

承认书

SPECIFICATION FOR APPROVAL

Part No. MP116
Description: LCD Power Supply Specification
Revision: 1.0
Customer. _____
Customer Approval No. : _____

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1. Power Supply Overview 电性能指标:

1.1 Table 1 Input Electrical Characteristics Overview (输入特性)

Input voltage range 输入电压	90Vac to 264Vac
Normal voltage range 标称输入	100Vac to 240Vac
Frequency range 频率范围	50Hz/60Hz $\pm$ 5%
Max input ac current 满载输入电流	2.0Amax at full load condition
Inrush current (cold start) 浪涌电流	50Atp peak, 120Vac; 100Atp peak, 220Vac
Efficiency(full load) 效率	80%min at 100Vac; 84%min at 220Vac
Harmonic current 谐波电流	Meet EN60065-2002/IEC61000-3-2 class D
Leakage Current 泄漏电流	Less Than 0.5mA, 230Vac input
Standby Power Loss 待机功耗	$\leq$ 1W 240Vac input , Output current $\leq$ 40mA,
Input Fuse 输入保险	T3. 15AH/250Vac

1.2 Output Electrical Characteristics Overview (输出特性)

1.2.1 Table 2 Output Voltage ,Current & Regulation. (输出调整率)

Output Voltage 输出电压	Regulation 调整率	Min. current 最小电流	Load current range 带载电流范围	Peak current or power 峰值电流或功率
+V1(+24V)	+V1 $\pm$ 5%	0.1 A	0.1A-3A	$\leq$ 4A
+V2(+12V)	+V2 $\pm$ 5%	0.1 A	0.1A-2A	$\leq$ 4A
+5.0V	+5.0V $\pm$ 5%	0.1 A	0.1A-3A	$\leq$ 4A
+5.0V(STB)	+5.0V $\pm$ 5%	0.05 A	0.05A-1A	$\leq$ 2A

Note:* The peak current or power should be test at other of dc output at Rated load ,And the peak current pulse width within 100ms 峰值电流或功率的测试是在其它额定负载时测试，且脉宽小于 100 毫秒。

1.2.2 Table 3 DC Output Ripple & Noise. (输出纹波和噪声)

Output Voltage	Ripple & Noise (Max.)
+V1(+24V)	240mVp-p@25℃ ; 350mVp-p@-10℃
+V2(+12V)	120mVp-p@25℃ ; 200mVp-p@-10℃
+5.0V	50mVp-p@25℃ ; 200mVp-p@-10℃ ;
+5.0V(STB)	60mVp-p@25℃ ; 200mVp-p@-10℃ ; 150mVpp when STB

Note: 1) Measurements shall be made with an oscilloscope with 20MHz bandwidth.

示波器须设置在 20 兆赫兹带宽

2) Outputs shall be bypassed at the connector with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor to simulate system loading.

输出须并联 0.1uF 的陶瓷电容和 10uF 的电解电容来模拟负载

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1.2.3 Output Transient Response. (输出动态响应)

Table 4. Test condition. 测试条件

Voltage Tolerance Limit	Slew Rate	Load Change
5.0V/5.0VSB $\pm$ 5% 24V/12V/ $\pm$ 10%	0.2A/uS	Min. to 50% load and 50% to Max load
All output $\pm$ 10%	0.2A/uS	Min. load to Max load

Note: Transient response measurements shall be made with a load changing repetition rate of 50Hz to 10kHz. 以 50Hz~10KHz 的频率跳变负载来测试。

1.2.4 Table 5 DC Output Hold-Up Time. (输出保持时间)

Output Voltage	120Vac input	220Vac input
+V1(+24V)	≥ 10 mS	≥ 10 mS
+V2(+12V)	≥ 10 mS	≥ 10 mS
+5.0V	≥ 10 mS	≥ 10 mS
+5.0V(STB)	≥ 10 mS	≥ 10 mS

Note: All of dc output at full load. 所有输出带满载

1.2.5 Table 6 DC Output Overshoot At Turn On & Turn Off. (输出超调)

Output Channel	Output (V)	Over shoot voltage (V) 超调电压	
		Turn on 开机	Turn off 关机
+V1(+24V)	+ 24V	10%	10%
+V2(+12V)	+ 12V	10%	10%
+5.0V	+5.0V	10%	10%
+5.0V(STB)	+5.0V	10%	10%

Note: All of dc output current from Min. to Max. 测试时负载范围：最小到最大

1.2.6 Table 7 DC output voltage rise time (输出上升时间)

Output Voltage	120Vac input & Full Load	220Vac input & Full Load
+V1(+24V)	≤ 100 mS	≤ 100 mS
+V2(+12V)	≤ 100 mS	≤ 100 mS
+5.0V	≤ 100 mS	≤ 100 mS
+5.0V(STB)	≤ 60 mS	≤ 50 mS

Note: The output voltages shall rise from 10% to 90% of their output voltage.

输出从 10%上升到 90%的时间

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1.3 Remote On/Off Control: (遥控功能)

The power supply DC outputs (without +5.0Vsb) shall be enable with an active-high TTL($\geq 2.5V/2.0mA$)-compatible signal(Ps-on). The +5.0Vsb is on whenever the AC power is present.

除 5.0Vsb 外, 其余输出受控于一个 TTL 电平兼容的信号 ($Ps-on \geq 1.5V/2.0mA$), 5.0Vsb 上电就存在。

- * When Ps-on is pulled to TTL high, the DC outputs are to be enabled.
Ps-on 高电平, 打开输出
- * When Ps-on is pulled to TTL low or open circuit, the DC outputs are to be disabled.
Ps-on 低电平, 关闭输出

Table 8.

Ps-on Signal	Comments	Outputs
Ps-on- high	$\geq 1.5V \& 2.0mA$ (source)	Output
Ps-on- low	$\leq 0.5V$	X
Ps-on-open	--	X

1.4 Protection: (保护功能)

1.4.1 Table 9 DC output Over Voltage Protection. (输出过压保护)

Output Voltage	TYP. Over Voltage	Comments
+V1(+24V)	28V	输出锁机
+V1(+12V)	15V	输出锁机

Note: The power supply shall be test at max AC voltage (264Vac) and min load or no load.
应该在最大交流输入电压 264 伏和轻载、空载下测试。

1.4.2 Table 10 DC Output Over current Protection. (输出过流保护)

Output Voltage	Over Current	Comments
+V1(+24V)	$\geq 3.5A_{typ}^*$	Hiccup 尝试重复启动
+V2(+12V)	$\geq 3.5A_{typ}^*$	Hiccup 尝试重复启动
+5V	$\geq 3.5A_{typ}^*$	Hiccup 尝试重复启动
+5.0VSTB	$\geq 1.5A_{typ}^*$	Hiccup 尝试重复启动

Note:* The over current protection should be test at other of dc output at Rated load
过流保护测试是在其它额定负载时测试。

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1.4.3 Table 11 DC Output Short Circuit Protection. (输出短路保护)

Output Voltage	Comments
+V1(+24V)	Shutdown 关机
+V2(+12V)	Shutdown 关机
+5V	Hiccup 尝试重复启动
+5.0V(STB)	Hiccup 尝试重复启动

Note:* The Short Circuit protection should be test at other of dc output at Rated load
短路保护测试是在其它额定负载时测试。

1.4.4 Reset After Shutdown. (保护功能复位)

Recycle the ps-on signal, the power supply will restart after the fault removed.
故障去除后，关掉 Ps-on 信号再打开，电源即可恢复。

2. Isolation (绝缘性能)

2.1 Table 12 (绝缘阻抗)

Input To Output	DC500V 50M Ω min (at room temperature)
Input To FG	DC500V 50M Ω min (at room temperature)
Output To FG	Non Isolated

2.2 Table 13 (绝缘耐压)

Input To Output	3000Vac 50Hz 1minute $\leq$ 10mA
Input To FG	1500Vac 50Hz 1minute $\leq$ 10mA
Output To FG	Non Isolated

Note: Open FG and Output return. 交流地和输出负极要断开。

3. Safety (安全规格)

The power supply shall compliance with the following Criterion:
电源安全性满足下列标准

- 1) UL60950
- 2) EN60950
- 3) GB4943-1995

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4. EMC (电磁兼容性)

4.1 EMI (电磁干扰)

The power supply shall compliance with the following Criterion:

电源电磁干扰满足下列规则:

1) Conduction Emission : (传导干扰度)

*EN55022, CLASS B

*GB9254, CLASS B

*FCC PART15 CLASS B

2) Radiated Emission : (辐射干扰度)

*EN55022, CLASS B

*GB9254, CLASS B

*FCC PART15 CLASS B

注: The power board should be assembled in customer's product to test for passing the regulations 需配合用户电路整机通过上述规则。

4.2 EMS (电磁抗扰)

The power supply shall compliance with the following Criterion:

电源电磁抗扰满足下列规则:

1) ESD (静电抗扰度)

*GB17626.2-1998/IEC61000-4-2

2) EFT (脉冲群抗扰度)

*GB17626.4-1998/IEC61000-4-4 3KV

3) Surge (雷击浪涌)

*GB17626.5-1998/IEC61000-4-5 1.5KV / 3KV

5. Environmental Requirement (工作环境)

5.1 Temperature (环境温度)

* Operating: -10℃ to +40℃.

* Store: -20℃ to +80℃.

5.2 Humidity (环境湿度)

* Operating: From 10%to90% relative humidity (non-condensing).

* Store: From 5 to 95% relative humidity (non-condensing).

5.3 Altitude (海拔高度)

* Operating: to 10,000 ft.

* Store: to 20,000ft.

5.4 Cooling Method (冷却方式)

* Ventilation cooling . 自然冷却

5.5 Vibration (振动耐受)

* 10-55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis.

5.6 Impact (冲击耐受)

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* 49m/s² (5G), 11ms, once each X, Y and Z axis.

6. Dimension (物理尺寸)

* 175mm X 90mm X 25mm (长 L * 宽 W * 高 H).

7. Weight (重量)

* 200g

8. Pin Connection (连接器脚位定义)

Table 15 Pin-CON5 Connection And Function

NO.	Pin Connection	Function
5. 6. 7. 8	GND	+24VDC RETURN
1. 2. 3. 4	+V1	+24VDC OUTPUT

Note: CON103 -- XH CONNEETION, TYPE : pitch2.5mm

Table 16 Pin-CON3 Connection And Function

NO.	Pin Connection	Function
3. 4	GND	+24VDC RETURN
1. 2	Vaudio	+24VDC OUTPUT

Note: CON103 -- XH CONNEETION, TYPE : pitch2.5mm

Table 17 Pin-CON4 Connection And Function

NO.	Pin Connection	Function
1. 2	GND	+5V +5VSB +12VDC RETURN
3. 4	+5V	+5VDC OUTPUT
5	STB	SMPS ON/OFF CONTROL (ON = HIGH)
6	+5VSB	STANDBY (+5.0VDC) OUTPUT
7. 8	+5V	+5VDC OUTPUT
9. 10. 11	GND	+5V +5VSB +12VDC RETURN
12. 13	+12V	+12VDC OUTPUT

Note: CON5 -- VH CONNEETION, TYPE : pitch2.5mm

Table 18 Pin-CON1 Connection And Function

NO.	Pin Connection	Function
①	AC-L	AC INPUT LINE
②	NC	NC
③	AC-N	AC INPUT NUTURE

Note: CON1 -- VH CONNEETION, TYPE : pitch3.96mm

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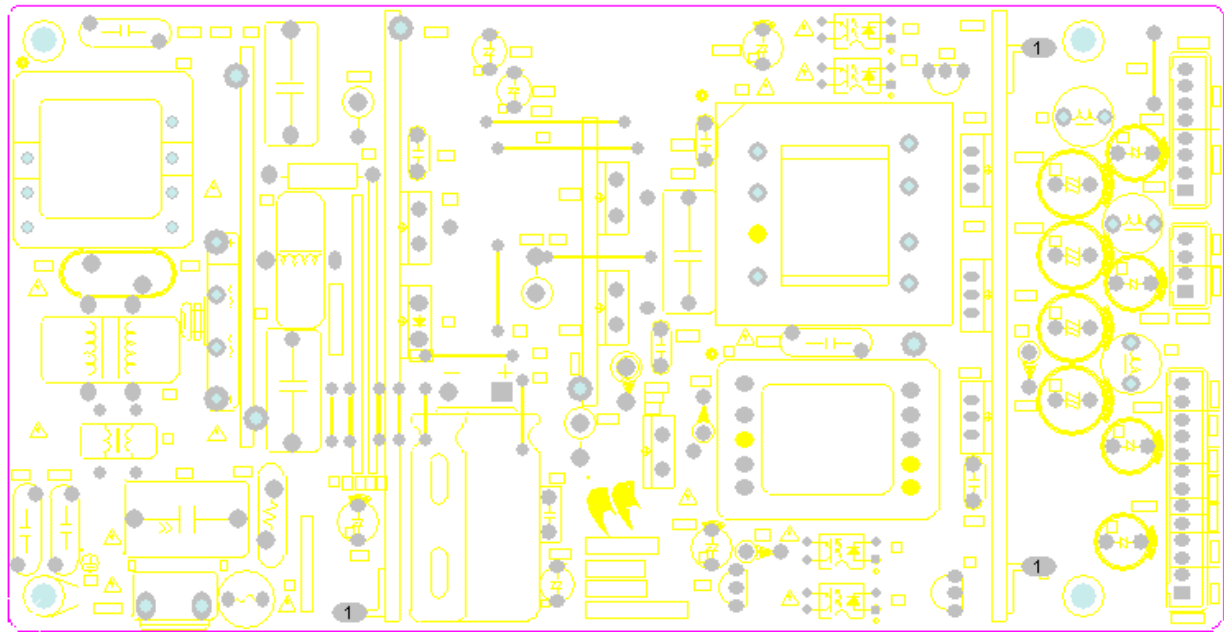
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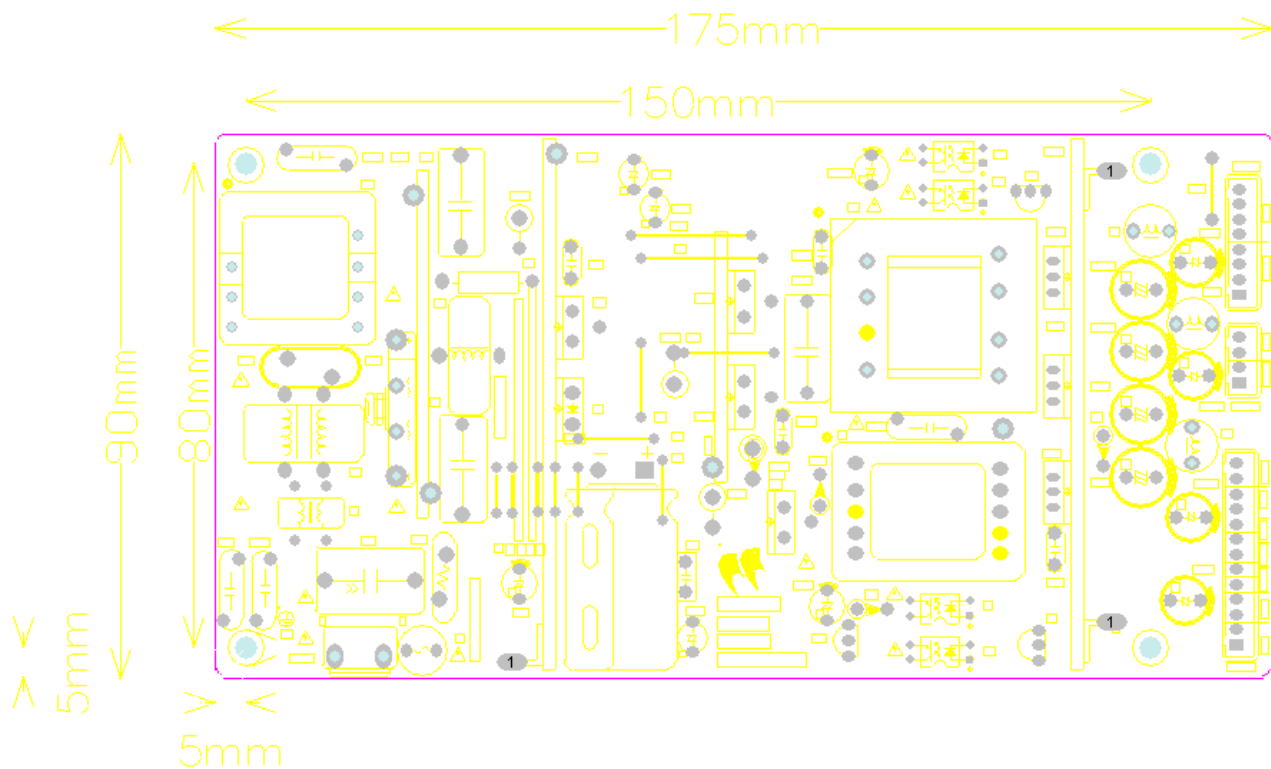
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Fig.8.1 Pin Connection (Top View)
Top View



9. Power Supply Mounting （安装尺寸）



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Mount Method(装配注意事项)

Table 19

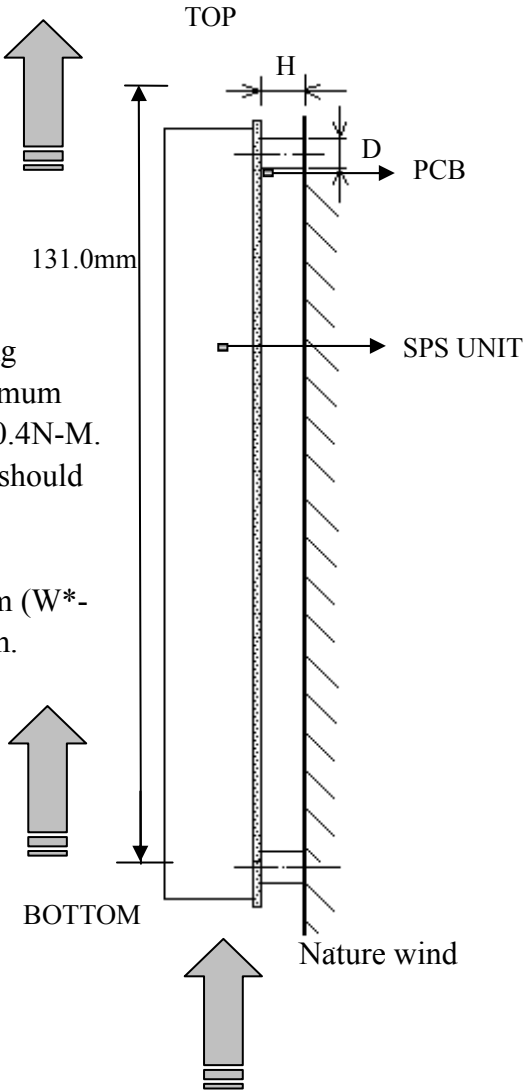
D	≤5.5mm (1*)
H	≥6.0mm
	≤3.0mm (2*)

Note:

1*. Mount the unit to the mounting board using M3 screw. The maximum value of the tightening torque is 0.4N-M. The insertion depth of the screw should be less 5.5mm.

2*. Add 100mmx180mmx 0.25mm (W*-H*T)Mylar under PCB bottom.

3* Horizontal monut 水平横装



10. Package 包装

防静电气泡袋,
包装箱尺寸:



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