

The logo for DONE, featuring the word "DONE" in a bold, teal, sans-serif font. The letter "D" is stylized with a circular element on its left side. The logo is contained within a white rounded rectangle with a thin teal border.

# MUG SERIES LED DRIVER

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DL-100U-V56P-MUG SPEC

V1.0

## Features

- Class I type for insulation(pending)
- Input voltage range: 277-480V ~ 50/60Hz
- Efficiency :90%(Typ.)
- Constant current output ,with power limitation for control mode
- Metal case, protection grade against water and dust: IP67
- [Input undervoltage protection](#) and [Input overvoltage protection](#)
- Surge level:
  - differential mode :6kV,
  - common mode :10kV
- available version :
  - A version: Output current is dimmed by external potentiometer
  - P version: Output current is dimmed by Isolated 3 in 1 dimmer
- guaranteed Lifetime : 5 years



## Applications

Street lighting、Industrial lighting、Venue lighting  
 Floodlight lighting、Landscape lighting 、Plant lighting

## Model list

Model NO.	Input voltage	Output power	Output voltage	The default current	Eff.
DL-100U-V56P-MUG	277-480V 50/60Hz	100W	25-56Vdc	2.1A	≥90%

- Note :**
1. Test conditions: Ta=25℃, under 380Vac input,after running for 30 minutes with full load .
  2. When the input is less than 240±15Vac,the output power gradually decreases to a half.and it recovers full power of 100W when the input is above 380VAC again. Please refer to “THE OUTPUT POWER VS INPUT VOLTAGE” curve chart for details.

## Input characteristics

Parameter	Min	Typ.	Max	remark
Rated input voltage	277Vac	380Vac	480Vac	
Input voltage range	264Vac		504Vac	
Rated frequency range	47Hz	50/60Hz	63Hz	
Power factor	0.95	-	-	@380Vac input ,with full load
Power factor	0.88	-	-	@277-480Vac input ,with 65%-100% load
T.H.D.	-	-	10%	@380Vac input ,with full load
T.H.D.	-	-	20%	@277-480Vac input ,with 65%-100% load
Input current	-	-	0.6A	@277Vac input ,with full load
Inrush current	-	-	70A	380Vac, cold start (25°C)

## Output characteristics

Parameter	Min	Typ.	Max	remark
Rated current DL-100U-V56P-MUG	-	1.8A	-	With loading 56VDC
Output current range DL-100U-V56P-MUG	0.8A	-	2.8A	
Output voltage range DL-100U-V56P-MUG	25V	-	56V	Constant power output range:36-56VDC
Available power(277-480Vac)	-	50W	100W	Decrease to a half once input voltage being less than 240±15Vac
Rated power(277-480Vac)	-	100W	-	
No-load voltage DL-150U-V56P-MUG	-	-	75V	
Efficiency@277Vac DL-150U-V56P-MUG	87%	90%	-	full load

## Output characteristics

Parameter	Min	Typ.	Max	Note
Efficiency@380VVac DL-100U-V56P-MUG	89%	90%	-	@380Vac input ,with full load
Accuracy of output current	-5%	-	+5%	For constant-power range , with full load
Line regulation	-3%	-	+3%	full load
Load regulation	-3%	-	+3%	full load
Starting time	300ms	-	1000ms	Full load@277-480Vac
12V output voltage	10.8V	12V	13.2V	
12V output current	0 mA	-	250 mA	Reference to the“Dim-”
12V output transient peak current@6W	-	-	500 mA	In a 5.0ms cycle, the maximum duration of the maximum peak current of 500mA is 2ms, and the average value must not exceed 250mA

**Note:** 1.The output current is limited by the input and output voltage, please refer to “I-V WORKING AREA” for details;

2. When the driver works at the rated minimum output current, the current accuracy is -5%--10%

## Dimming characteristics

Dimming function		Min	Typ.	Max	Instructions
0-10V Dimming ( Optional )	Safe operation voltage range	0V	-	12V	Beyond the range maybe lead to a failure of the driver.
	Dimming output range	0%	-	100%	-
	Rated operation voltage range	0V	-	10V	Negative logic dimming mode is also available by program
PWM Dimming ( Optional )	PWM high level	9.5V	-	10.5V	-
	PWM low level	0V	-	0.5V	-
	Rated dimming frequency	300Hz	-	2000Hz	-
	PWM duty cycle	0%	-	99%	Negative logic dimming mode is also available by program
Resistor Dimming ( Optional )	Rated external resistance value	0KΩ	-	100KΩ	Bigger resistor won't increase the output.
	Dimming output range	0%	-	100%	Negative logic dimming mode is also available by program
Multiple time-controlled dimming ( Optional )	MCU controlling		Segmented dimming function		operating mode
	Timer control		The default is six segments, Can be customized		24H to achieve a cycle

**Note:**

1. Output current of dimming port: 100uA (typical value);

2. The maximum operation voltage for the dimming port is 12V. Wrong voltage beyond the range or a reverse connection may lead to a critical failure of the driver.
3. When over-temperature protection happens, the threshold of output power(or output current) for dim-off and turn-on will keep the same as that in normal condition. Since the output power has been decreased to a half of normal condition, the dimming signal from the port need to be doubled to meet the same threshold as a result. Only for P version.
4. Dim -off function is available only for positive logic dimming mode of P version. Please consult the technician for details if you have other requirements.
5. All these drivers will not work in the no-load mode.

## Protection

Protection	description
Input under-voltage protection	When the input voltage is less than 240±15Vac, the output power decreases.
Output over-voltage protection	hiccup mode,and recovers automatically when the fault condition is removed.
Output short circuit protection	Hiccup mode,and recovery automatically when the fault condition is removed.
Over temperature protection	when the temperature of the case is greater than 90℃, the output power decreases to a half.
Output over-power protection	The maximum output power is limited to about 1.1 time of the rating automatically. Only for P version

**Note:**

1. Unless otherwise specified, all parameters should be measured at the condition of 380Vac (50Hz) input ,with rated load ,and ambient temperature of 25℃;

## Environmental

Environmental categories	Parameter
Working temperature	-40 ~ +55℃
Working humidity	20 ~ 95% RH
Tcase	-40 ~ +90℃
Storage temperature、 humidity	-40~+80℃, 10 ~ 95% RH
Resistant to vibration	10 ~ 500Hz, 5G 12 min/cycle, X, Y, Z axis 72 min each
MTBF	230Khrs min. MIL-HDBK-217F (Ta=25℃)
Lifetime	75000 hours @Tcase=75℃,refer to" <b>Tcase VS Lifetime</b> " curve

**Note:**

1. Unless otherwise specified, all parameters should be measured at the condition of 380Vac (50Hz) input ,with rated load ,and ambient temperature of 25℃;

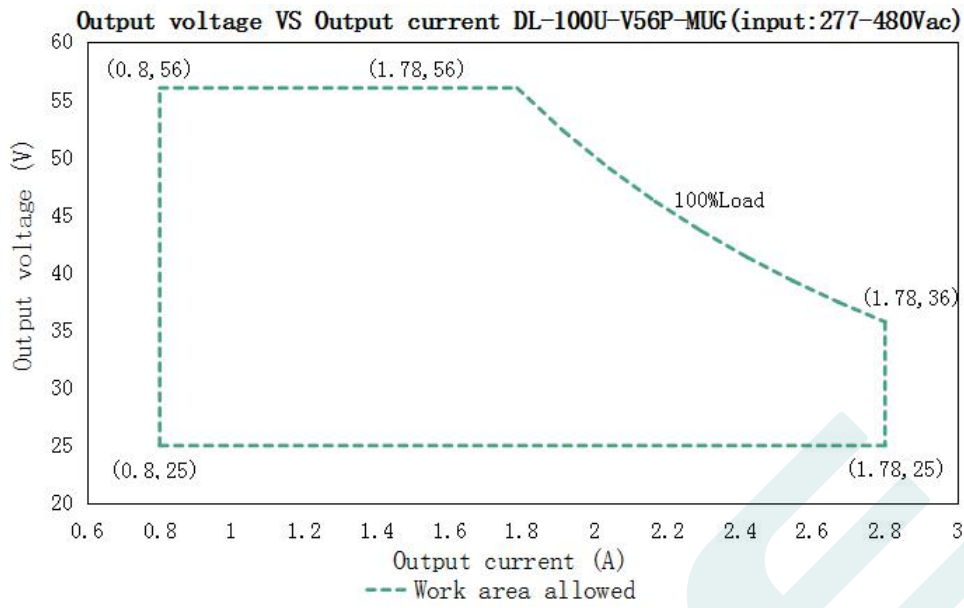
## Safety and EMC

Safety categories	Standard
Safety	UL 8750
EMC	FCC Part15, Subpart B
Surge leve	Differential mode L-N $\pm 4\text{KV}$ ( 2 ohm ) ,common mode L, N-PE $\pm 6\text{KV}$ ( 12 ohm ); Refer to IEC61000-4-5 2014 Criterion B
High-pot test	I/P-O/P:3.75KVac I/P-PE :1.5KVac O/P-PE : 0.5KVac I/P-DIM:3.75KVac O/P-DIM:1.5KVac
Insulation impedance	I/P-PE:100M $\Omega$ / 500VDC; I/P-O/P:100M $\Omega$ / 500VDC / 25 $^{\circ}\text{C}$ / 70% RH
Leakage current	<0.7mA@480Vac

**Note:**

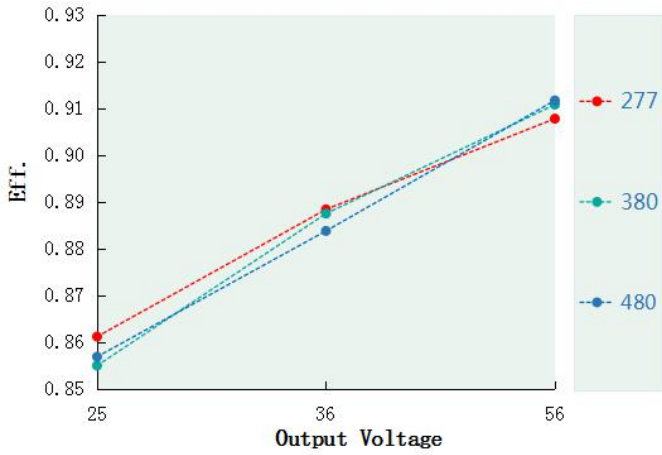
1.Attention! As a component of the whole, the EMC performance of the final product is not only decided by the driver, even if the driver is well-designed and fulfil all the required compliance. The final equipment manufacturers must re-qualify EMC Directive on the complete product.

## I-V Working area

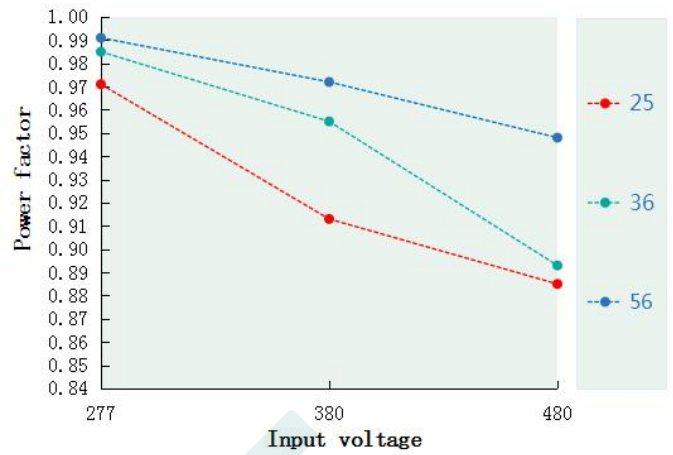


Load	Output								
Load working Voltage	25V	29V	33V	36V	40V	44V	48V	52V	56V
Io_MAX	2.8A	2.8A	2.8A	2.8A	2.5A	2.3A	2.1A	1.92A	1.8A
Po_MAX	48.5W	51.3W	55W	100W	100W	100W	100W	100W	100.8W

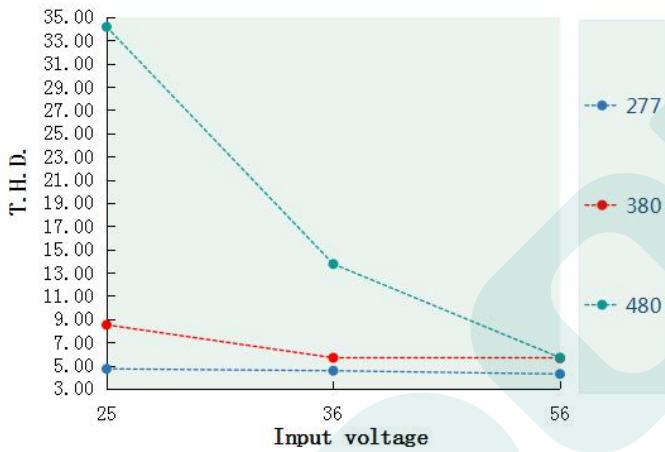
**Eff. VS Output voltageDL-100U-V56P-MUG**



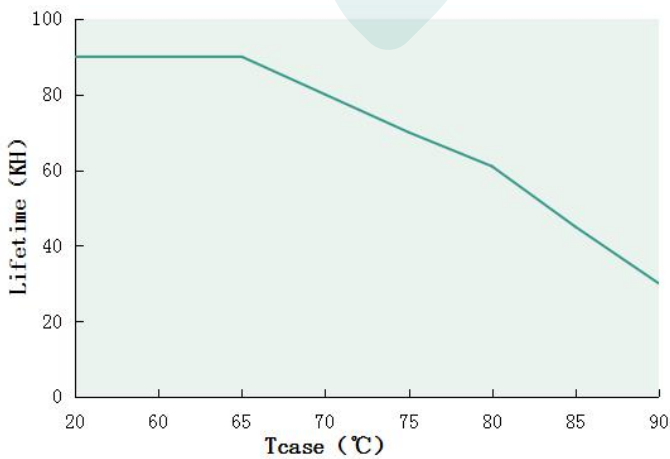
**Power factor VS Input voltageDL-100U-V56P-MUG**



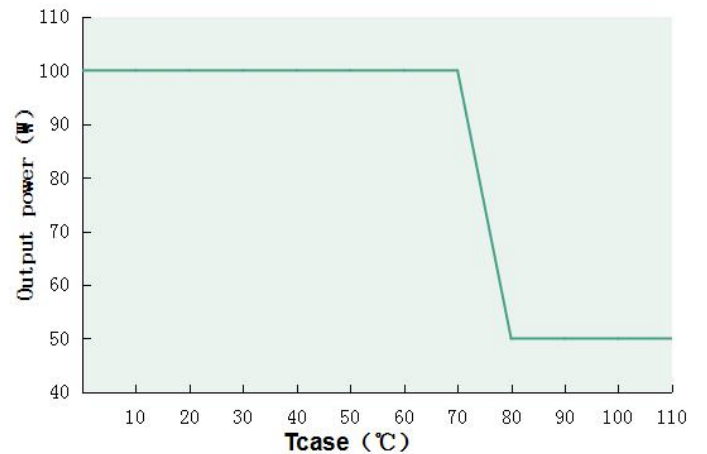
**T.H.D. VS Output voltage(DL-100U-V56P-MUG)**



**Tcase VS Lifetime(DL-100U-V56P-MUG)**

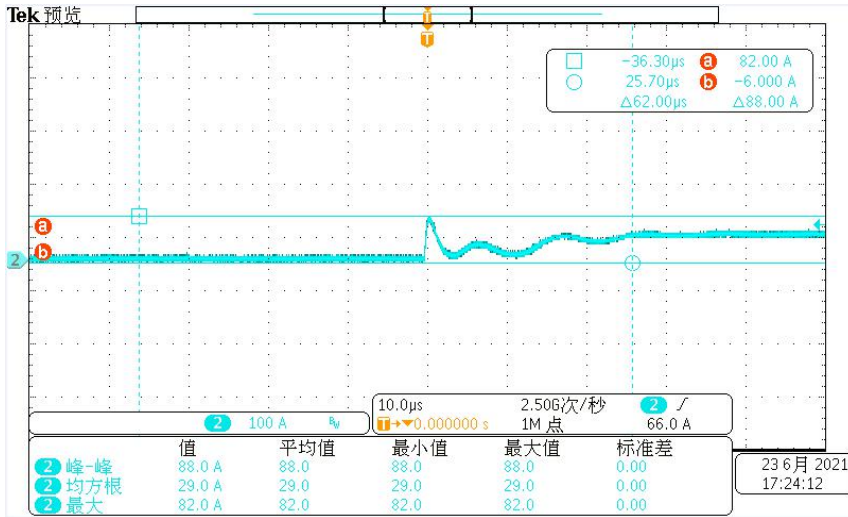


**Output power VS Tcase (DL-100U-V56P-MUG)**

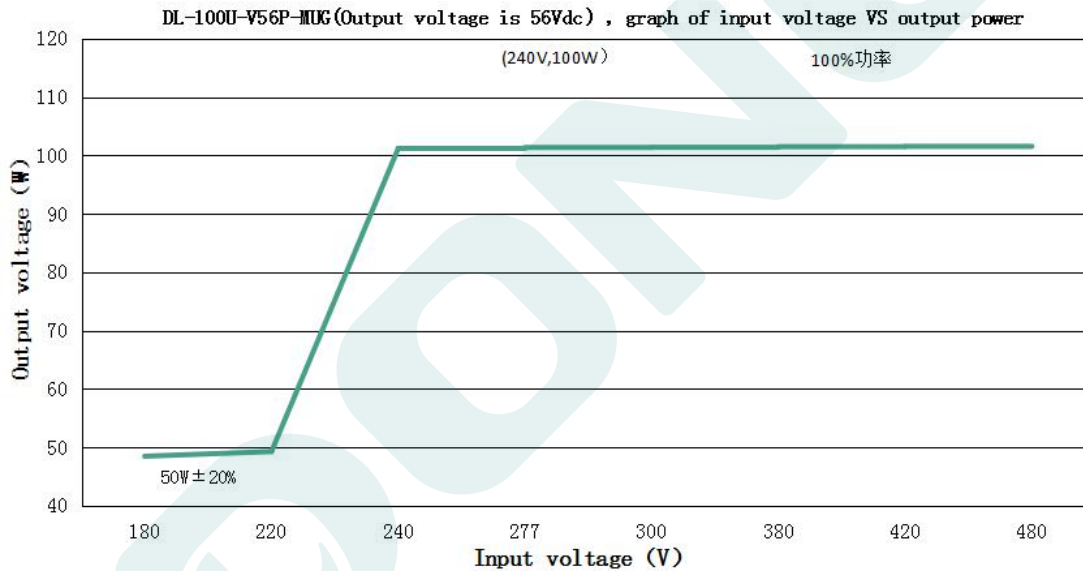




**Surge curve(DL-100U-V56P-MUG)**



**Output power VS Input voltage**



**DL-100U-V56P-MUG (When the output voltage is 56Vdc, the rated output current value and output power corresponding to different input voltage)**

Input Voltage	180Vac	220Vac	240Vac	277Vac	300Vac	380Vac	420Vac	480Vac
Iout	0.86A	0.86A	1.81A	1.8A	1.8A	1.8A	1.8A	1.8A
Pout	48.5W	49.3W	101.23W	101.39W	101.42W	101.53W	101.58W	101.64W

**Note:**

1. When the input voltage is below 240±15Vac, the output power decreases to 50W±20%

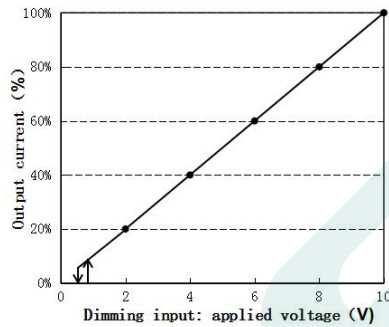
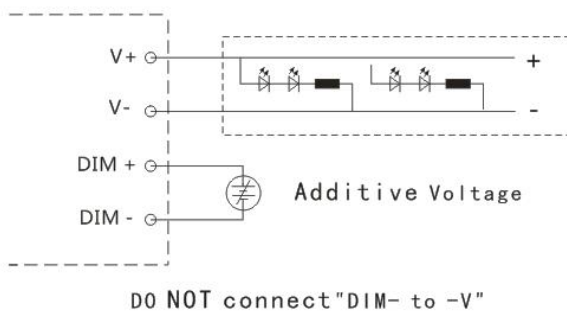
## Dimming function

### ※ Three-in-one dimming function (P version only)

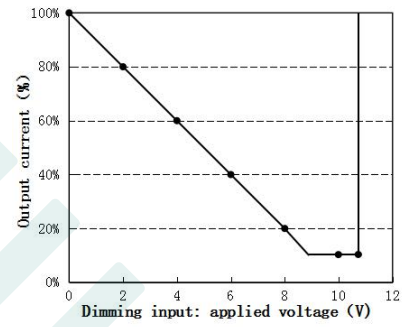
A. To adjust the output current, applying one of the three methods between DIM+ and DIM- : a resistor of 0-100K, or any voltage of 0-10V , or a PWM signal with amplitude of 10V. .

B. output current of dimming port: 100uA (typical value).

#### ◎ With 0-10V dimming voltage(for both logic,negative and positive):

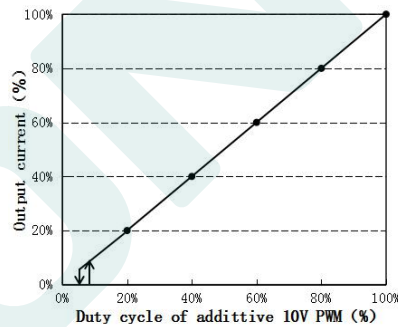
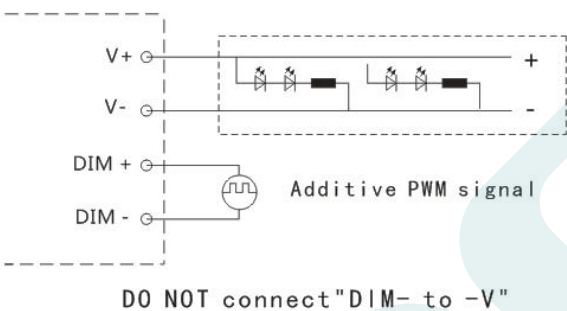


Positive logic dimming curve

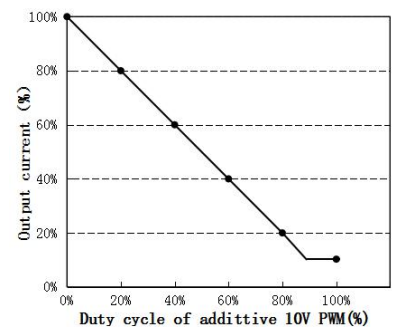


Negative logic dimming curve

#### ◎ With 10V PWM signal (Frequency range: 300Hz-2K Hz) :

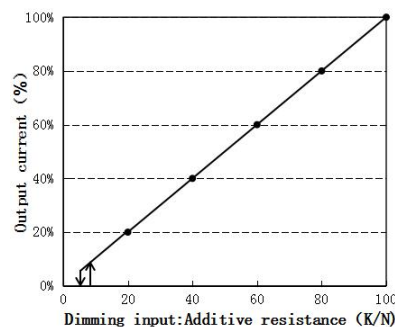
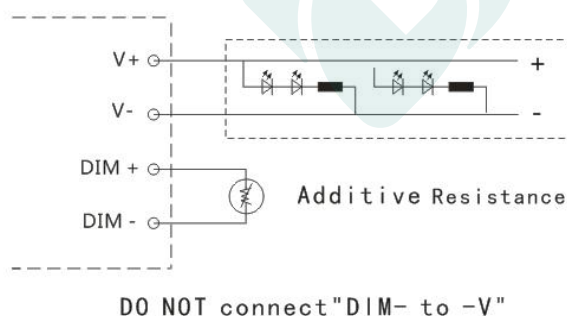


Positive logic dimming curve

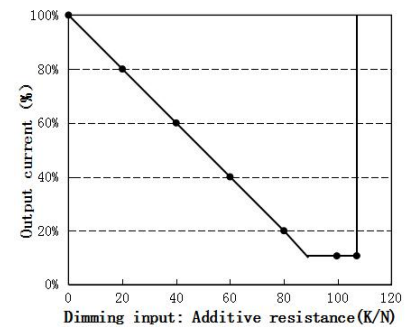


Negative logic dimming curve

#### ◎ With an additional 0-100K resistor:



Positive logic dimming curve



Negative logic dimming curve

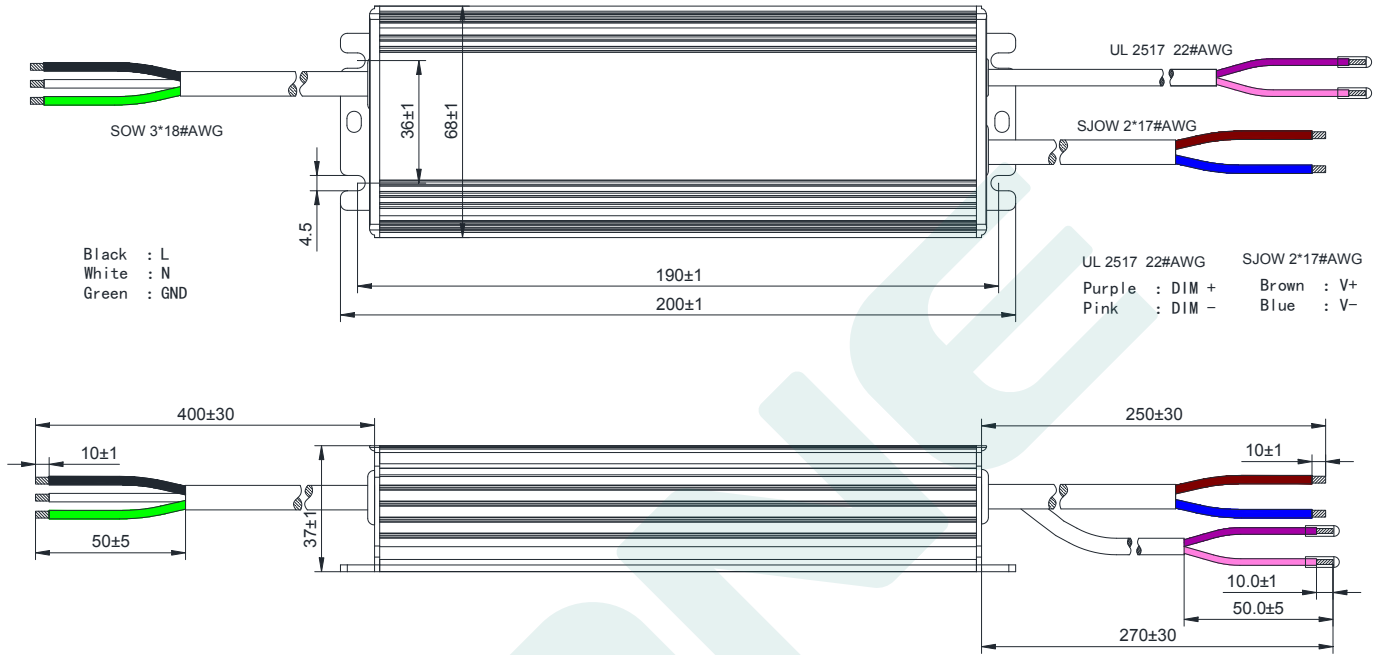
#### Remark:

1. Both operation way, of positive logic or negative logic, can be selected by program.
2. Dim -off is only available for positive logic dimming .Other requirements need to contact with the technician for help.

## Mechanical specification

Size (mm) L200mm\*W68mm\*H37mm

General product dimension drawing  
 DL-100U-V56P-MUG

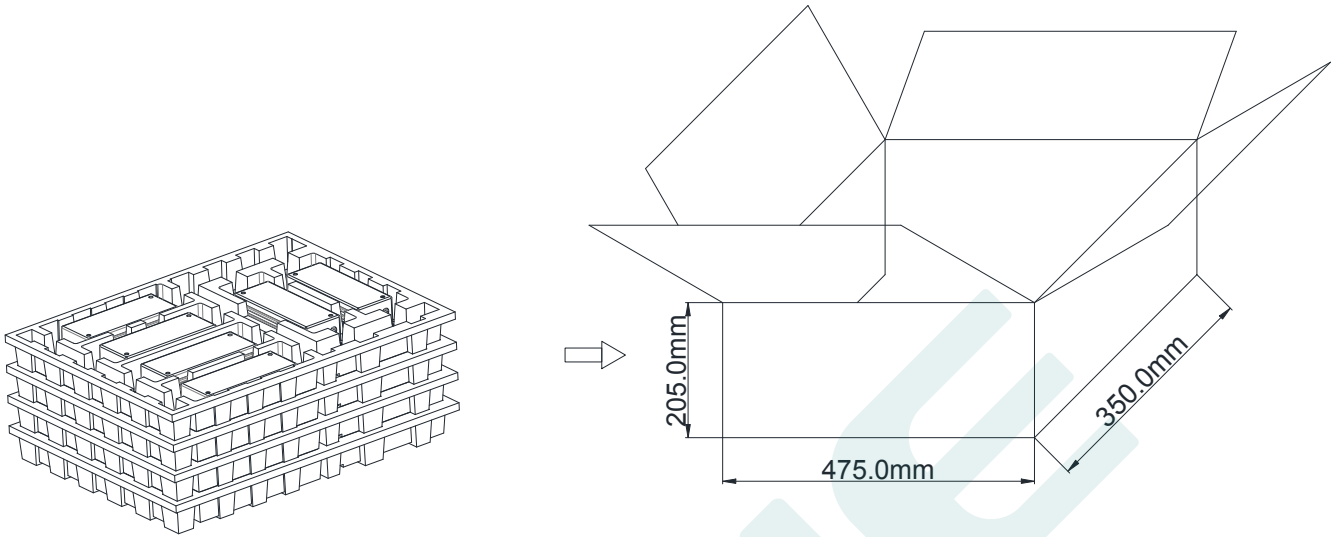


## Weight

Weight 800 g

## Packaging

Packaging (mm) L475\*W350\*H205



Note: One Carton 4 layers and 6 pcs each layer, total 24pcs/carton.

**Note:**

1. According to the qualified certificate of the LED DRIVER, that with English label is for sale in Europe, America and India.
2. That with Chinese label are used for Chinese market.

**Version**

DATE	DESCRIPTION	REV.	CHECK
2022.3.3	Initial version.	V1.0	

**MANUFACTURER**

EDIT	CHECK	APPROVE