江苏大全凯帆开关股份有限公司

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KFINE 官方微信

KFINE 直播平台

KFINE 官方网站

KFINE凯帆开关

KFW2系列万能式断路器

KFW2 Series Air Circuit Breaker

About KFINE

关于凯帆

江苏大全凯帆开关股份有限公司是国家高新技术企业，主要生产低压配电电器、工业控制电器、智能配电系统等产品。

低压断路器产品的核心部件操作机构、控制器、触头灭弧系统实现自主研发和完全自主知识产权，实现自主制造，具备模具加工中心、SMT贴片中心、零部件加工中心、检测中心、自动化装配线完整的生产制造体系。下设全资子公司昆山大全精密模具有限公司实现模具智能制造，保证产品开发进度和零件质量。 荣获江苏省两化融合示范企业、江苏省示范智能车间等认定。

大全凯帆坚持质量第一，追求卓越管理，拥有行业领先的制造、检测、试验设备；通过信息化、数字化与自动化融合，推动数字制造新模式 ； 建立了完善的管理体系，确保准时为客户提供性能优异、质量可靠的产品。公司各类产品深受用户好评，已广泛应用于电力、机械、交通、矿山、冶金、 石化、建筑、船舶、核电和新能源等领域，多次获得省市级质量奖。

展望未来，大全凯帆将坚持观念创新、管理创新、科技创新和营销创新，加速推进企业标准化建设，全面推进产品数字化、低碳化、管理信息化、生产智能化、服务网络化，实现“数字制造”的转型升级，朝着先进制造企业的目标迈进，为客户提供智能可靠的数字化配电产品！

大全凯帆专注技术创新，建有“博士后科研工作站”、“江苏省智能低压电器工程技术研究中心”、“江苏省研究生工作站”等创新平台，检测中心获中国合格评定国家认可委员会认可。公司拥有近 150 人的创新团队，各类创新成果多次获得省部级以上荣誉。

产品保障

可靠

凭借数字化设计、严选材质、数字化制造及严格的质量控制体系，为客户低压电气系统运行提供可靠的品质保障。

数字化设计

凯帆开关具备博士后工作站、研发中心、企业技术中心、电气检测站等研究机构，形成完备的三级科研创新体系，配备高精尖研发团队；研发过程采用国际先进的CAD设计软件及CAE仿真技术，提升产品数字化水平和可靠性；新一代数字化产品实现智能互联，让保护更加简单便捷。获得德国”IF”奖，及国家首批“绿色产品认证”。目前授权专利200多项，发明专利50多项，主持或参与多项国家、行业标准制定。

DESIGN AWARD 2015

CHINA GREEN PRODUCT

授权专利 200+ 项

发明专利 50+ 项

严选材质

为确保选材质量稳定可靠，材质选取全球优质供应链，90%以上材料可回收再利用，满足REACH、RoHs标准。

REACH

RoHS

数字化制造

通过ISO9001体系认证，产品皆通过GB及IEC标准规定的严格测试要求，可靠性达国际先进水平；具备行业领先的模具智能制造工厂，具备SMT贴片中心、钣金加工中心、挤压塑生产中心、数字化焊接车间、智能化立体仓库等完整的制造体系，配备齐全的工装夹具和检测设备，采用智能化流水线，保证产品生产过程的稳定控制。

质量控制体系

推行ISO9001和ISO90001管理体系，拥有多个检验实验室，配备先进检测设备，具备通断试验、寿命试验、EMC测试、综合特性试验、温度环境测试、湿热环境测试、跌落及振动试验、超声波无损探伤、三坐标测量、3D扫描、高速摄像、材料分析等试验设备，覆盖材质、性能、环境试验等全面检验能力。产品在整个生命周期经过严格全面的质量验证和过程质量控制，保证产品在不同使用环境下可靠运行。

专业服务

全面

凯帆始终致力于为客户提供全套服务解决方案，在产品生命周期的各个阶段，为客户提供全方位技术支持。凯帆可提供的技术服务包括：安装、调试、技术培训、维护保养、备件，维修与预防性维护、技术咨询和定制化服务。

技术服务

销售电话：0511-85128668
技术电话：0511-85120209

服务内容

指导安装操作培训
质保期外服务

线上APP

问题反馈 派工申请
现场服务 服务报告

通过手机扫码，可以直接获取产品信息，也可以随时在网上快捷的申请相关服务。

轻扫一下 尽在掌控

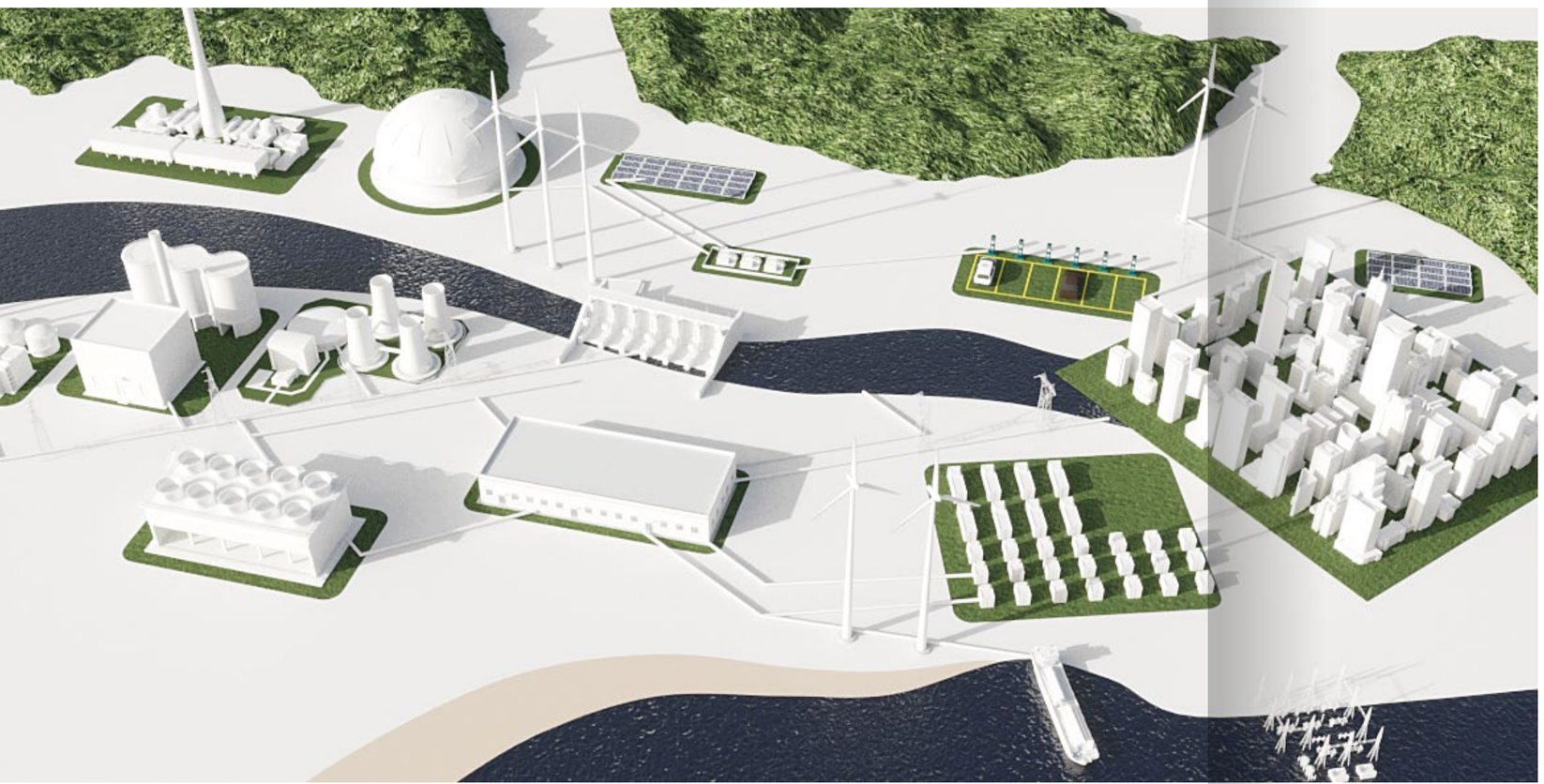
KFW2

特性

- 触头系统：主弧触头结构设计合理，弧触头 “先合后分”承受电弧，
  使断路器主触头免受电弧烧损，提高电气寿命和导电性能；
- 灭弧系统：通过ANSYS对断路器的触头灭弧系统仿真优化，确保断路器实现零飞弧；
- 传动机构：双导轨、齿轮传动，保证稳定、精确传动和较小的操作力；
- 位置指示：精确的位置指示及位置锁定，保证操作的准确性和可靠性；
- 连接方式：满足上进线或下进线连接方式，下进线无需降容，无安全距离要求；
- 外观造型：人性化专利技术设计；
- 智能控制：配有可以随时更换的智能控制单元，提供多种测量和保护功能，
  采用开放式MODBUS-RTU通讯协议，可通过转换器连接多种现场总线。

- Contact system: the structure of main arc contact is reasonably designed, the arc contact endures the arc by “make before break”, to protect the main arc contact of the breaker from being burned to prolong the electrical life and conductivity;
- Arc extinguishing system: ensure the breaker to realize zero flashover through conducting simulating optimization for the contact arc extinguishing system of the breaker with ANSYS;
- Transmission mechanism: dual guiding rail and gear drive, ensure stable and accurate transmission and smaller operating force;
- Position indication: accurate position indication and position lock ensure operating accuracy and reliability;
- Connection mode: satisfy the connection mode of upper wiring or lower wiring, derating capacity is not needed for lower wiring,
- there is no safe clearance requirement;
- Appearance molding: humanized patented technology design;
  Intelligent control: equipped with intelligent control unit that can be changed at any time, provide multiple measurement and protection function. Adopting open type Modbus- RTU communication protocol, it can connect various kinds of field bus through converter.

KFW2



KFW2系列万能式断路器
KFW2 SERIES AIR CIRCUIT BREAKER

KFW2 SERIES AIR CIRCUIT BREAKER

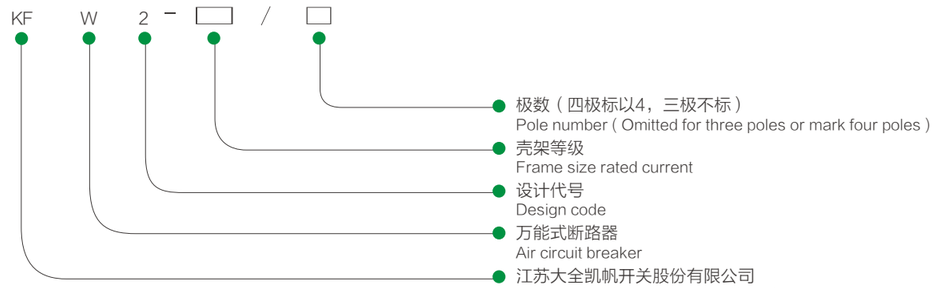
KFW2系列万能式断路器

适用范围 Application

- KFW2系列万能式断路器（以下简称断路器），适用于交流50Hz ，额定电压至690V，额定电流6300A及以下的配电网络中，用来分配电能，保护线路、电源设备及电机免受过载、欠电压、短路、单相接地等故障的危害，断路器可配置各种智能控制器，保护功能齐全，其中通讯型智能控制器带有通讯接口，便于与现场总线连接，可实现遥测、遥调、遥控、遥信“四遥”功能，满足控制自动化的要求。配置漏电互感器及相应的智能控制器也可实现漏电保护。
- 断路器符合IEC60947-2及GB/T14048.2《低压开关设备和控制设备 第2部分：断路器》。

- KFW2 Series Air Circuit Breaker（hereafter simply referred to as circuit breakers），rated operational voltage:AC50Hz up to 690V，rated current: up to 6300A，Circuit breakers can be used invarious low-voltage distribution areas. They are used for distributing power and protecting wires, power supply equipment and motors from the damage of overload, under-voltage fault, short-circuit fault and earth fault. Circuit breaker can be equipped with manifold intelligent controller which have versatile protective function and can improve the reliability of distribution network. For example intelligent controller with communicatable interface, which is convenient to connect with fieldbus, can realize remote measuring, remote controlling, remote adjusting and remote communicating (briefly named “four remote” function). The leakage protection can be realized by configuring the leakage current transformer and corresponding intelligent controller.
- The circuit breakers comply with the demands of the following standards: IEC60947-2 and GB/T14048.2（Low-voltage switchgear and controlgear Part2：Circuit-breakers）

型号及含义 Model and meaning



正常工作、安装和运输条件

- 周围空气温度为-5℃～+40℃；且24h的平均值不超过+35℃；
- 注：上限值超过+40℃或下限值低于-5℃的工作条件，用户应向本公司注明；（低温型可达-40℃）
- 安装地点的海拔高度不超过2000m；（超过2000m时需注明，可达5000m）；
- 污染等级：3级；
- 断路器安装在柜内且加装门框，防护等级IP40；
- 安装的垂直倾斜度不超过5°；
- 使用类别B；
- 最高温度为+40℃时，空气的相对湿度不超过50%，在较低温度下可以允许有较高的相对湿度，例如20℃时达90%，对由于温度变化偶尔产生的凝露应采取特殊的措施。
- 主电路安装类别Ⅳ；辅助电路的安装类别除了欠电压脱扣器线圈，电源变压器初级线圈与断路器的相同外，其余安装类别Ⅲ。
- 运输和储存条件：-40℃~+70℃。

Conditions for proper functioning, installation and transportation

- Ambient temperature: -5℃～+40℃; The average temperature over period of 24h does not exceed +35℃;
- NOTE : If the temperature is above +40℃ or below -5℃,please consult with the manufacturer,（Low temperature type up to -40℃）;
- Altitude ≤ 2000m; Elevation over 2000m,the breakers are used by reducing capacity; up to 5000m;
- Pollution protection: 3 grade;
- The circuit breaker should be installed in the compartment of switchgear cabinet and doorframe should be fixed additionally. Protection grade up to Ip40;
- The vertical gradient isn't more than 5°;
- Utilization category B;
- Relative humidity: not exceed 50% at the maximum ambient temperature of +40℃, but higher relative humidity at the lower temperature, for example, 90% at 20℃. Special measures should be taken considering the dews on product surface due to temperature change;
- Installing categories: Ⅳ for the main circuit; Ⅲ for other auxiliary and control circuits;
- Storage condiction : ambient temperature:-40℃～70℃.

KFW2-1600-6300 主要技术数据及性能 Main technical index of KFW2-1600~6300

型号 Type designation			KFW2					
壳架电流Inm (A) Frame size rated current			1600	2500	3200		4000	6300
额定电流In (A) Rated current In			200/400/630/800/1000/1250/1600	400/630/800/1000/1250/1600/2000/2500	630/800/1000/1250/1600/2000/2500	3200	630/800/1000/1250/1600/2000/2500/3200/4000	4000/5000/6300
额定工作电压Ue (V) Rated operational voltage			AC400V,500V,690V,50Hz					
额定绝缘电压Ui (V) Rated insulation voltage			1000					
额定冲击耐受电压Uimp (kV) Rated impulse withstand voltage Uimp			12					
工频耐受电压 Power frequency withstand voltage			AC3500V,1min,50Hz					
极数 Pole number			3、4					
N极额定电流IN（A） Rated current of neutral pole			100%In					50%In
额定极限短路分断能力Icu (有效值) (kA) Rated ultimate short-circuit breaking capacity(r.m.s value)		AC400V	65	65	100		100	120
		AC500V	50	–	75		–	–
		AC690V	42	50	65		80	85
额定运行短路分断能力Ics (有效值) (kA) Rated service short-circuit breaking capacity(r.m.s value)		AC400V	65	65	80		80	100
		AC500V	50	–	75		–	–
		AC690V	42	50	65		65	85
额定短路接通能力Icm (kA) Rated short-circuit making capacity (peak value)		AC400V	143	143	220		220	264
		AC500V	105	–	165		–	–
		AC690V	88	105	143		176	187
额定短时耐受电流Icw (kA1s) Rated short-time withstand current Icw (kA1s)		AC400V	42 / 55*	65	65		80	100
		AC500V	42	–	65		–	–
		AC690V	35 / 42*	50	65		65	85
全分断时间(无附加延时) Full-breaking time			12~18ms					
闭合时间 Closing time			最大（max）60ms					
智能型控制器 Intelligent control unit		Unit 3	√	√	√		√	√
		Unit 4/6	√	√	√		√	√
操作性能 Operating performance	预期电气寿命 (次) Expected electrical life (times)	AC400V	10000	10000	10000		10000	2000
		AC690V	6000	6000	6000		6000	1500
	预期机械寿命 (次) Expected mechanical life (times)	免维护 ☆ maintenance free	10000	10000	10000		10000	6500
		有维护 with maintenance	20000	20000	20000		20000	10000
型 式 Type	抽屉式 Withdrawable		√	√	√		√	√
	固定式 Fixed		√	√	√		√	√
外形尺寸（高×宽×深） Outline dimensions（H×W×D）	抽屉式 Withdrawable	3P	352×254×345	434×375×420	438×450×430	438×450×466	438×450×430.5	488×828×466
		4P	352×324×345	434×470×420	438×565×430	438×565×466	438×565×430.5	488×943×466
	固定式 Fixed	3P	329×256×250	401×362×336	401×422×336		401×422×322	401×816×375
		4P	329×326×250	401×457×336	401×537×336		401×550×322	401×931×375

注：表格中“A/B”，A表示标准型M，B表示高分断型H，另H型没有200额定电流档。
免维护寿命指电器在修理或更换部件前能完成的操作循环次数的期望值。

Note：The "A/B" in the table, A for standard M, B for high-break H, and H for no 200 rated current.
Maintenance free life refers to the expected number of operating cycles that can be completed before the electrical appliance is repaired or replaced.

KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

KFINE KFW2 SERIES AIR CIRCUIT BREAKER **KFW2-1600** 断路器正面指示
Front view of KFW2-1600

1 故障跳闸指示/复位按钮
Trip indication button

2 智能控制器
Intelligent control unit

3 手动操作手柄
Operating-mechanism charging handle

4 断开按钮（O）
Opening pushbutton

5 闭合按钮（I）
Closing pushbutton

6 储能机构状态指示器
Springs charged" and "ready to close" indicator
■ 储 能
Charged
■ 释 能
Discharged

7 主触头位置指示器
Indicator for position of the main contacts
■ 断开（O）
Opening
■ 闭合（I）
Closing

8 数据铭牌
Nameplate

9 手柄存放处
Crank storage

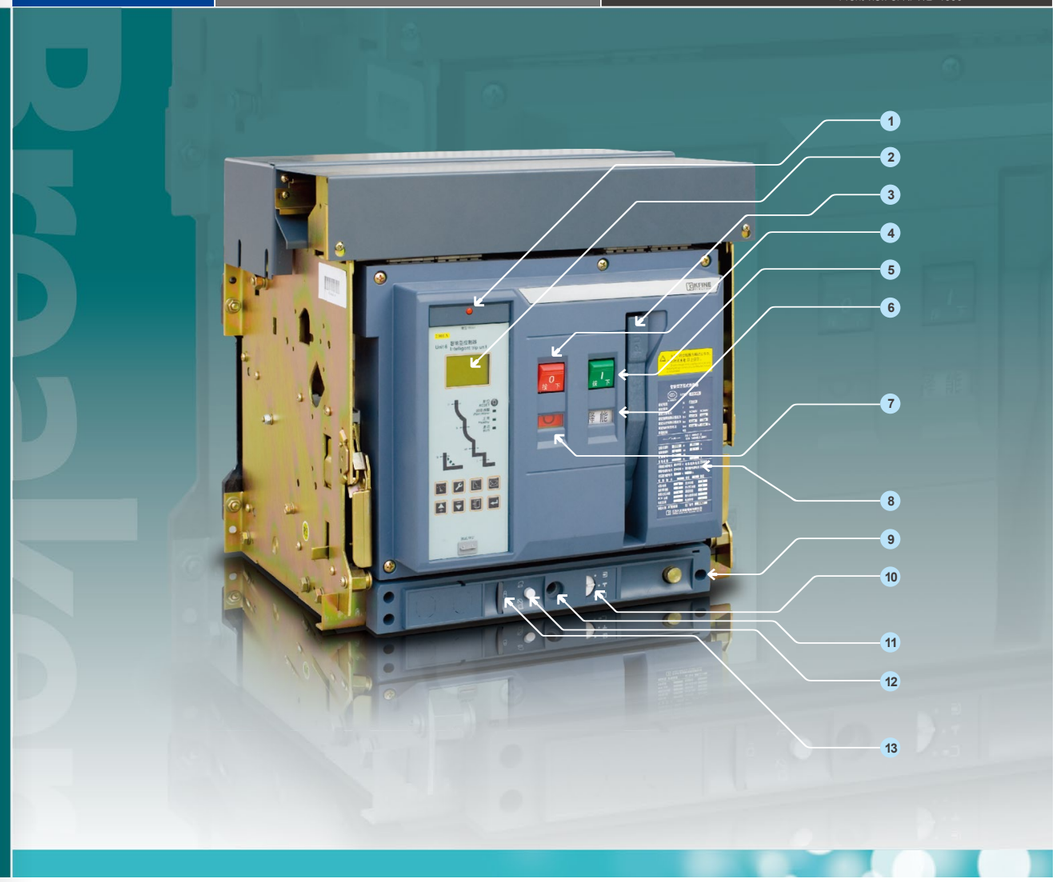
10 位置指示“连接” “试验” “分离”
“Connected”，“test”，“disconnected” position indicator

11 推进（出）装置
Rocker operating hole of the draw-out circuit breaker（Crank socket）

12 位置锁定装置“连接” “试验” “分离”
Position release button of ”Connected”，”test”，”disconnected”

13 位置挂锁“连接” “试验” “分离”
Locking by padlocks of “Connected”，“test”，“disconnected”

KFINE KFW2 SERIES AIR CIRCUIT BREAKER **KFW2-3200** 断路器正面指示
Front view of KFW2-1600



1 故障跳闸指示/复位按钮
Trip indication button

2 智能控制器
Intelligent control unit

3 手动操作手柄
Operating-mechanism charging handle

4 断开按钮(O)
Opening pushbutton

5 闭合按钮(I)
Closing pushbutton

6 储能机构状态指示器
"Springs charged" and " ready to close" indicator
■ 储 能
Charged
■ 释 能
Discharged

7 主触头位置指示器
Indicator for position of the main contacts
■ 断 开
Opening
■ 闭 合
Closing

8 数据铭牌
Nameplate

9 手柄存放处
Crank storage

10 位置指示“连接” “试验” “分离”
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11 推进（出）装置
Rocker operating hole of the draw-out circuit breaker (Crank socket)

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Position release button of "Connected", "test" , "disconnected"

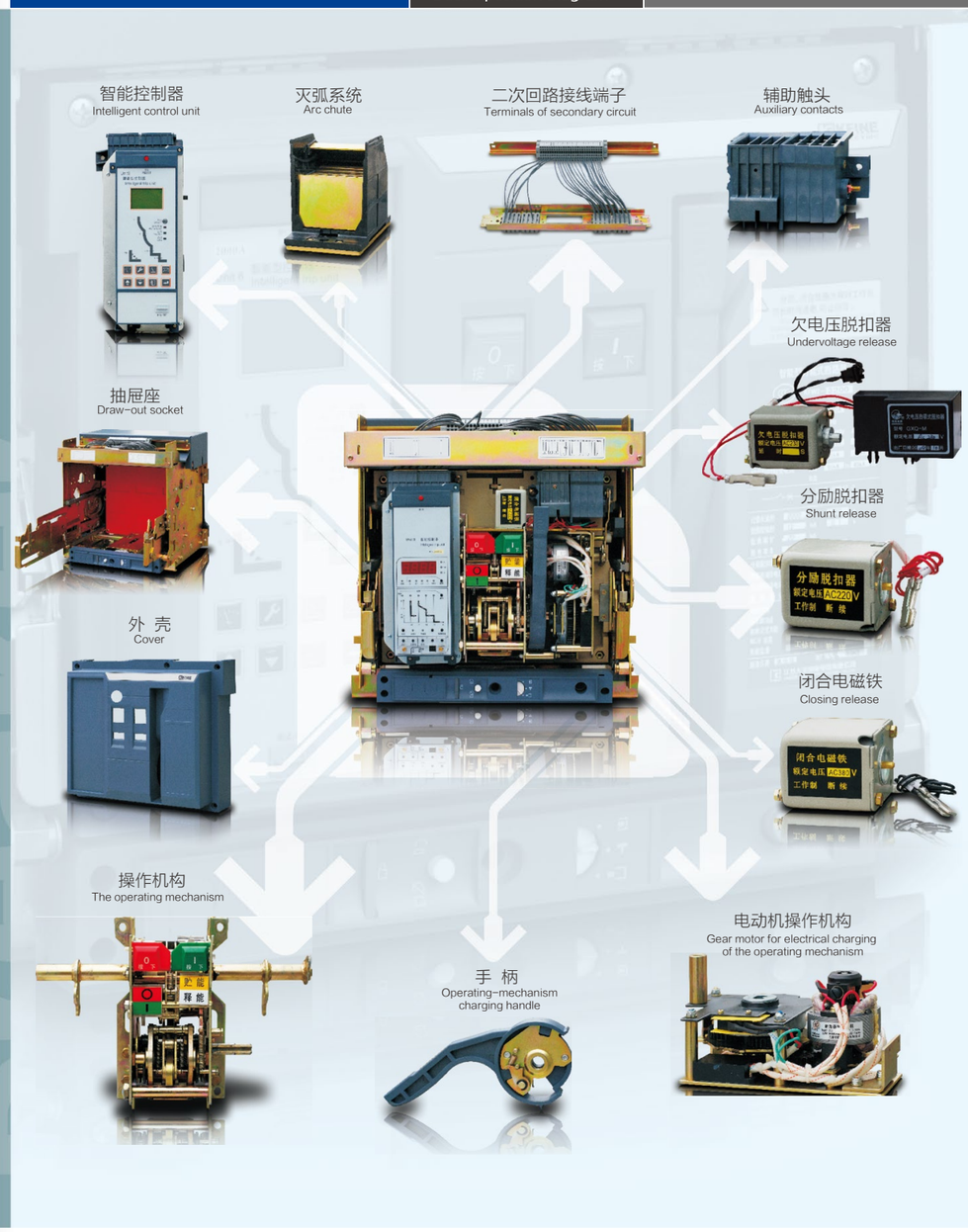
13 位置挂锁“连接” “试验” “分离”
Locking by padlocks of "Connected" , "test" , "disconnected"

KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-1600 结构分解图 Structural Decomposition Diagram

KFW2-3200 结构分解图 Structural Decomposition Diagram



KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

智能控制器面板结构

Unit 3

基本功能
- 过载长延时保护、短路短延时、短路瞬时保护
- 试验功能
- 故障记忆
- 电流表
- 状态指示及数据显示
- 自诊断功能
- LED灯指示，数码显示，按键操作

可选功能
- 接地保护
- MCR&HSISC接通分断及越限跳闸
- 热记忆

Unit 4/6

基本功能
- 过载长延时、短路短延时、短路瞬时保护
- MCR及HSISC保护（HSISC保护对断路器极限承载能力进行保护）
- 电流不平衡保护
- 四相电流及接地电流测量
- 故障记录（可在任何时候显示最后8次跳闸时测量的参数）
- 报警记录（可在任何时候显示最后8次跳闸时测量的参数）
- 自诊断
- 触头磨损及机械寿命指示
- 热记忆
- 故障时钟
- 中文人机界面，液晶显示，LED状态指示，按键操作

可选功能
- 接地保护（3P, 4P, 3P+N）
- 接地报警
- 漏电保护
- 功率测量
- 区域联锁
- 电压测量
- 谐波测量
- 欠压保护
- 过压保护
- 电压不平衡保护
- 频率测量
- 电能测量
- 相序检测
- 过频保护
- 欠频保护
- 逆功率保护
- 可编程触点
- 中性相保护

注：其他功能（Unit6为基础功能，Unit4没有此功能）
通信功能（可以实现遥测，遥调，遥控，遥信“四遥”功能，实现遥控功能，必须增选可编程触点输出功能。）

Intelligent controller

Unit 3

Basic functions
- Overload long time delay protection, short circuit short-time delay and short circuit instantaneous protection
- Test function
- Fault trip record
- Ampere meter
- Status indicator and data display
- Self-diagnosis function
- LED status indicator and key operation

Optional functions
- Earth-fault
- MCR function & HSISC function
- Thermal memory

Unit 4/6

Basic functions
- Overload long time delay, short circuit short-time delay and short circuit instantaneous protection
- MCR and HSISC protection (HSISC protection protects the breaker ultimate bearing capacity)
- Current unbalance protection
- Four-phase current and grounding current measurement
- Fault trip record (the measured parameters of the last 8 tripping can be displayed at any time)
- Alarm record (the measured parameters of the last 8 alarms can be displayed at any time)
- Self-diagnosis function
- Contact wear and mechanical life indicator
- Thermal memory
- Fault clock
- Chinese human-machine interface, LED status indicator and key operation

Optional functions
- Earth-fault (3P, 4P, 3P+N)
- Earth-fault alarm
- Power measurement
- Regional interlocking
- Voltage measurement
- Harmonics measurement
- Under-voltage protection
- Over-voltage protection
- Voltage unbalance protection
- Frequency measurement
- Electric energy measurement
- Phase sequence detection
- Over frequency protection and under frequency protection
- Reverse power protection
- Programmable contact
- Neutral phase protection

Note: other functions (unit 6 is basic function, unit 4 doesn’t have this function) communication function (the “four-remote” functions can be realized, namely remote measurement, remote adjustment, remote control and remote communication, the programmable contact output function must be co-opted to realize the remote functions.)

KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-1600~2500 配Unit3智能控制器保护特性

KFW2-1600~2500 with Unit3 intelligent controller protection features

	Unit 3						
长延时 Long-time delay							
电流整定（A） Current setting (A)	Ir=In × …	0.4 ~1.0 + OFF		(最小为100A) (minimum is 100A)	整定步长 1A/2A step 1A/2A		
长延时保护动作特性 Long-time delay protection action characteristics							
特性 Characteristic	电流倍数Current multiple（I/Ir）	脱扣时间 Tripping time					
不动作特性 Non-action characteristics	<1.05	大于2小时不动作 Non-action for more than 2 hours					
动作特性 Action characteristics	≥1.2	小于1小时动作 Action for less than 1 hour					
最大反时限延时时间T（s） Maximum inverse time limit time T(s) $T=\frac{(1.5Ir)^2}{I^2}tr$	tr（s）	15	30	60	120	240	480
	在1.5 Ir下 At 1.5 Ir	15	30	60	120	240	480
	在2.0 Ir下 At 2.0 Ir	8.4	16.9	33.8	67.5	135	270
	在7.2 Ir下 At 7.2 Ir	0.65	1.3	2.6	5.2	10.4	20.8
	精度 Accuracy	±10%（固有绝对误差±40ms）					
热记忆 Thermal memory	30min内释放，断电可清涂，如需关闭热记忆需在订货时说明 Released within 30 min, the outage can be eliminated, please specify when placing the order if the thermal memory needs to be turned off.						
短延时（仅定时限） Short-circuit short-time delay（definite time）							
整定值（A） Setting value (A)	Isd=Ir × …	1.5~15 + OFF 整定步长1A/2A step 1A/2A					
时间整定（s） Time setting (s)	定时限延时 Definite time delay	0.1~1s(级差0.1)+OFF（定时限关闭，反时限打开） 精确度：±10% 0.1~1 s (range 0.1) + OFF (Definite time delay turn off, inverse time delay turn on)					
	反时限特性 Inverse time delay	曲线同过载长延时曲线，曲线速度比过载长延时快10倍 精确度：±10% Curve is same with the overload long-time delay, curve velocity is 10 times faster than overload long-time delay					
特性 Characteristic	电流倍数Current multiple（I/Isd）	脱扣时间 Tripping time					
不动作特性 Non-action characteristics	≤0.9	不动作 Non-action					
动作特性 Action characteristics	>1.1	动作 Action					
反时限热记忆 Inverse time limit thermal memory	15min内释放，断电可清涂，如需打开热记忆需在订货时说明 Released within 15 min, the outage can be eliminated, please specify when placing the order if the thermal memory needs to be turned on.						
瞬时 Instantaneous short-circuit							
整定值（A） Setting value (A)	Ii=In × …	(1.0)In ~ 50KA + OFF 整定步长1A/2A Step 1A/2A					
特性 Characteristic	电流倍数Current multiple（I/Ii）	脱扣时间 Tripping time					
不动作特性 Non-action characteristics	≤0.85	不动作 Non-action					
动作特性 Action characteristics	>1.15	瞬时<30ms Instantaneous <30 ms					
接地故障 Earth-fault protection							
整定值（A） Setting value (A)	Ig=In × …	0.2~1.0 + OFF（最小为100A，OFF表示只报警不脱扣） Ig=In x… 0.2 ~ 1.0 OFF (Minimum value is 100 A, OFF means alarm without tripping)					
特性 Characteristic	电流倍数Current multiple（I/Ig）	脱扣时间 Tripping time					
不动作特性 Non-action characteristics	≤0.8	不动作 Non-action					
动作特性 Action characteristics	>1.0	延时动作 精度±10% Time delay action Accuracy ±10%					
时间整定（s） Time setting (s)	tg	0.1~1s + OFF(级差0.1，OFF表示只报警不脱扣) 精确度：±10% 0.1~1s + OFF (range 0.1, OFF means alarm without tripping) Accuracy ±10%					
	反时限剪切系数	1.5~6 + OFF(级差0.5，OFF表示接地为定时限功能) 1.5~6s + OFF (range 0.5, OFF means grounding is definite time limit function)					
不平衡或断相 Current unbalance or Open-phase protection							
整定值（A） Setting value (A)	δ= 40%~100% + OFF(OFF表示退出，级差1%) (OFF means exit,range 1%)	$\delta=\frac{\lvert I-I_{AVg}\rvert}{I_{AVg}}$，$I_{AVg}$为三相电流平均值 Iavg is the three-phase current average					
动作特性 Action characteristics	在0.9 δ ~1.1 δ 之间延时动作或报警 Time-delay action or alarm within 0.9 δ ~1.1 δ	≤0.9 δ 不动作 Non-action					
		>1.1 δ 延时动作或报警 Time-delay action or alarm					
延时时间 Delay time	0.1~1s + OFF(级差0.1，OFF表示只报警不跳闸) 精度：±10%（固有40ms） 0.1~1s+OFF(range 0.1s,OFF means alarm without tripping) Accuracy: ±10% (Inherent absolute error ±40 ms)						
MCR&HSISC接通分断及越限跳闸（可选） MCR function & HSISC function（optional）							
整定电流 Setting current	30kA~100kA	精度 Accuracy：-20%~0 <20ms					

KFW2-3200~6300 配Unit3智能控制器保护特性

KFW2-3200~6300 with Unit3 intelligent controller protection features

□过载长延时保护 Overload long-time delay protection

整定电流 Setting current	Ir=In × …	(0.4~1.0) +OFF		(最小为100A) (Minimum 100A)	整定步长1A/2A Step 1A/2A		
	动作特性 Action characteristics			< 1.05Ir 大于2小时不动作 Non-action for more than 2 hours ≥1.20Ir 小于1小时动作 Action for less than 1 hour			
最大反时限延时时间T（s） Maximum inverse time limit time T(s) $T=\frac{(1.5Ir)^2}{I^2}tr$	tr(s)	15	30	60	120	240	480
	在1.5Ir下 In 1.5Ir	15	30	60	120	240	480
	在2.0Ir下 In 2.0Ir	8.4	16.9	33.8	67.5	135	270
	在7.2Ir下 In 7.2Ir	0.65	1.3	2.6	5.2	10.4	20.8
	精度：±10%（固有绝对误差±40ms） Accuracy: ±10% (Inherent absolute error± 40 ms)						
热记忆保护 Thermal memory	30min内释放，断电可清涂，如需关闭热记忆需在订货时说明 Released within 30 min, the outage can be eliminated,please specify when placing the order if the thermal memory needs to be turned off.						

□短路短延时保护 Short circuit short-time delay protection

整定电流 Setting current	Isd=In × …	(0.4~15) +OFF 整定步长1A/2A Step 1A/2A			
	动作特性 Action characteristics	≤ 0.9 Isd 不动作 Non-action > 1.1 Isd 延时动作 Time-delay action			
定时限延时 Definite time delay	tsd(s)	0.1	0.2	0.3	0.4
	最大延时 Maximum delay (ms)	140	240	345	460
	最小延时 Maximum delay (ms)	60	160	255	340
定时限+反时限延时I^2 T:ON	I>8Ir 最大延时 Maximum delay (ms)	140	240	345	460
	I>8Ir 最小延时 Maximum delay (ms)	60	160	255	340
Definite Time+ Inverse time Delay I^2 T:ON	I≤8Ir	$T=\frac{(8Ir)^2}{I^2}tsd$			
	精度 Accuracy	±10%			
热记忆保护 Thermal memory	30min内释放，断电可清涂，如需打开热记忆需在订货时说明 Released within 30 min, the outage can be eliminated,please specify when placing the order if the thermal memory needs to be turned on.				

□短路瞬时保护Short circuit instantaneous protection

整定电流 Setting current	Ii=In × …	(1.0) ~50KA(400~2000A)/75KA(2000~3200A)/100KA(4000~6300A)+OFF
	动作特性 Action characteristics	≤ 0.85 Ii 不动作 Non-action > 1.15 Ii 瞬时动作 Instantaneous action
	延时允许误差 Delay permissible error	< 30ms

□接地保护 Earth-fault protection

整定电流 Setting current	Ig=In × …	(0.2~1.0) +OFF (最小100A) (Minimum 100A)			
	动作特性 Action characteristics	≤ 0.8 Ig 不动作 Non-action > 1.0 Ig 延时动作 Time-delay action			
延时时间 Delay time	tg（s）	0.1	0.2	0.3	0.4
	最小延时 Maximum delay (ms)	140	240	345	460
	最大延时 Minimum delay (ms)	60	160	255	340
	精 度：±10%（固有绝对误差±40ms） Accuracy: ±10% (Inherent absolute error ±40 ms)				

□MCR&HSISC接通分断及越限跳闸（可选） MCR function & HSISC function（optional）

整定电流 Setting current	MCR动作电流 MCR action current	65KA
	HSISC越限跳闸动作电流 HSISC action current	80KA
动作特性 action characteristics	精 度 Accuracy	-20%~0
	延时时间 Delay time	<20ms

KFW2−1600~6300 配Unit4/6智能控制器保护特性
KFW2−1600~6300 with Unit4/6 intelligent controller protection features

□过载长延时保护 Overload long−time delay protection													
整定电流 Setting current									(0.4~1.0) +OFF 整定步长1A				
	Ir=In × ... 动作特性 Action characteristics								< 1.05Ir 大于2小时不动作 Non−action for more than 2 hours ⩾1.20Ir 小于1小时动作 Action for less than 1 hour				
最大反时限延时时间T（s）Maximum inverse time limit time T(s) $T=\frac{(1.5Ir)^2}{I^2}tr$	tr(s)	15	30	60	120	240	360	480	600	720	840	960	
	在1.5Ir下 In 1.5Ir	15	30	60	120	240	360	480	600	720	840	960	
	在6.0Ir下 In 6.0Ir	0.94	1.88	3.75	7.5	15	22.5	30	37.5	45	52.5	60	
	在7.2Ir下 In 7.2Ir	0.65	1.3	2.6	5.2	10.4	15.6	20.8	26	31	36.5	41.7	
	精度：±10%（固有绝对误差±40ms）Accuracy: ±10% (Inherent absolute error± 40 ms)												
热记忆时间设定 Thermal memory	瞬时、10分钟、20分钟、30分钟、45分钟、1小时、2小时、3小时 nstantaneous, 10 minutes, 20 minutes, 30 minutes, 45 minutes, 1 hour, 2 hours, 3 hours												

□短路短延时保护 Short circuit short−time delay protection		
反时限和定时限整定电流 Inverse time limit and definite time limit setting current	Isd=Ir × ...	(1.5~15) +OFF 整定步长1A/2A
	动作特性 Action characteristics	< 0.9 Isd 不动作 Non−action ⩾ 1.1 Isd 延时动作 Action
定时限延时时间（s）Definite time delay time (s)	tsd	0.1~0.4s（0.1级差）0.1~0.4 s (range 0.1)　可定制时间为0.1~1s Customizable time 0.1~1 s
	精度：±10%（固有绝对误差±40ms）	Accuracy: ±10% (Inherent absolute error± 40 ms)
反时限特性 Inverse−time characteristics	动作延时时间是长延时的十分之一	Action time−delay is one−tenth of the long−time delay

□短路瞬时保护 Short circuit instantaneous protection		
整定电流 Setting current	Ii=In × ...	(1.0~20) +OFF 整定步长1A/2A
	动作特性 Action characteristics	< 0.85 Ii 不动作 Non−action ⩾ 1.15 Ii 动作 Action
动作时间 Action time	⩾1.15Ii	约定脱扣时间 Conventional tripping time < 40 ms

□MCR和HSISC保护 MCR and HSISC protection			
整定电流 Setting current	MCR动作电流 MCR action current HSISC动作电流 HSISC action current	30~100KA	
	动作特性 Action characteristics	实际电流/设定动作电流<0.8 Actual current/ Set action current <0.8	不动作 Non−action
		实际电流/设定动作电流⩾1.0 Actual current/ Set action current ⩾1.0	动作 Action
动作时间 Action time	⩾1.0	约定脱扣时间<20ms Conventional tripping time < 20 ms	

□漏电保护 Earth leakage protection													
Earth leakage protection 漏电保护	整定电流 Setting current	IΔn	0.5~30A 步长 0.1A										
		动作特性 Action characteristics	< 0.8 IΔn 不动作 Non−action ⩾ 1.0 IΔn 动作 Action										
	延时时间 Delay time (s)	TΔn	0.06，0.08,0.17,0.25,0.33,0.42,0.5,0.58,0.67,0.75,0.83，瞬时 instantaneous										
		精度：±10%（固有绝对误差±40ms）	Accuracy: ±10% (Inherent absolute error± 40 ms)										
Protective characteristics 保护特性	整定时间 Setting time (s)		0.06	0.08	0.17	0.25	0.33	0.42	0.5	0.58	0.67	0.75	0.83	瞬时 Instantaneous
	故障电流倍数 Multiple of fault current	最大断开时间 Maximum turning−off time s											
	IΔn		0.36	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	0.04
	2IΔn		0.18	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.25	2.5	0.04
	5/10IΔn		0.072	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	0.04

KFW2−1600~6300 配Unit4/6智能控制器保护特性
KFW2−1600~6300 with Unit4/6 intelligent controller protection features

■接地保护 Earth−fault protection		
整定电流 Setting current	Ig=In × ...	(0.2~1) +OFF
	动作特性Action characteristics	< 0.8 Ig 不动作Non−action ⩾1.0 Ig 动作 Action
定时限延时时间（s）Definite time delay time (s)	Tg	0.1~1s（级差0.1）可定制时间为0.1−120s 0.1~1s (range 0.1) Customizable time is 0.1−120 s
	精度：±10%（固有绝对误差±40ms）	Accuracy: ±10% (Inherent absolute error± 40 ms)
反时限延时时间（s）Inverse time delay time (s)	$T=T_g \times C_r \times I_g/I$ Cr：反时限剪切系数1.5~6 Cr: inverse time limit shearing factor 1.5~6　I：接地故障电流 I: Earth−fault current	

■接地报警 Earth−fault alarm

■接地报警相关参数设置 Earth−fault alarm related parameters settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	备注 Remarks
报警动作电流设定值 Setting value of alarm action current	OFF+(0.2~1) × In	2A	
报警动作延时 Alarm action time delay	0.1~1.0 s	0.1s	
报警返回电流设定值 Setting value of alarm return current	0.2In~动作电流设定值 0.2In ~ action current setting value	2A	仅当执行方式为报警时才有此设定值 This setting value is only available when the execution mode is alarm.
报警返回延时 Alarm return time delay	0.1~1.0 s	0.1s	
报警DO输出 Alarm DO output	将信号单元的一个DO设置为“接地报警”。（不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无节点输出） Set one DO in the signal element as “Earth−fault alarm”. (It is not necessary, if it is not set like this, the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警+关闭 Alarm + shut off		

■接地报警动作特性 Earth−fault alarm action characteristics

特性 Characteristics	电流倍数（I/设定值）Multiple of current (I/ setting value)	约定脱扣时间 Conventional tripping time	延时允许误差 Time delay allowable error
不动作特性 Non−action characteristics	<0.8	不动作 Non−action	
动作特性 Action characteristics	>1.0	动作 Action	
动作延时 Action delay	⩾1.0	定时限特性等于设定延时时间 Definite time characteristics equals to setting delay time	±10%（固有绝对误差±40ms） ±10% (Inherent absolute error± 40 ms)

■接地报警返回特性 Earth−fault alarm return characteristics

特性 Characteristics	电流倍数（I/设定值）Multiple of current (I/ setting value)	返回动作特性 Return feature	延时允许误差 Time delay allowable error
不返回特性 Non−return characteristics	>1.0	不返回 Non−return	
返回特性 Return characteristics	<0.9	返回 Return	
返回延时 Returns time delay	⩽0.9	定时限特性等于设定延时时间 Definite time characteristics equals to setting delay time	±10%（固有绝对误差±40ms） ±10% (Inherent absolute error± 40 ms)

■漏电报警 Earth leakage alarm

■漏电报警相关参数设置 Earth leakage alarm related parameter settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	备注 Remarks
报警动作电流设定值 Setting value of alarm action current	0.5~30A	0.1A	
报警动作延时 Alarm action time delay	瞬时Instantaneous+ 0.1−1.0 s	0.1s	
报警返回电流设定值 Setting value of alarm return current	0.5A~动作电流设定值 0.5A ~ action current setting value	0.1A	仅当执行方式为报警时才有此设定值 This setting value is only available when the execution mode is alarm.
报警返回延时 Alarm return time delay	瞬时 Instantaneous + 0.1~1.0s	0.1s	
报警DO输出 Alarm DO output	将信号单元的一个DO设置为“漏电报警”。（不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无接点输出） Set one DO in the signal element as “Earth leakage alarm”. (It is not necessary, if it is not set like this, the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警+关闭 Alarm + shut off		

注：漏电报警的动作特性，返回特性同接地报警
Note: the action characteristics and return characteristics of earth leakage alarm are the same with those of Earth−fault alarm.

KFW2-1600~6300 配Unit4/6智能控制器保护特性
KFW2-1600~6300 with Unit4/6 intelligent controller protection features

电流不平衡保护 Current unbalance protection

■电流不平衡保护相关参数设置 Current unbalance protection related parameters settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	备 注 Remarks
保护启动设定值 Setting value of protection startup	5%~60%	1%	
动作延时时间设定值 Setting value of action delay time	0.1~40s	0.1s	
保护动作返回设定值 Setting value of protection action return	5%~启动值 5%~starting value	1%	仅当执行方式为“报警”时才有此设定值 This setting value is only available when the execution mode is alarm.
保护返回延时时间 Protection return time delay	10~200s	1s	
保护报警DO输出 Protection alarm DO output	将信号单元的一个DO设置为“I不平衡报警”。(不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无接点输出) Set one DO in the signal element as “I unbalance alarm”. (It is not necessary, if it is not set like this,the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警/跳闸/关闭 Alarm / Tripping / Shut off		

■电流不平衡动作特性 Current unbalance operating characteristics

特性 Characteristics	实际电流不平衡率/设定值 Actual current unbalance rate/setting value	约定脱扣时间 Conventional tripping time	延时允许误差 Time delay allowable error
不动作特性 Non-action characteristics	<0.9	不动作 Non-action	
动作特性 Action characteristics	>1.1	动作 Action	
动作延时 Action delay	≥1.1	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms) ±10% (Inherent absolute error± 40 ms)

■电流不平衡返回特性 Current unbalance return characteristics

特性 Characteristics	实际电流不平衡率/设定值 Actual current unbalance rate/setting value	返回动作特性 Return feature	延时允许误差 Time delay allowable error
不返回特性 Non-return characteristics	>1.1	不返回 Non-return	
返回特性 Return characteristics	<0.9	返回 Return	
返回延时 Return time delay	≤0.9	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms) ±10% (Inherent absolute error± 40 ms)

电压不平衡保护 Voltage unbalance protection

■电压不平衡保护相关参数设置 Voltage unbalance protection related parameters settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	备 注 Remarks
保护启动设定值 Setting value of protection startup	2%~30%	1%	
动作延时时间设定值 Setting value of action delay time	0.2~60s	0.1s	
保护动作返回设定值 Setting value of protection action return	2%~启动值 5%~starting value	1%	仅当执行方式为“报警”时才有此设定值（返回值需大于或等于启动值） This setting value is only available when the execution mode is “alarm” (The return value shall be greater than or equal to starting value)
保护返回延时时间 Protection return time delay	0.2~60s	0.1s	
报警DO输出 Alarm DO output	将信号单元的一个DO设置为“U不平衡报警”。(不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无接点输出) Set one DO in the signal element as “U unbalance alarm”. (It is not necessary, if it is not set like this,the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警/跳闸/关闭 Alarm / Tripping / Shut off		

■电压不平衡动作特性 Voltage unbalance action characteristics

特性 Characteristics	实际电流不平衡率/设定值 Actual current unbalance rate/setting value	约定脱扣时间 Conventional tripping time	延时允许误差 Time delay allowable error
不动作特性 Non-action characteristics	<0.9	不动作 Non-action	
动作特性 Action characteristics	>1.1	动作 Action	
动作延时 Action delay	≥1.1	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms) ±10% (Inherent absolute error± 40 ms)

■电压不平衡返回特性 Voltage unbalance return characteristics

特性 Characteristics	实际电流不平衡率/设定值 Actual current unbalance rate/setting value	返回动作特性 Return feature	延时允许误差 Time delay allowable error
不返回特性 Non-return characteristics	>1.1	不返回 Non-return	
返回特性 Return characteristics	<0.9	返回 Return	
返回延时 Return time delay	≤0.9	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms) ±10% (Inherent absolute error± 40 ms)

KFW2-1600~6300 配Unit4/6智能控制器保护特性
KFW2-1600~6300 with Unit4/6 intelligent controller protection features

欠压保护 Under-voltage protection

■欠压保护相关参数设置 Under-voltage protection related parameters settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	备 注 Remarks
保护启动设定值 Setting value of protection startup	100V~返回值 100V ~ return value	1V	
保护动作延时时间设定值 Setting value of action delay time	0.2~60s	0.1s	
保护动作返回设定值 Setting value of protection action return	启动值~1200V	1V	仅当执行方式为“报警”时才有此设定值，返回值需大于或等于启动值 This setting value is only available when the execution mode is “alarm”, the return value shall be greater than or equal to starting value
保护返回延时时间 Protection return time delay	0.2~60s Start value ~ 1200V	0.1s	
报警DO输出 Protection alarm DO output	将信号单元的一个DO设置为“欠压故障”。(不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无接点输出) Set one DO in the signal element as “Under-voltage fault”. (It is not necessary, if it is not set like this,the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警/跳闸/关闭 Alarm / Tripping / Shut off		

■欠压保护动作特性 Under-voltage protection action characteristics

特性 Characteristics	电压倍数（Umax/动作设定值） Multiple of voltage (Umax / action setting value)	约定脱扣时间 Conventional tripping time	延时允许误差 Time delay allowable error
不动作特性 Non-action characteristics	>1.1	不动作 Non-action	
动作特性 Action characteristics	<0.9	动作 Action	
动作延时 Action delay	≤0.9	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms) ±10% (Inherent absolute error± 40 ms)

■欠压保护报警返回特性 Under-voltage protection alarm return characteristics

特性 Characteristics	电压倍数（Umax/返回设定值） Multiple of voltage (Umax / return setting value)	返回动作特性 Return feature	延时允许误差 Time delay allowable error
不返回特性 Non-return characteristics	<0.9	不返回 Non-return	
返回特性 Return characteristics	>1.1	返回 Return	
返回延时 Return time delay	≥1.1	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms) ±10% (Inherent absolute error± 40 ms)

过压保护 Over-voltage protection

■过压保护相关参数设置 Over-voltage protection related parameters settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	备 注 Remarks
保护启动设定值 Setting value of protection startup	返回值~1200V Return value ~ 1200V	1V	
动作延时时间设定值 Setting value of action delay time	0.2~60s	0.1s	
保护动作返回设定值 Setting value of protection action return	100V~启动值 100V ~ start value	1V	仅当执行方式为“报警”时才有此设定值（启动值需大于或等于返回值） This setting value is only available when the execution mode is “alarm”, the starting valueshall be greater than or equal to return value
保护返回延时时间 Protection return time delay	0.2~60s	0.1s	
报警DO输出 Alarm DO output	将信号单元的一个DO设置为“过压故障”。(不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无接点输出) Set one DO in the signal element as “Over-voltage fault”. (It is not necessary, if it is not set like this, the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警/跳闸/关闭 Alarm / Tripping / Shut off		

■过压保护动作特性 Over-voltage protection action characteristics

特性 Characteristics	电压倍数（Umax/动作设定值） Multiple of voltage (Umax / action setting value)	约定脱扣时间 Conventional tripping time	延时允许误差 Time delay allowable error
不动作特性 Non-action characteristics	<0.9	不动作 Non-action	
动作特性 Action characteristics	>1.1	动作 Action	
动作延时 Action delay	≥1.1	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms) ±10% (Inherent absolute error± 40 ms)

■过压保护报警返回特性 Over-voltage protection alarm return characteristics

特性 Characteristics	电压倍数（Umax/返回设定值） Multiple of voltage (Umax / return setting value)	返回动作特性 Return feature	延时允许误差 Time delay allowable error
不返回特性 Non-return characteristics	>1.1	不返回 Non-return	
返回特性 Return characteristics	<0.9	返回 Return	
返回延时 Return time delay	≤0.9	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms) ±10% (Inherent absolute error± 40 ms)

KFW2−1600~6300 配Unit4/6智能控制器保护特性

KFW2−1600~6300 with Unit4/6 intelligent controller protection features

逆功率保护 Reverse power protection

■逆功率保护相关参数设置 Reverse power protection related parameters settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	备 注 Remarks
保护启动设定值 Setting value of protection startup	5~500kW	1kW	
保护动作延时时间设定值 Setting value of action delay time	0.2~20s	0.1s	
保护动作返回设定值 Setting value of protection action return	5kW~开启值 5kW~Start value	1kW	仅当执行方式为“报警”时才有此设定值，返回值需大于或等于启动值 This setting value is only available when the execution mode is “alarm”, the return value shall be greater than or equal to starting value
保护返回延时时间 Protection return time delay	1.0~360s 1.0~360s	0.1s	
保护报警DO输出 Protection alarm DO output	将信号单元的一个DO设置为“功率故障”。(不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无接点输出) Set one DO in the signal element as “Power faul”. (It is not necessary, if it is not set like this, the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警/跳闸/关闭 Alarm / Tripping / Shut off		

■逆功率保护动作特性 Reverse power protection action characteristics

特性 Characteristics	逆功率值/设定值 Reverse power value / setting value	约定脱扣时间 Conventional tripping time	延时允许误差 Time delay allowable error
不动作特性 Non-action characteristics	<0.9	不动作 Non-action	
动作特性 Action characteristics	>1.1	动作 Action	
动作延时 Action delay	⩾1.1	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms） ±10% (Inherent absolute error± 40 ms)

■逆功率保护报警返回特性 Reverse power protection alarm return characteristics

特性 Characteristics	逆功率值/设定值 Reverse power value / setting value	返回动作特性 Return feature	延时允许误差 Time delay allowable error
不返回特性 Non-return characteristics	>1.1	不返回 Non-return	
返回特性 Return characteristics	<0.9	返回 Return	
返回延时 Return time delay	⩽0.9	定时限特性等于设定延时时间 Definite time characteristics equalsto setting delay time	±10%（固有绝对误差±40ms） ±10% (Inherent absolute error± 40 ms)

频率保护 Frequency protection

■欠频保护相关参数设置 Under-frequency protection related parameters settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	备 注 Remarks
保护启动设定值 Setting value of protection startup	45Hz~返回值 45Hz~Return value	0.5Hz	
保护动作延时时间设定值 Setting value of action delay time	0.2~5.0s	0.1s	
保护动作返回设定值 Setting value of protection action return	启动值~65Hz 5kW~Start value	0.5Hz	仅当执行方式为“报警”时才有此设定值（返回值需大于或等于启动值） This setting value is only available when the execution mode is “alarm”, the return value shall be greater than or equal to starting value
保护返回延时时间 Protection return time delay	0.2~36.0s	0.1s	
保护报警DO输出 Alarm DO output	将信号单元的一个DO设置为“欠频故障”。(不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无接点输出) Set one DO in the signal element as “Under-frequency fault”. (It is not necessary, if it is not set like this, the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警/跳闸/关闭 Alarm / Tripping / Shut off		

■过频保护相关参数设置 Over-frequency protection related parameters settings

参数名称 Parameter name	整定范围 Setting range	整定步长 Setting step size	延时允许误差 Time delay allowable error
保护启动设定值 Setting value of protection startup	返回值~65Hz Return value~65Hz	0.5Hz	
保护动作延时时间设定值 Setting value of action delay time	0.2~5.0s	0.1s	
保护动作返回设定值 Setting value of protection action return	45Hz~启动值 45Hz~Start value	0.5Hz	仅当执行方式为“报警”时才有此设定值（启动值需大于或等于返回值） This setting value is only available when the execution mode is “alarm”, the starting valueshall be greater than or equal to return value
保护返回延时时间 Protection return time delay	0.2~36.0s	0.1s	
保护报警DO输出 Alarm DO output	将信号单元的一个DO设置为“过频故障”。(不是必需，如不设此项，报警信息只能从控制器显示屏上读取，无接点输出) Set one DO in the signal element as “Over-frequency fault”. (It is not necessary, if it is not set like this, the alarm information only can be read from the controller display and there is no contact output.)		
执行方式 Execution mode	报警/跳闸/关闭 Alarm / Tripping / Shut off		

注：过频、欠频保护的动作原则，动作特性和过压、欠压保护相同

Note: the action principle and characteristics of over and under frequency protection are the same as those of over and under voltage protection.

KFW2−1600~6300 配Unit4/6智能控制器保护特性

■负载监控

■负载监控相关参数设置

参数名称	整定范围		整定步长	备 注
负载监控方式	1.电流方式1 2.电流方式2 3.功率方式1 4.功率方式2 5.关闭			tr过载长延时动作时间，Ir过载长延时动作设定值。
卸载I动作设定值	电流方式1/2	0.2~1.0Ir	2A	
	功率方式1/2	200~10000kW	1kW	
卸载I动作延时	电流方式1/2	20~80%tr	1%	
	功率方式1/2	10~3600 s	1s	
卸载II动作设定值	电流方式1	0.2~1.0Ir	2A	
	电流方式2	0.2Ir~卸载I		
	功率方式1	200~10000kW	1kW	
	功率方式2	100~卸载I	1kW	
卸载II动作延时	电流方式1	20~80%tr	1%	
	电流方式2	10~600 s	1s	
	功率方式1/2	10~3600 s	1s	
报警DO输出	将信号单元的一个DO设置为“负载监控一”，一个设为“负载监控二”			

注：负载监控可用于预报警，亦可用于控制支路负荷。动作依据可根据功率或电流进行动作，有两种方式可选，方式一，可独立控制两路负荷，当运行参数超过整定值时，相应负载监控DO延时动作(需设定相应DO功能)，控制分断两路支路负荷，保证主系统供电；方式二，一般用于控制同一支路负荷，当运行参数超过启动值，“负载监控一”DO延时动作分断支路负荷；若分断后运行参数值低于返回值，并经延时时间设定后，“负载监控一”DO返回，“负载监控二”DO动作，接通已分断的负荷，恢复系统供电。

负载监控要实现控制功能时，需选用可编程触点3DO1DI，否则只能实现控制器显示界面报警。

■区域联锁

■参数设置

上级断路器至少有一路DI设为区域联锁检测；

下级断路器至少有一路DO设为区域联锁信号输出。

注：区域联锁包括短路联锁和接地联锁。在两台或多台有上下级关联断路器的同一电力回路中；

（ 1 ）、当短路或接地故障发生的位置在下级断路器的出线侧时，下级断路器瞬时跳闸，并向上级断路器发出区域联锁跳闸信号；上级断路器收到区域联锁跳闸信号，按短路或接地保护设定进行延时。若上级断路器延时过程中故障电流被消除；则保护返回，上级断路器不动作；若下级断路器跳闸后故障电流仍未消除，则上级断路器按短路或接地保护设定动作；切除故障线路 。

（2）、当短路或接地故障发生的位置在上级断路器和下级断路器之间时，上级断路器未收到区域联锁信号，因而瞬时跳闸，快速切除故障线路。

KFW2-1600~4000 with Unit4/6 intelligent controller protection features

■Load monitor				
■Load monitor related parameters settings				
Parameter name		Setting range	Setting step size	Remarks
Load monitor mode		1.Current mode 1 2.Current mode 1 3.Power mode 1 4.Power mode 2 5.Shut off		tr: overload long-time delay action time, Ir: overload long-time action setting value.
Setting value of unloading action I	Current mode1/2	0.2 ~ 1.0Ir	2A	
	Power mode1/2	200 ~ 10000kW	1kW	
Time delay of unloading action I	Current mode1/2	20 ~ 80% tr	1%	
	Power mode1/2	10 ~ 3600 s	1s	
Setting value of unloading action II	Current mode1	0.2 ~ 1.0Ir	2A	
	Current mode2	0.2Ir ~ uninstall I		
	Power mode1	200 ~ 10000kW	1kW	
	Power mode2	100 to uninstall I	1kW	
Time delay of unloading action II	Current mode1	20 ~ 80% tr	1%	
	Current mode2	10 ~ 600 s	1s	
	Power mode1/2	10 ~ 3600 s	1s	
Alarm DO output		Set one DO in the signal element as “Load monitor I”, set the other one as “Load monitor II”.		

Note: The load monitor can be used for pre-alarm, and it also can be used to control the branch circuit load. The action can be conducted according to power or current. There are two selectable modes, mode I, control the load of two circuits independently, when the operating parameters exceed the setting values,the corresponding load monitor DO delay action (the corresponding DO function shall be set), control the branch circuit load of the two breaking circuits and ensure the main system power supply; mode II, generally used to control the load of the same branch circuit, when the operating parameter exceeds the starting value, the “Load monitor I” DO time delay action breaks the branch circuit load; if the operating parameter after breaking is lower than the return value,and the delay time has been set, “Load monitor I” DO returns, “Load monitor II” DO acts, connect the broken load and restore the system power supply.
When the load monitor realizes the control function, the programmable contact 3DO1DI shall be selected, or only the controller interface alarm can be realized.

■Regional interlocking

■Parameter setting

At least one DI of the higher breaker shall be set as regional interlocking test
At least one DO of the lower breaker shall be set as regional interlocking signal output

Note: Regional interlocking including short circuit interlocking and grounding interlocking. In the same electric power return circuit of two or more breakers with higher and lower interlocking;
(1)When the short circuit or grounding fault occurs at the coil out side of the lower breaker, the lower breaker will trip instantaneously and send the regional interlocking tripping signal to the higher breaker; the higher breaker receives the regional interlocking tripping signal and delay according to short circuit or grounding protection settings. If the fault current is eliminated during the delay process of the higher breaker, the protection returns and the higher breaker conducts no action; if the fault current has not been eliminated after the tripping of the lower breaker, the higher breaker acts according to the short circuit or grounding protection settings; cut-off the fault circuit.
(2)When the short circuit or grounding fault occurs between the higher and lower breaker, the higher breaker will trip instantaneously due to no regional interlocking signals have been received, cut-off the fault circuit rapidly.

智能控制器保护参数出厂缺省整定值
Factory default setting value of Intelligent controller protection parameters

■ 如用户订货时选择相应功能而未作具体要求，智能控制器保护参数出厂缺省整定值按如下：
If the user has chosen corresponding function but hasn’t made specific requirements while placing the order, the factory default setting values of the intelligent controller protection parameters shall be subject to those listed in the following table:

	项目 Protection	可调范围 Operating Value	出厂设定 Factory setting		备注 Remarks
过载长延时保护 Overload long-time delay protection	保护曲线类型 Time/current curve	I^2T			
	整定电流Ir Setting current Ir	(0.4~1.0)× In +OFF	1.0×In		Unit3
			1.0×In		Unit4/6
	整定时间tr Setting time tr	15s、30s、60s、120s、240s、480s、OFF	480s		Unit3
		15s、30s、60s、120s、240s、360s、480s、600s、720s、840s、960s	480s		Unit4/6
短路短延时保护 Short circuit short-time delay protection	定时限整定电流Isd Definite time setting current Isd	(1.5~15)×Ir+OFF	6×Ir		KFW2-1600~2500系列 Series Unit3
		(0.4~15)×In+OFF	6×In		KFW2-3200~6300系列 Series Unit3
		(1.5~15)×Ir+OFF	6×Ir		Unit4/6
	定时限整定时间tsd Definite time setting time tsd	0.1~1.0s	0.1s		KFW2-1600~2500系列 Series Unit3
		0.1~0.4s	0.1s		KFW2-3200~6300系列 Series Unit3
		0.1 ~0.4s或0.1~1.0s	0.1s		Unit4/6
	反时限整定电流Is Inverse time setting current Is	(1.5~15)×Ir+OFF	OFF		KFW2-1600~2500系列 Series Unit3
		(0.4~15)×In+OFF	OFF		KFW2-3200~6300系列 Series Unit3
		(1.5~15)×Ir+OFF	OFF		Unit4/6
短路瞬时保护 Instantaneous short-circuit protection	整定电流Ii Setting current Ii	1.0×In~50kA+OFF	15×In	In≤1000A	KFW2-1600~2500系列Unit3 KFW2-1600~2500 Series Unit3
			12×In	1000<In≤1600A	
			10×In	1600<In≤2500A	
		1.0×In~50kA+OFF	15×In	In≤1000A	KFW2-3200~6300系列Unit3 KFW2-3200 ~ 6300 series Unit3
		1.0×In~75kA+OFF	12×In	1000<In≤1600A	
		1.0×In~100kA+OFF	10×In	1600<In≤6300A	
		(1.0~20.0)×In+OFF	15×In	In≤1000A	Unit4/6
			12×In	1000<In≤1600A	
			10×In	1600<In≤6300A	

智能控制器保护参数出厂缺省整定值

Factory default setting value of Intelligent controller protection parameters

	项目 Protection	可调范围 Operating Value	出厂设定 Factory setting	备注 Remarks	
接地保护 Earth-fault protection	整定电流Ig Setting current Ig	（0.2～1.0）×In+OFF	0.8×In	In＜1600A	Unit3
			1200A	1600≤In≤6300A	
			0.2×In	In=6300A	
			0.8×In	In＜1600A	Unit4/6
			1200A	1600≤In≤6300A	
			0.2×In	In≤6300A	
	整定时间tg Setting time tg	0.1～1.0 s+OFF	0.4s	KFW2-1600~2500系列Series Unit3	
		0.1～0.4 s+OFF	0.4s	KFW2-3200～4000系列Series Unit3	
		0.1～1.0 s+OFF	0.4s	Unit4/6	
	反时限剪切系数K Inverse time factor K	1.5～6＋OFF	OFF	KFW2-1600~2500系列Series Unit3	
			OFF	Unit4/6	
漏电保护 Leakage Protection	剩余动作电流I Δn Setting current I Δn	0.5～30.0A＋OFF	30A	Unit4/6	
	延时时间 t Δn Setting time t Δn	瞬时 Instantaneous， 0.06，0.08，0.17，0.25，0.33， 0.42，0.5，0.58，0.67，0.75，0.83s	0.83s		
中性相保护 In phase protection	整定电流值 Setting current	100%In、50%In	100%In	4000A壳架及以下 4000A shell rack and below	Unit3
		50%In	50%In	6300A壳架 6300A shell frame	
		50%In、100%In、 160%In、200%In、OFF	100%In	4000A壳架及以下 4000A shell rack and below	Unit4/6
			50%In	6300A壳架 6300A shell frame	
接地报警	Earth-fault alarm		关闭 OFF		
漏电报警	Earth leakage alarm		关闭 OFF		
电流不平衡保护	Current unbalance protection		关闭 OFF		
需用电流保护	Demand current protection		关闭 OFF		
欠压保护	Under-voltage protection		关闭 OFF		
过压保护	Over-voltage protection		关闭 OFF		
电压不平衡保护	Voltage unbalance protection		关闭 OFF		
欠频保护	Under-frequency protection		关闭 OFF		
过频保护	Over-frequency protection		关闭 OFF		
逆功率保护	Reverse power protection		关闭 OFF		
相序保护	Phase sequence protection		关闭 OFF		
负载监控	Load monitor		关闭 OFF		

产品附件 Accessories

闭合电磁铁 Closing release

电动储能结束后，闭合电磁铁使操作机构的储能弹簧力瞬间释放，
使断路器快速闭合。
闭合电磁块有瞬时型和长通电型。
用于继电器监控系统中，需选用瞬时型。

After the electric energy storage, energy storage spring force the closing electromagnet operating.
Mechanism of instant release, the circuit breaker is closed fast.
Closed electromagnetic block instantaneous and long-energized.
Instantaneous type should be used in relay monitoring system.

分励脱扣器 Shunt release

可远距离操纵使断路器断开。
分励脱扣器有瞬时型和长通电型。
用于继电器监控系统中，需选用瞬时型。

Disconnect the circuit breaker can be remotely operated.
Shunt release instantaneous and long-energized.
Instantaneous type should be used in relay monitoring system.

特性 Characteristics

额定控制电源电压Us（V） Rated control supply voltage Us (V)	AC400 AC230 DC220/110
动作电压（V） Operation voltage (V)	(0.85-1.1)US
闭合时间 Closing time	≤60MS

特性 Characteristic

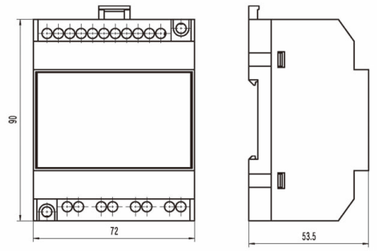
额定控制电源电压Us（V） Rated control supply voltage Us (V)	AC400 AC230 DC220/110
动作电压（V） Operation voltage (V)	(0.7-1.1)US
断开时间 Turn-off time	≤40MS

电压转换模块 Voltage conversion module

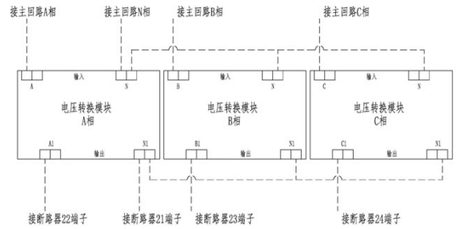
当框架断路器具有电压显示功能并且输入电压大于AC400V时，需配电压转换模块。
一套电压转换模块由A相电压转换模块、B相电压转换模块、C相电压转换模块组成。
电压转换模块输入电压:线电压不超过AC1250V(相电压不超过720V)电压转换模块变比: 1000V/400V (2.5 倍)。
电压转换模块可安装在35mm标准导轨上。

When the voltage of the circuit breaker frame is greater than 400V, it is required to display the input voltage of the circuit breaker frame.
A set of voltage conversion module is composed of A-phase voltage conversion module, B-phase voltage conversion module and c-phase voltage conversion module.
Input voltage of voltage conversion module: the line voltage does not exceed ac1250v (phase voltage does not exceed 720V). Transformation ratio of voltage conversion module: 1000V / 400V (2.5 times).
The voltage conversion module can be installed on the 35mm standard guide rail.

单只电压转换模块外形图 Outline drawing of single voltage conversion module



电压转换模块接线示意图 Wiring diagram of voltage conversion module



产品附件 Accessories

端子号 Terminal number	描 述 Description	备 注 Remarks
A	A 相输入端 Phase a input	
B	B 相输入端 Phase B input	
C	C 相输入端 Phase C input	
N	N 相输入端 Phase N input	
A1	A 相输出端 Phase a output	接KFW2/3断路器22号端子 Connected to terminal 22 of KFW2 / 3 circuit breaker
B1	B 相输出端 Phase B output	接KFW2/3断路器23号端子 Connected to terminal 23 of KFW2 / 3 circuit breaker
C1	C 相输出端 Phase C output	接KFW2/3断路器24号端子 Connected to terminal 24 of KFW2 / 3 circuit breaker
N1	N 相输出端 Phase N output	接KFW2/3断路器21号端子 Connected to terminal 21 of KFW2 / 3 circuit breaker

欠电压脱扣器 Under-voltage release

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。

Note: In the thunderstorm-prone area or the power grid with unstable supply power voltage, it is recommended to use the under-voltage tripping device with time delay, thus the breaker tripping caused by short-time stepping down of voltage can be avoided.

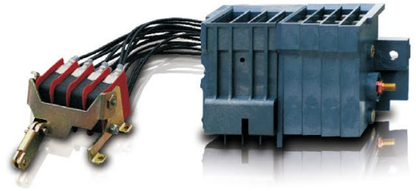
脱扣方式：瞬时脱扣/延时脱扣
Tripping mode: instantaneous tripping / time delay tripping

辅助触头 Auxiliary contact

指示断路器的断开或闭合位置。
Indicate the turn-off or closing position of the breaker

触点容量 Contact capacity	AC-12：16A/AC400V，AC-15：2A/AC400V
	DC-12：3A/DC250V，AC-13：0.3A/AC250V

注：四常开四常闭
Note: Four normally open and four normally closed



特性 Characteristics

额定工作电压UE（V） Rated operating voltage Ue (V)	AC400 AC230	额定工作电压UE（V） Rated operating voltage Ue (V)	AC400 AC230 DC220/110
动作电压（V） Operation voltage (V)	(0.35-0.7)UE	约定发热电流（A） Conventional thermal current (A)	6
可靠合闸电压（V） Reliable switching voltage (V)	(0.85-1.1)UE	额定控制容量 Rated control capacity	300VA 60W
可靠不能合闸电压（V） Reliable non-switching voltage (V)	≤0.35UE	备 注 Remarks	四常开四常闭 four normally open and four normally closed

产品附件 Accessories

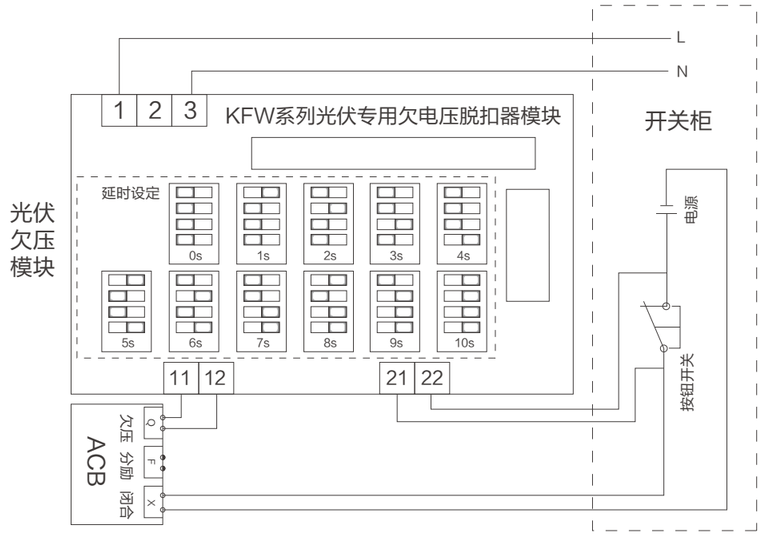
光伏欠电压脱扣器 Undervoltage release

通用功能 General function	欠电压脱扣器动作时间可调，时间范围为0~10S，最小调整步长为1S。当延时时间为0S时动作时间小于0.2S。 The action time of undervoltage release is adjustable, the time range is 0 ~ 10s, and the minimum adjustment step is 1s. When the delay time is 0s, the action time is less than 0.2S.
欠压延时 Undervoltage delay	当20%UN≤控制电源电压≤70%UN时，欠压脱扣器应在设定的延时时间内动作，使低压断路器可靠断开，延时范围为0~10S，动作时间允差为设定值的+20%。 当控制电源电压≤20%UN时，欠压脱扣器动作时间小于0. 2S。 当电压恢复至85%UN~110%UN时，电压允许误差≤2%，欠压脱扣器应吸合。 When 20% UN ≤ control power supply voltage ≤ 70% UN, the undervoltage release shall act within the set delay time to reliably disconnect the low-voltage circuit breaker. The delay range is 0 ~ 10s, and the allowable error of action time is + 20% of the set value. When the control power supply voltage is ≤ 20% UN, the action time of undervoltage release is less than 0 2s。 When the voltage recovers to 85% UN ~ 110% UN, the allowable voltage error is ≤ 2%, and the undervoltage release shall be pulled in.
失压延时 Voltage loss delay	当20%Un≤控制电源电压≤70%Un时，欠压脱扣器应在设定的延时时间内动作，使低压断路器可靠断开，延时范围为0~10s，动作时间允差为设定值的+20%。 当控制电源电压≤20%Un时(零电压时),欠压脱扣器应在设定的延时时间内动作，使低压断路器可靠断开，延时范围为0~10s，动作时间允差为设定值的+20%。 当电压恢复至85%Un~110%Un时，电压允许误差≤2%，欠压脱扣器应吸合。 When 20% UN ≤ control power supply voltage ≤ 70% UN, the undervoltage release shall act within the set delay time to reliably disconnect the low-voltage circuit breaker. The delay range is 0 ~ 10s, The action time tolerance is + 20% of the set value. When the control power supply voltage is ≤ 20% UN (zero voltage), the undervoltage release shall act within the set delay time to reliably disconnect the low-voltage circuit breaker. The delay range is 0 ~ 10s, The action time tolerance is + 20% of the set value. When the voltage recovers to 85% UN ~ 110% UN, the allowable voltage error is ≤ 2%, and the undervoltage release shall be pulled in.

光伏欠电压脱扣器 Undervoltage release

检有压合闸 Voltage detection and closing	当控制电源电压从欠压状态或失压状态恢复至85%UN时，电压允许误差≤2%，欠压脱扣器吸合。延时5~10S后，有压合闸无源触点闭合，闭合时间300~ 500MS。 When the control power supply voltage recovers from undervoltage state or voltage loss state to 85% UN, the allowable voltage error is ≤ 2%, and the undervoltage release is pulled in. After 5 ~ 10s delay, the passive contact of voltage closing is closed, and the closing time is 300 ~ 500ms.
过压保护 Overvoltage protection	当控制电源电压≥135%UN时，欠压脱扣器应在设定的延时时间内动作，是断路器可靠断开，过压延时范围为0~10S，动作时间允差为设定值的+20%。 当电压恢复至85%UN~110%UN时，电压允许误差≤2%，欠压脱扣器应吸合。 When the control power supply voltage is ≥ 135% UN, the undervoltage release shall act within the set delay time, the circuit breaker shall be reliably disconnected, the overvoltage delay range is 0 ~ 10s, and the allowable error of action time is + 20% of the set value. When the voltage recovers to 85% UN ~ 110% UN, the allowable voltage error is ≤ 2%, and the undervoltage release shall be pulled in.

脱扣器模块输入输出 Release module input and output



产品附件 Accessories

端子号 Terminal number	项 目 project	功述描能 Power description	备 注 remarks
1	欠压脱扣器进线端 Incoming end of undervoltage release	进线端 Incoming end	AC220V/AC380V输入 AC220V / AC380V input
2	空端子 Empty terminal	空端子 Empty terminal	
3	欠压脱扣器进线端 Empty terminal	进线端 Incoming end	AC220V/AC380V输入 AC220V / AC380V input
11 12	欠压线圈供电端 Undervoltage coil supply end	欠压线圈供电端 Undervoltage coil supply end	连接至KFW2系列断路器25、26号端子 Connect to terminals 25 and 26 of KFW2 series circuit breaker
21 22	有压合闸无源触点 Voltage Closing passive contact	无源继电器触点输出（常开触点） Passive relay contact output (normally open contact)	容量AC250V、AC-12、5A Capacity: AC250V, ac-12, 5A

产品附件 Accessories

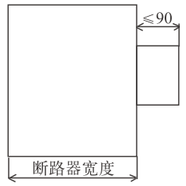
附加触头 Additional contact

当选用附加辅助触头时，断路器宽度最多增加90mm。
The breaker width would increase at most 90 mm when select additional auxiliary contact.

用户最多可增加四常开四常闭
The user can increase four normally open and four normally closed at most.

当用于抽屉式断路器时，附加触头仅在断路器处于连接位置时，可以实现转换。
When it is used on drawer type breaker, the additional contact only can realize switching when the breaker is in the connection position.

注：配机械联锁的开关不能加装附加触头。
Note: The switch of the mechanical interlocking can't be additionally equipped with additional contact.



相间隔板 Interphase baffle

必选件，绝缘材料制成，垂直安装于抽屉式断路器的固定部分的接线板之间。
It is a required accessory, made from insulating materials, vertically installed between the terminal blocks at the fixed part of the drawer type breaker.

加强母排连接处的绝缘强度。
Strengthen the insulating strength of the busbar joint.

防止电弧扩展至断路器内部。
Prevent the electric arc from extending to the inside of the breaker.

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 adds up the number of the breaker mechanical operation, which is absolutely clear to the user.

门框 Door frame

安装在柜门上，防护等级达到IP40，固定式与抽屉式均可用。
Installed on the cabinet door, the protection level reaches IP 40, applicable to both stationary and drawer types.

电源模块 Power module

KFW2电源模块可输入电压AC100-450V，DC100-400V，输出DC24V电源提供给控制单元。

The KFW2 power module can input voltage AC100-450V，DC100-400V, and output DC 24 V supply power to control unit.

ST电源模块 ST Power Module

ST电源模块IV可提供功率不小于9.6W的直流24V电源，可输出四组接线端子，输入分：AC440V，AC230V和DC110/200V。

ST power module IV can provide the direct current 24 V power supply with the power no less than 9.6 W, four groups of terminal blocks can be output, the input including: AC 400 V, AC 230 V and DC 110/ 200 V.

KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

产品附件 Product accessories

ST201继电器 ST 201 Relay

控制器输出的信号用于控制断路器分/合闸或带负载容量较大时，需通过ST201继电器模块转换后进行控制。

When the controller output signal is used for controlling the breaker separating / switching-on or the loading capacity is relatively higher, it shall be controlled after transition through ST 201 relay module.

ST201触点容量 ST 201 contact capacity	AC250V,10A
	DC28V,10A

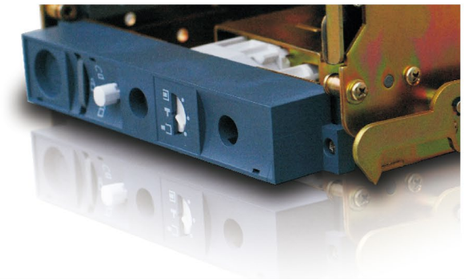
门联锁 Gate interlock

防止断路器在接通或试验位置时，柜门意外打开。

装于抽屉座的右侧。

Prevent the cabinet door from opening accidentally when the breaker is inconnection or testing position.

Installed at the right side of the drawer seat.



防止闭合锁 Closure-preventing lock

防止闭合锁可将断路器的断开按钮锁定在按下位置上，用户选装后，我方安装并配置钥匙。

一台断路器配一把锁和一把钥匙，锁住状态下不允许断路器合闸；

二台断路器配二把相同的锁和一把钥匙，只允许单台断路器合闸；

三台断路器配三把相同的锁和二把钥匙，最多两台同时合闸。

注：防止闭合锁使用时，必须先按下分闸按钮，方可旋转钥匙。

Closure-preventing lock can lock the disconnect button of the breaker at the press down position, we will install and provide keys after the user has selected.
One lock and one key are provided for one breaker, the breaker closing is not allowed in locked state.
Two same locks and one key are provided for two breakers, only single breaker closing is allowed;
Three circuit breakers are equipped with three identical locks and two keys, and at most two are closed at the same time.
Note: The key can only be rotated after pressing down the separating button while using the closure-preventing lock.

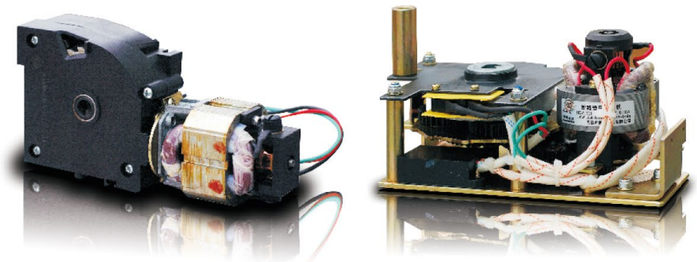
产品附件 Product accessories

电动操作机构 Electric operating mechanism

用于断路器电动储能和自动再储能功能。

Used for breaker energy storage and automatic re-storage.

额定工作电压Ue（V） Rated operating voltage Ue (V)		AC230 AC400	DC110 DC220
可靠动作范围 Reliable action range		(0.85-1.1)Ue	
额定控制容量 Rated control capacity	Inm=1600	75VA	75W
	Inm≥3200	110VA	110W



位置开关 Position switch

抽屉座机械指示本体“连接/试验/分离”位置，“连接/试验/分离”触点也可指示本体位置。		The drawer seat machinery indicates the positions of “Connect/ Test/ Separate” on the body, the contacts of “Connect/ Test/ Separate” also can indicate the body position.	
连接位置行程开关	切换开关，只有在到达主电路和控制电路连接时动作。	Connected position travel switch	A selector switch only makes action when the arriving main circuit and the control circuit areconnected.
试验位置行程开关	切换开关，只有在到达主电路隔离，安全挡板关闭，控制电路接通时动作。	Test position travel switch	A selector switch only makes action when the arriving main circuit is isolated, safety shield is closed and control circuit is connected.
分离位置行程开关	切换开关，只有在到达主电路、控制电路隔离时动作。	Disconnected position travel switch	A selector switch only makes action when the arriving main circuit and the control circuit are isolated.

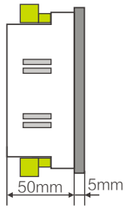
KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

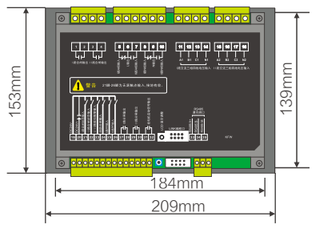
产品附件 Product accessories

双电源自动转换系统 Dual power automatic switching system

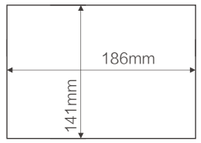
双电源自动转换系统可以实现两路电源之间的转换供电，确保用户用电可靠性，双电源自动转换系统在选配双电源自动控制器同时，必需选配机械联锁和PF触点配合使用。

The dual power automatic switching system can realize the switching power supply between dual power sources, ensure the user’s electricity reliability, at the same time of being equipped with dual power automatic controller, the dual power automatic switching system must be used with mechanical interlocking and PF contact cooperatively.





开孔尺寸图



互感器 Transformer

接地保护方式为3P+N时，选用N相互感器。在3相4线系统中用3极断路器时，中性极电流互感器作接地故障保护用，并应与智能脱扣器一起使用。

KFW2-1600~2500系列N相互感器开孔尺寸：61×21

KFW2-3200~6300系列N相互感器开孔尺寸：81×31

Select N phase transformer when the ground protection mode is 3 P+ N.When using the tri-pole breaker in the three-phase four-wire system, the neutral pole current transformer is used for ground fault protection and shall be used with the intelligent tripping device together.

KFW2- 1600~2500 Series N phase mutual inductor hole size: 61 x 21

KFW2- 3200~6300 Series N phase mutual inductor hole size: 81 x 31

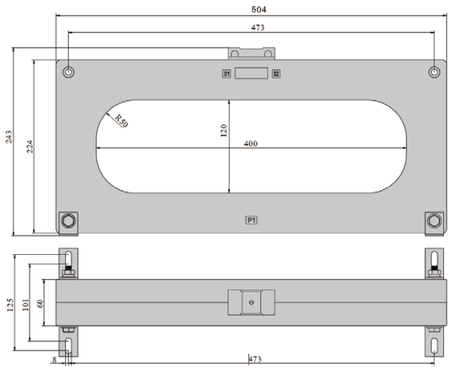
N相互感器 N phase transformer

接地保护方式为漏电保护时，选用漏电互感器。与智能脱扣器组合使用时，漏电互感器是用来检测几个安培的接地漏电电流。

Select and use the electric leakage transformer when the ground protection mode is electric leakage protection. When using in combination with the intelligent tripping device, the electric leakage transformer is used to detect the ground electric leakage current of several ampere meters.

注：仅Unit4/6智能控制器具有漏电保护功能。

Note: Only the Unit 4/ 6 intelligent controller has the electric leakage protection function.

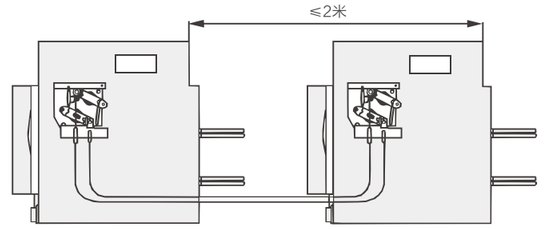


产品附件 Product accessories

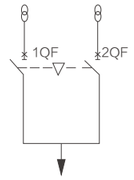
机械联锁 Mechanical interlocking

两台平放断路器的钢缆联锁或两台叠装断路器的连杆联锁
（两台断路器联杆联锁的型式及底板开孔尺寸参见三台断路器的型式及开孔尺寸）

The wirerope interlocking of two flat breakers or the connecting rod interlocking of two stack installed breakers.(See the pattern and hole size of three breakers for the pattern and bottom hole size of the connecting rod interlocking of two breakers.)

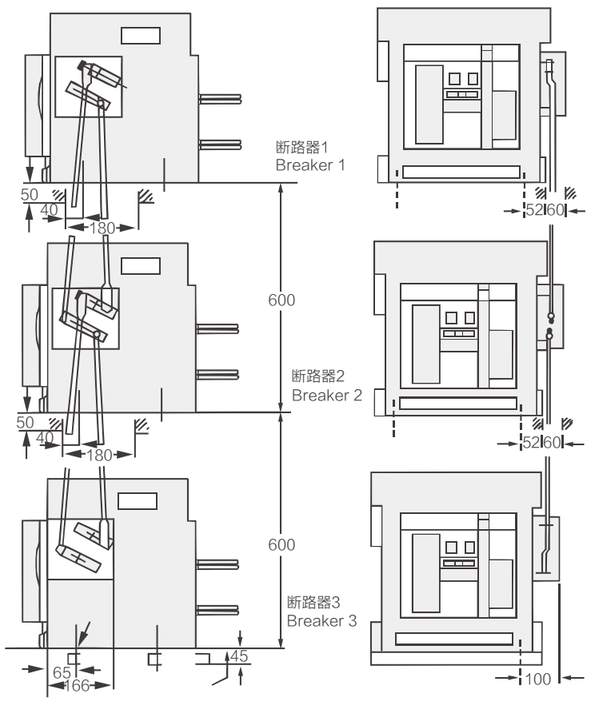


电路图 Circuit diagram　可能的运行方式 Possible operation mode



1QF	2QF
0	0
0	1
1	0

三台叠装断路器的连杆联锁 Connecting rod interlocking of three stack installed breakers

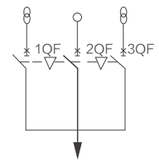


电路图 Circuit diagram　可能的运行方式 Possible operation mode

方式一：三个电源只能合一台断路器
Mode 1: three power supply can only share one breaker

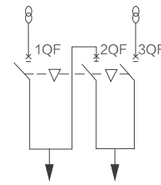
1QF	2QF	3QF
0	0	0
1	0	0
0	1	0
0	0	1

方式二：二个常用电源+一个备用电源
Mode 2: two normal power supply+ a reserve 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
Mode 3: two power supply one segment



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

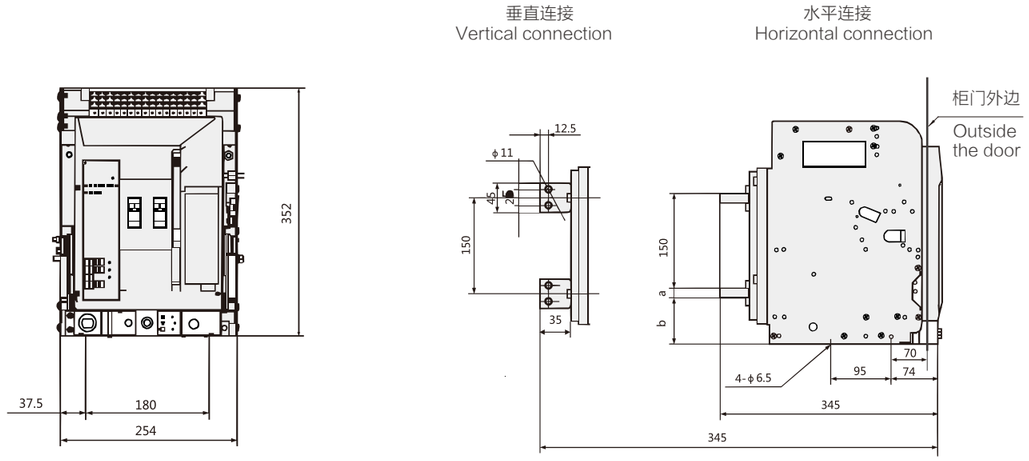
注：缆绳长度小于等于2米。钢缆联锁与连杆联锁可以组合使用。实现多断路器的联锁，须事先声明。

Note: The wire rope is less than or equals to 2 meters. The wire rope interlocking and connecting rod interlocking can be used in combination. Prior statement shall be made for realizing the interlocking of multiple breakers.

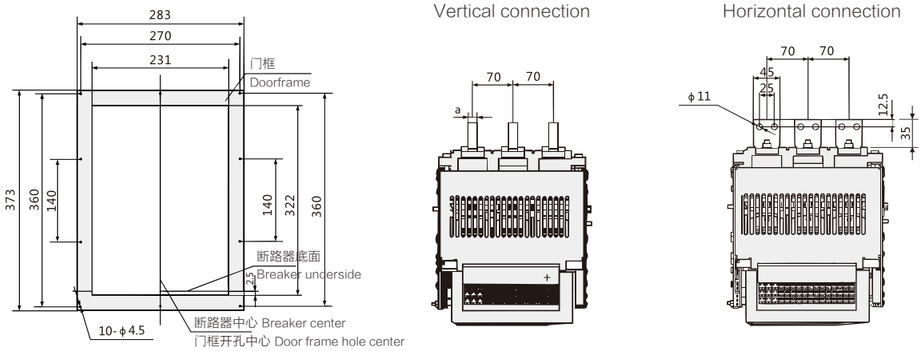
KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

KFW2−1600/3P 抽屉式 断路器外形及安装尺寸

KFW2−1600/3P Outline and installation dimensions of drawer type circuit breaker

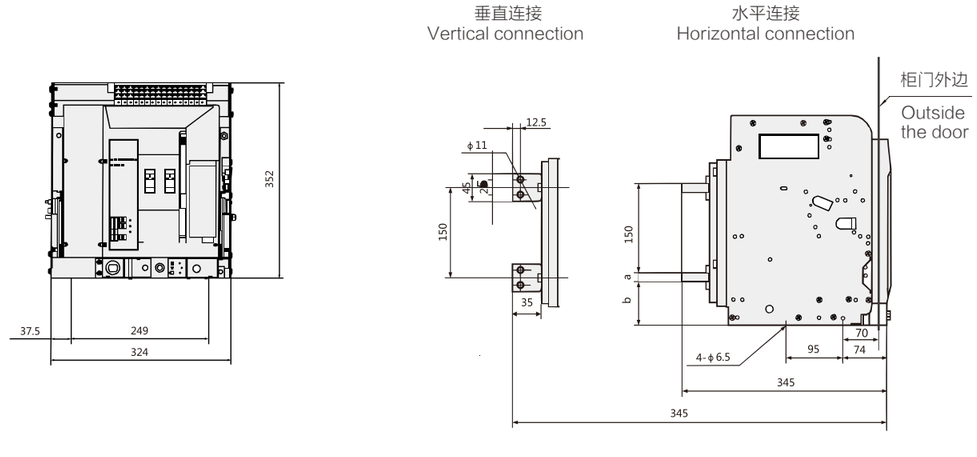


额定电流/A Rated current / A	a	b
In=400~1250	10	75
In=1600	15	72.5

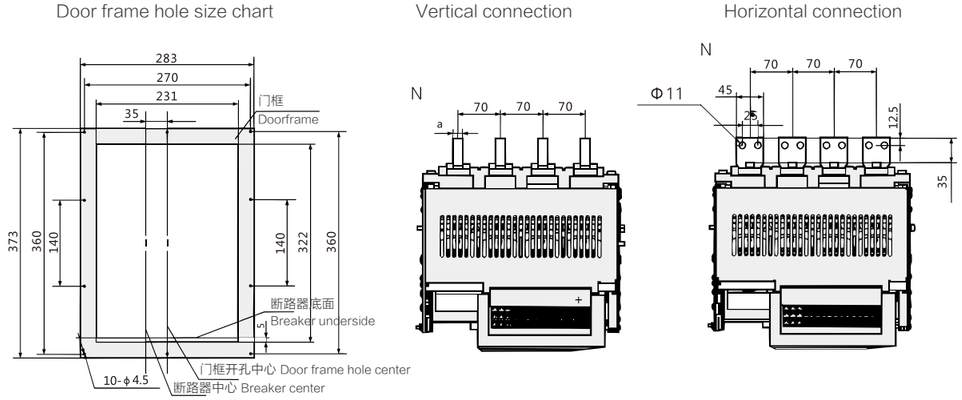


KFW2−1600/4P 抽屉式 断路器外形及安装尺寸

KFW2−1600/4P Outline and installation dimensions of drawer type circuit breaker



额定电流/A Rated current / A	a	b
In=400~1250	10	75
In=1600	15	72.5

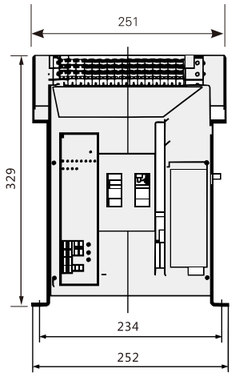


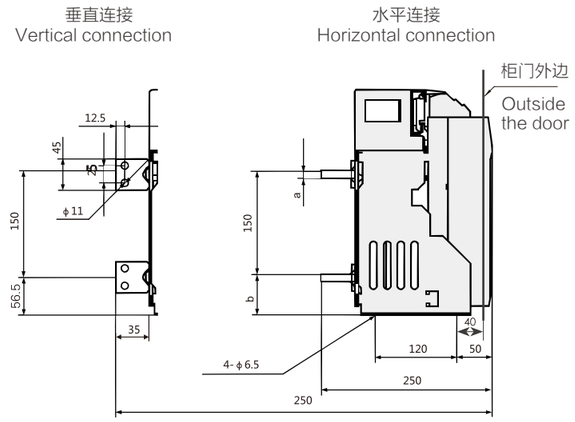
KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-1600/3P 固定式 断路器外形及安装尺寸

KFW2-1600/3P Fixed circuit breaker appearance and installation dimensions

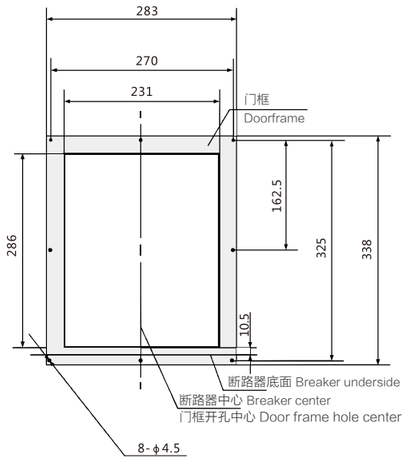


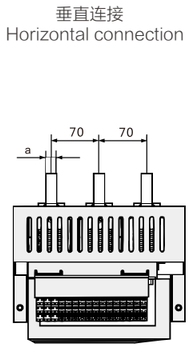


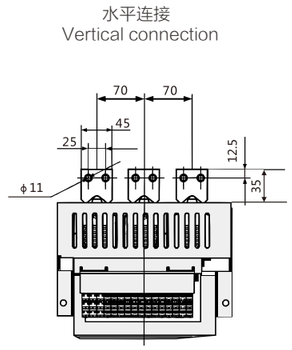
额定电流/A Rated current / A	a	b
In=400~1250	10	61.5
In=1600	15	64

门框开孔尺寸图

Door frame hole size chart

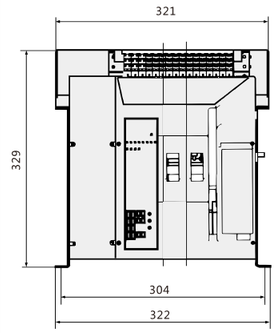


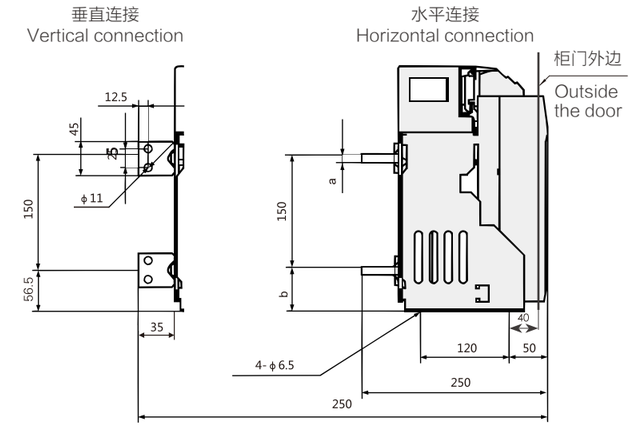




KFW2-1600/4P 固定式 断路器外形及安装尺寸

KFW2-1600/4P Fixed circuit breaker appearance and installation dimensions

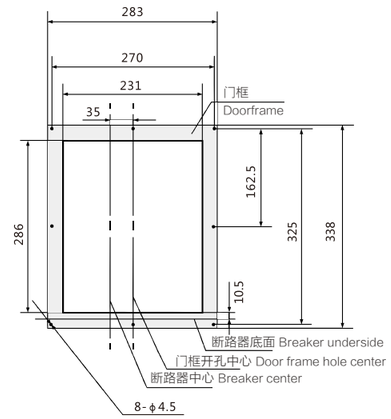


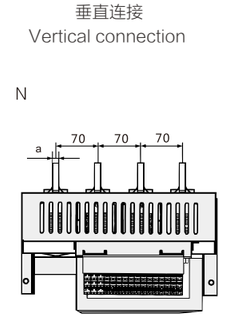


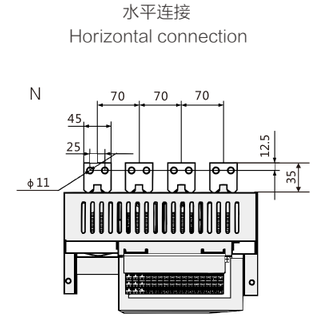
额定电流/A Rated current / A	a	b
In=400~1250	10	61.5
In=1600	15	64

门框开孔尺寸图

Door frame hole size chart



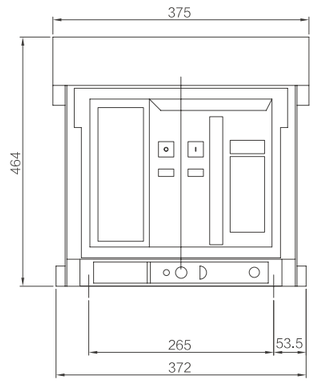


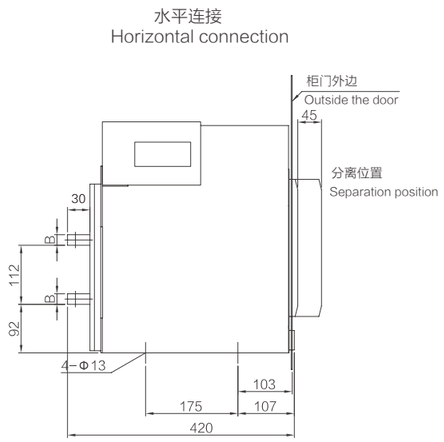


KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

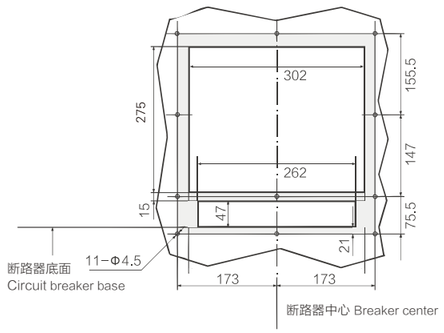
KFW2-2500/3P 抽屉式 断路器外形及安装尺寸

KFW2-2500/3P Outline and installation dimensions of drawer type circuit breaker

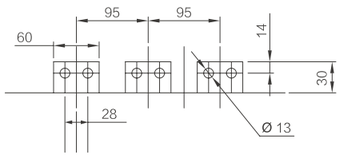




门框开孔尺寸图
Door frame hole size chart



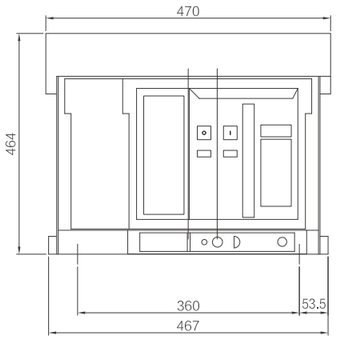
水平连接
Horizontal connection

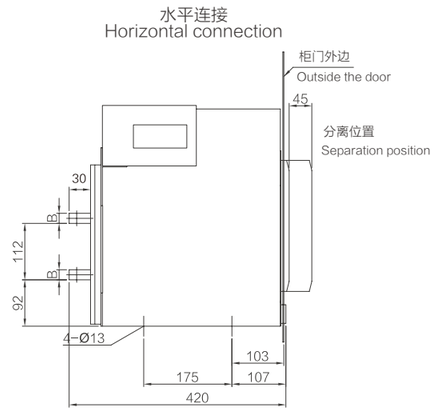


额定电流（A）Rated current (A)	尺寸 B（mm）Size B (mm)
400～800	10
1000～1600	15
2000～2500	20

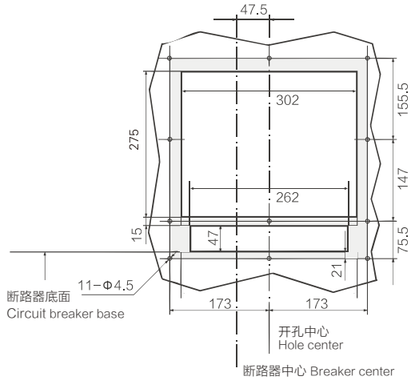
KFW2-2500/4P 抽屉式 断路器外形及安装尺寸

KFW2-2500/4P Outline and installation dimensions of drawer type circuit breaker

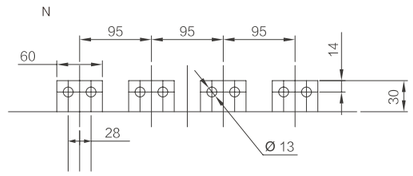




门框开孔尺寸图
Door frame hole size chart



水平连接
Horizontal connection

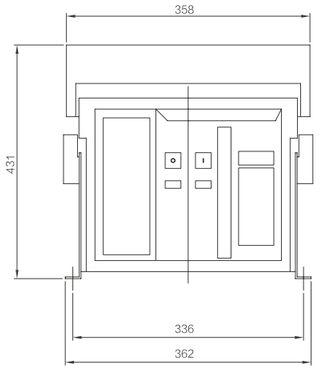


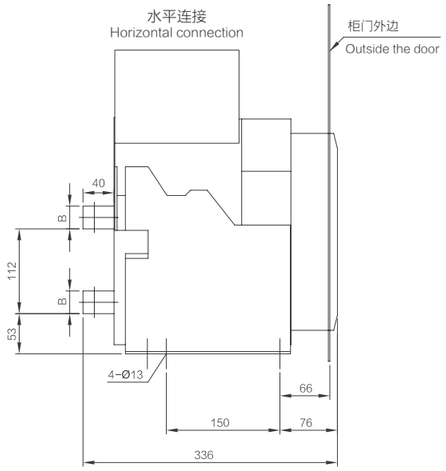
额定电流（A）Rated current (A)	尺寸 B（mm）Size B (mm)
400～800	10
1000～1600	15
2000～2500	20

KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

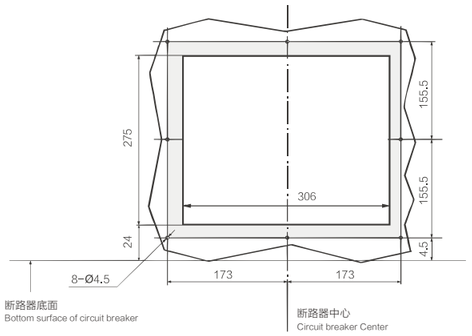
KFW2-2500/3P 固定式 断路器外形及安装尺寸

KFW2-2500/3P Fixed circuit breaker appearance and installation dimensions

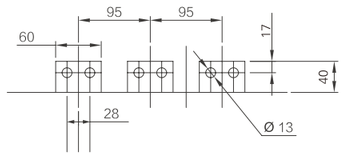




门框开孔尺寸图
Door frame hole size chart



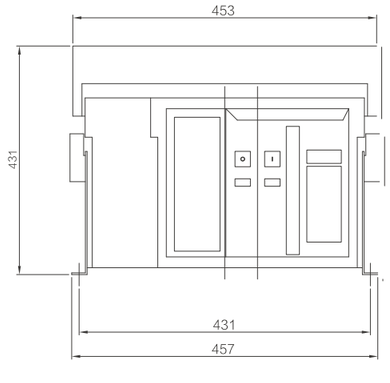
水平连接
Horizontal connection

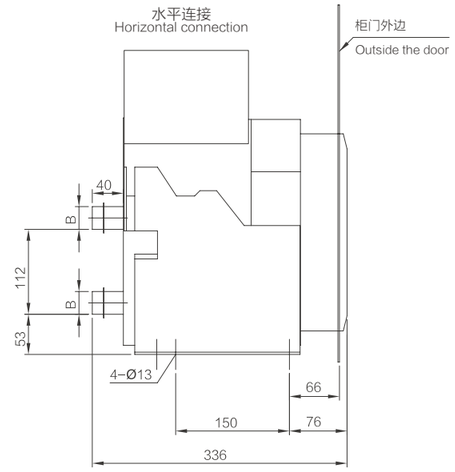


额定电流（A） Rated current (A)	尺寸 B（mm） Size B (mm)
400～800	10
1000～1600	15
2000～2500	20

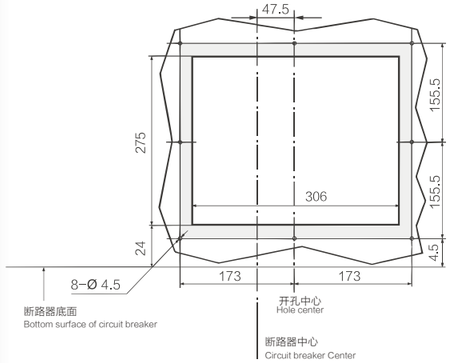
KFW2-2500/4P 固定式 断路器外形及安装尺寸

KFW2-2500/4P Fixed circuit breaker appearance and installation dimensions



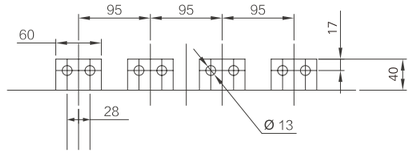


门框开孔尺寸图
Door frame hole size chart



N

水平连接
Horizontal connection



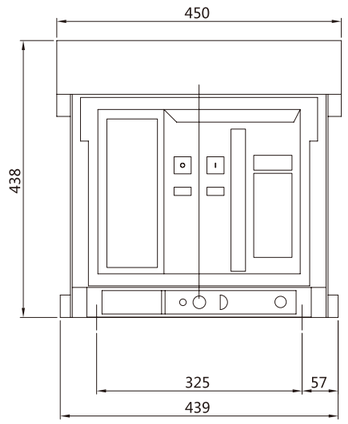
额定电流（A） Rated current (A)	尺寸 B（mm） Size B (mm)
400～800	10
1000～1600	15
2000～2500	20

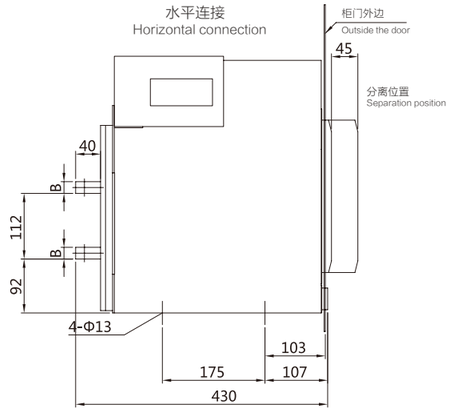
KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

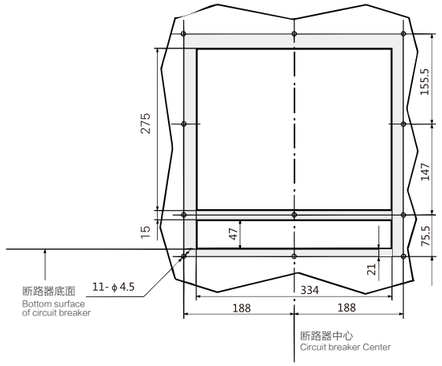
KFW2-3200/3P 抽屉式 630A~2500A 外形及安装尺寸

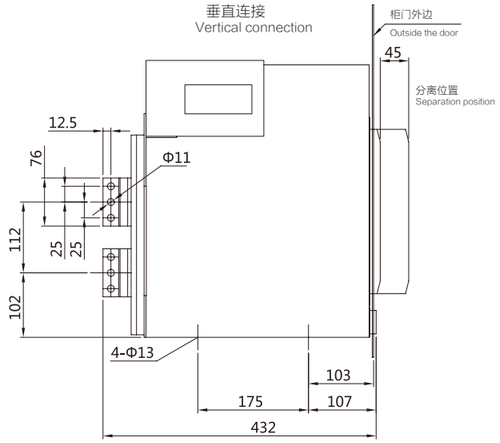
KFW2-3200/3P Outline and installation dimensions of drawer type 630A~2500A



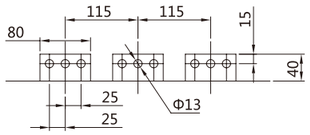


门框开孔尺寸图
Door frame hole size chart

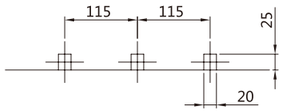




水平连接
Horizontal connection



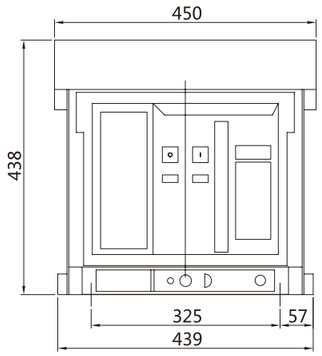
垂直连接
Vertical connection

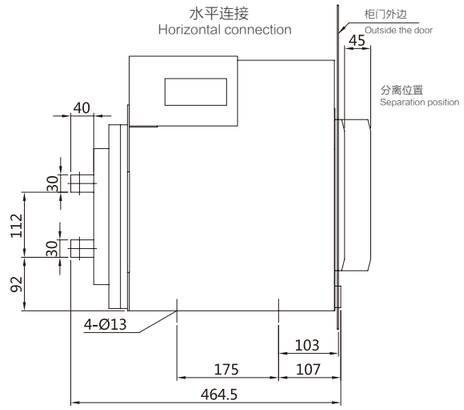


额定电流（A） Rated current (A)	尺寸 B（mm） Size B (mm)
630～1600	10
2000～2500	20

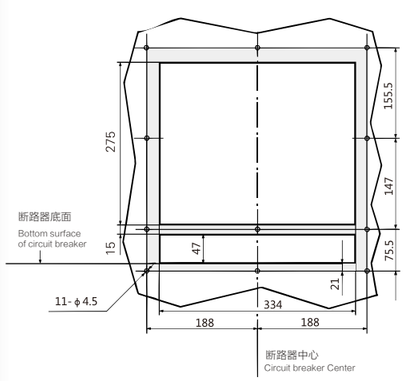
KFW2-3200/3P 抽屉式 3200A 外形及安装尺寸

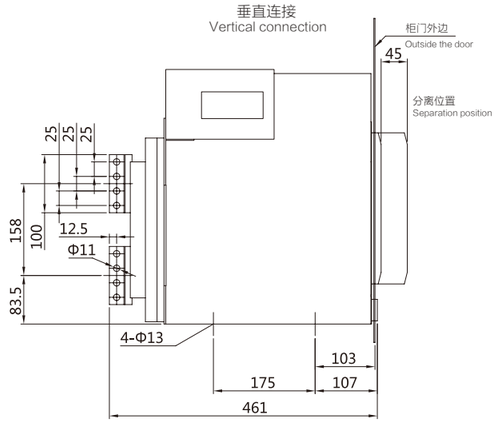
KFW2-3200/3P Outline and installation dimensions of drawer type 3200A



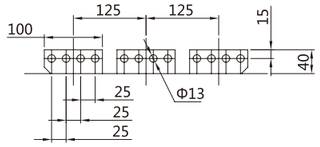


门框开孔尺寸图
Door frame hole size chart

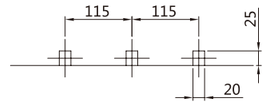




水平连接
Horizontal connection



垂直连接
Vertical connection

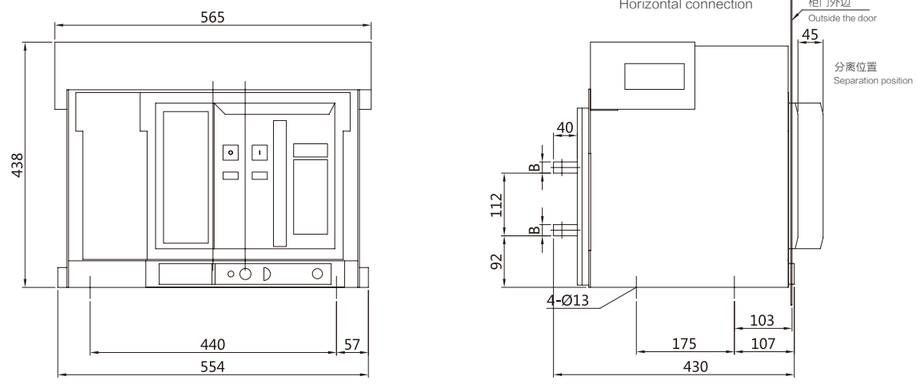


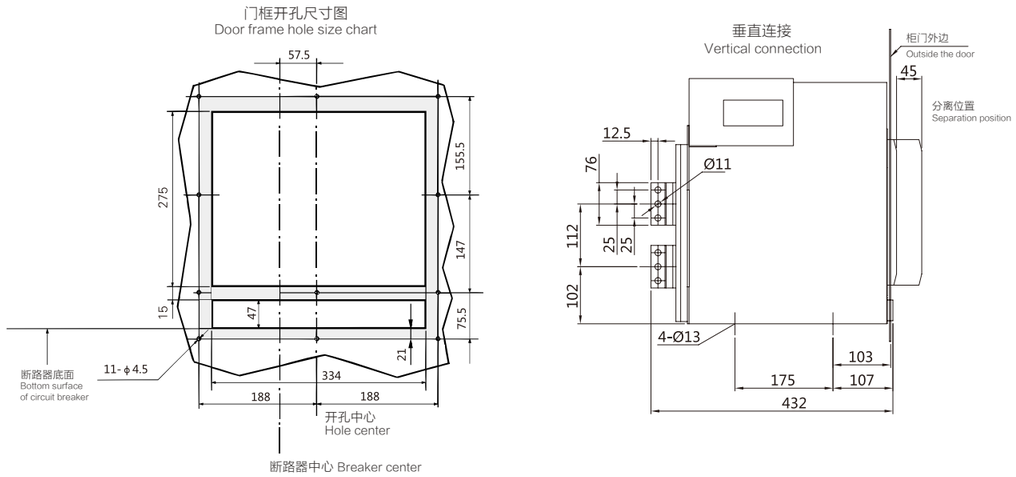
KFW2 SERIES AIR CIRCUIT BREAKER

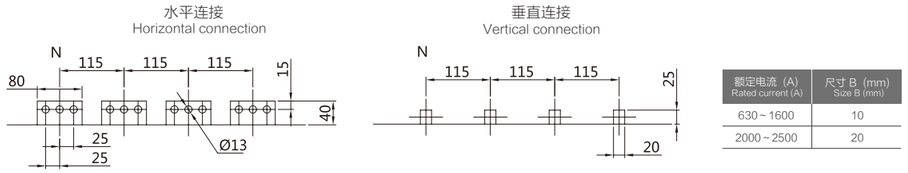
KFW2系列万能式断路器

KFW2-3200/4P 抽屉式 630A~2500A 外形及安装尺寸

KFW2-3200/4P Outline and installation dimensions of drawer type 630A~2500A



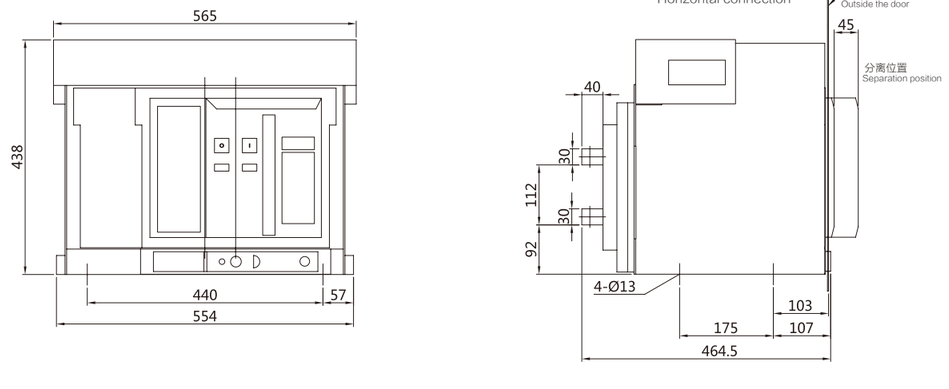


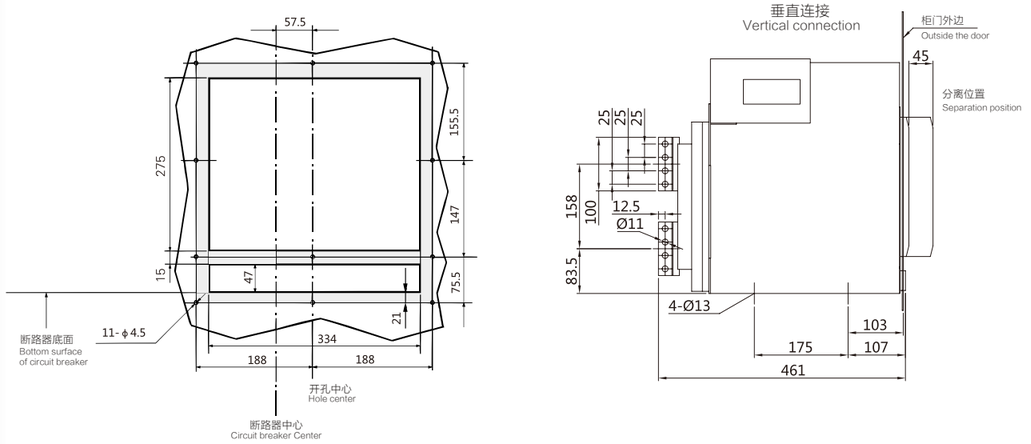


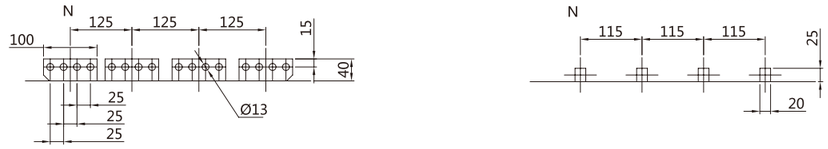
额定电流 (A) Rated current (A)	尺寸 B (mm) Size B (mm)
630～1600	10
2000～2500	20

KFW2-3200/4P 抽屉式 3200A 外形及安装尺寸

KFW2-3200/4P Outline and installation dimensions of drawer type 3200A





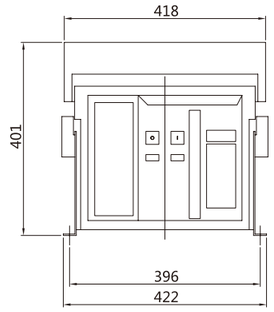


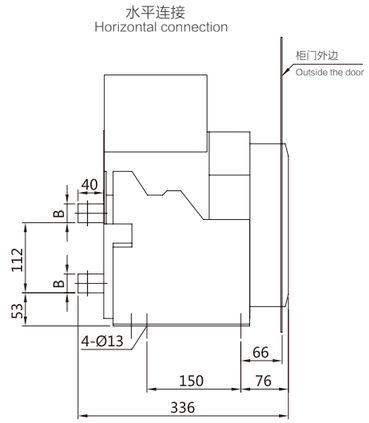
KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

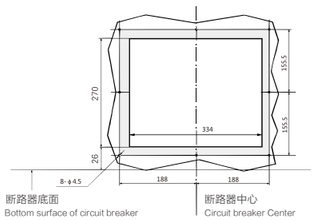
KFW2-3200/3P 固定式 断路器外形及安装尺寸

KFW2-3200/3P Fixed circuit breaker appearance and installation dimensions



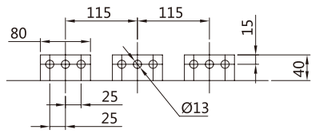


门框开孔尺寸图
Door frame hole size chart



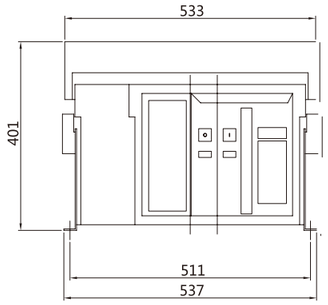
额定电流（A）Rated current (A)	尺寸 B（mm）Size B (mm)
630～1600	10
2000～2500	20
3200	30

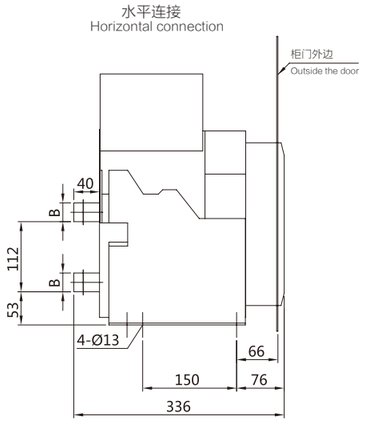
水平连接
Horizontal connection



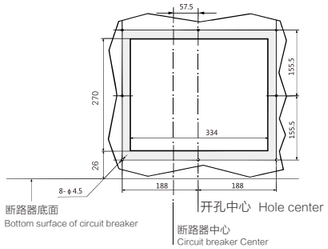
KFW2-3200/4P 固定式 断路器外形及安装尺寸

KFW2-3200/4P Fixed circuit breaker appearance and installation dimensions



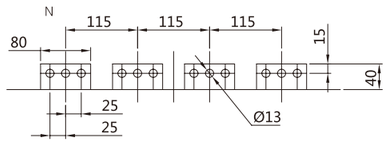


门框开孔尺寸图
Door frame hole size chart



额定电流（A）Rated current (A)	尺寸 B（mm）Size B (mm)
630～1600	10
2000～2500	20
3200	30

水平连接
Horizontal connection

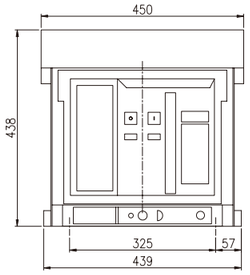


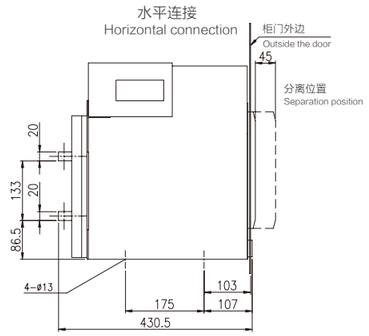
KFW2 SERIES AIR CIRCUIT BREAKER

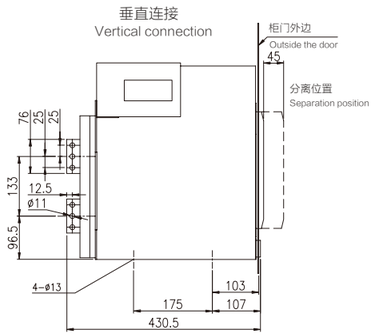
KFW2系列万能式断路器

KFW2-4000/3P 抽屉式 ≤2500A 外形及安装尺寸

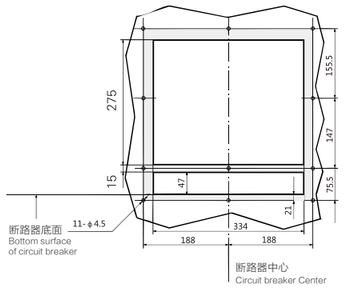
KFW2-4000/3P Outline and installation dimensions of drawer type ≤2500A

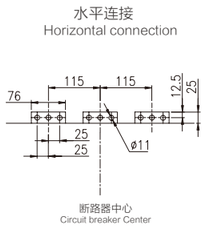


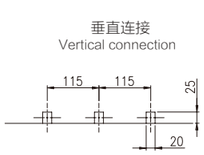




门框开孔尺寸图
Door frame hole size chart

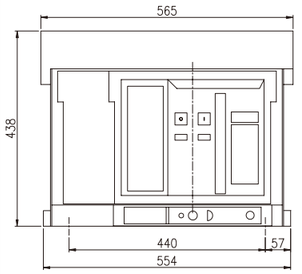


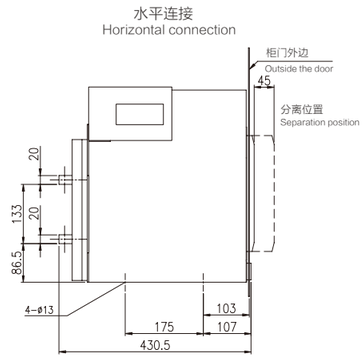


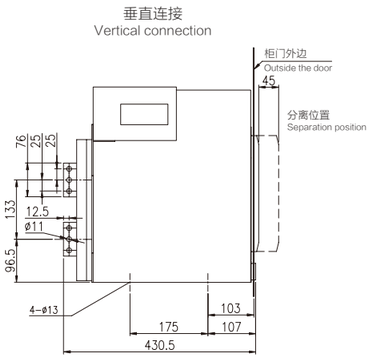


KFW2-4000/4P 抽屉式 ≤2500A 外形及安装尺寸

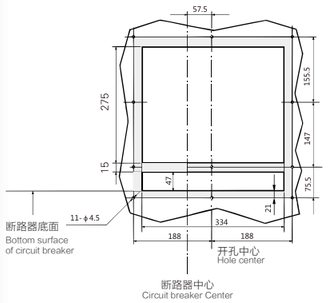
KFW2-4000/4P Outline and installation dimensions of drawer type ≤2500A

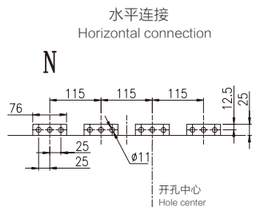


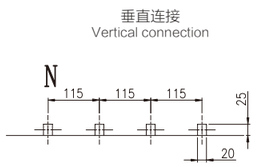




门框开孔尺寸图
Door frame hole size chart





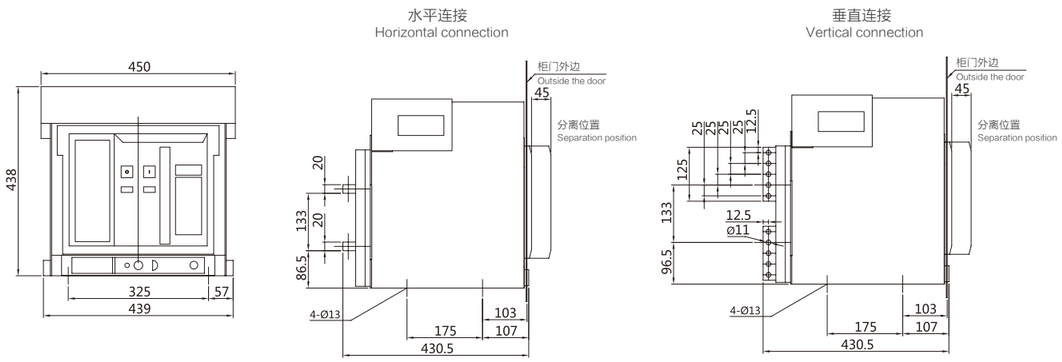


KFW2 SERIES AIR CIRCUIT BREAKER

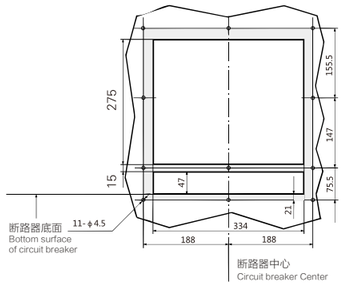
KFW2系列万能式断路器

KFW2-4000/3P 抽屉式 > 2500A 外形及安装尺寸

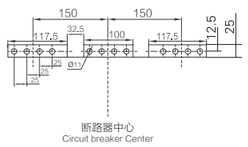
KFW2-4000/3P Outline and installation dimensions of drawer type >2500A



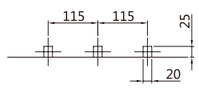
门框开孔尺寸图
Door frame hole size chart



水平连接
Horizontal connection

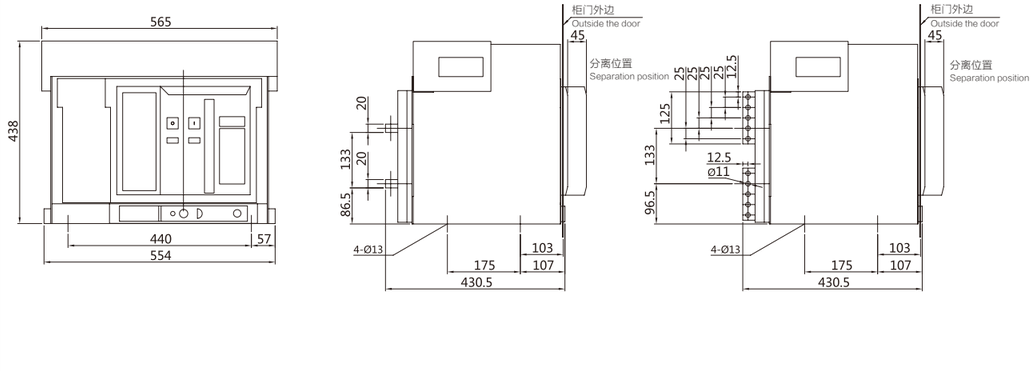


垂直连接
Vertical connection

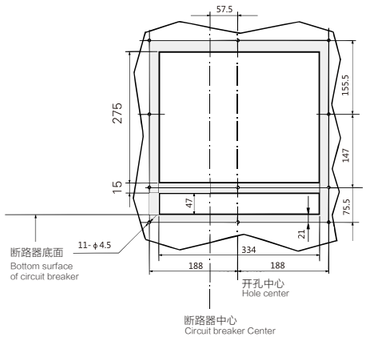


KFW2-4000/4P 抽屉式 > 2500A 外形及安装尺寸

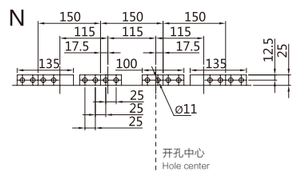
KFW2-4000/4P Outline and installation dimensions of drawer type >2500A



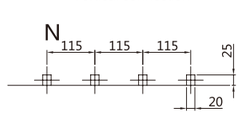
门框开孔尺寸图
Door frame hole size chart



水平连接
Horizontal connection



垂直连接
Vertical connection

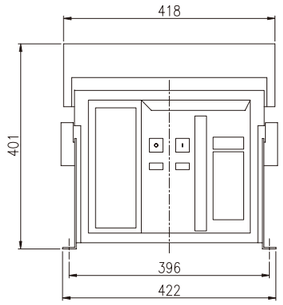


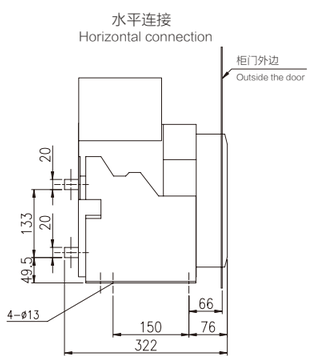
KFW2 SERIES AIR CIRCUIT BREAKER

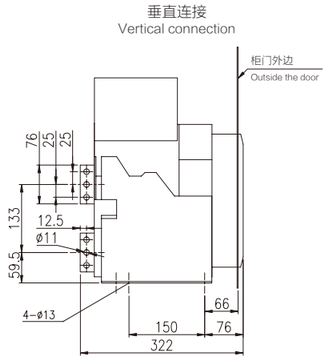
KFW2系列万能式断路器

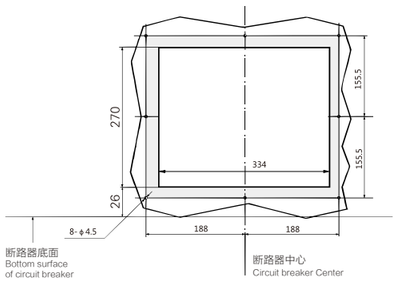
KFW2-4000/3P 固定式 ≤ 2500A 外形及安装尺寸

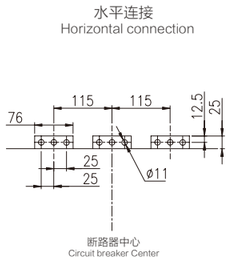
KFW2-4000/3P Fixed circuit breaker appearance and installation dimensions ≤2500A

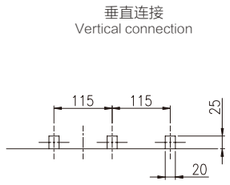






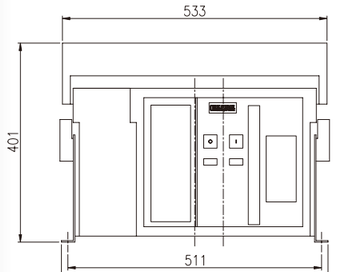


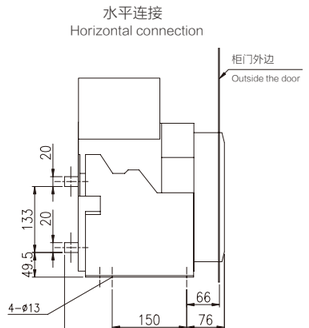


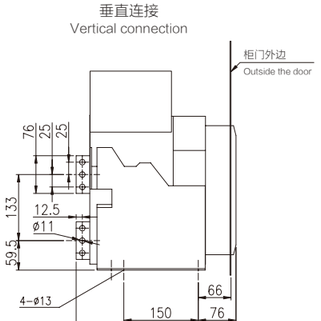


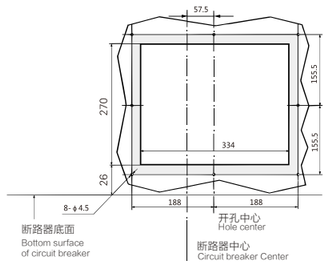
KFW2-4000/4P 固定式 ≤ 2500A 外形及安装尺寸

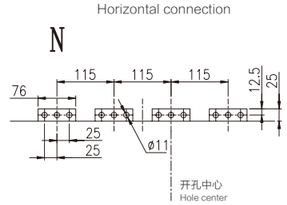
KFW2-4000/4P Fixed circuit breaker appearance and installation dimensions ≤2500A

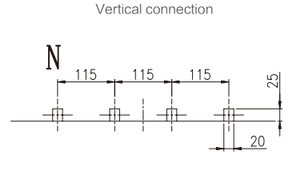










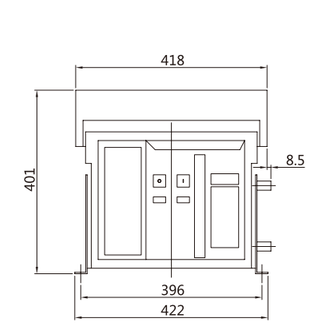


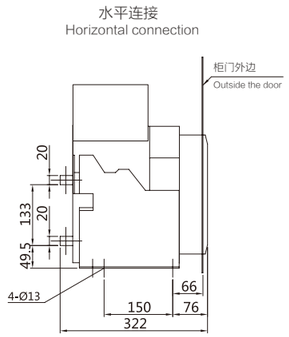
KFW2 SERIES AIR CIRCUIT BREAKER

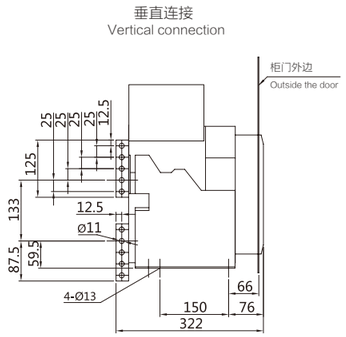
KFW2系列万能式断路器

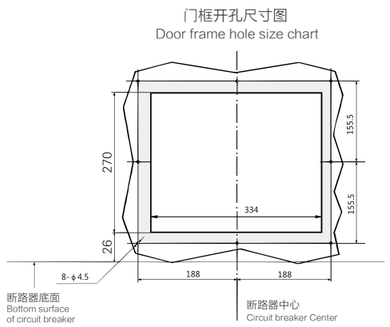
KFW2-4000/3P 固定式 > 2500A 外形及安装尺寸

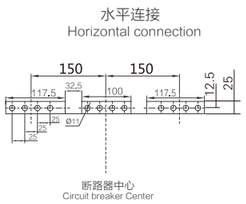
KFW2-4000/3P Fixed circuit breaker appearance and installation dimensions >2500A

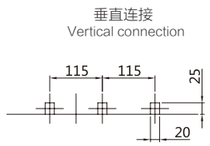






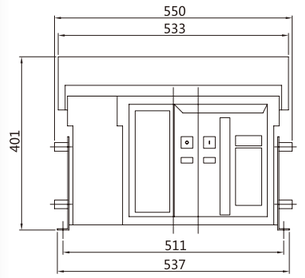


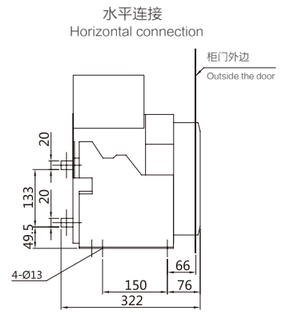


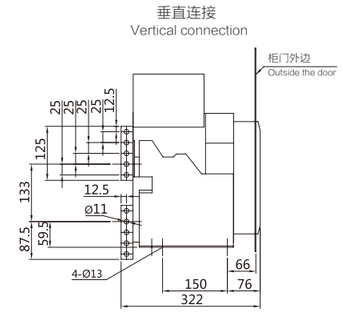


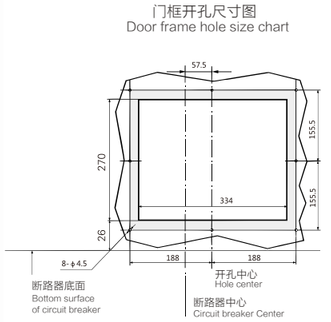
KFW2-4000/4P 固定式 > 2500A 外形及安装尺寸

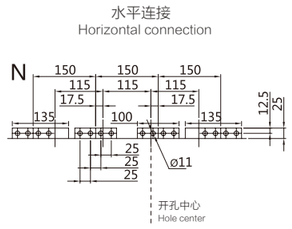
KFW2-4000/4P Fixed circuit breaker appearance and installation dimensions >2500A

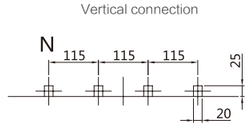










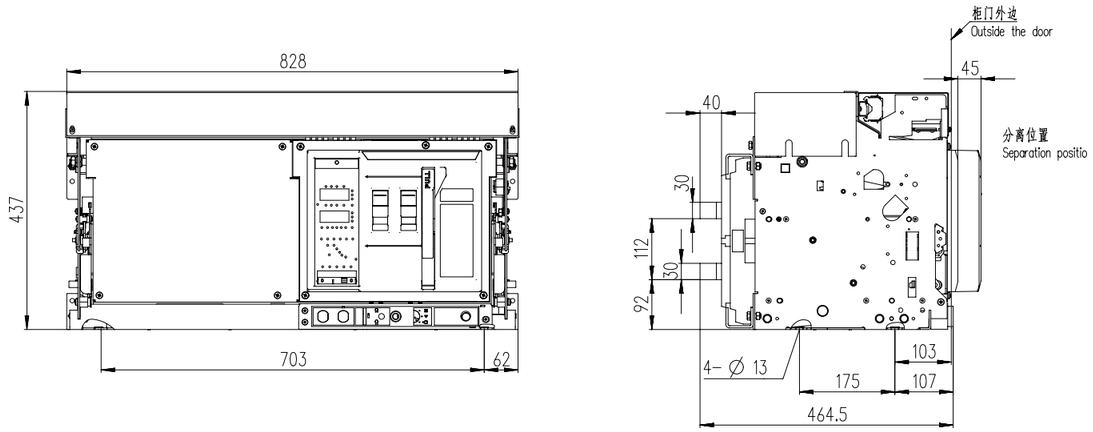


KFW2 SERIES AIR CIRCUIT BREAKER

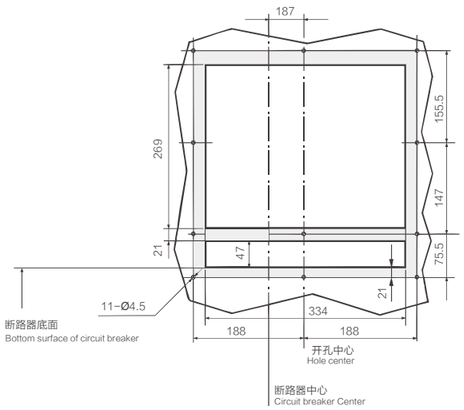
KFW2系列万能式断路器

KFW2-6300/3P 抽屉式 4000A～6300A 外形及安装尺寸

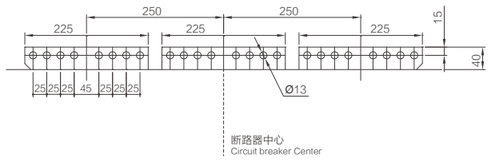
KFW2-6300/3P Drawer type 4000A～6300A outline and mounting dimensions



门框开孔尺寸图
Door frame hole size chart

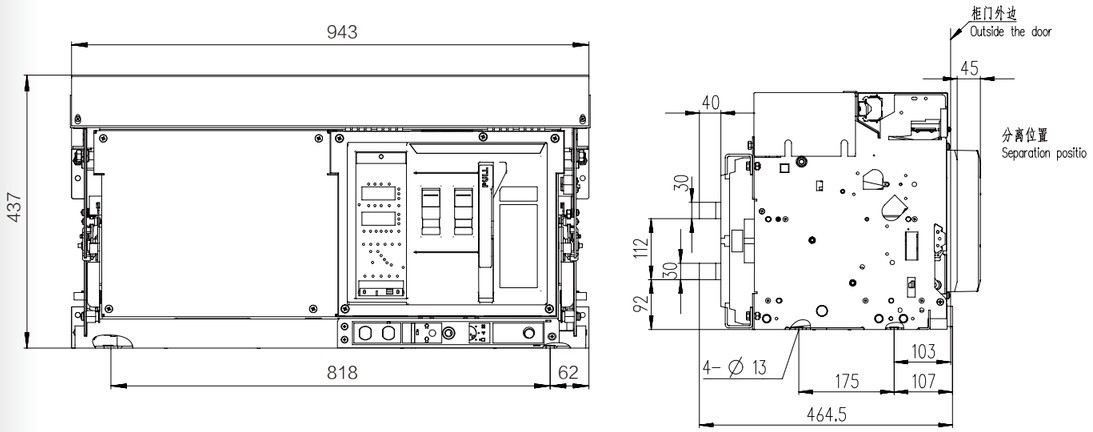


水平出线
Horizontal coil out

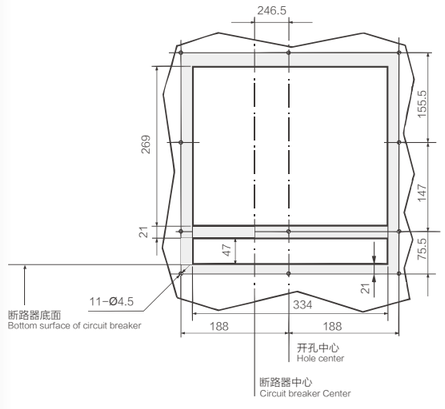


KFW2-6300/4P抽屉式4000A～6300A外形及安装尺寸

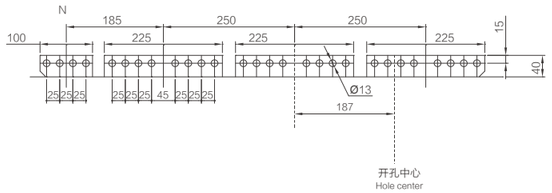
KFW2-6300/4P Drawer type 4000A～6300A outline and mounting dimensions



门框开孔尺寸图
Door frame hole size chart



水平出线
Horizontal coil out

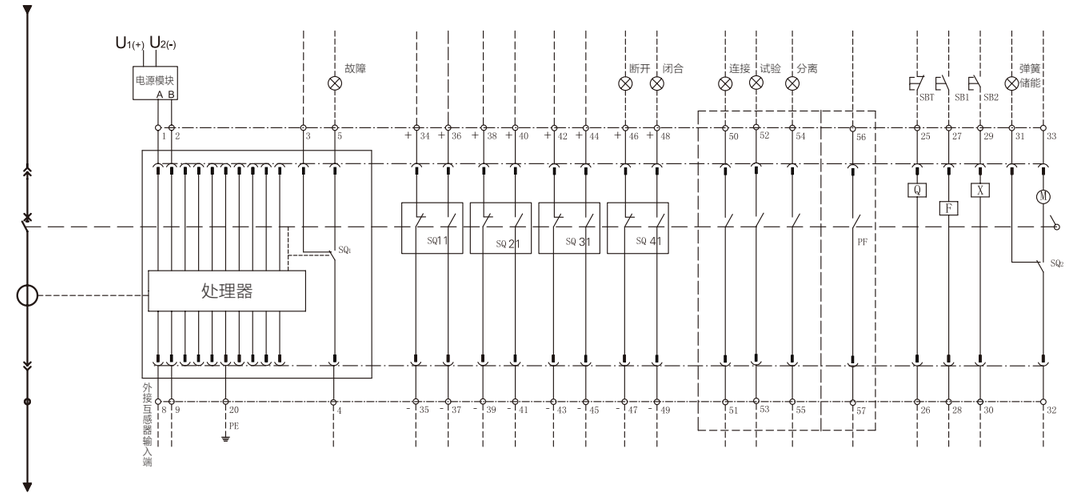


KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-1600 电气线路图（配置Unit3智能控制器）

主电路 | 智能控制器 | 断路器附件



SBT: 急停按钮	辅助开关 SQ11、SQ21、SQ31、SQ41: 4NC4NO 四开四闭，触点容量：AC- 12:16A/AC400V，DC-12:5A/DC250V，AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	SQ1：故障脱扣指示触头　触点容量：AC-12:16A/AC250V，DC-12:0.3A/DC250V
M：储能电动机	
X：闭合电磁铁（出厂时未串接常闭辅助触点）	SQ2：电机行程开关
F：分励脱扣器（出厂时未串接常开辅助触点）	PF:准备闭合触点　触点容量：AC-12:3A/AC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	"连接"、"试验"、"分离"三位置指示触点容量：AC-12:3A/AC250V

注:

1、按扭、指示灯等附件不随断路器一 起提供。图中虚线部分由用户自接。

2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。

3、智能控制器1#，2#端子输入为DC24V，使用时必须选配电源模块。当控制电源为交流时，直接接至电源模块U1、U2端子。控制电源为直流时，直流电源接至电源模块U1、U2端子。

4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（ 如使用在继电器在监控系统中，X、F需选用瞬时型）

5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。

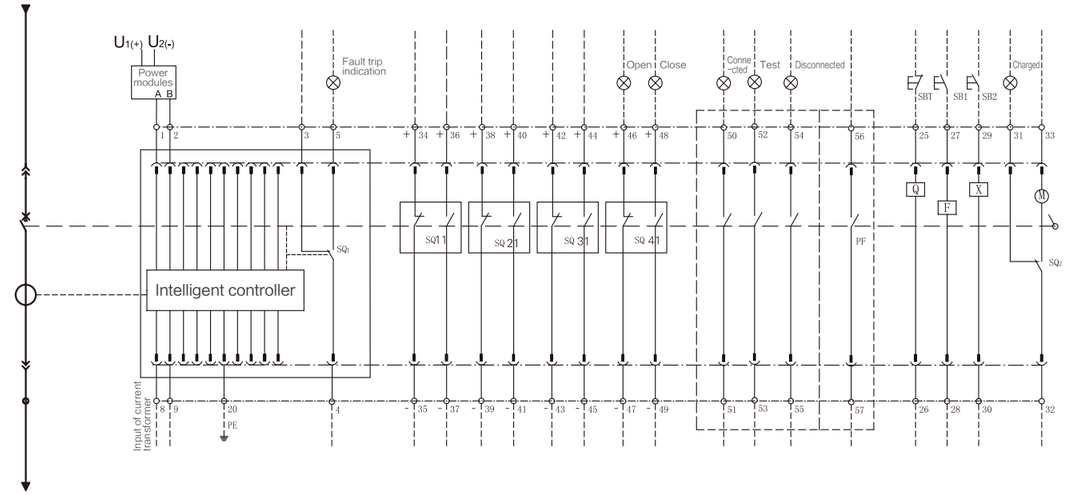
6、20#（PE线）为保护接地线（连接到和大地相连的金属部位）。

7、标准产品为四开四闭辅助触头。当需外加附加触头时，最多可选配八开八闭，详见附加触头接线图。

8、"连接"、"试验"、"分离"三位置指示触点、PF准备闭合触点为可选件。50#、51#为连接位置触点，52#、53#试验位置触点，54#、55# 为分离位置触点。56#、 57# 为PF准备闭合触点。

KFW2-1600 Electrical Wiring Diagram (Equipped with Unit3 Intelligent Controller)

Main circuit | Intelligent controller | Breaker accessories



SBT: Exigency button	Auxiliary switch SQ11,SQ21,SQ31,SQ41: 4NC4NO , Capacity: AC-12：16A/AC400V，DC-12：5A/DC250V，AC-15：2A/AC400V， DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
M: Gear motor for electrical charging of the operating mechanism	
X: Closing release (without NO switch when leaving factory)	SQ2: motor position switch , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
F: Shunt release (without NC switch when leaving factory)	PF: preparative closing switch , Capacity: AC-12：3A/AC250V
Q: Under-voltage release (can connect with exigency button when using)	Three indicating contact about “Connected”, “test”, “disconnected” position switch, Capacity: AC-12：3A/AC250V

Note:

1. Accessories such as button, indicator light are not supplied with circuit-break.

2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.

3. The auxiliary power supply voltage of intelligent controller is DC24V with connection 1 and 2, you need book DC supply modular. Output terminal of DC supply modular is already connected when leaving factory. If the supply power of intelligent controller is AC , U1, U2 connect with 1 and 2. If the supply power of intelligent controller is DC , U1, U2 connect with 1 and 2.

4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.

5. 8,9 are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer.

6. 20 are PE.

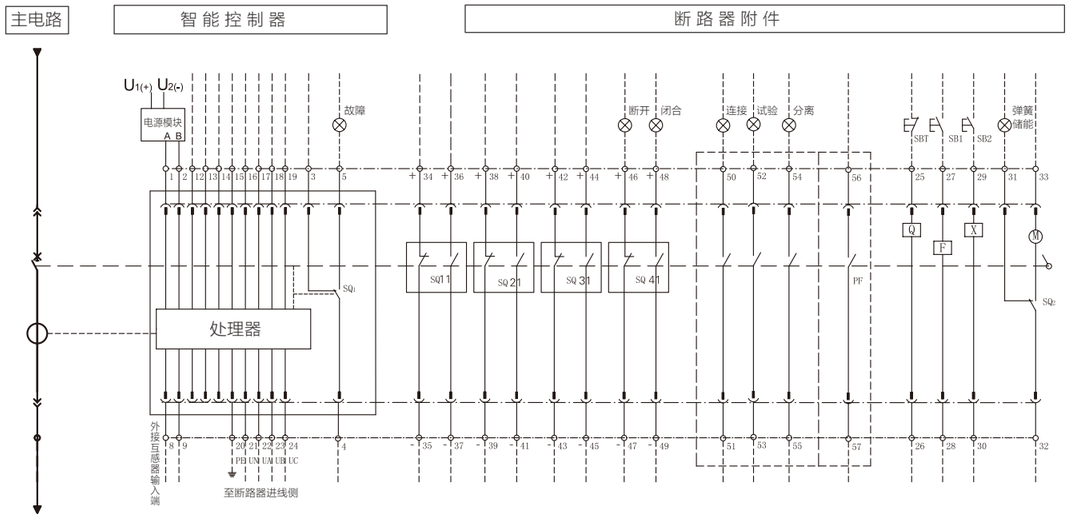
7.This is electric diagram of 4NC4NO. When you need adscititious extra contacts, max 8NC8NO , please consult the electric diagram of extra contacts.

8. Accessories such as” connected” “test” “disconnected” three position switch and PF preparative closing switch are optional. 50,51 are connected position switch. 52,53 are test position switch . 54,55 are disconnected position switch.56,57 are PF.

KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-1600 电气线路图（配置Unit4智能控制器）

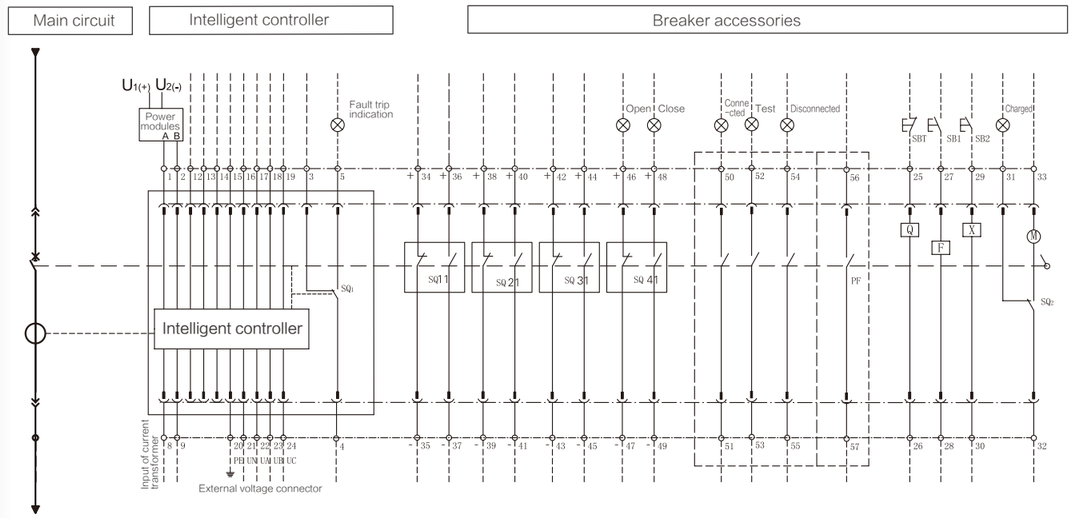


SBT: 急停按钮	辅助开关 SQ11、SQ21、SQ31、SQ41: 4NC4NO 四开四闭，触点容量：AC- 12:16A/AC400V，DC-12:5A/DC250V，AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	SQ1：故障脱扣指示触头　触点容量：AC-12:16A/AC250V，DC-12:0.3A/DC250V
M：储能电动机	
X：闭合电磁铁（出厂时未串接常闭辅助触点）	SQ2：电机行程开关
F：分励脱扣器（出厂时未串接常开辅助触点）	PF：准备闭合触点 触点容量：AC-12:3A/AC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	"连接"、"试验"、"分离"三位置指示触点容量：AC-12:3A/AC250V

注:

1、按扭、指示灯等附件不随断路器一 起提供。图中虚线部分由用户自接。
2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。
3、智能控制器1#，2#端子输入为DC24V，使用时必须选配电源模块。当控制电源为交流时，直接接至电源模块U1、U2端子。控制电源为直流时，直流电源接至电源模块U1、U2端子。
4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（如使用在继电器在监控系统中，X、F需选用瞬时型）
5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。接地方式为地电流型，必须选配地电流互感器。接地保护方式为漏电型时，必须选配外加的ZCT矩形互感器。
6、20#（PE线）为保护接地线（连接到和大地相连的金属部位）。
7、21#，22#，23#，24#为电压信号输入端，注意顺序不可接错且接于电源进线侧。三相三线制时，21# 与23#端子短接。没有增选电压保护功能时，此端子为空。（接入线电压不大于AC400V，大于AC500V时需配电压转换模块）。
8、12#-19#为可编程输入（DI）输出（DO）触点。触点容量：DO：DC110V 0.5A，AC250，3A。DI：DC110V-130V或AC110V-AC250V。当触点用于控制断路器分合闸或所带负载容量较大时，需通过ST201继电器模块转换后再进行控制。ST201触点容量：AC250V 10A；DC28V 10A。选择ST201继电器模块时，需定购ST电源模块提供其工作电源。12#，13#触点1，14#，15#触点2，16#，17#触点3，18#，19#触点4。触点功能见样本触点功能介绍。
9、标准产品为四开四闭辅助触头。当需外加附加触头时，最多可选配八开八闭，详见附加触头接线图。
10、"连接"、"试验"、"分离"三位置指示触点、PF准备闭合触点为可选件。50#、51#为连接位置触点，52#、53#试验位置触点，54#、55# 为分离位置触点。56#、57#为PF准备闭合触点。

KFW2-1600 Electrical Wiring Diagram (configuration Unit4 intelligent controller)



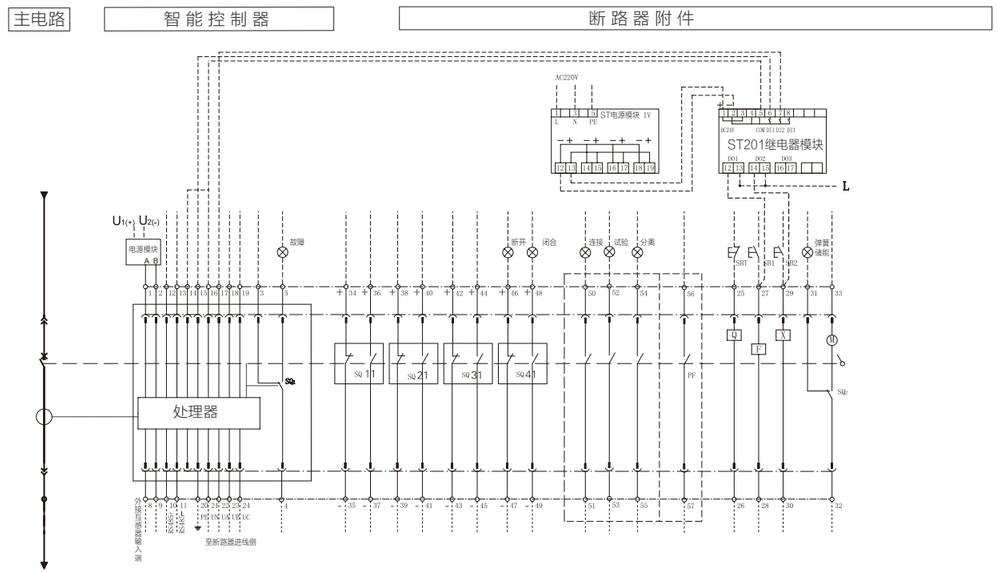
SBT: Exigency button	Auxiliary switch SQ11,SQ21,SQ31,SQ41: 4NC4NO , Capacity: AC-12：16A/AC400V，DC-12：5A/DC250V，AC-15：2A/AC400V， DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
M: Gear motor for electrical charging of the operating mechanism	
X: Closing release (without NO switch when leaving factory)	SQ2: motor position switch , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
F: Shunt release (without NC switch when leaving factory)	PF: preparative closing switch , Capacity: AC-12：3A/AC250V
Q: Under-voltage release (can connect with exigency button when using)	Three indicating contact about “Connected”，“test”，“disconnected” position switch, Capacity: AC-12：3A/AC250V

Note:
1. Accessories such as button, indicator light are not supplied with circuit-break.
2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.
3. The auxiliary power supply voltage of intelligent controller is DC24V with connection 1 and 2, you need book DC supply modular. Output terminal of DC supply modular is already connected when leaving factory. If the supply power of intelligent controller is AC , U1, U2 connect with 1 and 2. If the supply power of intelligent controller is DC , U1, U2 connect with 1 and 2.
4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.
5. 8,9 are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer. If earth leakage protection, you need book ZCT rectangle current transformer.
6. 20 are PE.
7. 21#,22#,23#,24# are the input terminals of the voltage signal. Note that the sequence should not be connected incorrectly and connected to the power supply inlet side. 3 - phase three - wire system, 21# and 23# terminals short connected. This terminal is empty if there is no additional voltage protection. (The voltage of access line shall not be greater than AC400V, and voltage conversion module shall be equipped when it is greater than Ac500V)
8. 12-19 are programmable DI, DO switch. Capacity : DO：DC110V/0.5A，AC250V/5A . DI：DC110V-130V or AC110V-AC250V. 12，13 is switch 1, 14，15 is switch 2, 16，17 is switch 3, 18，19 is switch 4. Functions of switches see user manual.
9.This is electric diagram of 4NC4NO. When you need adscititious extra contacts, max 8NC8NO , please consult the electric diagram of extra contacts.
10. Accessories such as “ connected” “test” “disconnected” three position switch and PF preparative closing switch are optional. 50,51 are connected position switch. 52,53 are test position switch . 54,55 are disconnected position switch. 56,57 are PF.

KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-1600 电气线路图（配置Unit6智能控制器）

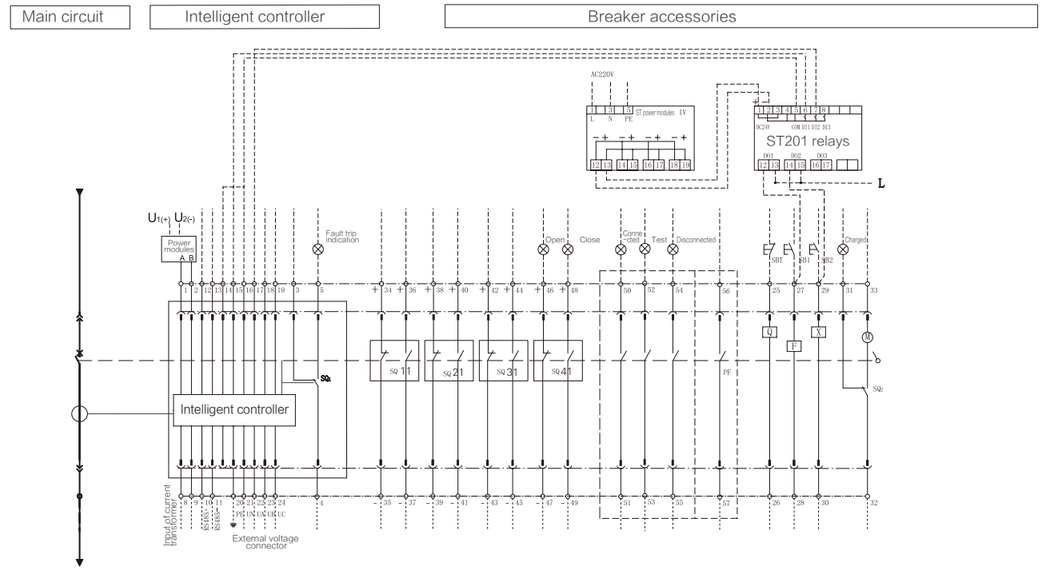


SBT: 急停按钮	辅助开关 SQ11、SQ21、SQ31、SQ41: 4NC4NO 四开四闭，触点容量：AC- 12:16A/AC400V，DC-12:5A/DC250V，AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	SQ1：故障脱扣指示触头　触点容量：AC-12:16A/AC250V，DC-12:0.3A/DC250V
M：储能电动机	
X：闭合电磁铁（出厂时未串接常闭辅助触点）	SQ2：电机行程开关
F：分励脱扣器（出厂时未串接常开辅助触点）	PF：准备闭合触点　触点容量：AC-12:3A/AC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	"连接"、"试验"、"分离"三位置指示触点容量：AC-12:3A/AC250V

注:

1、按扭、指示灯等附件不随断路器一 起提供。图中虚线部分由用户自接。
2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。
3、智能控制器1#，2#端子输入为DC24V，使用时必须选配电源模块。当控制电源为交流时，直接接至电源模块U1、U2端子。
控制电源为直流时，直流电源接至电源模块U1、U2端子。
4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（如使用在继电器在监控系统中，X、F需选用瞬时型）
5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。接地方式为地电流型，必须选配地电流互感器。接地保护方式为漏电型时，必须选配外加的ZCT矩形互感器。
6、10#，11#端子为RS485通讯线输入端。
7、控制器自带Modbus协议，如用户选定Profibus、DeviceNet或其它协议，请在订购时说明。
8、20#（PE线）为保护接地线（连接到和大地相连的金属部位）。
9、21#， 22#，23#，24#为电压信号输入端，注意顺序不可接错且接于电源进线侧。三相三线制时，21# 与23#端子短接。没有增选电压保护功能时，此端子为空。（接入线电压不大于AC400V，大于AC500V时需配电压转换模块）
10、12#-19#为可编程输入（DI）输出（DO）触点。触点容量：DO：DC110V 0.5A，AC250，3A。DI：DC110V-130V或AC110V-AC250V。当触点用于控制断路器分合闸或所带负载容量较大时，需通过ST201继电器模块转换后再进行控制。ST201触点容量：AC250V 10A；DC28V 10A。 选择ST201继电器模块时，需定购ST电源模块提供其工作电源。12#，13#触点1，14#，15#触点2，16#，17#触点3，18#，19#触点4。触点功能见样本触点功能介绍。
11、标准产品为四开四闭辅助触头。当需外加附加触头时，最多可选配八开八闭，详见附加触头接线图。
12、"连接"、"试验"、"分离"三位置指示触点、PF准备闭合触点为可选件。50#、51#为连接位置触点，52#、53#试验位置触点，54#、55# 为分离位置触点。56#、57#为PF准备闭合触点。

KFW2-1600 Electrical Wiring Diagram (Equipped with Unit 6 Intelligent Controller)



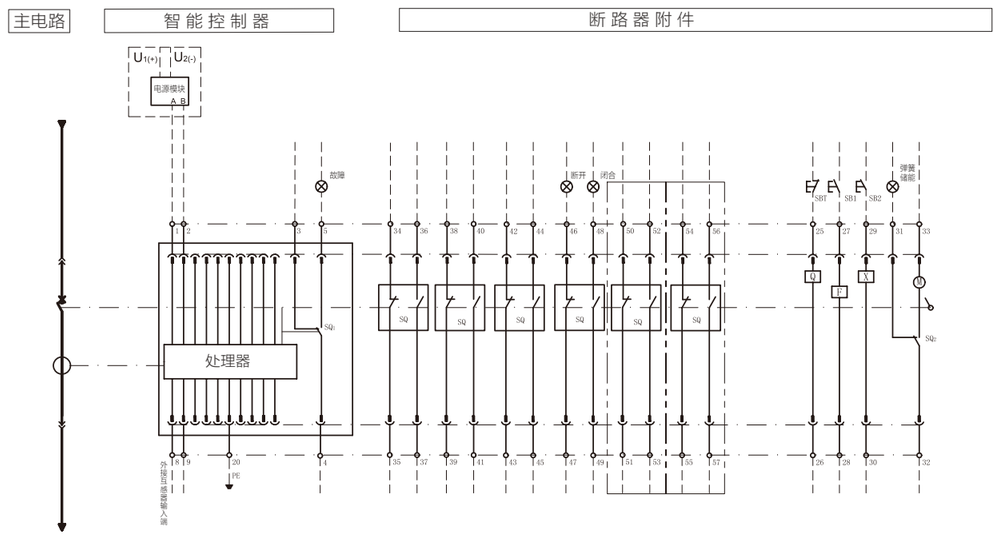
SBT: Exigency button	Auxiliary switch SQ11,SQ21,SQ31,SQ41: 4NC4NO , Capacity: AC-12：16A/AC400V，DC-12：5A/DC250V，AC-15：2A/AC400V，DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
M: Gear motor for electrical charging of the operating mechanism	
X: Closing release (without NO switch when leaving factory)	SQ2: motor position switch , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
F: Shunt release (without NC switch when leaving factory)	PF: preparative closing switch , Capacity: AC-12：3A/AC250V
Q: Under-voltage release (can connect with exigency button when using)	Three indicating contact about “Connected”，“test”，“disconnected” position switch, Capacity: AC-12：3A/AC250V

Note:
1. Accessories such as button, indicator light are not supplied with circuit-break.
2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.
3. The auxiliary power supply voltage of intelligent controller is DC24V with connection 1 and 2, you need book DC supply modular. Output terminal of DC supply modular is already connected when leaving factory. If the supply power of intelligent controller is AC , U1, U2 connect with 1 and 2. If the supply power of intelligent controller is DC , U1, U2 connect with 1 and 2.
4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.
5. 8,9 are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer. If earth leakage protection, you need book ZCT rectangle current transformer.
6. 10，11 are the input terminal of RS485 communication wire.
7. The normal agreement of intelligent controller is Modbus. If you want others such as Profibus、DeviceNet , please book in advance.
8.20 are PE.
9. 21#,22#,23#,24# are the input terminals of the voltage signal. Note that the sequence should not be connected incorrectly and connected to the power supply inlet side. 3 - phase three - wire system, 21# and 23# terminals short connected. This terminal is empty if there is no additional voltage protection. (The voltage of access line shall not be greater than AC400V, and voltage conversion module shall be equipped when it is greater than Ac500V)
10. 12-19 are programmable DI, DO switch. Capacity : DO：DC110V/0.5A，AC250V/5A . DI：DC110V-130V or AC110V-AC250V. 12，13 is switch 1, 14，15 is switch 2, 16，17 is switch 3, 18，19 is switch 4. Functions of switches see user manual.
11.This is electric diagram of 4NC4NO. When you need adscititious extra contacts, max 8NC8NO , please consult the electric diagram of extra contacts.
12. Accessories such as “connected” “test” “disconnected” three position switch and PF preparative closing switch are optional. 50,51 are connected position switch. 52,53 are test position switch . 54,55 are disconnected position switch. 56,57 are PF.

KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-2500 电气线路图（配置Unit3智能控制器）

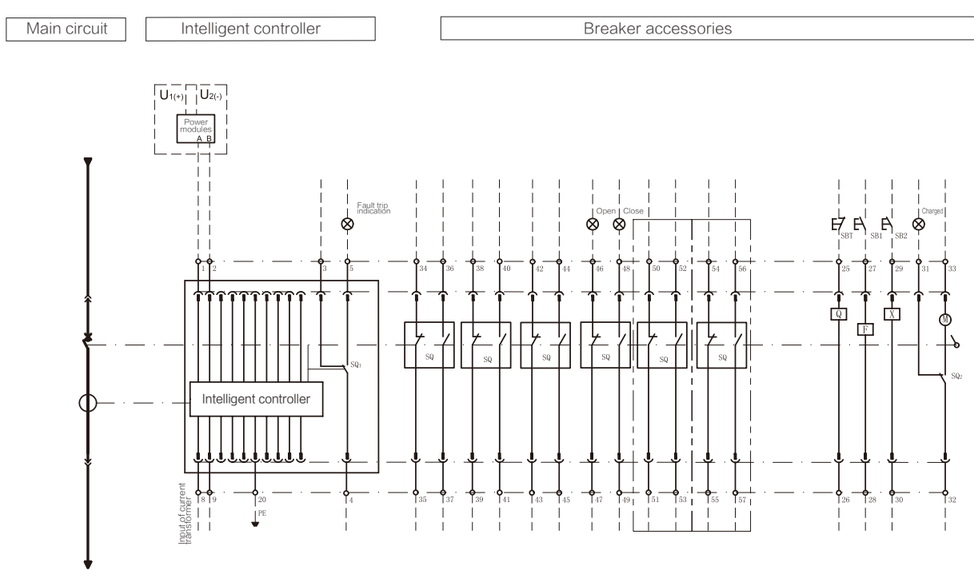


SBT: 急停按钮	SQ：辅助开关 标配 4NC4NO 四开四闭（最大6NC6NO 六常开六常闭）， 触点容量：AC-12:6A/AC400V，DC-12:3A/DC250V， AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	
X：闭合电磁铁（出厂时未串接常闭辅助触点）	M：储能电动机
F：分励脱扣器（出厂时未串接常开辅助触点）	SQ1：故障脱扣指示触头 触点容量： AC-12:16A/AC250V，DC-12:0.3A/DC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	
	SQ2：电机行程开关 触点容量：AC-12:3A/AC250V，DC-12：0.3A/DC250V

注：

1、按扭、指示灯等附件不随断路器一 起提供。图中虚线部分由用户自接。
2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。
3、当智能控制器电源为直流时，必须选配电源模块，直流电源接至电源模块U1、U2端子。出厂时电源模块输出端已接好。当智能控制器电源为交流时，直接接至1#、2#端子。
4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（如使用在继电器在监控系统中，X、F需选用瞬时型）
5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。
5、20#（PE线）为保护接地线（连接到和大地相连的金属部位）。
7、标准产品为四开四闭辅助触头，最大可选六开六闭。

KFW2-2500 Electrical Wiring Diagram (Equipped with Unit 3 Intelligent Controller)



SBT: Exigency button	SQ: Auxiliary switch, 4NC4NO (max 6NC6NO) , Capacity: AC-12：6A/AC400V，DC-12：3A/DC250V， AC-15：2A/AC400V， DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	
X: Closing release (without NO switch when leaving factory)	M: Gear motor for electrical charging of the operating mechanism
F: Shunt release (without NC switch when leaving factory)	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V， DC-12：0.3A/DC250V
Q: Under-voltage release (can connect with exigency button when using)	
	SQ2: motor position switch , Capacity: AC-12：16A/AC250V， DC-12：0.3A/DC250V

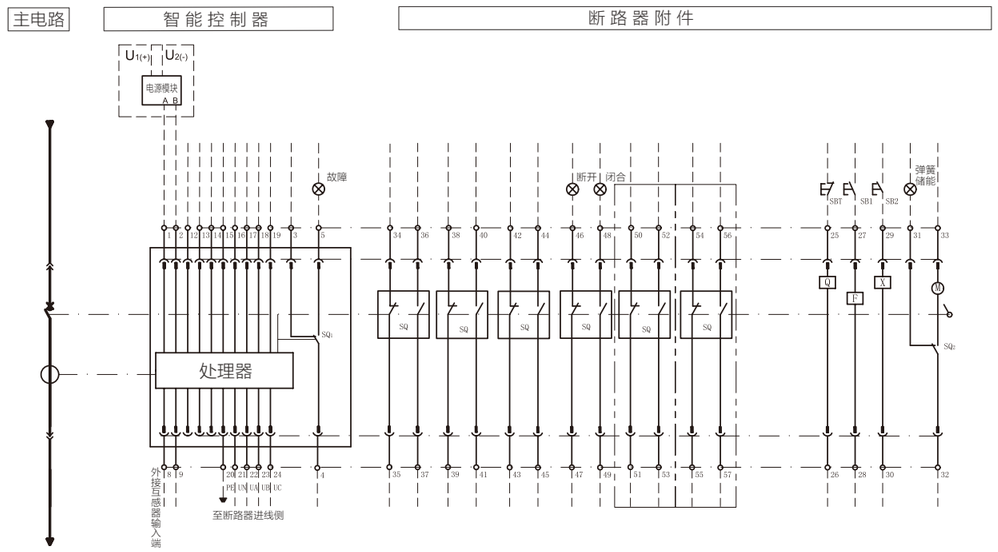
Note:

1. Accessories such as button, indicator light are not supplied with circuit-break.
2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.
3. If the supply power of intelligent controller is DC, you need book DC supply modular. The supply power of fixed-mounting circuit-breaker connect with U1、U2. The power of withdrawable circuit-breaker connect with 1#，2# on drawer .Output terminal of DC supply modular is already connected when leaving factory. If the power of intelligent controller is AC , the supply power connect with 1 and 2.
4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.
5. 8,9 are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer.
6. 20 are PE.
7. 4NC4NO are configuration features, 6NC6NO are optional.

KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-2500 电气线路图（配置Unit4智能控制器）

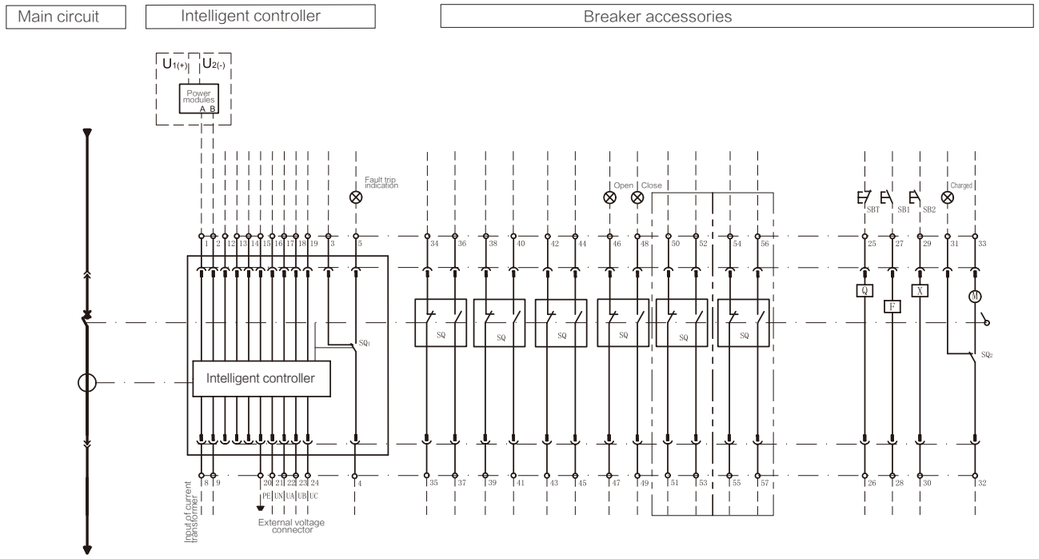


SBT: 急停按钮	SQ：辅助开关 标配 4NC4NO 四开四闭（最大6NC6NO 六常开六常闭）， 触点容量：AC-12:6A/AC400V，DC-12:3A/DC250V， AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	
X：闭合电磁铁（出厂时未串接常闭辅助触点）	M：储能电动机
F：分励脱扣器（出厂时未串接常开辅助触点）	SQ1：故障脱扣指示触头 触点容量： AC-12:16A/AC250V，DC-12:0.3A/DC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	
	SQ2：电机行程开关 触点容量：AC-12:3A/AC250V，DC-12：0.3A/DC250V

注:

1、按扭、指示灯等附件不随断路器一 起提供。图中虚线部分由用户自接。
2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。
3、当智能控制器电源为直流时，必须选配电源模块，直流电源接至电源模块U1、U2端子。出厂时电源模块输出端已接好。当智能控制器电源为交流时，直接接至1#、2#端子。
4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（ 如使用在继电器在监控系统中，X、F需选用瞬时型）
5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。接地方式为地电流型，必须选配地电流互感器。接地保护方式为漏电型时，必须选配外加的ZCT矩形互感器。
6、20#（PE线）为保护接地线（连接到和大地相连的金属部位）。
7、21#， 22#，23#，24#为电压信号输入端，注意顺序不可接错且接于电源进线侧。三相三线制时，21# 与23#端子短接。没有增选电压保护功能时，此端子为空。（接入线电压不大于AC400V，大于AC500V时需配电压转换模块）
8、12#-19#为可编程输入（DI）输出（DO）触点。触点容量：DO：DC110V 0.5A，AC250，3A。DI：DC110V-130V或AC110V-AC250V。当触点用于控制断路器分合闸或所带负载容量较大时，需通过ST201继电器模块转换后再进行控制。ST201触点容量：AC250V 10A；DC28V 10A。 选择ST201继电器模块时，需定购ST电源模块提供其工作电源。12#，13#触点DO1，14#，15#触点DO2，16#，17#触点DO3，18#，19#触点DI1。
9、标准产品为四开四闭辅助触头，最大可选六开六闭。

KFW2-2500 Electrical Wiring Diagram (Equipped with Unit 4 Intelligent Controller)



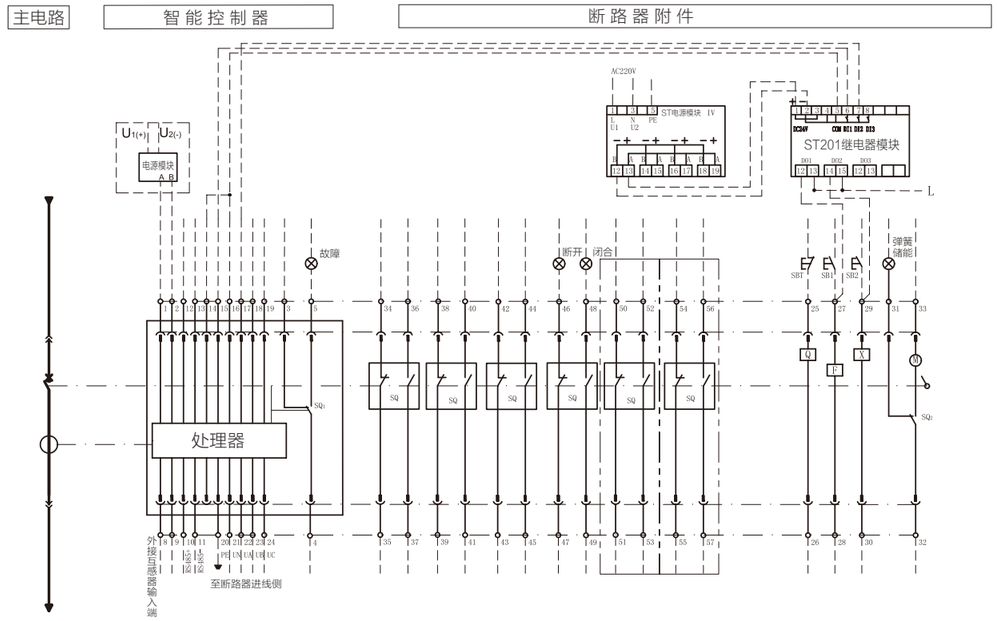
SBT: Exigency button	SQ: Auxiliary switch, 4NC4NO (max 6NC6NO) , Capacity: AC-12：6A/AC400V，DC-12：3A/DC250V， AC-15：2A/AC400V， DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	
X: Closing release (without NO switch when leaving factory)	M: Gear motor for electrical charging of the operating mechanism
F: Shunt release (without NC switch when leaving factory)	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V， DC-12：0.3A/DC250V
Q: Under-voltage release (can connect with exigency button when using)	
	SQ2: Motor position switch , Capacity: AC-12：16A/AC250V， DC-12：0.3A/DC250V

Note:
1. Accessories such as button, indicator light are not supplied with circuit-break.
2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.
3. If the supply power of intelligent controller is DC, you need book DC supply modular. The supply power of fixed-mounting circuit-breaker connect with U1、U2. The power of withdrawable circuit-breaker connect with 1#，2# on drawer .Output terminal of DC supply modular is already connected when leaving factory. If the power of intelligent controller is AC , the supply power connect with 1 and 2.
4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.
5. 8,9 are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer. If earth leakage protection, you need book ZCT rectangle current transformer.
6. 20 are PE.
7. 21#,22#,23#,24# are the input terminals of the voltage signal. Note that the sequence should not be connected incorrectly and connected to the power supply inlet side. 3 - phase three - wire system, 21# and 23# terminals short connected. This terminal is empty if there is no additional voltage protection. (The voltage of access line shall not be greater than AC400V, and voltage conversion module shall be equipped when it is greater than Ac500V)
8. 12-19 are programmable DI, DO switch. Capacity : DO：DC110V/0.5A，AC250V/5A . DI：DC110V-130V or AC110V-AC250V. 12，13 is switch 1, 14，15 is switch 2, 16，17 is switch 3, 18，19 is switch 4. Functions of switches see user manual.
9.4NC4NO are configuration features, 6NC6NO are optional.

KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

KFW2-2500 电气线路图（配置Unit6智能控制器）

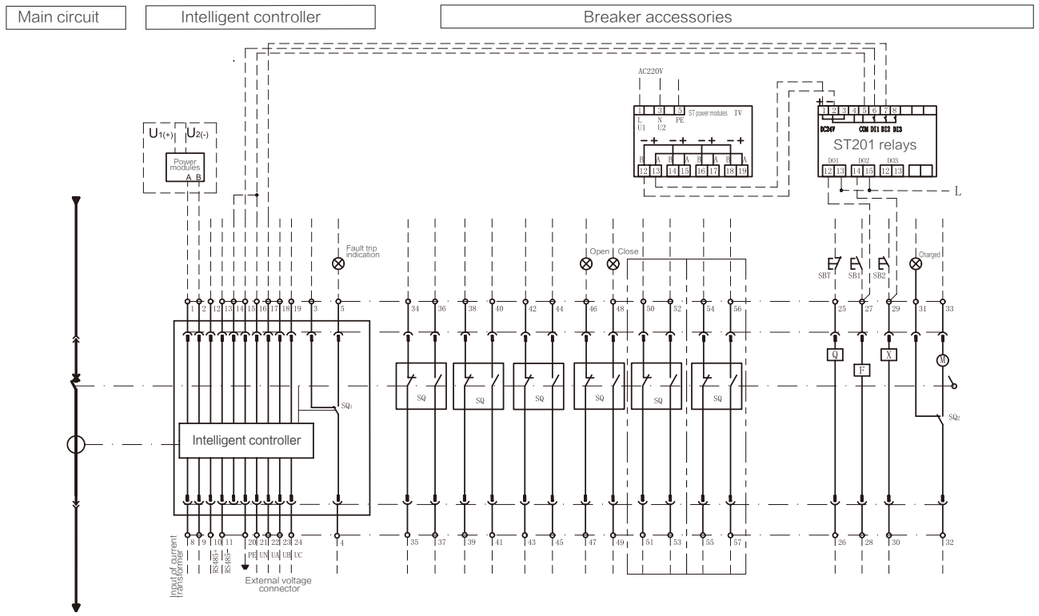


SBT: 急停按钮	SQ：辅助开关 标配 4NC4NO 四开四闭（最大6NC6NO 六常开六常闭）， 触点容量：AC-12:6A/AC400V，DC-12:3A/DC250V， AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	
X：闭合电磁铁（出厂时未串接常闭辅助触点）	M：储能电动机
F：分励脱扣器（出厂时未串接常开辅助触点）	SQ1：故障脱扣指示触头 触点容量： AC-12:16A/AC250V，DC-12:0.3A/DC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	
	SQ2：电机行程开关 触点容量：AC-12:3A/AC250V，DC-12：0.3A/DC250V

注:

1、按扭、指示灯等附件不随断路器一 起提供。图中虚线部分由用户自接。
2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。
3、当智能控制器电源为直流时，必须选配电源模块，直流电源接至电源模块U1、U2端子。出厂时电源模块输出端已接好。当智能控制器电源为交流时，直接接至1#、2#端子。
4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（ 如使用在继电器在监控系统中，X、F需选用瞬时型）
5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。接地方式为地电流型，必须选配地电流互感器。接地保护方式为漏电型时，必须选配外加的ZCT矩形互感器。
6、10#，11#端子为RS485通讯线输入端。
7、控制器自带Modbus协议，如用户选定Profibus、DeviceNet或其它协议，请在订购时说明。
8、20#（PE线）为保护接地线（连接到和大地相连的金属部位）。
9、21#， 22#，23#，24#为电压信号输入端，注意顺序不可接错且接于电源进线侧。三相三线制时，21# 与23#端子短接。没有增选电压保护功能时，此端子为空。（接入线电压不大于AC400V，大于AC500V时需配电压转换模块）
10、12#-19#为可编程输入（DI）输出（DO）触点。触点容量：DO：DC110V 0.5A，AC250，3A。DI：DC110V-130V或AC110V-AC250V。当触点用于控制断路器分合闸或所带负载容量较大时，需通过ST201继电器模块转换后再进行控制。ST201触点容量：AC250V 10A；DC28V 10A。 选择ST201继电器模块时，需定购ST电源模块提供其工作电源。12#，13#触点DO1，14#，15#触点DO2，16#，17#触点DO3，18#，19#触点DI1。
11、标准产品为四开四闭辅助触头，最大可选六开六闭。

KFW2-2500 Electrical Wiring Diagram (Equipped with Unit 6 Intelligent Controller)

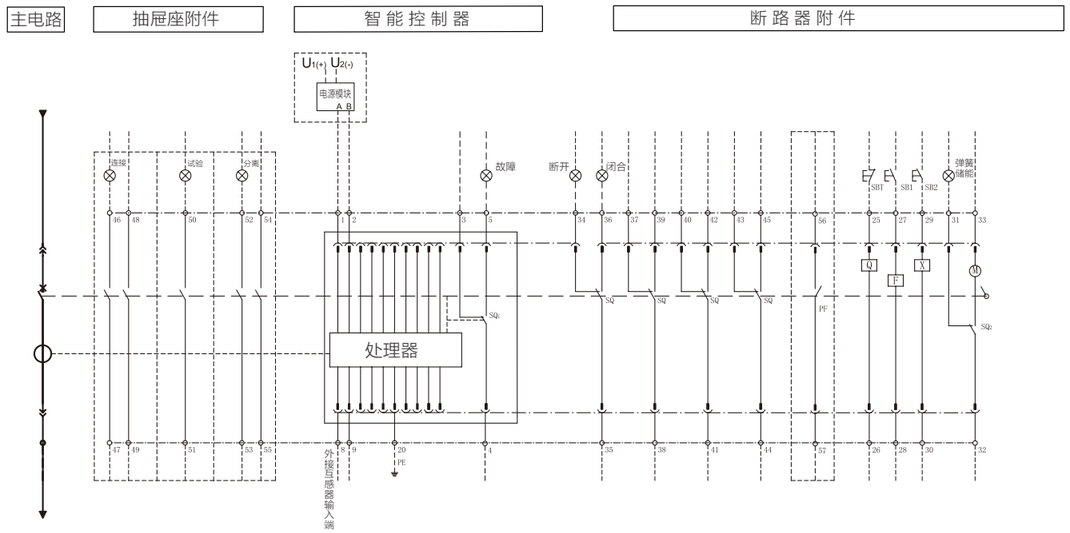


SBT: Exigency button	SQ: Auxiliary switch, 4NC4NO (max 6NC6NO) , Capacity: AC-12：6A/AC400V，DC-12：3A/DC250V， AC-15：2A/AC400V， DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	
X: Closing release (without NO switch when leaving factory)	M: Gear motor for electrical charging of the operating mechanism
F: Shunt release (without NC switch when leaving factory)	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V， DC-12：0.3A/DC250V
Q: Under-voltage release (can connect with exigency button when using)	
	SQ2: Motor position switch , Capacity: AC-12：16A/AC250V， DC-12：0.3A/DC250V

Note:

1. Accessories such as button, indicator light are not supplied with circuit-break.
2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.
3. If the supply power of intelligent controller is DC, you need book DC supply modular. The supply power of fixed-mounting circuit-breaker connect with U1、U2. The power of withdrawable circuit-breaker connect with 1#，2# on drawer .Output terminal of DC supply modular is already connected when leaving factory. If the power of intelligent controller is AC , the supply power connect with 1 and 2.
4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.
5. 8,9 are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer. If earth leakage protection, you need book ZCT rectangle current transformer.
6. 10，11 are the input terminal of RS485 communication wire.
7. The normal agreement of intelligent controller is Modbus. If you want others such as Profibus、DeviceNet , please book in advance.
8.20 are PE.
9.21#,22#,23#,24# are the input terminals of the voltage signal. Note that the sequence should not be connected incorrectly and connected to the power supply inlet side. 3 - phase three - wire system, 21# and 23# terminals short connected. This terminal is empty if there is no additional voltage protection. (The voltage of access line shall not be greater than AC400V, and voltage conversion module shall be equipped when it is greater than Ac500V)
10. 12 - 19 are programmable DI, DO switch. Capacity : DO：DC110V/0.5A，AC250V/5A . DI：DC110V-130V or AC110V-AC250V. 12，13 is switch 1, 14，15 is switch 2, 16，17 is switch 3, 18，19 is switch 4. Functions of switches see user manual.
11. 4NC4NO are configuration features, 6NC6NO are optional.

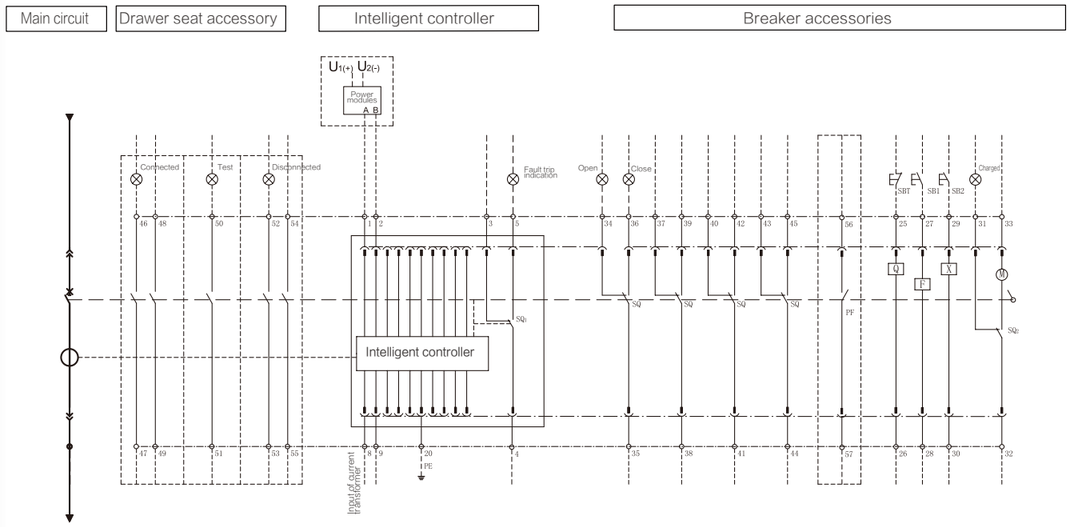
KFW2-3200~6300 电气线路图（配置Unit3智能控制器）



SBT: 急停按钮	SQ：辅助开关 4NC4NO 四转换，触点容量：AC-12:6A/AC400V，DC-12:3A/DC250V，AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	M：储能电动机
X：闭合电磁铁（出厂时未串接常闭辅助触点）	SQ1：故障脱扣指示触头 触点容量：AC-12:16A/AC250V，DC-12:0.3A/DC250V
F：分励脱扣器（出厂时未串接常开辅助触点）	SQ2：电机行程开关 触点容量：AC-12:16A/AC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	PF：准备闭合触点 触点容量：AC-12:16A/AC250V
	"连接"、"试验"、"分离"三位置指示 触点容量：AC-12:16A/AC250V

注:
1、按扭、指示灯等附件不随断路器一起提供。图中虚线部分由用户自接。
2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。
3、当智能控制器电源为直流时，必须选配电源模块，直流电源接至电源模块U1、U2端子。出厂时电源模块输出端已接好。当智能控制器电源为交流时，直接接至1#、2#端子。
4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（如使用在继电器监控系统中，X、F需选用瞬时型）
5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。
6、20#（PE）线为保护接地线（连接到和大地相连的金属部位）。
7、此为四转换辅助触头线路图，当需外加附加触头时见附加触头接线图。
8、"连接"、"试验"、"分离"三位置指示触点、PF准备闭合触点为可选件。46#、47#、48#、49#为连接位置触点，50#、51#为试验位置触点，52#、53#、54#、55#为分离位置触点。

KFW2-3200-6300 Electrical Wiring Diagram (Equipped with Unit3 Intelligent Controller)

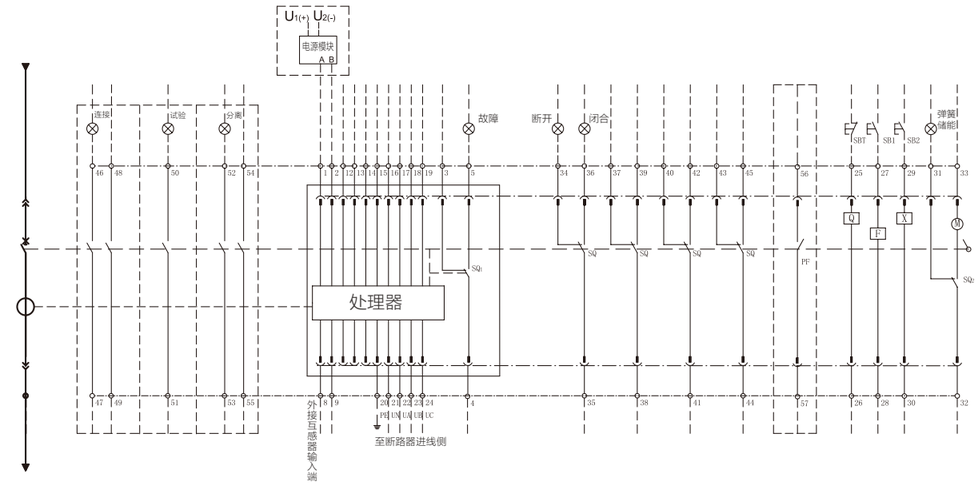


SBT: Exigency button	SQ: Auxiliary switch, 4NC4NO , Capacity: AC-12：6A/AC400V，DC-12：3A/DC250V，AC-15：2A/AC400V， DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	M: Gear motor for electrical charging of the operating mechanism
X: Closing release (without NO switch when leaving factory)	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
F: Shunt release (without NC switch when leaving factory)	SQ2: Motor position switch , Capacity: AC-12：16A/AC250V
Q: Under-voltage release (can connect with exigency button when using)	PF: preparative closing switch , Capacity: AC-12：16A/AC250V
	Three indicating contact about “Connected”，”test”，”disconnected” position switch, Capacity: AC-12：16A/AC250V

Note:
1. Accessories such as button, indicator light are not supplied with circuit-break.
2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.
3. If the supply power of intelligent controller is DC, you need book DC supply modular. The supply power of fixed-mounting circuit-breaker connect with U1、U2. The power of withdrawable circuit-breaker connect with 1#，2# on drawer .Output terminal of DC supply modular is already connected when leaving factory. If the power of intelligent controller is AC , the supply power connect with 1# and 2#.
4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.
5. 8#,9# are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer.
6. 20# are PE.
7.This is electric diagram of 4NC4NO. When you need adscititious extra contacts, max 8NC8NO , please consult the electric diagram of extra contacts.
8. Accessories such as” connected” “test” “disconnected” three position switch and PF preparative closing switch are optional. 46#,47#,48#,49# are connected position switch. 50#,51# are test position switch . 52#,53#,54#,55# are disconnected position switch.56#,57# are PF.

KFW2-3200~6300 电气线路图（配置Unit4智能控制器）

主电路 | 抽屉座附件 | 智能控制器 | 断路器附件



SBT: 急停按钮	SQ：辅助开关 4NC4NO 四转换，触点容量：AC-12:6A/AC400V，DC-12:3A/DC250V，AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	M：储能电动机
X：闭合电磁铁（出厂时未串接常闭辅助触点）	SQ1：故障脱扣指示触头 触点容量：AC-12:16A/AC250V，DC-12:0.3A/DC250V
F：分励脱扣器（出厂时未串接常开辅助触点）	SQ2：电机行程开关 触点容量：AC-12:16A/AC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	PF：准备闭合触点 触点容量：AC-12:16A/AC250V
	"连接"、"试验"、"分离"三位置指示 触点容量：AC-12:16A/AC250V

注:

1、按扭、指示灯等附件不随断路器一起提供。图中虚线部分由用户自接。

2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。

3、当智能控制器电源为直流时，必须选配电源模块，直流电源接至电源模块U1、U2端子。出厂时电源模块输出端已接好。当智能控制器电源为交流时，直接接至1#、2#端子。

4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（如使用在继电器监控系统中，X、F需选用瞬时型）

5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。接地方式为地电流型，必须选配地电流互感器。接地保护方式为漏电型时，必须选配外加的ZCT矩形互感器。

6、20#（PE）线为保护接地线（连接到和大地相连的金属部位）。

7、21#,22#,23#,24#为电压信号输入端，注意顺序不可接错且接于电源进线侧。三相三线制时，21#与23#端子短接。没有增选电压保护功能时，此端子为空。（接入线电压不大于AC400V，大于AC500V时需配电压转换模块）

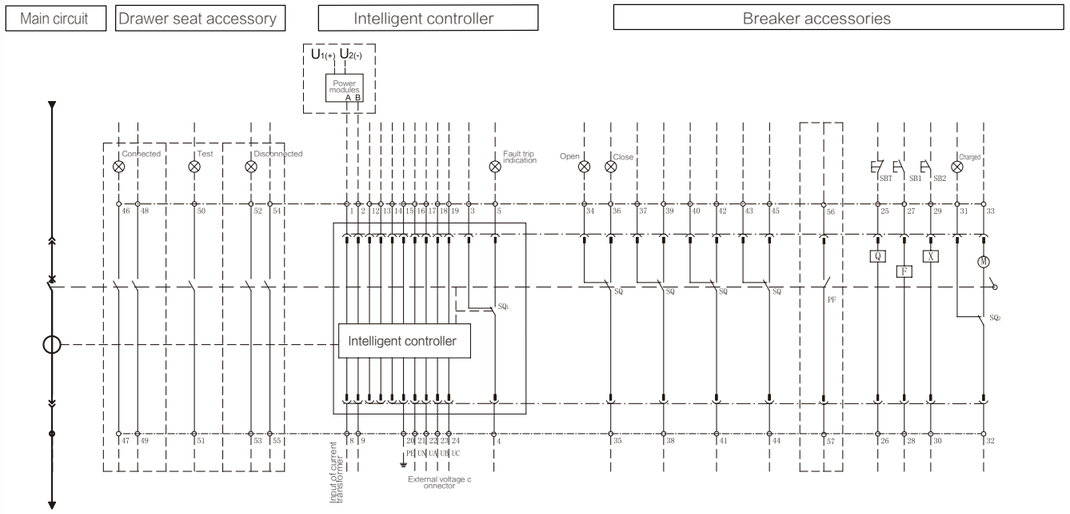
8、12#-19#为可编程输入（DI）输出（DO）触点。触点容量：DO：DC110V 0.5A，AC250 5A。DI：DC110V-130V或AC110V-AC250V。 当触点用于控制断路器分合闸或所带负载容量较大时，需通过ST201继电器模块转换后再进行控制。ST201触点容量：AC250V 10A； DC28V，10A。选择ST201继电器模块时，需定购ST电源模块提供其工作电源。12#，13# 触点1 ，14#，15# 触点2， 16#，17#触点3，18#，19#触点4。触点功能见样本触点功能介绍。

9、此为四常开四常闭辅助触头线路图，当需外加附加触头时见附加触头接线图。

10、"连接"、"试验"、"分离"三位置指示触点、PF准备闭合触点为可选件。46#、47#、48#、49#为连接位置触点，50#、51#为试验位置触点，52#、53#、54#、55#为分离位置触点。

KFW2-3200-6300 Electrical Wiring Diagram (Equipped with Unit4 Intelligent Controller)

Main circuit | Drawer seat accessory | Intelligent controller | Breaker accessories



SBT: Exigency button	SQ: Auxiliary switch, 4NC4NO , Capacity: AC-12：6A/AC400V，DC-12：3A/DC250V，AC-15：2A/AC400V， DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	M: Gear motor for electrical charging of the operating mechanism
X: Closing release (without NO switch when leaving factory)	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
F: Shunt release (without NC switch when leaving factory)	SQ2: Motor position switch , Capacity: AC-12：16A/AC250V
Q: Under-voltage release (can connect with exigency button when using)	PF: Preparative closing switch , Capacity: AC-12：16A/AC250V
	Three indicating contact about “Connected”，”test”，”disconnected” position switch, Capacity: AC-12：16A/AC250V

Note:

1. Accessories such as button, indicator light are not supplied with circuit-break.

2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.

3. If the supply power of intelligent controller is DC, you need book DC supply modular. The supply power of fixed-mounting circuit-breaker connect with U1、U2. The power of withdrawable circuit-breaker connect with 1#，2# on drawer .Output terminal of DC supply modular is already connected when leaving factory. If the power of intelligent controller is AC , the supply power connect with 1 and 2.

4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.

5. 8#,9# are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer. If earth leakage protection, you need book ZCT rectangle current transformer.

6. 20# are PE.

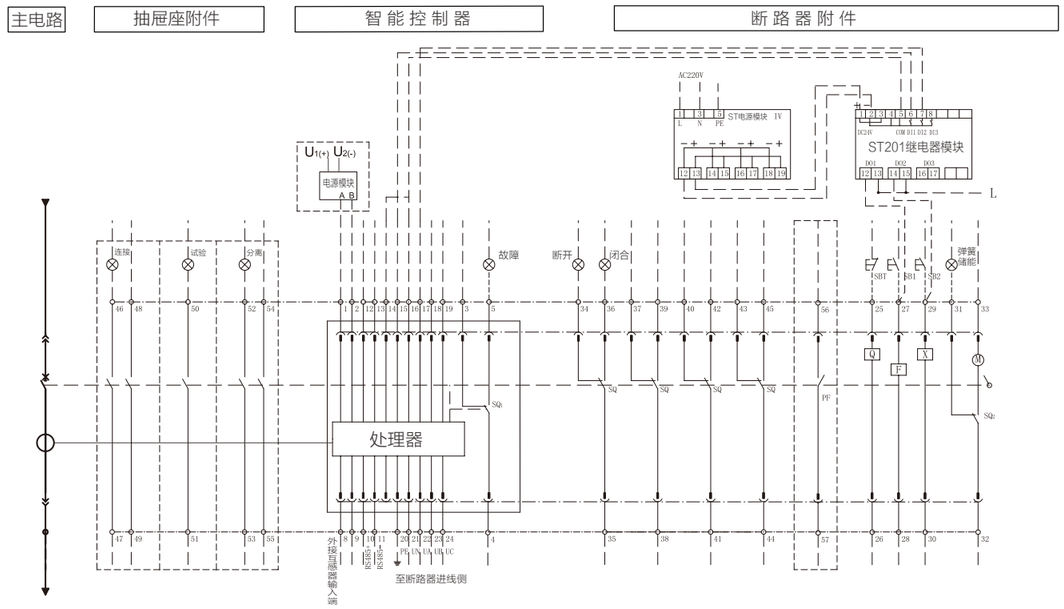
7. 21#,22#,23#,24# are the input terminals of the voltage signal. Note that the sequence should not be connected incorrectly and connected to the power supply inlet side. 3 - phase three - wire system, 21# and 23# terminals short connected. This terminal is empty if there is no additional voltage protection. (The voltage of access line shall not be greater than AC400V, and voltage conversion module shall be equipped when it is greater than Ac500V)

8. 12#-19# are programmable DI, DO switch. Capacity : DO：DC110V/0.5A，AC250V/5A . DI：DC110V-130V or AC110V-AC250V. 12#，13# is switch 1, 14#，15# is switch 2, 16#，17# is switch 3, 18#，19# is switch 4. Functions of switches see user manual.

9.This is electric diagram of 4NC4NO. When you need adscititious extra contacts, max 8NC8NO , please consult the electric diagram of extra contacts.

10. Accessories such as” connected” “test” “disconnected” three position switch and PF preparative closing switch are optional. 46#,47#,48#,49# are connected position switch. 50#,51# are test position switch . 52#,53#,54#,55# are disconnected position switch.56#,57# are PF.

KFW2-3200~6300 通讯型断路器接线图（配置Unit6智能控制器）

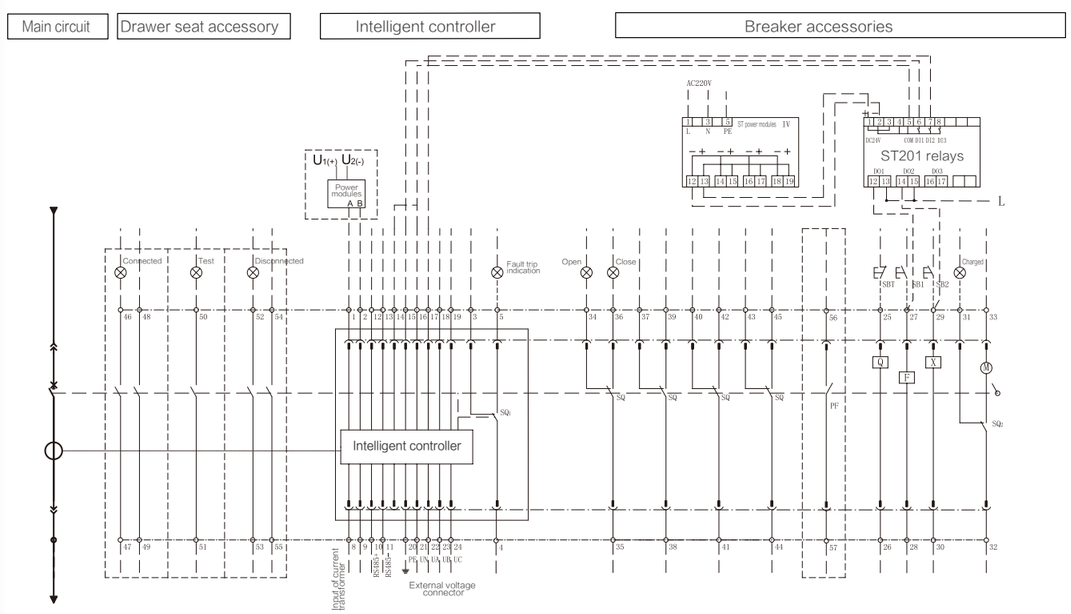


SBT: 急停按钮	SQ：辅助开关 4NC4NO 四转换，触点容量：AC-12:6A/AC400V，DC-12:3A/DC250V，AC-15:2A/AC400V，DC-13:0.3A/DC250V
SB1：断开按钮	
SB2：闭合按钮	M：储能电动机
X：闭合电磁铁（出厂时未串接常闭辅助触点）	SQ1：故障脱扣指示触头 触点容量：AC-12:16A/AC250V，DC-12:0.3A/DC250V
F：分励脱扣器（出厂时未串接常开辅助触点）	SQ2：电机行程开关 触点容量：AC-12:16A/AC250V
Q：欠电压脱扣器（使用时可串接"急停"按钮）	PF：准备闭合触点 触点容量：AC-12:16A/AC250V
	"连接"、"试验"、"分离"三位置指示 触点容量：AC-12:16A/AC250V

注:

1、按扭、指示灯等附件不随断路器一起提供。图中虚线部分由用户自接。
2、图示线路图，电路未接通，断路器处于断开位置，电机已储能。控制器无故障指示。
3、当智能控制器电源为直流时，必须选配电源模块，直流电源接至电源模块U1、U2端子。出厂时电源模块输出端已接好。当智能控制器电源为交流时，直接接至1#、2#端子。
4、M、X、F、Q的控制电源电压不同时可分别接不同电源。Q（欠电压脱扣器）为可选件。（如使用在继电器监控系统中，X、F需选用瞬时型）
5、8#，9#为外接互感器输入端。接地方式为3P+N模式时，必须选配N相互感器。接地方式为地电流型，必须选配地电流互感器。接地保护方式为漏电型时，必须选配外加的ZCT矩形互感器。
6、10#，11#端子为RS485通讯线输入端。
7、控制器自带Modbus协议，如用户选定Profibus、DeviceNet或其它协议，请在订购时说明。
8、20#（PE）线为保护接地线（连接到和大地相连的金属部位）。
9、21#,22#,23#,24#为电压信号输入端，注意顺序不可接错且接于电源进线侧。三相三线制时，21#与23#端子短接。没有增选电压保护功能时，此端子为空。（接入线电压不大于AC400V，大于AC500V时需配电压转换模块）
10、12#-19#为可编程输入（DI）输出（DO）触点。触点容量：DO：DC110V 0.5A，AC250 5A。DI：DC110V-130V或AC110V-AC250V。 当触点用于控制断路器分合闸或所带负载容量较大时，需通过ST201继电器模块转换后再进行控制。ST201触点容量：AC250V 10A； DC28V 10A。选择ST201继电器模块时，需定购ST电源模块提供其工作电源。12#，13# 触点1，14#，15# 触点2， 16#，17#触点3，18#，19#触点4。触点功能见样本触点功能介绍。
11、此为四常开四常闭辅助触头线路图，当需外加附加触头时见附加触头接线图。
12、"连接"、"试验"、"分离"三位置指示触点、PF准备闭合触点为可选件。46#、47#、48#、49#为连接位置触点，50#、51#为试验位置触点，52#、53#、54#、55#为分离位置触点。

KFW2-3200-6300 Connection Diagram of Communication Circuit Breaker (Equipped with Unit 6 Intelligent Controller)



SBT: Exigency button	SQ: Auxiliary switch, 4NC4NO , Capacity: AC-12：6A/AC400V，DC-12：3A/DC250V，AC-15：2A/AC400V， DC-13：0.3A/DC250V
SB1: Opening pushbutton	
SB2: Closing pushbutton	M: Gear motor for electrical charging of the operating mechanism
X: Closing release (without NO switch when leaving factory)	SQ1: Fault tripping instruction , Capacity: AC-12：16A/AC250V，DC-12：0.3A/DC250V
F: Shunt release (without NC switch when leaving factory)	SQ2: Motor position switch , Capacity: AC-12：16A/AC250V
Q: Under-voltage release (can connect with exigency button when using)	PF: Preparative closing switch , Capacity: AC-12：16A/AC250V
	Three indicating contact about “Connected”,”test”,”disconnected” position switch, Capacity: AC-12：16A/AC250V

Note:

1. Accessories such as button, indicator light are not supplied with circuit-break.
2. In this electric diagram, no power is supplied, the circuit-break is breaked, operating device is charged and the controller displays no fault.
3. If the supply power of intelligent controller is DC, you need book DC supply modular. The supply power of fixed-mounting circuit-breaker connect with U1、U2. The power of withdrawable circuit-breaker connect with 1#，2# on drawer .Output terminal of DC supply modular is already connected when leaving factory. If the power of intelligent controller is AC , the supply power connect with 1 and 2.
4. If the power of M、X、F、Q are different ,they can connect with different power. Q are optional features.
5. 8,9 are the input terminal of N phase current transformer. If the earth-fault protection mode is 3P+N, you need book N phase current transformer. If earth leakage protection, you need book ZCT rectangle current transformer.
6. 10#，11# are the input terminal of RS485 communication wire.
7. The normal agreement of intelligent controller is Modbus. If you want others such as Profibus、DeviceNet , please book in advance.
8.20# are PE.
9. 21#,22#,23#,24# are the input terminals of the voltage signal. Note that the sequence should not be connected incorrectly and connected to the power supply inlet side. 3 - phase three - wire system, 21# and 23# terminals short connected. This terminal is empty if there is no additional voltage protection. (The voltage of access line shall not be greater than AC400V, and voltage conversion module shall be equipped when it is greater than Ac500V)
10. 12#-19# are programmable DI, DO switch. Capacity : DO：DC110V/0.5A，AC250V/5A . DI：DC110V-130V or AC110V-AC250V. 12#，13# is switch 1, 14#，15# is switch 2, 16#，17# is switch 3, 18#，19# is switch 4. Functions of switches see user manual.
11.This is electric diagram of 4NC4NO. When you need adscitiious extra contacts, max 8NC8NO , please consult the electric diagram of extra contacts.
12. Accessories such as “ connected” “test” “disconnected” three position switch and PF preparative closing switch are optional. 46#,47#,48#,49# are connected position switch. 50#,51# are test position switch . 52#,53#,54#,55# are disconnected position switch.56#,57# are PF.

KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

电气线路图

可编程输入/输出接口

12#~19#: (DO:DC110V，0.5A, AC250V, 3A.
DI: DC110V~130V 或AC110V～AC250V).

当信号单元类型为S1时：（4DO模式）

12#、13# :可编程输出触点1 (DO1)
14#、15# :可编程输出触点2 (DO2)
16#、17# :可编程输出触点3 (DO3)
18#、19# :可编程输出触点4 (DO4)

当信号单元类型为S2：（3DO+1DI模式）

12#、13# :可编程输出触点1 (DO1)
14#、15# :可编程输出触点2 (DO2)
16#、17# :可编程输出触点3 (DO3)
18#、19# :可编程开关量输入(DI1)

当信号单元类型为S3时：（2DO+2DI模式）

12#、13# :可编程输出触点1 (DO1)
14#、15# :可编程输出触点2 (DO2)
16#、17# :可编程开关量输入2(DI2)
18#、19# :可编程开关量输入1(DI1)

DI/DO功能

DI输入功能

当信号单元为S2、S3时，Unit4/6型控制器
可提供1~2个可编程光隔开关量输入

开关量输入（DI）参数设置表

功能设置	报警，跳闸，区域联锁，通用，接地联锁，短路联锁	
DI	常开	常闭

DO输出功能

智能控制器提供2~4组独立的信号触点输出

DO功能设置表

功能设置			见下表	
DO	常开电平	常闭电平	常开脉冲	常闭脉冲
脉冲时间		无	1~ 360s步长1s	

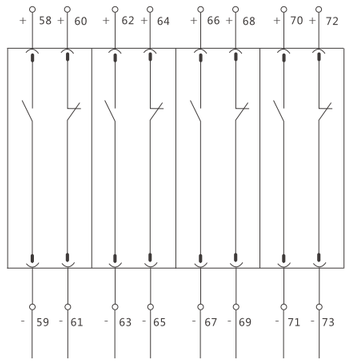
可查看当前的I/O状态

DO：“1”表示输出继电器为闭合状态；“0”表示输出继电器为断开状态。
DI：“1”表示动作；“0”表示复位。（相对与DI执行方式的设置来说）。

开关量输出(DO)参数设置表

通用	报警	故障跳闸	自诊断报警	负载监控一
负载监控二	过载预报警	过载故障	短延时故障	瞬时故障
接地/漏电故障	接地/漏电报警	电流不平衡故障	N相故障	欠压故障
过压故障	电压不平衡故障	欠频故障	过频故障	电流需用值故障
逆功率故障	区域联锁	合闸	分闸	相序报警
MCR/HSISC故障	接地联锁	短路联锁	A相需用值故障	B相需用值故障
C相需用值故障	N相需用值故障	需用值越限		

注：通用是指此输入输出在控制器本身未使用，可供在通讯组网上由上位计算机操作。



附加触头接线方案
1. 可单独提供每组常开常闭触头，最多可提供四常开四常闭。
2. 抽屉式断路器，外挂附加触头仅在断路器处于连接位置时，反映开关分、合状态。

Electrical Wiring Diagram

Programmable input/ output interface

12#– 19#: (DO: DC 110 V，0.5 A, AC 250 V, 3A.
DI: DC 110 V– 130 V or AC 110 V– AC 250 V).

Signal unit type is S 1: (4 DO mode)

12#, 13#: Programmable output contact 1 (DO 1)
14#, 15#: Programmable output contact 2 (DO 2)
16#, 17#: Programmable output contact 3 (DO 3)
18#, 19#: Programmable output contact 4 (DO 4)

Signal unit type is S 2: (3 DO + 1 DI mode)

12#, 13#: Programmable output contact 1 (DO 1)
14#, 15#: Programmable output contact 2 (DO 2)
16#, 17#: Programmable output contact 3 (DO 3)
18#, 19#: Programmable switching input (DI 1)

Signal unit type is S 3: (2 DO + 2 DI mode)

12#, 13#: Programmable switching contact 1 (DO 1)
14#, 15#: Programmable output contact 2 (DO 2)
16#, 17#: Programmable switching input 2 (DI 2)
18#, 19#: Programmable switching input 1 (DI 1)

DI/ DO function

DI input function

When the signal units are S 2 and S 3, the Unit 4/ 6 type controller can provide 1–2 programmable light insulation switching input

Table on–off input (DI) parameter setting

Function setting	Alarm, trip, ZSI, universal, earth ZSI, short–circuit ZSI	
DI	NO	NC

DO output

Intelligent controller to provide 2 to 4 independent output signal contact

DO function setting table

Function setting	See the table below
DO Normally open electric level Normally closed electric level Normally open pulse Normally closed pulse	
Pulse time No 1– 360s Step size 1 s	

The current I / O state can be checked

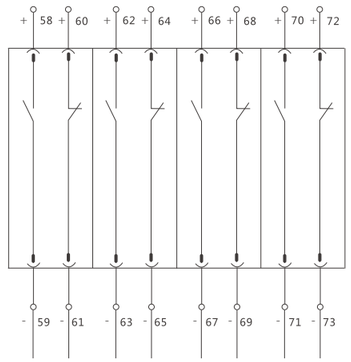
DO: “1” represents the output relay is in closed state; “0” represents the output relay is in disconnect state;

DO: “1” represents action; “0” represents restoration. (As for the setting of DI operation mode).

Table on–off output (DO) parameter setting

Universal	Alarm	Fault trip	S/T alarm	Load monitoring 1
Load monitoring 2	Pre O/L warn	Overload fault	Short–circuit short–time fault	Instantaneous fault
Earth/earth leakage fault	Earth/earth leakage alarm	Current unbalance fault	Neutral fault	Under–voltage fault
Over–voltage fault	Voltage unbalance fault	Under–frequency fault	Over–frequency fault	Demand current fault
Reverse power fault	ZSI	Close	Open	P/R Alarm
MCR/HSISC fault	Earth ZSI	Short–circuit ZSI	A demand current trip	B demand current trip
C demand current trip	N demand current trip	Demand current O/F		

Note: General means the input and output are not used on the controller itself, they can be controlled by host computer on the communication network.

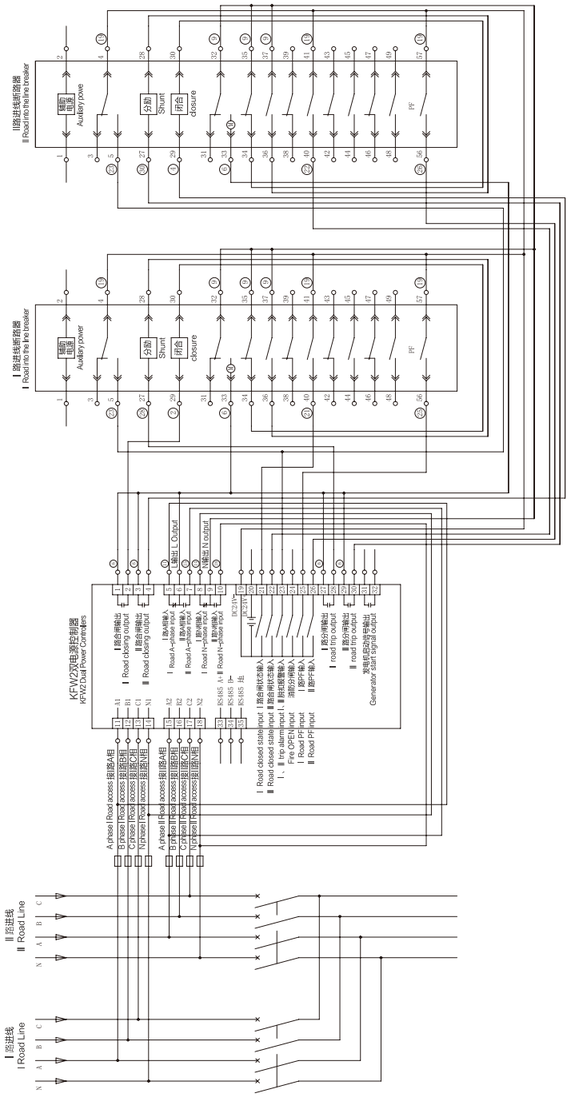


Additional contact wiring scheme
1.Each group of normally open and normally closed contacts can be separately provided; four groups of normally open and normally closed contacts can be provided at most.
2.As for the drawer type breaker, when breaker is in the connecting position, the external additional contact will represent to the on–off state of the switch.

KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

电气线路图 Electrical Wiring Diagram

- **KFW2-1600 系列双电源自动转换典型接线原理图**
  KFW2- 1600 SERIES DUAL POWER AUTOMATIC SWITCHING TYPICAL WIRING DIAGRAM

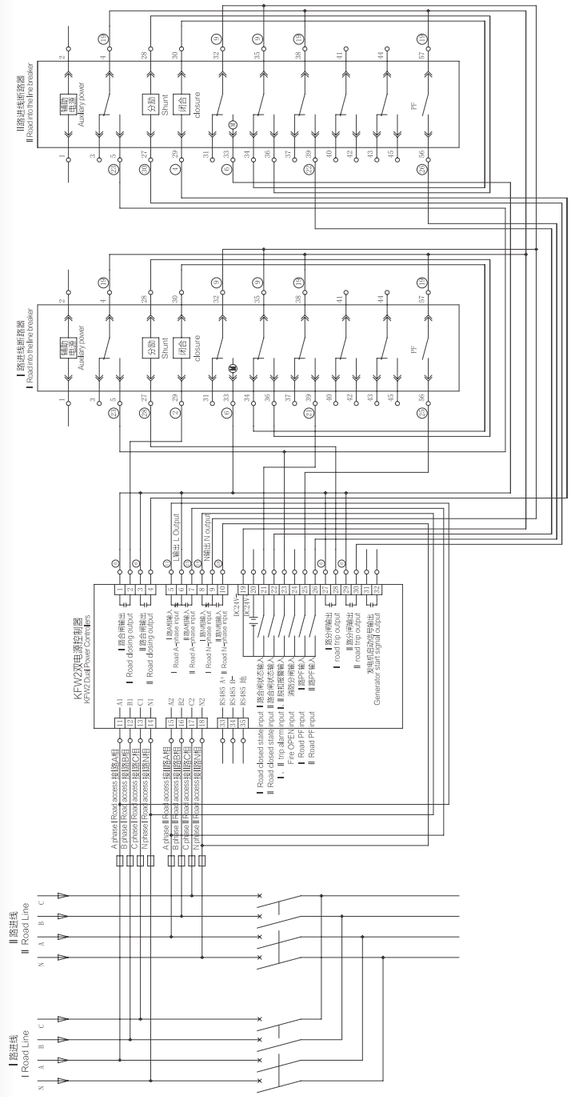


注：
1、接线图指示为网路无电，断路器处于分闸状态，并处于连接位置，机构已储能。
2、接线图为电网--电网系统，若为电网--发电机系统，双电源控制器19号接DC24V－，20号接DC24V＋，31、32号为发电机机启动信号输出。
3、采用自动电源转换系统供电时，断路器的智能控制器、分励（分励脱扣器）、闭合（合闸电磁铁）、储能电机电压应为AC230V，有其他电源要求需事先说明。
4、控制器1、2号端子接线参照KFW2系列断路器电气线路图。
5、断路器一次侧电源线电压为AC400V。

Note:
1.The wiring diagram indicates that the network is without electricity, the breaker is in switch off state and in the connecting position, and the mechanism has stored energy.
2.The wiring diagram is power grid – power grid system, if it is power grid – generator system, the No. 19 dual power controller connects to DC 24 V–, No. 20 connects to DC 24 V+,No. 31 and No. 32 are electric generator starting signal output.
3.When adopting the automatic power supply changeover system for power supply, the voltage of intelligent controller, shunt(shunt tripping device), closing (closing electromagnet)and energy storing motor of the breaker shall be AC 230 V, and other power requirements shall be specified in advance.
4.Refer to KFW 2 series breaker electric circuit diagram for the wiring of terminal 1 and terminal 2 of the controller.
5.The power line voltage of one side of the breaker is AC 400 V.

电气线路图 Electrical Wiring Diagram

- **KFW2-3200~4000 系列双电源自动转换典型接线原理图**
  KFW2- 3200~4000 SERIES DUAL POWER AUTOMATIC SWITCHING TYPICAL WIRING DIAGRAM



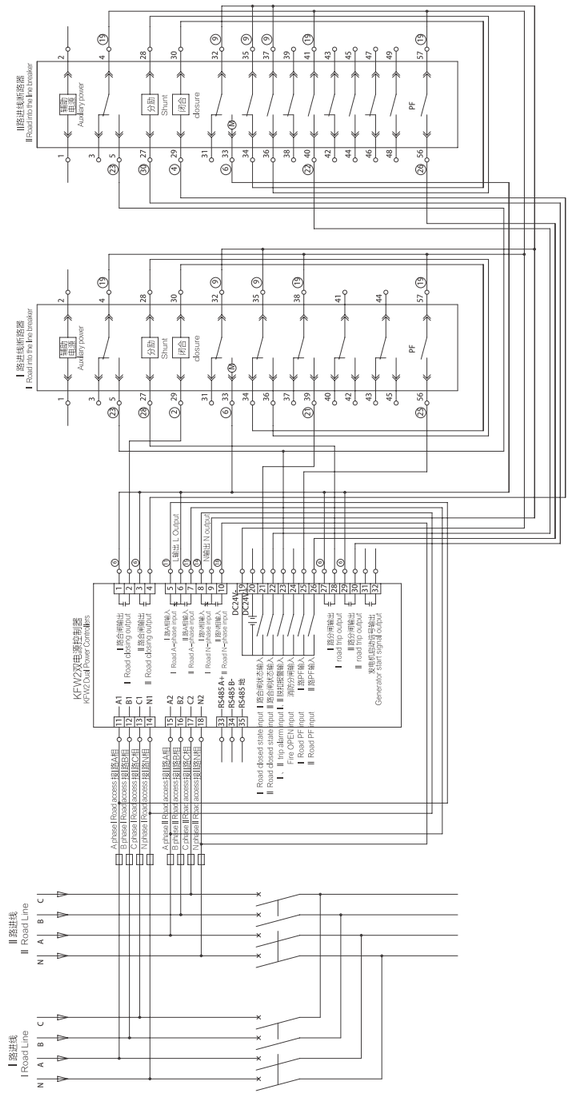
注：
1、接线图指示为网路无电，断路器处于分闸状态，并处于连接位置，机构已储能。
2、接线图为电网--电网系统，若为电网--发电机系统，双电源控制器19号接DC24V－，20号接DC24V＋，31、32号为发电机机启动信号输出。
3、采用自动电源转换系统供电时，断路器的智能控制器、分励（分励脱扣器）、闭合（合闸电磁铁）、储能电机电压应为AC230V，有其他电源要求需事先说明。
4、控制器1、2号端子接线参照KFW2系列断路器电气线路图。
5、断路器一次侧电源线电压为AC400V。

Note:
1.The wiring diagram indicates that the network is without electricity, the breaker is in switch off state and in the connecting position, and the mechanism has stored energy.
2.The wiring diagram is power grid – power grid system, if it is power grid – generator system, the No. 19 dual power controller connects to DC 24 V–, No. 20 connects to DC 24 V+,No. 31 and No. 32 are electric generator starting signal output.
3.When adopting the automatic power supply changeover system for power supply, the voltage of intelligent controller, shunt(shunt tripping device), closing (closing electromagnet)and energy storing motor of the breaker shall be AC 230 V, and other power requirements shall be specified in advance.
4.Refer to KFW 2 series breaker electric circuit diagram for the wiring of terminal 1 and terminal 2 of the controller.
5.The power line voltage of one side of the breaker is AC 400 V

KFW2 SERIES AIR CIRCUIT BREAKER
KFW2系列万能式断路器

电气线路图 Electrical Wiring Diagram

- **KFW2-3200~4000 系列与 KFW2-1600 系列双电源自动转换典型接线原理图**
  KFW 2- 3200~4000 SERIES AND KFW2- 1600 SERIES DUAL POWER AUTOMATIC SWITCHING TYPICAL WIRING DIAGRAM



注：

1、接线图指示为网路无电，断路器处于分闸状态，并处于连接位置，机构已储能。

2、接线图为电网--电网系统，若为电网--发电机系统，双电源控制器19号接DC24V－，20号接DC24V＋，31、32号为发电机机启动信号输出。

3、采用自动电源转换系统供电时，断路器的智能控制器、分励（分励脱扣器）、闭合（合闸电磁铁）、储能电机电压应为AC230V，有其他电源要求需事先说明。

4、控制器1、2号端子接线参照KFW2系列断路器电气线路图。

5、接线图，I路进线断路器为KFW2-3200~6300系列，II路进线断路器为KFW2-1600系列。

6、断路器一次侧电源线电压为AC400V。

Note:

1.The wiring diagram indicates that the network is without electricity, the breaker is in switch off state and in the connecting position, and the mechanism has stored energy.

2.The wiring diagram is power grid - power grid system, if it is power grid - generator system, the No. 19 dual power controller connects to DC 24 V-, No. 20 connects to DC 24 V+,No. 31 and No. 32 are electric generator starting signal output.

3.When adopting the automatic power supply changeover system for power supply, the voltage of intelligent controller, shunt (shunt tripping device), closing (closing electromagnet)and energy storing motor of the breaker shall be AC 230 V, and other power requirements shall be specified in advance.

4.Refer to KFW 2 series breaker electric circuit diagram for the wiring of terminal 1 and terminal 2 of the controller.

5.As for the wiring diagram, the circuit I coil in breaker is KFW 2-3200- 6300 series, circuit II coil in breaker is KFW 2-1600 series.

6.The power line voltage of one side of the breaker is AC 400 V.

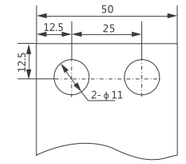
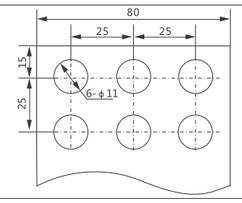
环境温度变化的降容系数表 Derating factor table of ambient temperature variation

周围环境温度 Ambient temperature		+40℃	+45℃	+50℃	+55℃	+60℃
持续承载电流能力 Continuous current carrying capacity	In=1600A	1.0In	0.99In	0.96In	0.90In	0.87In
	In=2000A	1.0In	0.97In	0.91In	0.84In	0.82In
	In=2500A	1.0In	0.96In	0.90In	0.86In	0.82In
	In=3200A	1.0In	0.95In	0.89In	0.85In	0.78In
	In=4000A	1.0In	0.94In	0.88In	0.83In	0.76In
	In=6300A	1.0In	0.93In	0.87In	0.82In	0.75In

高海拔降容系数表 Derating factor table of high altitude

海拔高度（m） Altitude (m)	2000	3000	4000	5000
工频耐压（V） Power frequency withstand voltage (V)	3500	3000	2500	2000
工作电流修正系数 Operating current correction factor	1	0.94	0.88	0.82
断路器分断能力修正系数 Breaker breaking capacity correction factor	1	0.84	0.72	0.66

断路器主回路接线铜排规格参数表 Reference table of breaker major loop copper busbar specification

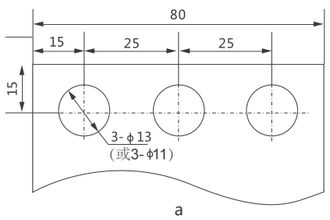
壳架等级 Inm Frame size rated current	额定电流 In(A) Rated current	铜排规格 Busbar sizing		连接型式 Connection	
		根数 The number of	尺寸(mm×mm) Size	抽屉 Draw-out	固定 Fixed
KFW2-1600	200	1	50×5		
	400	1	50×5		
	630	2	50×5		
	800	2	50×5		
	1000	3	50×5		
	1250	4	50×5		
	1600	4	50×5		
	配端子适配器的连接型式 The connection type of terminal adapter	2	80×6		
KFW2-2500	630	2	60×5		a
	800	2	60×5		a
	1000	2	60×5		a
	1250	3	60×5		a
	1600	2	60×10		a
	2000	3	60×10		a
	2500	4	60×10		a

KFW2 SERIES AIR CIRCUIT BREAKER

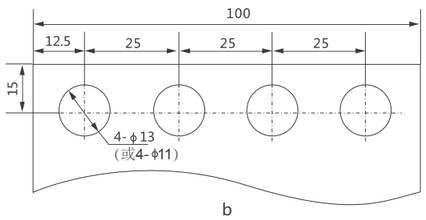
KFW2系列万能式断路器

断路器主回路接线铜排规格参数表 Reference table of breaker major loop copper busbar specification

壳架等级 Inm Frame size rated current		额定电流 In(A) Rated current	铜排规格 Busbar sizing 根数 The number of	铜排规格 Busbar sizing 尺寸(mm×mm) Size	连接型式 Connection 抽屉 Draw-out	连接型式 Connection 固定 Fixed
KFW2-3200	630A-2500A	630	2	80×5	a	
		800	2	80×5	a	
		1000	2	80×5	a	
		1250	3	80×5	a	
		1600	2	80×10	a	
		2000	2	80×10	a	
		2500	3	80×10	a	
	3200A	3200	4(抽屉式) 5(固定式) 4 (Draw-out) 5 (Fixed)	100×10(抽屉式) 80×10(固定式) 100×10 (Draw-out) 80×10 (Fixed)	b	a
KFW2-4000		630	2	80×5	a	
		800	2	80×5	a	
		1000	2	80×5	a	
		1250	3	80×5	a	
		1600	2	80×10	a	
		2000	2	80×10	a	
		2500	3	80×10	a	
		3200	4	100×10	b	
		3600	4	100×10	b	
		4000	5	100×10	b	
KFW2-6300		4000	5	100×10	b	
		5000	6	100×10	b	
		6300	8	100×10	b	

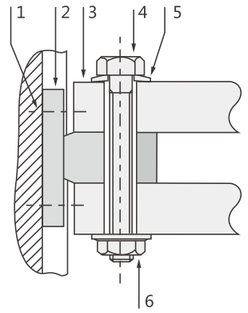


a



b

电源连接 Power connection



固定

母排正确的固定取决于螺栓与螺母适当的力矩。力矩过大或过小都不允许。

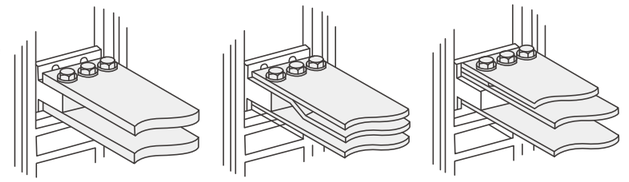
对于断路器母排联接，紧固力矩见下表：这些数值适应于铜母排及钢螺栓及螺母。等级8.8。

Fixation

The correction fixation of the busbar depends on the proper torque between bolt and nut. The torque is not allowed to be too big or too small.

As for the breaker busbar connection, see the table below for tightening torque: these values are applicable to the copper busbar and steel bolt and nut. Grade is 8.8.

举例
For example



1 端子出厂力矩16NM
2 断路器端子
3 母排
4 螺栓
5 垫片
6 螺母

1.Terminal factory torque 16 Nm
2.Breaker terminal
3.Busbar
4.Bolt
5.Spacer
6.Nut

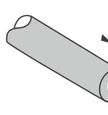
紧固力矩 Tightening torque

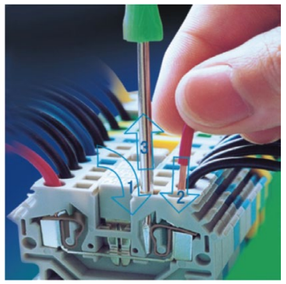
ϕ 标称(mm) Rated (mm)	ϕ 钻孔(mm) Borehole (mm)	紧固力矩 用弹簧垫圈或平垫圈 Use spring washer or flat washer	Tightening torque (Nm) 用接触垫圈或波纹垫圈 Use contact washer or corrugated washer
12	13	50	75
10	11	37.5	50

二次接线 Secondary connection

S_{min}：0.6mm²

S_{max}：2.5mm²





KFW2 SERIES AIR CIRCUIT BREAKER

KFW2系列万能式断路器

安装 Installation

依照使用说明书进行安装，安装前先检查断路器的规格是否符合要求。

安装前先以500V兆欧表检查断路器主回路绝缘电阻，在周围空气温度+20℃±5℃和相对湿度50%~70%应不小于10MΩ,否则烘干，待绝缘电阻达到要求方可使用。

断路器应垂直安装，并用M6螺栓固定。

在安装抽屉座时，严禁将任何金属或非金属物体留在抽屉座里。

在主电路通电前（本体在“试验”位置）应进行下列操作试验：

A）检查欠电压、分励脱扣器、闭合电磁铁及电动操作电压是否相符（欠电压脱扣器吸合，断路器才能操作）；

B）上下扳动面罩上的手柄，七次后，面板显示“贮能”，并听到“咔嗒”一声，贮能结束，按动“I”按钮或闭合电磁铁通电，断路器可靠闭合，扳动手柄能再次贮能；

C）接通辅助电源，电动机通电操作至面罩显示“贮能”，并伴随“咔嗒”一声，贮能结束，电动机自动断电，按动“I”按钮或闭合电磁铁通电，断路器可靠闭合，此时电动机又通电贮能。

D） 断路器闭合后，无论用欠电压、分励脱扣器或面罩上的“O”按钮或智能型控制器的脱扣试验按钮均应能使断路器断开。

Conduct installation according to the operating manual, and check whether the specifications of the breaker meet the requirements before installation.

Use 500 V tramegger to check the major loop insulation resistance of the breaker before installation, the ambient air temperature shall be + 20℃±5℃, relative humidity is 50%~ 70% and no less than 10 MΩ, or dry and use it until the insulation resistance meets the requirements.

The breaker shall be vertically installed and fixed with M 6 bolt.

It is strictly prohibited to leave any metal or non-metal objects in the drawer seat while installing it.

The following operation test shall be carried out before electrifying the main circuit (the main body is in “testing” position):

a)Check whether the under-voltage tripping device, shunt tripping device, closing electromagnet and electric operating voltage are matched up (the breaker can only be operated when the under-voltage tripping device is pulled in);

b)Pull the handle on the mask up and down for seven times, then the panel displays “energy storage” and hear the “clatter” sound, the energy storage is finished, press “I” button or close the electromagnetic electricity, the breaker is closed in a reliable way, pull the handle and conduct energy storage again;

c)Switch on auxiliary power, power on the motor and operate to the “energy storage” displayed on the mask, and the energy storage is finished along with the “clatter” sound, the motor conducts automatic power off, the breaker is closed in a reliable way, now the motor is power on and conducts energy storage.

After the breaker is closed, it can be disconnected through under-voltage, shunt tripping device or the “O” button on the mask or the tripping test button on the intelligent controller.

维护 Maintenance

在使用中发现脱扣器线圈有特殊噪声时，应将工作极面用防锈油擦清，重新涂上清洁的防锈油脂。

在使用过程中各个转动部分应定期注入润滑油。

应定期清刷灰尘，以保持断路器绝缘良好。

应定期检查触头系统，特别在每次短路故障后或当维修指示达到60%更必须检查，检查内容：

A. 灭弧罩

B. 触头

C. 连接部位的紧固件

D. 软联接

建议每两年检查一次。

If special noise of the tripping device coil is found in use, the operating pole face shall be wiped clean with rust-preventative oil and coat with clean preservative oil and grease again.

Each rotating part shall be regularly injected with lubricating oil during use.

Regularly brush the dust to keep good performance of the breaker.

Regularly check the contact system, especially after short circuit faults or when the maintenance indicator reaches 60%, check content including:

a: arc extinguishing chamber

b: contact

c: fasteners at joint parts

d: soft interlock

It is suggested to check once every two years.

订 货 单

订货规格				（请在 ☐ 填上数字，在□内打√）	
用户名称			订货数量		订货日期
型 号	KFW2-☐	分断能力	□ M □ H	□-固定式 □-抽屉式	□-3P □-4P
额定电压	□-AC400V □-AC500V □-AC690V			额定电流	In=☐ A
使用场所	□常规型配电	□超低温型配电		□常规型风电	□超低温型风电

智能控制器	型号选择	□-Unit3型	□-Unit4型	□-Unit6型	
	基本功能	过载长延时保护 Ir ☐ tr ☐	短路瞬时保护 Ii ☐	故障记忆功能 自诊断功能	试验功能 热记忆功能
		电流表 状态指示及数据显示 短路短延时保护 Isd ☐ tsd ☐	短路短延时保护 Isd ☐ tsd ☐ 状态指示及数据显示 故障时钟 触头磨损及寿命指示 热记忆功能 电流不平衡保护	MCR功能及HSISC功能 电流表 负载监控保护 □-方式一 □-方式二	
				通讯功能	
	可选功能	□-接地故障保护（差值型） Ig ☐ tg ☐	□-3P □-4P □-3P+N（标配外接N相电流互感器）		
		□-MCR功能及HSISC功能 □-热记忆	□-电压测量 □-过压保护 □-欠压保护 □-电压不平衡保护 □-相序检测 □-过频保护 □-欠频保护	□-功率测量 □-逆功率保护 □-电能测量 □-谐波测量 □-区域连锁 □-漏电保护 □-中性相保护	□-可编程触点 □-3DO,1DI □-2DO,2DI □-4DO
	智能控制器电源	□-AC230V □-AC400V	□-DC220V	□-DC110V	□-DC24V
标配附件	■ 分励脱扣器	□-AC230V ■-长通电型	□-AC400V □-瞬时型	□-DC220V □-保持型	□-DC110V
	■ 合闸电磁铁	□-AC230V ■-长通电型	□-AC400V □-瞬时型	□-DC220V	□-DC110V
	■ 电动操作机构	□-AC230V	□-AC400V	□-DC220V	□-DC110V
	■ 辅助触头	标配型式 特殊型式	■-四常开四常闭（KFW2-3200~4000系列为四转换） ☐ NC ☐ NO （NC，NO必须相同，最多8NC 8NO）		
选择附件	□-机械联锁	三台断路器	□-联杆联锁方式一	□-联杆联锁方式二	□-联杆联锁方式三 □-钢缆联锁
		两台断路器	□-联杆联锁 □-钢缆联锁		□-多台断路器
	□-欠电压脱扣器	□-AC230V □-AC400V	□-欠电压瞬时脱扣器 □-欠电压延时脱扣器 □-0.3s □-0.5s □-1s □-3s □-5s □-零压延时脱扣器 □-0.3s □-0.5s □-1s □-3s □-5s □-光伏专用欠电压延时脱扣器 0~10s可调 □-光伏专用零压延时脱扣器 0~10s可调 □-光伏专用欠电压延时、过压脱扣器 0~10s可调 □-光伏专用零压延时、过压脱扣器 0~10s可调		
	□-分闸锁定装置	一台断路器 □-一锁一钥匙	两台断路器 □-两锁一钥匙	三台断路器 □-三锁二钥匙	
	□-位置开关	□-连接位置开关 □-试验位置开关 □-分离位置开关			
	□-相间隔板 □-门框 □-计数器 □-门联锁 □-N互感器 （□-60X20 □-80X30 □-120X30 □-柔性） □-合闸准备就绪触点 □-ST201继电器模块 □-ST电源模块 □-ZCT漏电互感器 □-电压转换模块				
	□-双电源自动转换系统	□-KFW双电源控制器（同时必须要选用机械联锁和合闸准备就绪触点）			

接线方式	上接线端子	■-水平端子 □-垂直端子 □-正向连接 □-特殊要求 □-端子适配器
	下接线端子	■-水平端子 □-垂直端子 □-正向连接 □-特殊要求 □-端子适配器
备 注		

■为标准配置

ORDER FORM

Order specification (Please Fill number in [ ] , mark √ in □)

Customer		Quantity		Date
Type	KFW2 - [ ]	Circuit breaker □ M □ H	□-Fixed □-Draw-out	□-3P □-4P □-3P+N (standard configuration added with N phase current transformer)
Rated voltage	□-AC400V □-AC500V □-AC690V		Rated current	In= [ ] A
Place of application	□ -General distribution □ -Ultra-low Temperature distribution		□ -General Wind power	□ -Ultra-low temperature Type wind power

Intelligent controller –

Type selection	□- Unit3	□- Unit4	□- Unit6	
Basic functions	Overload long-time delay protection Ir [ ] tr [ ] Ii [ ]	Instantaneous protection	Fault record Self-diagnosis function	Test trip function Thermal memory
	Ampere meter State and value indicator Short circuit short-time delay protection Isd [ ] tsd [ ]	Short circuit short-time delay protection Isd [ ] tsd [ ] State and value indicator Fault schedule Contact abrasion and operation endurance indicator Thermal memory Current unbalance protection	MCR function & HSISC function Ampere meter Load monitoring □- Load monitoring 1 □- Load monitoring 2	
				Communication function
Optional functions	□-Eafth-fault protection (Difference type) Ig [ ] tg [ ] □-3P □-4P □-3P+N (Standard external n-phase current transformer)			
	□-MCR function & HSISC function □-Thermal memory	□-Voltage measurement □-Over-voltage protection □-Under-voltage protection □-Voltage unbalance protection □-Phase order protection □-Over-frequency protection □-Under-frequency protection	□-power measurement □-Reverse power protection □-Energy measurement □-Harmonic measurement □-Regional interlocking □-Earth leakage protection □-Neutral protection □-Programmable contact □- 3DO,1DI □- 2DO,2DI □- 4DO	
Intelligent controller power	□-AC230V	□-AC400V	□-DC220V	□-DC110V □-DC24V

Standard accessories

■ Shunt release	□-AC230V ■-Long-energized	□-AC400V □-Momentary	□-DC220V □-Holding pattern	□-DC110V
■ Closing electromagnet	□-AC230V ■-Long-energized	□-AC400V □-Momentary	□-DC220V	□-DC110V
■ Gear motor	□-AC230V	□-AC400V	□-DC220V	□-DC110V
■ Auxiliary switch	Standard type: ■ four normally open and four normally closed (KFW2-3200~4000 series is four conversion type) Special type: [ ] NC [ ] NO (NC and NO must be the same, the maximum shall be 8 NC 8 NO)			

Optional accessory

□- Mechanical interlocking	Three circuit breakers □- Connecting rod interlocking mode 1 □- Connecting rod interlocking mode 2 □- Connecting rod interlocking mode 3 □- Cable interlocking	
	Two circuit breakers □- Connecting rod interlocking □- Cable interlocking	□- Multiple breakers
□- Under-voltage release	□-AC230V □-AC400V	□- Instantaneous undervoltage release □- Undervoltage delay release □-0.3s □-0.5s □-1s □-3s □-5s □- Zero pressure delay release □-0.3s □-0.5s □-1s □-3s □-5s □- Photovoltaic special time delay under-voltage release, time delay: 0 ~ 10s □- Photovoltaic special zero-voltage time delay under-voltage release, time delay: 0 ~ 10s □- Photovoltaic special time delay under-voltage (over- voltage) release, time delay: 0 ~ 10s □- Photovoltaic special zero-voltage time delay under-voltage (over- voltage) release, time delay: 0 ~ 10s
□-Sub-gate locking	A circuit breaker □- Two circuit breaker □-Two locks and one key	Three circuit breakers □- Three locks and two keys
□-Position switch	□- Connection position switch □- Test position switch □- Isolated position switch	
□- Phase clapboard □- Door frame □-Counter □-Door interlock □- NTransformers (□-60x20 □-80x30 □-120x30 □-flexibility) □- Ready contact □-ST 201 relay module □- ST power module □- ZCT leakage transformer □-Voltage conversion module		
□- Dual power automatic convertion system	□- KFW dual power controller (the mechanical interlocking and ready-contact must be selected and used at the same time)	

Connection	Top	■- Horizontal connection □- Vertical connection □- Front connection □- Special request □- Terminal adapter
	Bottom	■- Horizontal connection □- Vertical connection □- Front connection □- Special request □- Terminal adapter
Remarks		

■ As standard configuration

备注 Remarks