



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

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SPECIFICATION FOR APPROVAL
产品承认书

Customer/客户:	
Products code 产品代码: 4.0N.HN60W02005	Customer Rev.客户版本:
Customer Model No.客户型号:	Customer ID客户代码:F8888
Fahold Model No.我司型号: HN60W-02(25-40V/1500mA)	Fahold Rev.我司版本: 00
Article产品名称: LED DRIVER	Sample NO.样品编码:
Certified 认证: UL FCC	Safety No.安规编码: E479229
Catalog No.证书编码:	Date日期: 2016-12-19

易丹		
<i>Designed/ 设计</i>	<i>Checked by/ 审核</i>	<i>Approved by/ 批准</i>

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

<i>ENG. /工程</i>	<i>QA/品管</i>	<i>OTHER/其它</i>

Comments 建议:

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1. INTRODUCTION/概述

The document detail the electrical, mechanical and environmental specifications of a 60W constant current 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恒流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 800 mA Max. at 在 100 AC交流

2.3 Inrush Current 浪涌电流

At full load cold start(25°C ambient,normal input voltage), the inrush current will not exceed 在满负载第一次启动(25°C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: 0.9 @
Output voltage 36V

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 0.9 @输出36V

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			53Vdc	
3.1.2	Output wrokVoltage输出电压	25Vdc		40Vdc	
3.1.3	Output constant current 输出电压	1425mA	1500mA	1575mA	@Output Voltage typical current 相对于典型输出电流
3.1.4	output current precision 输出电流误差		5%		@Output Voltage typical current 相对于典型输出电流
3.1.5	Ripple and Noise纹波和噪声	—	—	500mV 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: $-20^{\circ}\text{C} \sim +52^{\circ}\text{C}$

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: $-30^{\circ}\text{C} \sim 70^{\circ}\text{C}$

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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Fahold Model No.: HN60W-02(25-40V/1500mA)



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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: 336.4g±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
<input type="checkbox"/>	China 中国	CCC	<input type="checkbox"/> GB4943, <input type="checkbox"/> GB8898
<input type="checkbox"/>	Europe 欧洲	CE+GS	<input type="checkbox"/> EN61347 <input type="checkbox"/> EN61558
<input checked="" type="checkbox"/>	USA 美国	UL	<input checked="" type="checkbox"/> UL8750
<input checked="" type="checkbox"/>	Canada 加拿大	CUL	<input checked="" type="checkbox"/> CSA C22.2 NO.8750
<input type="checkbox"/>	Australia 澳大利亚	SAA	<input type="checkbox"/> AS/NZS60950
<input type="checkbox"/>	Japan 日本	PSE	<input type="checkbox"/> J61558, <input type="checkbox"/> J60950
<input type="checkbox"/>	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	Input 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 Immur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 Immunit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 the efficiency can not be less than 86%
当电源输入交流电压为100V时, 输出效率不能低于86%

10.3 When the power supply input in the 277V the efficiency can not be less than 87%
当电源输入交流电压为277V时, 输出效率不能低于87%

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"

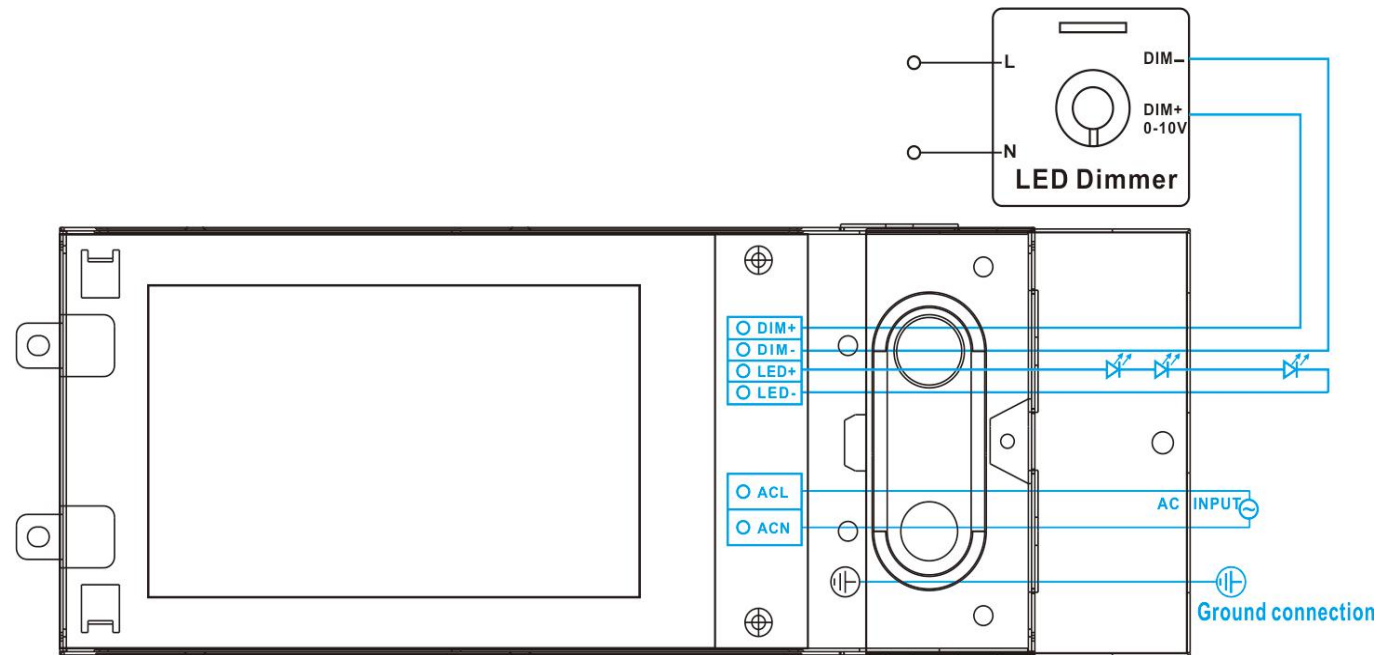
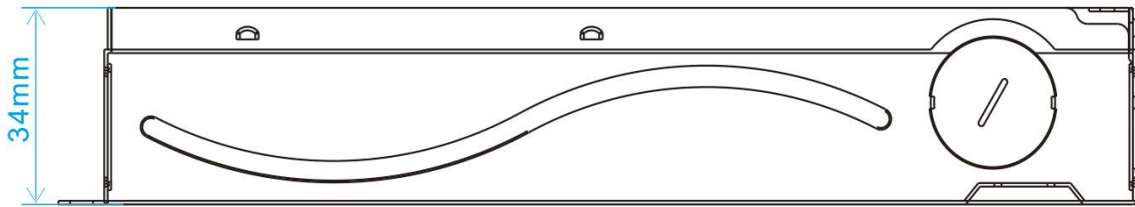
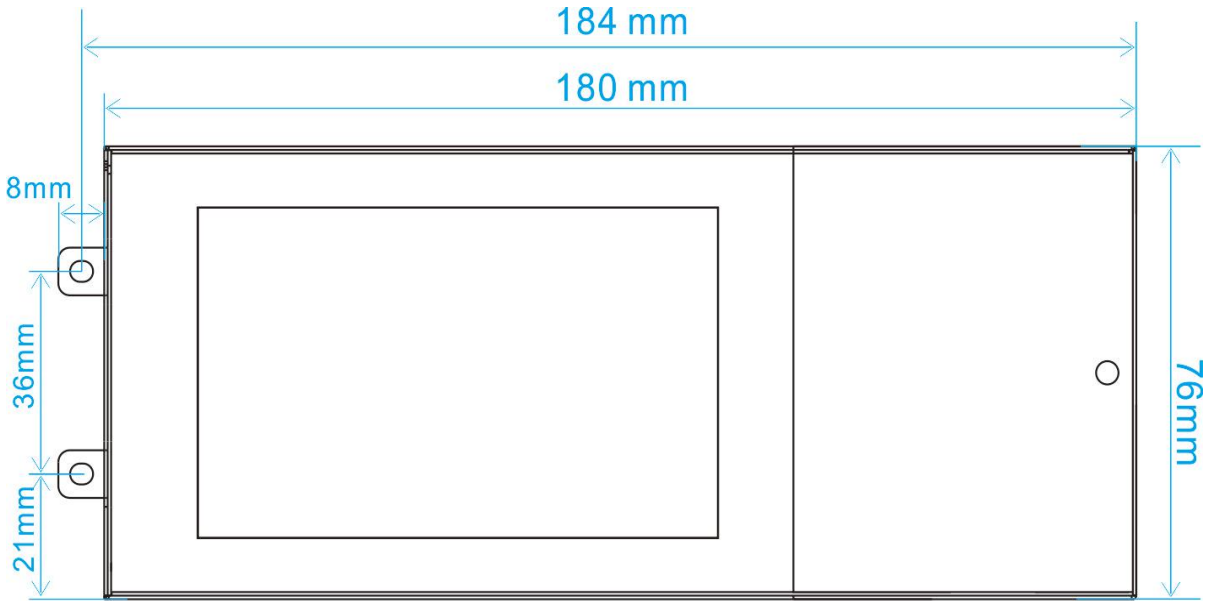
EU Directive 2002/96/EC "WEEE"
欧盟指令2002/96/EC"WEEE"

Customer P/N:

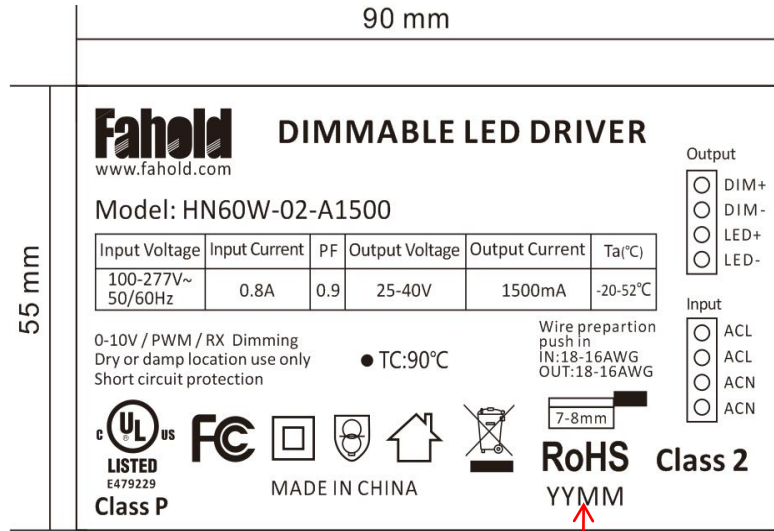
Fahold Model No.: HN60W-02(25-40V/1500mA)

12. OUTLINE DRAWING

12.1:单位: mm; 未标注公差尺寸为±1mm



13. LABEL 铭牌



备注：（周期码编码规则，YY代表年 MM代表月
 Remark : Rule of date code : YY -year ; MM -Month

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:±0.5mm。