



**广东绿功电气有限公司**  
GuangDong Lvgong Electrical Co., Ltd.



# 产品宣传手册

PRODUCT PROMOTIONAL BROCHURE



**LvGONG**

# 广东绿功电气有限公司

GuangDong Lvgong Electrical Co., Ltd.

专业 UPS 电源、逆变器、充电桩、电池放电、变频器、风能发电、太阳能发电、轨道交通、新能源、自动化设备负载及老化测试等行业解决方案提供商。

Professional UPS Power Supply, Inverter, Charging Station, Battery Discharge, Frequency Converter, Wind Power Generation Electricity, Solar Power Generation, Rail Transit, New Energy, Automation Equipment Load and Aging Testing, etc Industry Solution Provider.

## 公司简介

## Introduction to the company

广东绿功电气有限公司成立于2016年，公司致力于电力电子变换技术的开发和应用，从事瓷管电阻、铝壳电阻、黄金铝壳电阻、电阻箱、负载柜、制动单元及电抗器的研发、制造、销售以及售后服务工作。我司产品均符合欧盟RoHS指令和欧盟REACH法规关于有害物质方面的要求。

凭借卓越的品质与优良的服务在业界享有较高的声誉，公司技术力量雄厚、生产及检测设备先进。关键材料均来自于行业领先的优质供应商，在制程中严格执行IEC标准进行制造生产，也可根据客户的特殊要求执行日本JIS标准或美国MIL军用标准，电阻产品规格齐全。我们秉持‘产品精益求精’的经营宗旨与‘满足和超越客户的需求’的服务承诺，与众多世界知名企业建立了长期的业务合作关系，力争成为行业的标兵。

GuangDong Lvgong Electrical Co., Ltd. was established in 2016, dedicated to the development and application of power electronic conversion technology. The company is engaged in the research and development, manufacturing, sales, and after-sales service of ceramic tube resistors, aluminum shell resistors, gold aluminum shell resistors, brake resistor boxes, resistor load cabinets, brake units, and reactors. Our products comply with the requirements of the EU RoHS directive and the EU REACH regulation regarding hazardous substances.

With outstanding quality and excellent service, the company enjoys a high reputation in the industry. The company has strong technical strength and advanced production and testing equipment. The key materials are all sourced from industry-leading high-quality suppliers, and the manufacturing process strictly follows IEC standards. We can also comply with Japanese JIS standards or American MIL military standards according to customers' special requirements, and the specifications of our resistor products are complete. We adhere to the business philosophy of 'product excellence' and the service commitment of 'meeting and exceeding customer needs', and have established long-term business partnerships with many world-renowned enterprises, striving to become a model in the industry.

# 梯形铝壳电阻

Trapezium Aluminum Housed Wire-wound Resistors (RXLG)



铝壳电阻外壳采用铝合金制造,表面具有散热沟槽,体积小功率大,耐高温,过载能力强,具有耐气候性、高精度,标准低感应电阻,高稳定,强架构,其变通性多重组合选择,利于机械保护,方便安装使用。The aluminum shell resistor housing is made of aluminum alloy and has heat dissipation grooves on the surface, Small size, high power, high temperature resistance, strong overload capacity, weather resistance, high Precision, standard low inductance resistance, high stability, strong architecture, and multiple versatility Combination selection is beneficial for mechanical protection and easy installation and use.

## ●产品特点 Product features:

- ▶金属铝壳包封,散热性能好、适合散热板安装,可长期在恶劣环境下使用。Aluminum crust surface with good performance in heat radiation, suitable for cooling plate installation, can be used in the atrocious environment.
- ▶体积小、功率负荷大。Small size, high power load.
- ▶绝缘性高,采用阻燃无机材料一体化安装,抗振性好。High insulating capacity, encapsulation by non-flame inorganic Material, good performance in vibration.
- ▶多种接线方式,便于安装。Multi connection form will be easily to fix.
- ▶广泛用于电源、变频器、电梯、舞台音响及高端设备行业。Widely used in Power supply, Transducer, Elevator, Arena audio and high requirement equipment Industry.
- ▶精度范围。Resistance tolerance:  $\pm 1\%$ 、 $\pm 2\%$ 、 $\pm 5\%$ 、 $\pm 10\%$ .

# 黄金铝壳电阻

Gold Aluminum Housed Wirewound Resistors (RX24)



黄金铝壳电阻也叫无感铝壳电阻或者LED铝壳电阻。外壳采用铝合金制造,表面具有散热沟槽,具有体积小、功率大、耐高温、过载能力强、耐气候性、高精度、高稳定、强架构等特性,有利于机械保护,安装方便。Gold aluminum shell resistor, also known as non inductive aluminum shell resistor or LED aluminum shell resistor. The shell is made of aluminum alloy and has heat dissipation grooves on the surface. It has the characteristics of small volume, high power, high temperature resistance, strong overload capacity, weather resistance, high precision, high stability, and strong architecture, which is conducive to mechanical protection and easy installation.

## ●产品特点 Features:

- ▶金属铝壳包封,散热性能好、适合散热板安装,可长期在恶劣环境下使用。Gold Aluminum shell surface, good performance in heat radiation, suitable for cooling plate installation, can be used in the atrocious environment.
- ▶体积小、功率负荷大。Small size, high power load.
- ▶绝缘性高,采用阻燃无机材料一体化封装,抗振性好。High insulating capacity, encapsulation by incombustible and inorganic material, good performance in vibration.
- ▶多种接线方式,便于安装。Multi connection form will be easily to fix.
- ▶广泛用于电源、变频器、电梯、舞台音响及高端设备行业。Widely used in Power supply, Transducer, Elevator, Arena audio and high requirement equipment Industry.
- ▶精度范围。Resistance tolerance:  $\pm 1\%$ 、 $\pm 2\%$ 、 $\pm 5\%$ 、 $\pm 10\%$ .

# 波纹电阻

Coated High Power Ceramic Tube Resistors (RX20)



波纹电阻采用陶瓷管作为骨架,用波纹状电阻丝均匀绕制在骨架上,表面有绝缘漆,安装方便,具有良好的散热性能,可用于变频器、伺服驱动器等电气回路。绿功LVG系列波纹电阻长期配套应用于电梯、起重机、磕头机、离心机及负载测试等行业。The corrugated resistor adopts ceramic tube as the skeleton, and is uniformly wound with corrugated resistance wire on the skeleton. The surface is coated with insulating paint, which is easy to install and has good heat dissipation performance. It can be used in electrical circuits such as frequency converters and servo drives. The Green Power LVG series corrugated resistors have been widely used in industries such as elevators, cranes, colliders, centrifuges, and load testing for a long time.

## 产品特点 Product features:

- ▶ 过负荷能力强,热稳定性好,使用寿命长。Good overload and heat-durability capacity,the use life is longer than the others.
- ▶ 表面涂漆为绿色不燃性面漆。The resistors surface is coated in green.
- ▶ 使用环境温度。Operating ambient temperature:-55°C~+275°C.
- ▶ 精度误差。Resistance tolerance: ±5%、±10%.

# 制动单元

Braking Unit (BU)



制动单元全称为“变频器专用型能耗制动单元”,主要是用于控制机械负载较重的、制动速度要求非常快的场合,将电机所产生的再生电能通过制动电阻消耗掉,以保障变频器等设备正常运行。The full

name of the braking unit is "frequency converter specific energy consumption braking unit", which is mainly used to control situations with heavy mechanical loads and very fast braking speed requirements. The regenerative electrical energy generated by the motor is consumed through the braking resistor to ensure the normal operation of frequency converters and other equipment.

## 产品特点 Features:

电源 Power Supply	电网电压 Grid Voltage	220V/380V/460V/660V±20%	通信接口 Communication Interface	RS485通信接口,兼容Modbus RTU协议或RS485 Communication interface, compatible with Modbus RTU protocol mode	
	电网频率 Grid Frequency	45Hz-65Hz		并联接口 Parallel Interface	四线主从并联接口 Four wire master-slave parallel interface
控制 Control	动作时间 Action Time	≤1mS	接口 Interface	主从设定 Master Slave Setting	柜上三针线设定 Three needle thread setting on the board
	动作电压设定 Action Voltage Setting	经济型(5档跳线设置); 标准型(键盘设置) Economy Type (5-speed jumper settings); Standard Type (keyboard settings)		故障输出 Fault Output	250V/3A常开/常闭触点输出(随机型而定) 250V/3A Normally open/normally closed contact output (depending on the random type)
	动作电压范围 Operating Voltage Range	220V:DC330-450V;380V:DC600- 800V;660V:1000-1200V	环境 Environment	状态指示 Status Indication	电源、制动、故障(经济型); 监控、参数、就绪、制动 (经济型); Monitoring, parameters, readiness, braking, faults (standard type)
	散热方式 Heat Dissipation Method	自然冷却或强制风冷 Natural Cooling Or Forced Air Cooling		安装场所 Installation Site	室内,海拔<1000m,无阳光直射,无导电性粉尘及腐蚀性气体 Indoor, altitude<1000m, no direct sunlight, no conductive dust or corrosive gases
过热动作 Overheating Action	箱内散热器达80°C时过热保护动作 Overheating protection action when the radiator inside the box reaches 80°C	环境温度 Ambient Temperature	-10~40°C, 通风良好 10~40°C, Well ventilated		

# 制动电阻箱

Braking Resistance Cabinet (BRU)



本品是由波纹电阻器组合而成的电阻箱,适用于大功率,大电流的制动设备,试验测试设备,电梯,起重等变频器的能耗制动回路中。工作电压直流 500V-2000V,额定功率可叠加至200KW。This product is a resistance box composed of corrugated resistors, suitable for high-power, high current braking equipment, testing equipment, elevators, cranes, and other frequency converters in energy consumption braking circuits. The working voltage is DC 500V-2000V, and the rated power can be stacked up to 200KW.

## 技术参数 Technical Parameters:

- ▶ 功率范围 Power range: 1KW-200KW
- ▶ 电压范围 Voltage range: 0.5KV-2KV 可选
- ▶ 阻值范围 Resistance value range: 1R-10KR
- ▶ 耐压 Withstand voltage: 2.5KV-5KV/1min 50Hz 可选
- ▶ IP 等级 IP Level: Ip20
- ▶ 振动 Vibration: 0.5g
- ▶ 散热方式 Heat dissipation Method :自然冷却 Natural cooling
- ▶ 额定温升 Rated Temperature rise:375°C
- ▶ 温漂 Temperature excursion: 80-400ppm/°C
- ▶ 载流体材料 Transfer fluid material: 0Cr25Al5/Ni80Cr20 可选 can choose
- ▶ 优势 Advantage:较高电压 Higher Voltage
- ▶ 劣势 Disadvantage:功率做不大,抗震性稍差 Low Power, and weak antiknock characteristic
- ▶ 包装 Packaging:纸盒封装 Carton packaging

# 阻性感性容性测试负载

Resistive Inductive Capacitive Test Load (RLC)



交流阻感性负载, 依据IEC 62116-2008《并网连接式光伏逆变器孤岛防护措施测试方法》内关于RLC负载部分进行设计; 采用分段式组合控制, 支持突加/突卸; 阻性部分使用自研发功率模块, 功率密度高, 耐热性强, 强制风冷, 保证负载能持续运行; 感性负载电抗器采用高硅优质取向硅钢片; 所有绝缘材料及电磁导线采用F/H级, 按照国家标准要求工艺制造具有损耗小、绝缘性佳、散热性好、防腐蚀、防潮、抗震力强、安全可靠; 容性负载电容采用GB/T3667-2005认证的标准容器, 具备体积小、重量轻, 电性能好、损耗小, 具有良好的自愈(SH)特性, 内部有压力式防爆装置, 使用安全, 加载测试过程电容阻抗功率不会发生变化。交流阻感性负载, 7种负载组合, R载/L载/C载/RL载/RC载/LC载、RLC载, 可以模拟用户的各种测试工况需求, 是电源、发电机、光伏储能逆变器等产品不可缺少的研发测试设备。The AC resistance-inductive capacitive load is designed according to RLC load part in IEC 62116-2008 Test Method for Islanding Protection Measures of Grid-connected PV Inverter; Sectional combined control is adopted to support sudden loading/unloading; Self-developed power module is used for the resistance part, with high power density, strong heat resistance and forced air cooling to ensure continuous operation of load; High silicon quality oriented silicon steel sheet shall be adopted for inductive load reactor; All insulating materials and electromagnetic conductors shall be of F/H grade, and shall be manufactured in accordance with national standards, with small loss, main insulation, good heat dissipation, corrosion resistance, moisture resistance, strong seismic resistance, safety and reliability; Capacitive load capacitor adopts GB/T3667-2005 certified standard container, with small volume, light weight, good electrical performance, small loss, good self-healing (SH) characteristics, pressure explosion-proof device inside, safe use, no change of capacitance impedance power during loading test. AC resistive capacitive load, 7 load combinations, R load/L

load/C load/R load/R load/R load/C load/L load, RLC load, which can simulate the user's various test conditions, is an indispensable R&D test equipment for power supply, generator, photovoltaic energy storage inverter and other products.

## 产品特点 Product features:

- ▶ 显示功能: 带电压、电流、功率、频率、电量等电参数显示。Display function: display voltage, current, power, frequency, electric quantity and other electrical parameters.
- ▶ 保护功能: 具备超温报警、超温保护、过压保护、过流保护功能, 异常状态负载自动卸载, 保证设备以及人身安全。Protection function: over-temperature alarm, over-temperature protection, over-voltage protection, over-current protection, automatic load unloading under abnormal conditions, to ensure equipment and personal safety.
- ▶ 核心功率模块: 自主研发功率模块, 自主生产, 功率密度高, 耐热性强, 温漂低, 无红热现象, 使用寿命长。Core power module: self-developed power module, self-developed, high power density, strong heat resistance, low temperature drift, no red heat phenomenon, long service life.
- ▶ 控制方式可选: 手动控制或者触摸屏控制。Optional control mode: manual control or touch screen control.
- ▶ 负载精度:  $\pm 5\%$ ; Load accuracy:  $\pm 5\%$ .
- ▶ 散热方式: 负载采用强制风冷散热, 使用小型轴流风机, 风量大, 噪音小, 保证负载能持续稳定运行。Heat dissipation mode: forced air cooling heat dissipation is adopted for load, and small axial flow fan is adopted, with large air volume and low noise, so as to ensure continuous and stable operation of load.
- ▶ 参考标准: 依据IEC 62116-2008《并网连接式光伏逆变器孤岛防护措施测试方法》内防孤岛测试负载标准设计。Reference standard: it is designed according to the anti-islanding test load standard in IEC 62116-2008 Test Method for Islanding Protection Measures of Grid-connected PV Inverter.

# 非线性测试负载

Non-linear Test Load (RCD)



交流RCD负载箱, 是一种非线性模拟负载, 依据GB/T 7260.3-2003《不间断电源设备(UPS第3部分: 确定性能的方法和试验要求》等相关国标, 通过深入研发和试验, 确定了RCD负载的设计规范与参数标准, 研制出新式RCD模拟负载, 真实模拟电源、逆变器在用户端实际带载情况。内部使用自研发功率模块, 功率密度高, 耐热性强, 强制风冷, 保证负载能持续运行; 电解电容使用国产优质品牌电容, 采用EPS(聚苯乙烯泡沫)材料制成的上下垫进行固定, EPS材质具有良好的防水、防撞、抗挤压等特性, 能够更好的保护电解电容。是UPS、逆变器及电源等产品不可缺少的研发测试设备。本产品适合电力电子产品带载测试及老化测试。The AC RCD load box is a kind of nonlinear simulation load. According to GB/T 7260.3-2003 Uninterruptible Power Supply Equipment (UPS Part 3: Methods and Test Requirements for Determining Performance and other relevant national standards, the design specifications and parameter standards of RCD load are determined through in-depth research and test, and a new RCD simulation load is developed to simulate the actual load of power supply and inverter at the user end. Self-developed power module is used internally, with high power density, strong heat resistance and forced air cooling to ensure continuous operation of load; The electrolytic capacitor adopts domestic high-quality brand capacitor, and is fixed with EPS (polystyrene foam) material. EPS material has good waterproof, impact resistance, extrusion resistance and other characteristics, which can better protect the electrolytic capacitor. It is an indispensable R&D test equipment for UPS, inverter and power supply.

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## 产品特点 Product features:

- ▶ 显示功能: 带电压、电流、有功功率、无功功率、功率因数、频率、电量等电参数显示。Display function: display voltage, current, active power, reactive power, power factor, frequency, electric quantity and other electrical parameters.
- ▶ 保护功能: 具备超温报警、超温保护、过压保护、过流保护功能, 异常状态负载自动卸载, 保证设备以及人身安全。Protection function: over-temperature alarm, over-temperature protection, over-voltage protection, over-current protection, automatic load unloading under abnormal conditions, to ensure equipment and personal safety.
- ▶ 核心功率模块: 自主研发功率模块, 自主生产, 功率密度高, 耐热性强, 温漂低, 无红热现象, 使用寿命长。Core power module: self-developed power module, self-developed, high power density, strong heat resistance, low temperature drift, no red heat phenomenon, long service life.
- ▶ 控制方式可选: 手动控制或者触摸屏控制。Optional control mode: manual control or touch screen control.
- ▶ 负载精度:  $\pm 5\%$ 。Load accuracy:  $\pm 5\%$ .
- ▶ 功率因数可调: 0.7-1。Power factor adjustable: 0.7-1.
- ▶ 散热方式: 负载采用强制风冷散热, 使用小型轴流风机, 风量大, 噪音小, 保证负载能持续稳定运行。Heat dissipation mode: forced air cooling heat dissipation is adopted for load, and small axial flow fan is adopted, with large air volume and low noise, so as to ensure continuous and stable operation of load.
- ▶ 参考标准: 依据GB/T 7260.3-2003《不间断电源设备(UPS第3部分: 确定性能的方法和试验要求》标准设计。Reference standard: designed according to GB/T 7260.3-2003 Uninterruptible Power Supply Equipment - Part 3: Methods for Determining Performance and Test Requirements.

# 直流回馈负载

DC Feedback Load



直流回馈负载,内部使用DC/AC双向直流电源模块,通过DC/AC逆变,把直流电逆变回馈到交流三相电网,满功率状态下,最高回馈效率达90%以上,可以节约大量电能是逆变器、UPS、直流发电机、直流电焊机、电源等产品不可缺少的老化测试设备。DC/AC bidirectional DC power supply module is used in DC/AC feedback load. DC/AC inverter feeds back DC power to AC three-phase power grid. Under full power condition, the maximum feedback efficiency is over 90%, which can save a lot of electric energy. It is an inverter, UPS, DC generator, DC electric welding machine, power supply and other indispensable aging test equipment.

## 产品特点 Product features:

- ▶ DC/AC双向逆变,带高频隔离。DC/AC two-way inverter, with high frequency isolation.
- ▶ 超宽交流电压范围,满足国标、欧标、美标应用:260Vac~530Vac;自适应同步接入电网;Ultra-wide AC voltage range, meeting national standard, European standard and American standard application: 260Vac~530Vac; Self-adaptive synchronous access to power grid.
- ▶ 超宽直流电压范围。Ultra-wide DC voltage range: 200Vdc~1000Vdc.
- ▶ 宽工作温度范围。Wide operating temperature range:-40°C~75°C.
- ▶ 支持CC(恒流)模式、CV(恒压)模式。CC (constant current) mode and CV (constant pressure) mode.
- ▶ 具有完善的保护功能,过温保护、过流保护、过功率保护。Perfect protection functions, including over-temperature protection, over-current protection and over-power protection.
- ▶ 高达90%的转换效率;。Up to 90% conversion efficiency.
- ▶ 具有7寸高清触摸屏,方便用户触摸操作。Inch HD touch screen for user touch operation.
- ▶ 带电压、电流、功率显示。With voltage, current and power display.

# 交流回馈负载

Alternating Current Feedback Load



交流回馈负载,把交流电经过AC-DC-AC电路反馈到电网,满功率状态下,最高回馈效率达90%以上,可以节约大量电能,是逆变器、UPS、交流电源、交流发电机等产品不可缺少的老化测试设备。The AC feedback load is used to feed the AC power back to the grid through AC-DC-AC circuit. Under full power condition, the maximum feedback efficiency can reach over 90%, which can save a lot of electrical energy UPS、Indispensable aging test equipment for AC power supply, AC generator and other products.

## 产品特点 Features:

- ▶ 半载以上(相电压176 Vac~264Vac)回馈效率高达90%。Feedback efficiency above half load (phase voltage 176 Vac~264 Vac) up to 90%.
- ▶ 输入,回馈隔离,无反灌电压[电流]现象。Input, feedback isolation, no reverse voltage [current] phenomenon.
- ▶ 带7寸触摸屏控制,负载性能稳定。With 7-inch touch screen control, stable load performance.
- ▶ 具有RS485通讯(可并机使用)。R5485 communication (can be used in parallel).
- ▶ 带电压、电流、功率、效率显示。With voltage, current, power and efficiency display.
- ▶ 可设定带载时间。Load time can be set.

# 交流充电桩测试系统

Test System of A.C. Charging Pile



交流充电桩老化系统用于国标、欧标、美标交流充电桩出厂老化测试,搭配交流耗能型负载或者交流回馈负载,16路串联设计,高效节能。支持多种标准,兼容单相和三相充电桩产品,实时检测每台交流桩的电压、电流。该老化系统主要应用于交流充电桩生产时批量老化测试,为产品出货提高效率,降低生产成本。The AC charging spot aging system is used for the ex-factory aging test of GB, European and American standard AC charging spot, matched with AC energy-consuming load or AC feedback load, 16-channel series design, high efficiency and energy conservation. Supporting multiple standards, compatible with single-phase and three-phase charging pile products, and detecting voltage and current of each AC pile in real time. The aging system is mainly used for batch aging test during AC charging pile production, which improves the efficiency of product delivery and reduces the production cost.

## 产品特点 Product features:

- ▶符合现行国标、欧标、美标交流充电桩测试标准。Comply with current national standard, European standard and American standard AC charging pile test standard.
- ▶控制方式:手动控制或者触摸屏控制。Control mode: manual control or touch screen control.
- ▶模块化设计。Modular design.
- ▶单台支持16路串联老化。A single set supports 16-channel series aging.
- ▶带S2控制导引开关。With S2 control pilot switch.
- ▶整体结构采用双面两层设计。The overall structure is designed with double sides and two layers;
- ▶带旁路开关。With bypass switch.
- ▶每个老化位带电压、电流检测(只检测L1)。Each aging position is provided with voltage and current detection (only L1 is detected).
- ▶每个老化位带充电指示灯Each aging position is equipped with charging indicator.

# 直流充电桩老化系统

DC Charging Pile Aging System



直流充电桩老化系统集成直流充电桩通讯连接与负载两大功能模块,负载可选用宽电压直流负载或者直流回馈负载,直流回馈负载采用DC/AC双向直流电源模块,通过DC/AC逆变,把直流电逆变回馈到交流三相电网,满功率状态下,最高回馈效率达90%以上,有源逆变技术,即可满足测试功率实验要求,也可将电源发出的电能逆变后返回电网,使电能得到循环,极大降低测试环节的电能开销,降低生产成本,提高老化效率。The DC charging pile aging system integrates two functional modules: DC charging pile communication connection and load. Wide voltage DC load or DC feedback load can be selected as the load. DC/AC bidirectional DC power supply module is used as the DC/AC feedback load. The DC/AC inverter feeds back the DC power to the AC three-phase power grid. Under full power, the maximum feedback efficiency is over 90%. Active inverter technology can meet the test power test requirements, and the power generated by the power supply can be inverted and returned to the power grid, so that the power can be circulated, greatly reducing the power consumption of the test link, reducing the production cost and improving the aging efficiency.

## 产品特点 Features:

- ▶兼容国标、欧标、美标三种直流充电桩通信功能。It is compatible with the communication functions of three DC charging piles: national standard, European standard and American standard.
- ▶具有控制导引模拟功能,可设置直流充电桩的输出电压。It has control guidance simulation function and can set the output voltage of DC charging pile.
- ▶可选用高效率回馈模块,回馈效率高达90%以上,极大节约老化成本。High-efficiency feedback module can be selected, with feedback efficiency of over 90%, greatly saving aging cost.
- ▶可选用宽电压直流负载,能耗型,带CC/CR/CP三种模式。Wide voltage DC load, energy consumption type, with CC/CR/CP modes.
- ▶带7寸高清触摸屏,操作简易。With 7-inch HD touch screen, easy operation.
- ▶带过压、过流、过温保护。With overvoltage, overcurrent and over-temperature protection.

# 合作单位

Cooperation unit



## 广东绿功电气有限公司

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