



深圳市荣电创新技术有限公司
Shenzhen Rong Electric Technology Co.,Ltd

产品规格书 SPECIFICATION FOR APPROVAL

Customer: _____

Issued Date: _____

Model No.: MQ200PC4.5B

Description: 显示屏电源

荣电创新			客户	
PREPARED BY 编写	CHECKED BY 审核	APPROVED BY 批准	CHECKED BY 审核	APPROVED BY 批准
胡进涛	詹满冬	王世顺		

ADD:4F-2#Building,Tangwei NO.1 Industrial park,Guangming District,Shenzhen
City,China,PRC.518132

地址: 深圳市光明新区塘尾第一工业区B栋4楼

电话/Tel: 0755-61820336 0755-61820337 传真/Fax: 0755-61820339

网址/web:www.rong-electric.com



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一、 Overview 概述:

The power supply was designed for LED display; small size, high efficiency, stability, reliability and high average current accuracy. Power supply has input undervoltage, output current limiting, output short circuit protection. Power supply will apply with high rectification which greatly improves the power efficiency, can reach 87.0% above, saving energy consumption.

本电源是专为 LED 显示屏设计的电源: 具有体积小、效率高、工作稳定、可靠性高, 高均流精度等特点。电源具有输入过欠压, 输出限流及输出短路保护; 电源采用高效整流电路极大地提高了电源的效率, 效率高达 87.0%, 极大地节约了能源。



二、 Main Electrical Specification 产品主要电气规格.

Output Power (W) 输出功率	Rated Input Voltage (Vac) 额定输入电压	Output voltage (Vdc) 输出电压	Output Current (A) 输出电流	Regulation accuracy 稳压精度	Ripple & Noise (mVp-p) 纹波及噪音
180	100—240	+4.5	0-40	±2%	≤150

三、 Reference standards and norms 引用标准及规范.

3.1 GB / T 2423.1-2011 electric and electronic products, environmental testing, Part 2: Test methods / test A: low-temperature GB/T 2423.1-2011 电工电子产品环境试验, 第 2 部分: 试验方法/试验 A: 低温

3.2 GB / T 2423.2-2011 electric and electronic products, environmental testing, Part 2: Test Methods / Test B: high-temperature GB/T 2423.2-2011 电工电子产品环境试验, 第 2 部分: 试验方法/试验 B: 高温

3.3 GB / T 2423.3-1993 electric and electronic products environmental testing procedures - Test Ca: Damp heat test method; GB/T 2423.3-1993 电工电子产品基本环境试验规程—试验 Ca: 恒定湿热试验方法;

3.4 GB / T 2423.4.1993 electric and electronic products environmental testing procedures - Test Db: Damp heat test method; GB/T 2423.4.1993 电工电子产品基本



环境试验规程—试验 Db:交变湿热试验方法

3.5 GB / T 2423.5-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ea and guidance: Shock; GB/T 2423.5-1995 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Ea 和导则: 冲击

3.6 GB / T 2423.6-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ea and guidance: Bump; GB/T 2423.6-1995 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Ea 和导则: 碰撞

3.7 GB / T 2423.8-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ed: Free fall; GB/T 2423.8-1995 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Ed: 自由跌落

3.8 GB / T 2423.10-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Fc and guidance: Vibration (sinusoidal) ; GB/T 2423.10-1995 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Fc 和导则: 振动 (正弦)

3.9 GB / T 2423.11-1997 electric and electronic products, environmental testing, Part 2: Test Methods / Test Fd: Random vibration wide band - General requirements; GB/T 2423.11-1997 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Fd: 宽频带随机振动—一般要求

3.10 GB / T 2423.22-2002 electric and electronic products, environmental testing, Part 2: Test N: temperature change; GB/T 2423.22-2002 电工电子产品环境试验, 第 2 部分: 试验 N: 温度变化

四、Environmental conditions 环境条件:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	☒Remarks 备注
4.1	Permanent operating temperature 工作温度	-30-50	℃ 度	高温老化需加散热板辅助散热, 散热面积不小于 200*300*3mm
4.2	Storage temperature 存贮温度	-40-80	℃ 度	
4.3	Work Relative Humidity 工作相对湿度	10-90 (无凝露)	%	Note 1
4.4	Storage Relative Humidity 存贮相对湿度	10-90	%	
4.5	Cooling mode 散热方式	Ventilation cooling 自冷		
4.6	Atmospheric pressure 大气压力	80-106	Kpa 帕斯卡	
4.7	☒Altitude 海拔高度	2000	M 米	
4.8	Vibration 振动耐受	10-55Hz 19.6m/S ² (2G),20 minutes each along X,Y and Z axis.		
4.9	Shock 冲击耐受	49m/S ² (5G),20 once each X,Y and Z axis.		

Note 1: Please add the new requirement when the power supply will be used for



high humidity condition. 当电源将被用于高湿度的环境下,在下订单时请增加这新的要求。

五、Electrical Characteristics 电气特性:

5.1. Input Electrical characteristics 输入特性:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
5.1.1	Rated input voltage 额定输入电压	100-240	Vac	Note 2
5.1.2	Input voltage range 输入电压范围	90-264	Vac	
5.1.3	Input frequency range 输入频率	47-63	Hz	
5.1.4	Efficiency 效率	≥ 87.0 (Vin=220Vac)	%	Full load (room temperature) Note 3
5.1.5	PF 功率因数	≥ 0.95	/	Full load
5.1.6	Maximum input current 最大输入电流	≤ 4	A	
5.1.7	Inrush current 输入浪涌电流	≤ 60	A	

Note 2: Meanings of rated input voltage and the input voltage range: the rated input voltage is the international general appellation, the highest voltage of rated input voltage float upwards 10%, is the input voltage upper limit, the maximum value, the minimum voltage of rated input voltage float downward 10%, is the input voltage lower limit, the minimum value. Rated input voltage range of 200-240 is corresponding to 180-264. The two terms are not contradictor, essence is consistent, uniform, only two different terms. 额定输入电压与输入电压范围的含义: 额定输入电压是国际通用的称谓, 额定输入电压的最高电压向上浮动 10%, 就是输入电压的上限, 即最大值, 额定输入电压的最低电压向下浮动 10% 就是输入电压的下限, 即最小值。额定输入电压 200-240 对应的输入电压范围为 180-264。这两者不是相互矛盾的, 实质是一致的, 统一的。

Note 3: Efficiency: Terminal output voltage multiplied by the output current, and then divided by the AC input voltage, divided by the AC input current, divided by the power factor: $\text{efficiency} = \text{terminal output voltage} \times \text{output current} / (\text{the AC input voltage} \times \text{AC input current} \times \text{power factor})$. 电源效率: 端子口输出电压乘以输出电流, 然后除以交流输入电压, 除以交流输入电流, 除以电源功率因数; 效率 = 端子口输出电压 X 输出电流 / (交流输入电压 X 交流输入电流 X 功率因数)。



5.2. Output Electrical Characteristics 输出特性:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
5.2.1	Output rating voltage 输出额定电压	+4.5	Vdc	
5.2.2	Output current range 输出电流	0—40	A	
5.2.3	Output voltage range 输出电压范围	4.408—4.6	Vdc	
5.2.4	Voltage regulation accuracy 电压调整率	±1%	V _o	
5.2.5	Load regulation accuracy 负载调整率	±1%	V _o	
5.2.6	Regulation accuracy 稳压精度	±2%	V _o	
5.2.7	Ripple and noise 纹波及噪声	≤150	mVp-p	Full load; 20MHz, 104+10uF NOTE 3
5.2.8	Power output delay 开机延迟时间	≤2500	ms	NOTE 4
5.2.9	Hold up time 输出保持时间	≥10	ms	V _{in} =220Vac NOTE5
5.2.10	Output voltage rise time 输出电压上升时间	≤100	ms	NOTE 6
5.2.11	Off overshoot 输出过冲	±10%	V _o	
5.2.12	Output dynamic 输出动态响应	Voltage changes less than ± 5% V _O ; dynamic response time ≤ 250us		LOAD 25%—50%; 50%—75%;

Note 3: Ripple & noise test: Ripple & noise bandwidth is set to 20MHz, use a 0.10uF ceramic capacitor in parallel with a 10.0uF electrolytic capacitor at output connector for ripple & noise measurements. 纹波和噪声的测试: 纹波和噪声的测试带宽为 20 兆赫兹, 在输出端口并联一个 0.10 微法的瓷片电容和一个 10.0 微法的电解电容。

Note 4: The power delay time measured is when AC power on to 90% of specified output voltage observed on the channel. 开机延迟时间为 AC 输入上电到输出电压上升到 90% 间的时间。

Note 5: The hold-up time measured is when AC power off to 90% of specified output voltage observed on the channel. 输出保持时间为从输入 AC 掉电到输出电压下掉到输出电压的 90% 间的时间。

Note 6: The rise time measured is when the output voltage rise from 10% to 90% of specified output V_{out} observed on the channel wave form. 输出上升时间为输出电压从 10% 上升到 90% 间的时间。



5.3. Protection Features 保护特性:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
5.3.3	Output current limit protection point 输出过流保护	44-60	A	Hiccup Model, Auto-recovery 打嗝, 自恢复
5.3.4	Output short circuit protection 输出短路保护	可保护	/	

5.4. Other features 其它特性:

NO. 序号	ITEM 项目	Specifications 技术要求	Units 单位	Remarks 备注
5.4.1	MTBF	$\geq 30,000$	H	
5.4.2	Leakage current 输入泄漏电流	$< 1.0\text{mA}$ ($V_{in}=220\text{Vac}$)		GB8898-2001 9.1.1

六、 Safety features 安全特性:

NO. 序号	ITEM 项目	Test conditions 测试条件	Standard/SPEC 标准、技术要求	
6.1	Isolation voltage 绝缘耐压	Input-Output 输入对输出	3000Vac/10mA/1min	No flashover, no breakdown
		Input-PE 输入对大地	1500Vac/10mA/1min	No flashover, no breakdown
		Output-PE 输出对大地	500Vac/10mA/1min	No flashover, no breakdown
6.2	Insulation Resistance 绝缘阻抗	Input-Output 输入对输出	DC500V	10M Ω Min
		Input-PE 输入对大地	DC500V	10M Ω Min
		Output-PE 输出对大地	DC500V	10M Ω Min

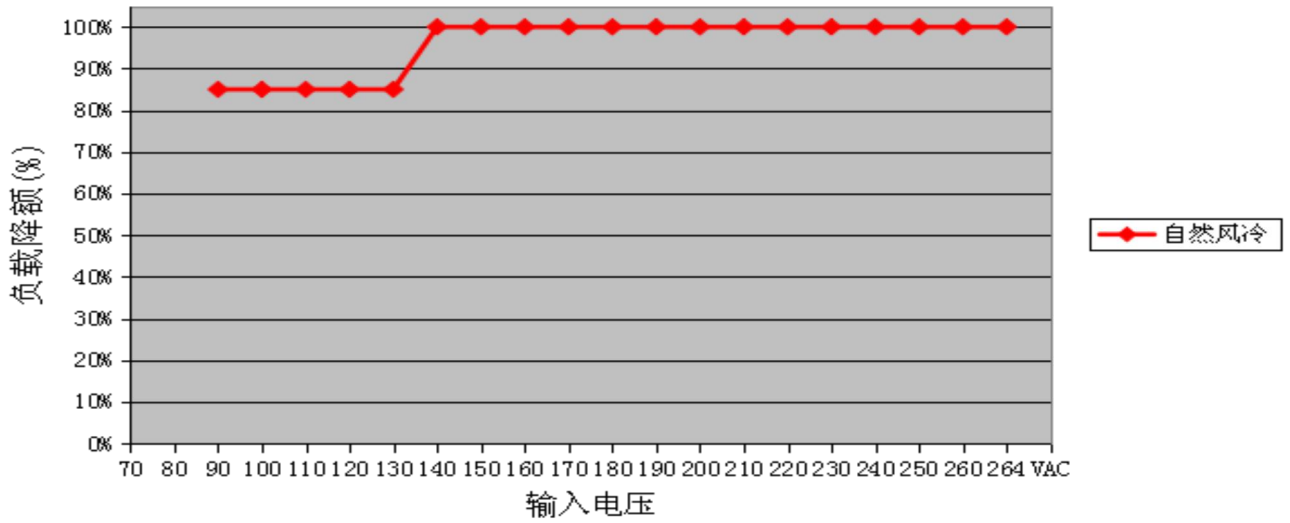
Note: Input line (all L&N) should be shorted; and all output should be shorted.
所有输入线 (包括 L 线和 N 线) 要短路和所有输出包括正负端要短路。

七. Derating guideline:降额曲线:

7.1 Input voltage derating guideline.输入电压降额曲线:

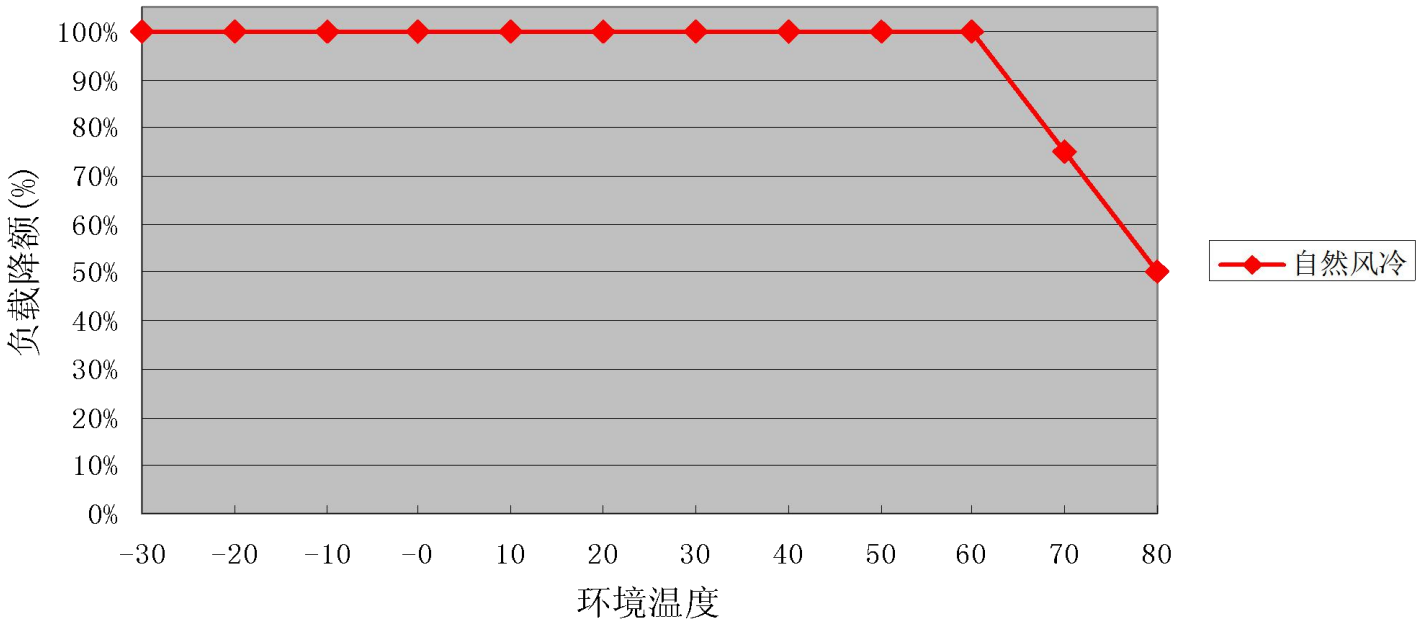


输入电压降额曲线图



7.2 Operate temperature derating guideline. 温度降额曲线:

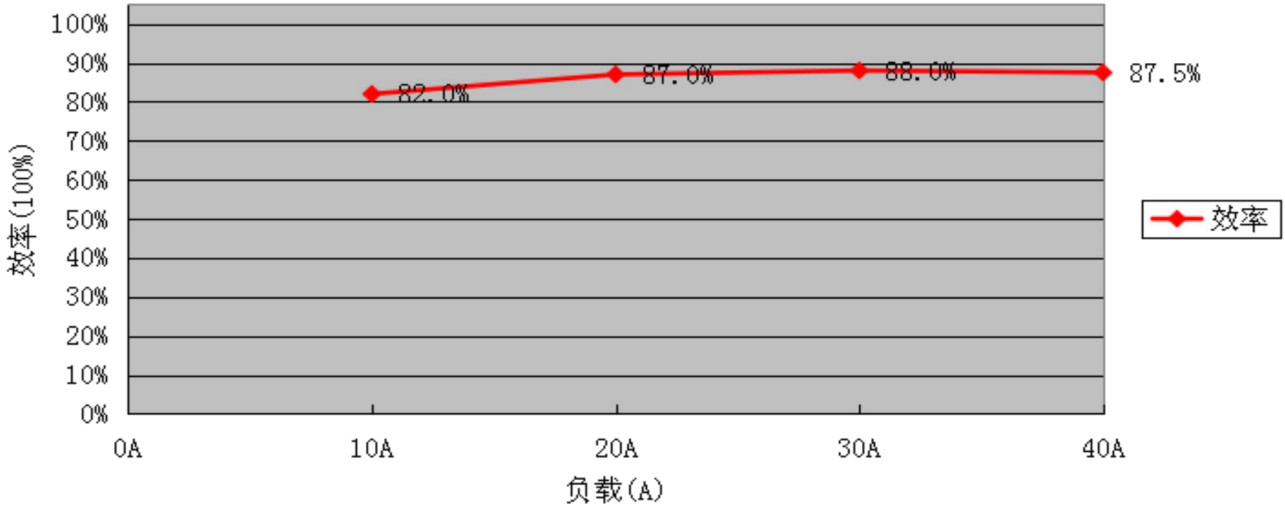
工作温度降额曲线图



7.3 Effi & load guideline: 效率与负载曲线: (220Vac)



负载与效率曲线

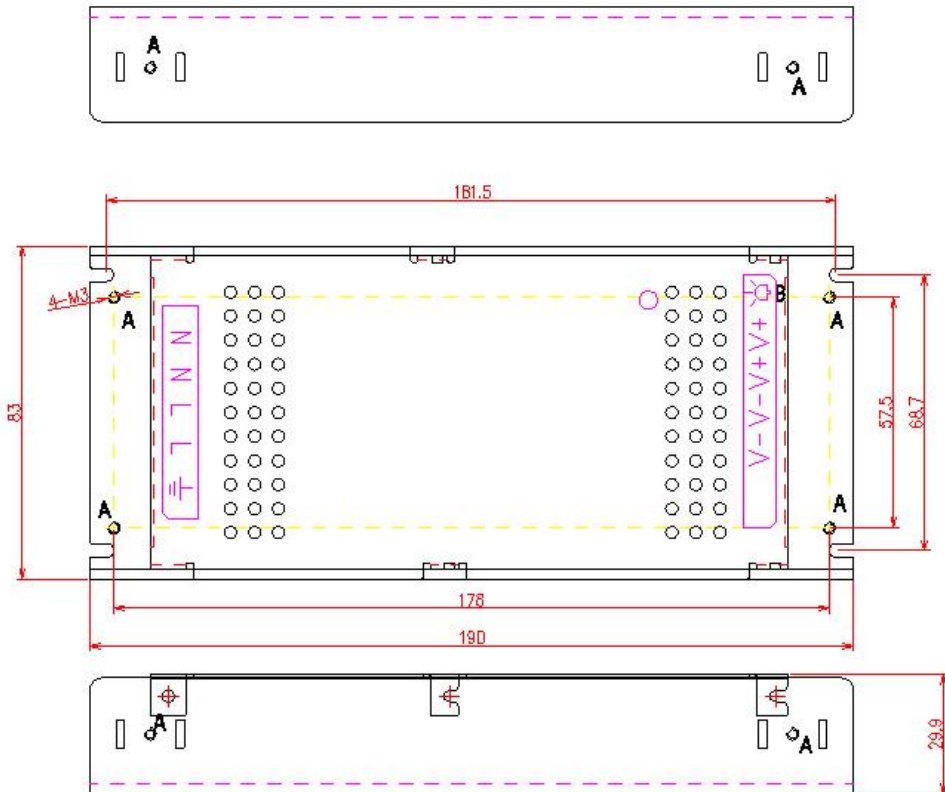


八、The definition of mechanical properties and connectors (Units: mm) 机械特性及接插件定义 (单位: 毫米)

8.1. Dimensions 尺寸:

L190 x W83 x H30 电源尺寸为: 长 190 宽 83 高 30, 单位毫米。

8.2. Installation hole size: 安装孔位尺寸:



8.3. Pin connection. 连接器脚位定义:



8.3.1 Input connection CON3 : 5PIN 9.6mm (输入连接端子 CON3)

N0. 序号	N0. 序号	Define. 定义
1	PIN1	NEUTRAL
2	PIN2	NEUTRAL
3	PIN3	LINE
4	PIN4	LINE
5	PIN5	EARTH

Note: Face the connection from left to right.

8.3.2 output connection COM1 (输出连接端子 COM1)

N0. 序号	N0. 序号	Define. 定义
1	PIN1	GND
2	PIN2	GND
3	PIN3	GND
4	PIN4	+4.5VDC
5	PIN5	+4.5VDC
6	PIN6	+4.5VDC

Note: Face the connection from left to right.

九、Weight, packaging, transport and storage. 重量, 包装, 运输和储存:

9.1. Weight. 重量:

9.1.1. Everyone weight is 758G. 单个电源的重量为 758 克。

9.1.2 One box have 10 units, total weight is 8.1KG. the dimensions of the box :LXWXH (units :mm): 一个箱子装 10 台, 总重量为 8.1 千克;箱子尺寸为: L39.9 x W29 x H14CM

9.2 Packing

Box has the product name, model number, manufacturer ID, the manufacturers certificate of quality inspection department, manufacturing date; the box with an attachment list. 包装箱上有产品名称、型号、厂家标识、厂家质量部门的检验合格证、制造日期等; 包装箱内有附件清单。

9.3 Transportation

Suitable for cars, boats, aircraft transport, transport should be awnings, sun protection, loading and unloading of civilization. 适应于车、船、飞机运输, 运输中应遮蓬、防晒、文明装卸。



9.4 storage

Product is not used which should be stored in the box, warehouse temperature $-20\text{ }^{\circ}\text{C}$ - $+80\text{ }^{\circ}\text{C}$, relative humidity of 10% -90%, the warehouse does not allow any harmful gases, flammable, explosive and corrosive products of chemicals, and strong mechanical vibration, shock and strong magnetic field, package box should be at least 20cm high from the ground, away from the wall, heat, window or air intake at least 40cm, under specified conditions in the storage period is generally one year, more than one year should be re-tested. 产品未使用时应存放在包装箱内, 仓库环境温度为 $-10\text{ }^{\circ}\text{C}$ — $+80\text{ }^{\circ}\text{C}$, 相对湿度为 10%—90%, 仓库内不允许有有害气体, 易燃, 易爆的产品及有腐蚀性的化学物品, 并且无强烈的机械振动, 冲击和强磁场作用, 包装箱应垫离地至少 20cm 高, 距离墙壁、热源、窗口或空气入口至少 40cm, 在本规定条件下的贮存期一般为 1 年, 超过 1 年后应重新进行检验。