



# SPF SERIES LED DRIVERS

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DL-120W-SPF SPEC V1.5



## Features

- Class I structure
- Input voltage: 120-277 V ~ 50/60 Hz
- Efficiency: 95% (Typ.)
- Constant power drive and constant current output control mode
- Metal shell structure, protection grade: IP65
- Lightning protection level: differential mode 4kV, common mode 4kV
- When the dimming signal input is 0V, 0% and 0K $\Omega$ , standby power consumption is less than or equal to 0.5W.(X version only)
- Function selection:
  - Output current is adjusted by external potentiometer
  - Isolated 3 in 1 dimming (0-10V, PWM, Resistor)(S/X version only)
  - Auxiliary power supply: 12V 200mA (X version only)
- Lifetime design: 5 years



## Applications

Road 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. | T.H.D | PF    |
|-------------------|---------------------|--------------|----------------|---------------------|------|-------|-------|
| DL-120W-V260A-SPF | 120-277V<br>50/60Hz | 120W         | 180-260Vdc     | 0.5A                | ≥95% | ≤10%  | ≥0.95 |
| DL-120W-V260S-SPF |                     |              |                |                     |      |       |       |
| DL-120W-V260X-SPF |                     |              |                |                     |      |       |       |

### Note :

1. Test conditions of the above parameters: Ta=25℃, 230Vac input, full load operation for 30 minutes;
2. When the input is 120-277VAC, the rated power is 120W, please ensure that the input voltage is within the allowable range. Please refer to "THE OUTPUT POWER VS INPUT VOLTAGE" curve chart for details.



## Input characteristics

| Parameter           | Min    | Typ.    | Max    | Note                                         |
|---------------------|--------|---------|--------|----------------------------------------------|
| Rated input voltage | 120Vac | 230Vac  | 277Vac | -                                            |
| Input voltage range | 108Vac | -       | 305Vac | -                                            |
| Rated frequency     | 47Hz   | 50/60Hz | 63Hz   | -                                            |
| Power factor        | -      | 0.95    | -      | Full load, rated input voltage of 120-230Vac |
|                     | -      | 0.92    | -      | Full load, rated input voltage of 277Vac     |
| T.H.D.              | -      | -       | 10%    | 100% load, 120Vac/60Hz, 230Vac/50Hz input    |
|                     | -      | -       | 20%    | 80%-100% load, 277Vac/60Hz input             |
| Input current       | -      | -       | 1.2A   | @120Vac full load                            |
| Inrush current      | -      | -       | 100A   | 230Vac, cold start (25°C)                    |

## Output characteristic

| Parameter                                      | Min    | Typ.  | Max    | Note                        |
|------------------------------------------------|--------|-------|--------|-----------------------------|
| Rated current<br>DL-120W-V260A/S/X -SPF        | -      | 0.46A | -      | -                           |
| Output current range<br>DL-120W-V260A/S/X -SPF | 0.25A  | -     | 0.6A   | -                           |
| Output voltage range<br>DL-120W-V260A/S/X -SPF | 180Vdc | -     | 260Vdc | -                           |
| Constant power output voltage range            | 200V   | -     | 260V   | Maximum output power 120W   |
| Constant current output voltage range          | 180V   | -     | 260V   | Maximum output current 0.6A |
| No-load voltage<br>DL-120W-V260A/S/X -SPF      | -      | -     | 300V   | -                           |
| Efficiency@120Vac<br>DL-120W-V260A/S/X -SPF    | -      | 92%   | -      | Full load                   |

## Output characteristic

| Parameter                                   | Min   | Typ. | Max    | Note                 |
|---------------------------------------------|-------|------|--------|----------------------|
| Efficiency@230Vac<br>DL-120W-V260A/S/X -SPF | -     | 95%  | -      | Full load            |
| Accuracy of output current                  | -5%   | -    | +5%    | Full load            |
| Ripple of output current                    | -     | 5%   | -      | Full load            |
| Line regulation                             | -3%   | -    | +3%    | Full load            |
| Load regulation                             | -3%   | -    | +3%    | Full load            |
| Starting time                               | 100ms | -    | 1000ms | Full load@120-277Vac |

**Note:** The output current range be limited by the input and output voltage, please refer to "I-V WORKING AREA" for details.

## Dimming characteristic

| Dimming function                 |                             | Min         | Typ. | Max           | Instructions                                                    |
|----------------------------------|-----------------------------|-------------|------|---------------|-----------------------------------------------------------------|
| 0-10V Dimming<br>( Optional )    | Safe applied voltage range  | 0V          | -    | 12V           | When the external voltage is $\geq 12V$ , the dimming will fail |
|                                  | Dimming output range        | 0           | -    | 100%          | -                                                               |
|                                  | Rated dimming voltage range | 0V          | -    | 10V           | -                                                               |
| PWM Dimming<br>( Optional )      | PWM high level              | 9.5V        | -    | 10.5V         | -                                                               |
|                                  | PWM low level               | 0V          | -    | 0.3V          | -                                                               |
|                                  | PWM frequency band          | 300Hz       | -    | 2000Hz        | -                                                               |
|                                  | PWM duty cycle              | 0           | -    | 100%          | -                                                               |
| Resistor Dimming<br>( Optional ) | External resistance value   | 0K $\Omega$ | -    | 100K $\Omega$ | -                                                               |
|                                  | Dimming output range        | 0           | -    | 100%          | -                                                               |

**Note:**

1. Output current of dimming port: 100uA (typical value);
2. The maximum withstand voltage of the dimming port is 12V. If the external power supply voltage exceeds 12V or the signal line is Connected reversely, the power supply will be damaged.
3. Maximum connected dimming/Aux. power wire length: 3m.

## Protection

| Function                        | Function instructions                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 specifications and parameters shall be measured at the conditions of 230Vac (50Hz), rated load and 25℃ of ambient temperature;
2. Including setting error, line regulation and load regulation.

## Environmental

| Environmental categories      | Parameter                                                                    |
|-------------------------------|------------------------------------------------------------------------------|
| Working temperature           | -40 ~ +55℃ @120-277Vac (refer to "Life Curve ")                              |
| Working humidity              | 20 ~ 95% RH, non condensing                                                  |
| Tcase                         | 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                          | 100Khrs min. MIL-HDBK-217F (Ta=25℃)                                          |
| Lifetime                      | 70000H@Tcase75℃,(Please refer to <b>Lifetime VS Tcase</b> curve for details) |

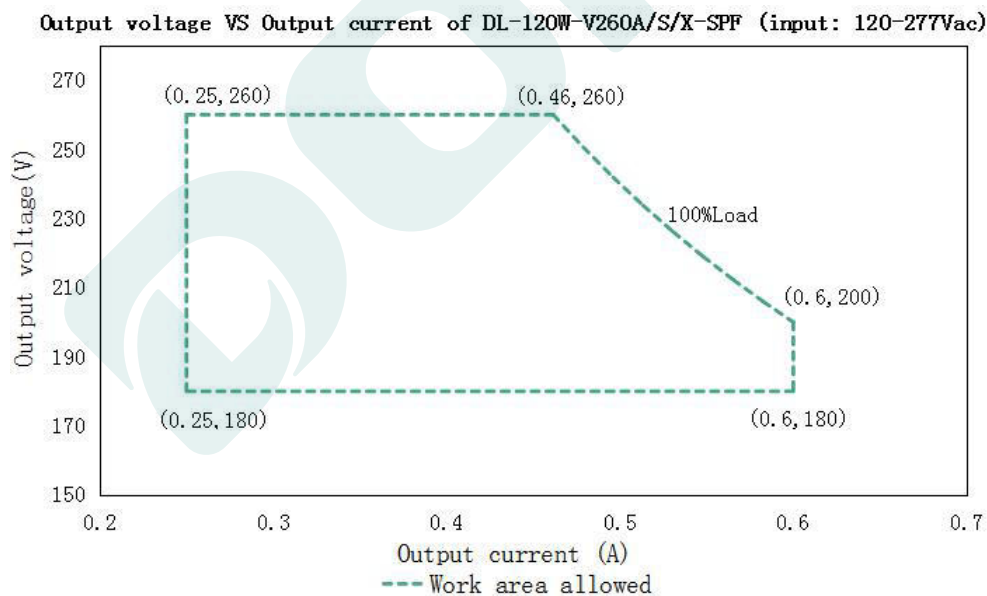
## Safety and EMC

| Safety categories    | Standard                                                                                                                    |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Safety               | GB19510.1、GB19510.14、EN61347-1、EN61347-2-13、IEC61347-1、IEC61347-2-13、AS/NZS61347.1、AS61347.2.13 UL8750;                     |
| EMC                  | EN 55015、EN 61547、EN 61000-3-2、GB/T 17743、GB17625.1、EN 61000-3-3 FCC Part 15                                                |
| Surge protection     | Differential mode L-N $\pm 4$ KV (2 ohm) ,common mode L, N-PE $\pm 4$ KV ( 12 ohm ); Refer to IEC61000-4-5 2014 Criterion B |
| High-pot test        | I/P-PE :1.5KVac I/P-DIM:1.5KVac                                                                                             |
| Insulation impedance | I/P-PE:100M $\Omega$ / 500VDC; 25 $^{\circ}$ C/ 70% RH                                                                      |
| Leakage current      | <0.7mA@277Vac                                                                                                               |

### Note:

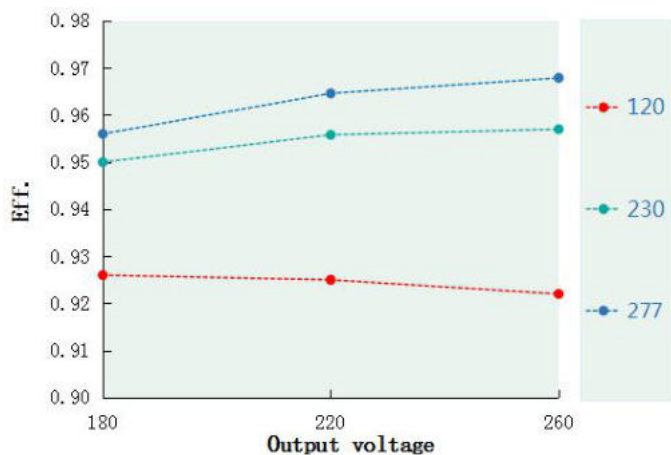
- 1.The driver is considered as a component that will be operated in combination with the final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.
- 2.Because the driver will be in OVP restart model when it works in no-load, so the driver on-load is recommended.

## I-V Working area

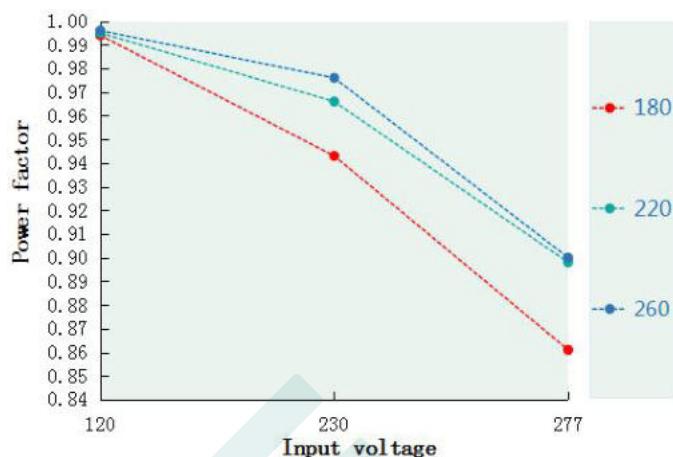


| Load                 | Output |      |      |        |        |        |      |       |       |
|----------------------|--------|------|------|--------|--------|--------|------|-------|-------|
| Io_MAX               | 180V   | 190V | 200V | 210V   | 220V   | 230V   | 240V | 250V  | 260V  |
| Load working Voltage | 0.6A   | 0.6A | 0.6A | 0.571A | 0.545A | 0.521A | 0.5A | 0.48A | 0.46A |
| Po_MAX               | 108W   | 114W | 120W | 120W   | 120W   | 120W   | 120W | 120W  | 120W  |

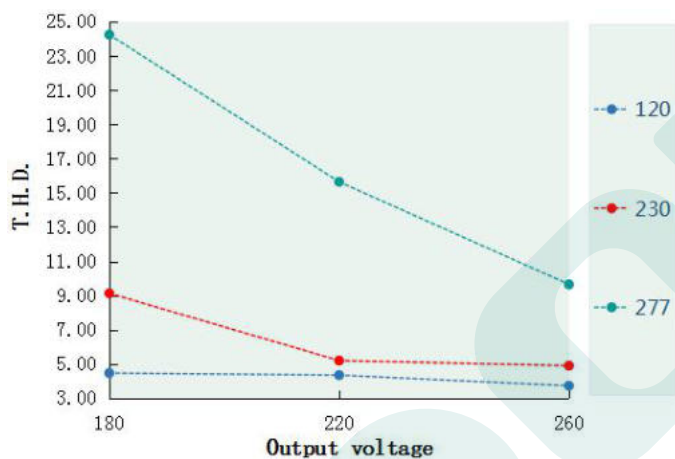
Eff. VS Output voltage(DL-120W-V260A/S/X -SPF)



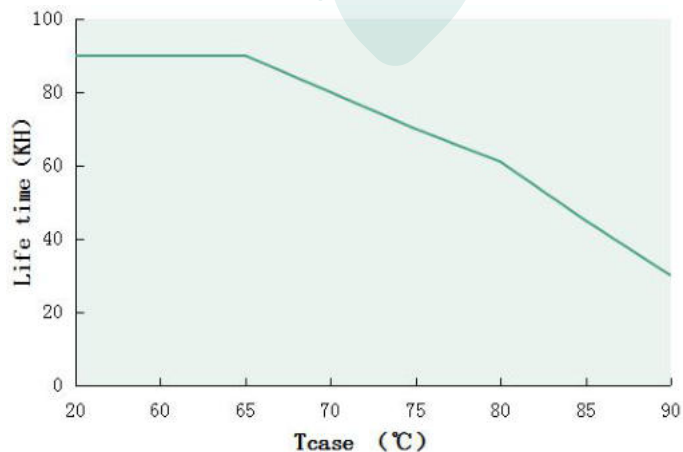
Power factor VS Input (DL-120W-V260A/S/X -SPF)



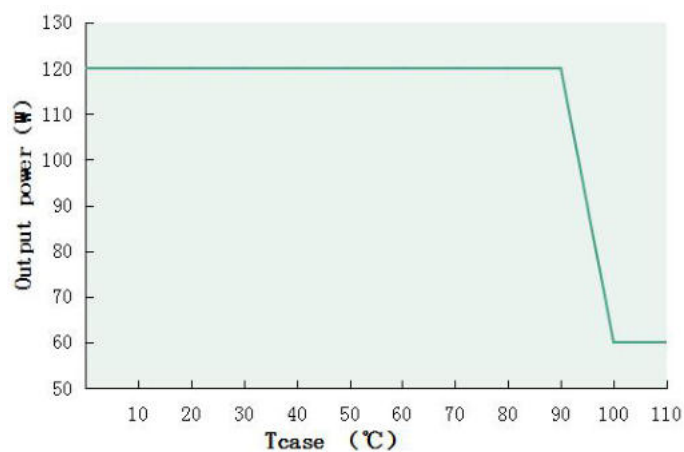
T.H.D. VS Output voltage (DL-120W-V260A/S/X -SPF)



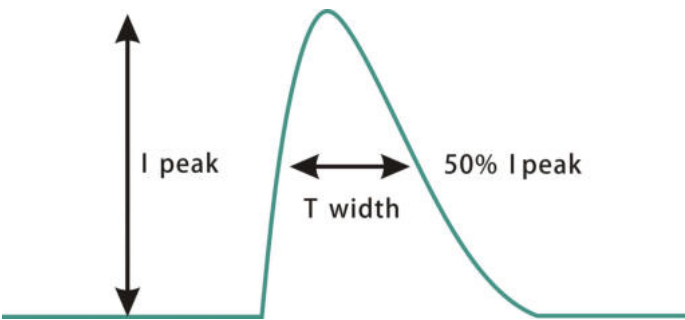
Lifetime VS Tcase (DL-120W-V260A/S/X -SPF)



Output power VS Tcase (DL-120W-V260A/S/X -SPF)

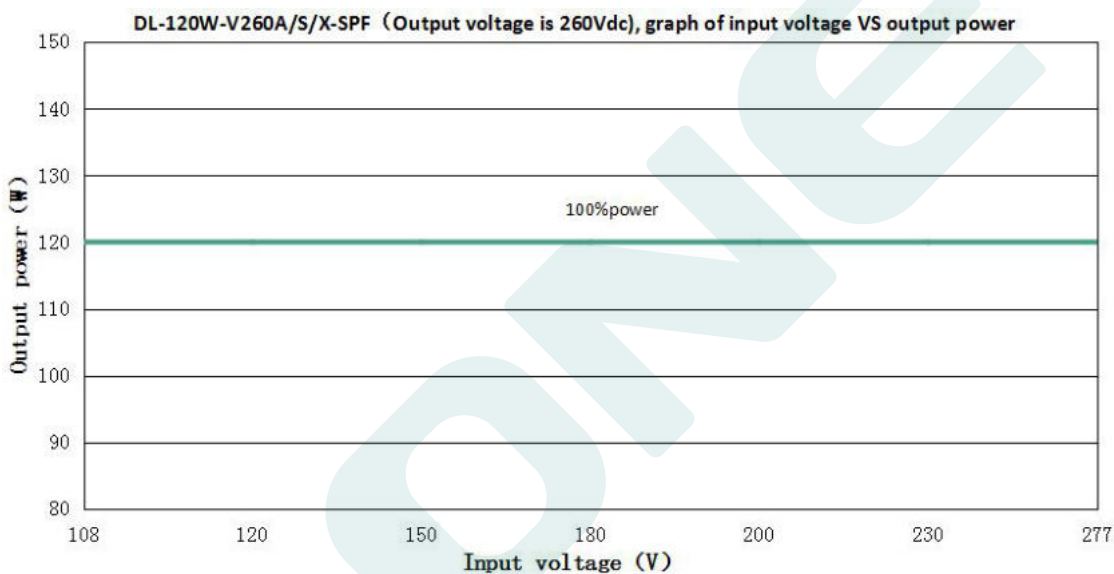


Inrush Current(DL-120W-A/S/X-SPF)



| Input voltage | Peak current | T(@50% Peak current) |
|---------------|--------------|----------------------|
| 120Vac        | 59.3A        | 148us                |
| 230Vac        | 73.2A        | 145us                |
| 277Vac        | 84.5A        | 147us                |

Output power VS Input voltage



DL-120W-V260A/S/X-SPF (When the output voltage is 260Vdc, the rated output current value and output power corresponding to different input voltage)

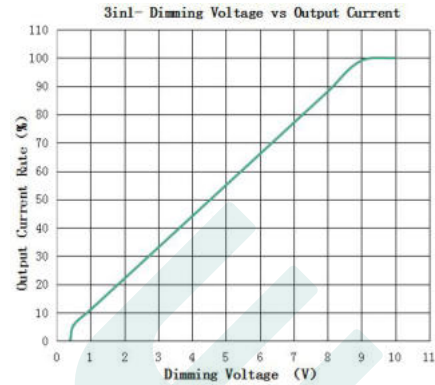
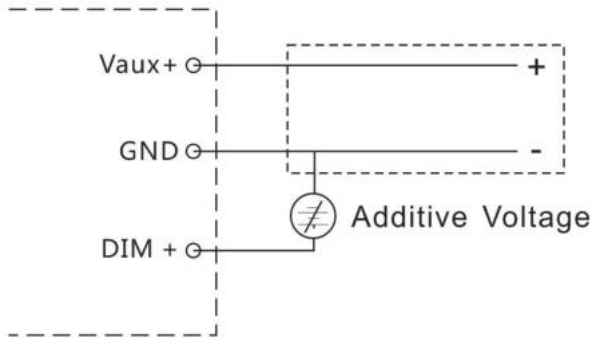
| Input Voltage | 108Vac | 120Vac | 150Vac | 180Vac | 200Vac | 230Vac | 277Vac |
|---------------|--------|--------|--------|--------|--------|--------|--------|
| Iout          | 0.46A  | 0.46A  | 0.46A  | 0.46A  | 0.46A  | 0.46A  | 0.46A  |
| Pout          | 120W   | 120W   | 120W   | 120W   | 120W   | 120W   | 120W   |

## Dimming operation

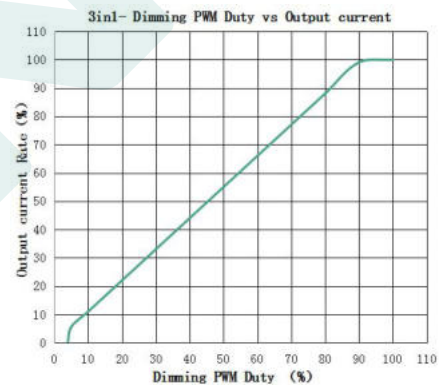
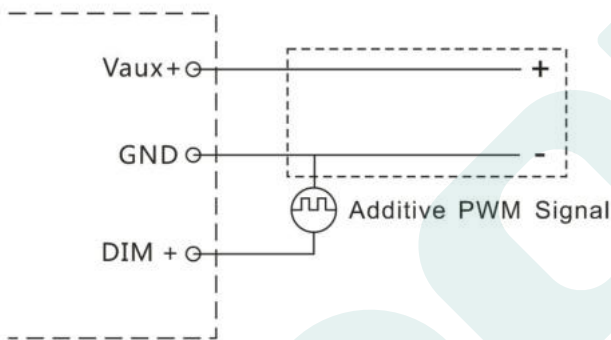
### ※ Three-in-one dimming function (S/X version only)

- A. Connect a resistor 0-100K or 0-10V DC voltage or 10V PWM signal between DIM+ and DIM- to adjust the output current.  
B. Output current of dimming port: 100uA (typical value). (to be determined!)

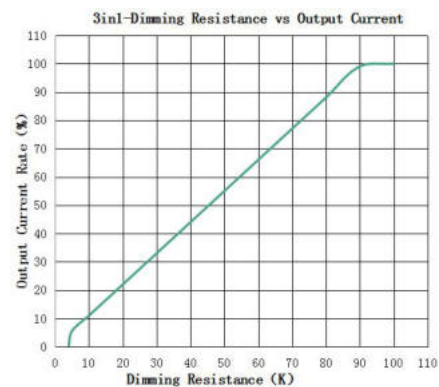
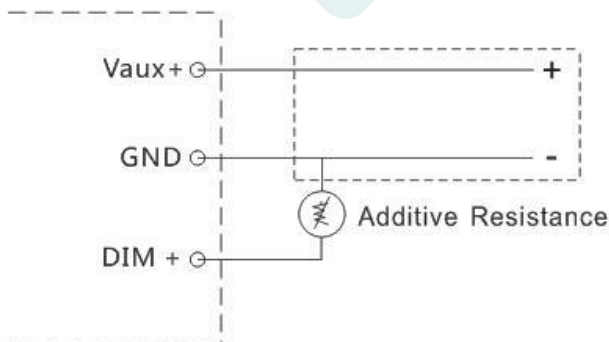
#### ◎Applied voltage of 0-10V:



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



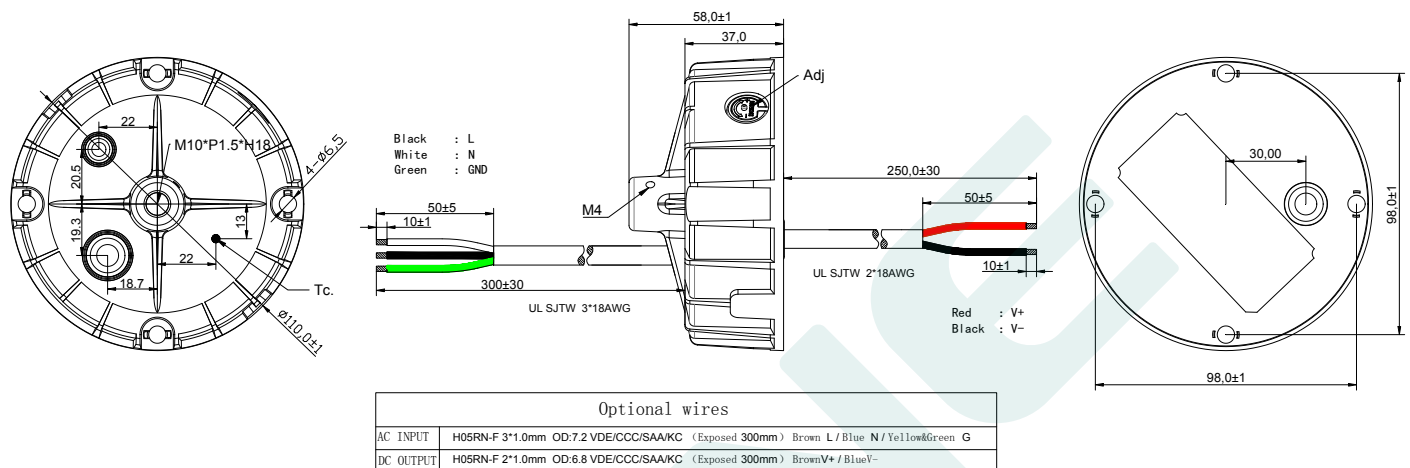
#### ◎Applied an additional 0-100K resistor:



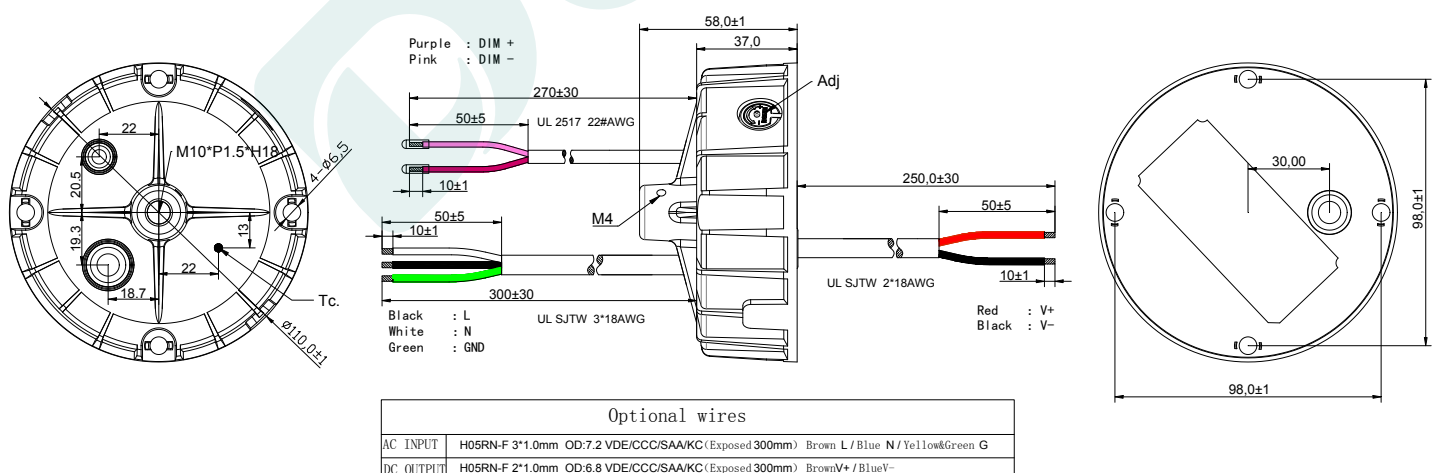
## Mechanical specification

Size (mm)  $\Phi 110 \times H58$

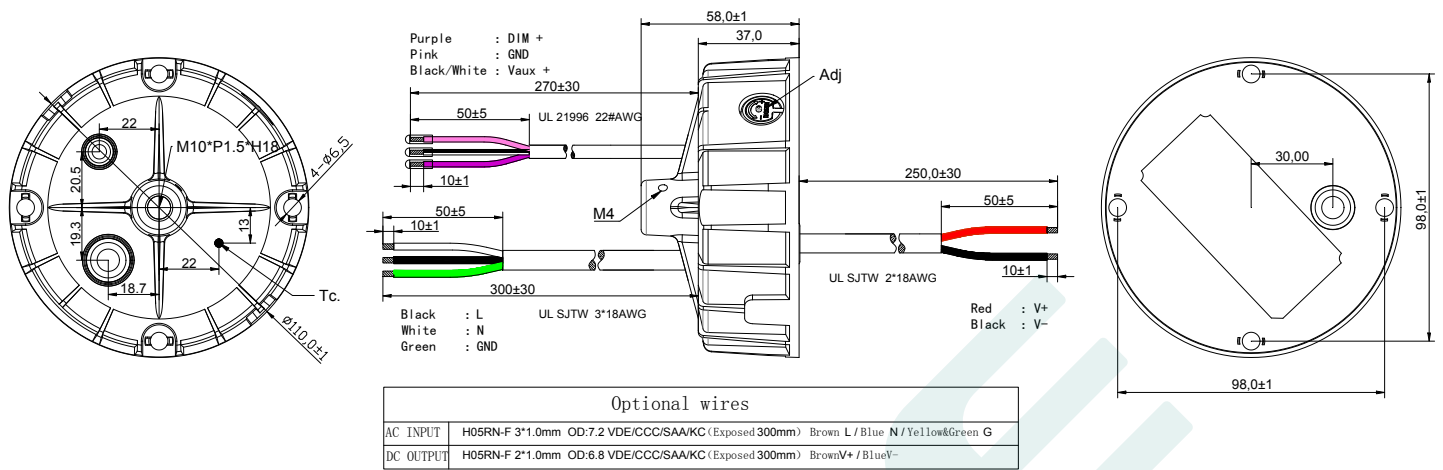
General product dimension drawing  
DL-120W-V260A-SPF



General product dimension drawing  
DL-120W-V260S-SPF



General product dimension drawing  
 DL-120W-V260X-SPF

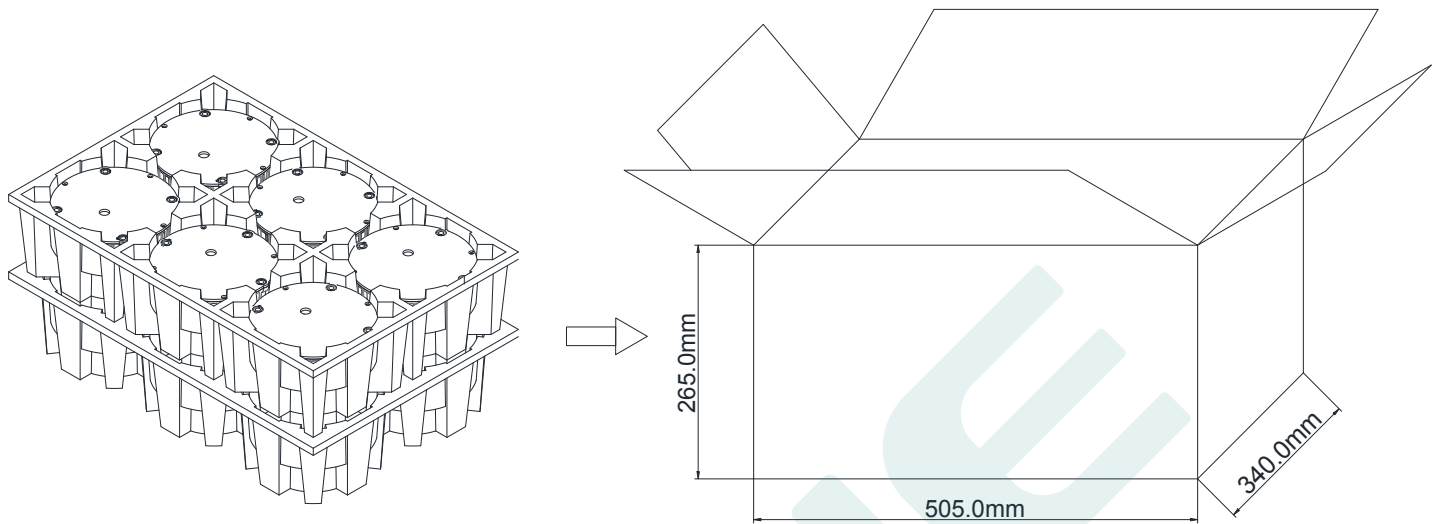


Weight

|        |       |
|--------|-------|
| Weight | 620 g |
|--------|-------|

Packaging

Packaging (mm) L505\*W340\*H265

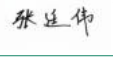


Note: One Carton 2 layers and 6 pcs each layer, total 12pcs/carton.

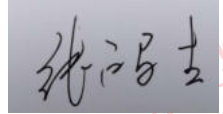
Note:

- 1. According to the certificate obtained by the LED DRIVER, the LED DRIVER with the English label is sold in Europe, America and India.
- 2. The LED DRIVER with Chinese label is only used for China market.

Version

| DATE      | DESCRIPTION                                                                                                                                                                                                  | REV. | CHECK                                                                                                                                                                                                                                                              |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2022.3.22 | Initial version.                                                                                                                                                                                             | V1.0 |                                                                                                                                                                                                                                                                    |
| 2022.4.26 | 1.Increase Inrush Current<br>2.Increase when dimming is off , standby power consumption is less than or equal to 0.5W.(X version only).<br>3.Increase features: ripple of output current, Tcase , life time. | V1.1 |                                                                                                                                                                                                                                                                    |
| 2022.5.12 | 1.Update: When the dimming signal input is 0V, 0%and 0K $\Omega$ , standby power consumption is less than or equal to 0.5W.(X version only).<br>2.Add TC point position on the shell.                        | V1.2 |                                                                                                                                                                                                                                                                    |
| 2022.6.10 | Add the optional wire (European standard)                                                                                                                                                                    | V1.3 |                                                                                                                                                                                                                                                                    |
| 2022.8.4  | Update: .Because the driver will be in OVP restart model when it works in no-load, so the driver on-load is recommended.                                                                                     | V1.4 |                                                                                                                                                                                                                                                                    |
| 2022.11.8 | Updated: Graph of output power VS input voltage.                                                                                                                                                             | V1.5 | <div>  2022.11.12 16:43:33 +08'00'<br/>  ZHANGTINGWEI 2022.11.15 11:12:46 +08'00' </div> |

## MANUFACTRUER

| EDIT                                                                                                            | CHECK                                                                                                           | APPROVE                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  2022.11.10 16:07:26 +08'00' |  2022.11.12 16:18:32 +08'00' |  数字签名者: 张鸿生<br>DN : cn=张鸿生, o, ou, email=978425630@qq.com, c=<无<br>日期: 2022.11.15 15:12:55 +08'00' |