

## 离网风光互补发电系统

### Off Grid Wind Solar Hybrid System

- PWM离网风光互补控制器  
PWM off grid wind solar hybrid controller
- MPPT离网风光互补控制器  
MPPT off grid wind solar hybrid charge controller
- 偏航变桨风机控制器  
Yaw variable pitch wind generator controller



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## 发展历程

## Development Course

### 稳定成熟 Stabilize

经过五年的积累，公司购买了独立产权的厂房，2009年公司迁址。

After five years of accumulation, the company purchased an independent plant and then relocation.

2004



### 创立初期 Beginning

公司成立，取得德明、泉能两项注册商标。

The company was established and obtained 2 trademarks of Deming and quanneng.

2009



2012



### 开拓市场 Develop Markets

成立外贸部，申请对外贸易出口权，开始拓展国外市场。

Established the Ministry of Foreign Trade, applied for foreign export trade rights, and started to explore overseas markets.



## 飞跃发展 Progress

拥有2项发明专利，6项实用新型专利，1项外观专利，成为高新技术企业。完成9001质量管理体系认证。

Owned 2 invention patents, 6 new type patents, 1 appearance patent, obtained high-tech enterprises.

Completed 9001 quality management system certification.

## 展望未来 Future

德明致力于绿色节能事业。弘扬工匠精神。立足市场，关注客户，提供优质产品，坚持科技进步，科学管理，规范经营，共同迎接新的挑战。

Deming is committed to the cause of green energy conservation. Carry forward the craftsmanship. Based on the market, paying attention to customers, providing high-quality products, and jointly meeting new challenges.

2015

2018

## 不断创新 Innovation

拥有4项发明专利，11项实用新型，2项软件注册权，再次成功认定高新技术企业。完成企业知识产权贯标。

Possess 4 invention patents, 11 new patents, 2 software registration rights, complete the implementation of corporate intellectual property standards.

## 公司简介

## Company Profile

济南德明电源设备有限公司是一家专注于风能、太阳能等可再生能源配套电源产品研发、生产、销售和服务的高新技术企业，且在行业内具有颇高的知名度及口碑，是中国风能协会的常任理事单位，参与了小型风力发电机国际标准的制定，是国家援助国外项目的指定产品，其中80%的产品用于出口。

2004年公司成立，并在同年取得“德明”和“泉能”两项注册商标；经过五年的积累，公司逐步稳定成熟，于2009年购买了独立产权的厂房，顺利迁址并开启新征程；2012年，成立外贸部，开始扩展国外市场；2015年，公司取得飞跃发展，拥有2项发明专利、6项实用新型专利、1项外观专利、获得“高新技术企业”认定，并取得ISO9001质量管理体系认证；2018年，公司不断创新，拥有4项发明专利权、6项实用新型专利权、2项软件注册权，再次成功认定高新技术企业；2019年7月10日通过知识产权管理体系认证；2020年，申请3项发明专利和6项实用新型专利。

德明主要产品有：离网风力发电机控制器、并网风力发电机控制器、太阳能充电控制器、风光互补控制器、风光互补路灯控制器、并网逆变电源、离网逆变电源、变频电源、稳压稳频电源等。

德明凭借一流的制造技术、先进的工艺装备、雄厚的技术力量、完善的检测手段及人才管理等优势，在近三年的时间中，研究开发项目17项、完成科技成果转化16项，全部自行投资实施转化，平均每年科技成果转化5.3项。

德明以技术创新为企业发展的根本，年研发费用不少于销售收入的20%，不断探索新能源电源领域的先进技术，如风力发电机电磁控制技术、MPPT技术、偏航风力发电机控制技术、风光互补系统物联网监控等。现已拥有五项核心技术的国家发明专利、十二项实用新型专利，且风力发电机控制技术已经达到国际先进水平。

为确保用户安全、可靠使用，德明所有产品质量保证体系完善，已拥有9001认证，并实行全面、全员、全过程的质量控制，出厂前逐台严格测试，各项性能优于国家有关标准，且全部产品均已通过欧盟CE认证。

现公司产品已为国内著名厂商首选配套产品，产品出口德国、日本、美国、英国、加拿大、澳大利亚、埃及、巴西、沙特阿拉伯等120多个国家和地区，在国内外市场上树立了良好的形象。

立足市场，关注客户，提供优质产品，坚持技术进步，科学管理，规范经营是德明成功的关键，公司将共同迎接新世纪的挑战，外塑好形象，全方位立体式构筑现代化企业的蓝图。





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Jinan Deming Power Equipment Co., Ltd. is a high-tech enterprise focusing on research, production, sales and service of renewable energy power products such as wind energy and solar energy. With a high reputation in the Association and participates in the formulation of international standards for small wind turbines. It is a designated product for state aid for foreign projects and 80% of products are exported.

The company was established in 2004 and acquired two registered trademarks of "Deming" and "Quanneng" in the same year. After five years of accumulation in 2009, the company gradually matured steadily. The company purchased factory buildings with independent property rights, and the company relocated to start a new journey. In 2012, the Ministry of Foreign Trade was established to open up markets and begin to expand foreign markets. In 2015, the company achieved rapid development, with 2 invention patents, 6 utility model patents, 1 appearance patents, obtained the "high-tech enterprise certificate" recognition, and obtained the ISO 9001 quality management system certification. In 2018, the company continued to innovate, with four invention patents, six utility model patents, and two software registration rights, and again successfully recognized high-tech enterprises. On July 10, 2019, it passed the certification of intellectual property management system. In 2020, three patents for invention and six patents for utility models were applied for.

Our main products are off grid wind turbine controller, On grid wind turbine controller, solar charging controller, wind-light complementary controller, wind-light complementary street lamp controller, On grid inverter, off grid inverter, frequency converter, stabilized frequency power supply, etc.

With first-class manufacturing technology, advanced technology and equipment, strong technical force, perfect testing means and personnel management, Deming has carried out 17 research and development projects in the last three years, completed 16 transformation of scientific and technological achievements, and invested all by itself to implement the transformation, averaging 5.3 transformation of scientific and technological achievements each year.

Deming takes technological innovation as the basis of enterprise development, annual R&D cost is not less than 20% of sales revenue, and continuously explores advanced technologies in the field of new energy power sources, such as electromagnetic control technology for wind turbines, MPPT technology, yaw wind turbines control technology, wind and solar complementary system Internet of Things monitoring, etc. Now it has five national invention patents for core technologies, twelve utility model patents, and the control technology for wind turbines has reached the advanced international level.

Deming has a complete product quality assurance system and 9001 certification. Perform comprehensive quality control, rigorous test one by one, each performance is superior to the relevant national standards, all products have passed the EU CE certification. Ensure user safety and reliable use. Now the company's products have been the preferred supporting products for the well-known domestic manufacturers. The products export to more than 120 countries and regions, such as Germany, Japan, the United States, the United Kingdom, Canada, Australia, Egypt, Brazil, Saudi Arabia, and have established a good image in the domestic and foreign markets.

We are based on the market, pay attention to customers, provide high-quality products, adhere to technological progress, scientific management and standardized operation are the key to our success. We will jointly meet the challenges of the new century, shape a good image outside, and construct the blueprint of a modern enterprise in an all-round and three-dimensional way.





## 关于我们 About Us

### 专业、专注 Professional Technical Team

德明成立于2004年，是国内成立较早的专业研发、生产、销售风光互补控制系统的厂家。我们拥有专业的技术团队，理论及实践经验丰富。公司成立以来，我们专注做一件事情——风光互补控制和逆变。

Founded in 2004, Deming is an early manufacturer specializing in the research, development, production and sales of wind solar control systems in China. We have a professional technical team with rich theoretical and practical experience.



### 工匠精神 Craftsmanship Spirit

每个元器件使用前逐一筛选，每台设备出厂前逐一检验。从选材到生产的每道工序，我们将一丝不苟、精益求精的工匠精神融入每一个环节，打造一流产品。

Each component is strictly tested before production and each product must pass aging quality test before delivery.



### 创新 Innovation Ability

产品不断创新，现拥有多项发明专利。全部产品具有了远程通讯功能，所有数据接入物联网实现云存储。

Our products are constantly innovating and now have a number of invention patents. All products have the function of remote communication, and all data are connected to the Internet of Things for cloud storage.



### 专业的系统集成 Integrated System Specialist

德明是中国较早的专业生产中小型风机控制器的工厂。我们跟多家优秀风机工厂合作。所以我们可以提供优质的风光互补系统。

Deming is an early professional manufacturer of small and medium-sized wind turbine controllers in China. We cooperate with many excellent wind turbine factories. So we can provide high quality Hybrid wind solar system.



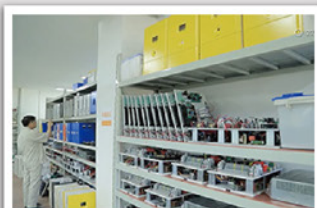




## 企业资质 CERTIFICATE



## 工厂 PRODUCTION MANAGEMENT



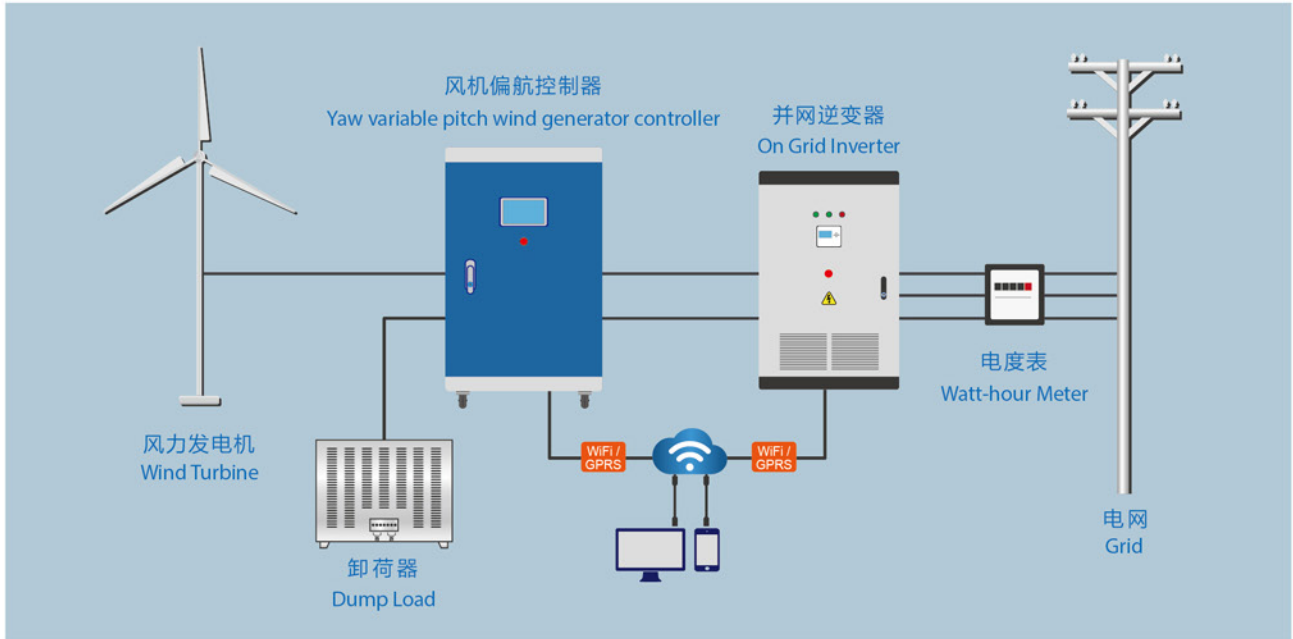
## 展 会 EXHIBITIONS



## 偏航变桨风机控制器

# Yaw Variable Pitch Wind Generator Controller

- 偏航控制采用西门子 PLC;
  - 西门子触摸屏;
  - 自带编码器;
  - 自带风速仪、风向仪;
  - 自带温度传感器;
  - 自带转速传感器;
  - 自带变频器(根据风机可选);
  - 含两套卸荷控制(PWM卸荷控制,三相卸荷控制);
  - 显示风力发电机电压、电流、功率等各项参数;
  - 偏航、变桨、解缆、风速、风向、转速、电压、电流控制可设置;
  - 可增加机械刹车控制;
  - 所有数据接入物联网,支持手机电脑网页监控;
  - 采用专利设计方案,省去了复杂的接线,安装、调试便捷。
- 
- The yaw control uses Siemens PLC;
  - Siemens touch screen;
  - Equipped with encoder;
  - Equipped with anemometer, wind indicator;
  - Equipped with temperature sensor;
  - Equipped with revolution speed transducer;
  - Equipped with converter(according to the wind turbine);
  - Including two sets of unloading controls(PWM unloading control, three-phase unloading control);
  - Display wind turbine voltage, current, power and other parameters;
  - Yaw, cable release, wind speed, direction and yaw Angle can be set;
  - Mechanical brake control can be added;
  - All data access to the Internet of things, supporting mobile phone and computer web monitoring;
  - Using the patent design which eliminates the complicated wiring and makes installation and debugging convenient.



**偏航变桨风机控制器**  
Yaw variable pitch wind generator controller



## 偏航变桨风机控制器显示屏

# Yaw Variable Pitch Wind Generator Controller Display Screen



## 自动界面

风向夹角 °      电    压      V  
风    速      m/s    电    流      A  
电缆圈数      圈      桨    距      °

自动运行

手动运行

上一页

下一页

系统界面

首页

## 手动界面

风向夹角 °      电    压      V  
风    速      m/s    电    流      A  
电缆圈数      圈      桨    距      °

左偏航

右偏航

自动运行

手动运行

桨距增加

桨距减小

上一页

下一页

系统界面

首页

## 解缆设置

电缆最大圈数+

圈

电缆最大圈数-

圈

电缆圈数

圈

圈数复位

返回

## 风向仪设置

左偏航角度范围

0° - °

右偏航角度范围

° -360°

返回

## 风速仪设置

启动风速

m/s

最大风速

m/s

返回

## FKJ-MPPT 离网风光互补控制器性能特点

### FKJ-MPPT off grid wind solar hybrid controller

### Performance Characteristics

- 本产品依照JB/T6939.1-2004号行业标准，GB/T19115.1-2003号国家标准生产，也可根据用户技术要求生产。
- 大屏LCD显示。图像直观查看控制器工作状态。丰富的数据显示：风机电压、电流、功率，太阳能板电压、电流、功率，蓄电池电压、充电电流、充电功率。
- MPPT最大功率跟踪，适用于多种风力发电机电压，提高发电效率。
- 采用两套卸荷控制系统，直流恒压卸荷+ 三相卸荷。
- 多种控制功能任意选择：风机电压控制、风机电流控制、风机转速控制（三种模式可选），电压、电流、转速可根据不同风机参数设置。
- 全面的保护功能：蓄电池防反接保护，蓄电池防脱节保护，蓄电池防损坏保护，过充保护，过压保护，过流保护，避雷保护。
- 手动刹车控制，保障风机安装、维护时的人员安全，遇极端天气提前保护风机，也可用于紧急情况下风机刹车。增加通讯功能，可远程控制风机刹车。
- ◆ 采用Modbus通讯协议。方便客户进行二次开发。
- ◆ 可通过RS485接口，使用自带上位机软件设置控制器的各项技术参数。
- ◆ 支持WIFI，GPRS，Ethernet。监控数据接入物联网平台，客户可通过PC端或移动端（兼容Android和os）实时监控风光互补发电系统的工作状态，支持历史记录查询。
- ◆ 可增加柴油机接口，自动控制柴油发电机启动和停机。
- ◆ 控制器根据风力发电机的种类，可增加偏航控制、变桨控制、机械折尾控制、机械刹车、液压刹车、电磁刹车，等多种制动控制功能。

### 应用领域：

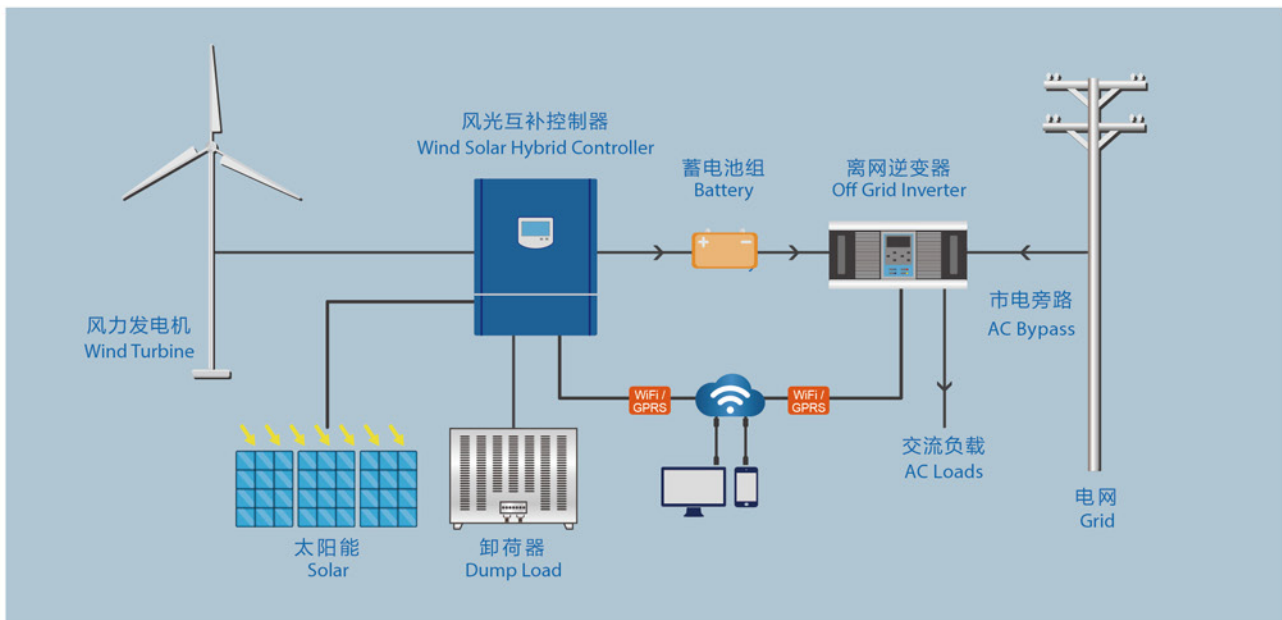
- 用于边远无电地区如高原、海岛、牧区、边防哨所等军民生活用电。
- 用于交通领域如航标灯、交通/铁路信号灯、交通警示/标志灯、路灯、高空障碍灯、高速公路/铁路无线电话亭、无人值守道班供电等。
- 用于通讯/通信领域：无人值守微波中继站、光缆维护站等。
- 风光互补电站：风光(柴)互补电站、各种大型停车场充电站、家庭小型发电站、工厂小型发电站等。
- 政府形象工程



- The product is manufactured according to the JB/T6939.1-2004 industrial standard and GB/T 19115.1-2003 national standard, also could be customized according to users' technical requirements.
- Big LCD Display. View the operating status of the controller visually. Rich data display: wind turbine voltage, current, power, solar panel voltage, current, power, battery voltage, charging current, charge power.
- MPPT maximum power tracking, suitable for a variety of wind generator voltage, improve power generation efficiency.
- Two sets of control systems: DC constant dump load and three-phase dump load system.
- Multiple control functions are optional: wind turbine voltage control, wind turbine current control, wind turbine speed control, (three modes are optional), voltage, current, speed can be set according to different wind turbine parameters.
- Comprehensive protection function: battery anti-reverse connection protection, battery anti-disconnection protection, battery anti-damage protection, overcharge protection, over voltage protection, over current protection, lightning protection.
- Manual brake control, to ensure the safety of the installation and maintenance of the fan, advance protection of the fan in extreme weather, can also be used in emergency fan brake. Add communication function, remote control wind turbine brake.
  
- ◆ Adopt Modbus Communication protocol. Convenient to carry out the secondary development.
- ◆ Adjusting the technical specification via RS485 is available. Convenient to adjust the different wind turbines for professional customers.
- ◆ Support WIFI, GPRS, Ethernet. The monitoring data is connected to the Internet of Things platform, and the client can monitor the working status of the wind solar hybrid power generation system in real time through the PC or mobile terminal (compatible with Android and OS), and support historical record query.
- ◆ Can add diesel engine interface, automatically control diesel generator start and stop.
- ◆ According to the type of wind turbine, the controller can add yaw control, rotor control, mechanical tail control, mechanical brake, hydraulic brake, electromagnetic brake, and other brake control functions.

## Application Area:

- For remote areas without electricity, such as plateaus, islands, pastoral areas, border posts and other military and civilian living electricity.
- Used in the field of transportation, such as navigation lights, traffic/railway signal lights, traffic warning/sign lights, street lights, high altitude obstacle lights, highway/railway wireless telephone booths, unattended road class power supply, etc.
- For communication/communication field: unattended microwave relay station, optical cable maintenance station, etc.
- Solar wind hybrid power stations: solar wind (diesel) hybrid power stations, various large parking lot charging stations, household small power stations, factory small power stations, etc.
- Government image engineering.



产品展示及技术参数  
Product Type  
And Specifications



**1KW-5KW 风光互补控制器**  
**1KW-5KW Wind Solar Hybrid Controller**



**1-3KW 卸荷器**  
**1-3KW Dump Load**



**5KW 卸荷器**  
**5KW Dump Load**

## 2KW MPPT型离网风光互补控制器

### 2KW MPPT off grid wind solar hybrid charge controller

型号 TYPE	FKJ-MPPT 2KW			
风力发电机输入 Wind turbine input				
风力发电机额定功率 Wind turbine rated power	1000W DC24V	1500W DC36V	2000W DC48V	
最大控制功率/电流 Max. control power / current	2000W / 50A	3000W / 50A	4000W / 50A	
支持风力发电机输入额定交流线电压 Support the wind turbine to input the rated AC line voltage	AC48V/96V/120V ( L-L )			
直流卸荷电压 Dc dump load voltage	DC170V			
三相制动电压 Three-phase braking voltage	DC190V			
制动电流 Braking current	DC50A			
*发电机超速控制 *Generator Over speed	可选 Optional			
*超风速控制 *Wind Over speed	可选 Optional			
手动控制功能 Manual control function	风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)			
自动控制功能 Auto control function	卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load. * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake			
*光伏输入 *PV.Input				
额定功率 (可定制) Rated Power (Customizable)	<2000Wp ( 风力发电机额定功率 Rated power of the wind turbine + 太阳能板功率 Solar panel power ≤2KW )			
开路电压 DC Voltage DC	<200V			
电池参数 Battery parameters				
额定电压 DC Rated voltage DC	24V/36V/48V 自动识别 Automatic recognition			
支持电池类型 Support battery type	蓄电池、锂电池 Battery, lithium battery			
超压断开电压 Over voltage disconnect voltage	出厂值 Default	32V	48V	64V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
充电限制电压 Charging limit voltage	出厂值 Default	30V	45V	60V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
超压断开恢复电压 Over voltage reconnect voltage	出厂值 Default	30V	45V	60V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
均衡电压 Equalize charging voltage	出厂值 Default	29.2V	43.8V	58.4V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
提升电压 Boost charging voltage	出厂值 Default	28.8V	43.2V	57.6V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
浮充电压 Float charging voltage	出厂值 Default	27.6V	41.4V	55.2V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
提升恢复电压 Boost reconnect charging voltage	出厂值 Default	26.4V	39.6V	52.8V
	设置范围 Set range	18V-34V	27V-51V	36V-68V



均衡持续时间 Equalize Duration	出厂值 Default	120 minutes
	设置范围 Set range	0-180 minutes
提升持续时间 Boost Duration	出厂值 Default	120 minutes
	设置范围 Set range	10-180 minutes
<b>电气参数 Electrical parameters</b>		
额定充电电流 Rated charging current	50A	
蓄电池保险 Battery fast-acting fuse	80A 58V	
额定充电功率 Rated charging power	1200W/24V, 1800W/36V, 2400W/48V	
MPPT 范围 MPPT voltage range	(蓄电池电压 Battery voltage +2V) ~ 144V (25°C条件下 Under the condition of 25°C)	
跟踪效率 MPPT tracking efficiency	≥99.5%	
最大转换效率 Max. Conversion efficiency	98.5%	
满载效率 Full load efficiency	97.6%	
温度补偿系数 Temperature compensate coefficient	-3mV/°C/2V (默认 Default)	
静态损耗 Self-consumption	60mA/24V;50mA/36V;46mA/48V	
接地类型 Grounding	共负极 Common negative grounding	
<b>通用参数 General parameters</b>		
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output	
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester	
显示 Display	液晶显示 LCD+LED	
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、*累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed	
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)	
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet	
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)	
噪音 (1m) Noise (1m)	< 40dB	
制冷方式 Refrigeration	强制风冷 Air cooling	
<b>尺寸重量 Size / weight</b>		
控制器尺寸\重量 Controller size / weight	400*230*550mm 26.5Kg	
卸荷器尺寸\重量 Dump load size / weight	245*290*120mm 4.5Kg	

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

### 3KW MPPT型离网风光互补控制器

#### 3KW MPPT off grid wind solar hybrid charge controller

型号 TYPE	FKJ-MPPT 3KW			
风力发电机输入 Wind turbine input				
风力发电机额定功率 Wind turbine rated power	2000W DC24V	2500W DC36V	3000W DC48V	
最大控制功率/电流 Max. control power / current	4000W / 80A	5000W / 80A	6000W / 80A	
支持风力发电机输入额定交流线电压 Support the wind turbine to input the rated AC line voltage	AC48V/96V/120V ( L-L )			
直流卸荷电压 Dc dump load voltage	DC170V			
三相制动电压 Three-phase braking voltage	DC190V			
制动电流 Braking current	DC80A			
*发电机超速控制 *Generator Over speed	可选 Optional			
*超风速控制 *Wind Over speed	可选 Optional			
手动控制功能 Manual control function	风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)			
自动控制功能 Auto control function	卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load. * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake			
*光伏输入 *PV.Input				
额定功率 (可定制) Rated Power (Customizable)	<2000Wp ( 风力发电机额定功率 Rated power of the wind turbine+太阳能板功率 Solar panel power ≤3800W )			
开路电压 DC Voltage DC	<200V			
电池参数 Battery parameters				
额定电压 DC Rated voltage DC	24V/36V/48V 自动识别 Automatic recognition			
支持电池类型 Support battery type	蓄电池、锂电池 Battery, lithium battery			
超压断开电压 Over voltage disconnect voltage	出厂值 Default	32V	48V	64V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
充电限制电压 Charging limit voltage	出厂值 Default	30V	45V	60V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
超压断开恢复电压 Over voltage reconnect voltage	出厂值 Default	30V	45V	60V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
均衡电压 Equalize charging voltage	出厂值 Default	29.2V	43.8V	58.4V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
提升电压 Boost charging voltage	出厂值 Default	28.8V	43.2V	57.6V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
浮充电压 Float charging voltage	出厂值 Default	27.6V	41.4V	55.2V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
提升恢复电压 Boost reconnect charging voltage	出厂值 Default	26.4V	39.6V	52.8V
	设置范围 Set range	18V-34V	27V-51V	36V-68V

均衡持续时间 Equalize Duration	出厂值 Default	120 minutes
	设置范围 Set range	0-180 minutes
提升持续时间 Boost Duration	出厂值 Default	120 minutes
	设置范围 Set range	10-180 minutes
<b>电气参数 Electrical parameters</b>		
额定充电电流 Rated charging current		80A
蓄电池保险 Battery fast-acting fuse		125A/58V
额定充电功率 Rated charging power		2000W/24V, 3000W/36V, 4000W/48V
MPPT 范围 MPPT voltage range	(蓄电池电压 Battery voltage +2V) ~ 144V (25°C条件下 Under the condition of 25°C)	
跟踪效率 MPPT tracking efficiency		≥99.5%
最大转换效率 Max. Conversion efficiency		98.5%
满载效率 Full load efficiency		97.6%
温度补偿系数 Temperature compensate coefficient		-3mV/°C/2V (默认 Default)
静态损耗 Self-consumption		98mA/12V;60mA/24V;50mA/36V;46mA/48V
接地类型 Grounding		共负极 Common negative grounding
<b>通用参数 General parameters</b>		
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output	
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester	
显示 Display	液晶显示 LCD+LED	
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、*累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed	
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)	
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet	
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)	
噪音 (1m) Noise (1m)	< 40dB	
制冷方式 Refrigeration	强制风冷 Air cooling	
<b>尺寸重量 Size / weight</b>		
控制器尺寸\重量 Controller size / weight	400*230*550mm 29.1Kg	
卸荷器尺寸\重量 Dump load size / weight	245*290*120mm 4.5Kg	

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters



## 5KW MPPT型离网风光互补控制器

### 5KW MPPT off grid wind solar hybrid charge controller

型号 TYPE	FKJ-MPPT 5KW			
风力发电机输入 Wind turbine input				
风力发电机额定功率 Wind turbine rated power	2500W DC24V	3500W DC36V	5000W DC48V	
最大控制功率/电流 Max. control power / current	5000W / 100A	7000W / 100A	10KW / 100A	
支持风力发电机输入额定交流线电压 Support the wind turbine to input the rated AC line voltage	AC48V/96V/120V ( L-L )			
直流卸荷电压 Dc dump load voltage	DC170V			
三相制动电压 Three-phase braking voltage	DC190V			
制动电流 Braking current	DC100A			
*发电机超速控制 *Generator Over speed	可选 Optional			
*超风速控制 *Wind Over speed	可选 Optional			
手动控制功能 Manual control function	风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)			
自动控制功能 Auto control function	卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load. * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake			
*光伏输入 *PV.Input				
额定功率 (可定制) Rated Power (Customizable)	<2000Wp ( 风力发电机额定功率 Rated power of the wind turbine + 太阳能板功率 Solar panel power ≤3800W )			
开路电压 DC Voltage DC	<200V			
电池参数 Battery parameters				
额定电压 DC Rated voltage DC	24V/36V/48V 自动识别 Automatic recognition			
支持电池类型 Support battery type	蓄电池、锂电池 Battery, lithium battery			
超压断开电压 Over voltage disconnect voltage	出厂值 Default	32V	48V	64V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
充电限制电压 Charging limit voltage	出厂值 Default	30V	45V	60V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
超压断开恢复电压 Over voltage reconnect voltage	出厂值 Default	30V	45V	60V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
均衡电压 Equalize charging voltage	出厂值 Default	29.2V	43.8V	58.4V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
提升电压 Boost charging voltage	出厂值 Default	28.8V	43.2V	57.6V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
浮充电压 Float charging voltage	出厂值 Default	27.6V	41.4V	55.2V
	设置范围 Set range	18V-34V	27V-51V	36V-68V
提升恢复电压 Boost reconnect charging voltage	出厂值 Default	26.4V	39.6V	52.8V
	设置范围 Set range	18V-34V	27V-51V	36V-68V

均衡持续时间 Equalize Duration	出厂值 Default	120 minutes
	设置范围 Set range	0-180 minutes
提升持续时间 Boost Duration	出厂值 Default	120 minutes
	设置范围 Set range	10-180minutes
<b>电气参数 Electrical parameters</b>		
额定充电电流 Rated charging current		100A
蓄电池保险 Battery fast-acting fuse		150A/58V
额定充电功率 Rated charging power		2500W/24V, 3750W/36V, 5000W/48V
MPPT 范围 MPPT voltage range		(蓄电池电压 Battery voltage +2V) ~ 144V (25°C条件下 Under the condition of 25°C)
跟踪效率 MPPT tracking efficiency		≥99.5%
最大转换效率 Max. Conversion efficiency		98.5%
满载效率 Full load efficiency		97.6%
温度补偿系数 Temperature compensate coefficient		-3mV/°C/2V (默认 Default)
静态损耗 Self-consumption		60mA/24V;50mA/36V;46mA/48V
接地类型 Grounding		共负极 Common negative grounding
<b>通用参数 General parameters</b>		
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output	
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester	
显示 Display	液晶显示 LCD+LED	
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、*累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed	
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)	
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet	
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)	
噪音 (1m) Noise (1m)	< 40dB	
制冷方式 Refrigeration	强制风冷 Air cooling	
<b>尺寸重量 Size / weight</b>		
控制器尺寸重量 Controller size / weight	400*230*550mm 31Kg	
卸荷器尺寸重量 Dump load size / weight	245*290*120mm 4.5Kg	

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

## FKJ-MC 型 PWM 离网风光互补控制器性能特点

### FKJ-MC PWM off grid wind solar hybrid controller Performance Characteristics

- 本产品依照JB/T6939.1-2004号行业标准，GB/T19115.1-2003号国家标准生产，也可根据用户技术要求生产。
- 触摸屏显示。图像直观查看控制器工作状态。丰富的数据显示：风机电压、电流、功率、转速，太阳能板电压、电流、功率，蓄电池电压、充电电流，风速等。
- 采用两套控制系统，PWM恒压系统 + 三相卸荷系统。
- 多种控制功能任意选择：风机电压控制、风机电流控制、风机转速控制、风速（四种模式可选），电压、电流、转速可根据不同风机参数设置。
- 全面的保护功能：蓄电池防反接保护，蓄电池防脱节保护，蓄电池防损坏保护，过充保护，避雷保护。
- 手动刹车控制，保障风机安装、维护时的人员安全，遇极端天气提前保护风机，也可用于紧急情况下风机刹车。增加通讯功能，可远程控制风机刹车。
- ◆ 用Modbus通讯协议。方便客户进行二次开发。
- ◆ 可通过RS485接口，使用自带上位机软件设置控制器的各项技术参数。
- ◆ 支持WIFI，GPRS，Ethernet。监控数据接入物联网平台，客户可通过PC端或移动端（兼容Android和os）实时监控风光互补发电系统的工作状态，支持历史记录查询。
- ◆ 可增加柴油机接口，自动控制柴油发电机启动和停机。
- ◆ 控制器根据风力发电机的种类，可增加偏航控制、变桨控制、机械折尾控制、机械刹车、液压刹车、电磁刹车，等多种制动控制功能。

#### 应用领域：

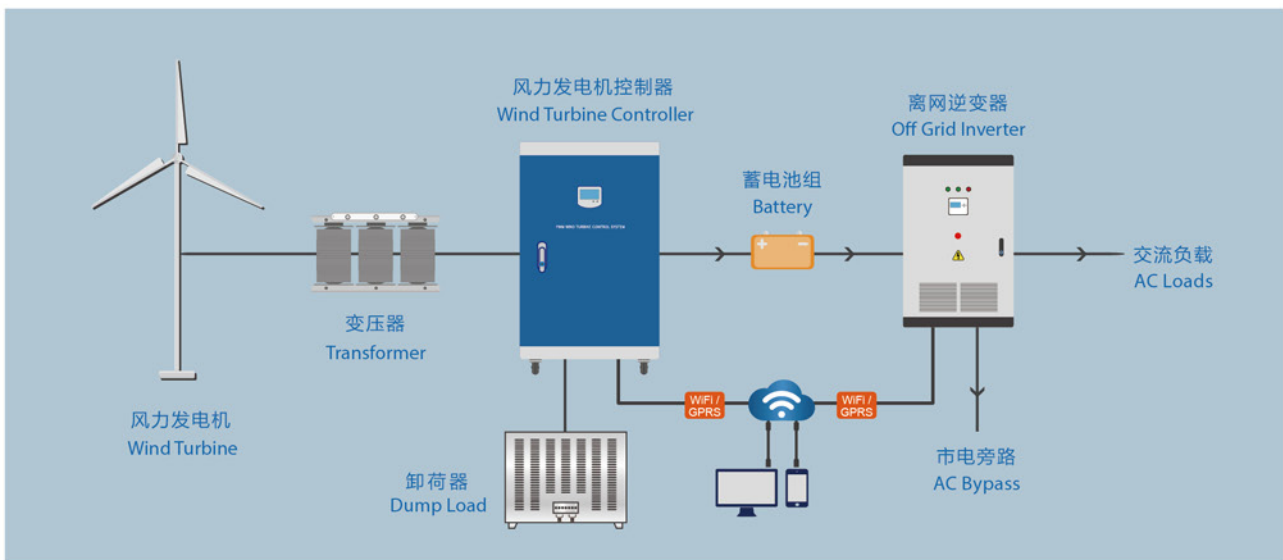
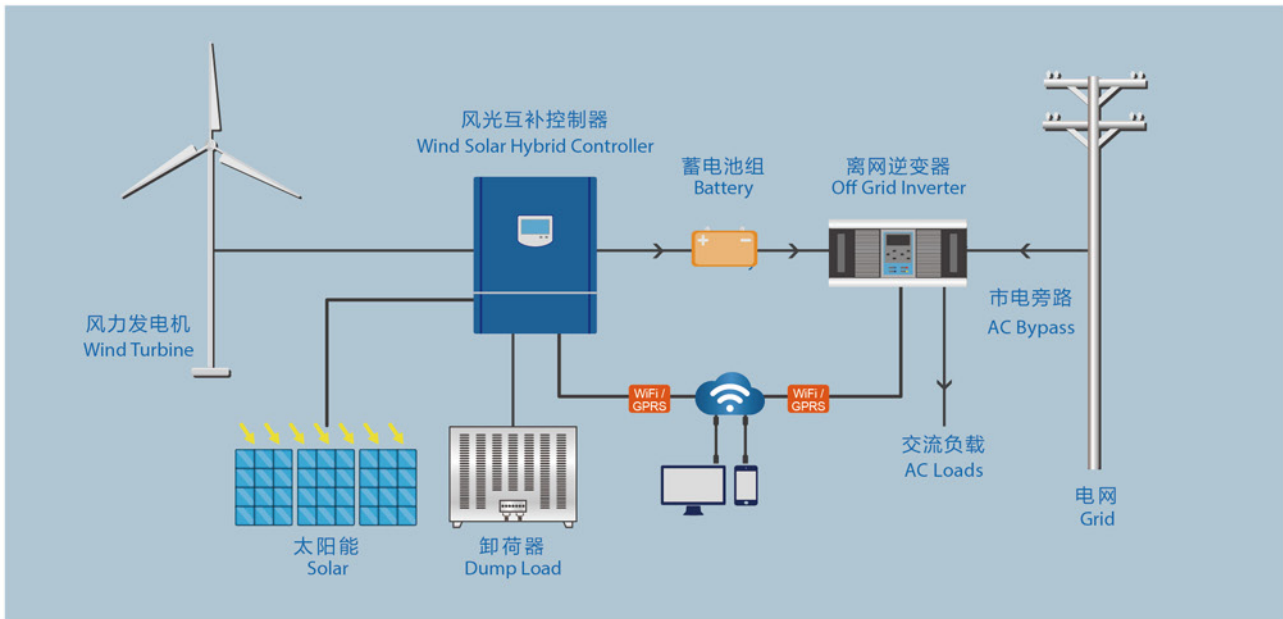
- 用于边远无电地区如高原、海岛、牧区、边防哨所等军民生活用电。
- 用于交通领域如航标灯、交通/铁路信号灯、交通警示/标志灯、路灯、高空障碍灯、高速公路/铁路无线电话亭、无人值守道班供电等。
- 用于通讯/通信领域：无人值守微波中继站、光缆维护站等。
- 风光互补电站：风光(柴)互补电站、各种大型停车场充电站、家庭小型发电站、工厂小型发电站等。



- The product is manufactured according to the JB/T6939.1-2004 industrial standard and GB/T 19115.1-2003 national standard, also could be customized according to users' technical requirements.
  - Touch screen display.View the operating status of the controller visually. Rich data display: wind turbine voltage, current, power, speed, solar panel voltage, current, power, battery voltage, charging current, wind speed, etc.
  - Two sets of control systems: PWM constant voltage system and three-phase dump load system.
  - Multiple control functions are optional: wind turbine voltage control, wind turbine current control, wind turbine speed control, wind speed (four modes are optional), voltage, current, speed can be set according to different wind turbine parameters.
  - Comprehensive protection function: battery anti-reverse connection protection, battery anti-disconnection protection, battery anti-damage protection, overcharge protection, lightning protection.
  - Manual brake control, to ensure the safety of the installation and maintenance of the fan, advance protection of the fan in extreme weather, can also be used in emergency fan brake. Add communication function, remote control wind turbine brake.
- 
- ◆ Adopt Modbus Communication protocol. Convenient to carry out the secondary development.
  - ◆ Adjusting the technical specification via RS485 is available.Convenient to adjust the different wind turbines for professional customers.
  - ◆ Support WIFI, GPRS, Ethernet. The monitoring data is connected to the Internet of Things platform, and the client can monitor the working status of the wind solar hybrid power system in real time through the PC or mobile terminal (compatible with Android and OS), and support historical record query.
  - ◆ Can add diesel engine interface, automatically control diesel generator start and stop.
  - ◆ According to the type of wind turbine, the controller can add yaw control, rotor control, mechanical tail control, mechanical brake, hydraulic brake, electromagnetic brake, and other brake control functions.
  - ◆ For the different wind turbine, the controller can be equipped with mechanical yawing, Rotate tail control, furred empennage, mechanical brake,hydraulic brake, electromagnetism brake and other brake functions.

## Application Area:

- For remote areas without electricity, such as plateaus, islands, pastoral areas, border posts and other military and civilian living electricity.
- Used in the field of transportation, such as navigation lights, traffic/railway signal lights, traffic warning/sign lights, street lights, high altitude obstacle lights, highway/railway wireless telephone booths, unattended road class power supply, etc.
- For communication/communication field: unattended microwave relay station, optical cable maintenance station, etc.
- Solar wind hybrid power stations: solar wind (diesel) hybrid power stations, various large parking lot charging stations, household small power stations, factory small power stations, etc.





产品展示及技术参数  
Product Type  
And Specifications



**1KW-5KW 风光互补控制器**  
**1KW-5KW Wind Solar Hybrid Controller**



**卸荷器**  
**Dump Load**

## 1KW离网风光互补/风光柴互补控制器

### 1KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC1K24	FKJ-MC1K48	FKJ-MC1K96	FKJ-MC1K220
<b>风力发电机输入 Wind turbine input</b>					
额定功率 Rated power		1KW	1KW	1KW	1KW
最大控制功率/电流 Max. control power / current		2KW / 63A	2KW / 31A	2KW/15A	2KW/7A
输入电压范围 Input voltage range	AC	0-24V	0-48V	0-96V	0-220V
	DC	0-32V	0-64V	0-130V	0-300V
制动电压 DC Braking voltage DC	出厂值 Default	29V±1%	58V±1%	116V±1%	260V±1%
	设置范围 Set range	27-32V	56-62V	108-124V	245-280V
制动电流 DC Braking current DC	出厂值 Default	50A	25A	12A	6A
	设置范围 Set range	0-50A	0-25A	0-12A	0-6A
*发电机超速控制 *Generator Over speed	出厂值 Default	> 300 rpm/min			
	设置范围 Set range	0-1000 rpm/min			
*超风速控制 *Wind Over speed	出厂值 Default	14m/s			
	设置范围 Set range	0-45m/s			
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)			
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load. * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake			
<b>*光伏输入 *PV.Input</b>					
额定功率 (可增加) Rated Power ( Increased)		300Wp	600KWp	1.2KWp	2.7KWp
工作电压/开路电压 Voltage DC		36V / 45V	72V / 90V	144V / 180V	320V / 400V
<b>蓄电池参数 Battery parameters</b>					
额定电压 DC Rated voltage DC		24V	48V	96V	220V
恒压电压 DC Constant voltage	出厂值 Default	28V±1%	56V±1%	112V±1%	252V±1%
	设置范围 Set range	26-30V	53-60V	104-120V	235-270V
恒流电流 DC Constant current	出厂值 Default	45A	23A	11.5A	5A
	设置范围 Set range	0-45A	0-23A	0-11.5A	0-5A

停止充电电压 DC Stop Charging Voltage	出厂值 Default	29V±1%	58V±1%	116V±1%	260V±1%
	设置范围 Set range	27-32V	56-62V	108-124V	245-280V
恢复充电电压 DC Recharging Voltage	出厂值 Default	27V±1%	54V±1%	108V±1%	243V±1%
	设置范围 Set range	<恒压电压 Less than constant voltage			
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C			
<b>通用参数 General parameters</b>					
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output				
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester				
显示 Display	液晶显示 LCD+LED				
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、*累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed				
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)				
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet				
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)				
噪音 (1m) Noise (1m)	< 40dB				
制冷方式 Refrigeration	强制风冷 Air cooling				
<b>尺寸重量 Size / weight</b>					
控制器尺寸\重量 Controller size / weight	352*170*473 11.5Kg	352*170*473 11.5Kg	360*230*480 16Kg	360*230*480 16Kg	
卸荷器尺寸\重量 Dump load size / weight	245*290*120 4.5Kg	245*290*120 4.5Kg	400*290*120 7Kg	400*290*120 7Kg	

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

## 2KW离网风光互补/风光柴互补控制器

### 2KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC2K24	FKJ-MC2K48	FKJ-MC2K96	FKJ-MC2K220
<b>风力发电机输入 Wind turbine input</b>					
额定功率 Rated power		2KW	2KW	2KW	2KW
最大控制功率/电流 Max. control power / current		4KW / 125A	4KW / 63A	4KW/31A	4KW/13.5A
输入电压范围 Input voltage range	AC	0-24V	0-48V	0-96V	0-220V
	DC	0-32V	0-64V	0-130V	0-300V
制动电压 DC Braking voltage DC	出厂值 Default	29V±1%	58V±1%	116V±1%	260V±1%
	设置范围 Set range	27-32V	56-62V	108-124V	245-280V
制动电流 DC Braking current DC	出厂值 Default	100A	50A	25A	11A
	设置范围 Set range	0-100A	0-50A	0-25A	0-11A
*发电机超速控制 *Generator Over speed	出厂值 Default	>300 rpm/min			
	设置范围 Set range	0-1000 rpm/min			
*超风速控制 *Wind Over speed	出厂值 Default	14m/s			
	设置范围 Set range	0-45m/s			
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)			
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load, * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake			
<b>*光伏输入 *PV.Input</b>					
额定功率 (可增加) Rated Power ( Increased)		300Wp	600KWp	1.2KWp	2.7KWp
工作电压/开路电压 Voltage DC		36V / 45V	72V / 90V	144V / 180V	320V / 400V
<b>蓄电池参数 Battery parameters</b>					
额定电压 DC Rated voltage DC		24V	48V	96V	220V
恒压电压 DC Constant voltage	出厂值 Default	28V±1%	56V±1%	112V±1%	252V±1%
	设置范围 Set range	26-30V	53-60V	104-120V	235-270V
恒流电流 DC Constant current	出厂值 Default	92A	46A	23A	10A
	设置范围 Set range	0-92A	0-46A	0-23A	0-10A



停止充电电压 DC Stop Charging Voltage	出厂值 Default	29V±1%	58V±1%	116V±1%	260V±1%
	设置范围 Set range	27-32V	56-62V	108-124V	245-280V
恢复充电电压 DC Recharging Voltage	出厂值 Default	27V±1%	54V±1%	108V±1%	243V±1%
	设置范围 Set range	<恒压电压 Less than constant voltage			
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C			
<b>通用参数 General parameters</b>					
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output				
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester				
显示 Display	液晶显示 LCD+LED				
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、* 累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed				
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)				
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet				
使用环境 Environment	工作温度 -30-60°C, 相对湿度 <90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)				
噪音 (1m) Noise (1m)	< 40dB				
制冷方式 Refrigeration	强制风冷 Air cooling				
<b>尺寸重量 Size / weight</b>					
控制器尺寸\重量 Controller size / weight	400*230*550 23Kg	352*170*473 11.5Kg	360*230*480 16Kg	360*230*480 16Kg	
卸荷器尺寸\重量 Dump load size / weight	400*290*120 7Kg	400*290*120 7Kg	400*290*120 7Kg	400*290*120 7Kg	

\*以上技术参数仅供参考，可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

### 3KW离网风光互补/风光柴互补控制器

#### 3KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC3K24	FKJ-MC3K48	FKJ-MC3K96	FKJ-MC3K220
<b>风力发电机输入 Wind turbine input</b>					
额定功率 Rated power		3KW	3KW	3KW	3KW
最大控制功率/电流 Max. control power / current		6KW / 188A	6KW / 94A	6KW/47A	6KW/20.5A
输入电压范围 Input voltage range	AC	0-24V	0-48V	0-96V	0-220V
	DC	0-32V	0-64V	0-130V	0-300V
制动电压 DC Braking voltage DC	出厂值 Default	29V±1%	58V±1%	116V±1%	260V±1%
	设置范围 Set range	27-32V	56-62V	108-124V	245-280V
制动电流 DC Braking current DC	出厂值 Default	150A	75A	38A	17A
	设置范围 Set range	0-150A	0-75A	0-38A	0-17A
*发电机超速控制 *Generator Over speed	出厂值 Default	>300 rpm/min			
	设置范围 Set range	0-1000 rpm/min			
*超风速控制 *Wind Over speed	出厂值 Default	14m/s			
	设置范围 Set range	0-45m/s			
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)			
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load. * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake			
<b>*光伏输入 *PV.Input</b>					
额定功率 (可增加) Rated Power ( Increased)		900Wp	1.2KWp	1.2KWp	2.7KWp
工作电压/开路电压 Voltage DC		36V / 45V	72V / 90V	144V / 180V	320V / 400V
<b>蓄电池参数 Battery parameters</b>					
额定电压 DC Rated voltage DC		24V	48V	96V	220V
恒压电压 DC Constant voltage	出厂值 Default	28V±1%	56V±1%	112V±1%	252V±1%
	设置范围 Set range	26-30V	53-60V	104-120V	235-270V
恒流电流 DC Constant current	出厂值 Default	138A	69A	35A	15A
	设置范围 Set range	0-138A	0-69A	0-35A	0-15A

停止充电电压 DC Stop Charging Voltage	出厂值 Default	29V±1%	58V±1%	116V±1%	260V±1%
	设置范围 Set range	27-32V	56-62V	108-124V	245-280V
恢复充电电压 DC Recharging Voltage	出厂值 Default	27V±1%	54V±1%	108V±1%	243V±1%
	设置范围 Set range	<恒压电压 Less than constant voltage			
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C			
<b>通用参数 General parameters</b>					
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output				
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester				
显示 Display	液晶显示 LCD+LED				
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、* 累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed				
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)				
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet				
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)				
噪音 (1m) Noise (1m)	< 40dB				
制冷方式 Refrigeration	强制风冷 Air cooling				
<b>尺寸重量 Size / weight</b>					
控制器尺寸\重量 Controller size / weight	400*230*550 23Kg	400*230*550 23Kg	360*230*480 16Kg	360*230*480 16Kg	
卸荷器尺寸\重量 Dump load size / weight	400*250*400 13.5Kg	400*250*400 13.5Kg	400*250*400 13.5Kg	400*250*400 13.5Kg	

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters



## 5KW离网风光互补/风光柴互补控制器

### 5KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC5K48	FKJ-MC5K96	FKJ-MC5K220	FKJ-MC5K384
<b>风力发电机输入 Wind turbine input</b>					
额定功率 Rated power		5KW	5KW	5KW	5KW
最大控制功率/电流 Max. control power / current		10KW / 156A	10KW / 78A	10KW/34A	10KW/20A
输入电压范围 Input voltage range	AC	0-48V	0-96V	0-220V	0-380V
	DC	0-64V	0-130V	0-300V	0-520V
制动电压 DC Braking voltage DC	出厂值 Default	58V±1%	116V±1%	260V±1%	465V±1%
	设置范围 Set range	56-62V	108-124V	245-280V	435-480V
制动电流 DC Braking current DC	出厂值 Default	125A	63A	27A	16A
	设置范围 Set range	0-125A	0-63A	0-27A	0-16A
*发电机超速控制 *Generator Over speed	出厂值 Default	> 300 rpm/min			
	设置范围 Set range	0-1000 rpm/min			
*超风速控制 *Wind Over speed	出厂值 Default	14m/s			
	设置范围 Set range	0-45m/s			
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)			
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load. * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake			
<b>*光伏输入 *PV.Input</b>					
额定功率 (可增加) Rated Power ( Increased)		1.2KWp	2.7KWp	5.4KWp	4.5KWp
工作电压/开路电压 Voltage DC		72V / 90V	144V / 180V	320V / 400V	550V / 660V
<b>蓄电池参数 Battery parameters</b>					
额定电压 DC Rated voltage DC		48V	96V	220V	384V
恒压电压 DC Constant voltage	出厂值 Default	56V±1%	112V±1%	252V±1%	450V±1%
	设置范围 Set range	53-60V	104-120V	235-270V	410-465V
恒流电流 DC Constant current	出厂值 Default	115A	57A	25A	15A
	设置范围 Set range	0-115A	0-57A	0-25A	0-15A



停止充电电压 DC Stop Charging Voltage	出厂值 Default	58V±1%	116V±1%	260V±1%	465V±1%
	设置范围 Set range	56-62V	108-124V	245-280V	435-480V
恢复充电电压 DC Recharging Voltage	出厂值 Default	54V±1%	108V±1%	243V±1%	432V±1%
	设置范围 Set range	<恒压电压 Less than constant voltage			
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C			
<b>通用参数 General parameters</b>					
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output				
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester				
显示 Display	液晶显示 LCD+LED				
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、* 累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed				
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)				
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet				
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)				
噪音 (1m) Noise (1m)	< 40dB				
制冷方式 Refrigeration	强制风冷 Air cooling				
<b>尺寸重量 Size / weight</b>					
控制器尺寸\重量 Controller size / weight	400*230*550	400*230*550	360*230*480	360*230*480	
	23Kg	23Kg	16Kg	16Kg	
卸荷器尺寸\重量 Dump load size / weight	600*450*380	600*450*380	600*450*380	600*450*380	
	27Kg	27Kg	27Kg	27Kg	

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

产品展示及技术参数  
Product Type  
And Specifications



**10KW 风光互补控制器**  
10KW Wind Solar Hybrid Controller



**卸荷器**  
Dump Load

## 10KW离网风光互补/风光柴互补控制器

### 10KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC10K96	FKJ-MC10K220	FKJ-MC10K384	FKJ-MC10K420
风力发电机输入 Wind turbine input					
额定功率 Rated power		10KW	10KW	10KW	10KW
最大控制功率/电流 Max. control power / current		20KW /156A	20KW/70A	20KW/40A	20KW/36A
输入电压范围 Input voltage range	AC	0-96V	0-220V	0-380V	0-400V
	DC	0-130V	0-300V	0-520V	0-540V
制动电压 DC Braking voltage DC	出厂值 Default	116V±1%	260V±1%	465V±1%	510V±1%
	设置范围 Set range	108-124V	245-280V	435-480V	480-540V
制动电流 DC Braking current DC	出厂值 Default	125A	55A	31A	29A
	设置范围 Set range	0-125A	0-55A	0-31A	0-29A
*发电机超速控制 *Generator Over speed	出厂值 Default	>300 rpm/min			
	设置范围 Set range	0-1000 rpm/min			
*超风速控制 *Wind Over speed	出厂值 Default	14m/s			
	设置范围 Set range	0-45m/s			
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)			
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load. * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake			
*光伏输入 *PV.Input					
额定功率 (可增加) Rated Power ( Increased)		2.7KWp	5.4KWp	4.5KWp	5.4KWp
工作电压/开路电压 Voltage DC		144V / 180V	320V / 400V	550V / 660V	610V / 760V
蓄电池参数 Battery parameters					
额定电压 DC Rated voltage DC		96V	220V	384V	420V
恒压电压 DC Constant voltage	出厂值 Default	112V±1%	252V±1%	450V±1%	490V±1%
	设置范围 Set range	104-120V	235-270V	410-465V	465-520V
恒流电流 DC Constant current	出厂值 Default	115A	50A	29A	26A
	设置范围 Set range	0-115A	0-50A	0-29A	0-26A



停止充电电压 DC Stop Charging Voltage	出厂值 Default	116V±1%	260V±1%	465V±1%	510V±1%
	设置范围 Set range	108-124V	245-280V	435-480V	480-540V
恢复充电电压 DC Recharging Voltage	出厂值 Default	108V±1%	243V±1%	432V±1%	475V±1%
	设置范围 Set range	<恒压电压 Less than constant voltage			
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C			
<b>通用参数 General parameters</b>					
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output				
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester				
显示 Display	液晶显示 LCD+LED				
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、*累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed				
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)				
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet				
使用环境 Environment	工作温度 -30-60°C, 相对湿度 <90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)				
噪音 (1m) Noise (1m)	< 40dB				
制冷方式 Refrigeration	强制风冷 Air cooling				
<b>尺寸重量 Size / weight</b>					
控制器尺寸重量 Controller size / weight	400*230*550 23Kg	400*230*550 23Kg	400*230*550 23Kg	400*230*550 23Kg	400*230*550 23Kg
卸荷器尺寸重量 Dump load size / weight	690*450*530 39Kg	690*450*530 39Kg	690*450*530 39Kg	690*450*530 39Kg	690*450*530 39Kg

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

产品展示及技术参数  
Product Type  
And Specifications



20KW-100KW 风光互补控制器  
-20KW-100KW Wind Solar Hybrid Controller



卸荷器  
Dump Load

## 20KW离网风光互补/风光柴互补控制器

### 20KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC20K220	FKJ-MC20K384	FKJ-MC20K420
<b>风力发电机输入 Wind turbine input</b>				
额定功率 Rated power		20KW	20KW	20KW
最大控制功率/电流 Max. control power / current		40KW/136A	40KW/78A	40KW/71A
输入电压范围 Input voltage range	AC	0-220V	0-380V	0-400V
	DC	0-300V	0-520V	0-540V
制动电压 DC Braking voltage DC	出厂值 Default	260V±1%	465V±1%	510V±1%
	设置范围 Set range	245-280V	435-480V	480-540V
制动电流 DC Braking current DC	出厂值 Default	109A	62A	57A
	设置范围 Set range	0-109A	0-62A	0-57A
*发电机超速控制 *Generator Over speed	出厂值 Default	>300 rpm/min		
	设置范围 Set range	0-1000 rpm/min		
*超速控制 *Wind Over speed	出厂值 Default	14m/s		
	设置范围 Set range	0-45m/s		
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)		
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load, * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake		
<b>*光伏输入 *PV.Input</b>				
额定功率 (可增加) Rated Power ( Increased)		5.4KWp	8.1KWp	8.1KWp
工作电压/开路电压 Voltage DC		320V / 400V	550V / 660V	610V / 760V
<b>蓄电池参数 Battery parameters</b>				
额定电压 DC Rated voltage DC		220V	384V	420V
恒压电压 DC Constant voltage	出厂值 Default	126V±1%	450V±1%	490V±1%
	设置范围 Set range	235-270V	410-465V	465-520V
恒流电流 DC Constant current	出厂值 Default	100A	57A	52A
	设置范围 Set range	0-100A	0-57A	0-52A



停止充电电压 DC Stop Charging Voltage	出厂值 Default	260V±1%	465V±1%	510V±1%
	设置范围 Set range	245-280V	435-480V	480-540V
恢复充电电压 DC Recharging Voltage	出厂值 Default	243V±1%	432V±1%	475V±1%
	设置范围 Set range	<恒压电压 Less than constant voltage		
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C		
<b>通用参数 General parameters</b>				
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output			
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester			
显示 Display	液晶显示 LCD+LED			
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、 *累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed			
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)			
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet			
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)			
噪音 (1m) Noise (1m)	< 40dB			
制冷方式 Refrigeration	强制风冷 Air cooling			
<b>尺寸重量 Size / weight</b>				
控制器尺寸\重量 Controller size / weight	550*550*900 50Kg	550*550*900 50Kg	550*550*900 50Kg	
卸荷器尺寸\重量 Dump load size / weight	923*775*400 54Kg	923*775*400 54Kg	923*775*400 54Kg	

\*以上技术参数仅供参考，可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

## 30KW离网风光互补/风光柴互补控制器

### 30KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC30K240	FKJ-MC30K384	FKJ-MC30K420
<b>风力发电机输入 Wind turbine input</b>				
额定功率 Rated power		30KW	30KW	30KW
最大控制功率/电流 Max. control power / current		60KW/188A	60KW/117A	60KW/107A
输入电压范围 Input voltage range	AC	0-240V	0-380V	0-400V
	DC	0-325V	0-520V	0-540V
制动电压 DC Braking voltage DC	出厂值 Default	290V±1%	465V±1%	510V±1%
	设置范围 Set range	275-310V	435-480V	480-540V
制动电流 DC Braking current DC	出厂值 Default	150A	94A	86A
	设置范围 Set range	0-150A	0-94A	0-86A
*发电机超速控制 *Generator Over speed	出厂值 Default	> 300 rpm/min		
	设置范围 Set range	0-1000 rpm/min		
*超风速控制 *Wind Over speed	出厂值 Default	14m/s		
	设置范围 Set range	0-45m/s		
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)		
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load, * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake		
<b>蓄电池参数 Battery parameters</b>				
额定电压 DC Rated voltage DC		240V	384V	420V
恒压电压 DC Constant voltage	出厂值 Default	280V±1%	450V±1%	490V±1%
	设置范围 Set range	270-300V	410-465V	465-520V
恒流电流 DC Constant current	出厂值 Default	138A	86A	79A
	设置范围 Set range	0-138A	0-86A	0-79A
停止充电电压 DC Stop Charging Voltage	出厂值 Default	290V±1%	465V±1%	510V±1%
	设置范围 Set range	275-310V	435-480V	480-540V

恢复充电电压 DC Recharging Voltage	出厂值 Default	270V±1%	432V±1%	473V±1%
	设置范围 Set range	Less than constant voltage		
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C		
<b>通用参数 General parameters</b>				
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output			
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester			
显示 Display	液晶显示 LCD+LED			
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、* 累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed			
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)			
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet			
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)			
噪音 (1m) Noise (1m)	< 40dB			
制冷方式 Refrigeration	强制风冷 Air cooling			
<b>尺寸重量 Size / weight</b>				
控制器尺寸/重量 Controller size / weight	550*550*900	550*550*900	550*550*900	
	50Kg	50Kg	50Kg	
卸荷器尺寸/重量 Dump load size / weight	923*775*400	923*775*400	923*775*400	
	54Kg	54Kg	54Kg	

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters



## 50KW离网风光互补/风光柴互补控制器

### 50KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC50K384	FKJ-MC50K420	FKJ-MC50K480
风力发电机输入 Wind turbine input				
额定功率 Rated power		50KW	50KW	50KW
最大控制功率/电流 Max. control power / current		100KW / 195A	100KW / 180A	100KW / 160A
输入电压范围 Input voltage range	AC	0-380V	0-400V	0-440V
	DC	0-520V	0-540V	0-600V
制动电压 DC Braking voltage DC	出厂值 Default	465V±1%	510V±1%	580V±1%
	设置范围 Set range	435-480V	480-540V	550-620V
制动电流 DC Braking current DC	出厂值 Default	160A	145A	125A
	设置范围 Set range	0-160A	0-145A	0-125A
*发电机超速控制 *Generator Over speed	出厂值 Default	>300 rpm/min		
	设置范围 Set range	0-1000 rpm/min		
*超风速控制 *Wind Over speed	出厂值 Default	14m/s		
	设置范围 Set range	0-45m/s		
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)		
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load, * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake		
蓄电池参数 Battery parameters				
额定电压 DC Rated voltage DC		384V	420V	480V
恒压电压 DC Constant voltage	出厂值 Default	450V±1%	490V±1%	560V±1%
	设置范围 Set range	410-465V	465-520V	530-600V
恒流电流 DC Constant current	出厂值 Default	145A	130A	115A
	设置范围 Set range	0-145A	0-130A	0-115A
停止充电电压 DC Stop Charging Voltage	出厂值 Default	465V±1%	510V±1%	580V±1%
	设置范围 Set range	435-480V	480-540V	550-620V

恢复充电电压 DC Recharging Voltage	出厂值 Default	432V±1%	475V±1%	540V±1%
	设置范围 Set range	<恒压电压 Less than constant voltage		
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C		
<b>通用参数 General parameters</b>				
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output			
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester			
显示 Display	液晶显示 LCD+LED			
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、 *累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed			
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)			
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet			
使用环境 Environment	工作温度 -30-60°C, 相对湿度 < 90% 不结露 Working temperature -30-60°C, Humidity < 90%(No condensation)			
噪音 (1m) Noise (1m)	< 40dB			
制冷方式 Refrigeration	强制风冷 Air cooling			
<b>尺寸重量 Size / weight</b>				
控制器尺寸\重量 Controller size / weight	600*500*1200 105Kg	600*500*1200 105Kg	600*500*1200 105Kg	
卸荷器尺寸\重量 Dump load size / weight	待定	待定	待定	

\*以上技术参数仅供参考, 可根据客户要求定制。

\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

## 100KW离网风光互补/风光柴互补控制器

### 100KW Off Grid Wind Solar Hybrid Controller

型号 TYPE		FKJ-MC50K384	FKJ-MC50K420	FKJ-MC50K480
风力发电机输入 Wind turbine input				
额定功率 Rated power		50KW	50KW	50KW
最大控制功率/电流 Max. control power / current		100KW / 195A	100KW / 180A	100KW / 160A
输入电压范围 Input voltage range	AC	0-380V	0-400V	0-440V
	DC	0-520V	0-540V	0-600V
制动电压 DC Braking voltage DC	出厂值 Default	465V±1%	510V±1%	580V±1%
	设置范围 Set range	435-480V	480-540V	550-620V
制动电流 DC Braking current DC	出厂值 Default	160A	145A	125A
	设置范围 Set range	0-160A	0-145A	0-125A
*发电机超速控制 *Generator Over speed	出厂值 Default	>300 rpm/min		
	设置范围 Set range	0-1000 rpm/min		
*超风速控制 *Wind Over speed	出厂值 Default	14m/s		
	设置范围 Set range	0-45m/s		
手动控制功能 Manual control function		风机手动刹车, *远程控制刹车 (需加通讯实现) Manual brake, * Remote control brake (with communication)		
自动控制功能 Auto control function		卸荷控制、*偏航、*变桨、*机械刹车、*液压刹车、*电磁刹车 Dump load. * Yaw, * Pitch, * Mechanical brake, * Hydraulic brake, * Electromagnetic brake		
蓄电池参数 Battery parameters				
额定电压 DC Rated voltage DC		384V	420V	480V
恒压电压 DC Constant voltage	出厂值 Default	450V±1%	490V±1%	560V±1%
	设置范围 Set range	410-465V	465-520V	530-600V
恒流电流 DC Constant current	出厂值 Default	145A	130A	115A
	设置范围 Set range	0-145A	0-130A	0-115A
停止充电电压 DC Stop Charging Voltage	出厂值 Default	465V±1%	510V±1%	580V±1%
	设置范围 Set range	435-480V	480-540V	550-620V



恢复充电电压 DC Recharging Voltage	出厂值 Default	432V±1%	475V±1%	540V±1%
	设置范围 Set range	<恒压电压 Less than constant voltage		
*温度补偿 (可选) *Temperature compensation		-4mv/°C/2V, -35°C~+80°C, 精度:±1°C		
<b>通用参数 General parameters</b>				
功能 Function	整流、充电、电压控制、充电电流控制、卸荷控制、参数设置、*直流输出 Rectification, Charging, Voltage control, Charging current control, Dump load control, Parameter setting, *DC output			
自动保护 Auto protection	过压保护、过流保护、反接保护、恒压充电、恒流充电、避雷器 Over voltage protection, Over-current protection, Reverse connection protection, Constant voltage charging, Constant current charging, Arrester			
显示 Display	液晶显示 LCD+LED			
监控内容 Monitor	风机电压、电流、功率, 太阳能板电压、电流、功率, 蓄电池电压、充电电流、 *累计发电量、*任意时间发电量、*转速、*风速 The power, voltage, current of Wind turbine and Solar panels, Battery voltage, Charging current, * Cumulative power generation, * Power generation at any time, * Revolution, * wind speed			
防护等级 Protection level	IP20 (室内 Indoor) IP65 (户外 Outdoors)			
远程通讯 (可选) Telematics (optional)	RS485/USB/GPRS/WIFI/Ethernet			
使用环境 Environment	工作温度 -30-60°C, 相对湿度 <90% 不结露 Working temperature -30-60°C, Humidity <90%(No condensation)			
噪音 (1m) Noise (1m)	< 40dB			
制冷方式 Refrigeration	强制风冷 Air cooling			
<b>尺寸重量 Size / weight</b>				
控制器尺寸\重量 Controller size / weight	600*500*1200 105Kg	600*500*1200 105Kg	600*500*1200 105Kg	
卸荷器尺寸\重量 Dump load size / weight	待定	待定	待定	

\*以上技术参数仅供参考，可根据客户要求定制。

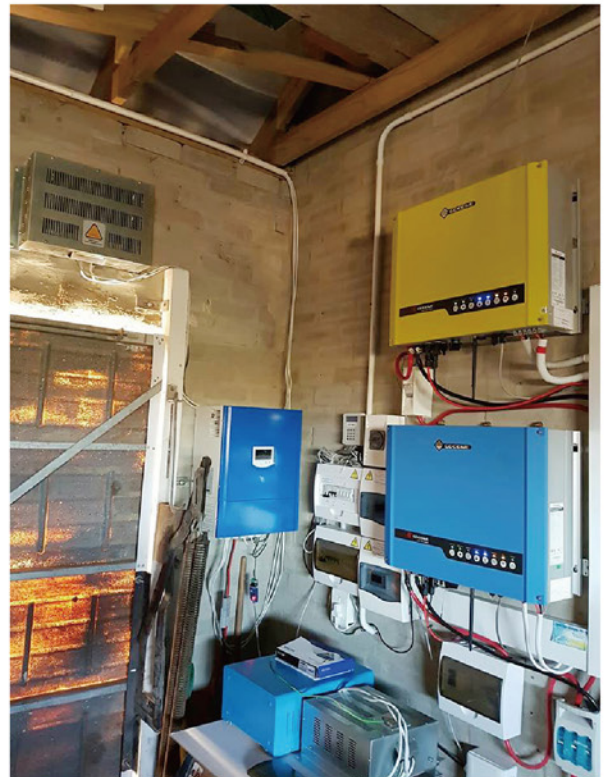
\*The above technical parameters are for reference only, and can be customized according to the user's technical parameters

## 工程案例 Cases

- ▶ 2KW离网风力发电系统  
2kw off grid wind  
power system  
位于内蒙古 Neimenggu



- ▼ 5KW离网风力发电系统  
5kw off grid wind power system  
位于瑞典、南非 Sweden、South Africa





# 德明 APP DeMing APP

Deming APP智能终端是为风光互补电站、光伏电站设计的监控和管理系统。它帮助用户掌握电站运行状态，随时随地实现风光互补电站、光伏电站的远程数据监控，确保方便管理和监视及时性。通过视觉系统显示电站运行数据表，包括电站设备运行状态、设备实时数据、历史数据查询。作为时尚和智能应用程序，它可以让用户在任何场合展示他的电站。

Deming APP is intelligent terminal for hybrid wind solar power, PV power station monitoring and management person. It help user master power station running status at anytime and anywhere, realize remote data monitoring of hybrid wind solar power and PV power station, ensure convenient management and monitoring timeliness. System displays hybrid wind solar power station and PV power station running data by visual table, includes power station power generation, benefit, CO2 emission reduction benefit, equipment running status, equipment real-time data, history data query, power generation comparison, equipment performance comparison. As fashion and intelligent application, it can let user demonstrate his hybrid wind solarpower station and PV power station at any occasion, user has intuitive feeling, enhance user confidence.

- 丰富的数据输出界面，支持Android、iphone、ipad、windows、macOS  
Various data output interface, support Android、iphone、ipad、windows、macOS
- 精准数据，易操作，支持下载和安装，可捆绑微信，实时监控，数据同步  
Delicate and precise data, easy to operate, download and install, Wechat binded, real-time monitoring, data synchronization
- 24小时监控 24-hour monitoring
- 低运营成本 Low maintenance cost
- 电站信息共享功能 Power station information sharing function



## 可选配件 Optional Parts



1. RS485转WIFI  
RS485 to WIFI



2. RS485转GPRS  
RS485 to GPRS



3. RS485转以太网  
RS485 to Ethernet



4. RS485转USB  
RS485 to USB





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JINAN DEMING POWER EQUIPMENT CO.,LTD

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