

产品特点：

- ✓ AC 输入；DC 输入
- ✓ 短路/过载/过压/过温保护
- ✓ 采用内置恒流限制电流
- ✓ 防浪涌设计，浪涌电流 $\leq 40A$
- ✓ 内置风扇冷却
- ✓ 2 年质保

应用领域：

- ✓ 工业控制 / LED 显示

Features:

- ✓ AC input ; DC input
- ✓ Protections: Short circuit / Overload / Over voltage / Over temperature
- ✓ Build-in constant current limit circuit
- ✓ Inrush current immunity, less than 40A
- ✓ 2 years warranty

Application:

- ✓ Industrial Control / LED

ESP-250C-12

产品规格书

PRODUCT SPECIFICATION

制造安全产品 驱动绿色世界 Power a Safe and Green world

Excellent 卓越 Creative 创造 United 协作



合肥华耀电子工业有限公司

ECU ELECTRONICS INDUSTRIAL CO.,LTD.



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1. 产品功能描述 Product Function Description

ESP-250C 系列开关电源为 AC 输入，手动开关切换，具有过压、过流和过温保护，内置温控风扇冷却和恒流限制电路，具有高效率、低温升和高性价比，广泛应用于 LED 显示和工业控制。

ESP-250C series are AC input selectable by switch power supply, with over voltage, overload and over temperature protection, built-in cooling by temperature-control fan and constant current limiting circuit, also with high efficiency, low temperature rise and high cost performance, widely used in LED indicator and industrial control.

2. 基本参数 Basic Parameter

输出电压 Output Voltage	电压调整范围 Voltage Adjust Range	噪声+纹波 Noise & Ripple	最小负载 Min.Load	最大负载 Max.Load
12V	±10%	150mV	0A	20.8A

备注1)：电源最大持续输出功率249.6W。

Remark1) :Maximum 249.6W continuous output, with air convection.

3. 技术特性 Technical Characteristics

3-1 输入特性 Input Characteristics

项目 Item	单位 Unit	最小值 Min	额定值 Rated	最大值 Max	备注 Remark
输入电压 Input Voltage	Vac	90	115	132	
		180	230	264	
输入频率 Input Frequency	Hz	47	50	63	
输入电流 Input Current	A	/	/	3.0	230Vac,满载/Full Load.
				5.0	115Vac,满载/Full Load.
输入冲击电流 Inrush Current	A	/	/	40	230Vac/50Hz, 满载, 25℃ 冷启动 /Full load cold start@25℃.

3-2 输出特性 Output Characteristics

项目 Item	单位 Unit	最小值 Min	额定值 Rated	最大值 Max	测试条件 Test Conditions
输出电压 Output Voltage	V	10.8	12	13.2	
输出电流 Output Current	A	0	/	20.8	12Vdc输出/@12Vdc Output
负载调整率 Load Regulation	/	/	/	±1%	
线性调整率 Line Regulation	/	/	/	±1%	

电压误差 Voltage Tolerance	/	/	/	±2%	
输出纹波噪声 DC Output Ripple&Noise	mVp-p	/	/	150	
效率 Efficiency	/	/	83%	/	230Vac/50Hz,最大负载Max load.
开机延迟时间 Setup Time	S	/	/	1	115/230Vac输入,25℃满载. 115/230Vac.Input,Full Load@25℃.
输出上升时间 DC Output Voltage Rise Time	mS	/	/	200	115/230Vac输入,25℃满载. 115/230Vac.Input,Full Load@25℃.
输出保持时间 DC Output Hold-up Time	mS	16	/	/	115Vac输入,25℃满载. 115Vac Input, Full Load@25℃.
		20	/	/	230Vac输入,25℃满载. 230Vac Input, Full Load@25℃.

注:输出纹波噪声测试条件 DC output ripple & noise test conditions

1)使用 12 英寸 (300mm) 的双绞线将电源连接至负载, 同时在负载端并联 0.1uF 和 47uF 电容。

12" (300mm) of twisted load cables,paralleled 0.1uF ceramic and 47uF electrolytic placed across the terminals at the load.

2)示波器须设置在 20M 赫兹带宽, 在负载端进行测试。

Scope probe,20MHz bandwidth-limited,placed across the terminals at the load.

3-3 保护功能 Protection Function

项目 Item	范围 Range	注释 Comments
过压保护 Over Voltage Protection	115~150%	过压发生后, 必须重新启动才能恢复。 Reset must be need when over voltage to get right.
过载保护 Over load Protection	105~150%	故障移出后,电源自动恢复。 Recovers automatically after fault condition is removed
短路保护 Short Circuit Protection	/	故障移出后,电源自动恢复。 Recovers automatically after fault condition is removed
过温保护 Over temperature Protection	105-115℃	内部关键元器件温度达到一定范围时, 关断输出, 自动恢复。 Temperature of internal key components reaches a certain extent, Disconnect output, recovery automatically

3-4 绝缘性能 Withstand Function

项目 Item	测试方法 Range	测试条件 Comments
绝缘耐压 Dielectric Strength:(Hi- pot)	输入-输出 Input To Output	1500Vac 50Hz 1 分钟/minute切断电流≤10mA
	输入-地 Input To FG	1500Vac 50Hz 1 分钟/minute切断电流≤10mA
	输出-地 Output To FG	500Vac 50Hz 1 分钟/minute切断电流≤10mA

绝缘阻抗 Isolation Impedance	输入-输出 Input To Output	DC500V 100MΩ分钟/minute(25℃, 70%RH)
	输入-地 Input To FG	DC500V 100MΩ分钟/minute(25℃, 70%RH)
	输出-地 Output To FG	DC500V 100MΩ分钟/minute(25℃, 70%RH)
接触电流 Leakage current	/	≤3.5mA

3-5 安规要求 Safety Requirement

安规&电磁兼容 Safety& EMC:

电源设计满足下列规则: EN60950-1,GB4943-2001

Designed to meet the following:EN60950-1,GB4943-2001

3-6 可靠性 Reliability

电源老化 Burn-in test

电源在输入 230Vac(50Hz) ,满载,温度40℃条件下;4小时老化测试.

230Vac (50Hz) input voltage applied to the power supply, Full load is applied on the product in a 40 degrees C environment in a burn-in room for 4 hours.

MTBF

在25℃时测得与计算, 超过20万小时
200,000 Hours at 25℃

4.环境要求

项目 Item	单位 Unit	最小值 Min	典型值 Rated	最大值 Max	备注 Remark
温度 Temperature	℃	-20	25	60	工作温度Operation Temperature 参照负载降额曲线 (attached drawing)
		-20	25	85	贮藏温度Storage Temperature
相对湿度 Humidity	℃	20%	/	90%	工作湿度Operation Humidity
		10%	/	95%	贮藏湿度Storage Humidity
冷却方式 Cooling Mode	温控风扇冷却Cooling by temperature-control fan				
振动 Vibration	10-500Hz, 2G 10分钟/周期, X、Y、Z轴各60分钟 10~500Hz, 2G 10min/1cycle, period for 60 min each along X,Y,Z axes				

长 215 毫米*宽 115 毫米*厚 50 毫米; 215×115×50mm

≤1.1Kg ; Weight: ≤1.1Kg.

Technical drawing of the LED module showing top, front, and bottom views with dimensions and assembly instructions.

Top View Dimensions:

- Overall width: 150 ± 0.3
- Overall height: 50 ± 1
- Left side width: 32 ± 0.5
- Right side width: 33 ± 0.5
- Bottom edge height: 28 ± 0.3

Front View Dimensions:

- Overall width: 215 ± 1 (Note: (228) is also indicated)
- Overall height: 135 ± 0.3 (Note: (148) is also indicated)
- Left side width: 32 ± 0.5
- Right side width: 32.5 ± 0.5
- Bottom edge height: 12.5 ± 0.5
- Internal height segments: 50 ± 0.3 , 115 ± 1

Bottom View Dimensions:

- Overall width: 150 ± 0.3
- Overall height: 50 ± 1
- Left side width: 32 ± 0.5
- Right side width: 33 ± 0.5
- Bottom edge height: 28 ± 0.3

Assembly Instructions:

- 4-M4-6H screws are used for mounting.
- Screw insertion length: $\leq 4\text{mm}$.
- Length of screw in: $\leq 4\text{mm}$.

Other Labels:

- LED
- ADJ

A: Suggested tightening torque: M3.0 screw $< 0.4 \text{ N} \cdot \text{m}$; M4.0 screw $< 0.6 \text{ N} \cdot \text{m}$.

5-4 输入 AC/输出 DC 插座 Input And Output Socket

引脚编号 Pin No.	功能 Assignment	引脚编号 Pin No.	功能 Assignment
1	AC/L	4~6	DC 输出 -V
2	AC/N	7~9	DC 输出 +V
3	FG		

6. 降额曲线 Derating Curve

