



# MXK SERIES LED DRIVERS

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DL-165H-P/X/GX-MXK SPEC V1.0

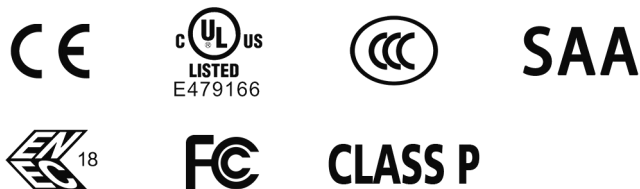


## Features

- Class I structure
- Input voltage: AC 200-277 V ~ 50/60 Hz
- Efficiency: 93%(Typ.)
- Constant power drive and constant current output control mode
- Plastic shell structure, protection grade: IP20
- Lightning protection level: differential mode 6kV, common mode 10kV
- Function selection:
  - Isolated 3 in 1 dimming
  - Auxiliary source: 24V/125mA (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. ( Typ. ) | T.H.D | PF    |
|--------------------|------------------------|--------------|----------------|---------------------|---------------|-------|-------|
| DL-165H-V235P-MXK  | AC 200-277V<br>50/60Hz | 165W         | 104-235Vdc     | 0.7A                | ≥93%          | ≤10%  | ≥0.95 |
| DL-165H-V235X-MXK  |                        |              |                |                     |               |       |       |
| DL-165H-V235GX-MXK |                        |              |                |                     |               |       |       |

**Note :**

1. Test conditions of the above parameters: Ta=25℃, 230Vac input, full load operation for 30 minutes;
2. When the input is less than 180Vac±10%, the output power gradually decreases. When the input 200-277Vac, rated power 165W.  
 Please refer to “THE OUTPUT POWER VS INPUT VOLTAGE” curve chart for details.

## Input characteristics

| Parameter           | Min    | Typ.    | Max    | Note                            |
|---------------------|--------|---------|--------|---------------------------------|
| Rated input voltage | 200Vdc | 230Vac  | 277Vac |                                 |
| Input voltage range | 180Vac | -       | 305Vac |                                 |
| Rated frequency     | 47Hz   | 50/60Hz | 63Hz   |                                 |
| Power factor        | 0.95   | -       | -      | full load, rated input voltage  |
| Power factor        | 0.9    | -       | -      | 65%-100% load, 200-277VAC input |
| T.H.D.              | -      | -       | 10%    | @230Vac full load               |
| T.H.D.              | -      | -       | 20%    | 65%-100% load, 200-277VAC input |
| Input current       | -      | -       | 1.5A   | @200Vac full load               |
| Inrush current      | -      | -       | 70A    | 230Vac, cold start (25°C)       |

## Output characteristic

| Parameter               | Min  | Typ.  | Max   | Note                                                                      |
|-------------------------|------|-------|-------|---------------------------------------------------------------------------|
| Rated current           |      |       |       |                                                                           |
| DL-165H-V235P/X-MXK     | -    | 0.7A  | -     |                                                                           |
| Output current range    |      |       |       |                                                                           |
| DL-165H-V235P/X-MXK     | 0.5A | -     | 1.05A |                                                                           |
| Output voltage range    |      |       |       |                                                                           |
| DL-165H-V235P/X-MXK     | 104V | -     | 235V  |                                                                           |
| Rated power(165-180Vac) | -    | 82.5W | 165W  | The derating begins when the input voltage is less than 180Vac $\pm 10\%$ |
| Rated power(180-277Vac) | -    | 165W  | -     |                                                                           |
| No-load voltage         |      |       |       |                                                                           |
| DL-165H-V235P/X-MXK     | -    | -     | 300V  |                                                                           |
| Efficiency@200Vac       |      |       |       |                                                                           |
| DL-165H-V235P/X-MXK     | 90%  | 91%   | -     | full load @200Vac                                                         |

### Output characteristic

| Parameter                                                 | Min    | Typ.     | Max     | Note                                                                                                                                        |
|-----------------------------------------------------------|--------|----------|---------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency@230Vac<br>DL-165H-V235P/X-MXK                  | 91%    | 93%      | -       | full load @230Vac                                                                                                                           |
| Output Current Ripple                                     | -      | 5% Iomax | -       | 100% load , 20 MHz BW ;<br>Ripple =rms/ average                                                                                             |
| Accuracy of output current                                | -3%    | -        | +3%     | full load<br>Constant power range                                                                                                           |
| Line regulation                                           | -3%    | -        | +3%     | full load                                                                                                                                   |
| Load regulation                                           | -3%    | -        | +3%     | full load                                                                                                                                   |
| Starting time                                             | 300 ms | -        | 1000 ms | Full load@200-277Vac                                                                                                                        |
| 24V Auxiliary source output voltage                       | 22.8V  | 24V      | 25.2V   | -                                                                                                                                           |
| 24V Auxiliary source output current                       | 0 mA   | -        | 125 mA  | Reference ground is "Dim -"                                                                                                                 |
| 24V Auxiliary source output<br>transient peak current @6W | -      | -        | 250 mA  | In a 5.0ms cycle, the maximum<br>duration of the maximum peak<br>current of 250mA is 2ms, and the<br>average value must not exceed<br>250mA |

**Note:** The output current range is 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           | It can be set to negative dimming mode through program setting  |
| 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%                                                               | -    | 99%           | Output full power at 99% duty cycle                             |
| Resistor Dimming<br>( Optional )                  | External resistance value   | 0K $\Omega$                                                      | -    | 100K $\Omega$ | -                                                               |
|                                                   | Dimming output range        | 0%                                                               | -    | 100%          | -                                                               |
| Multiple<br>time-controlled<br>dimming (optional) | MCU control                 | Set segment dimming function through program                     |      |               | Working mode                                                    |
|                                                   | Timer control               | It is divided into six segments by default and can be customized |      |               | 24H to achieve a cycle                                          |

### Note:

1. Output current of dimming port: 100uA (typical value);
2. The X version is 0-10V dimming, and the P version is 1-10V dimming (0V can be turned off). 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  $0.46 \cdot V_{omax}$  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

| Function                        | Function instructions                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input under-voltage protection  | When the input voltage is less than 180Vac $\pm 10\%$ , 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 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℃@200-277Vac, -40 ~ +45℃ @180-200Vac (refer to "Life Curve ")                |
| Max.Case Temp.               | -40 ~ 90℃                                                                             |
| Working humidity             | 20 ~ 95% RH, non condensing                                                           |
| 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                     | 70,000 hours @Tcase≤75℃,230Vac, 80% Load, Please refer to "Tcase VS Lifetime" section |

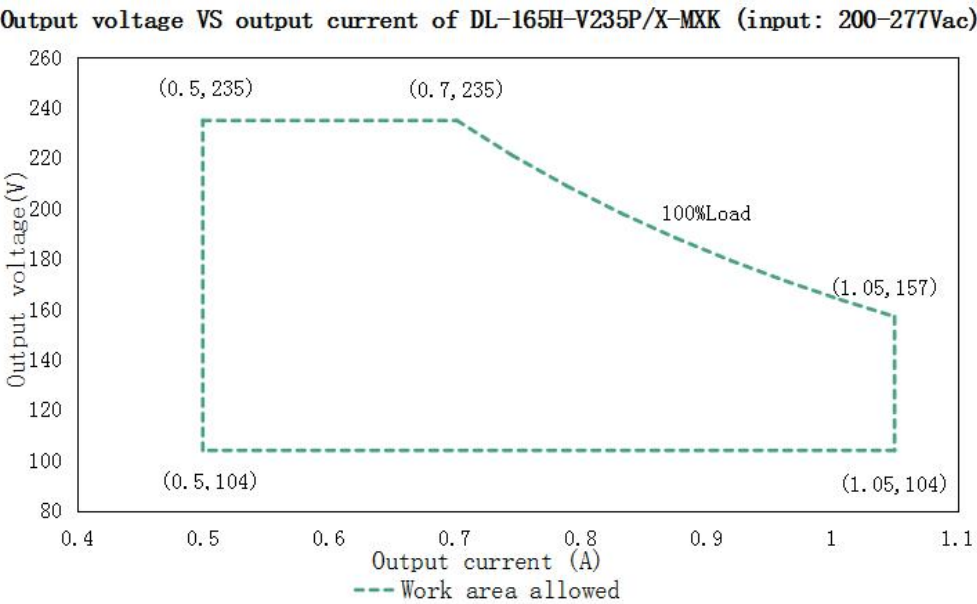
Safety and EMC

| Safety categories    | Standard                                                                                                          |
|----------------------|-------------------------------------------------------------------------------------------------------------------|
| Safety               | GB19510.1、GB19510.14、EN61347-1、EN61347-2-13、IEC61347-1、IEC61347-2-13、AS/NZS61347.1、AS61347.2.13、EN 62384、UL8750;  |
| EMC                  | EN 55015、EN 61000-3-2 、GB/T 17743、GB17625.1、EN 61000-3-3                                                          |
| Surge protection     | Differential mode L-N ±6KV (2 ohm) ,common mode L, N-PE± 10 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:1.5KVac    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@277Vac                                                                                                     |

**Note:**

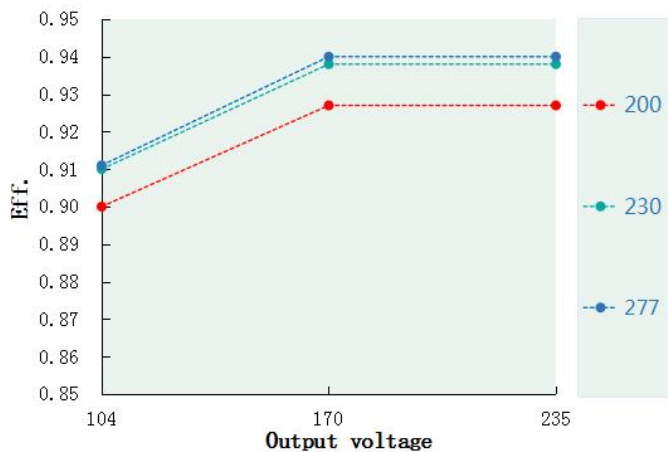
The driver is considered as a component that will be operated in combination with the final equipment. Since EMC performance will be affected by the complete installation,the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.

I-V Working area

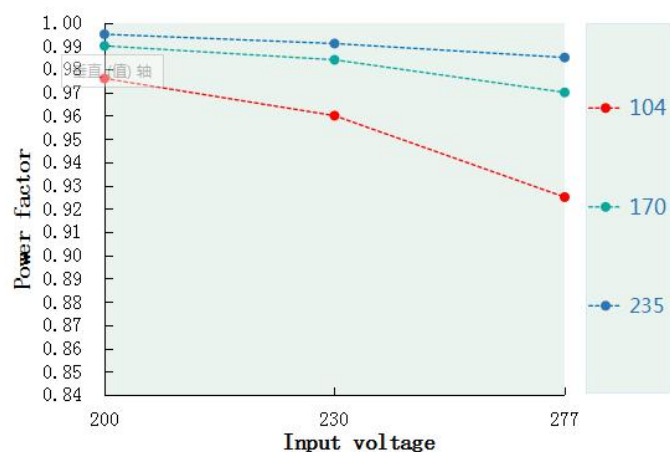


| Load                 | Output |       |       |       |       |       |       |       |      |
|----------------------|--------|-------|-------|-------|-------|-------|-------|-------|------|
| Load working Voltage | 104V   | 111V  | 118V  | 157V  | 172V  | 187V  | 202V  | 217V  | 235V |
| Io_MAX               | 1.05A  | 1.05A | 1.05A | 1.05A | 0.96A | 0.88A | 0.82A | 0.76A | 0.7A |
| Po_MAX               | 108W   | 117W  | 124W  | 165W  | 165W  | 165W  | 165W  | 165W  | 165W |

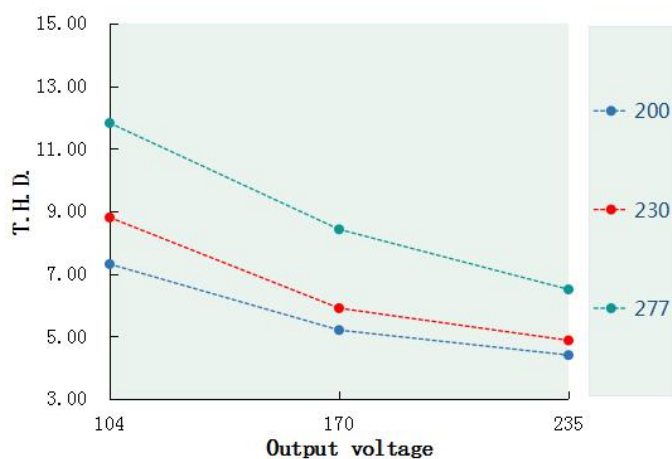
Eff. VS Output voltage(DL-165H-V235P/X-MXK)



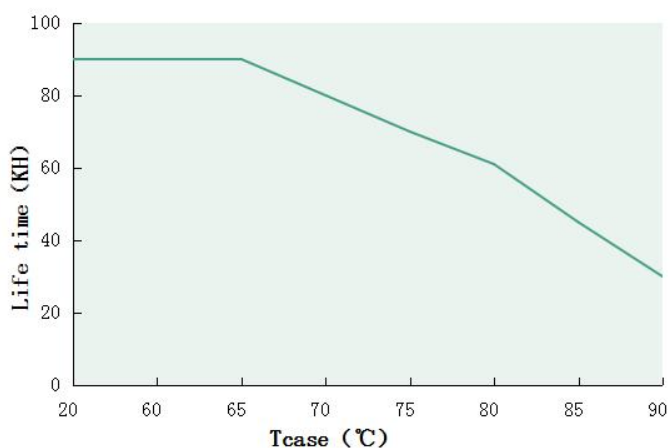
Power factor VS Input voltage(DL-165H-V235P/X-MXK)



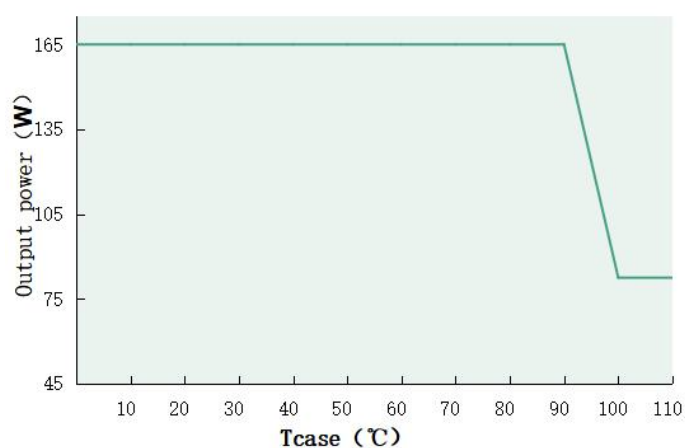
T.H.D. VS Output voltage(DL-165H-V235P/X-MXK)

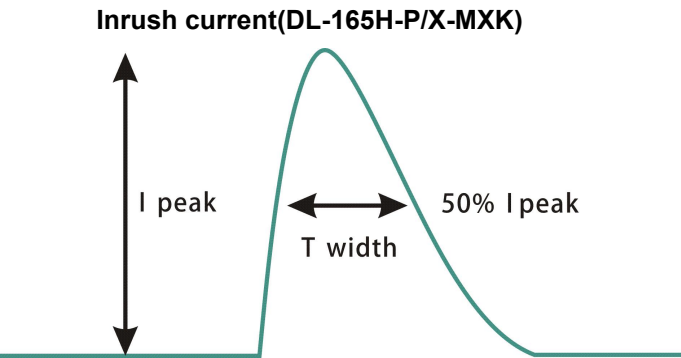


Tcase VS Lifetime(DL-165H-P/X-MXK)



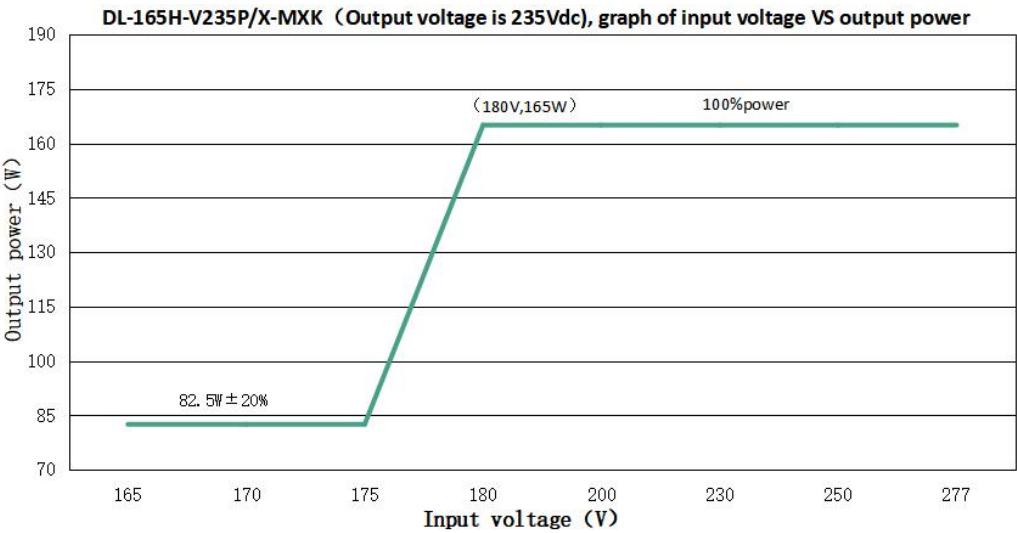
Output power VS Tcase (DL-165H-P/X-MXK)





| Input voltage | Peak current | T(@50% Peak current) |
|---------------|--------------|----------------------|
| 200Vac        | 28A          | 278us                |
| 230Vac        | 56A          | 236us                |
| 277Vac        | 68A          | 262us                |

Output power VS Input voltage



DL-165H-V235P/X-MXK (When the output voltage is 235Vdc, the rated output current value and output power corresponding to different input voltage)

| Input Voltage | 165Vac | 170Vac | 175Vac | 180Vac | 200Vac | 230Vac | 250Vac | 277Vac |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Iout          | 0.37A  | 0.37A  | 0.37A  | 0.7A   | 0.7A   | 0.7A   | 0.7A   | 0.7A   |
| Pout          | 82.5W  | 82.5W  | 82.5W  | 165W   | 165W   | 165W   | 165W   | 165W   |

Note:

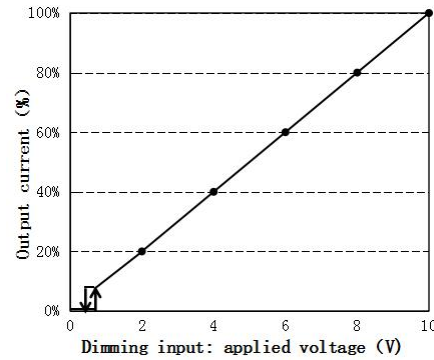
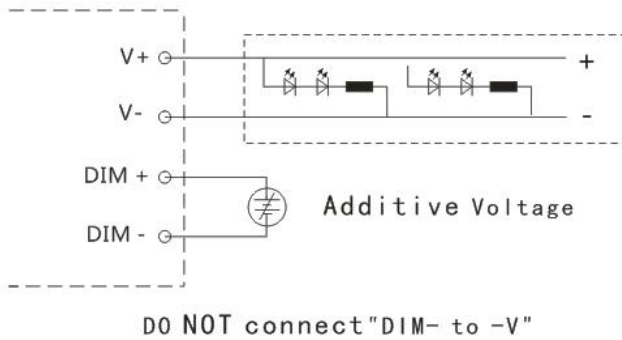
Output power will decrease gradually when input voltage less than 180Vac±10%;When the input voltage is 170Vac,the output power range is 82.5W±20%.

## Dimming operation

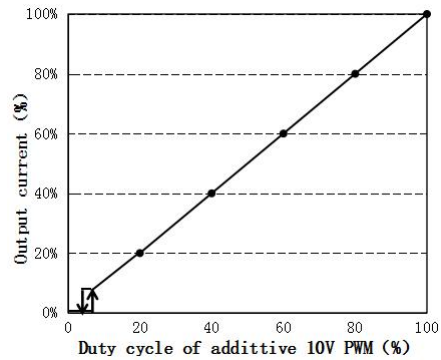
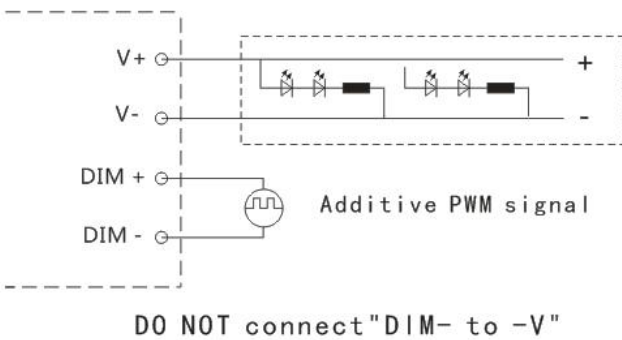
### ※ Three-in-one dimming function

- 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).

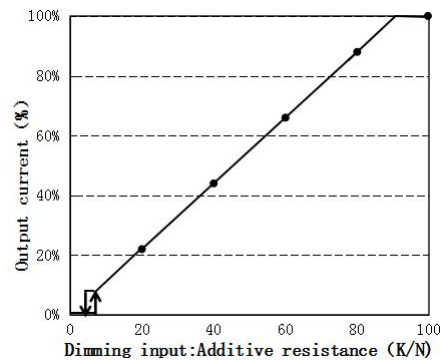
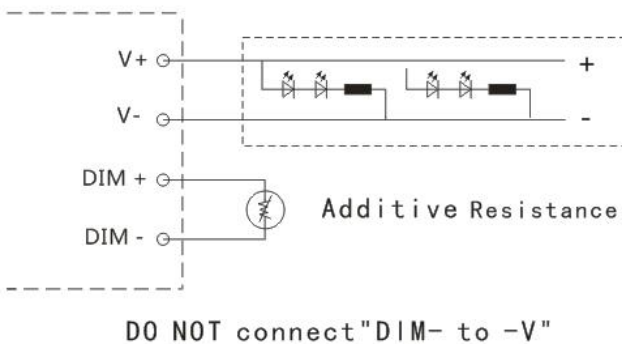
#### ◎ With an applied voltage of 0-10V:



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



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



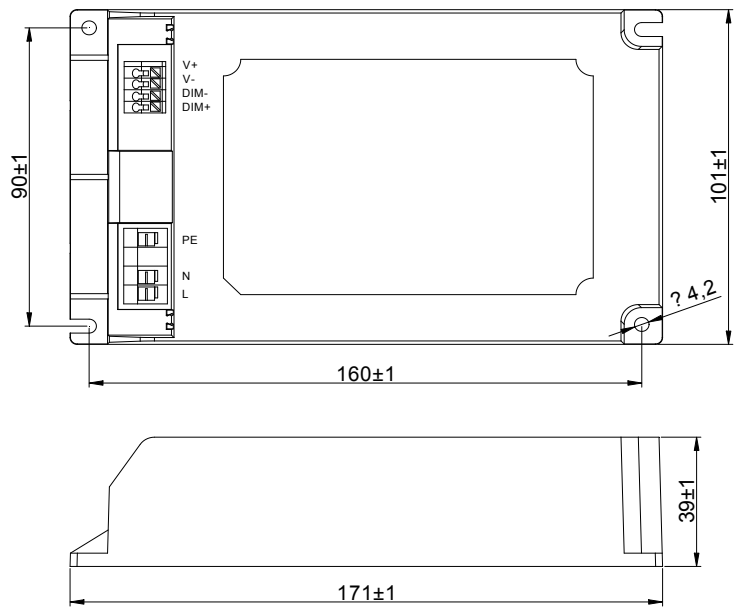
### Note:

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

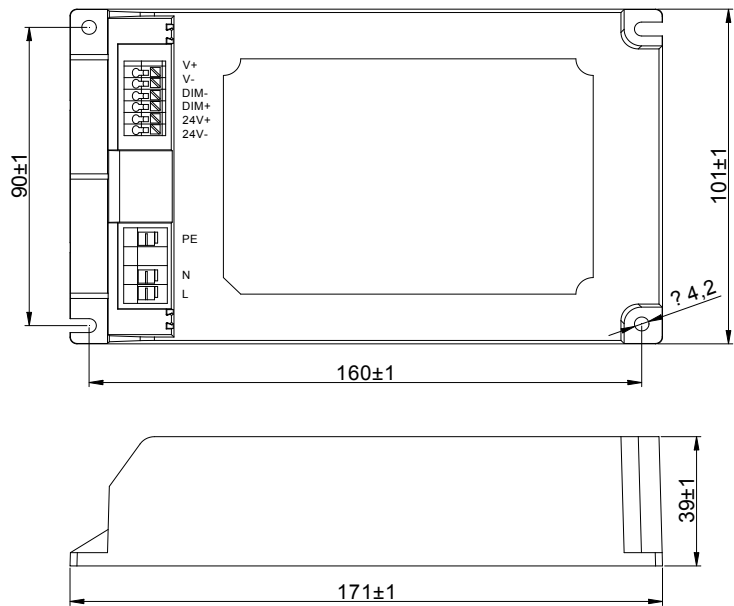
# Mechanical specification

|           |                     |
|-----------|---------------------|
| Size (mm) | L170mm*W100mm*H40mm |
|-----------|---------------------|

DL-165W-V235P-MXK



DL-165W-V235X-MXK

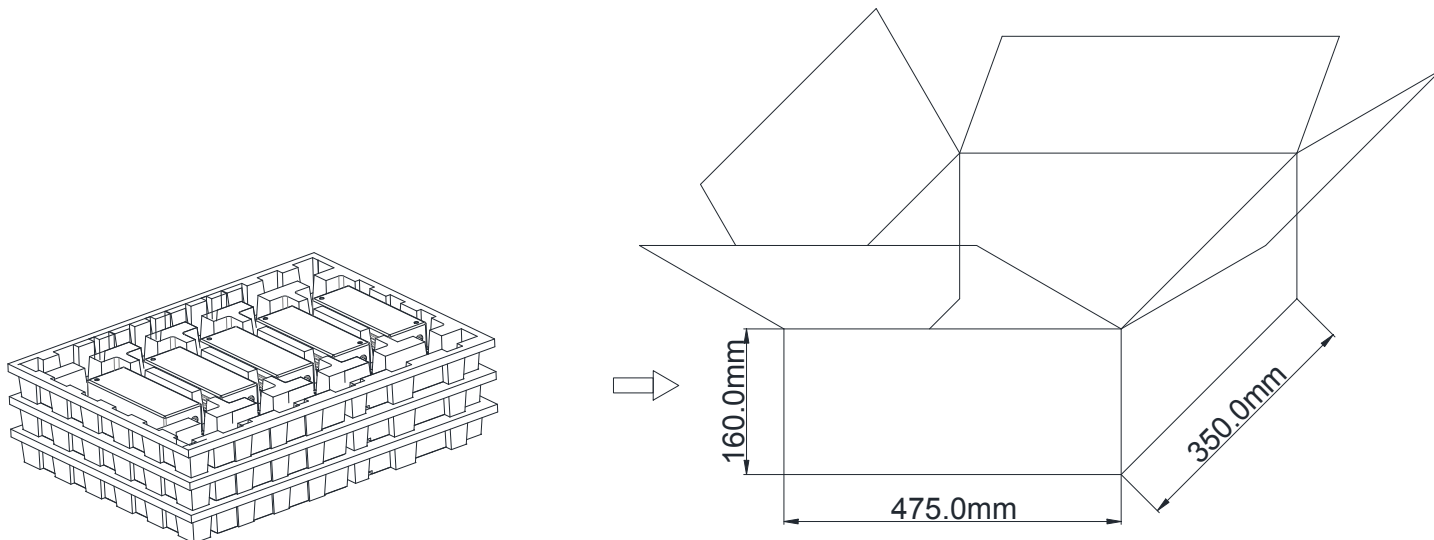


# Weight

|        |       |
|--------|-------|
| Weight | 720 g |
|--------|-------|

## Packaging

Packaging (mm) L475\*W350\*H160



Note: One Carton 3 layers and 5 pcs each layer, total 15pcs/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 |
|------------|------------------|------|-------|
| 2023.10.12 | Initial version. | V1.0 |       |
|            |                  |      |       |
|            |                  |      |       |
|            |                  |      |       |
|            |                  |      |       |

| MANUFACTRUER |       |         |
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