



机型名称 Model No: ES-RND160CD-0800BX-U0-02-P 系列LED驱动电源

概述 Description: 150W 工矿灯电源 150W UFO Highbay Driver

版本 Version: V02

发行日期 Released On: 2023-05-18

## 产品规格书

## SPECIFICATION

ES-RND160C 系列工矿灯电源

UFO Highbay Driver



### ES-RND160C 150W 工矿灯电源 150W UFO Highbay Driver 150W LED High Bay Driver

#### 产品特性 Features

- ◆ 超高功率密度, 效率高达94%
  - ◆ 双级架构, 无频闪
  - ◆ 内置有源PFC,实现高PF/低THD
  - ◆ 隔离调光: 0-10V PWM 电阻
  - ◆ 辅助电源功能: 12V/200mA
  - ◆ 雷击保护: L-N(差模): 4KV L/N-PE(共模): 6KV
  - ◆ 全方位保护: 过温/过压/短路
  - ◆ 五年质保
- ◆ High Efficiency(Up to 94%)
  - ◆ Two Stage Design, Flicker-Free
  - ◆ With Active PFC For High PF/ Low THD
  - ◆ Isolated dimming:0-10V PWM,Resistor
  - ◆ With Auxiliary Power for 12V/200mA
  - ◆ Surge Protection: L-N:4KV, L/N-PE:6KV
  - ◆ All-Around Protection:OTP, OVP, SCP
  - ◆ Five-year warranty

#### 产品描述 Description

ES-RND160 0-10V调光系列为150W圆形非隔离恒流驱动产品, 此系列产品针对LED照明设计, 主要应用领域为工矿照明。超高的效率, 良好的散热结构, 极大提高了产品的可靠性, 且具有短路/过温/过压保护功能, 使驱动电源产品寿命大大提高。

ES-RND160 0-10V Dimming series, is a 150W round non-isolated power driver with constant current. The series is specially designed for LED industrial lighting, supplies with high efficiency, appropriate heat radiation design and all-around protection of OTP, OVP and SCP, highly improved its reliability and lifespan.

#### 型号编码 Description ES-RND160C\*-0800\*

* 调功率 Wattage Adjusting	调色温 CCT Tuning	感应器底座 Receptacle for Sensor
A	√	
B	√	√
D	√	√

* 非调光 Non-Dimming	0-10V三合一调光 0-10V 3-in-1 Dimming	12V辅助源 With Auxiliary Output
A	√	
B		√
BX	√	√

**性能参数 Performance Parameters**

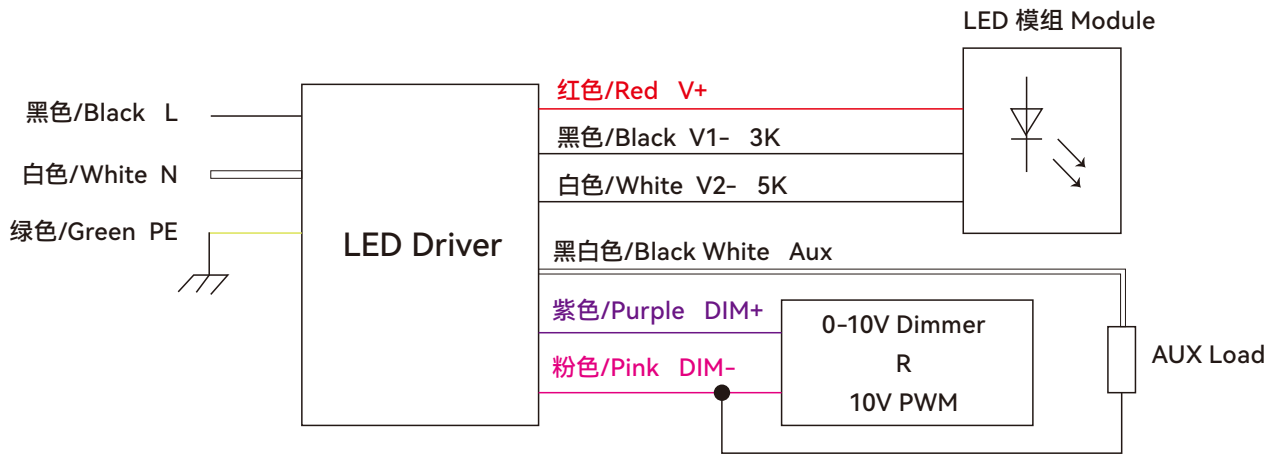
输出 Output	空载最高输出电压 Output voltage	350Vdc Max (@no load) 180-260Vdc
	输出电流可调范围 (AOC) Output current adjustable range	0.5-0.8A
	额定输出电流 Rated Output current	(0.61A@260V;0.8A@200V)
	额定输出电压 Rated Output voltage	180V Min ,260V Max (Po=Vo*Io=150W,full load)
	电流精度 Accuracy current	±5%
	启动时间 Startup time	120Vac <1S @满载; 230Vac <0.5S@满载 120Vac <1S @Full load; 230Vac <0.5S@Full load
	满功率输出电压范围 Full power output voltage	200-260Vdc
	效率 (Typ.) Efficiency (Typ.)	92%@120Vac/95%@230Vac/95%@277Vac,full load@260Vdc
输入 Input	输入功率 Input power Max	175W,@25°C,120Vac 260Vdc
	输入电流 Input current	2.0Arms Max
	待机功率 Stand-by power	≤0.5W @220Vac
	输入电压范围 Input voltage range	额定: 100-277Vac 极限: 90-305Vac (参照降额曲线) Rated: 100-277Vac Extreme: 90-305Vac (Refer to the reduction curve)
	频率范围 Frequency range	47-63Hz
	功率因素 (Typ.) Frequency range	PF≥0.99@120Vac, PF≥0.95@230Vac, PF≥0.95@277Vac, @满负荷, 47-63Hz;其他负载情况, 参考功率因数曲线 PF≥0.99@120Vac, PF≥0.95@230Vac, PF≥0.95@277Vac,@full load,47-63Hz; Other load conditions, please refer to power factor curve
	总谐波失真 Total harmonic distortion	THD≤10%,@230Vac,full load; 具体请参考: 总谐波失真曲线 THD≤10%,@230Vac,full load; Please refer to: total harmonic distortion waveform
	浪涌电流 Inrush current (Typ.)	100A @230Vac, Ta=25°C, 冷启动 cold start
漏电流 Leakage current	<0.75mA @ 277Vac	
保护 Protection	过温保护 Over temperature	功率降额, 温度下降后恢复满载 Power derating, recovers automatically after fault condition is removed
	过压保护 Over voltage protection	打嗝模式, 过压状态移除后可自恢复 Hiccup mode, recovers automatically after voltage fault condition is removed
	短路保护 Short circuit protection	打嗝模式, 负载异常移除后可自恢复 Hiccup mode, recovers automatically after load fault condition is removed

<b>环境温度 Environment</b>	环境温度 Environmental temperature	Ta: -40~55°C, 具体请参考负载与温度曲线 Ta: -40~55°C, please refer to load VS temperature curve
	工作壳温 Ambient temp	Tc: -40~90°C
	工作湿度 Working humidity	10~95% RH, 无冷凝 no condensation
	储存温度和湿度 Storage temp. and humidity	-40~+85°C, 5~95% RH
	环境保护 Environmental protection	干燥、潮湿或下雨场所, IP65 UL Dry, Damp or Wet Location, IP65
	振动保护 Vibration protection	沿着 X, Y, Z 轴 10 ~ 500 hz, 5 g 12 分钟/周期, 循环 72 分钟。 10~500Hz, 5G 12min./cycle, period for 72min. Each along X, Y, Z axes
<b>安规和 电磁兼容 Safety &amp; EMC</b>	安规标准 Safety standard	IEC/EN61347-1(GB19510-1-2009), IEC/EN61347-2-13(GB 19510.14-2009), UL8750, CSA C22.2 NO. 250.13-12; IP65 approved
	耐电压 Withstand voltage	Input-Aux:3KVac,Output-Aux:3KVac, Input-PE:1.5KVac, Output-PE:1.5KVac
	绝缘电阻 Insulated resistance	I/P-PE,O/P-PE>100M Ohm/500VDC/25°C/70%RH
	EMI	EN55015 , FCC PART15-CLASSB
	谐波电流 Harmonic current	EN61000-3-2 Class C
	雷击保护 Surge protection	L/N-PE:6KV,L-N:4KV
	EMS	EN61000-4-2,3,4,5,6,8,11; EN61547 Industry standard
<b>其他 Others</b>	MTBF	≥200Khrs, MIL-HDBK-217F(25°C)
	重量/尺寸 Weight/Size	0.78Kg/详见机械数据 0.78Kg/See mechanical data for details
	壳体颜色 Case color	黑色 Black

## 调光概述 Dimming General Specifications

参数 Parameters	最小值 Min	典型值 Typical Value	最大值 Max	备注 Remarks
0-10V 调光线电压范围 0-10V Dimming wire voltage range	0V	10V	+12V	
0-10V 调光线电流范围 0-10V Dimming wire current range	100uA	255uA	300uA	
推荐调光输入范围 Dimming wire range recommendation	0V	-	10V	
PWM 高电平 PWM high level	-	10V	-	
PWM 低电平 PWM low level	-	0V	-	
PWM 频率范围 PWM frequency range	500Hz	-	3KHz	
PWM 占空比 PWM proportion	10%	-	100%	
电阻范围 Resistance range	TBD	-	TBD	

## 接线图 Wiring diagram



备注 (参考线材) Remarks (Refer to the wire) :

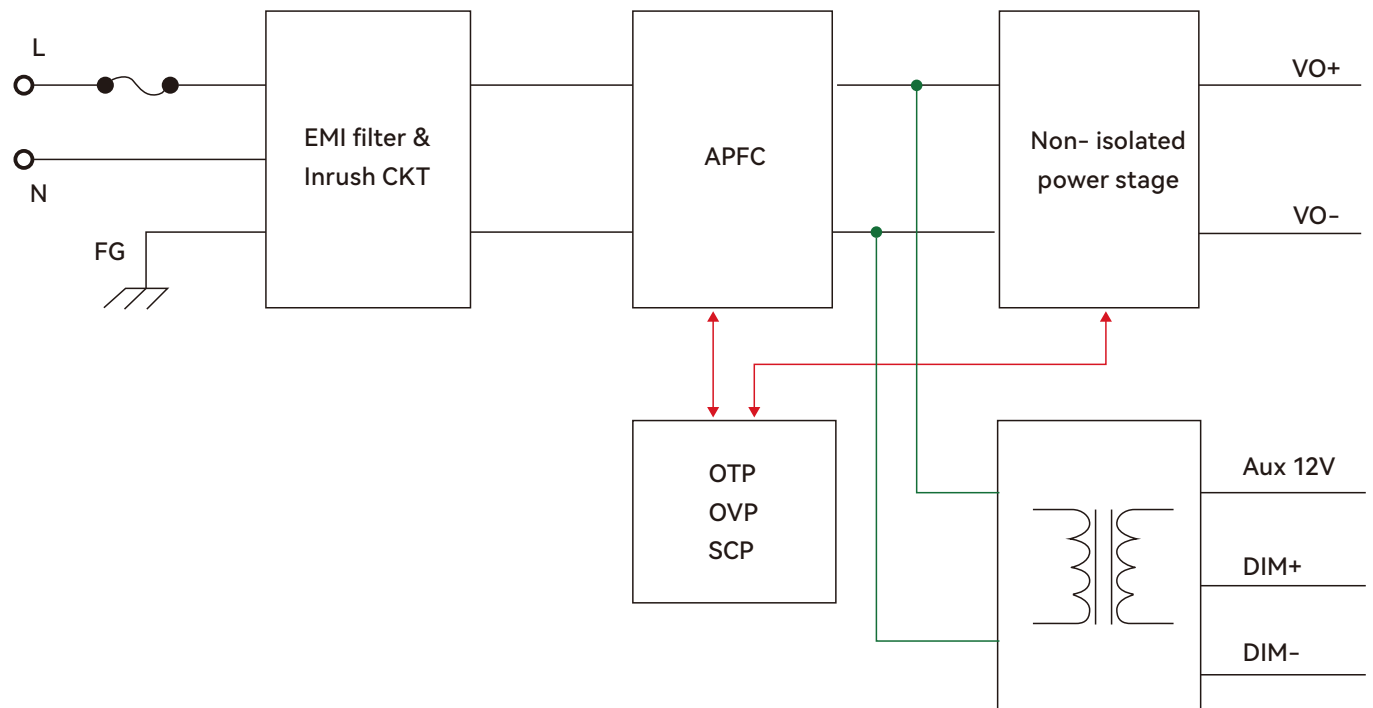
**CE/CB/SAA/CCC** 版本为 L/棕色, N/蓝色, G/黄绿, V+/棕色, V-/蓝色, Aux 12V 黑白色, DIM+/紫色, DIM-/粉色;

**UL** 版本为 L/黑色, N/白色, G/绿色, V+/红色, V-/黑色, V-/白色, Aux 12V/黑白色, DIM+/紫色, DIM-/粉色。

**CE/CB/SAA/CCC** version: L/brown , N/blue, G/yellow-green, V+/brown,V-/blue, Aux 12V/Black white, DIM+/purple, DIM-/Pink;

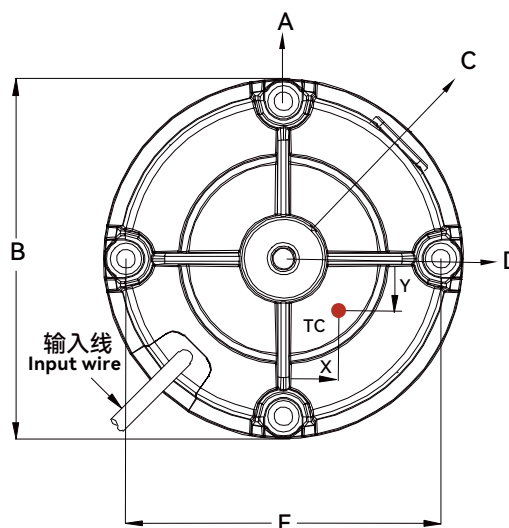
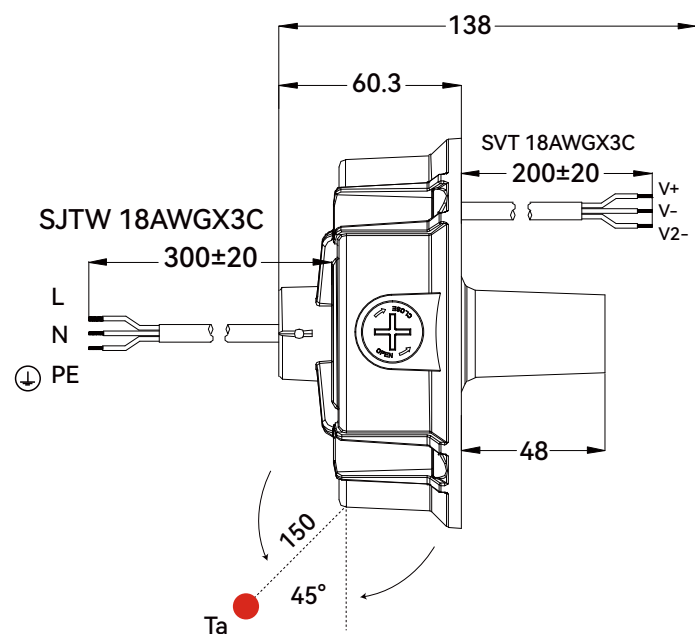
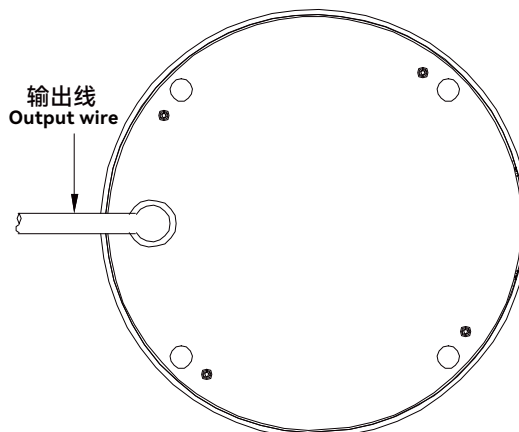
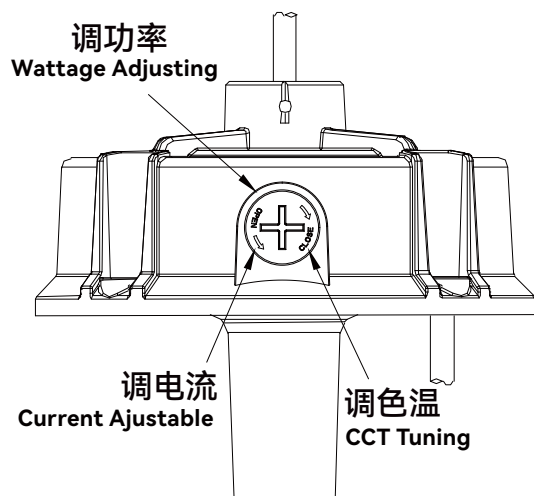
**UL** version: L/black, N/white, G/green, V+/red, V-/black, V-/White, Aux 12V/Black white, DIM+/purple, DIM-/Pink.

## 电气框图 Electrical block diagram



机械尺寸图 Mechanical size 电源机构图

单位 Unit:mm 电源机构图

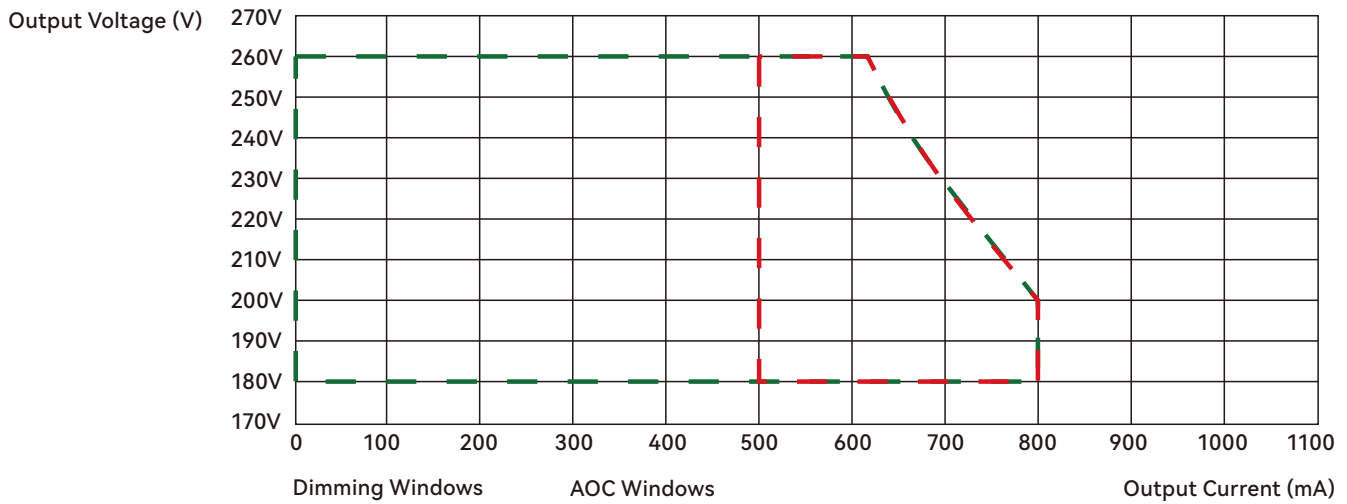


● Ta: 环境温度测试点  
Ambient temperature measured point

● Tc: 外壳温度测试点  
Max case temperature Case temperature point

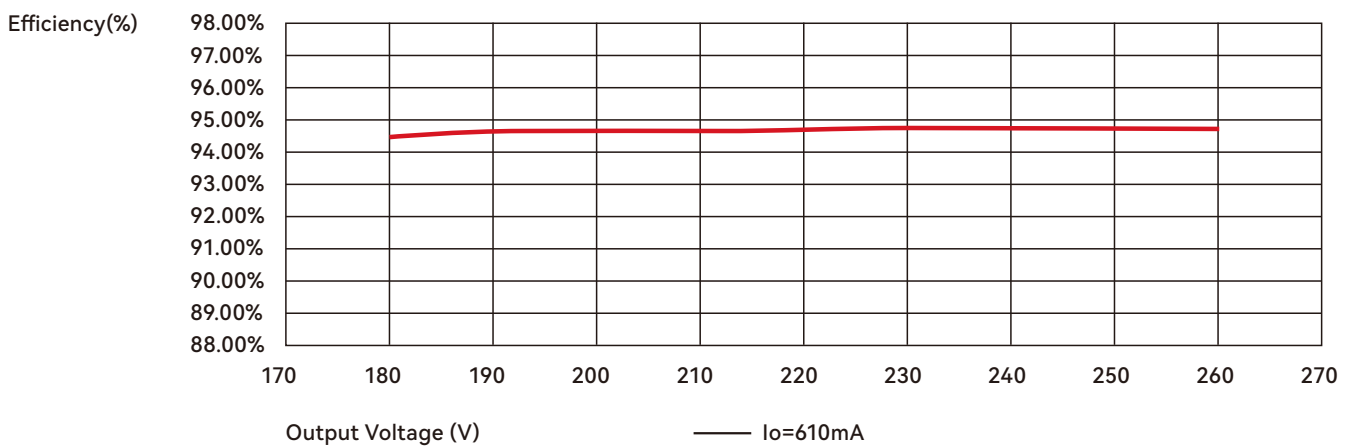
Name Description	Standard Code	mm(In.)
Mounting Screw Diameter	A	Ø7 (0.27)
House Diameter	B	129 (5.07)
Ring Fixed Hold	C	M4*0.7
Hold Hole(Depth)	D	18 (0.7)
Mounting Size	E	113 (4.44)
TC Point Position	X	20 (0.15)
TC Point Position	Y	20 (0.15)

## 输出电压与输出电流(Dim/AOC 窗口) Output Voltage Vs. Output Current (Dim/AOC Window)



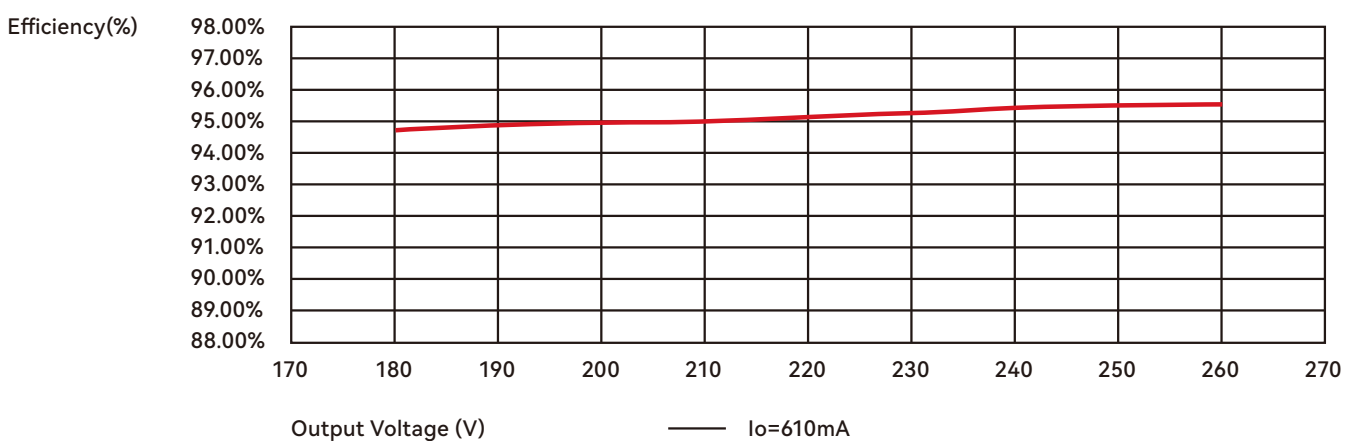
## 输出电压与效率(Vin=120Vac) Efficiency Vs. Output Voltage (Vin=120Vac)

### Efficiency Vs. Output Voltage (Vin=120Vac)



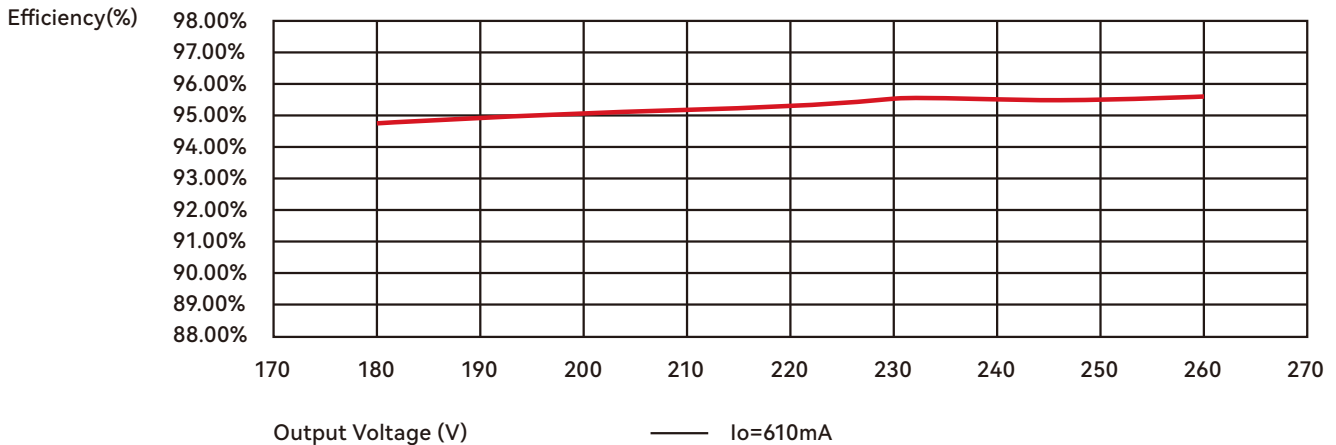
## 效率与输出电压(Vin=230Vac) Efficiency Vs. Output Voltage (Vin=230Vac)

### Efficiency Vs. Output Voltage (Vin=230Vac)



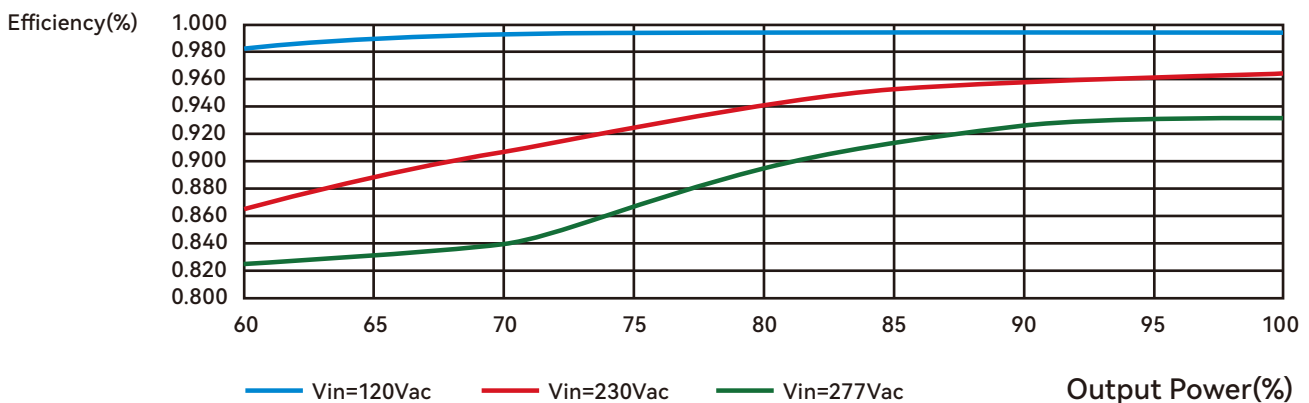
## 效率与输出电压(Vin=277Vac) Efficiency Vs. Output Voltage (Vin=277Vac)

### Efficiency Vs. Output Voltage (Vin=277Vac)



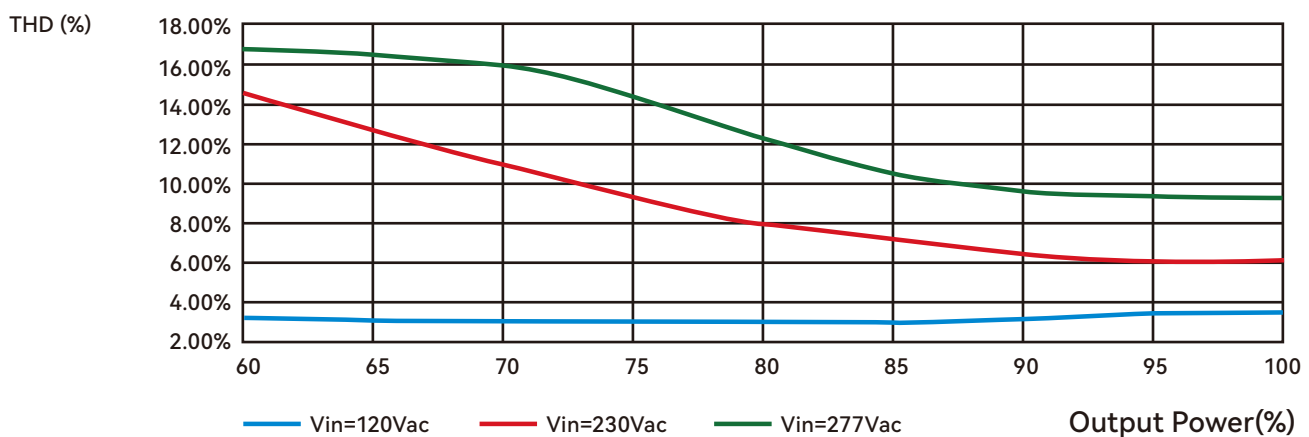
## 功率因数与输出功率 Power Factor Vs. Output Power

### Power Factor Vs. Output Power



## 总谐波失真(THD)与输出功率 Total harmonic distortion (THD) Vs. Output Power

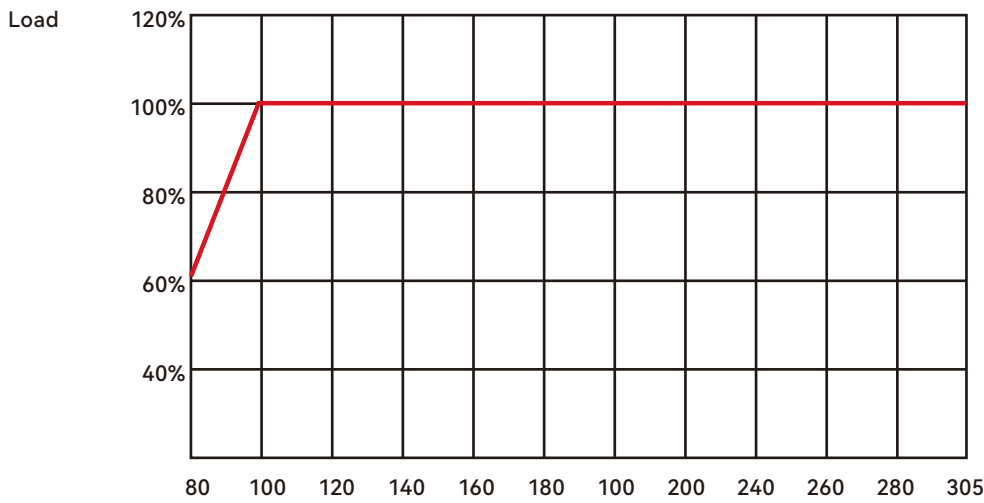
### THD Vs. Output Power



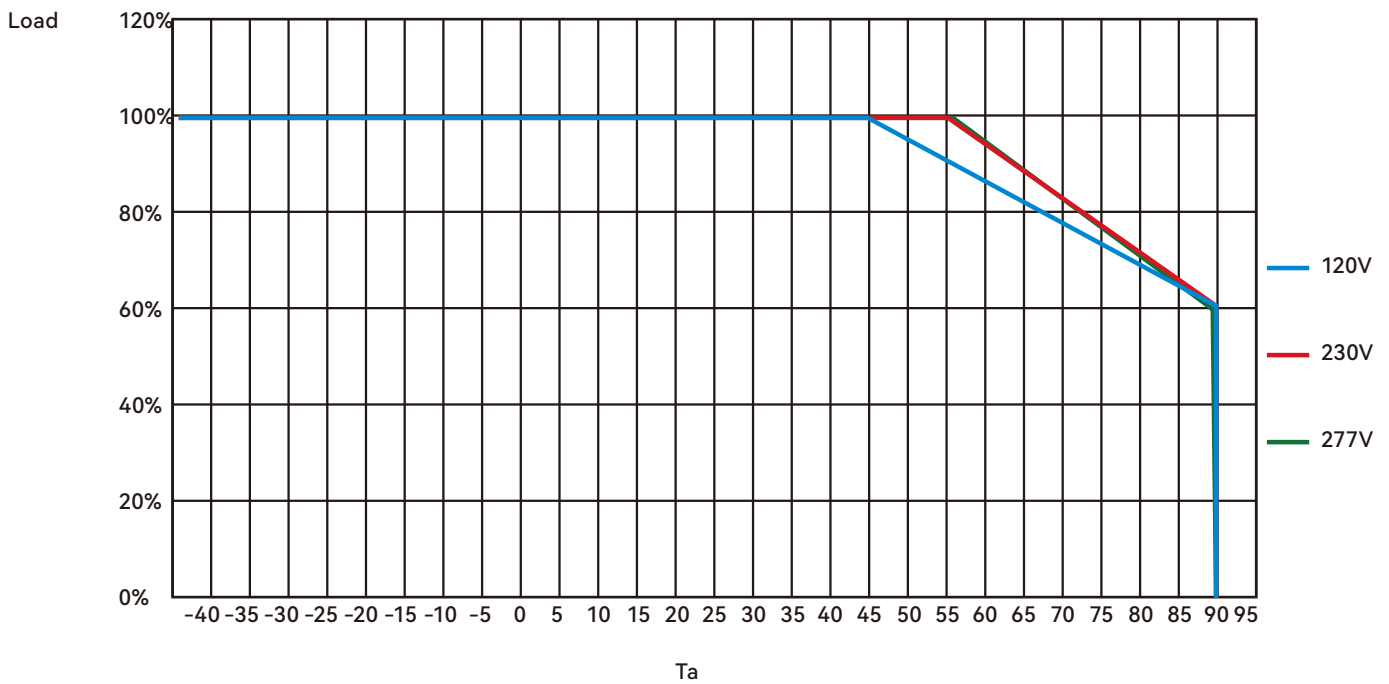


## 功率降额曲线 Power derating waveform

### Load-Vin(V)



### Load-Ta



### 负载与 Ta (环温) 的降额曲线 Derating waveform of Load VS Ta

备注:

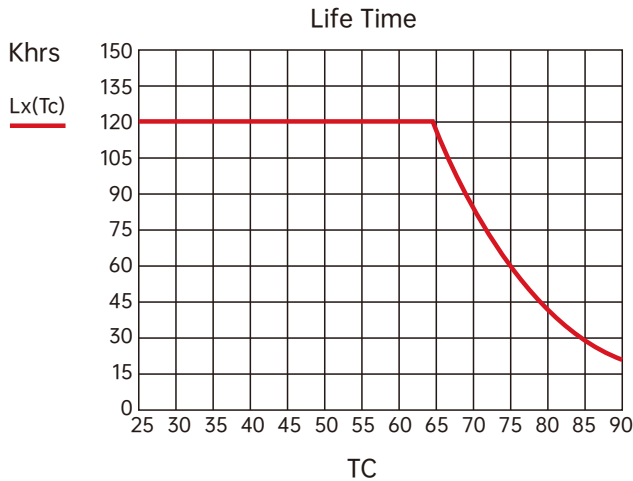
1. 输入电压低于 100Vac 时需降额, 输入电压为 90Vac 时需降额至 80%负载;
2. 负载与环境温度的降额曲线, 环境温度是指电源周围的温度。

Notes:

1. Derating is required when the input voltage is lower than 100Vac, and derating to 80%Load when input voltage is 90Vac;
2. The derating curve of the load and the ambient temperature, ambient temperature means the temperature around the power supply.

寿命曲线 (120VAC/230VAC 输入/Full load)

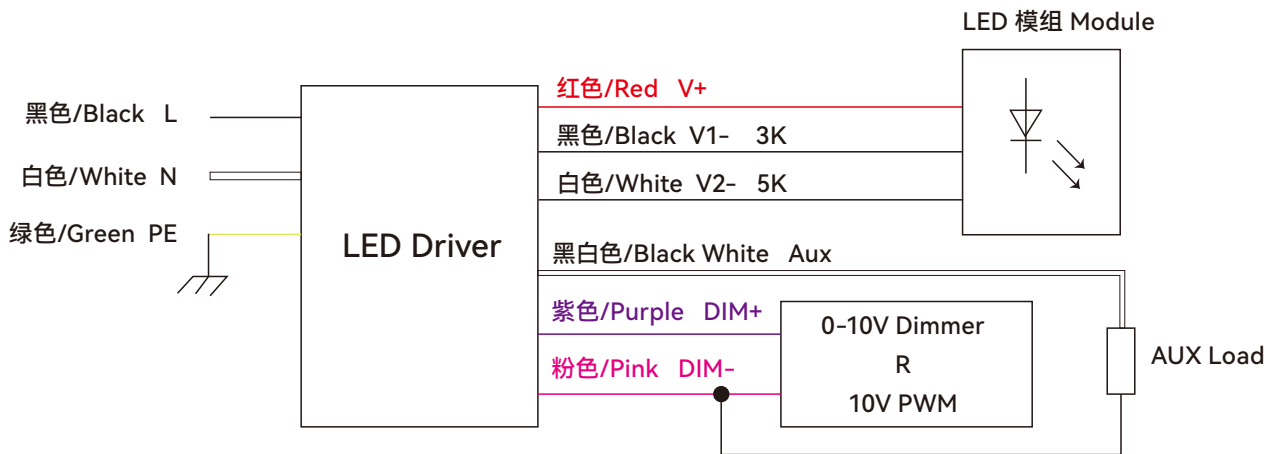
Lifetime waveform (120VAC/230VAC input/Full load)



注: 由于存在不同的输入电压范围、不同的应用环境、不同的外部散热设计等不定性因素, 会导致外壳温升有一定的差异。在以上任何应用条件中, 必须满足驱动器外壳温度 (Tc) 小于 90°C, 此降额曲线方可成立。若客户对 实际应用环境存有疑问, 请及时与我司相关人员沟通。

Notes: different input voltage range, different application environment, different external heat dissipation design and other factors, which will lead to a certain difference in the temperature rise of the case. In any of the above application conditions, the temperature of the actual case (Tc) must be less than 90°C, and this reduction curve can be established. If there is any doubt about the actual application environment, please contact the relevant personnel in time.

调光 Dimming

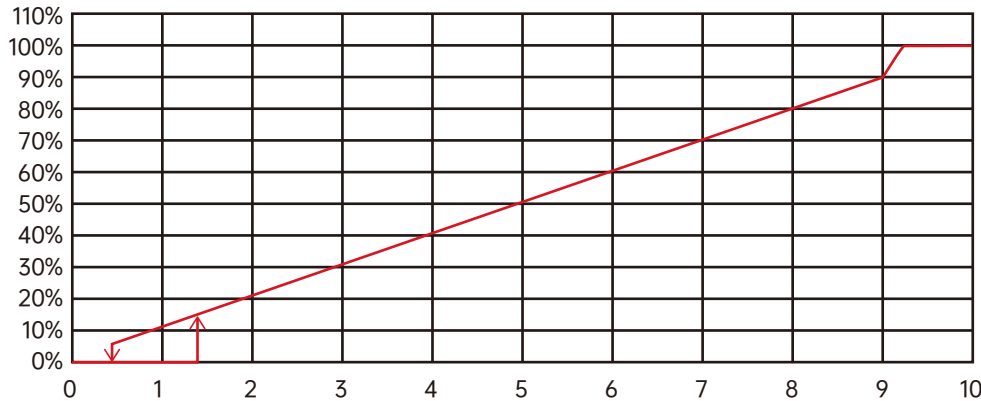


备注: 1. Dim+和 Dim-不能接到 Vo+, Vo- 2. 不用调光时, Dim+和 Dim-应该悬空

Remarks: 1. Noted: Dim+ and Dim- signals can't be connected to Vo+, Vo-;

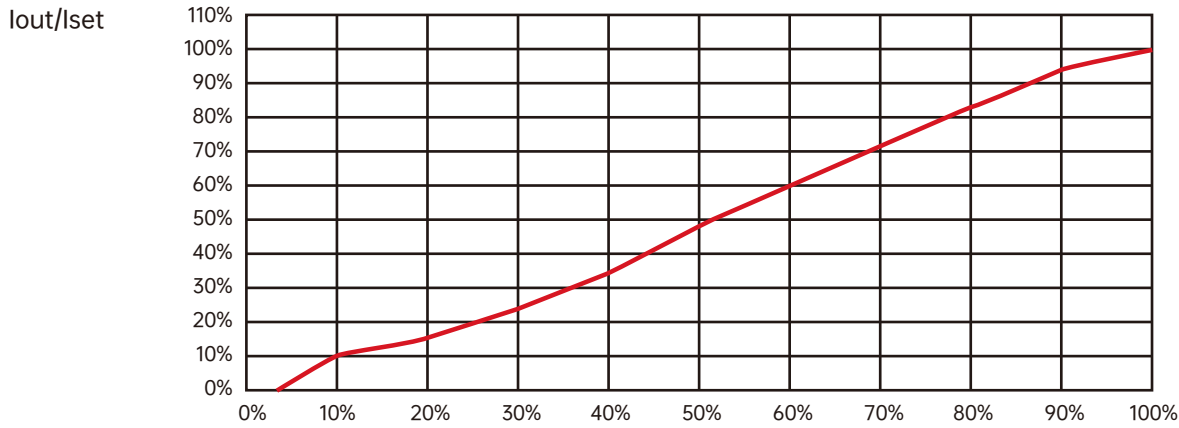
2. If the dimming function is not used, the Dim+ and Dim- signals should be suspended.

0-10V Dimming



调光输入:附加电压 Dimming input: additional voltage

## 10V PWM Dimming



调光输入: 附加 PWM    Dimming input: additional PWM

### 注意事项 Attention

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. 驱动器应远离热源和易燃易爆物品。</li> <li>2. 应将驱动程序安装在通风良好的散热空间内,实际使用中应考虑最极端情况下,驱动器外壳温度不超过安全壳温。</li> <li>3. ▲带高压! 请不要在带电工作的情况下打开,非专业电工人员不得进行接线等各项操作。</li> <li>4. 确保输入/输出电线接头完全密封防水,以防触电和漏电,使用中需要注意接线方式所引起的阻抗不能影响驱动器正常工作。</li> <li>5. 产品寿命与产品温度有直接关系,请参照寿命温度曲线评估产品的适用性。</li> <li>6. 实际应用中前级保护器请注意输入浪涌的承受能力。</li> <li>7. 非隔离电源实际应用中需要注意灯板 LED 芯片&amp;走线与外壳的避距。</li> </ol> | <ol style="list-style-type: none"> <li>1. The driver should be kept away from heat source and inflammable or explosive materials.</li> <li>2. The driver should be installed in open space. In actual application, Tc temperature should not exceed the max allowed temperature(89°C) in the most extreme condition.</li> <li>3. ▲With high voltage danger! Please don't check under the condition of live working. Only professional electricians may carry out wiring and other operations.</li> <li>4. Ensure that the input / output wires joint are completely sealed and waterproof-treated if required to prevent electric shock and leakage. The impedance caused by the connection mode in the application should not affect the normal function of the driver.</li> <li>5. The driver lifespan is directly related to the driver working temperature. Please refer to the life&amp;temperature curve to evaluate the applicability of the driver.</li> <li>6. In practical application, please pay attention to the surge capacity of the front protector.</li> <li>7. Pay attention to distance between wire &amp; LED and the heatsink in practical application of non-isolated driver.</li> </ol> |
|---|--|

### 变更履历表 Version history

日期 Date	版本 Version	变更内容描述 Content	变更日期 Change Date	备注 Remark
2022.10.08	V00	首次发行 First issue		
2023.04.04	V01	更新TC点位置		
2023.05.18	V02	外壳更新		

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