



深圳市华浩德电子有限公司
ShenZhen City FAHOLD Electronic CO., LTD.

地址：深圳市宝安区石岩街道石龙社区石环路4号星光工业园C栋二、四、五、六楼
Add.:Floor 2,4,5, 6 Building C, Starlight Industrial Park, NO. 4, Shihuan Road,Shilong Community, Shiyan Town,
Bao'an District, Shenzhen, China.
Tel: 0755-2763 9266;2738 8980 Fax: 0755-2763 9269 E-mail: fahold@126. com

SPECIFICATION FOR APPROVAL
产 品 承 认 书

Customer/客户:	
Products code 产品代码:	Customer Rev.客户版本:
Customer Model No.客户型号:	Customer ID客户代码:
Fahold Model No.我司型号: HR60W-02-24V/2500mA	Fahold Rev.我司版本: 00
Article产品名称: LED DRIVER	Sample NO.样品编码:
Certified 认证: TUV UL SAA FCC CE	Safety No.安规编码:
Catalog No.证书编码:	Date日期: 2016/10/18

易丹		
Designed/ 设计	Checked by/ 审核	Approved by/ 批准

Please confirm and send it back with signature within 7 days. Otherwise we will assume your acceptance. And if any quality dissent, will execute according to this product specification.
请确认后七日内回签，如不回签则视贵公司默认接受，在发生品质异议时按此份产品规格书执行。

CUSTOMER APPROVED SIGNATURE /客户承认签章

ENG./工程	QA/品管	OTHER/其它

Comments 建议:

[illegible]

Fahold Model No.: HR60W-02-24V/2500mA



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1. INTRODUCTION/概述

The document detail the electrical, mechanical and environmental specifications of a 60W constant Voltage LED driver with 0-10V Dimming. This LED drive power supply is suitable only for LED load.

此份资料详细描述了一款60W 带0-10V调光的LED恒压驱动电源的电气性能,结构性能及环境等要求。此LED驱动电源只适合LED负载。

This LED driver is compatible with the dimmers of main brands, such as LEVITON, LUTGRON, ect. 此电源兼容LEVITON、LUTRON等主流调光器。

2. INPUT CHARACTERISTICS/输入特性

2.1 Input Voltage & Frequency/输出电压&频率

The range of input voltage is from 输入交流电压范围从 **100 V** 到 **277 V**

	Min./最小	Rated/额定	Max./最大
Input Voltage/输入电压	100Vac		277Vac
Input Frequency/输入频率	47Hz	50/60Hz	63Hz

2.2 Input Current/输入电流

The maximum input current is最大输入电流为 **720 mA** Max. at 在 **100 AC**交流

2.3 Inrush Current 浪涌电流

At full load cold start(25℃ ambient,normal input voltage), the inrush current will not exceed 在满负载第一次启动(25℃环境温度, 正常的输入电压),最大流通电流不能超过

60 A do not result any damage ,and the input fuse shall not be blown up.

测试过程中不能有任何异常情况, 且电流保险丝不能出现熔断。

2.4 Power Factor 功率因素

When full load working at normal input voltage, the power factor will more than**0.95@**
 Ouput current 2500mA

在正常输入电压的和满负载输出情况下, 功率因素至少要大于 **0.95 @**输出2500mA

3. OUTPUT CHARACTERISTICS/输出特性

3.1 Output Parameter 输出参数

	Parameter参数	Spec. limit标准参数			Test Condition测试条件
		Min.最小	Typical典型	Max. 最大	
3.1.1	No load Voltage空载电压			25.2Vdc	
3.1.2	Output wrok current输出电流	0mA		2500mA	
3.1.3	Output constant voltage 恒压输出	22.8Vdc	24.0Vdc	25.2Vdc	@Output Voltage typical voltage 相对于典型输出电流
3.1.4	output voltage precision 输出电压误差		5%		@Output Voltage typical voltage 相对于典型输出电压
3.1.5	Ripple and Noise纹波和噪声	—	—	0.24V p-p	Measured by oscilloscope 20MHz bandwidth, and paralleled a low ESR 10uF electrolytic capacitor and a 0.1uF ceramic capacitor at test point. 输出带宽设置为20MHz,输出应并一个 高频低阻10uF的电解电容和0.1uF的 陶瓷电容来测试
3.1.6	Dimmable Range调光范围	0%	—	100%	@Output Voltage typical voltage 相对于典型输出电压
3.1.7	THD总谐波失真	—	—	20%	



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3.2 Turn On Delay Time 开机延迟时间

Under normal conditions, the maximum delay time is 在正常的条件下工作最大延迟时间为
1 seconds 秒

4. PROTECTION FUNCTIONS 保护特性

4.1 LED disconnection Protection /LED开路保护

When the LED disconnection the product is protected such as hiccup or when it is at the highest point of output voltage the product would not be hurt when the fault is excluded or is start working again the power supply is working normally.

当LED开路时,产品进入保护状态,如打嗝或钳在某输出最高电压状态,产品不会损伤,当故障排除或重新起机时,电源工作正常.

4.2 Short-Circuit Protection/短路保护

When the output short circuit, the output voltage is zero, the output hit isolation protection, input power is constantly changing, the input power should be less than 30% of the power output, output short circuit when lifting, power is restored to normal.

当输出短路时,此时输出电压为零,输出打隔保护,输入功率不断的变化,输入功率值应小于输出的功率的30%,当解除输出短路,电源恢复正常

5. ENVIRONMENTAL CONDITIONS 环境条件

5.1 Operating 工作

The power supply shall be capable of operating normally in any mode without malfunction happens in the following environmental conditions.

在合理的条件下电源都能工作,无故障发生在以下环境条件。

5.1.1 Operating Temperature 工作温度: -20℃ ~ +55℃

Relative Humidity 湿度: 10% ~ 90%

Altitude 海拔: Sea level to 海平面至 2,000 m.

5.1.2 Vibration 振动: 1.0mm, 10 –55Hz, 15 minutes per cycle for each axis

15分钟每个周期1次(X, Y, Z).

5.1.3 Cooling 冷却: Natural convection cooling 自然对流冷却

5.2 Non - Operating 储存

The power supply shall be capable of withstanding the following environmental conditions extended periods of time, without sustaining electrical or mechanical damage and subsequent operational deficiencies.

电源储存应能承受下列环境条件下 (在长期不通电或没有损坏的条件下)

5.2.1 Storage Temperature 储存温度: -30℃ ~ 70℃

5.2.2 Relative Humidity 湿度: 10% ~ 90%

5.2.3 Altitude 海拔: Sea level to 海平面至 2,000 m.

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6. RELIABILITY AND QUALITY CONTROL 可靠性及品质控制

6.1 MTBF平均无故障时间

When the power supply is operating within the limits of this specification the MTBF

当电源在规定的要求下使用，它的平均无故障时间

shall be at least 50,000 hours at 25°C

不小于 50000小时(在环境测试25°C的条件下)

6.2 Burn-In 老化

The power supply shall withstand a minimum of 4 hours Burn-In test under full load

电源在满负载的条件下不能小于4小时的老化时间

at 35°C ~40°C room Temperature, after test, product shall operate normally.

在35°C~ 40°C室温,测试后,产品将正常运行。

7. MECHANICAL CHARACTERISTICS 机械特性

7.1 Physical Dimensions 物理尺寸

The detailed size of the product, drawing the appearance of a graph, please check the chapter 12.

该产品的详细尺寸，绘制的外观图请看第12项

7.2 Weight重量: 275±8g

7.3 Nameplate 铭牌

About the details of the nameplate, please see the following "LABEL".

关于铭牌的详细信息，请参阅下面的“铭牌”。

7.4 Drop test跌落试验

Sample is to be subjected to three times by dropping from a height of 1000mm±10mm, onto a horizontal surface in positions likely produce the most adverse results. The horizontal surface consist of hardwood at least 13mm thick, mounted on two layers of plywood each 19mm to 20mm thick, all supported on a concrete or equivalent non-resilient floor. After test, the sample should pass electric functional test and its case should not cracked.

样品将受到从高度1000mm±10mm的跌落试验，跌落面木板厚13mm，或用在两层合板加起来的厚度为19mm 20mm，所有支撑在混凝土或等效的非弹性地板。从水平跌落试验测试样品电气性能必须正常，外壳不能破损。



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8. SAFETY COMPLIANCE 安全标准

8.1 Safety Standard 安规标准

The power supply shall be certified with the following international regulatory standards:

电源符合下列国际标准认证:

Item项目	Country 国家	Certified 认证	Standard 标准
☐	China中国	CCC	☐ GB4943, ☐ GB8898
☒	Europe欧洲	CE+GS	☒ EN61347 ☐ EN61558
☒	USA美国	UL	☒ UL8750
☐	Canada加拿大	CUL	☐ CSA C22.2 NO.8750
☒	Australia澳大利亚	SAA	☒ AS/NZS60950
☐	Japan日本	PSE	☐ J61558, ☐ J60950
☐	Korea 韩国	KC	K60950

8.2 Insulation Resistance 绝缘电阻

Input to output输入对输出: **50 MΩ** Min最小. At在 **500 VDC**.

8.3 Dielectric Strength (Hi-Pot)介电强度(高压)

项目	Voltage 输入电压	Leakage Current 漏电流	Test time 测试时间	Frequency 频率	ARC 电弧等级	Ramp 电压上升时间
初级-次级 P-S	3000	5mA	60S	50Hz	0	10S
初级-地 P-E	1500	5mA	60S	50Hz	0	10S
次级-地 S-E	500	5mA	60S	50Hz	0	10S

Mark: In order to improve the production efficiency, the voltage will be increased to 1.25 times, the test time is changed to 3S, that is AC3750V/5mA/3S

备注: 为了提高生产效率, 将电压提高到1.25倍, 测试时间改为3S, 即AC3750V/5mA/3S

8.4 Leakage Current 泄漏电流

The leakage current shall be less than **0.25mA** for Class 2 at maximum input voltage .

漏电流必须小于0.25mA, 在等级Class 2的最大输入电压范围内。

9. EMC COMPLIANCE 电磁兼容性标准

9.1 EMC Standards: the power supply product shall meet following standards.

电源符合下列EMC标准

- ☐ GB9254 ☐ GB13837 ☐ GB17625.1
- ☒ EN55015 ☐ EN55024 ☐ EN55014 ☐ EN61000-3-2 ☐ EN61000-3-3
- ☒ FCC Part15 Class B ☐ CAN/CSA,CISPR22
- ☐ AS/NZS CISP22
- ☐ J55022
- ☐ K00022 ☐ K00024

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9.2 EMS Compliance 电磁抗干扰标准

The power supply shall meet the following EMS standards : 电源符合下列EMS标准

9.2.1 EN61000-4-2 Electrostatic Discharge (ESD) Immunity 静电放电 (静电) 免疫

Severity Level等级: level 3/3级, Air Discharge空气放电: $\pm 8KV$

Severity Level等级: level 2/2级, Contact Discharge接触放电: $\pm 4KV$

Performance Criterion性能标准: B

9.2.2 EN61000-4-3 RF field strength Immunity. 射频场强度

Radio- frequency Electromagnetic Field Susceptibility Test(RS)射频电磁场药敏试验, 80-1000MHz,

Severity level等级: level 2/2级, 3V/M

Performance Criterion性能标准: A.

9.2.3 EN61000-4-4 Electrical Fast Transient / Burst (EFT) Immunity 电快速瞬变脉冲 (EFT)

Severity level等级: level 2/2级, line to line: 1.0KV

Performance Criterion性能标准: B.

9.2.4 EN61000-4-5 Surge Immunity浪涌雷击

Severity level等级: level 2/2级, line to line线对线: 1.0KV

Severity level等级: level 3/3级, line to earth线对地: 2.0KV

Performance Criterion性能标准: B.

10. ENERGY EFFICIENCY 能效

10.1 The No-Load power consumption shall be less than 空载功耗应小于

2 W at irated maximum input voltage在额定最高输入电压下测试

10.2 When the power supply input in the 100V maximum the efficiency can not be less than87%
当电源输入交流电压为100V时, 输出最大功率效率不能低于87%

10.3 When the power supply input in the 240V maximum the efficiency can not be less than 88%
当电源输入交流电压为240V时, 输出最大功率效率不能低于88%

11. HAZARDOUS SUBSTANCES 有害物质

11.1 All components and materials used shall compliance with:

所有使用的元件和材料均符合下以标准

☒ EU Directive 2002/95/EC "RoHS"
欧盟指令2002/95/EC"RoHS"

☐ EU Directive "REACH"
欧盟指令"REACH"

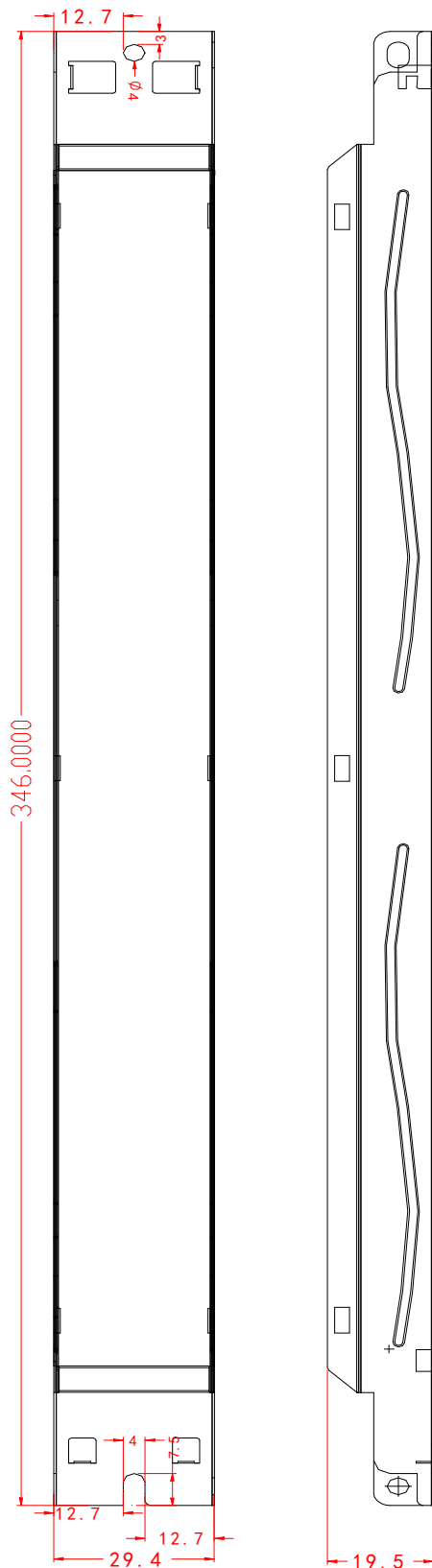
☐ EU Directive 2002/96/EC "WEEE"
欧盟指令2002/95/EC"WEEE"

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12. OUTLINE DRAWING

12.1:单位: mm; 未标注公差的尺寸为 $\pm 1\text{mm}$



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13. LABEL 铭牌

27 mm		260 mm				
		DIMMABLE LED DRIVER		Model: HR60W-02-024V2500A		•TC:90°C
Input ☐ ACL ☐ ACN ☐ NC ☐ GND		Input Voltage 100-240V~50/60Hz 277VAC 50/60Hz Max.0.25A (277VAC for North America only)	Input Current 0.7A	PF 0.95	Output Voltage 24V ---	Output Current & Power 2500mA 60W Ta(T°C) -20-60°C
Shenzhen City Fahold Electronics Co., Ltd.				MADE IN CHINA		     
						Output ☐ DIM+ ☐ DIM- ☐ LED+ ☐ LED-

Notice: Please confirm the parameters on the label of samples . if any question, please let us know before the conformation of samples , otherwise, we will produce according to the samples .

重要提示: 铭牌资料供客户样品认可使用, 如有疑问请于样品认可 前提出, 否则, 资料将视作客户认可并应用于生产。

Technical Requirements :

技术要求

1、Black words laser printed.

激光黑字。

2、Surface: keeping clean, no deformation, no fold, no damage, no scratch . Clear words.

外观要求: 无脏污、无变形、无皱纹、无破损、无划痕等, 印字清晰;

3、The parameters on the label and the size will be produced according to drawing .

印字内容尺寸大小按图纸生产。

4、Environmental protection requirements: meet RoHS requirements.

环保要求: 过ROHS标准。

5、Tolerance : ± 0.5

公差: ± 0.5 mm。

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