

**CUSTOMER: GREYLIGHT**

**CUSTOMER CODE:**

# SPECIFICATION



产品名称 DESCRIPTION: LCD POWER SYSTEM

客户型号 CUSTOMER MODEL: \_\_\_\_\_

客户编号 CUSTOMER CODE: \_\_\_\_\_

承制方型号 MANUFACTURER MODEL: CTN280-P

版本 EDITION: \_\_\_\_\_

日期 DATE: 2012/11/03

## CUSTOMER APPROVED


采购部 PURCHING	研发部 R/D	品质部 QUALITY
COMPANY SIGN		

## MANUFACTURER

拟制 DRAWING	审核 CHECKED	批准 RATIFY
王理辉	李昌美	赵颜辉
COMPANY SIGN		

# Section

1. Power supply overview
  - 1.1 Input Electrical Characteristics Overview
  - 1.2 Output Electrical Characteristics Overview
    - 1.2.1 Output Voltage ,Current & Regulation.
    - 1.2.2 DC Output Ripple & Noise.
    - 1.2.3 Output Transient Response.
    - 1.2.4 DC Output Hold-Up Time.
    - 1.2.4 DC Output Overshoot At Turn On & Turn Off.
    - 1.2.6 DC output voltage rise time
  - 1.3 Remote On/Off Control:
  - 1.4 Protection:
    - 1.4.1 DC output Over Voltage Protection.
    - 1.4.2 DC Output Over current Protection.
    - 1.4.3 DC Output Short Circuit Protection.
    - 1.4.4 Reset After Shutdown.
2. Isolation
3. Safety
4. EMC
  - 4.1 EMI
  - 4.2 EMS
5. Environmental Requirement
  - 5.1 Temperature
  - 5.2 Humidity
  - 5.3 Altitude
  - 5.4 Cooling Method
  - 5.5 Vibration
  - 5.6 Impact
6. Dimension
7. Weight
8. Pin Connection
9. Power Supply mounting
10. Package (包装)
11. NOTICE (注意事项)

				DESCRIPTION:	
				<b>SPECIFICATION</b>	
				Model No. :	
				CTN280-P	
DATE	PREPARED	CHECKED	APPROVED	Document No. :	REV:
2012-11-03				CTN280-P	

# 1. Power Supply Overview:

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

Normal voltage range	100—240V~
Frequency range	50Hz/60Hz ± 5%
Max input ac current	4Amax at full load condition
Inrush current (cold start)	50A <sub>typ</sub> peak, 120V~; 100A <sub>typ</sub> peak, 220V~
Efficiency(full load)	83%min at 100V~; 86%min at 220V~
Harmonic current	Meet GB17625.1-1998/IEC61000-3-2 class D
Leakage Current	Less Than 0.75mA, 230V~ input
Standby Power Loss	≤1W 240Vac input ,Output current ≤50mA,
Input Fuse	T6. 3A/250V~

## 1.2 Output Electrical Characteristics Overview

### 1.2.1 Table 2 Output Voltage ,Current & Regulation.

Output Voltage	Regulation	Min. current	Rated current	Peak current
+24V	+24V ± 5%	0.3 A	8.5A	11A
+24V SP	+24V ± 5%	0.1A	1A	2A
+12V	+12V ± 5%	0.2A	1A	2A
+5.0V (STB)	+5.0V ± 5%	0.01A	0.5A	1A
+5.0V	+5.0V ± 5%	0.05A	5A	6A

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

5V 5V(STB) +12V 输出总功率小于 45W.

### 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

				DESCRIPTION:	
				(规格书) <b>SPECIFICATION</b>	
				Model No.:	
				CTN280-P	
DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
2012-11-03				CTN280-P	

### 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/5.0VS ± 5% 24V/12V/± 10%	0.2A/uS	Min. to 50% load and 50% Load 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	120V~ input	220V~ input
+24V +24 SP	≥ 10 mS	≥ 10 mS
+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
+24V +24 SP	+ 24V	10%	10%
+12V	+ 12V	10%	10%
+5.0V	+5.0V	10%	10%
+5.0V(STB)	+5.0V	10%	10%

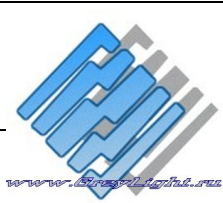
Note: All of dc output current from Min. to Max. 测试时负载范围: 最小到最大

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

Output Voltage	120V~input & Full Load	220V~ input & Full Load
+24V +24 SP	≤ 100mS	≤ 100mS
+12V	≤ 100 mS	≤ 100 mS
+5.0V	≤ 100 mS	≤ 100mS
+5.0V(STB)	≤ 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

				DESCRIPTION:	
				(规格书) <b>SPECIFICATION</b>	
				Model No.:	
				CTN280-P	
DATE	PREPARED	CHECKED	APPROVED	Document No.:	
2008-08-18				CTN280-P	
				REV:	

### 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 $\geq 2.5V/2.0mA$ ），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	$\geq 2.5V \& 2.0mA$ ( 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
+24V +24 SP	28V	Power supply latch into shutdown state 输出锁机
+12V	15V	Power supply latch into shutdown state 输出锁机
+5V	7V	电源无输出
+5.0V(STB)	7V	电源无输出

Note: The power supply shall be test at max AC voltage (264V~) 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
+24V +24 SP	$\geq 13A_{typ}^*$	Power supply latch into shutdown state 输出锁机
+12V	$\geq 2A_{typ}^*$	Power supply latch into shutdown state 输出锁机
+5V	$\geq 2A_{typ}^*$	Hiccup 尝试重复启动
+5.0VSTB	$\geq 8A_{typ}^*$	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。

				DESCRIPTION:	
				(规格书) <b>SPECIFICATION</b>	
				Model No.:	
				CTN280-P	
DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
2008-08-18				CTN280-P	

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

Output Voltage	Comments
+24V +24 SP	Shutdown 关机
+12V	Shutdown 关机*
+5V	Shutdown 关机*
+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, But +5V、+5.0V(STB)output over voltage can't be reset.

故障去除后, 关掉 Ps-on 信号再打开, 电源即可恢复。+5V、+5.0V(STB)过压后不可恢复。

## 2. Isolation (绝缘性能)

### 2.1 Table 12 (绝缘阻抗)

Input To Output	DC500V 50MΩmin (at room temperature)
Input To FG	DC500V 50MΩmin (at room temperature)
Output To FG	Non Isolated

### 2.2 Table 13 (绝缘耐压)

Input To Output	3000Vac 50Hz 1minute ≤10mA
Input To FG	1500Vac 50Hz 1minute ≤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

				DESCRIPTION: (规格书) <b>SPECIFICATION</b>	
				Model No.: <b>CTN280-P</b>	
DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
2008-08-18				CTN280-P	

## 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

### 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, 19.6m/s<sup>2</sup> (2G), 3minutes period, 60minutes each along X, Y and Z axis.

### 5.6 Impact (冲击耐受)

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

				DESCRIPTION:	
				(规格书) <b>SPECIFICATION</b>	
				Model No.:	
				CTN280-P	
DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
2008-08-18				CTN280-P	

## 6. Dimension (物理尺寸)

\* 260mm X 160mm X30mm (长 L \* 宽 W \* 高 H).

## 7. Weight (重量)

\* 820 ± 50g

## 8. Pin Connection (连接器脚位定义)

**Table 15 Pin-CON5 Connection And Function**

NO.	Pin Connection	Function
6. 7. 8. 9. 10	GND	+24VDC RETURN
1. 2. 3. 4. 5	+24V	+24VDC OUTPUT

Note: CN4,CN5 -- XH CONNEETION, TYPE : pitch2.5mm

**Table 16 Pin-CON3Connection And Function**

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

Note: CN3 -- 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: CN3 -- VH CONNEETION, TYPE : pitch2.5mm

**Table 18 Pin-CN1 Connection And Function**

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

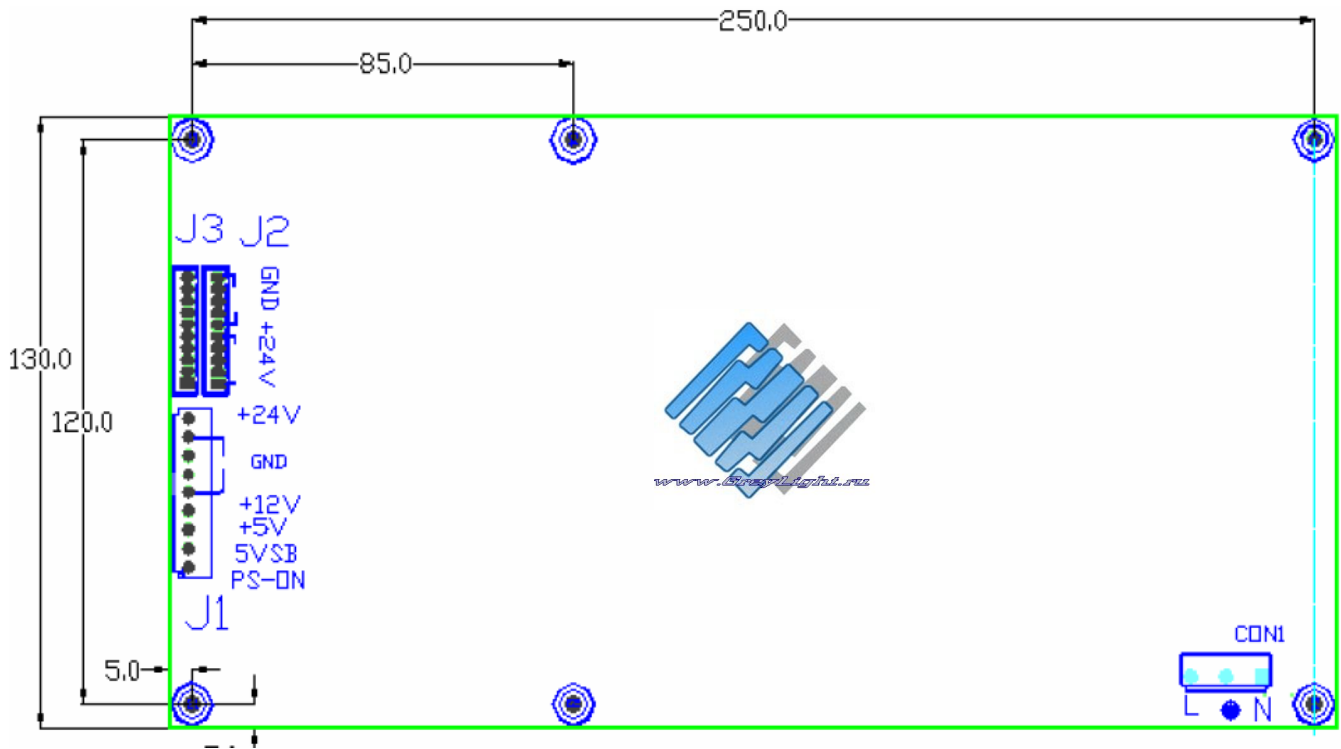
Note: CN1-- VH CONNEETION, TYPE : pitch3.96mm

				DESCRIPTION:	
				(规格书) <b>SPECIFICATION</b>	
				Model No.:	
				CTN280-P	
DATE	PREPARED	CHECKED	APPROVED	Document No.:	REV:
2008-08-18				CTN280-P	



## 9. Power Supply Mounting (安装尺寸)

\* 260mm X 160mm X30mm (长 L\*宽 W\* 高 H).



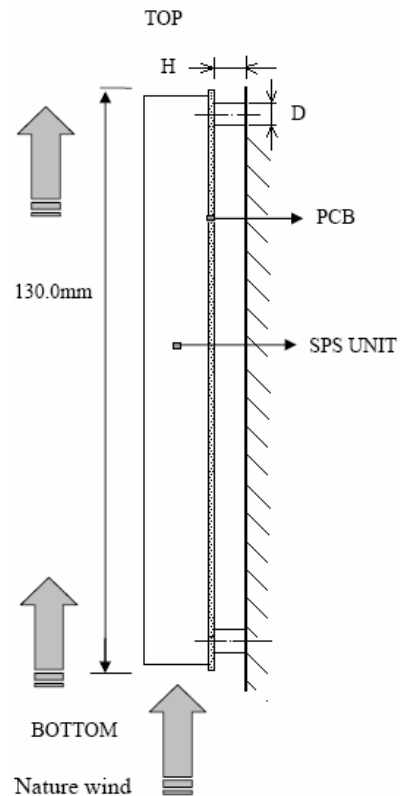
### Mount Method (装配注意事项)

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.

$$D \leq 5.5\text{mm}, H \geq 6.0\text{mm}$$

if  $H \leq 6.0\text{mm}$  .Add 135 mmx 265mmx 0.25mm (W\*H\*T) Mylar under PCB bottom.



DESCRIPTION:

(规格书)

**SPECIFICATION**

Model No.:

CTN280-P

Document No.:

CTN280-P

REV:

DATE

PREPARED

CHECKED

APPROVED

2008-08-18



## 11.Notice(注意事项)

11.1 The production shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on it;

该产品不能遭到水滴或水溅，而且设备上不能放置诸如花瓶一类装满液体的物品；

11.2 The production is part of the accessible conductive parts of class I apparatus and it shall be reliably connected to a protective earth terminal within the apparatus.

该产品是可触及导电零部件应当与设备中保护接地端子可靠的链接。

11.3 Please use it under the condition of good aeration.

该产品使用时需有良好通风。



DESCRIPTION:

(规格书)

**SPECIFICATION**

Model No.:

CTN280-P

Document No.:

CTN280-P

REV:

DATE	PREPARED	CHECKED	APPROVED
2008-08-18			