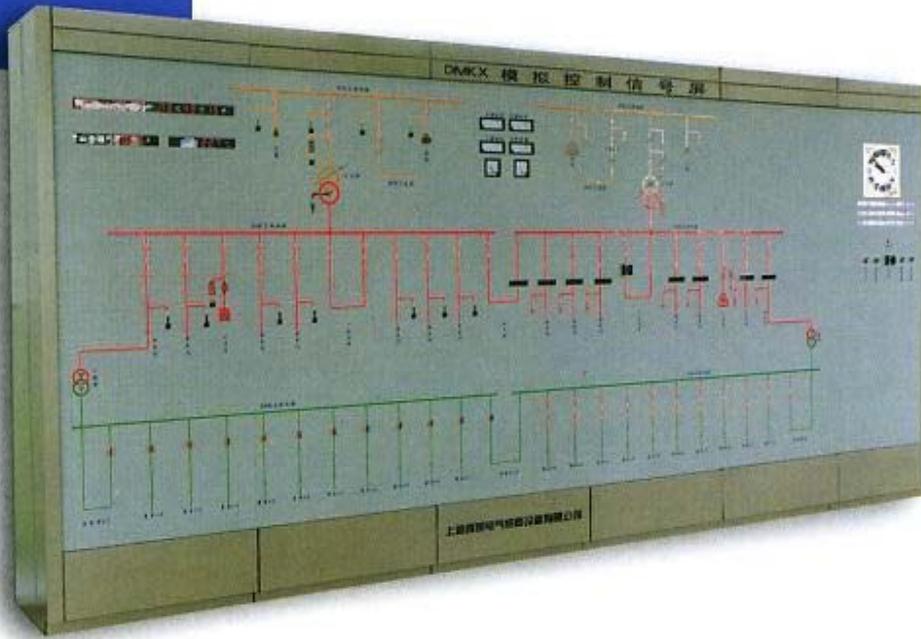


GMKX

模拟控制信号屏

Manual for GMKX signal panel of simulative control



QI-KAI ELECTRIC



上海奇凯电气成套设备有限公司
SHANGHAI QI-KAI ELECTRIC EQUIPMENT CO., LTD.

QI

公司简介



Brief Introduction

上海奇凯电气成套设备有限公司座落在上海西南距七宝镇 4.5 公里的松江区九亭镇九里亭工业园区内，占地 12 亩，标准厂房二层，总面积 2000M²，办公楼三层，总面积 1000M²，其中绿化面积 4500 M²。

奇凯电气公司主要生产直流屏、继电保护屏、交流屏、模拟屏、充电浮充电装置和各类蓄电池的组装

奇凯电气公司是国家经贸委发布的《全国城乡电网建设与改造所需主要设备产品及生产企业推荐目录》的生产厂家公司，通过德国 TUV 公司的 ISO9001 质量保证体系的国际认证。

奇凯电气公司技术力量雄厚，大专以上的技术人员占公司员工的 60% 以上，其中有原在航天部立一等功、二等功和国外学有所成的高级技术人员。

技术工人有上海劳动局颁发的高级证书，最高为八级电工，公司检测系统齐全，全部实行智能化。

奇凯电气公司的产品外形新颖，具有独特之处，产品有分低、中、高档的各种型式，供客户根据需要选择。本公司特别擅长各种蓄电池的筛选、匹配，使之与整机能处于优良的匹配工作状态，整机保用一年，终身保修。售后服务响应时间承诺外地用户 72 小时，本市用户 24 小时。

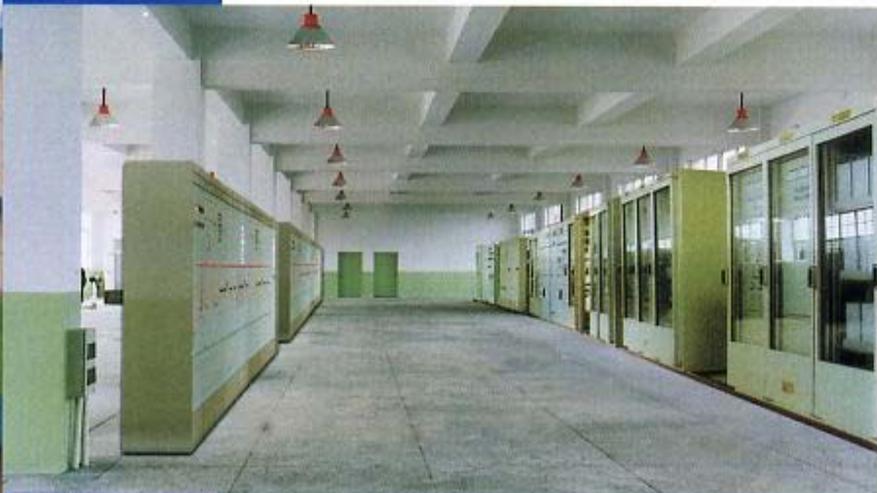
Shanghai Qi-kai Electric Equipment Co., Ltd. is located at Jiu-Li-Ting industrial zone, Jiu-Ting Town, Song-Jiang district. It occupies area of 12 mu, 4.5 Km from Qi-Bao Town, southwest in Shanghai. We possess standard two-floor factory, occupying total areas 2000m², and three-floor office, 1000m², including viewsceance areas 4500m².

Qi-kai Electric Company's main products are direct current panels, relay protecting panels, alternating current panels, mimic diagrams and charge-bypass chargers, moreover, we provide services for battery assembly.

Qi-kai Electric Company is a manufacturer listed in endorsed contents of main facilities and products for the construction and reconstruction of electricity net in towns and villages all over the country by China Trade and Economy Ministry. We have got the international quality certificate of ISO9001 from TUV, Germany.

Qi-Kai Electric Company has abundant technical source. Some of them worked previously in the Ministry of spaceflight, won the first or second prize for their contribution toward development of spaceflight. Some of them returned from overseas and have rich experience in this field. Moreover, technicians all have graduated from universities or colleges. Technical workers all have the advanced certificate issued by laboring bureau, the highest level of them is grade 8. We have complete supervising system and all operations are intellectualized.

Qi-kai Electric Company provides novel products with specific features, which are divided into low, medium and high level for customer selections particularly. We can ensure whole machine working in the most optimum status through our distinctive features of the selection and match of batteries. The whole machine is guaranteed one year and long-life maintenance. We promise that responding time of after-sales service is within 24 hours in Shanghai, 72 hours outside.



GMKX

模拟控制信号屏

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1. 概述

GMKX系列模拟控制信号屏综合国内外同类产品之特点，结合国内外目前大型现代化电站实际运行情况和满足当前信息化技术发展需要，选用目前国内外最合适、高可靠的元器件和本公司自行研制的核心控制部件而自行开发研制成功的典型产品，无论在技术上、功能上还是结构上都处于国内领先。

GMKX系列模拟控制信号屏的屏面以25x25mm为一个模数，以积木形式镶嵌而成，模块材料用进口阻燃塑料注塑成型，屏面的模拟网络由节能型LED发光二极管光带及精密移印相结合组成，屏面的开关、表计、指示灯都与模数的乘积吻合。因此具有外观新颖美观、操作简单、维修方便等优点。

本产品是一种完美而理想的模拟控制信号屏，它可手动模拟现场设备操作，也可同中央控制单元联网，动态地、实时地反映现场设备运行的参数和状态，适合于大型现代化电站对现场设备运行进行监测和显示之需求。

2. 特点

2.1 国内独特的新颖外形结构和技术领先的电气技术。

2.2 联网控制，适合现代办公自动化的场所。

2.3 高可靠性整机，采用进口阻燃工程塑料注塑成型25x25mm的模数镶嵌而成，作为屏的衬底，具有防腐、防火的作用。采用高品质，最新元器件并经过严格测试和筛选，光带色彩明亮，清晰，丰富。

2.4 实行现场总线联网通讯，采用RS485接口，现场信号和参数数量不受限制。

2.5 可手动模拟现场设备操作，也可与中央控制单元联网通讯或二者组合使用。

2.6 整屏可以是直面式，也可以是弧形式，全部采用数字化技术，表计、光带、光字牌、时钟等与屏完美地融为一体，气派非凡。

2.7 接线简捷明了，维护简便。

3. 使用环境

3.1 海拔高度不超过2000米

3.2 环境温度-15℃—+40℃

3.3 日平均相对湿度不大于95%，月平均相对湿度不大于90%

3.4 无强烈振动和冲击，无强电磁场干扰。

3.5 周围无严重粉尘，爆炸危险介质，腐蚀金属和破坏环境绝缘的有害气体，导电微粒和严重的霉菌。

3.6 垂直倾斜度不大于5度

4. 基本参数

4.1 整机工作电压 $220 \pm 10\%V$ $50 \pm 0.5\%HZ$ 或110VDC或220VDC

4.2 光带、光字牌供电电压 24V DC

4.3 模块工频耐压 $> 2.5KV$

4.4 模块绝缘电阻 $> 2M\Omega$

4.5 相比漏电起痕指数 CTI > 100 阻燃

4.6 光带耗电 1.5MA/单元

4.7 光带亮度 $> 60cd/m^2$

4.8 模块模数标准 25x25mm²

5. 主要技术数据

5.1 数据传输速率 1200bits/s 2400 bits/s 4800 bits/s 7200 bits/s

5.2 发光管寿命 > 70000 小时

5.3 数码管寿命 > 70000 小时

5.4 元器件寿命 > 100000 小时

5.5 通讯协议、标准协议、自定义协议和用户协议

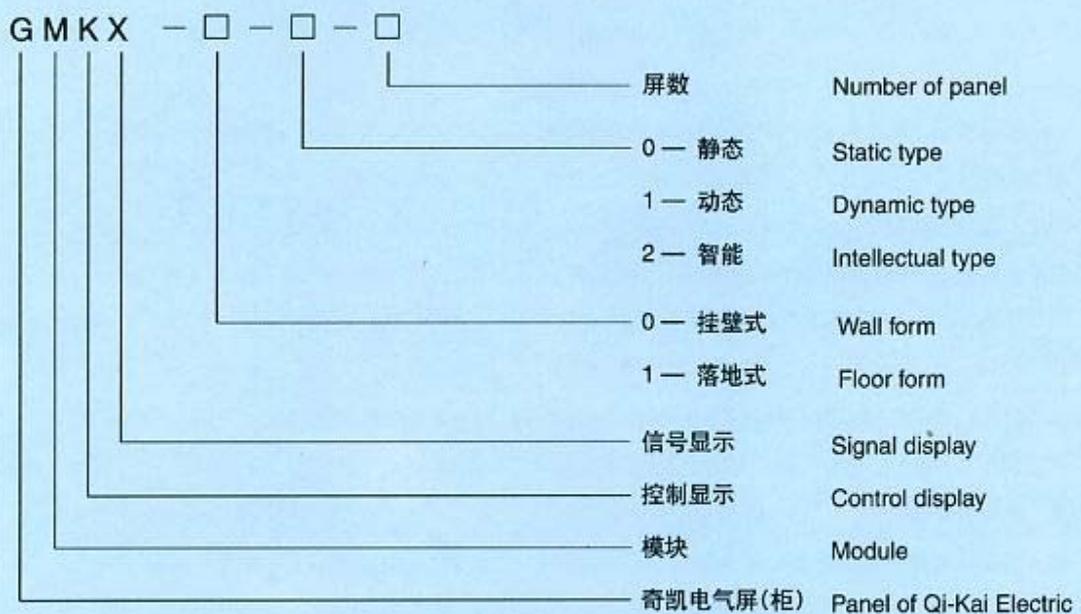
5.6 光带、光字牌、表计造型、颜色、分用户定义、生产厂方定义

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模拟控制信号屏

Manual for GMKX signal panel of simulative control

6. 产品型号



如 GMKX — 1 — 2 — 6

表示：由 6 屏组成的智能落地式模拟控制信号屏

7. 组成

7.1 屏体形式选择

- a. 直平面式，框架结构，两边侧板拆卸式，双开后门形式
- b. 弧形式，框架结构，两边侧板拆卸式，双开后门形式
- c. 挂壁式，铝合金边框，挂壁式

7.2 屏体拼砖选择

进口高档模块防火、防腐拼砖，标准尺寸 25x25mm²

7.3 光带、光字牌、表计选择

光带、光字牌、表计、尺寸、造型、亮度、颜色

7.4 报警选择

电铃、电笛、电铃预报警、电铃事故报警

7.5 工作电源

24VDC

8. 产品的功能



8.1 动态而实时地接受中央控制单元传输的现场一次设备和二次设备的运行参数和状态信号，并形象美观地在屏上表示，实现数字化和信息化。

8.2 可进行手动模拟操作或手动模拟操作与联网操作合二为一。

8.3 现场一次设备和二次设备的故障或预告故障信号用光字牌表对运行状态进行监测

8.4 挂壁式可实现操作前的模块操作并显示实际一次设备的运行状态。

8.5 时钟安全运行天数、温度和湿度等非电量参数也可由中央控制单元输出，每隔一段时间数据被刷新。

8.6 现场一次设备和二次设备可形象地用发光器件来绘制，运行状态由光带色彩变色形象地表示实际状态。

9. 备品备件

9.1 备品备件

本系列产品出厂，均随整机提供全套图纸，使用说明书，出厂试验报告，合格证、可带插拔的备件、专用工具、易损器件。

9.2 互换性

本系列产品的光带、光字牌、表计等全都是全系列通用，具有很好的互换性。

10. 屏体的外形尺寸、安装尺寸、颜色

10.1 外形尺寸

10.1.1 挂壁式

根据用户的模式状态的要求，确定高×宽实际尺寸

10.1.2 落地式

a. 2360 (高) × 800 (宽) × 550 (深)

b. 2260 (高) × 800 (宽) × 600 (深)

c. 屏数根据要求可由 N 个屏拼装组合

10.2 安装尺寸

680 (宽) × 340 (深)

10.3 颜色

本系列产品颜色按照国际 GB3181—82 标准

常用色标编号如下：

B05 淡灰色 B05 海灰色 Y01 驼灰色

用户也可根据要求提供其它的色标编号或色板。

11. 订货

用户订货需提供如下参数

a. 现场一次设备和二次设备的连接图

b. 各种设备的电参数数量名称，故障信号名称，进线出线的名称

c. 通讯方式，可以自定义，标准定义和厂方定义

d. 制造方根据用户的设计图和 a.b.c. 三条内容向需求方提供计算机的画稿，经需求方确认后设计制造。

e. 屏体的形式、外形尺寸、颜色

f. 现场设备的光带表示，可参照厂家提供实样

g. 交货地点、运输方式、包装要求

h. 如有特殊要求，本公司可另行设计，满足要求。

12. 包装、运输、现场服务

12.1 包装

本系列产品包装分简易包装和木箱包装

12.1.1 简易包装

屏体套塑料袋，再加套毛毯套，充电浮充电装置，套塑料袋，电池用周转箱，其中毛毯套要回收，此包装适合于市内用户，包装全部免费。

12.1.2 木箱包装

屏体套塑料袋，木箱内壁有防雨油毛毡，屏体与木箱之间衬发泡塑料板，屏体与木箱底板用螺丝固定，木箱采用满板形式，充电浮充电装置、电池全部采用木箱包装，此包装适合于外地用户，所有包装材料不予回收，包装费用由用户承担。

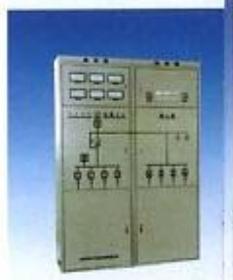
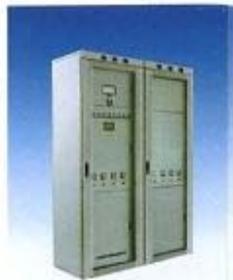
12.2 运输

a. 产品运输屏体，每一屏的模块全部拆卸后运输到现场后由本公司调试人员安装。

b. 本市用户免费送货到现场，外地用户本公司代办运输

12.3 现场服务

本公司负责现场免费调试开通，现场培训。



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1. General description

GMKX serial signal panel of simulative control integrates domestic and overseas features of same serial products. We develop this typical product originally in terms of the practical running situation of current substations. All components are of high reliability, including some important controlling parts developed by us independently. At present, this serial product takes a lead role in domestic industry on whatever technology, function, and structure.

The plane of GMKX serial signal panel of simulative control is inlaid by mosaic brick of 25x25mm², which adopts imported fireproof plastic. The simulative network on plane is made up of energy-saving LED light band and precise printing. The switch, meter, and indicator on the plane match with mosaic brick, so the appearance is novel and attractive, operation is simple, and maintenance is convenient.

Our product is a perfect and ideal signal panel of simulative control. It can simulate manually on-the-spot facility operation, and can also form network with center controlling unit to show these operating parameters and statuses dynamically in real-time mode. It is widely applied to monitor and show on-the-spot facility operation in large modern substation.

2. Features

- 2.1 Unique and novel structure appearance, advanced electrical technology.
- 2.2 Controlled by network, adaptive to high-level office automation.
- 2.3 Whole machine of high-reliability adopts flameproof engineering plastic of 25x25mm² module, which is imported, as the ground of panel. It has anti-rot and anti-fire functions. The newest components with high quality are selected and tested strictly. Colors of light band are bright, clear, and abundant.
- 2.4 Communication with on-the-spot bus by network, adoption of RS485 interface, number of on-the-spot signal and parameter is unlimited.
- 2.5 It can manually simulate on-the-spot facility operation, and can also form network with center controlling unit. Another way is to combine the two methods.
- 2.6 Adoption of digital technology. Meter, light band, light-word plate, and clock are integrated as one perfectly. This signal panel can be plane form or arc form.
- 2.7 Concise connection, convenient maintenance.

3. Working environment

- 3.1 Not higher than 2,000 m above sea level.
- 3.2 Circumstance temperature: -15°C ~ +40°C
- 3.3 Mean daily relative humidity not higher than 95%, mean monthly relative humidity not higher than 90%.
- 3.4 No hard shock or beat, no strong electromagnetic field interference.
- 3.5 No heavy dirt, no dangerous medium causing explosion around, no harmful gas which can corrode metal or destroy insulation, no conductive particles or serious moulds.
- 3.6 Vertical gradients not higher than 5 degree.

4. Basic parameters

- 4.1 Operating source of whole machine: 220 ± 10% , frequency: 50 ± 0.5 HZ; 220VDC, 110VDC
- 4.2 Voltage for light band and light-word plate 24VDC
- 4.3 Voltage endurance of module at working frequency > 2.5KV
- 4.4 Insulating resistance of module > 2 MΩ
- 4.5 CTI > 100 anti-fire
- 4.6 Consumption of light band 1.5 mA / unit
- 4.7 Brightness of light band > 60 cd / m²
- 4.8 Dimension of module 25x25 mm².

5. Main technical data

- 5.1 Data transferring rate: 1200 bits/s, 2400 bits/s, 4800 bits/s, 7200 bits/s.
- 5.2 Luminous components lifetime: > 70000 hours.
- 5.3 Numerical components lifetime: > 70000 hours.
- 5.4 Electronic component lifetime: > 100000 hours
- 5.5 Communication protocol, Standard protocol, self-decision protocol and customer protocol.
- 5.6 Light band, light-word plate, meter appearance, and color are decided respectively by customer or manufacturer.





6. Mode

For example: GMKX-1-2-6

Represents signal panel of simulative control consists of 6 panels with intellectual type and floor form.

7. Components

7.1 Selection of panel structure

7.1.1 Plane form, adoption of frame structure, two sideboards can be disassembled, two pieces of backdoors can be opened.

7.1.2 Arc form, adoption of frame structure, two sideboards can be disassembled, two pieces of backdoors can be opened.

7.1.3 Wall form, aluminum alloy side frame

7.2 Selection of panel and mosaic brick

Imported high-quality module with fireproof and rot-proof functions, 25x25 mm².

7.3 Selection of light band, light-word plate, and meter

Light band, light-word plate, meter, dimension, structure, brightness, and color.

7.4 Alarm selection

Electric bell, electric flute, prediction alarm of electric bell, failure alarm of electric flute.

7.5 Operating source: 24VDC, 5VDC

8. Product functions

8.1 This serial product receives operating parameters and status signals of primary and secondary facilities on the spot from center controlling unit dynamically in real-time mode. They are showed on the panel visually to realize functions of digit and information.

8.2 Manually simulative operation or combination of this one with forming network operation.

8.3 Light-word plate shows failure or failure prediction signal of primary and secondary facilities, and at the same time, monitors operating status.

8.4 This serial signal panel of wall form can perform simulative operation before practical operation, and show practical operating status of primary facility.

8.5 Non-electric parameters, such as clock, safety operating days, temperature and humidity, can be received from center controlling unit. The data is refreshed at regular interval.

8.6 Light band can visually show the primary facilities and secondary facilities on the spot, and their practical operating status.

9. Accessories and fittings

9.1 Accessories and fittings

This serial product leave factory with whole set of drawing, user guide, test report, eligibility certificate, spare parts of controller replaced with electricity on, specific tools and destructible device.

9.2 Interchangeability

Light band, light-word plate, meter, etc. are universal in this serial product. They are of high interchangeability.

10. External size, installing size and colors of the cabinet

10.1 External size (unit, mm)

10.1.1 Wall form

The practical dimension (height and width) is based on requirements of customer's simulative status.

10.1.2 Floor form

	Height	Width	Depth
a.	2360	800	550
b.	2260	800	600

c. Number of panel, N, is in terms of requirements.

10.2 Installing size: 680 (width)x340(depth)

10.3 Colors

The colors of this serial product comply with GB 3181-82. Usual colors are numbered as follows:

Light gray: B03 Sea gray: B05 Camel gray: Y01

Customers can provide other color number or color board in terms of special requirements.

11. Ordering

Ordering parameters provided by customers:

a) Electrical equipment connection diagram of primary and secondary facility on the spot.

b) Number and name of electric parameters, name of failure signal, input and output lines.

c) Communication mode. Self-decision protocol, standard protocol, and manufacturer protocol.

d) Manufacturer provides computer-based drawing in terms of previous clauses a), b), c) and customer's design drawing. When customer confirms these drawings, the design and manufacture are carried out.

e) Cabinet form, external size and color

f) Light band indication of on-the-spot facility can refer to samples provided by manufacturer.

g) Delivery place, means of transportation, packing requirements

h) Our company can also offer special service to meet special requirements made by customers.

12. Packing, transportation, and on-the-spot service

12.1 Packing

This serial product is categorized into simple packing and wooden packing.

12.1.1 Simple packing

The panel is covered by plastic pocket, and then covered by blanket. Charge-bypass charger are covered by plastic pocket. Batteries are put in the plastic box. The blanket should be return to manufacturer. This kind of packing is adaptive to customers within Shanghai. All package are free of charge.

12.1.2 wooden packing

The panel is covered by plastics pocket. There is waterproof cloth inside wooden box, and foamed plastic board between panel and wooden box. The panel is fixed by screws on the bottom board of fully-sealed wooden box. Charge-bypass charger and batteries adopt wooden packing. This kind of packing is adaptive to customers outside Shanghai. All packing do not returned to manufacturer. Customers should pay the fee of packing.

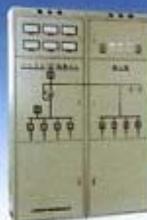
12.2 Transportation

a) Panel, and modules of each panel are all dissembled, and then transported to working site. Our company is in charge of installation.

b) It is free of charge for customers within Shanghai to send products to working site. We can offer product delivery for customers outside Shanghai with charge.

12.3 On-the-spot service

Our company provides favorable free-of-charge service for test and training on the spot.



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