

KFQ2 系列双电源自动转换装置

KFQ2 Series Automatic Transfer Switching Equipment

公司简介



江苏大全凯帆电器有限公司由大全集团有限公司(原江苏长江电气集团有限公司)投资组建,专业从事低压电器领域各种产品的开发、生产和销售。属江苏省高新技术企业。

公司技术力量雄厚,设计手段先进,并与上海电器科学研究所、西安交通大学、江苏大学等科研院所建立了良好的合作关系;集团公司博士后科研工作站也为我们的研究、开发提供了重要的技术支持。

公司重视技改投入,先后从德国、美国、日本、瑞士等国家引进了具有国际先进水平的生产、检测设备和专用的焊接设备,多项低压电器焊接工艺和检测手段填补了国内空白,框架断路器和塑壳断路器产品也先后被列入国家级及省级火炬计划项目,并获得多项省市高新技术产品荣誉称号。

在公司管理方面,公司全面实施ERP系统及人力资源管理系统,并通过了荷兰KEMA公司的ISO9001-2000质量管理体系认证。

目前公司的主要产品有:KFW2系列智能型万能式断路器、KFM2系列塑料外壳式断路器、KFM2L系列剩余电流动作断路器、KFM2E系列智能型塑壳断路器、KFQ2系列双电源自动转换装置、KFM2Z系列直流断路器和KFC2系列交流接触器、KFB系列小型断路器、KFR系列热继电器等。以上产品均已通过“国家强制性产品认证”,各项技术指标均达国内领先、国际先进水平,产品已被广泛应用于电厂、化工、钢铁等领域。

公司秉承“以顾客为中心”的理念,以“增强顾客满意度”为宗旨,以强大的技术力量、一流的生产设备、现代化的管理手段,不断进取、不断创新,努力为顾客提供更好的产品和服务。



创新不已 追求卓越



Outline

Jiangsu Daqo kfine electric Co., Ltd(KFINE)was investigated by Daqo group Co., Ltd(the former Jiangsu Changjiang Electric group Co., Ltd). The company specializes in developing, manufacturing and selling of low-voltage electric equipment, and has been given the title of "High-tech Enterprise of Jiangsu".

The company has a strong technical foundation and modern design means. Here have the good cooperative membership with shanghai electrical apparatus research institute, Xi'an jiaotong University and Jiangsu University. And the postdoctoral programs in group corporation plays a vital role in researches and development.

The company concentrates on the technical improvement and introduces successively various international advanced manufacturing and testing equipments from Germany, USA, Japan and Swiss. All those provide reliable guarantee for high quality products. the ACB and NCCB products are listed in "Torch High-tech item of China", and win many honors from Jiangsu province and Zhenjiang city.

The company has built ERP system and Human Resource administion system, and has passed the ISO9001:2000 quality authentication.

Now, the products designed and developed by the company include: the KFW2 series intelligent ACB and the KFM2 series MCCB, KFM2L series residual current protection, current breaker KFQ2 series Automatic trasfrer Switches, KFM2E series Intelligent MCCB, KFM2Z series DC breaker, KFC2 series AC contactor, KFB1 series MCC and KFR1 series thermal overlod relay. All the products above have passed the China Compulsory Product Certification(3C). The breaker is in the national highest and meet the international lever, the products have been widely applied in the fields such as electric power plant, chemical industry, iron and steel industry.

The company which follows the principle of "customer first" and "customer satisfied", will advance and innovate continuously to meet the market and the users with strong technique strength, first-class manufacturing equipment and modern management methods.



概述

随着社会的发展，人们对供电可靠性的要求已越来越高，很多场合用两路电源来保证供电的可靠性，这就需要一种在两路电源之间进行可靠转换以保证供电的装置。KFQ2系列双电源自动转换装置（以下简称KFQ2）就是为满足这一要求而开发的新产品。

适用范围

KFQ2适用于额定工作电压400V及以下，额定工作电流从63A至800A的两路电源（常用电源和备用电源或发电电源）。KFQ2系列适用于医院、商场、银行和消防等不允许断电的重要场所。

符合标准

本产品执行GB/T14048.11-2002和IEC60947-6-1:1998(1、2版)《低压开关设备和控制设备 第6部分：多功能电器 第1篇：自动转换开关电器》标准。

General

With the development of society, People's request to the reliability of power supply are becoming more and more strict, 2-circuit electric source has been used in many conditions in order to ensure the reliability of power supply. So a reliably transfer switch between two circuit electric sources is required emergently. KFQ2 duplicate power supply automatic transfer switch is such a new product designed according to this requirement.

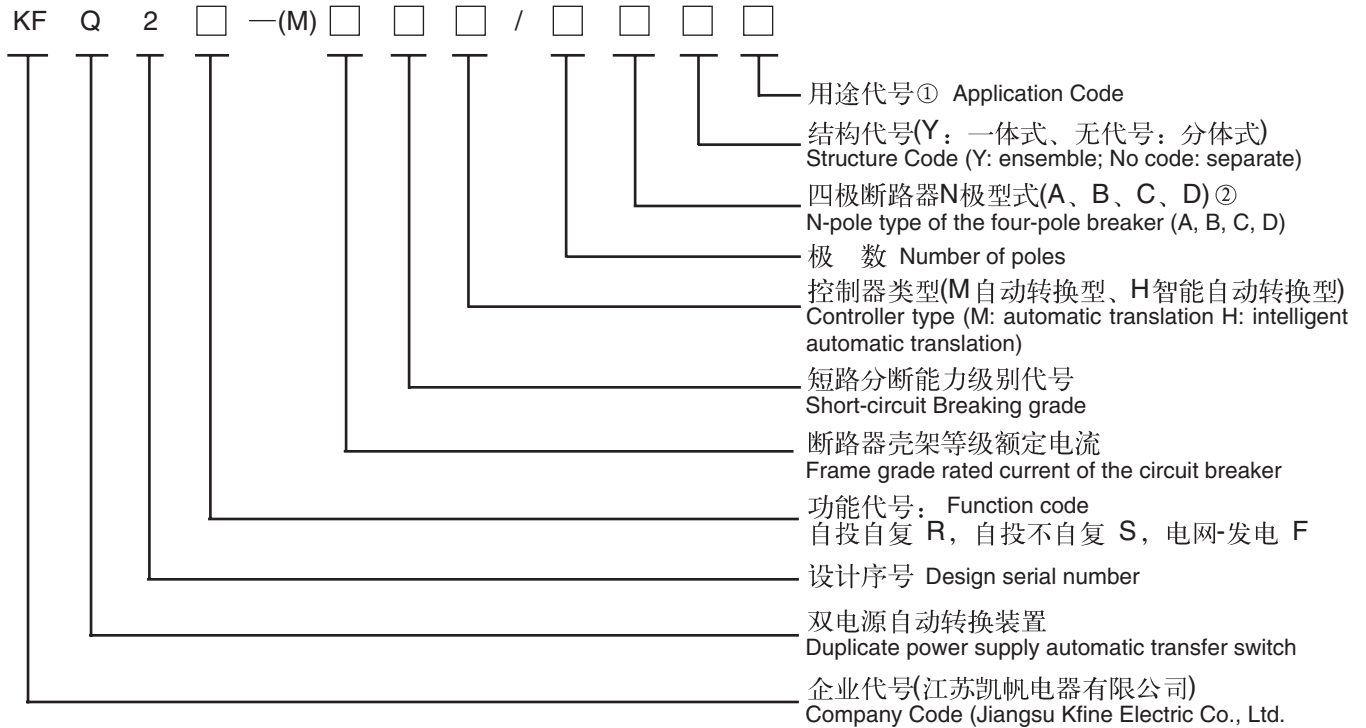
Application

KFQ2 is suitable for transferring between two circuit s of power supply (working power supply, standby power supply or generated power supply) with rated frequency of AC 50Hz, rated working voltage to 400V and rating current up to 800A. KFQ2 is switable for important plae where power-breakinging is not allowable such as hospital, mall, bank and fire protection facilities.

Specifications

This product performs the standards of GB/T14048.11-2002 and IEC 60947-6-1:1998(1、2 version) 《Low-voltage switchgear and controlear Part 6-1: Multiple function equipment - Automatic transfer switching equipment》.

型号及含义 Type and its Meaning



注

① 配电用的执行断路器无代号，保护电动机用的执行断路器用“2”

② **A型**：N极不安装过电流脱扣元件，且N极始终接通，不与其它三极一起合分；

B型：N极不安装过电流脱扣元件，且N极与其它三极一起合分（N极先合后分）；

C型：N极安装过电流脱扣元件，且N极与其它三极一起合分（N极先合后分）；

D型：N极安装过电流脱扣元件，且N极始终接通，不与其它三极一起合分。

(M) 表示，KFQ2采用本公司微型断路器作为执行断路器。

Note

① No code for distribution breakers, 2" represents breakers for motor protection.

② **Type A**: No over-current release is fitted on the N-pole, and the N-pole is making all the time and doesn't make and break along with the other three poles.

Type B: No over-current release is fitted on the N-pole and the N-pole makes and breaks along with the other three poles. (N-pole makes before and breaks after the other poles)

Type C: Over-current release is fitted on the N-pole, and the N-pole makes and breaks along with the other three poles. (N-pole makes before and breaks after the other poles)

Type D: Over-current release is fitted on the N-pole, and the N-pole is making all the time and doesn't make and break along with the other three poles.

(M) is shown that the circuit breaker which is used in KFQ2 is the MCB of our company.

结构与性能

● KFQ2双电源自动转换装置由装置本体和自动控制器两大部分组成。

装置本体由单电机操作机构、断路器、内部附件（辅助、报警触头）、底板及接线端子等组成。单电机操作机构具有体积小、结构简单、动作灵活、机械连锁等特点。

自动控制器分为分体式 and 一体式结构，分体式：控制器安装在箱、柜门上，其余元件安装在金属底板上（底板上装有接线端子插口）；一体式：整个自动转换装置都安装在底板上，结构紧凑。

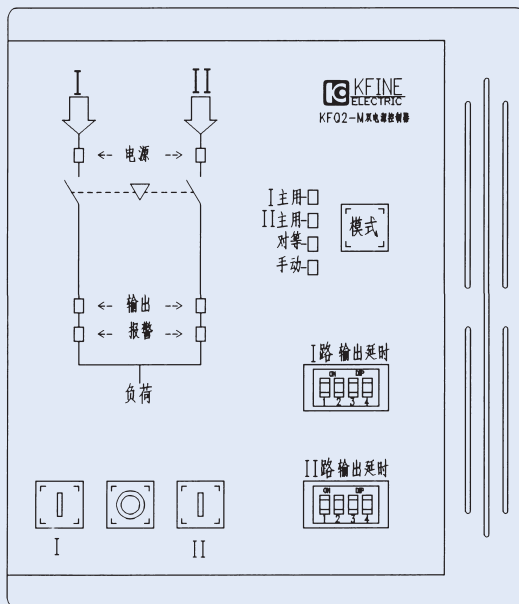
Structure and Function

KFQ duplicate power supply automatic transfer switch is made up of the mechanism and the automatic controller .

The body of unit is made up of single electromotor operating mechanism, the KFM2 series circuit breaker, internal accessories (auxiliary contact, alarm contact), motherboard and terminal block .

The automatic controller is divided into Ensemble and Separate, Separate:The controller is mounted on the chest, and the cupboard door, the other components are mounted on the metal motherboard (the motherboard has the sockets of the terminal block); Ensemble: The single electromotor operating mechanisms, the automatic controller, and the circuit breaker are all mounted on the motherboard, and the structure is compact.

KFQ2-M



基本功能

Basic Function

实时监测过压、欠压及转换装置的状态
Real time detection of overvoltage, undervoltage

各种状态显示
All mode clear display

手动、自动状态切换
Manual or automatic switch control

常用电源设定
Normal Power setting

延时控制
Time delay control

延时控制
Time delay control

选择功能

Selection Function

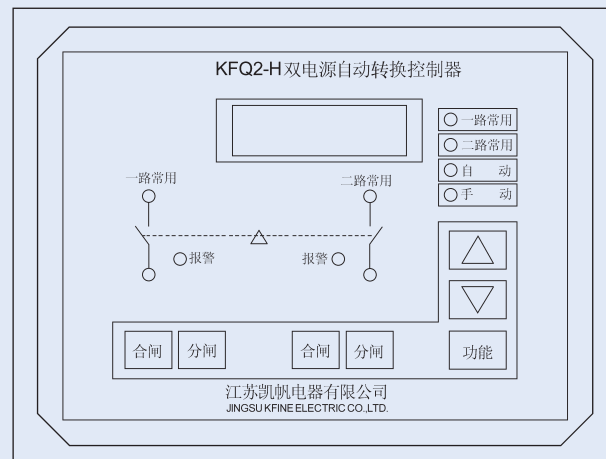
可外接复位指令（消防）
External reset instruction (fire fighting)

External reset instruction (fire fighting)

输出发电机启动和卸载指令
Generator starting and shutdown instruction output

Generator starting and shutdown instruction output

KFQ2-H



基本功能

Basic Function

实时监测过压、欠压及转换装置的状态

Real time detection of overvoltage, undervoltage

各种状态显示

All mode clear display

手动、自动状态切换

Manual or automatic switch control

常用电源设定

Normal Power setting

延时控制

Time delay control

选择功能

Selection Function

可外接复位指令（消防）

External reset instruction (fire fighting)

输出发电机启动和卸载指令

Generator starting and shutdown instruction output

记录查询

Inquiring about the log

可通讯

Communication

时钟功能

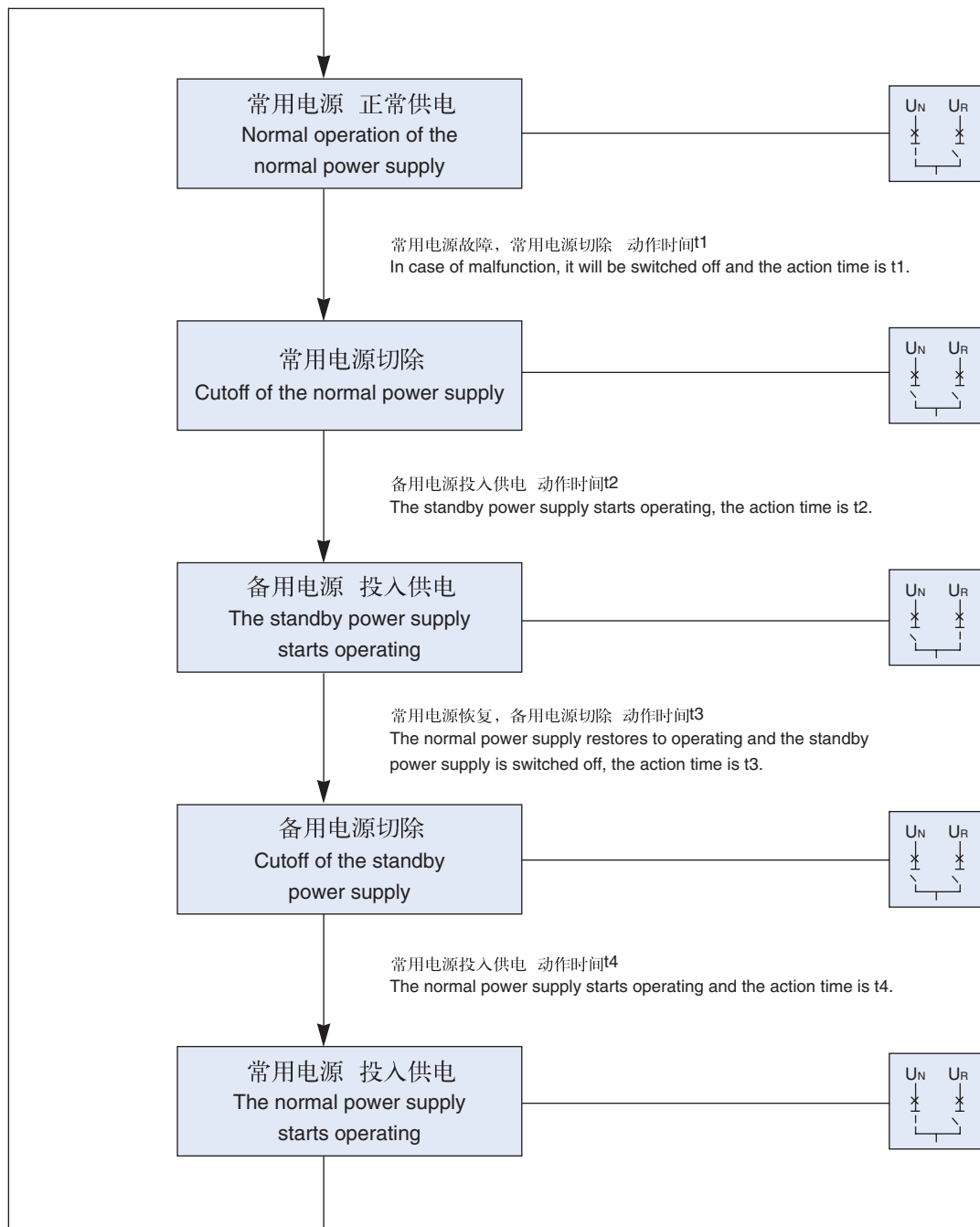
Clock display

R型、S型、F型三种“自动”控制功能逻辑图

Logic chart of control function of type R,S and F automatic control

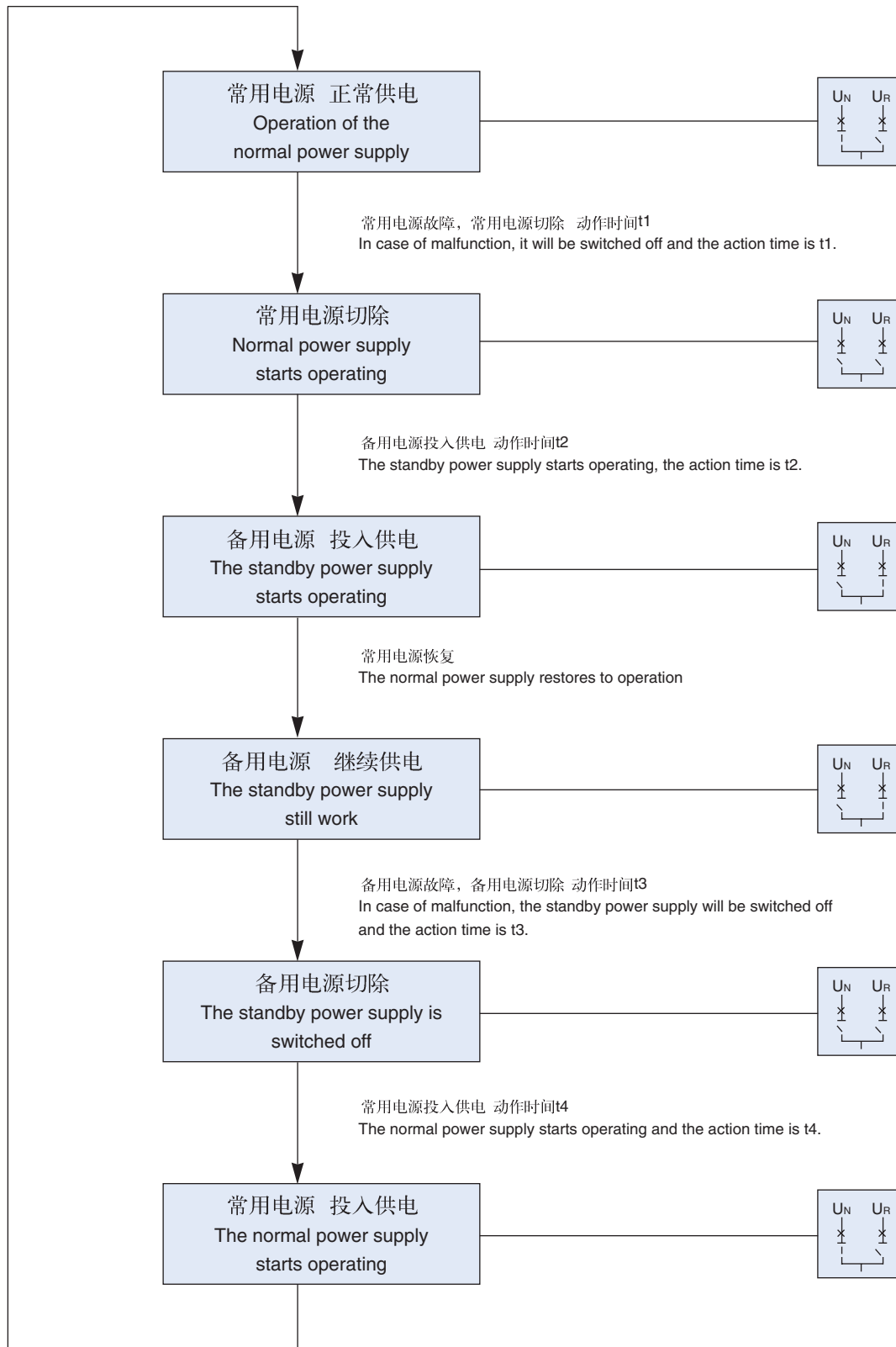
常用—备用间的自投自复(R型)

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



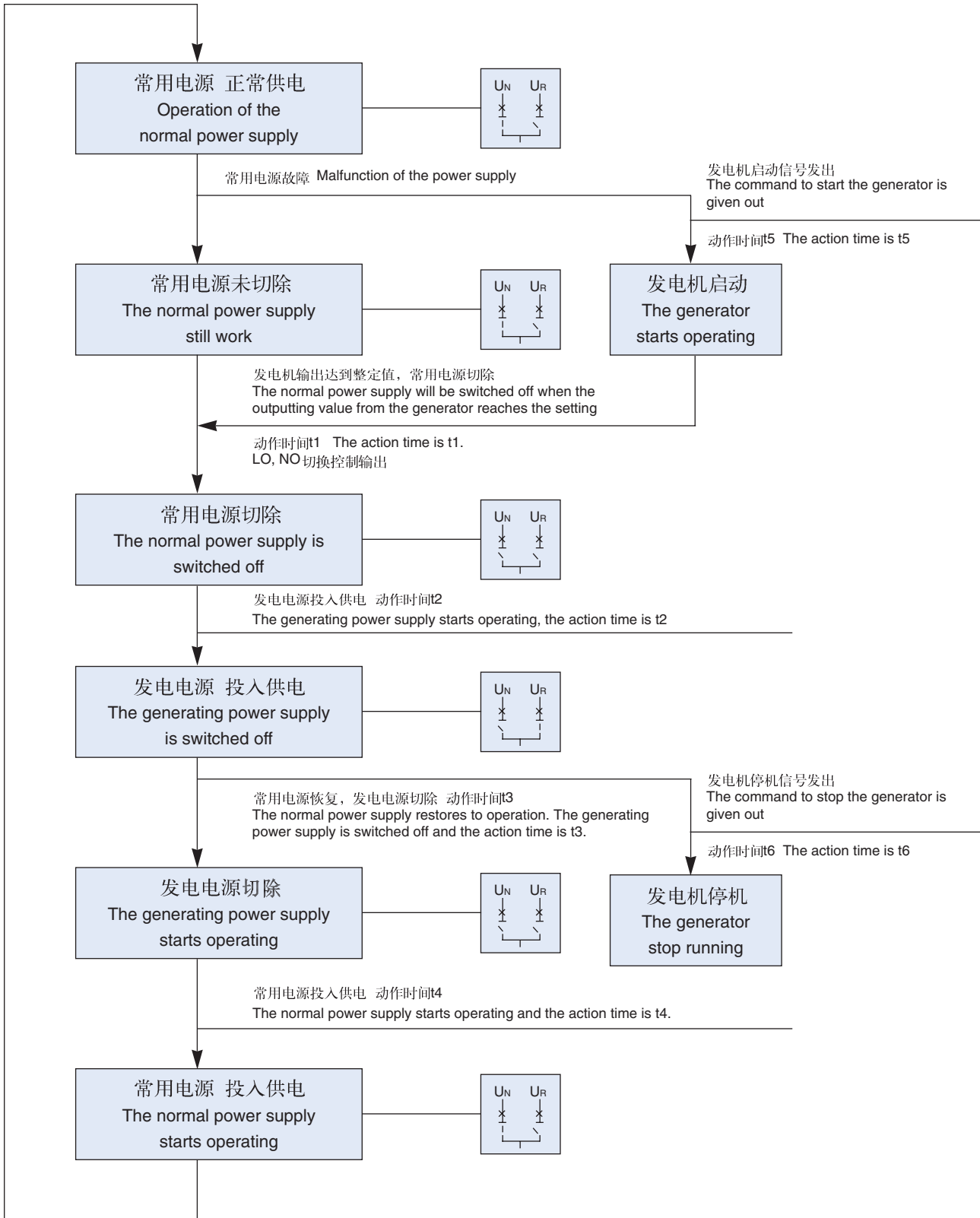
常用—备用间的自投不自复(S型)

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



常用—发电电源间的自投自复(F型)

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



常用一发电型必须为控制器提供一个稳定、不间断的DC9~35V直流电源。

As for the normal and generating power supply, an interrupted power supply of D.C. 9~35V is required.

R型、S型、F型控制特性:

Control feature of Type R, S and F control unit:

| 控制功能 Type | 额定控制 电源电压 Us(V) Rated power supply Us(V) | 转换断开 延时时间t1(s) Delay time before power supply switching off while switching operation t1(s) | 转换接通 延时时间t2(s) Delay time before power supply switching on while switching operation t2(s) | 返回断开 延时时间t3(s) Delay time before power supply switching off while restoring operation t3(s) | 返回接通 延时时间t4(s) Delay time before power supply switching on while restoring operation t4(s) | 发电指令 延时时间 t5(s) Delay time before giving out of the command of power generation t5(s) | 发电停机指 令延时时间 t6(s) Delay time before giving out of the command to stop the generation t6(s) |
|--------------|--|--|---|--|---|--|---|
| R型 S型 | AC220 | 5 (出厂默认值) (default setting) 1~30 (用户可调) (adjusted by users) | 1 (出厂默认值) (default setting) 1~30 (用户可调) (adjusted by users) | 5 (出厂默认值) (default setting) 1~30 (用户可调) (adjusted by users) | 1 (出厂默认值) (default setting) 1~30 (用户可调) (adjusted by users) | — | — |
| F型 | AC220 | 1~30 (用户可调) (adjusted by users) | 1~30 (用户可调) (adjusted by users) | 1~30 (用户可调) (adjusted by users) | 1~30 (用户可调) (adjusted by users) | 1~60 (用户可调) (adjusted by users) | 1~60 (用户可调) (adjusted by users) |

主要技术参数

Main technical parameters

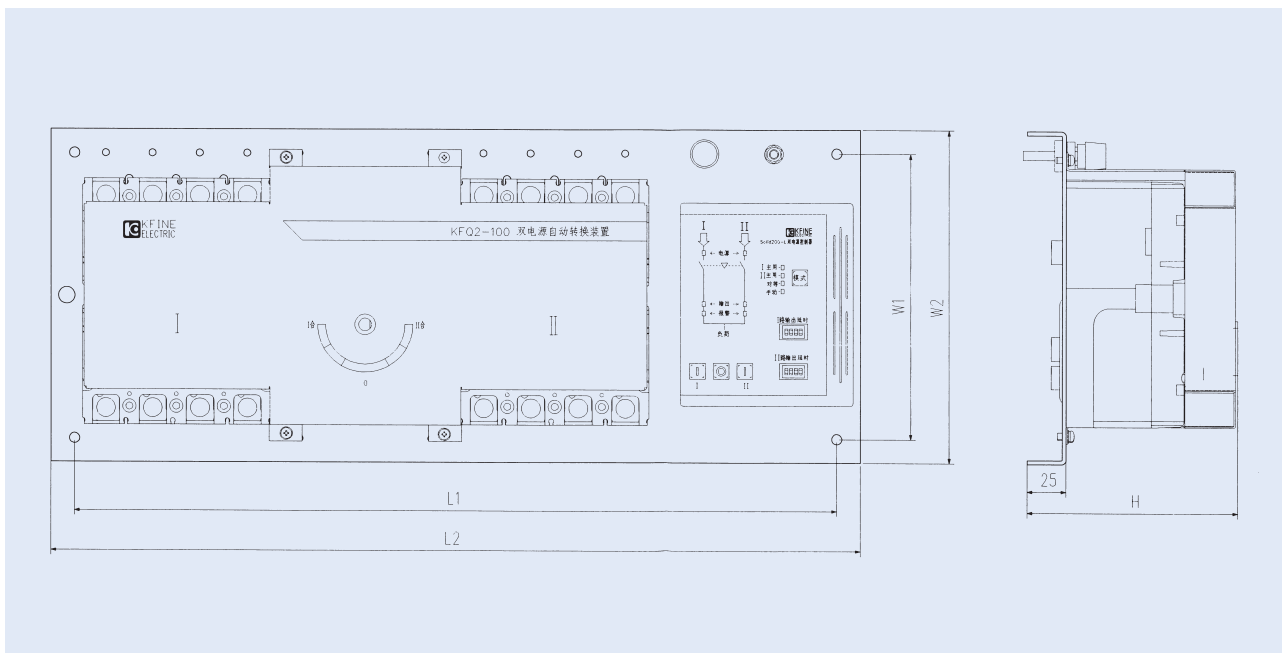
| 规格型号 Type | KFQ2-63 | KFQ2-100 | KFQ2-250 | KFQ2-400 | KFQ2-630 | KFQ2-800 |
|---|------------------------------------|-------------------------------------|---|---------------------------------|---------------------------------|-----------------------------|
| 额定工作电压Ue(V) Rated working voltage | AC400V 50Hz | | | | | |
| 额定电流Ie(A) Rated Current | 6*、10、16、 20、25、32、 40、50、63 | 16、20、25、 32、40、50、 63、80、100 | 100、125、140、 160、180、200、 225、250 | 200、225、 250、315、 350、400 | 250、315、 350、400、 500、630 | 400、500、 630、700、 800 |
| 额定绝缘电压Ui(V) Rated insulation Voltage | 500 | 690 | | | | |
| 极数 Poles | 3P | | | 4P | | |
| 额定短路分断能力Icm(KA) Rated short circuit connection ability | 35/50 | 35/50/65/80 | 35/50/65/80 | 35/50/65/80 | 35/50/65/80 | 35/50/65/80 |
| 电气寿命(循环) Electric endurance times | 3000 | 3000 | 3000 | 2000 | 1500 | 1500 |
| 机械寿命(循环) Mechanical endurance times | 6000 | 6000 | 6000 | 4000 | 2500 | 2500 |
| 转换动作总时间(S) Total transferring times | 1-35 | | | | | |
| 手动自动转换 Automatic transfer in manual | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 常用电源设定 The working power setting | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 延时控制 Delay control | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 过压转换 Overvoltage transfer | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 欠压转换 Undervoltage transfer | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 断相转换 Open-phase transfer | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 指令(消防)复位 Conductor reset | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 发电机启动和卸载 Generator starting and shutdown | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 过载、短路保护 Overload、shortcircuit protection | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

外形及安装尺寸

Outline and mounting demensions

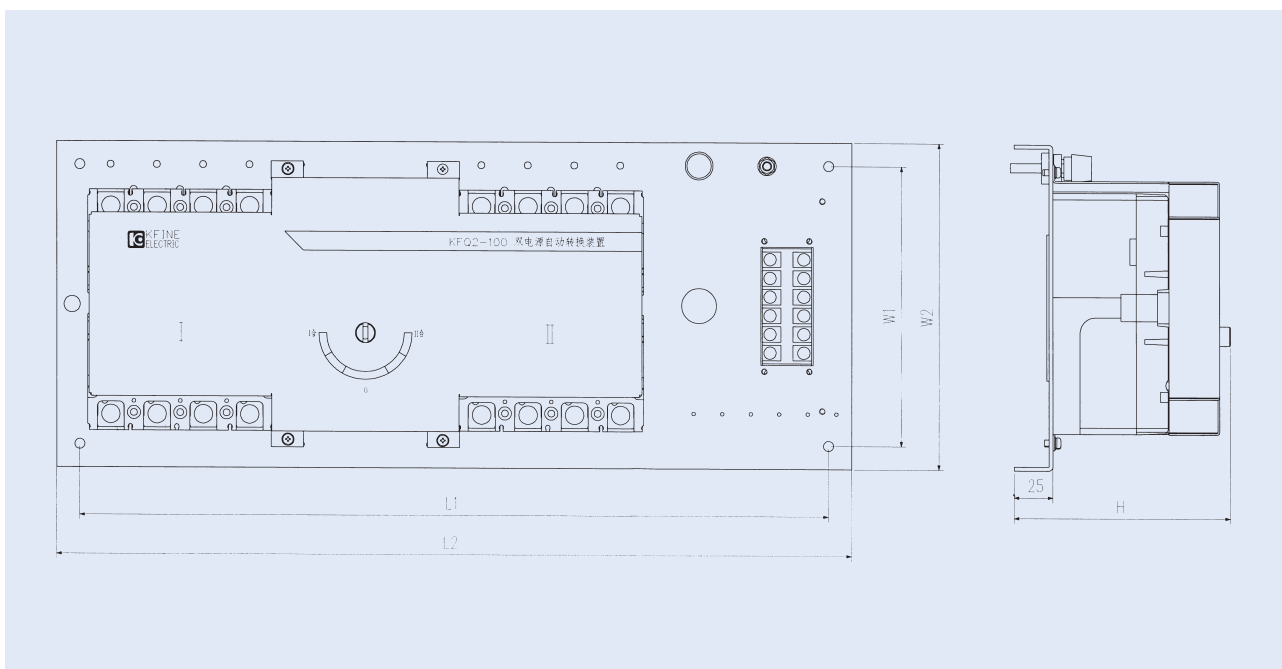
一体式外形

Ensemble outline



分体式外形

Separate outline



外形及安装尺寸

Outline and mounting dimensions

| 规格 Type | 尺寸 Size | L1 | | W1 | L2 | | W2 | H |
|------------|------------|-----|-----|-----|-----|-----|-----|------|
| | | 3P | 4P | | 3P | 4P | | |
| KFQ2-M63 | | 410 | | 180 | 440 | | 210 | <140 |
| KFQ2-M100 | | 485 | | 180 | 515 | | 210 | |
| KFQ2-63 | | 445 | | 180 | 475 | | 210 | <162 |
| KFQ2-100 | | 485 | | 180 | 515 | | 210 | |
| KFQ2-250 | | 540 | | 180 | 570 | | 210 | |
| KFQ2-400 | | 585 | | 300 | 615 | | 330 | <197 |
| KFQ2-630 | | 720 | 790 | 300 | 750 | 820 | 330 | |
| KFQ2-800 | | 720 | 790 | 300 | 750 | 820 | 330 | |

注：其中KFQ2-M63/M100所用断路器为本公司微型断路器

Note: The circuit breaker which is used in KFQ2-M63/M100 is the MCB of our company

H尺寸为同一断路器壳架等级中的最高值。

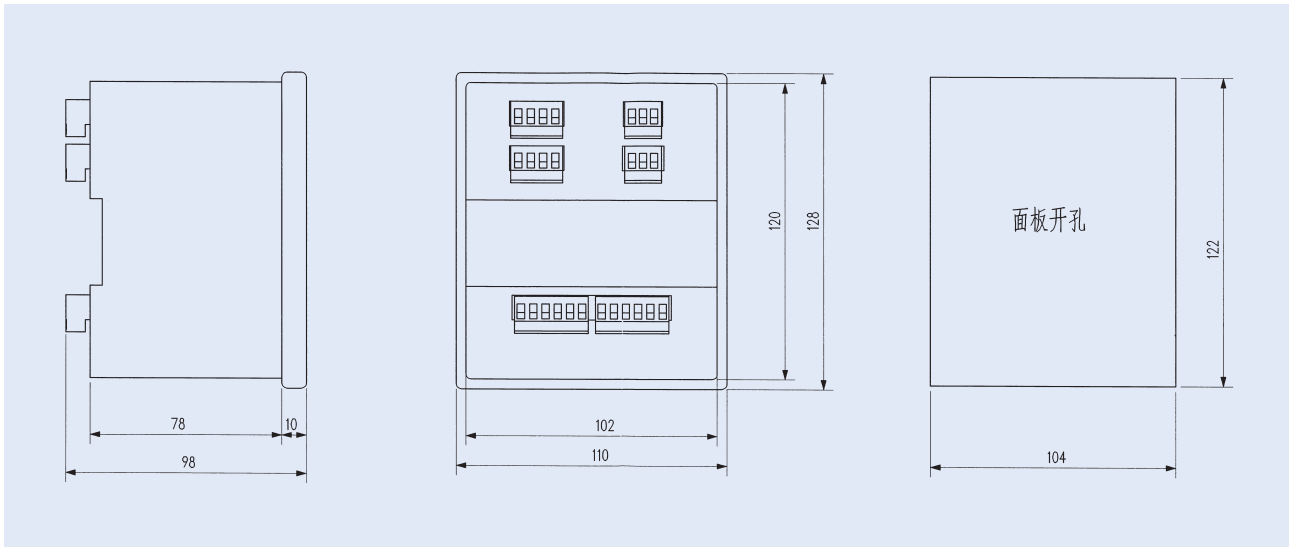
H stands for the highest value for the breakers with the same frame current.

自动控制器外形及安装尺寸

Automatic controller outline and mounting sizes

- KFQ2-M自动控制器外形及安装尺寸

KFQ2-M Automatic controller outline and mounting sizes

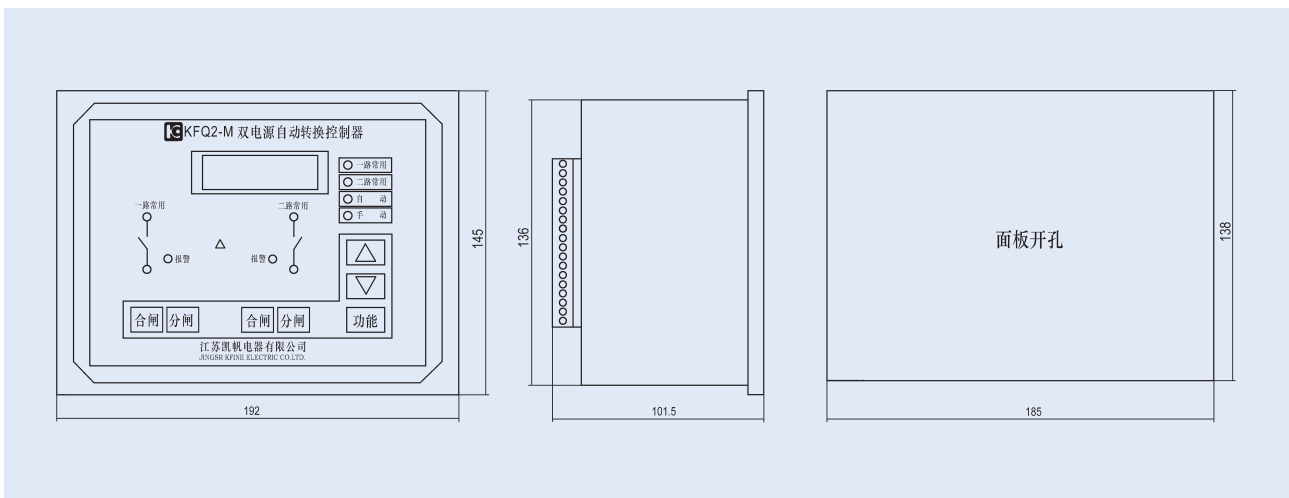


注 仅当选购装置为分体式时，需进行安装面板开孔。

If the ATSE which you order is separate, A door should be made in the mounting plate for the controller.

- KFQ2-H型智能控制器外形及安装尺寸（仅用于分体式）

KFQ2-H intelligent controller outline and mounting sizes

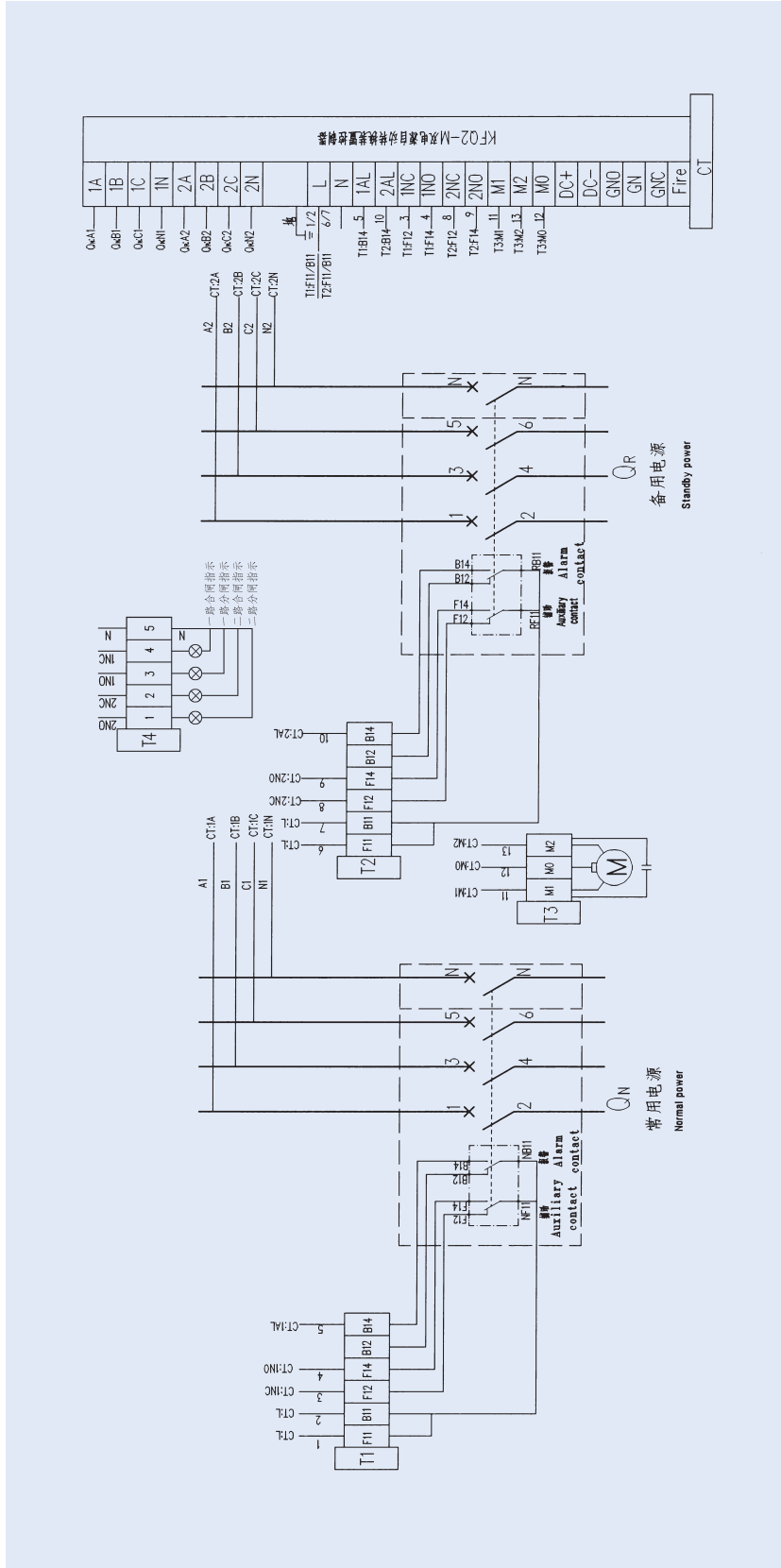


注 分体式时控制器与装置本体用1.8米电缆连接，电缆长度超过1.8米时，请在订货时注明。

The controller connects with the switch via a cable 1.8m at length, In case of the cable over 1.8m, please notice while making order.

电气原理接线图 Electric wiring diagram

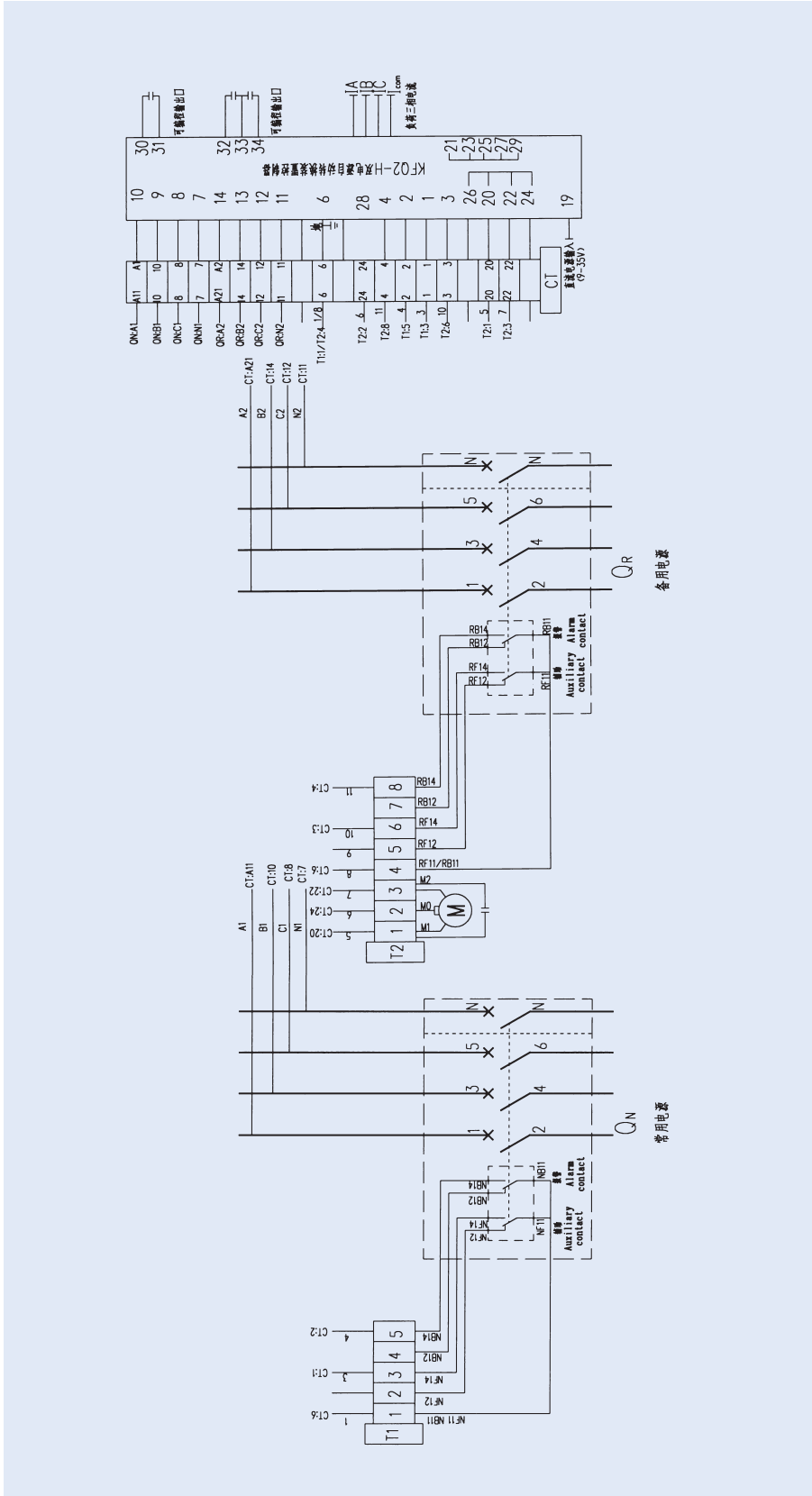
● KFQ2-M 型自动控制器接线图
The wiring diagram of KFQ2-M automatic controller



注

DC+, DC-: 10~24V 外接直流电源的正负极端子。
DC+, DC-: External DC power (10~24V, 用于油机启动)
在电网一发电时, 使用外接直流电源
If the power supply is electrical net-generator an power of DC is required
Fire: 220V 双分信号输入节点 (Fire-Alarm), 可用于消防复位。
GNO, GNC, GN: 发电机启动信号输出节点, 为一无源信号输出节点。当控制器用于电网-发电机系统中, 如果电网出现故障, 此时可通过此节点发送启动信号给发电机。
对于三极断路器, N1, N2 中性线接至装置本体N极接线柱上
For the two breakers of three poles, the neutral lines N1 and N2 should connect with N poles of the switch

●KFQ2-H 型智能控制器接线图
The wiring diagram of KFQ2-H automatic controller



注

2、4可接外部报警如：消防报警等。
2、4 can connect with external alarm etc: fire alarm, Q1、Q2 can connect with "opening and closing" indicator light
在电网一发电时，使用外接直流电源
If the power supply is electrical net-generator an power of DC is required
对于三极断路器，N1、N2中性线接至装置本体N极接线柱上
For the two breakers of three poles, the neutral lines N1 and N2 should connect with N poles of the switch

工作原理

当两路电源电压正常，状态设置键置于“一路常用”或“二路常用”档时，控制器将指定常用的一路合上，而另一路断开。以保证所指定的电源接通负载。当常用电源电压异常（过压、欠压、缺相）时，在预定延时时间内将负载从常用电源转换至备用电源（预定延时时间可调），并在常用电源恢复正常时，将负载返回切换至常用电源。如果状态设置键置于“无常用”时，负载将不返回接至恢复正常的电源，只有当备用电源异常时，才将负载返回切换至常用电源。同时，对负载具有保护功能。当负载过载或短路时，KFQ2发出报警信号，并回到中间位，断开故障电路。还可接入外部报警，如：消防报警。若供电系统为电网—发电供电时，控制器应按接线图接入9-35V的直流电源，以保证自动控制器在电网停电而发电机尚未供电时发出发电机启动和卸载信号。

注意事项

接入两台断路器的电源相序必须一致，两路电源的各自的N线不能接错！

保护接地应可靠，以确保使用安全！

订货须知

用户在订货时，应写明双电源转换装置的型号、规格。

举例：KFQ2R-100SH/4300Y 额定工作电流为20A。

即：断路器壳架等级电流为100A、额定工作电流为20A、分断类别为S、4极、配电用、智能型自动转换控制器、自投自复、一体式KFQ2双电源自动转换装置。

注：用户订购额定工作电压为690V时，需要特殊说明。

Working principle

When voltage of two circuit power supply is normal and functional parts setting on "Line I working" or "Line II working". Now, the controller will assign a commonly used line to close, but another line break off, to ensure working power supply switching-on load. When the working power supply voltage is abnormal (over-voltage, short-voltage, lacks of phase), with pre-setting delay time, transfer the load from working power supply to standby power supply (pre-setting delay time is adjustable), when the working power supply restore to normal condition, the load return back to working power supply. If functional parts setting on "None Master", the load can not return back to working power supply. Only the standby power supply is abnormal, it will return back to working power supply. In addition, KFQ2 has the protection function to the load. When the load has the overload or short-circuits, the automatic controller sends out alarm signal, and returns to the middle position, breaks off the trouble circuit. KFQ2 also can be connected with exterior warning, for example: the fire fighting alarm. If the power supply system is electrical net - generating and supplying electricity, the controller should be connected with the 9-35V DC power according to the wiring diagram to assure the automatic controller send out the generator starting signal when electrical net has a power in trouble and the engine doesn't supply power yet.

Notice

Phase sequence of the two breakers should be same. Pay attention to the two different neutral lines of the two breakers.

To ensure safety, grounding should be in good condition.

Notice for ordering

When ordering, the user shall be give clear indication of type, size.

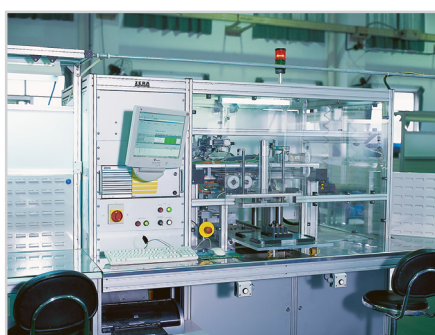
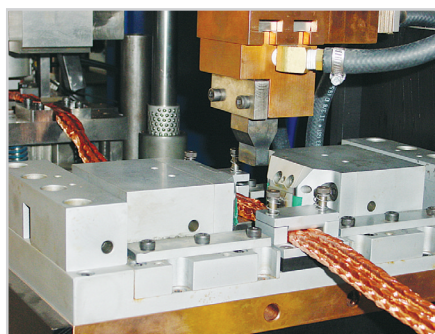
Example: KFQ2R-100SH/4BY rated operational current is 20A

For ordering KFQ2 duplicate power supply automatic transfer switch of frame current 100A, rated operational current is 20A, breaking type is "S", 4 poles, B type, for distribute use, intelligent automatic transfer controller, self-throw-self-restoring

Note: It should be indicated When ordering product which rated operational voltage is 690V

Equipment

完善的制造和检测设备



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