

承认书
SPECIFICATION FOR APPROVAL

Part No. MLT199TL规格
Description: LCD Power Supply Specification
Revision: 1.2
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 _{typ} peak, 120Vac; 100A _{typ} peak, 220Vac
Efficiency(full load) 效率	82%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 带 50mA 负载
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	+24V ± 5%	0.3A	10.0A	14A*
+12V	+12V ± 10%	0.2A	3.0A	4.5A*
+5V(SB)	+5V ± 5%	0.01A	1.0A	1.2A*
+5V	+5V ± 5%	0.05A	4.0A	4.4A*

Note:* pulse width within 100ms 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.)
+24V	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	≥ 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	10%	10%
+12V	+12V	10%	10%
+5V +5V (SB)	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
+24V	≤ 120 mS	≤ 120 mS
+12V	≤ 120 mS	≤ 120 mS
+5V +5V (SB)	≤ 120 mS	≤ 120 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

1.3 Remote On/Off Control: (遥控功能)

The power supply DC outputs shall be enable with an active-high TTL(≥ 2.0V/2.0mA)-compatible signal(Ps-on). The +5.0Vsb is on whenever the AC power is

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present.

除 5.0Vsb 外，其余输出受控于一个 TTL 电平兼容的信号（串入 4.7KΩ 电阻 Ps-on ≥ 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	≥1V&1.0mA (source)	Output
Ps-on- low	≤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)	27-31V	Power supply latch into shutdown state 输出锁机
+12V	15Vtyp	Power supply latch into shutdown state 输出锁机

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	≥14A _{typ}	Shutdown 锁机
+12V	≥4.5A _{typ}	Shutdown 锁机
+5.0VSB	≥1.2A _{typ}	Hiccup 尝试重复启动
+5.0V	≥4.4A _{typ}	Hiccup 尝试重复启动

一路保护，其它路带满载。

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

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

Note:

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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

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

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)

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- *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 u 值 850 磁环 3TS

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/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis.

5.6 Impact (冲击耐受)

* 196.1m/s² (20G),11ms, once each X, Y and Z axis.

6. Dimension (物理尺寸)

* 260mm X 130mm X 38mm (长 L *宽 W * 高 H, Fig 9.1, Fig 9.2).

7. Weight (重量)

* 820±50g

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8. Pin Connection (连接器脚位定义)

Table 15 Pin-CN3\CN4 Connection And Function

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

Note: CN3/CN4 -- JST VA CONNEETION, TYPE : 2.5mm

Table 16 Pin-CN1 Connection And Function

N0.	Pin Connection	Function
①	+12V	+12VDC OUTPUT
②	+12V	+12VDC OUTPUT
③	GND	
④	GND	
⑤	GND	
⑥	+5.0V	+5.0VDC OUTPUT
⑦	+5.0V	+5.0VDC OUTPUT
⑧	5.0VSB	+5.0VDC OUTPUT
⑨	PS-ON	SMPS ON/OFF CONTROL (ON = HIGH)
⑩	+5.0V	+5.0VDC OUTPUT
11	+5.0V	+5.0VDC OUTPUT
12	GND	
13	GND	

Note: CN1 -- JST VA CONNEETION, TYPE : 2.5mm

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Table 17 CN2 Connection And Function

N0.	Pin Connection	Function
①	+24V	+24VSP OUTPUT
②	+24V	+24VSP OUTPUT
③	GND	+24VSP RETURN
④	GND	+24VSP RETURN

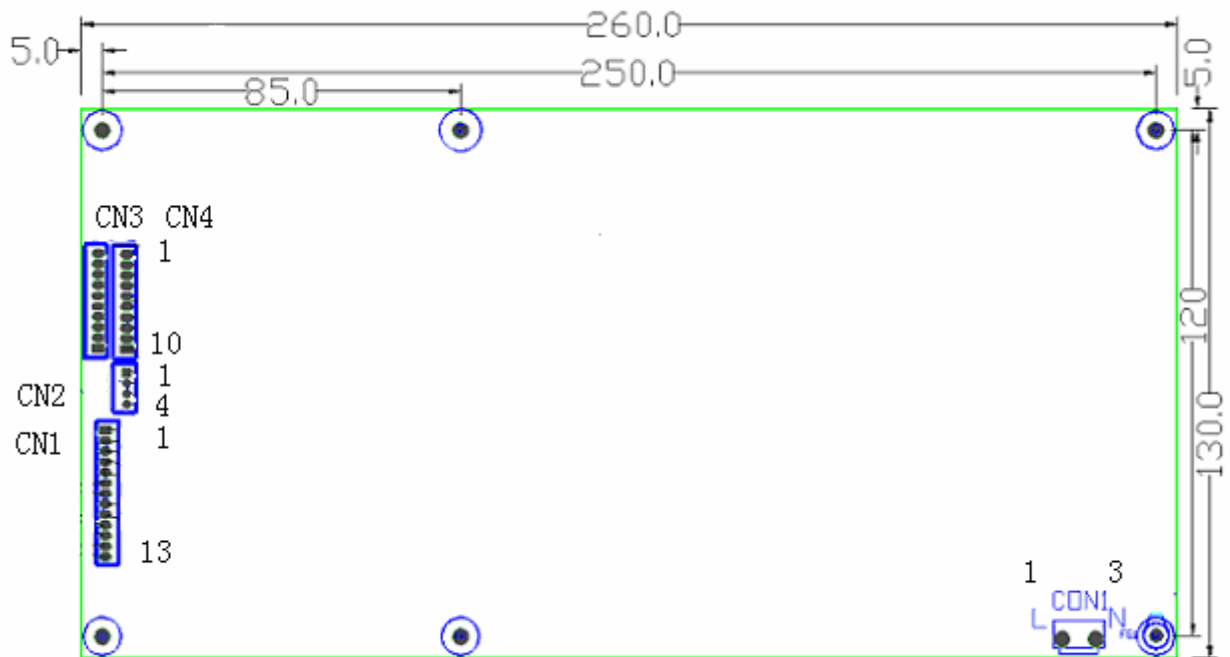
Note: CN2 -- JST VA CONNEETION, TYPE : 2.5mm

Table 18 C0N1 Connection And Function

N0.	Pin Connection	Function
①	AC-L	AC INPUT LINE
②	NC	
③	AC-N	AC INPUT NUTURE

Note: CON1 -- JST VA CONNEETION, TYPE : 3.96mm

9. Power Supply Mounting (安装尺寸)



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Fig. 9.1 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。

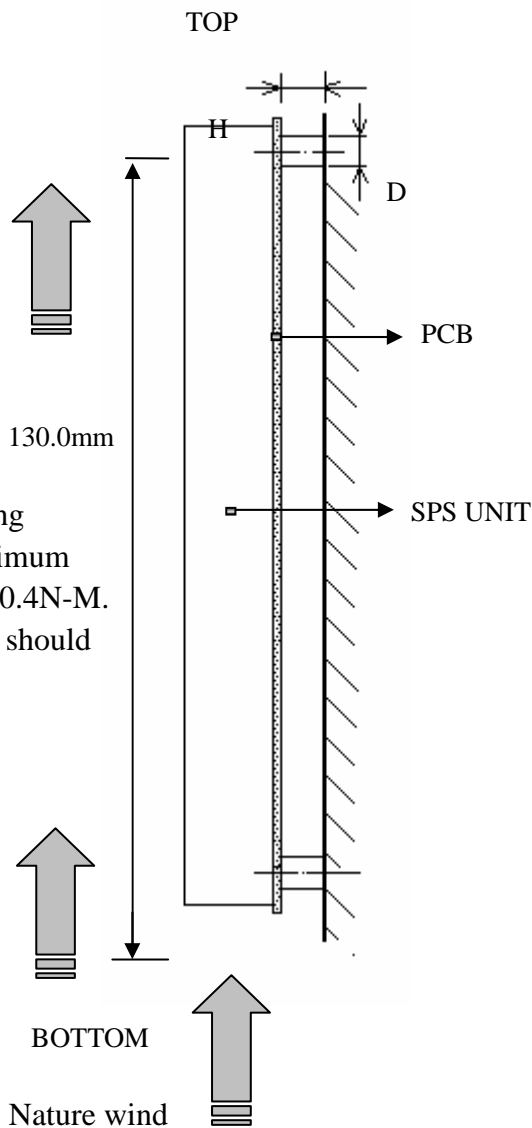
Mount Method (装配注意事项)

Table 17

D	≤5.5mm (1*)
H	≥6.0mm

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.



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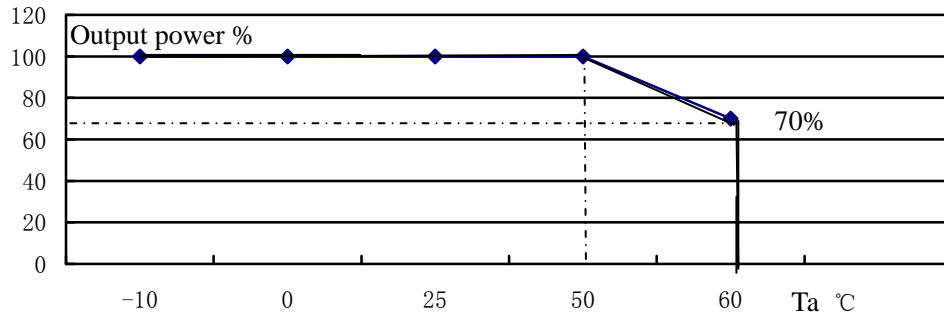
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Fig. 9.2 Derating Curve



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