# MUG SERIES LED DRIVER

## DL-150U-MUG SPEC V1.1

GUANGDONG DONE POWER TECHNOLOGY CO.,LTD

## Features

• Class I type for insulation(pending)

• Input voltage range: 277-480V ～ 50/60Hz

• Efficiency :92%(Typ.)

•Constant current output ,with power limitation for control mode

• Metal case, protection grade against water and dust: IP67

• Surge level:

differential mode :6kV,

common mode :15kV

•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

c UL us LISTED E479166

## Model list

| Model NO. | Input voltage | Output power | Output voltage | The default current | Eff. | T.H.D | PF |
|---|---|---|---|---|---|---|---|
| DL-150U-V56P-MUG | 277-480V 50/60Hz | 150W | 25-56Vdc | 3.6A | ≥91% | ≤10% | ≥0.95 |
| DL-150U-V214P-MUG | 277-480V 50/60Hz | 150W | 95-214Vdc | 0.7A | ≥92% | ≤10% | ≥0.95 |

**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±10%Vac,the output power gradually decreases.When the input 277-480VAC,rated power 150W. 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 | 0.9 | - | - | @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℃) |

## Output characteristics

| Parameter | Min | Typ. | Max | remark |
|---|---|---|---|---|
| Rated current<br>DL-150U-V56P-MUG<br>DL-150U-V214P-MUG | - | 2.68A<br>0.7A | - | |
| Output current range<br>DL-150U-V56P-MUG<br>DL-150U-V214P-MUG | 1.8A<br>0.5A | -<br>- | 4.2A<br>1.05A | |
| Output voltage range<br>DL-150U-V56P-MUG<br>DL-150U-V214P-MUG | 25V<br>95V | -<br>- | 56V<br>214V | |
| Available power(277-480Vac) | - | 75W | 150W | Decrease to a half once input voltage being less than 240±10%Vac |
| Rated power(277-480Vac) | - | 150W | - | |
| No-load voltage<br>DL-150U-V56P-MUG<br>DL-150U-V214P-MUG | -<br>- | -<br>- | 75V<br>250V | |

## Output characteristics

| Parameter | Min | Typ. | Max | Note |
|---|---|---|---|---|
| Efficiency@380VVac<br>DL-150U-V56P-MUG<br>DL-150U-V214P-MUG | <br>90%<br>91% | <br>91%<br>92% | - | @380Vac input ,with full load |
| Accuracy of output current | -5% | - | +5% | For constant-power range , with full load |
| Line regulation | -5% | - | +5% | full load |
| Load regulation | -5% | - | +5% | 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;

## Dimming characteristics

| Dimming function | | Min | Typ. | Max | Instructions |
|---|---|---|---|---|---|
| 0-10V Dimming ( Optional ) | Safe operation voltage range | 0V | - | 12V | When the external voltage is ≥12V, the dimming will fail |
| | Dimming output range | 0% | - | 100% | - |
| | Rated operation voltage range | 0V | - | 10V | It can be set to negative dimming mode through program setting |
| PWM Dimming ( Optional ) | PWM high level | 9.5V | - | 10.5V | - |
| | PWM low level | 0V | - | 0.3V | - |
| | Rated dimming frequency | 300Hz | - | 2000Hz | - |
| | PWM duty cycle | 0% | - | 99% | Output full power at 99% duty cycle |
| Resistor Dimming ( Optional ) | Rated external resistance value | 0KΩ | - | 100KΩ | - |
| | Dimming output range | 0% | - | 100% | - |
| 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 voltage of the dimming port is 12V. If the external power supply voltage exceeds 12V or the signal cable is inverted, the power supply will be damaged;

3. Dimming default setting is three in one positive logic dimming (programmable software can be set to timing dimming, 0-5V or other voltage dimming);

4. When set to positive logic dimming function, the 0V dimming is turned off, and the output voltage is 0.46*Vomax after the dimming is turned off. Be careful when using this function, but customers are advised to use 1-10V dimming.

5. When setting negative logic dimming, the default output is 100% when the dimming is suspended. Negative logic dimming cannot be turned off. When the port voltage of the dimming is greater than 10.5V, the maximum power output of the power supply will be achieved.

## Protection

| Protection | description |
|---|---|
| Input under-voltage protection | When the input voltage is less than 240Vac±10%, the output power gradually decreases. |
| Output overload protection | Protection mode:hiccup mode,recovers automatically after fault condition is removed. |
| Output short circuit protection | Hiccup mode:recovers automatically after fault condition is removed |
| Over temperature protection | Self-recovery type：when the housing temperature is greater than 90℃, the output power decreases gradually. |
| Output over-voltage protection | Protection mode: Hiccup mode or clamped in output highest voltage , the product is not damaged，LED driver works normally after fault condition is removed. |

**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℃@200-277Vac (refer to "Life Curve ") |
| Safety shell temperature | -40 ~ 90℃ |
| Working humidity | 20 ~ 95% RH |
| 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 | 70000 h @ housing temperature 75 ℃, 380Vac, 80% load, see section "housing temperature and life" |

**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 ±4KV（2 ohm）,common mode L，N-PE± 6KV ( 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:100MΩ / 500VDC; I/P-O/P:100MΩ / 500VDC / 25℃/ 70% RH |
| Leakage current | <0.7mA@480Vac |

**Note:**

1.The driver is considered as a component that will be operated in combination with the final equipment. Since EMC performance will be affected by the complete installation,the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.

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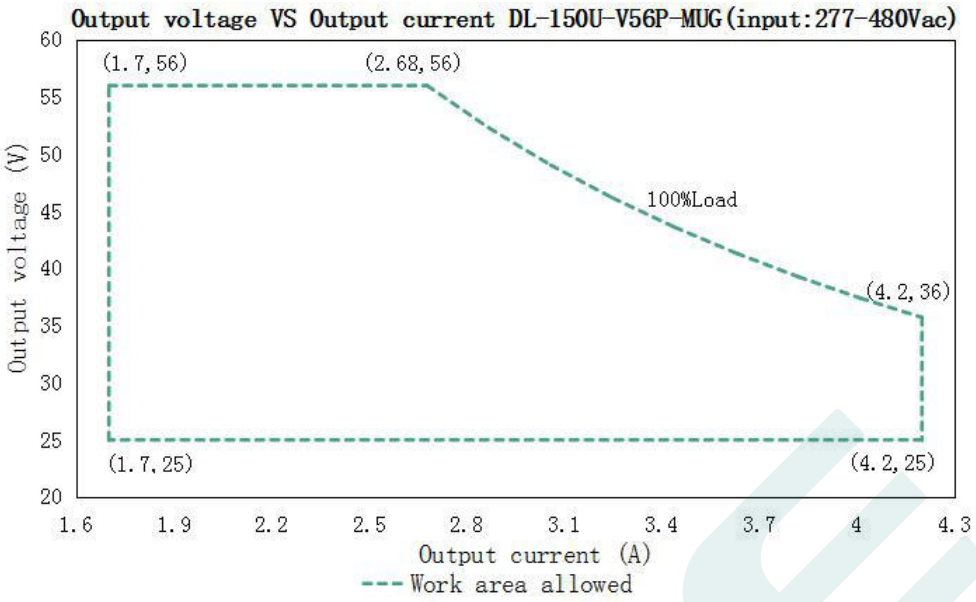
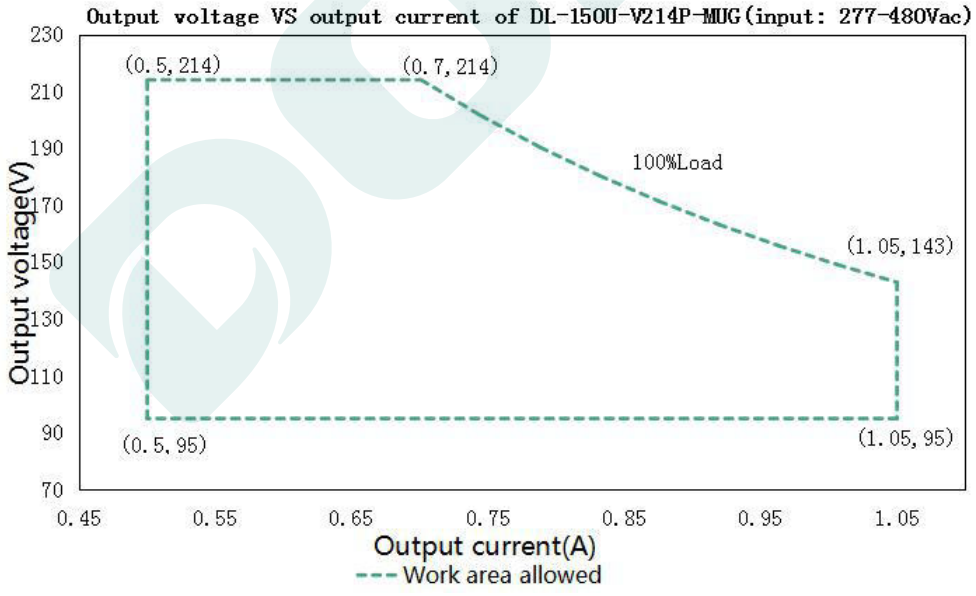
## I-V Working area

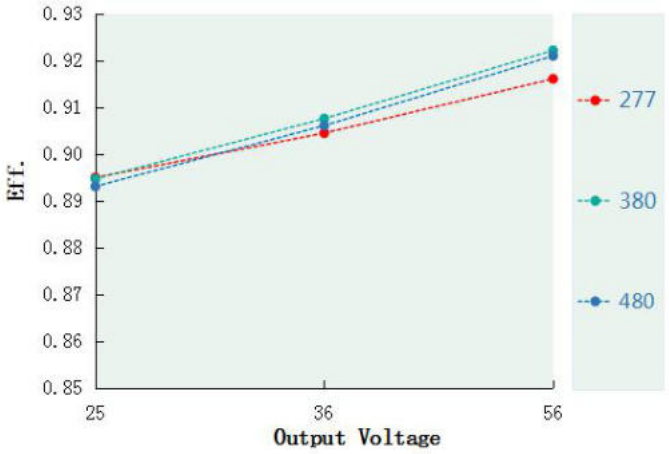



| Load | Output | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Load working Voltage | 25V | 29V | 33V | 36V | 40V | 44V | 48V | 52V | 56V |
| Io_MAX | 4.2A | 4.2A | 4.2A | 4.17A | 3.75A | 3.41A | 3.13A | 2.88A | 2.67A |
| Po_MAX | 105W | 121.8W | 138.6W | 150W | 150W | 150W | 150W | 150W | 150W |

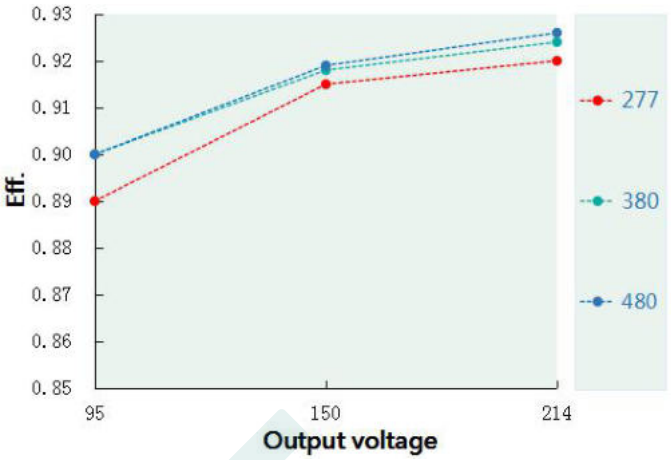



| Load | Output | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Load working Voltage | 95V | 108V | 123V | 143V | 156V | 172V | 186V | 200V | 214V |
| Io_MAX | 1.05A | 1.05A | 1.05A | 1.05A | 0.961A | 0.872A | 0.806A | 0.748A | 0.6984A |
| Po_MAX | 99.75W | 113.4W | 129.1W | 149.9W | 150W | 150W | 149.9W | 149.65W | 149.37W |

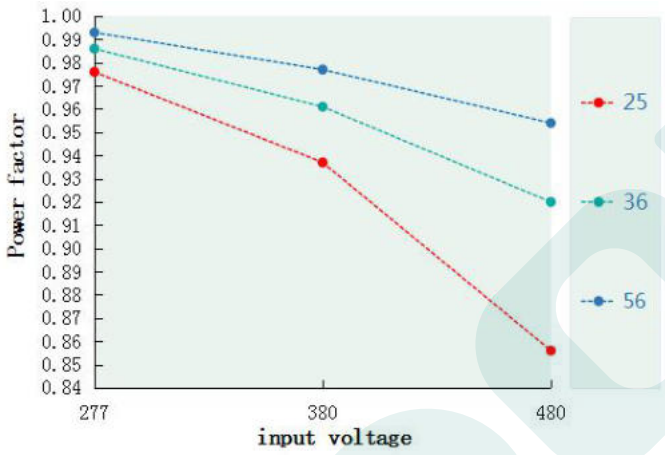
**Eff. VS Output voltageDL-150U-V56P-MUG**



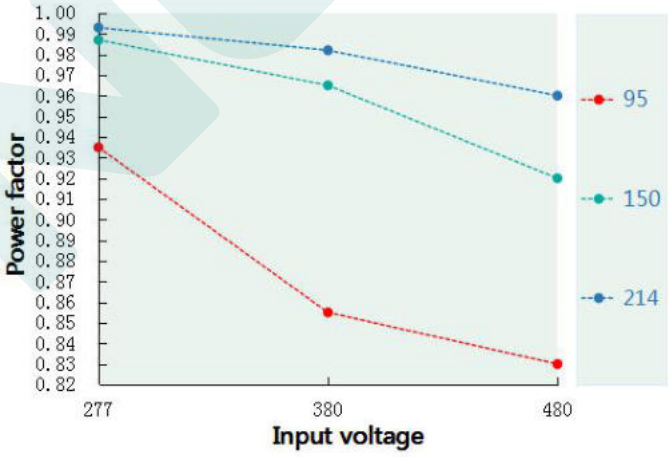

**Eff. VS Output voltageDL-150U-V214P-MUG**



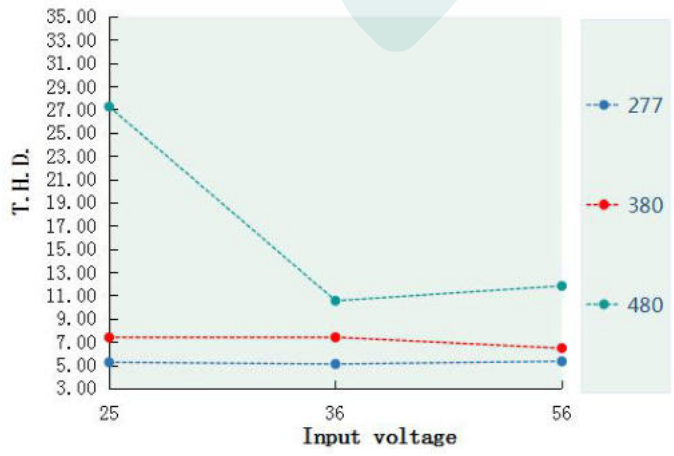

**Power factor VS Input voltageDL-150U-V56P-MUG**




**Power factor VS Input voltageDL-150U-V214P-MUG**




**T.H.D. VS Output voltage(DL-150U-V56P-MUG)**

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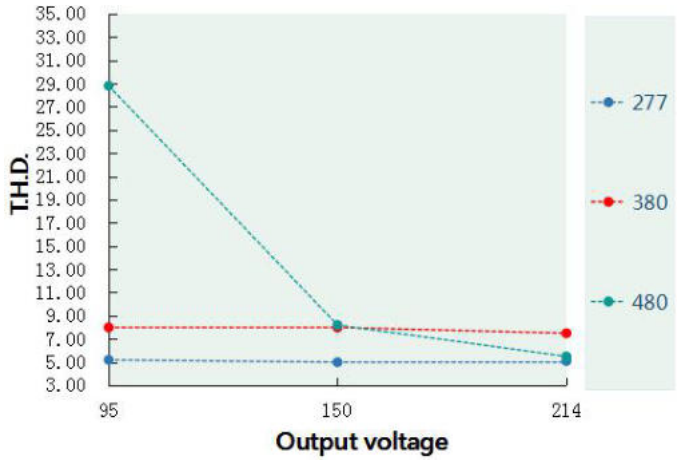
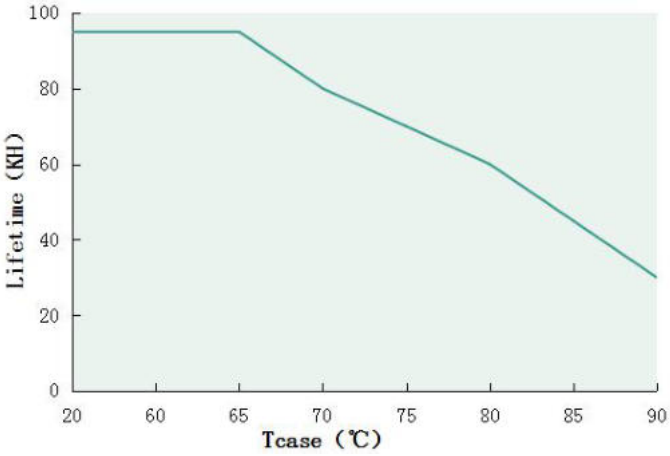
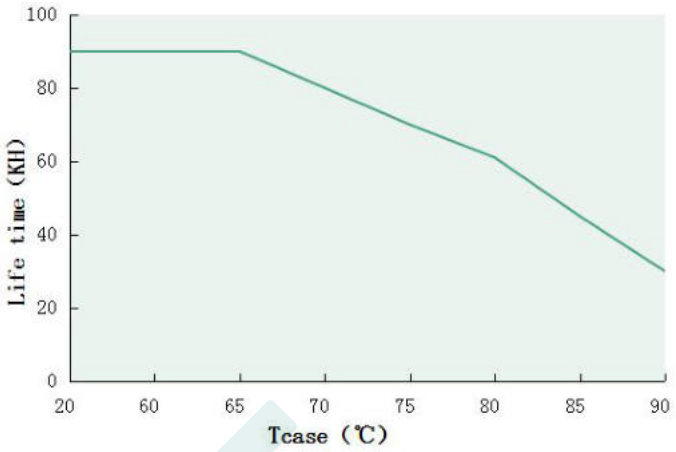


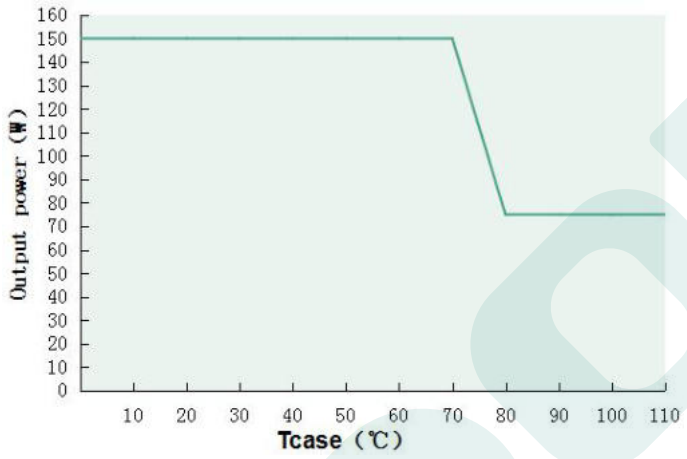
**Tcase VS Lifetime(DL-150U-V56P-MUG)**



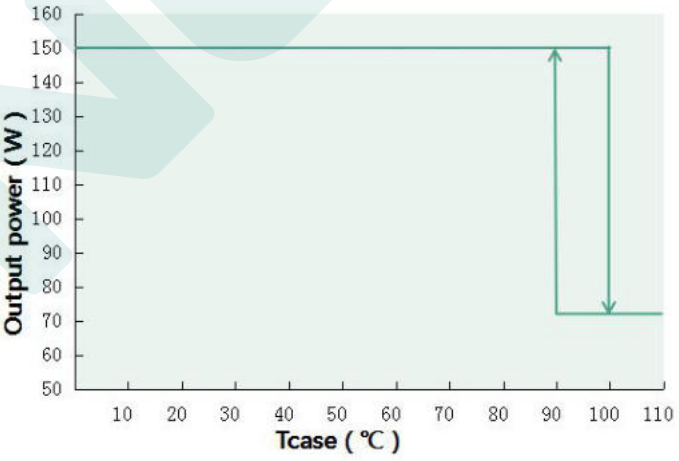

**Tcase VS Lifetime(DL-150U-V214P-MUG)**



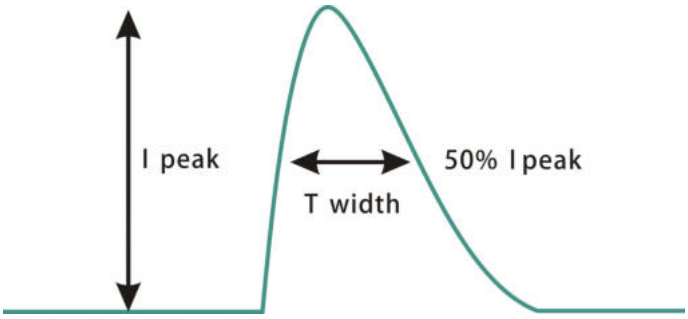

**IOutput power VS Tcase (DL-150U-V56P-MUG)**




**IOutput power VS Tcase (DL-150U-V214P-MUG)**

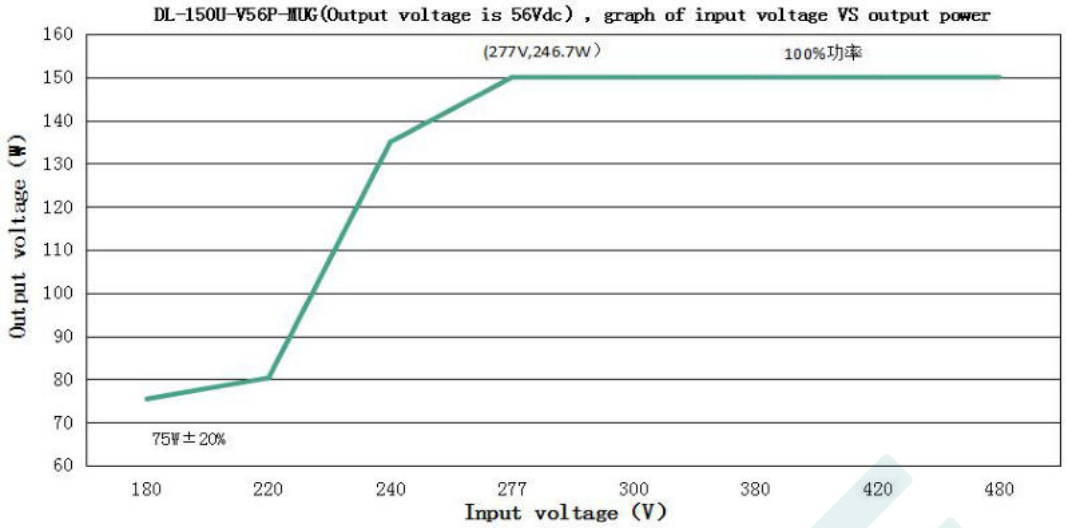



**nrush Current (DL-150U-V56P/V214P-MUG)**

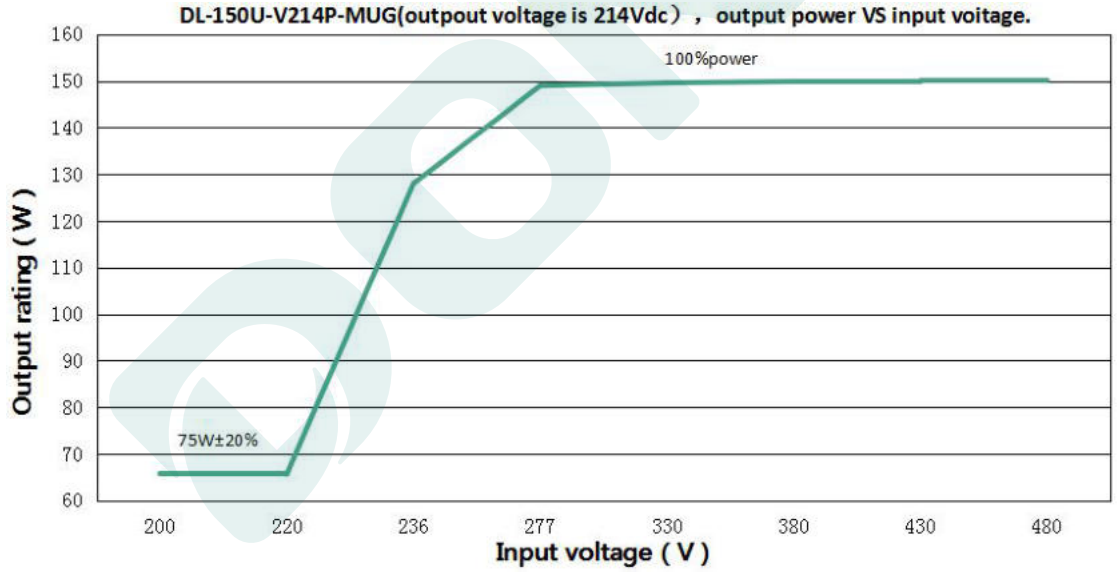



| Input voltage | Peak current | T(@50% Peak current) |
|---|---|---|
| 277Vac | 78A | 4us |
| 380Vac | 88A | 5.1us |
| 480Vac | 89A | 4.3us |

**Output power VS Input voltage**




| DL-150U-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 | 1.48A | 1.48A | 2.41A | 2.68A | 2.68A | 2.68A | 2.68A | 2.68A |
| Pout | 75.4W | 80.3W | 135W | 150W | 150W | 150W | 150W | 150W |




| DL-150U-V214P-MUG (When the output voltage is 214Vdc, the rated output current value and output power corresponding to different input voltage) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Input Voltage | 200Vac | 220Vac | 236Vac | 277Vac | 330Vac | 380Vac | 430Vac | 480Vac |
| Iout | 0.31A | 0.31A | 0.62A | 0.6971A | 0.698A | 0.698A | 0.699A | 0.7A |
| Pout | 65.8W | 65.7W | 128W | 149W | 149.6W | 149.79W | 150.13W | 150.21W |

**Note:**

1.Output power will decrease gradually when input voltage less than 240Vac±10%;When the input voltage is 220Vac,the output power range is 75W±20%.

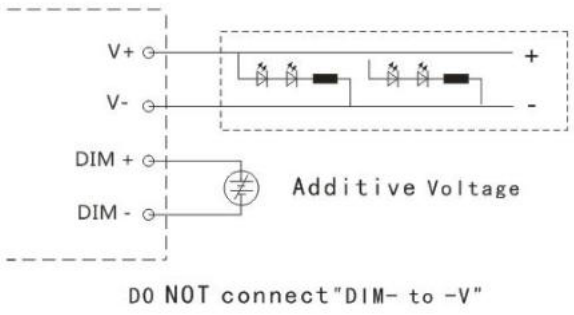
# Dimming function

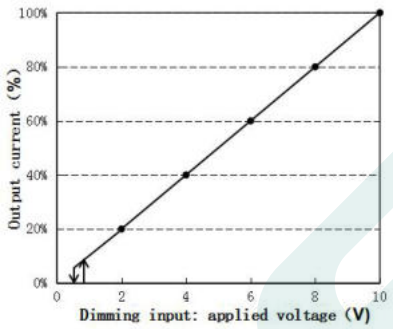
**※ Three-in-one dimming function (P version only)**

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. .

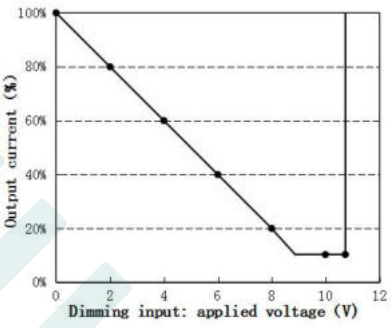
B. output current of dimming port: 100uA (typical value).

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



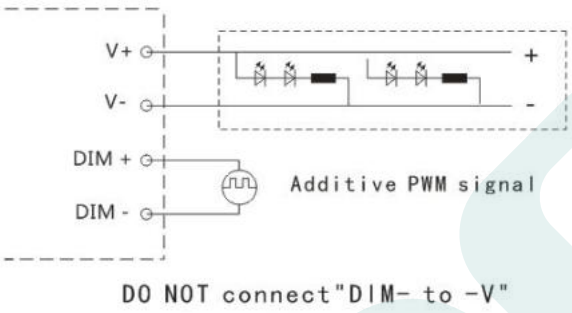



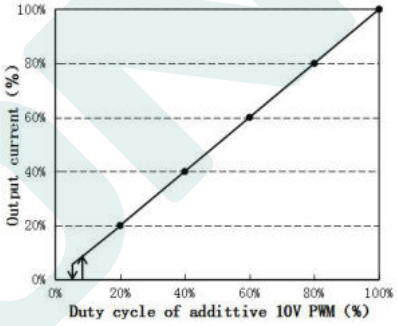

Positive logic dimming curve



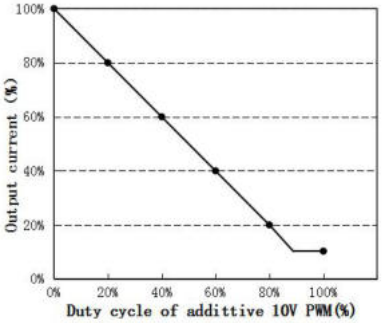

Negative logic dimming curve

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



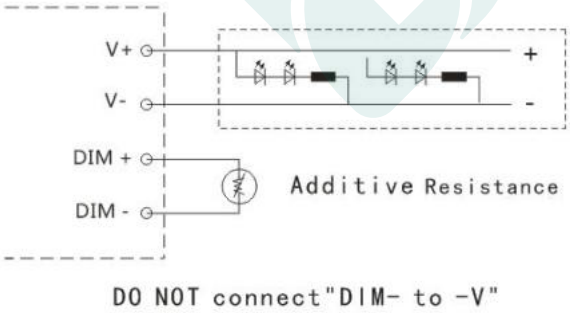



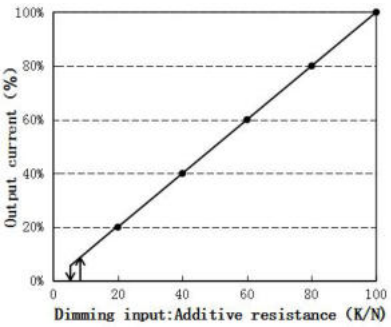

Positive logic dimming curve



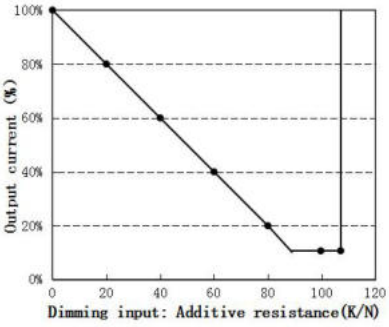

Negative logic dimming curve

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




Positive logic dimming curve




Negative logic dimming curve

**Note:**

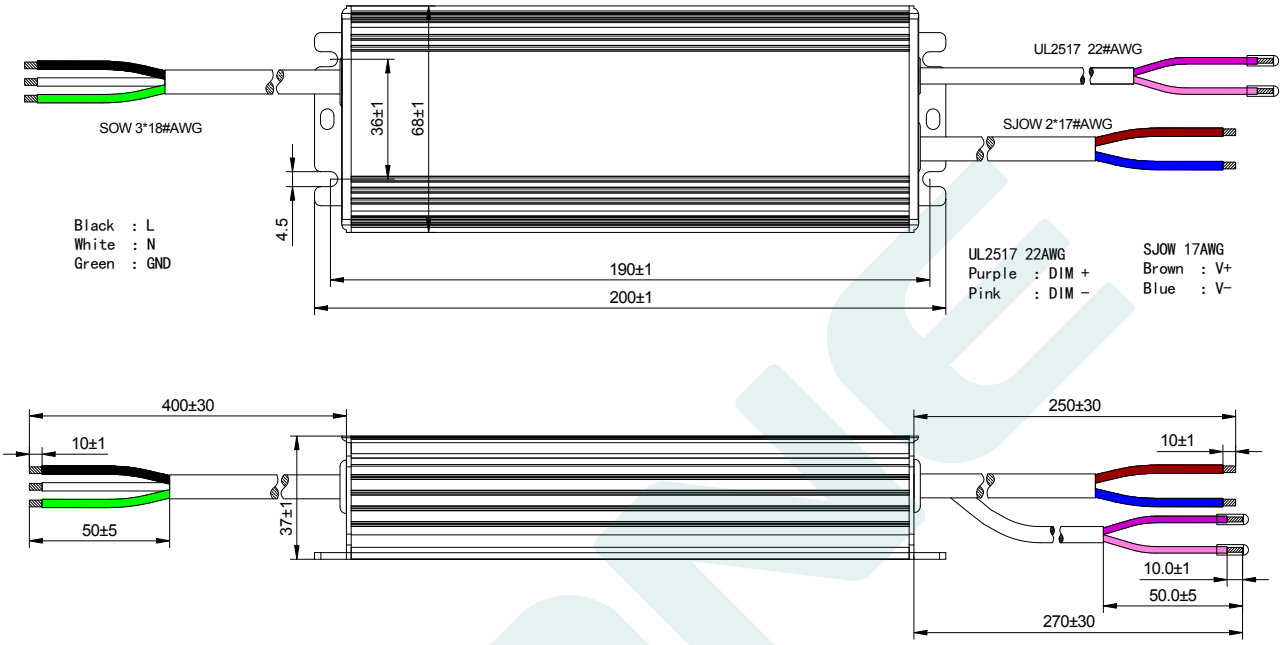
1. Positive and negative logic dimming can be programmed.
2. Dimming off only applies to positive logic. For other requirements, please contact technical personnel.

## Mechanical specification

| | |
|---|---|
| **Size（mm）** | L200mm*W68mm*H37mm |

**General product dimension drawing**

**DL-150U-V56/214P-MUG**

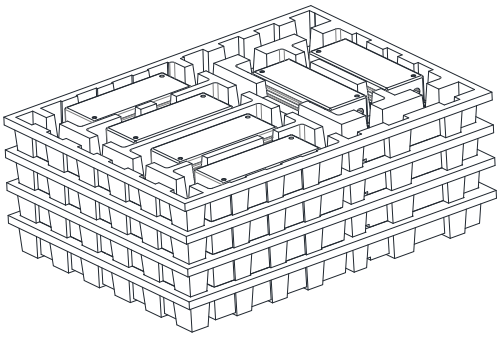


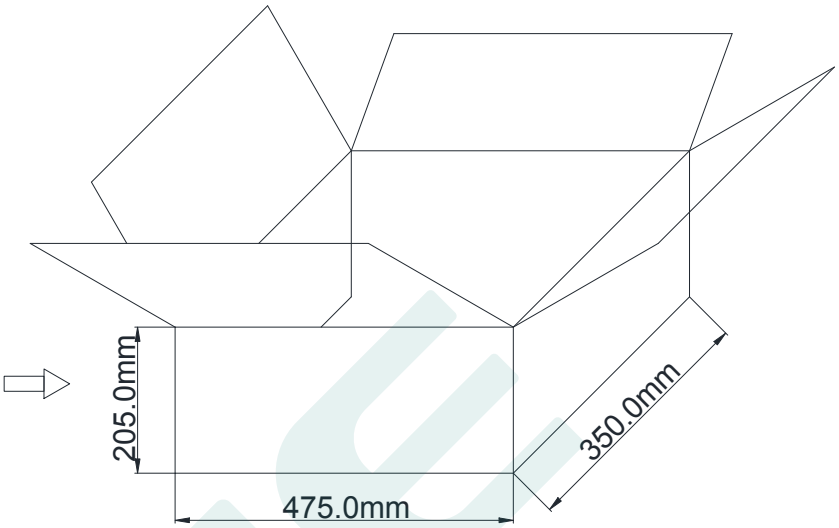

## Weight

| | |
|---|---|
| **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 |
|---|---|---|---|
| 2021.12.02 | Initial version. | V1.0 | |
| 2024.1.18 | Added DL-150U-V214P-MUG | V1.1 | 2024.02.28 19:24:58 +08'00' LQ 2024.03.01 14:44:45 +08'00' |
| | | | |
| | | | |
| | | | |

| MANUFACTRUER | | |
|---|---|---|
| EDIT | CHECK | APPROVE |
| LSH 2024.01.18 16:57:28 +08'00' | 2024.02.28 14:54:58 +08'00' CRQ 2024.02.28 15:16:33 +08'00' | 数字签名者：张鸿生 DN：cn=张鸿生, o, ou, email=978425630@qq.com, c=<无 日期：2024.03.05 16:08:23 +08'00' |