

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

MAL Series LED Drivers

DL-50H-58A/S-MAL (CLASS II) Spec V1.0

Features

- Class II structure
- Input voltage: 100-277V ~ 50/60 Hz
 Rated voltage: 200-277 V ~ 50/60 Hz 50W max.
 Input voltage: 100~150V ~ 50/60 Hz 25W max.
- Efficiency: 89%(Typ.)
- Constant power driver and constant current output
- Function selection:
 Fixed current : Adjusted by external potentiometer (A version)
 Isolated 3-in-1 dimming : 0-10V/PWM/Resistor (S version)
- Input surge protection: DM 4kV
- All-Around protection: IUVP/SCP/OVP/OTP
- Ingress protection rating: IP67
- Warranty: 5 years



Applications

- Street lighting
- Industrial lighting
- Floodlight lighting
- Landscape lighting



Model list

| Model NO. | Rated input voltage | Output power | Output voltage | Output current | Default current | Eff. (Typ.) | THD (Typ.) | PF (Typ.) |
|----------------------------------|---------------------|--------------|----------------|----------------|-----------------|-------------|------------|-----------|
| DL-50H-58S-MAL DL-50H-58A-MAL | 200-277V 50/60Hz | 50W | 32-58Vdc | 0.5-1.2A | 0.9A | 89% | 10% | 0.95 |

- Note :**
1. Test conditions for the above parameters: Ta = 25°C, 230 Vac input, after 30 minutes with full load.
 2. When the input is less than 165±15Vac, the output power gradually decreases to a half, The rated output power is 50W at an input voltage of 200-277Vac, please refer to the output power vs. input voltage curve

Input characteristics

| Parameter | Min | Typ. | Max | remark |
|-----------------------|--------|---------|---------|--|
| Rated input voltage | 200Vac | 230Vac | 277Vac | |
| Input voltage range | 100Vac | | 305Vac | Output power decrease to a half when input below 165±15Vac |
| Rated frequency range | 47Hz | 50/60Hz | 63Hz | |
| Leakage current | - | - | 0.70mA | IEC 60598-1; 240Vac/60Hz |
| | - | - | 0.75MIU | UL 8750; 277Vac/60Hz |
| Power factor | 0.9 | 0.95 | - | At 200~240Vac and 75%~100% load |
| Power factor | 0.9 | - | - | At 277Vac and 75%~100% load |
| T.H.D. | - | 10% | 20% | At 200~277Vac and 70%~100% load |
| Input current | - | - | 0.35A | At 200Vac and full load conditions |
| Inrush current | - | - | 44A | At 230Vac and 25°C cold start |

Output characteristics

| Parameter | Min | Typ. | Max | Note |
|----------------------------|------|------|------|---|
| Efficiency@230Vac | 88% | 89% | - | At full load condition , Io=0.86A |
| Output voltage range | 32V | | 58V | Constant power range: 42-58Vdc |
| Open circuit voltage | | | 75V | |
| Output current range | 0.5A | | 1.2A | Default current is 0.9A |
| Output current tolerance | -5% | - | +5% | At full load conditions |
| Start-up overshoot current | - | - | 10% | At full load conditions |
| Line regulation | -5% | - | +5% | Measured at full load,input voltage changes from 200Vac to 277Vac,. |
| Load regulation | -5% | - | +5% | At 230Vac input and load change from 70% to 100% |
| Turn-on delay time | - | - | 1.0s | At 200~277Vac and full load |

Note: The output current range is limited by the input and output voltage, please refer to I-V Work area curve

Dimming characteristics

| Dimming function | | Min | Typ. | Max | Instructions |
|-------------------------------|-------------------------------|-------|------|--------|-------------------------------------|
| 0-10V Dimming (Optional) | Safe operation voltage range | 0V | - | 12V | |
| | Dimming output range | 0 | - | 100% | |
| | Rated operation voltage range | 0V | - | 10V | - |
| | Turn-on voltage | 0.8V | 1.0V | 1.2V | |
| | Turn-off voltage | 0.3V | 0.5V | 0.7V | |
| 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 |
| | Turn-on duty cycle | 8% | 10% | 12% | |
| | Turn-off duty cycle | 3% | 5% | 7% | |
| Resistor Dimming (Optional) | External resistor value | 0KΩ | - | 100KΩ | |
| | Dimming output range | 0 | - | 100% | - |

Note:

1. Output current of dimming port: 100uA (typical value).
2. Dimmer default 0-10V, it can be dim-off ,but can not reach 0.5W standby power consumption.
3. The maximum voltage applied to the dimming port is suggested below 12V,but it also is protected against wrong voltage up to 230VAC or 300VDC.Please don't keep the wrong voltage apply to the port for a long time. Otherwise,it is possible to be damaged.
4. The floating voltage at the dimming port may be up to 14.5V, please notice it.

Protection

| Protection | description |
|---------------------------------|---|
| Input under voltage protection | Self-recovery type,When the input voltage is less than 165±15Vac, the output power decreases. |
| Output overload protection | 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 casing temperature is greater than 90°C, the output power decreases gradually. |
| Output over-voltage protection | Self-recovery type, automatically recovered after abnormal conditions are removed |

Note: Unless otherwise specified, all parameters should be measured at the condition of 230Vac (50Hz) input ,with rated load ,and ambient temperature of 25°C.

Environmental

| Categories | Parameter |
|---|---|
| Operating temperature Ta | -40°C ~ +55°C@200-277Vac |
| Operating case temperature for Safety Tc_s | -40°C ~ +90°C |
| Operating case temperature and humidity for Warranty Tc_w | -40°C ~ +75°C, 10% ~ 95% RH |
| Storage temperature, humidity | -40°C ~ +80°C, 10% ~ 95% RH |
| Resistant to vibration | 10Hz ~ 500Hz, 5G 12 min/cycle, X, Y, Z axis 72 min each |
| MTBF | 230,000 hours(MIL-HDBK-217F), Ta=25°C, 230Vac, 80% load |
| Lifetime | 50,000 hours @Tc≤75°C, 230Vac, 80% Load |

Safety

| Safety Categories | Area | Standards | Approved |
|-------------------|-----------------|---|----------|
| CCC | China | GB 19510.1, GB 19510.14 | |
| CE | Europe | EN 61347-1, EN 61347-2-13 | √ |
| ENEC | | EN 62384 | √ |
| CB | CB member state | IEC 61347-1, IEC 61347-2-13 | √ |
| SAA | Australia | AS/NZS 61347.1, AS/NZS 61347.2.13 | |
| UL | USA | UL 8750 | |
| CUL | Canada | CSA C22.2 No.250.13 | |
| EAC | Russia | ГОСТ IEC 61347-1-2019 ГОСТ IEC 61347-2-13-2013 | |
| BIS | India | IS 15885(PART 2/SEC 13) | |

RoHS

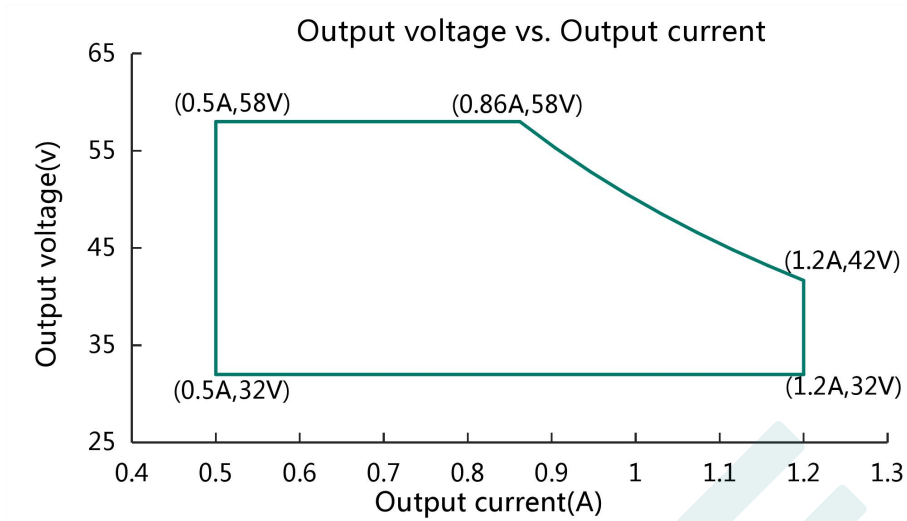
Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.

Safety Test Items:

| Safety Test Item | UL | CE/CB/ENEC | CCC | Insulation Requirements |
|-----------------------|----|------------|-----|----------------------------------|
| Input-output | - | 3200Vac | - | Reinforced insulation, 1min< 5mA |
| Input-Case | - | 3200Vac | - | Basic insulation, 1min< 5mA |
| Input-Dim | - | 3200Vac | - | Reinforced insulation, 1min< 5mA |
| Output-Case | - | 2300Vac | - | Basic insulation, 1min< 5mA |
| Output-Dim | - | 2300Vac | - | Additional insulation, 1min< 5mA |
| Dim-Case | - | 500Vac | - | |
| Insulation Resistance | | ≥10MΩ | | Input-Dim,Test voltage:500Vdc |
| Ground Resistance | | ≤0.1Ω | | 25A/1min;Ta=25°C±10°C |

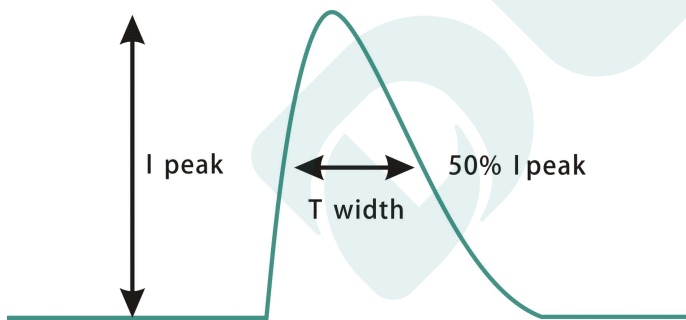
Note: The driver is considered as a component that will be operated in combination with the final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.

I-V Working area



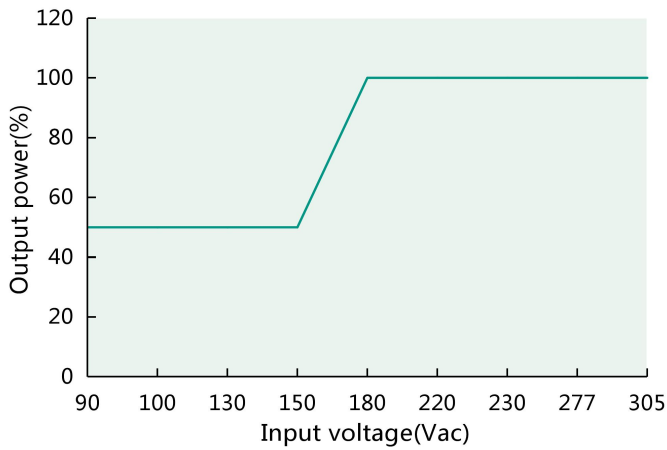
| Load | Output parameter | | | | | | | | |
|----------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Output Voltage | 32V | 36V | 39V | 42V | 46V | 49V | 52V | 55V | 58V |
| Output Current | 1.20A | 1.20A | 1.20A | 1.19A | 1.09A | 1.02A | 0.96A | 0.91A | 0.86A |
| Output Power | 38.4W | 43.2W | 46.8W | 50.0W | 50.0W | 50.0W | 50.0W | 50.0W | 50.0W |

Inrush Current

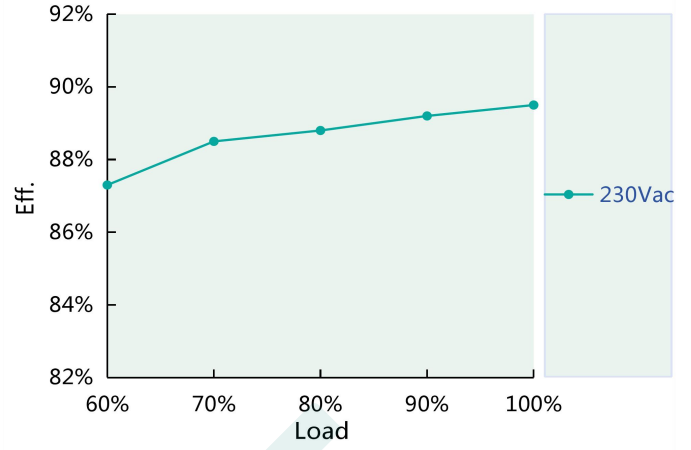


| Input voltage | Peak current | T(@50% Peak current) |
|---------------|--------------|----------------------|
| 230Vac | 36A | 1.170us |

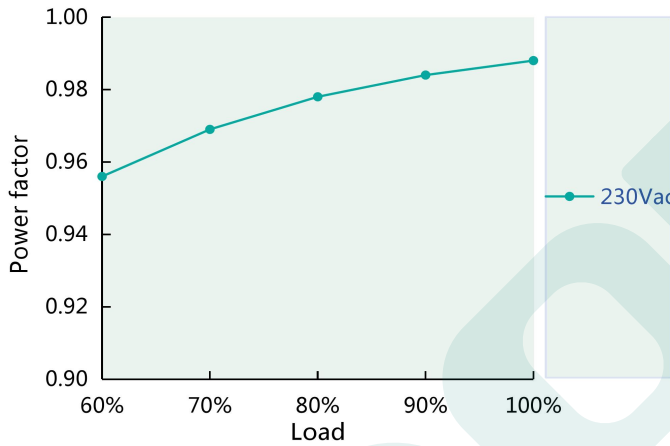
Output power vs. Input voltage



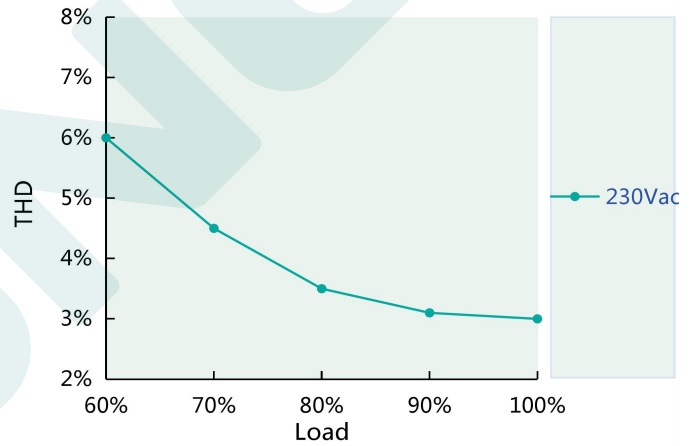
Eff. vs. Load



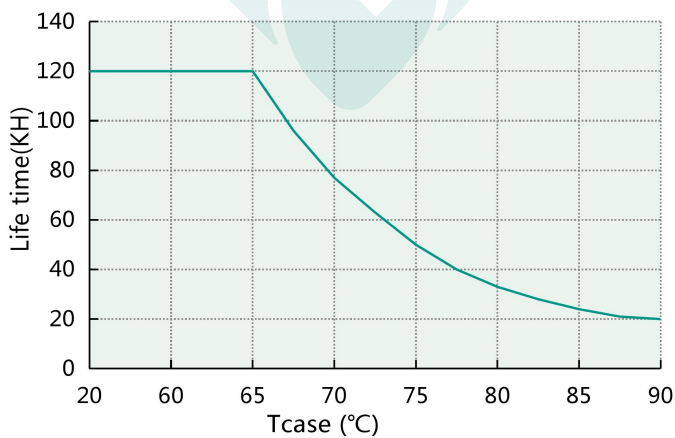
Power Factor vs. Load



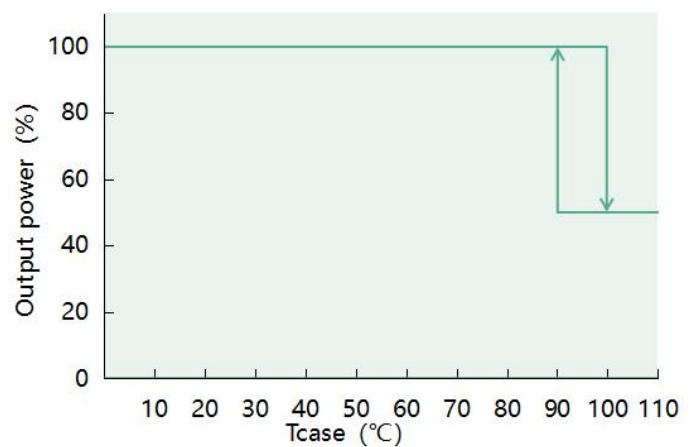
THD vs. Load



Lifetime vs. Tcase



Output power vs. Tcase

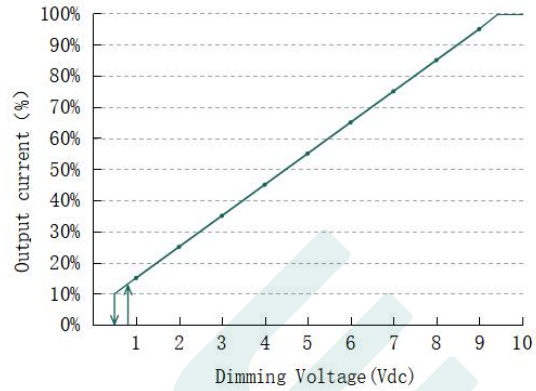
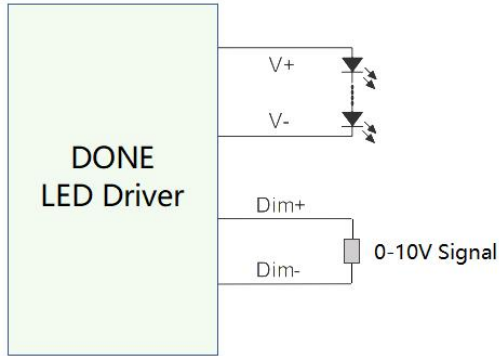


Dimming operation

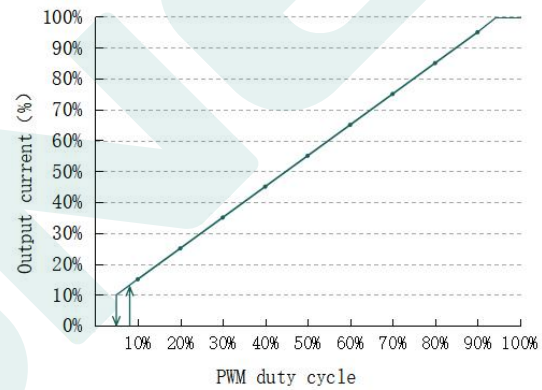
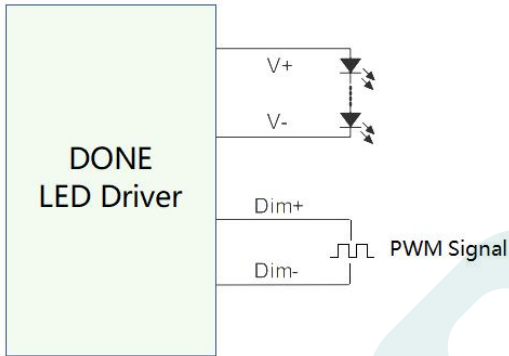
3-in-1 dimming function (S version only)

Connect a 0-10V Dimmer or 10V PWM signal or resistor between DIM+ and DIM-

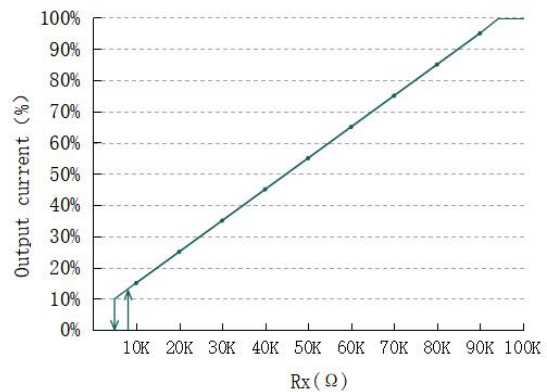
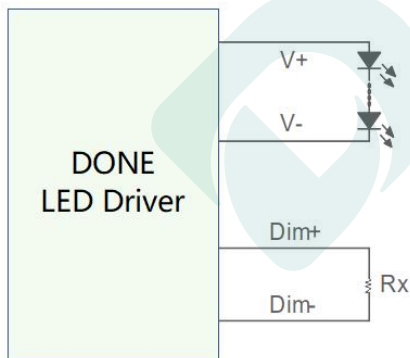
0-10V dimming:



PWM dimming :



Resistor Dimming:



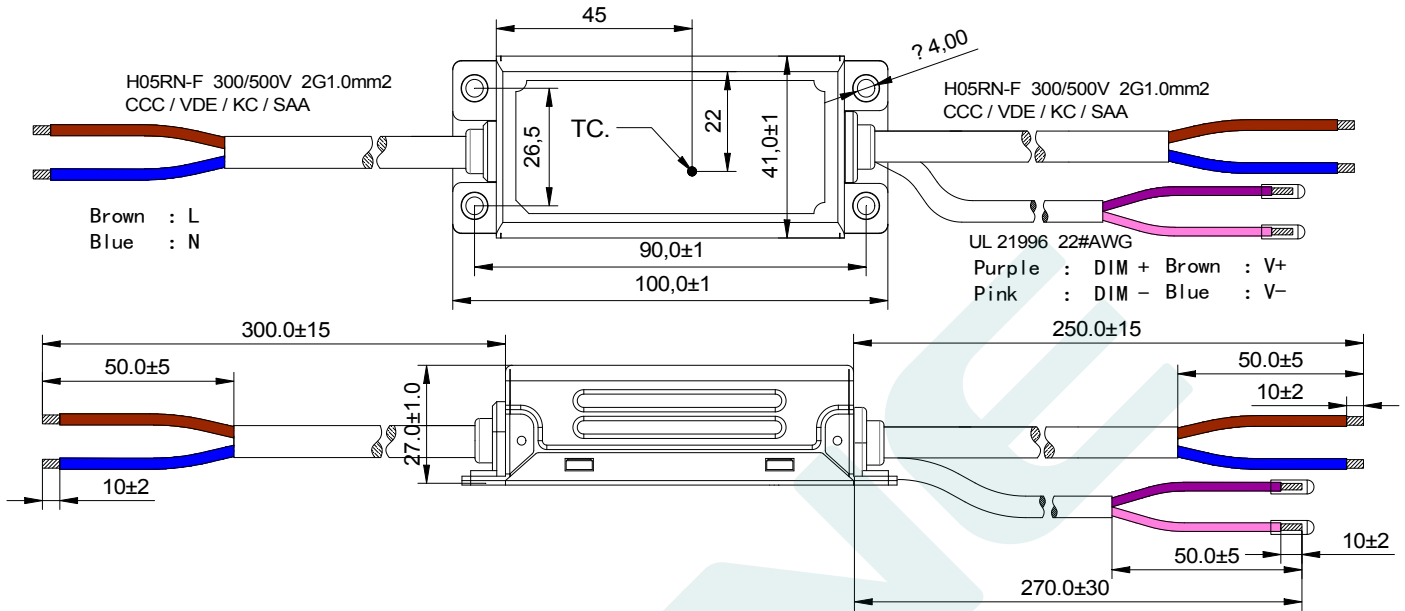
Note:

1. It is recommended to use 0-10V and equivalent three-in-one dimming. By default, it can be dimmed off, but it cannot achieve 0.5W standby power. If dim-off is not required, please contact the relevant personnel for customization.
2. If dim-off is not required and the input voltage is below 180Vac, the driver may fail to start upon power-on. In such case, the dimming voltage needs to be increased to above 2V.

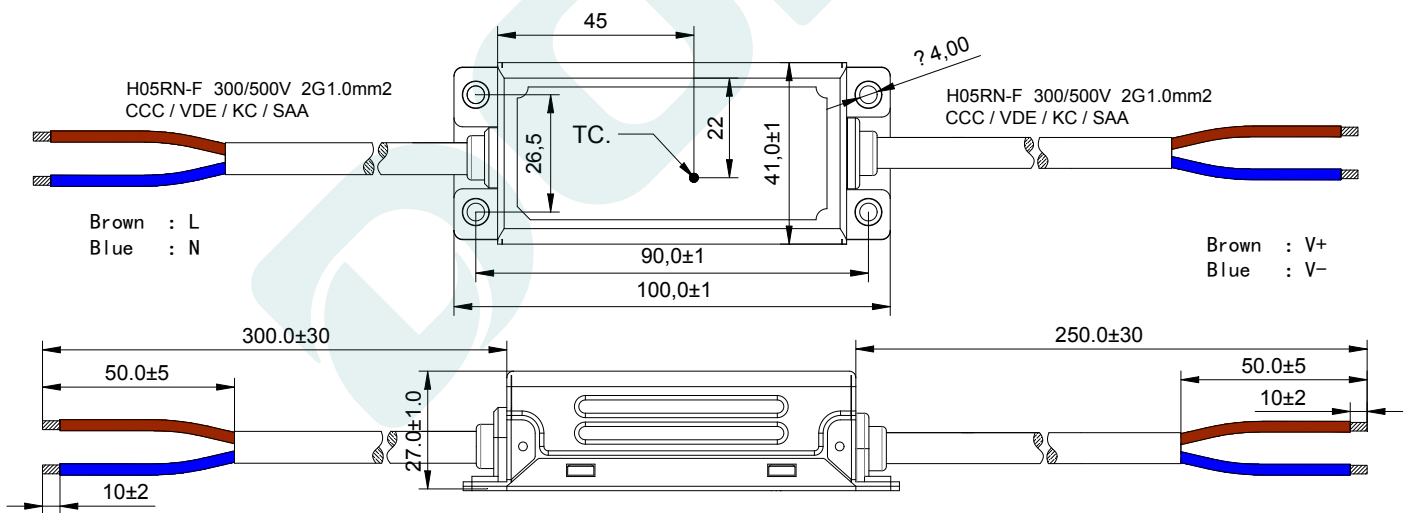
Mechanical specification

Size (mm) L100*W41*H27

DL-50H-58S-MAL



DL-50H-58A-MAL

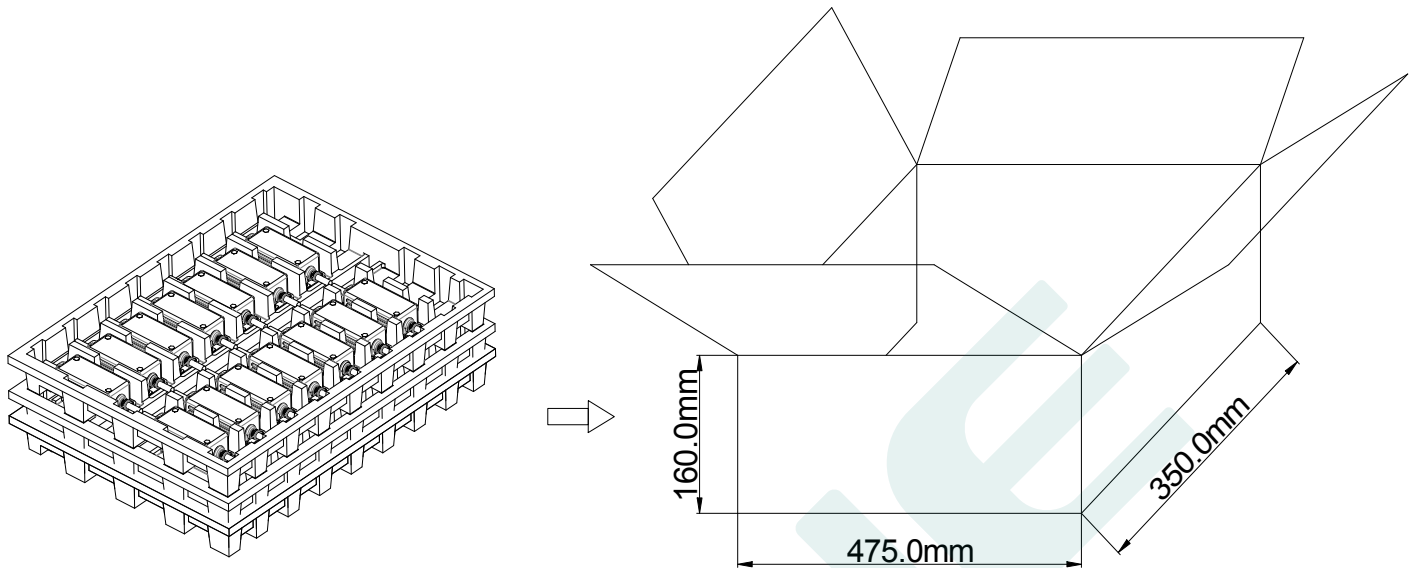


Weight

Weight 241g

Packaging

Packaging (mm) L475*W350*H160



Note: One Carton 3 layers and 14 pcs each layer, total 42 pcs/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 |
|-----------|------------------|------|-------|
| 2025.9.19 | Initial version. | V1.0 | |
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