

## 承认书

### SPECIFICATION FOR APPROVAL

Part No. MLT666T  
 Description: LCD Power Supply Specification  
 Revision: 1.2  
 Customer: \_\_\_\_\_  
 Customer Approval No. : \_\_\_\_\_

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2008/11/06	RANHONGJIANG	GUICHENCAI	ZHANGZHI	MSPS-MLT666T-1.2	1.2



# Section 目录

1. Power supply overview 电源性能指标
  - 1.1 Input Electrical Characteristics Overview (输入特性)
  - 1.2 Output Electrical Characteristics Overview (输出特性)
    - 1.2.1 Output Voltage ,Current & Regulation. (输出电压电流调整率)
    - 1.2.2 DC Output Ripple & Noise. (输出纹波和噪声)
    - 1.2.3 Output Transient Response. (输出动态响应)
    - 1.2.4 DC Output Hold-Up Time. (输出保持时间)
    - 1.2.4 DC Output Overshoot At Turn On & Turn Off. (输出超调)
    - 1.2.6 DC output voltage rise time (输出上升时间)
  - 1.3 Remote On/Off Control: (遥控功能)
  - 1.4 Protection: (保护功能)
    - 1.4.1 DC output Over Voltage Protection. (输出过压保护)
    - 1.4.2 DC Output Over current Protection. (输出过流保护)
    - 1.4.3 DC Output Short Circuit Protection. (输出短路保护)
    - 1.4.4 Reset After Shutdown. (保护功能复位)
2. Isolation 绝缘性能
3. Safety 安全规格
4. EMC 电磁兼容性
  - 4.1 EMI (电磁干扰)
  - 4.2 EMS (电磁抗扰)
5. Environmental Requirement 环境
  - 5.1 Temperature (环境温度)
  - 5.2 Humidity (环境湿度)
  - 5.3 Altitude (海拔高度)
  - 5.4 Cooling Method (冷却方式)
  - 5.5 Vibration (振动耐受)
  - 5.6 Impact (冲击耐受)
6. Dimension (物理尺寸)
7. Weight (重量)
8. Pin Connection (连接器脚位定义)
9. Power Supply mounting (安装尺寸)
10. Package (包装)

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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	3.0Amax 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 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	≤ 1W 240Vac input , Output current ≤ 50mA,
Input Fuse 输入保险	T5A/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 ± 5%	0.2 A	0.2A-5.0A	≤ 6.5A
+V2(+12V)	+V2 ± 10%	0.3 A	0.3A-2A	≤ 45W
+5.0V	+5.0V ± 5%	0.1 A	0.1A-3A	
+5.0V(STB)	+5.0V ± 5%	0.05 A	0.05A-1A	

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°C ; 350mVp-p@-10°C
+V2(+12V)	120mVp-p@25°C ; 200mVp-p@-10°C
+5.0V	50mVp-p@25°C ; 200mVp-p@-10°C ;
+5.0V(STB)	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.

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 ± 5% 24V/12V/± 10%	0.2A/uS	Min. to 50% load and 50% to Max load
All output ± 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
+V1(+24V)	≥ 10 mS	≥ 10 mS
+V2(+12V)	≥ 10 mS	≥ 10 mS
+5.0V	≥ 10mS	≥ 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)	≤ 100mS	≤ 100mS
+V2(+12V)	≤ 100 mS	≤ 100 mS
+5.0V	≤ 100mS	≤ 100mS
+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	Hiccup 尝试重复启动

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)	$\geq 6A_{typ}^*$	Power supply latch into shutdown state 输出锁机
+V2(+12V)	$\geq 2A_{typ}^*$	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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Document No.:	REV:
<b>MSPS-MLT666T-1.2</b>	1.2

### 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)	Hiccup 尝试重复启动
+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 $\Omega$ min (at room temperature)
Input To FG	DC500V 50M $\Omega$ 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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2008/11/06	RANHONGJIANG	GUICHENCAI	ZHANGZHI	<b>MSPS-MLT666T-1.2</b>	1.2

#### 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: 0°C to +40°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: 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/s<sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis.

##### 5.6 Impact (冲击耐受)

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\* 49m/s<sup>2</sup> (5G), 11ms, once each X, Y and Z axis.

## 6. Dimension (物理尺寸)

\* 192mm X 130mm X 30mm (长 L \* 宽 W \* 高 H).

## 7. Weight (重量)

\* 500g

## 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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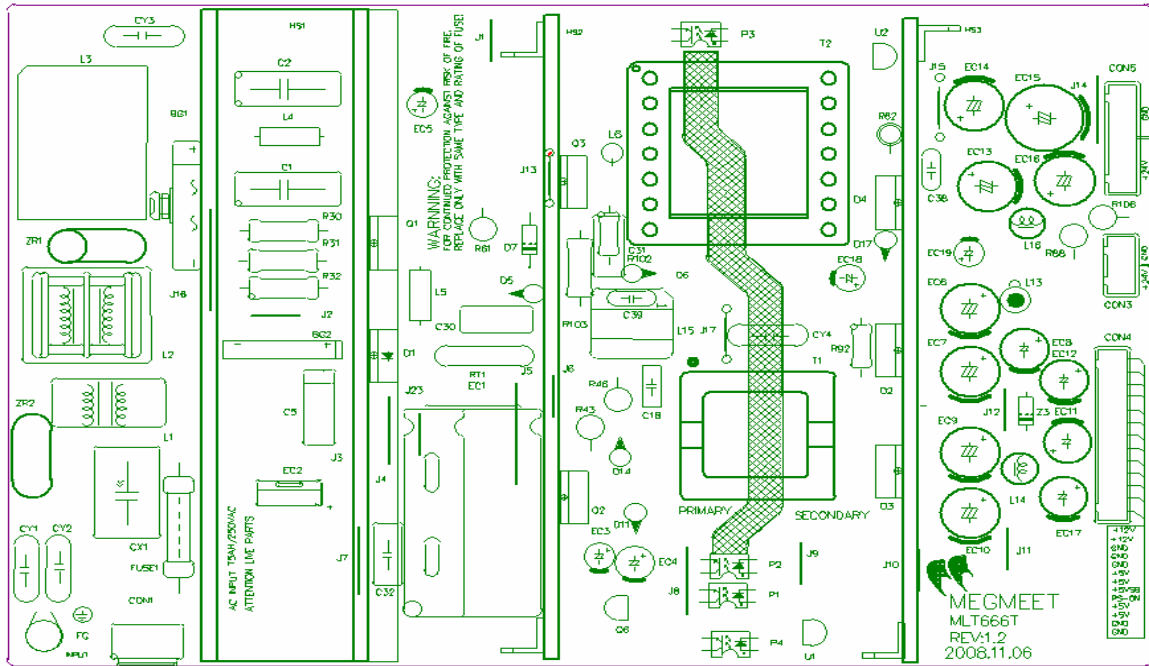
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Document No. :	REV:
<b>MSPS-MLT666T-1.2</b>	<b>1.2</b>

**Fig.8.1 Pin Connection (Top View)**

**Top View**



**9. Power Supply Mounting (安装尺寸)**



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2008/11/06	RANHONGJIANG	GUICHENCAI	ZHANGZHI	MSPS-MLT666T-1.2	1.2

### Mount Method ( 装配注意事项 )

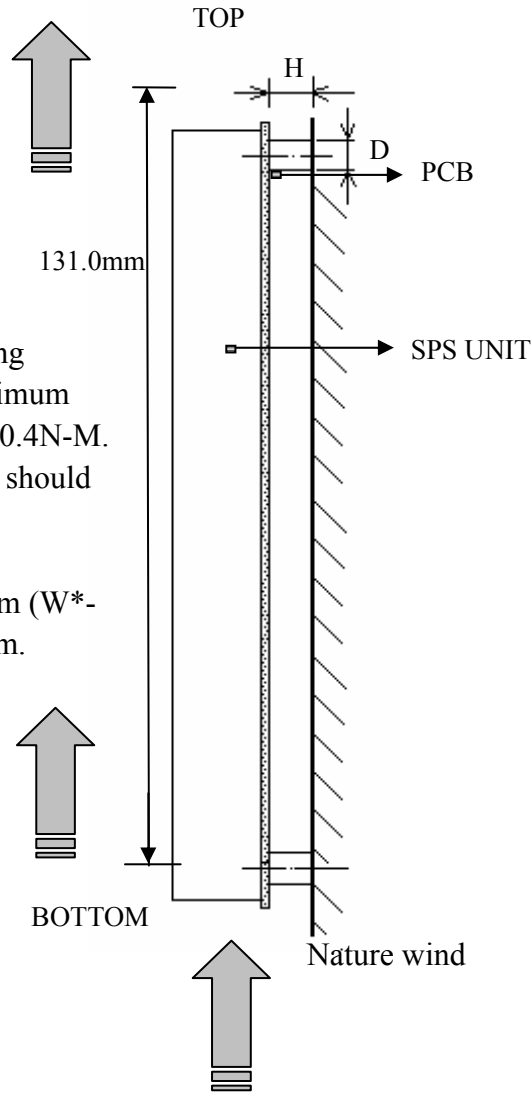
**Table 19**

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 136mmx196mmx 0.25mm (W\*-H\*T )Mylar under PCB bottom.



### 10. Package 包装

防静电气泡袋,  
包装箱尺寸:



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