

SPECIFICATION

产品规格书

Model(产品型号): YC-400W16-5V

Description(产品描述): POWER SUPPLY

Revision(版本号): V1.0

Published Date(发行日期): 2021-12-01

Approved by YuanChi		
Prepared by 编写	Checked by 审核	Approved by 批准
肖翔	邓龙云	肖学文

Please send the original back to us after you have approved and signed.

客户承认签章后敬请寄回正本一份。

Approved by customer		
Comments 确认意见	Approved by 批准签字	Company's seal 盖章
Customer's Name:		

深圳市原驰电子有限公司

ShenZhen YuanChi Electronics Co.,Ltd

Content 目录

1. GENERAL DESCRIPTION (概述)	1
2. ELECTRICAL SPECIFICATION (电气规格)	1
2.1 INPUT ELECTRICAL CHARACTERISTICS (输入特性)	1
2.2 OUTPUT ELECTRICAL CHARACTERISTICS (输出特性)	1
2.2.1 OUTPUT VOLTAGE & CURRENT REGULATION (输出电压电流调整率)	1
2.2.2 INPUT VOLTAGE DERATING GUIDLINE (输入电压降额曲线)	2
2.2.3 TEMPERATURE RATING GUIDLINE (温度降额曲线)	2
2.2.4 DC OUTPUT RIPPLE & NOISE. (输出纹波和噪声)	3
2.2.5 OUTPUT TRANSIENT RESPONSE. (输出动态响应)	3
2.2.6 DC OUTPUT VOLTAGE RISE TIME (输出上升时间)	3
2.2.7 DC OUTPUT OVERSHOOT DURING TURN-ON & TURN-OFF (输出超调)	3
2.2.8 HOLD-UP TIME (输出保持时间)	3
2.2.9 POWER ON DELAY TIME (开机输出延迟时间)	3
2.3 PROTECTION (保护功能)	4
2.3.1 DC OUTPUT OVER CURRENT PROTECTION (输出过流保护)	4
2.3.2 DC OUTPUT SHORT CIRCUIT PROTECTION (输出短路保护)	4
2.3.3 OTP(过温保护)	4
3. ISOLATION (绝缘性能)	4
3.1 INSULATION RESISTANCE (绝缘阻抗)	4
3.2 DIELECTRIC STRENGTH (绝缘耐压)	4
4. EMC (电磁兼容性)	5
4.1 EMI (电磁干扰)	5
4.2 EMS (电磁抗扰)	5
5. SAFETY (安全规格)	4
6. ENVIRONMENTAL REQUIREMENT (工作环境)	6
6.1 TEMPERATURE (环境温度)	6
6.2 HUMIDITY (环境湿度)	6
6.3 ALTITUDE (海拔高度)	6
6.4 COOLING METHOD (冷却方式)	6
6.5 VIBRATION (振动耐受)	6
6.6 SHOCK (冲击耐受)	6
7. DIMENSION (物理尺寸)	7
8. WEIGHT (重量)	7
9. MTBF (平均故障间隔时间)	7
10. PIN CONNECTION (连接器脚位定义)	8
11. REQUIREMENTS FOR BURNING IN TEST (老化测试要求)	9

The information in the specification is subject to change without notice. 内容如有更改，恕不另行通知。

深圳市原驰电子有限公司

ShenZhen YuanChi Electronics Co.,Ltd

1. General Description (概述)

YC-400W16-5V is a conversion device which converts 200VAC-240VAC power to 5.0VDC power. It takes advanced a half-bridge LLC Resonant Converter technology, with precise control, input and output isolation, makes the device safe and efficient, and of good reliability. The conversion device mainly applies to the field of electronics, LED display, security monitoring, military-industry, communications, electricity, lighting display, industrial equipment etc.

YC-400W16-5V 电源是一种将 200VAC-240VAC 市电转换为 5.0V 直流电的变换装置；采用先进的 LLC 控制技术，控制精确，输入输出隔离，安全高效，可靠性好，具备完善的保护功能；主要应用于电子、LED 显示屏、安防监控、军工、通信、电力、灯具显示、工业设备等领域。

2. Electrical Specification (电气规格)

2.1 Input Electrical Characteristics (输入特性)

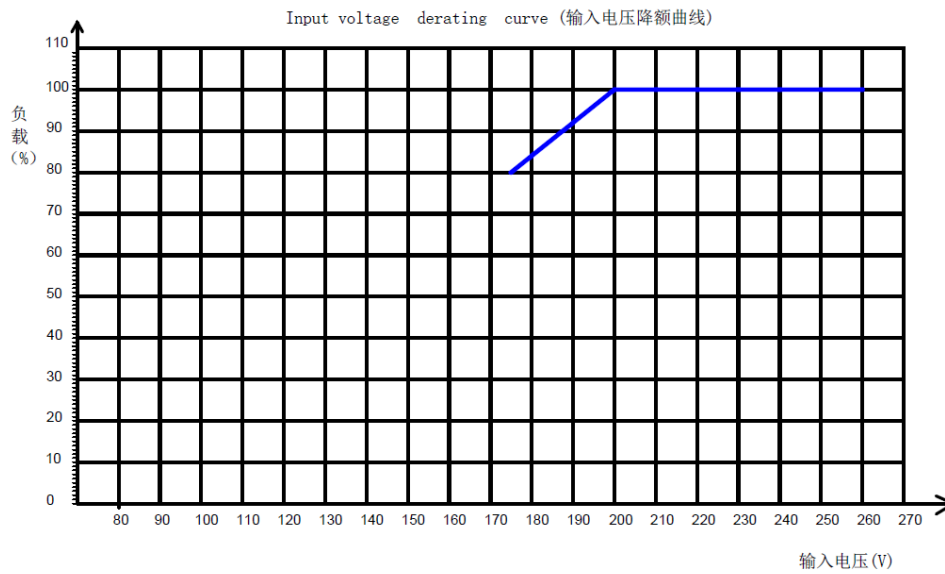
Input voltage range 输入电压	176Vac to 264Vac
Normal voltage range 标称输入	200Vac to 240Vac
Frequency range 频率范围	47Hz—63Hz
Max input ac current 最大输入电流	4.9Amax. at full load condition
Inrush current (cold state) 浪涌电流	80A@220V
Efficiency (full load) 效率	91%min.@230Vac
Leakage Current 泄漏电流	Less Than 1 mA, @ 230Vac input
Normal output power 额定功率	400W
Input Fuse 输入保险	T6.3AH/250Vac
Power Factor 功率因素	PF>0.95/220Vac

2.2 Output Electrical Characteristics (输出特性)

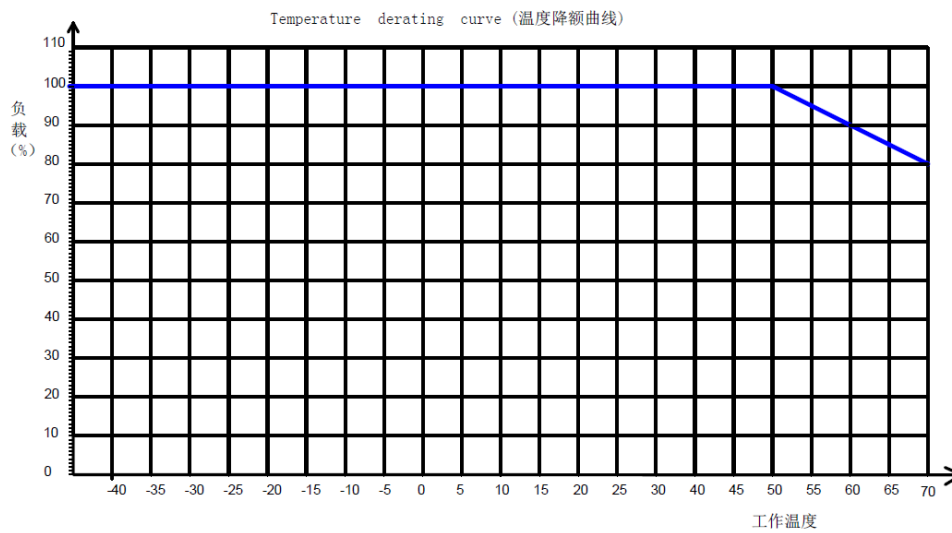
2.2.1 Output Voltage & Current Regulation (输出电压电流调整率)

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
5.0V	±5%	0A	80A	85A

2.2.2 Input voltage Derating Guideline (输入电压降额曲线)



2.2.3 Temperature rating Guideline (温度降额曲线)



深圳市原驰电子有限公司

ShenZhen YuanChi Electronics Co.,Ltd

2.2.4 DC Output Ripple & Noise. (输出纹波和噪声)

Output Voltage	Ripple & Noise (Max.)
5.0V	280mVp-p@ 25°C

Note: 1) Ripple & Noise test: Ripple & Noise bandwidth is set to 20MHz.

纹波和噪声测试: 纹波和噪音带宽设置在 20 兆赫兹。

2) Use a 0.1uF ceramic capacitor in parallel with a 10uF electrolytic capacitor at output connector terminals for ripple& noise measurements.

输出端并联一个 0.1uF 的陶瓷电容和一个 10uF 的电解电容来测试纹波和噪声。

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

Test condition (测试条件)

Voltage Tolerance Limit	Slew Rate	Load Change
5.0V /5%	0.02A/uS	25% to 50% load and 50% to 75% load

Note: Load change repetition rate: 50Hz to 100Hz .

备注: 跳变负载频率 50~100Hz.

2.2.6 DC output voltage rise time (输出上升时间)

Output Voltage	220Vac input & Full Load
5.0V	≤100mS

Note: The rise time measured is when the output voltages rise from 10% to 90% of specified output voltage V_{out} observed on the channel waveform.

备注: 上升时间为输出电压从 10%上升到 90%的时间。

2.2.7 DC Output Overshoot During Turn-On & Turn-Off (输出超调)

Output Channel	Output(V)	Overshoot voltage(V)超调电压	
		Turn-on 开机	Turn-off 关机
5.0V	5.0V	≤10%	≤10%

Note: All of dc output current from Min. to Max.

备注: 测试时负载范围: 最小到最大。

2.2.8 Hold-Up Time (输出保持时间)

Output Voltage	220Vac input
5.0V	≥10 mS

2.2.9 Power on delay time (开机输出延迟时间)

Output Voltage	220Vac input @ 25°C	220Vac input @ -30 °C
5.0V	≤3S	≤5S

Note: The Power delay time measured is when AC power on to 90%.

备注: 开机延迟时间为 AC 上电到输出电压 90%的时间。

深圳市原驰电子有限公司

ShenZhen YuanChi Electronics Co.,Ltd

2.3 Protection (保护功能)

2.3.1 DC Output Over Current Circuit Protection (输出过流保护)

Output Voltage	Comments
5.0V	95A MIN

2.3.2 DC Output Short Circuit Protection (输出短路保护)

Output Voltage	Comments
5.0V	latch off/锁机

备注: 进入锁机保护状态后, 需要先断开 AC 电源, 再重新上电, 电源才能重新工作。

2.3.3 OTP(过温保护)

OTP	Comments
YES (有)	Self-recovery/可自恢复

3. Isolation (绝缘性能)

3.1 Insulation Resistance (绝缘阻抗)

Input To Output	DC500V 10 M Ω min.(at room temperature)
Input To FG	DC500V 10 M Ω min.(at room temperature)
Output To FG	DC500V 10 M Ω min.(at room temperature)

3.2 Dielectric Strength (绝缘耐压)

Input To Output	3000Vac 50Hz 1minute \leq 10mA
Input To FG	1500Vac 50Hz 1minute \leq 10mA
Output To FG	500Vac 1minute \leq 10mA

Notes: Input line (L&N) should be shorted, and all output should be shorted.

备注: 电路如有防雷器件, 进行耐压测试时需断开放电气管后进行。

深圳市原驰电子有限公司

ShenZhen YuanChi Electronics Co.,Ltd

4. EMC (电磁兼容性)

4.1 EMI (电磁干扰)

The power supply design shall comply with the following criterion:

电源电磁干扰设计满足下列标准:

- **Conduction Emission (传导干扰度):**

无

- **Radiated Emission (辐射干扰度):**

无

4.2 EMS (电磁抗扰)

The power supply design shall comply with the following criterion:

电源电磁抗扰设计满足下列标准:

- ① **ESD (静电抗扰度)**

*GB17626.2-1998/IEC61000-4-2 Lever 3 判据: A

- ② **EFT (脉冲群抗扰度)**

*GB17626.4-1998/IEC61000-4-4 Lever 3 判据: A

- ③ **SURGE (浪涌)**

*GB17626.5-1998/IEC61000-4-5 Lever 3 判据: A

- ④ **DIP (电压跌落)**

*GB17626.11-1998/IEC61000-4-11 判据: C

电源 DIP 电压跌落要求表

跌落至	跌落时间	性能判据
0%Ut	10ms	B
70%Ut	500ms	C
40%Ut	200ms	C
0%Ut	5000ms	C

5. Safety (安全规格)

The power supply design shall comply with the following criterion:

电源安全性设计满足下列标准:

*UL60950/IEC60950/EN60950

*GB4943.1-2011

6. Environmental Requirement (工作环境)

6.1 Temperature (环境温度)

* Operating 工作温度: -40°C to $+50^{\circ}\text{C}$

* Storage 存储温度: -40°C to $+85^{\circ}\text{C}$.

6.2 Humidity (环境湿度)

* Operating 工作: From 10% to 90% relative humidity (non-condensing).

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

6.3 Altitude (海拔高度)

* Operating: -60 to 3000 m

* Storage: up to 5000 m

6.4 Cooling Method (冷却方式)

* Ventilation cooling. 自然冷却

6.5 Vibration (振动耐受)

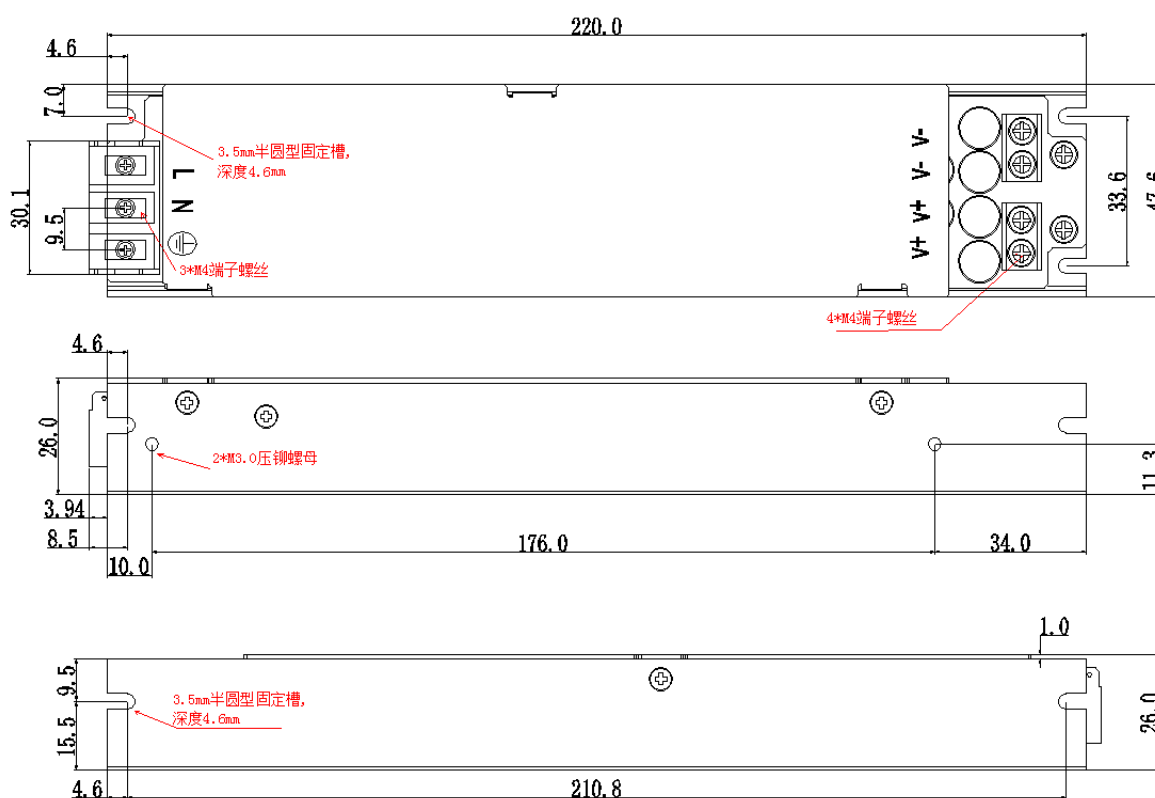
* $10\text{-}500\text{Hz}$, $19.6\text{m/s}^2(2\text{G})$, 10minutes each along X, Y and Z axis.

6.6 Shock (冲击耐受)

* $49\text{m/s}^2(5\text{G})$, 11ms , once each X, Y and Z axis.

7. Dimension (物理尺寸)

* $220\text{mm} \times 47.6\text{mm} \times 26\text{mm}$ (长 L * 宽 W * 高 H).



8. Weight (重量)

*约 450g

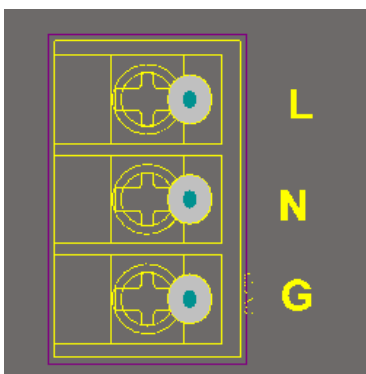
9. MTBF (平均故障间隔时间)

The MTBF shall be at least 50,000 hours at 25 °C, full load and normal input condition.

在环境温度 25 °C下，带满负载以及正常输入时，平均无故障时间至少为 50000 小时。

10. Pin Connection (连接器脚位定义)

输入: CON1 HB9500G-3P 3PIN (M4 螺丝)



序号	引脚定义
PIN1	LINE
PIN2	NEUTRAL
PIN3	EARTH

输出: CN301 CN302 (M4 螺丝)

序号	引脚定义
CN301	V+,V+
CN302	V-,V-

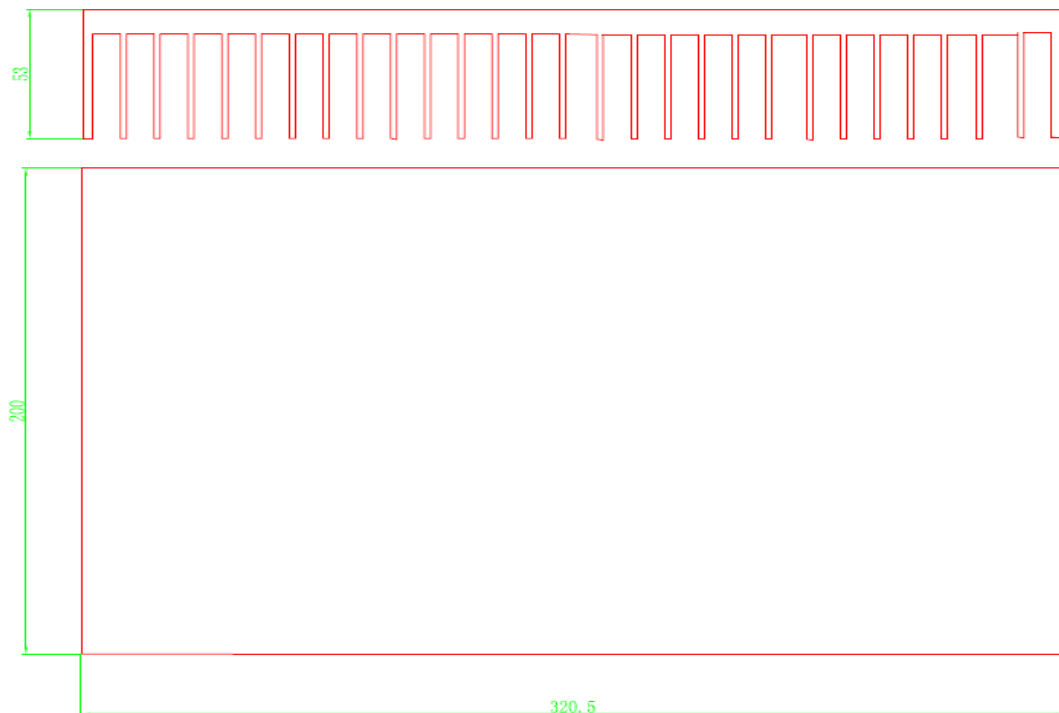
11. Picture(实物图片)



12. Requirements for Burning in Test (老化测试要求)

We recommend that the Power Supply should be mounted tightly with the heatsink described as the following heatsink drawing while the products burn in at 30°C and 220Vac input.

在环境温度 30°C下, 不加湿, 电源输入 220V, 带满负载, 机壳底面紧贴散热板(建议散热板尺寸见图 1 所示, 单位 mm), 加电老化。(本规格书中指标, 是在建议环境下测试的结果)。



图一: Scheme for Heatsink 散热板尺寸图(单位: mm)