂ □		短路瞬时保护 <input type="checkbox"/> I ₃ □				
		试验功能 <input type="checkbox"/>		报警及故障区段 <input type="checkbox"/>		热模拟功能 <input type="checkbox"/>		MCR功能 <input type="checkbox"/>		
	选择功能			<input type="checkbox"/> 电压数字显示功能						
				负载监控功能 <input type="checkbox"/>		<input type="checkbox"/> 方式一 <input type="checkbox"/> 方式二				
智能控制器电压	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> DC220V <input type="checkbox"/> DC110V									
必备附件	FFT分励脱扣器	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> DC220V <input type="checkbox"/> DC110V								
	FHD合闸电磁铁	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> DC220V <input type="checkbox"/> DC110V								
	FDC电动操作机构	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> DC220V <input type="checkbox"/> DC110V								
	FFC辅助开关	标准型式 <input type="checkbox"/> 4组转换触头 特殊型式 <input type="checkbox"/> 4常开4常闭 <input type="checkbox"/> 6常开2常闭 <input type="checkbox"/> 2常开6常闭 <input type="checkbox"/> 3常开3常闭								
选择附件	□FQT欠电压脱扣器	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V								
		<input type="checkbox"/> 欠电压瞬时脱扣器 <input type="checkbox"/> 欠电压延时脱扣器		<input type="checkbox"/> 0.5s <input type="checkbox"/> 1s <input type="checkbox"/> 2s <input type="checkbox"/> 3s						
	□FFS分闸锁定装置	<input type="checkbox"/> 一锁一钥匙 <input type="checkbox"/> 二锁一钥匙 <input type="checkbox"/> 三锁二钥匙								
		<input type="checkbox"/> FLS机械联锁		两台断路器 <input type="checkbox"/> 钢缆联锁 <input type="checkbox"/> 联杆联锁						
	<input type="checkbox"/> FZZ自动电源转换系统		自动转换控制器 <input type="checkbox"/> R型 <input type="checkbox"/> S型 <input type="checkbox"/> F型							
	<input type="checkbox"/> 外接中性线N 电流互感器		<input type="checkbox"/> FDH-80 <input type="checkbox"/> FDH-120 <input type="checkbox"/> FDH-260							
	<input type="checkbox"/> FWZ抽屉座位置电气指示装置									
	<input type="checkbox"/> FDY/WT直流电源模块		<input type="checkbox"/> DC220V <input type="checkbox"/> DC110V							
	<input type="checkbox"/> FAN按钮锁定装置		<input type="checkbox"/> FJS计数器 <input type="checkbox"/> 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CW1-2000、3200低温至-40℃断路器。



断路器订货规范

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 <input type="checkbox"/> 上水平下垂直（后置） <input type="checkbox"/> 下水平上垂直（后置） <input type="checkbox"/> 上水平下垂直（前置） <input type="checkbox"/> 下水平上垂直（前置） 抽屉式 <input type="checkbox"/> 上水平下垂直（后置） <input type="checkbox"/> 下水平上垂直（后置） <input type="checkbox"/> 上水平下垂直（前置） <input type="checkbox"/> 下水平上垂直（前置）	注：仅供Inm=2000A的断路器
FFC辅助开关	交流工作电压	<input type="checkbox"/> 3常开5常闭 <input type="checkbox"/> 5常开3常闭 <input type="checkbox"/> 5常开5常闭 <input type="checkbox"/> 6常开6常闭	
	直流工作电压	<input type="checkbox"/> 2常开4常闭 <input type="checkbox"/> 4常开2常闭 <input type="checkbox"/> 4组转换触头 <input type="checkbox"/> 4常开4常闭 <input type="checkbox"/> 3常开5常闭 <input type="checkbox"/> 5常开3常闭 <input type="checkbox"/> 5常开5常闭 <input type="checkbox"/> 2常开6常闭 <input type="checkbox"/> 6常开2常闭 <input type="checkbox"/> 6常开6常闭	
FQT欠电压脱扣器		<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> 欠电压延时脱扣器 <input type="text"/> s 在4s~9s内选择并填上数值	
FFS分闸锁定装置		一台断路器 <input type="checkbox"/> 二锁（二相同锁） <input type="checkbox"/> 二锁（二不同锁）	
FZZ自动电源转换系统		智能型自动转换控制器 <input type="checkbox"/> ZR型 <input type="checkbox"/> ZS型 <input type="checkbox"/> ZF型 智能可通信自动转换控制器 <input type="checkbox"/> ZTR型 <input type="checkbox"/> ZTS型 <input type="checkbox"/> ZTF型	
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- <input type="text"/>						
Use	<input type="checkbox"/> On land <input type="checkbox"/> Tropical (TH)		<input type="checkbox"/> On ship <input type="checkbox"/> Class 1E		<small>Note:for the breakers used on ship and class 1E condition, the frame current Inm only 2000A and 3200A.</small>		
Pole Quality	<input type="checkbox"/> three-poles		<input type="checkbox"/> four-poles				
Rated Voltage	<input type="checkbox"/> AC 400V		<input type="checkbox"/> AC 690V				
Rated current	In= <input type="text"/> A		Rated current of N Pole (In)		<input type="checkbox"/> 50%In <input type="checkbox"/> 100%In		
Connection Type	<input type="checkbox"/> Fixed <input type="checkbox"/> Horizontal (back mounted) <input type="checkbox"/> Vertical (front mounted) <input type="checkbox"/> Vertical (back mounted)				<small>Note:Only for the breaker with Inm 2000A, connection type are vertical(front mounted) and vertical (back mounted).</small>		
	<input type="checkbox"/> Draw-out <input type="checkbox"/> Horizontal (back mounted) <input type="checkbox"/> Vertical (front mounted) <input type="checkbox"/> Vertical (back mounted)						
Interelligent Controller	Type choosing	<input type="checkbox"/> L Type (Electronic Type)		<input type="checkbox"/> M Type (Typical Type)		<input type="checkbox"/> MY Type (LCD displayed normal type)	
	Basic Function	Overload Long-time Delay Ir1 <input type="text"/> t1 <input type="text"/>		Short Circuit Short-time Delay Ir2 <input type="text"/> t2 <input type="text"/>		Short Circuit Instantaneous Ir3 <input type="text"/>	
		Test		Over Load Alarm		Thermo-analogue	
	Choosing Function	Earthed Fault Ir4 <input type="text"/> t4 <input type="text"/>		<input type="checkbox"/> Digital indication of voltage			
				Load Monitoring		<input type="checkbox"/> Pattern One <input type="checkbox"/> Pattern Two	
Power supply	<input type="checkbox"/> AC230V		<input type="checkbox"/> AC400V		<input type="checkbox"/> DC220V <input type="checkbox"/> DC110V		
Attachments	FFT Shunt Release	<input type="checkbox"/> AC230V		<input type="checkbox"/> AC400V		<input type="checkbox"/> DC220V <input type="checkbox"/> DC110V	
	FHD Closing Magnet	<input type="checkbox"/> AC230V		<input type="checkbox"/> AC400V		<input type="checkbox"/> DC220V <input type="checkbox"/> DC110V	
	FDC Motor-driven	<input type="checkbox"/> AC230V		<input type="checkbox"/> AC400V		<input type="checkbox"/> DC220V <input type="checkbox"/> DC110V	
	FFC Auxiliary Switch	Normal type <input type="checkbox"/> Four pairs of change-over contacts					
Special type <input type="checkbox"/> 4 NO4NC		<input type="checkbox"/> 6 NO2NC		<input type="checkbox"/> 2 NO6NC <input type="checkbox"/> 3 NO3NC			
Accessory	<input type="checkbox"/> FQT Under Voltage Release	<input type="checkbox"/> AC230V		<input type="checkbox"/> AC400V			
		<input type="checkbox"/> Undervoltage Instantaneous Release <input type="checkbox"/> Undervoltage Time Delay release					
	<input type="checkbox"/> 0.5s <input type="checkbox"/> 1s <input type="checkbox"/> 2s <input type="checkbox"/> 3s						
	<input type="checkbox"/> FFS OFF locked device	<input type="checkbox"/> One lock and one key		<input type="checkbox"/> Tow locks, one key		<input type="checkbox"/> 3-locks 2-keys	
	<input type="checkbox"/> FLS Interlock	Two breakers <input type="checkbox"/> Cable Interlock <input type="checkbox"/> Rod Interlock					
		Three breakers <input type="checkbox"/> Cable interlock <input type="checkbox"/> Rod interlock, pattern 1 <input type="checkbox"/> Rod interlock, pattern 2 <input type="checkbox"/> Rod interlock, pattern 3					
	<input type="checkbox"/> FZZ Automatic power supply switch system		Automatic controller		<input type="checkbox"/> Type R		<input type="checkbox"/> Type S <input type="checkbox"/> Type F
<input type="checkbox"/> Current transformer connected to N pole externally		<input type="checkbox"/> FDH-80		<input type="checkbox"/> FDH-120		<input type="checkbox"/> FDH-260	
<input type="checkbox"/> FWZ Electrical indication mechanism of draw-out socket position							
<input type="checkbox"/> FDY/WT DC power supply module		<input type="checkbox"/> DC220V		<input type="checkbox"/> DC110V			
<input type="checkbox"/> FAN "Button" locking device		<input type="checkbox"/> FJS Counter		<input type="checkbox"/> 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:CW1-2000、3200 breaker can be provided temperature down to -40℃.



ORDER FORM OF BREAKER

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

Bar connecting type		Fixed <input type="checkbox"/> Upper horizontal-down vertical(back) <input type="checkbox"/> Down horizontal-upper vertical(back) <input type="checkbox"/> Upper horizontal-down vertical(front) <input type="checkbox"/> Down horizontal-upper vertical(front)	Note: only for the Inm=2000A breaker
		Draw-out <input type="checkbox"/> Upper horizontal-down vertical(back) <input type="checkbox"/> Down horizontal-upper vertical(back) <input type="checkbox"/> Upper horizontal-down vertical(front) <input type="checkbox"/> Down horizontal-upper vertical(front)	
FFC Auxiliary switch	AC-voltage	<input type="checkbox"/> 3NO5NC <input type="checkbox"/> 5NO3NC <input type="checkbox"/> 5NO5NC <input type="checkbox"/> 6NO6NC	
	DC-voltage	<input type="checkbox"/> 2NO4NC <input type="checkbox"/> 4NO2NC <input type="checkbox"/> Four pairs of chang over contacts <input type="checkbox"/> 4NO4NC <input type="checkbox"/> 3NO5NC <input type="checkbox"/> 5NO3NC <input type="checkbox"/> 5NO5NC <input type="checkbox"/> 2NO6NC <input type="checkbox"/> 6NO2NC <input type="checkbox"/> 6NO6NC	
FQT Under voltage release		<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V	
		<input type="checkbox"/> Under voltage time delay release <input type="text"/> s please filling value in 4s~9s	
FFS OFF locked device		One breaker <input type="checkbox"/> Two lockes(two same lockes) <input type="checkbox"/> Two lockes(two different lockes)	
Automatic power supply switch system		Automatic controller <input type="checkbox"/> Type ZR <input type="checkbox"/> Type ZS <input type="checkbox"/> Type ZF <input type="checkbox"/> Type ZTR <input type="checkbox"/> Type ZTS <input type="checkbox"/> Type ZTF	
<p>Note1: load monitoring and communication functions are not selected for breaker with 5NO5NC or 6NO6NC auxiliary switch.</p> <p>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.</p>			



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}	CW1-2000	CW1-3200、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		



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	CN1DP-MD		
	CN1DP-MP		
	CN1DP-MC		
	CN1EG/10		
FDM3短消息通知模块			
FCX3智能配电监控器	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		

温度报警模块订货规范

用户单位		订货日期	
型号		订货数	
FWB1温度报警模块			
热传感器	FRG-7		
	FRG-9		
	FRG-11		
	FRG-13		
	FRG-17		



Order form of Communication Component

Name		order a date	
product type communicative		order amount	
Communicative chargover derice			
communicative adapter	CN1DP-MD		
	CN1DP-MP		
	CN1DP-MC		
	CN1EG/10		
short message			
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		

Order Form of Temperature Alarming module

Name		order a date	
product type communicative		order amount	
FWB1Temperature alarm module			
hest sensor	FRG-7		
	FRG-9		
	FRG-11		
	FRG-13		
	FRG-17		

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

2014.04

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

公司地址: 江苏省常熟市建业路8号
网 址: <http://www.riyue.com.cn>
电子信箱: cskg0001@cs-kg.com
邮 编: 215500

ADDRESS:NO.8 JIANYE ROAD CHANGSHU, JIANGSU, P.R.CHINA
URL:[HTTP://WWW.RIYUE.COM.CN](http://WWW.RIYUE.COM.CN)
E-MAIL:cskg0001@cs-kg.com
POST CODE:215500

办 公 室: 0512-52842237 52846851
元 件 销 售: 0512-52840577 52840993 52844994 52845227
52840995 52841441 52841442 52841616
成 套 销 售: 0512-52846862 52846863 52840073 52845582
技 术 热 线: 0512-52841486 8008282528
售 后 服 务 热 线: 0512-52846867 52846869 52844091 52845956
传 真: 0512-52841606 52841465 52841042

OFFICE :0512-52842237 52846851
SALES DEP. FOR ELECTRIC COMPONENTS:
0512-52840577 52840993 52844994 52840995
52841441 52841442 52845227 52841616
SALES DEP. FOR COMPLETE SWITCHGEAR EQUIPMENT :
0512-52846862 52846863 52840073 52845582
TECHNICAL SUPPORT HOTLINE : 0512-52841486 8008282528
SERVICE HOTLINE: 0512-52846867 52846869 52844091 52845956
FAX : 0512-52841606 52841465 52841042

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