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1. ELECTRICAL CHARACTERISTICS

1.1 Input Specifications:

1.1.1 Rated Voltage

100Vac ~ 277Vac

1.1.2 Input Voltage Range

90Vac ~ 305Vac

1.1.3 Rated Frequency

50Hz/60Hz

1.1.4 Frequency Range

47Hz ~ 63Hz

1.1.5 Efficiency

90% (Typical) , 88% (minimum) , at 110Vac input voltage and 100% load.

93% (Typical) , 91% (minimum) , at 220Vac input voltage and 100% load.

(Measured after the unit is thermally stabilized. It will be lower about 1%, if measured immediately after startup.)

1.1.6 Power Factor

0.99 (Typical), 0.98 (minimum), at 110Vac input voltage and 100% load.

0.98 (Typical), 0.97 (minimum), at 220Vac input voltage and 100% load.

1.1.7 Inrush Current

Less than 65A at 220Vac/50Hz input voltage and max load, 25°C, cold start,.

1.1.8 Maximum Input Current

Less than 2.4A at 100Vac input voltage and 100% load.

1.2 Output Specifications:

1.2.1 Output Channel

Single output

1.2.2 Output Voltage and Current

Output Voltage: 143~285Vdc

Output Current: constant current 700mA±5%

1.2.3 Total Output Power

200W Max.

1.2.4 Operating Mode

Continuous operating.

1.2.5 Turn-on Delay Time

The time after switch on for the output current reach the normal current should be within 1.2S when operating at rated input and rated load.

1.3 Protection:

1.3.1 Short Circuit Protection

The short circuit protection is provided. The characteristic is hiccup mode, automatic recovery. The function operates when the output is shorted. The output will be automatically recovered when the short circuit is released.

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1.3.2 Over Voltage Protection

OVP may occur when internal regulation function of the power supply fails, OVP function operates to insure the output voltage value less than 385V (Typical) .

1.3.3 Over Temperature Protection

Decrease output current mode. When the case temperature reaches $105 \pm 10^{\circ}\text{C}$, the output current decreases to 50%Iout until the case temperature reaches $75 \pm 15^{\circ}\text{C}$.

1.4 Life Time:

More than 50,000 hours (Tc: 75°C)

1.5 MTBF:

More than 300,000 hours (full load at ambient temperature: 25°C)

2. ENVIRONMENTAL CHARACTERISTICS

2.1 Temperature:

2.1.1 Operating Temperature

$-40^{\circ}\text{C} \sim 70^{\circ}\text{C}$ (Maximum case temperature 90°C)

2.1.2 Storage Temperature

$-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$

2.2 Humidity:

2.2.1 Operating Humidity

20% $\sim$ 95% RH

2.2.2 Storage Humidity

10% $\sim$ 95% RH.

2.3 Altitude:

Operating altitude: 0~3km (otherwise, check HI-POT and leakage current.)

2.4 Vibration:

Sweep range: 10-55-500Hz

Peak acceleration: 2G (10~55Hz), 5G (55~500Hz)

Sweep rate: 1 octave/minute

Repeat periods: 1h/axis (X/Y/Z)

2.5 Shock:

Acceleration value: 40G

Duration: 11ms

Shock times: 6 shocks/ axis (X/Y/Z)

2.6 Degrees of Protection:

IP67

3. SAFETY TESTS

3.1 Dielectric Withstand Voltage (HI-POT):

3.1.1 Input to Output: 3.75kVac, 10mA, 1 minute.

3.1.2 Input to FG: 1.875kVac, 10mA, 1 minute.

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3.1.3 Output to FG: 1.5kVac, 10mA, 1 minute.

3.2 Leakage Current:

3.2.1 Line to FG: max 0.75mA @277Vac 60 Hz input

3.2.2 Neutral to FG: max 0.75mA @277Vac 60Hz input

3.3 Insulation Resistance:

3.3.1 Input to Output: 500Vdc, 100MΩ, 1 minute.

3.3.2 Output to FG: 500Vdc, 100MΩ, 1 minute.

4. SAFETY & EMC COMPLIANCE

4.1 The power supply must be compliant with the following safety rules:

UL8750,UL1012, EN61347-1,EN61347-2-13

4.2 Conducted Emission: FCC PART15 Class B, EN55015

4.3 Radiated Emission: FCC PART15 Class B, EN55015

4.4 Harmonic Emission: EN61000-3-2

4.5 Surge Immunity: EN61000-4-5

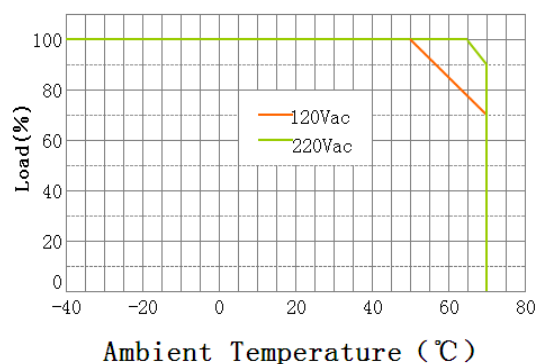
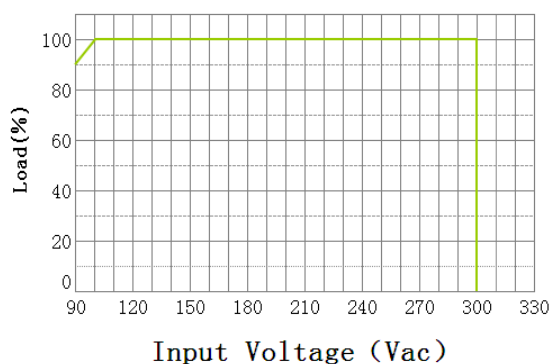
Line to FG: ±6kV, Neutral to FG: ±6kV, Line to Neutral: ±4kV

4.6 Electrostatic Discharge (ESD): EN61000-4-2

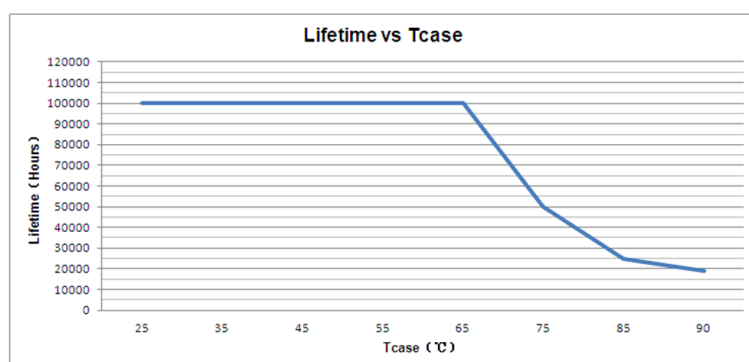
Level 4 (±8kV contact discharge, ±15kV air discharge)

5. DERATING CURVE

5.1 DERATING CURVE



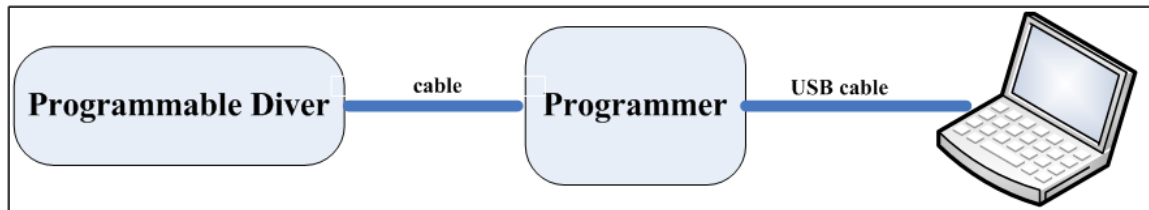
5.2 LIFETIME CURVE



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6. DIMMING FUNCTION

6.1 Field Programmable Topology



The programmable driver can be programmed by using special PC software and the programmer module.

6.2 Dimming Interface Description

Pin description

CLKS DIMMING PROGRAMMING INTERFACE	
1	Vaux 12V / BK/WH(黑白)
2	Dim+ / PU(紫色)
3	Dim- / GR(灰色)

Pin	Name	Value	Description
1	Vaux 12V	10.8V-13.2V	Passive dimmers power supply
2	Dim+/Program	0-10V	Dimming/Programming input
3	Dim-	0V	DC Ground

6.3 Dimming Software Function Instruction

6.3.1 Adjustable Output Current(AOC)

Adjustable Output Current (AOC)

Module Current %

Users can set the rated current between 10%~100% by 1% per step.

6.3.2 Adjustable Startup Time(AST)

Adjustable Startup Time (AST)

Start Fadeup Time s

At power ON, the fast fade-up of light can be unpleasant in certain applications. To avoid such a situation, the driver fade-up time at start-up can be programmed to a value among 0s、1s、2s、5s、10s、20s、40s. The default start fade up time is 1s.

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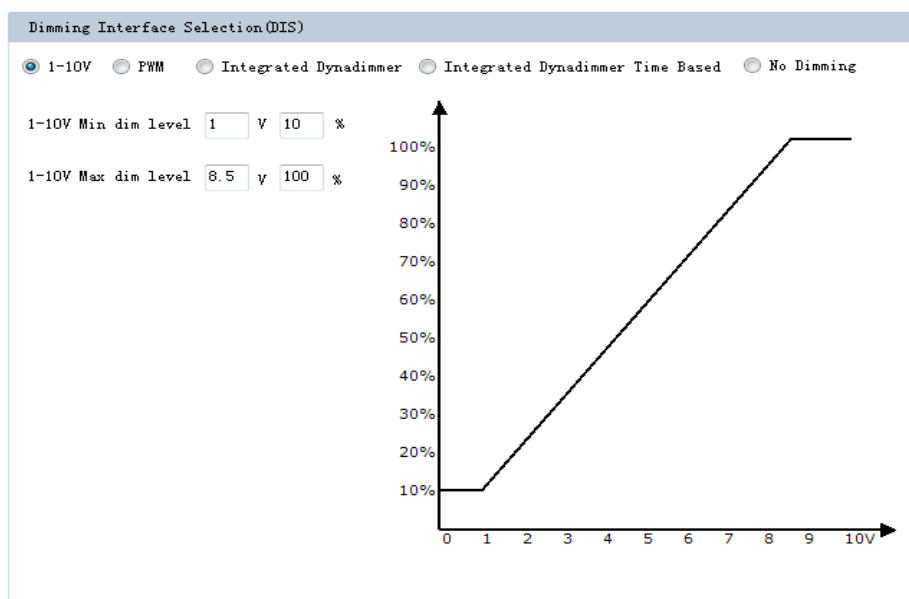
6.3.3 Set Module Working Hrs

Set Module Working hrs (SMW)

Set Module Working hrs hrs

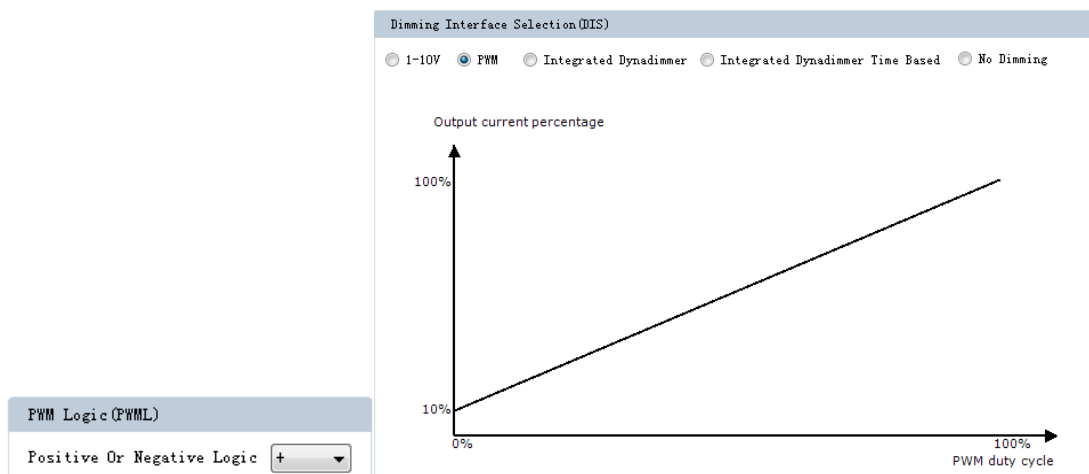
Use to reset the working hour counting in the microcontroller of the driver and collaborate with CLO.

6.3.4 1-10V

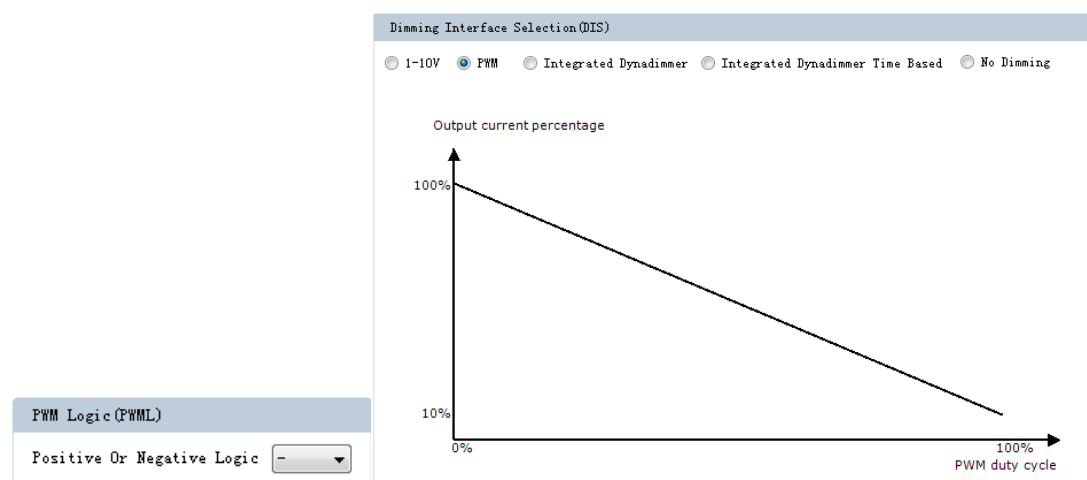


Allow users to set the max and min output current and corresponding output voltage to clarify the 1-10V dimming curve. Input a 0~10V signal from 2nd pin of the dimming interface. Default: input $\leq 1V$, output current 10%; input $\geq 8.5V$, output current 100%.

6.3.5 PWM

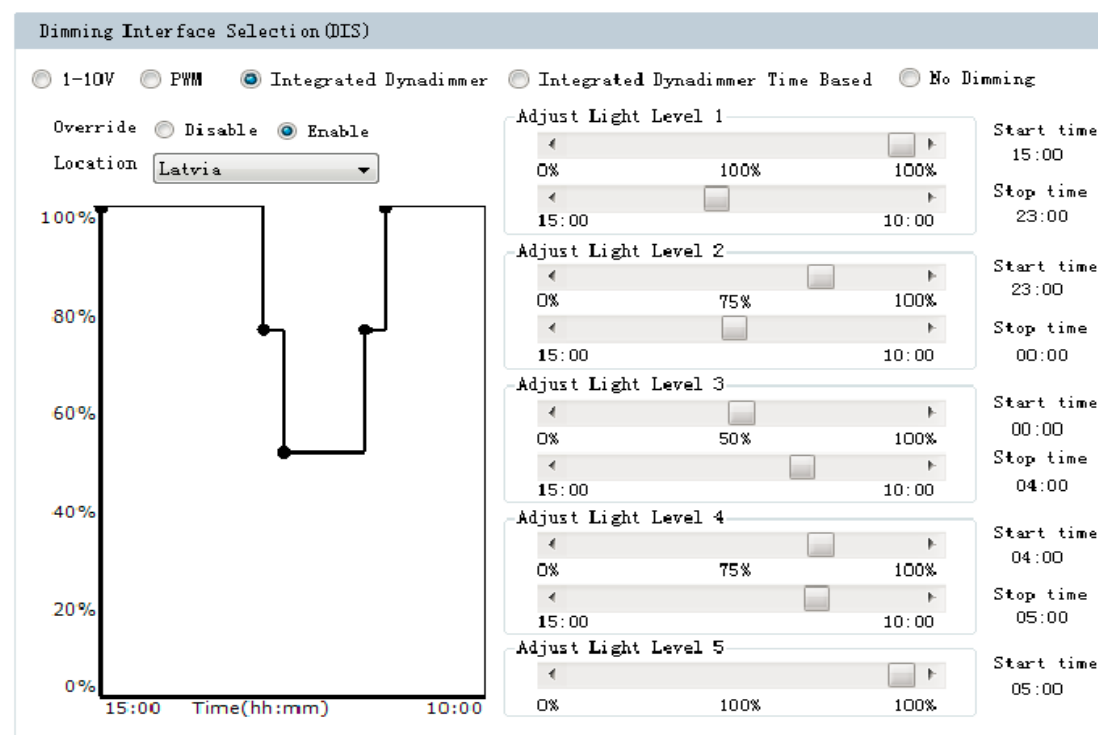


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Input a PWM signal from the 2nd pin(Dim+/Program) of the dimming interface to change the output current. PWM duty circle: 1%~99%(it has both positive and negative logics), frequency: 500Hz~5kHz, 3V~10V is high,-0.3V~0.8V is low.

6.3.6 Integrated Dynadimmer

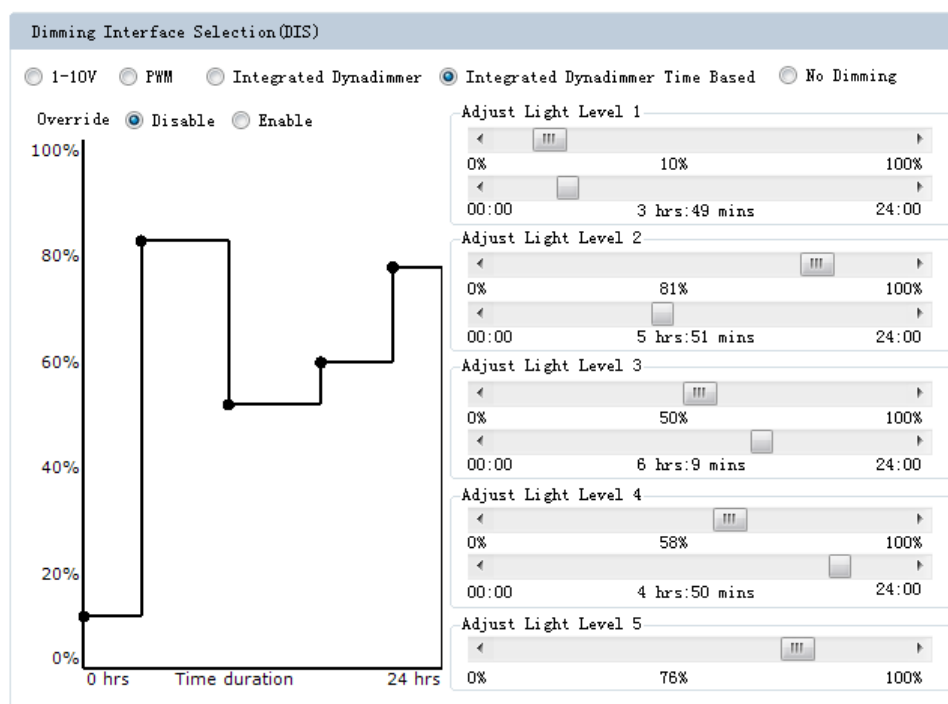


Integrated Dynadimmer allows dimming to predefined light levels based on the nightly operating time. With flexibility in setting time and light levels, the user can configure the driver for specific locations and application needs. Using Integrated Dynadimmer, it is possible to set up to 5 dim levels and time intervals. The driver does not have a real time clock. Instead it runs a virtual clock, determined by the length of nightly operating hours. After 3 ON-OFF cycles, the driver will calculate the virtual clock time. A valid ON-time is defined as a period during which the driver operates continuously for ≥ 4 hours to ≤ 24 hours. For example, if the requirement in summer is:

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23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75% (other time 100% or Off). The driver should be powered on for 7h, so it can calculate the virtual clock time as 22:00. Then we can set the dimming plan: 22:00~23:00: 100%, 23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75%. From summer to winter, the valid ON-time changes day by day. The driver should be powered on for 17h in winter, and it also can calculate the virtual clock time as 17:00. Then the dimming plan is 17:00~23:00: 100%, 23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75%, 05:00~10:00: 100%. From the above, if we set the dimming plan as shown in the picture, after repeating the driver ON-time for 3 consecutive days, the dimming plan takes effect from the 4th day onwards. Each day the driver powered on, it has a different start time according to the virtual clock time. So the driver can satisfy different requirements for different seasons.

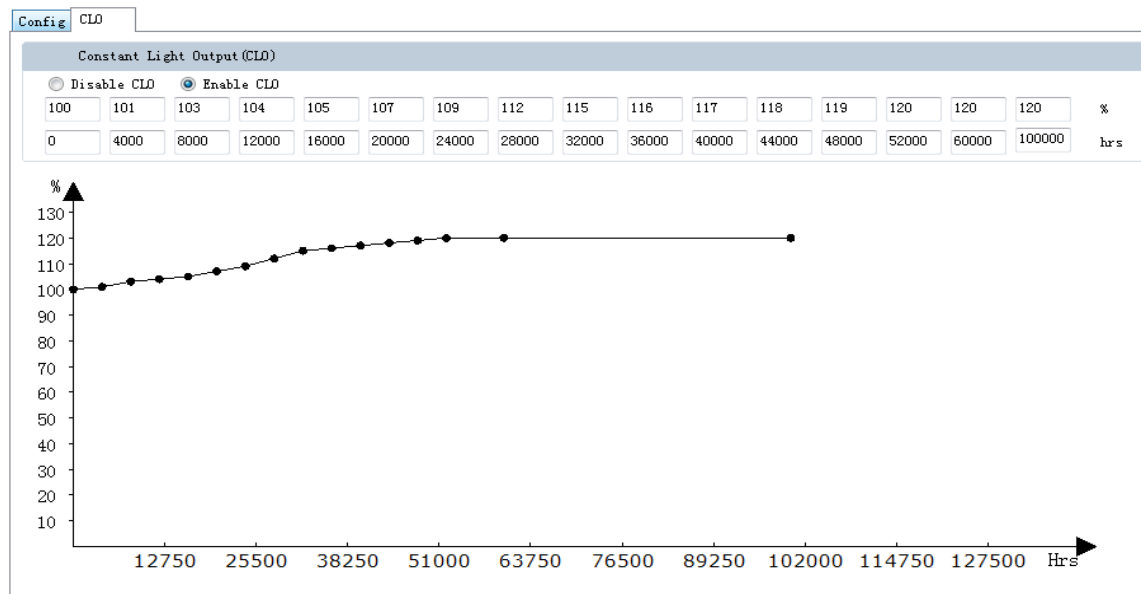
6.3.7 Integrated Dynadimmer Time Based



Allow users to separate 24hrs into 5 sections and corresponding output current.

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6.3.8 Constant Light Output(CLO)



Traditional light sources suffer from depreciation in light output over time. This applies to LED light sources as well. The CLO feature enables LED solutions to deliver constant lumen output through the life of the light engine. Based on the type of LEDs used, heat sinking and driver current, it is possible to estimate the depreciation of light output for specific LEDs and this information can be entered into the driver. The driver counts the number of light source working hours and will increase output current based on this input to enable CLO.

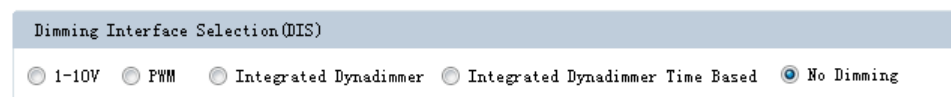
When the CLO feature is enabled, the driver nominal output current will be defined by the CLO percentage as shown by the equation below:

Driver target nominal output current = CLO percentage * AOC. For example, in the CLO profile shown in Figure, between 52,000-60,000 working hours, the CLO percentage is set at 120%.

Assuming the nominal AOC is set to 500mA, the driver output current with CLO enabled will be $1.20 \times 500 = 600 \text{ mA}$.

The CLO percentage can be set to a value between 100%-120%, in increments of 1%. The LED module working hours can be set at any value between (0-100,000 hours).

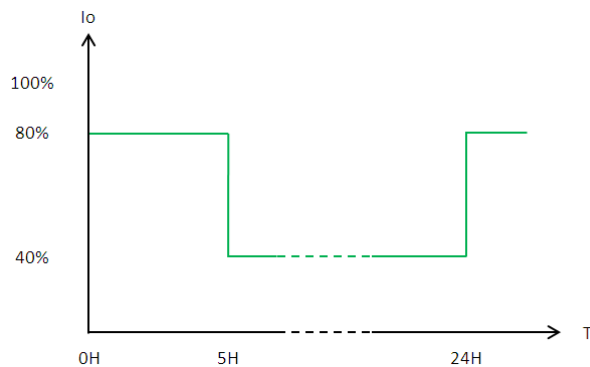
6.3.9 No Dimming



The driver will be in constant output mode.

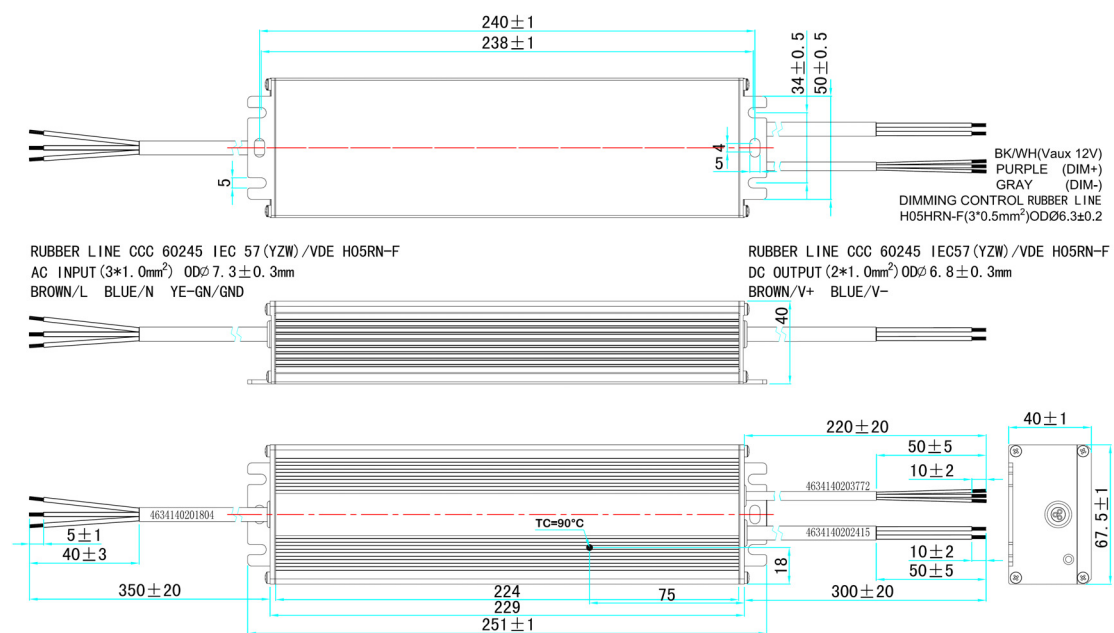
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6.3.10 Default output current curve



7. MECHANICAL CHARACTERISTICS

7.1 Outline:



7.2 Weight:

1200g(Typical)

8. NAMEPLATE

INPUT AC/L BROWN (棕色) AC/N BLUE (蓝色) YE-GN (黄绿色)	MOONS' LED Driver (LED控制装置) Energy Saving Solutions Http://www.moons.com.cn Http://www.moonsindustries.com	MU200H070AQ_CLKS P/N. Input Voltage (输入电压): 100-240Vac 50/60Hz Input Current (输入电流): 2.4A Output Voltage (输出电压): 143~285Vdc U-OUT (最大输出电压): 313V	 IP67 RoHS Output Current (输出电流): 700mA Output Power (输出功率): 200W tc: 90°C ta: 60°C SHANGHAI MOONS' AUTOMATION CONTROL CO., LTD 上海悦恩自动化控制设备有限公司	OUTPUT V+ BLUE (蓝色) V- BROWN (棕色)