

# 承认书

## SPECIFICATION FOR APPROVAL

Part No. MLT198L

Description: LCD Power Supply Specification

Revision: 2.1

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 ± 5%
Max input ac current 满载输入电流	4Amax at full load condition
Inrush current (cold start) 浪涌电流	50A <sub>typ</sub> peak, 120Vac; 100A <sub>typ</sub> peak, 220Vac
Efficiency(full load) 效率	80%min at 90Vac; 86%min at 220Vac
Harmonic current 谐波电流	Meet GB17625.1-1998/IEC61000-3-2 class D
Leakage Current 泄漏电流	Less Than 0.75mA, 230Vac input
Standby Power Loss 待机功耗	≤ 1W, 240Vac input
Input Fuse 输入保险	T6.3AH/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	Rated current 额定电流	Peak current 峰值电流
+24V	+V1 ± 5%	0.3A	8.5A	11A*
+24V SP	+V1 ± 5%	0.1A	1A	2A*
+12V	+V2 ± 10%	0.2A	1.5A	2A*
+5V(SB)	+5V ± 5%	0.01A	0.5A	1A
+5V 5A	+5V ± 5%	0.05A	5A	6A

Note:\* pulse width within 100ms 脉宽小于 100 毫秒

5V 5VSB +12V 输出总功率小于 55W。

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

Output Voltage	Ripple & Noise (Max.)
+24V +24V SP	240mVp-p@25°C ; 350mVp-p@-10°C
+12V	120mVp-p@25°C ; 200mVp-p@-10°C
+5V +5V (SB)	60mVp-p@25°C ; 200mVp-p@-10°C ; 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.

离电源板大于 30CM 处输出电源端并联 0.1uF 的陶瓷电容和 10uF 的电解电容来模拟负载测试

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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
V1/V2 ± 5% ; 5.0V ± 5%	0.2A/uS	Min. to 50% load and 50% to Max load
± 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 50~10KHz 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
+24V +24V SP	≥ 10 mS	≥ 10 mS
+12V	≥ 10 mS	≥ 10 mS
+5V +5V (SB)	≥ 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
+24V +24V SP	+24V	5%	5%
+12V	+12V	5%	5%
+5V +5V (SB)	5.0V	5%	5%

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
+24V +24V SP	≤ 100 mS	≤ 100 mS
+12V	≤ 100 mS	≤ 100 mS
+5V +5V (SB)	≤ 100 mS	≤ 100 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 shall be enable with an active-high TTL( $\geq 2.0V/2.0mA$ )-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（串入 4.7K $\Omega$  电阻 Ps-on $\geq 1.0V/1.0mA$ ），

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	$\geq 1V \& 1.0mA$ ( source)	Output
Ps-on- low	$\leq 0.5 V$	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	Max. Over Voltage	Comments
+V1(+24V)	27V	Power supply latch into shutdown state 输出锁机
+5.0V	6.8Vtyp	钳位二极管

Note: The power supply shall be test at max AC voltage (270Vac) and min load or no load.

应该在最大交流输入电压 270 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
+24V	$\geq 13A_{typ}$	Shutdown 关机
+24V SP	$\geq 2A_{typ}$	Shutdown 关机
+12V	$\geq 2A_{typ}$	Hiccup 尝试重复启动
+5.0V	$\geq 8A_{typ}$	Hiccup 尝试重复启动

一路保护，其它路带满载。

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

Output Voltage	Comments
+24V	Shutdown 关机
+12V	Hiccup 尝试重复启动
+5.0V	Hiccup 尝试重复启动

Note:

### 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 $\Omega$ min (at room temperature)
Input To FG	DC500V 50M $\Omega$ min (at room temperature)
Output To FG	Non Isolated

Note:

### 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

整机测试时, 建议交流输入线套  $\mu$  值 850 磁环

##### 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:                      0°C to +45°C.
- \* Store:                              -20°C to +80°C.

##### 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:                      to10,000 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, 49.0m/s<sup>2</sup> (5G), 3minutes period, 60minutes each along X, Y and Z axis.

##### 5.6 Impact (冲击耐受)

- \* 196.1m/s<sup>2</sup> (20G),11ms, once each X, Y and Z axis.

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## 6. Dimension (物理尺寸)

\* 260mm X 130mm X 30mm (长 L \* 宽 W \* 高 H, Fig 9.1, Fig 9.2).

## 7. Weight (重量)

\* 820±50g

## 8. Pin Connection (连接器脚位定义)

**Table 15 Pin-J2\J3 Connection And Function**

N0.	Pin Connection	Function
①	+V1	+24VDC OUTPUT
②	+V1	+24VDC OUTPUT
③	+V1	+24VDC OUTPUT
④	+V1	+24VDC OUTPUT
⑤	+V1	+24VDC OUTPUT
⑥	GND	+24VDC RETURN
⑦	GND	+24VDC RETURN
⑧	GND	+24VDC RETURN
⑨	GND	+24VDC RETURN
⑩	GND	+24VDC RETURN

Note: CN2 -- JST VA CONNEETION, TYPE :

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**Table 16 Pin-J1 Connection And Function**

NO.	Pin Connection	Function
①	PS-ON	SMPS ON/OFF CONTROL (ON = HIGH)
②	5. 0VSB	+5. 0VDC OUTPUT
③	+5. 0V	+5. 0VDC OUTPUT
④	+12V	+12VDC OUTPUT
⑤	GND	
⑥	GND	
⑦	GND	
⑧	GND	
⑨	+24V SP	SPEAK (+24VDC) OUTPUT

Note:

**Table 18 Pin-C0N1 Connection And Function**

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

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## 9. Power Supply Mounting (安装尺寸)

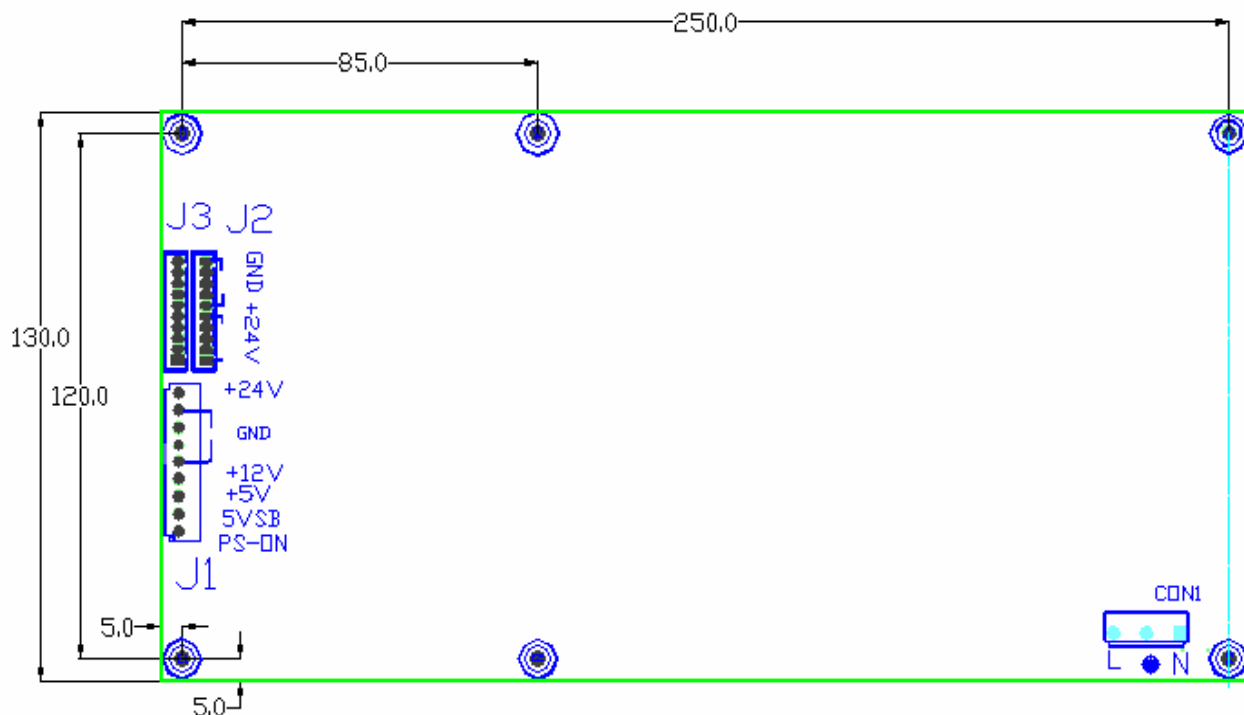
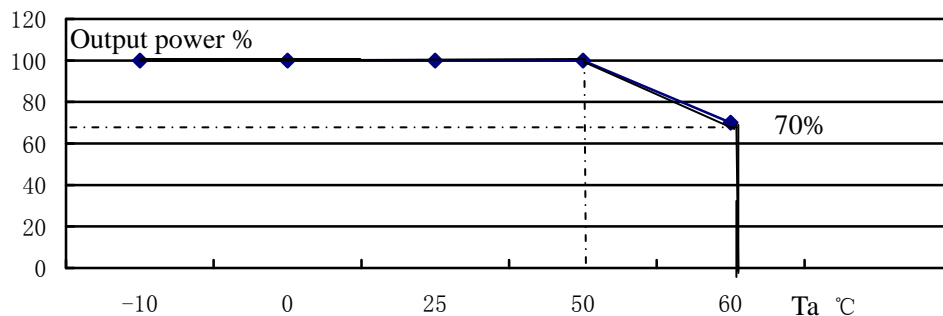


Fig. 9.1 Derating Curve



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**Fig. 9.2 Mount Method ( 装配注意事项 )**

电源为横装结构，散热器应有良好自然通风。

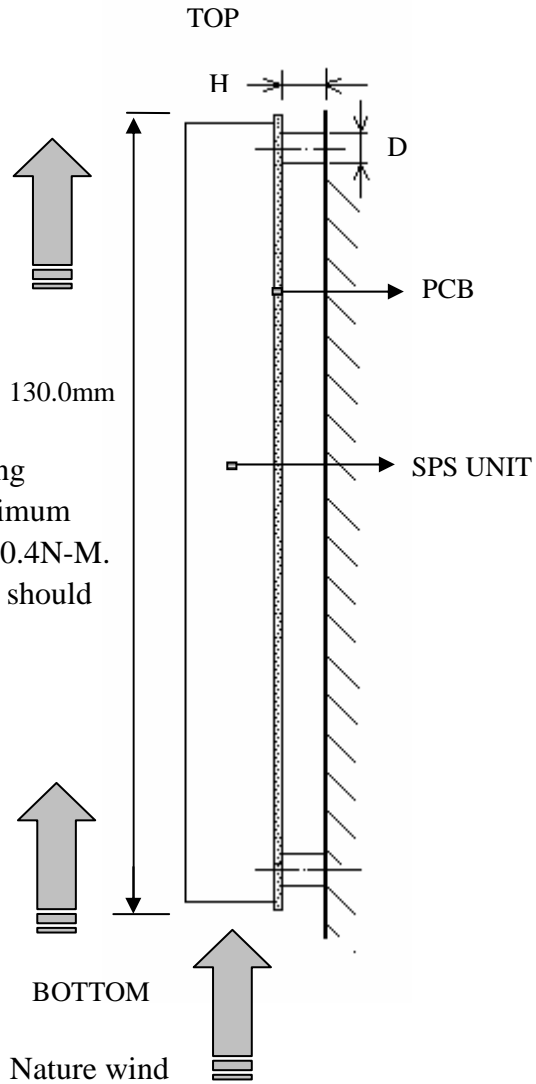
散热器离外壳金属板间距应大于 5mm,不足应加绝缘处理。

**Table 17**

D	$\leq 5.5\text{mm}$ (1*)
H	$\geq 6.0\text{mm}$

Note:

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.



底部进风口留 20cm 进风空间

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