

MXK Series LED Drivers

DL-110H-FP/FX-MXK Specification V1.1

Features

- Suitable for luminaire with protection Class I and II
- Input voltage range:176-305Vac
- High efficiency up to 91% (Typ.)
- Constant power design and constant current mode
- Adjustable output current (AOC) with NFC or programmer
- Isolated 3-in-1 dimming: 0-10V/PWM/Resistor; Timer dimming
- Auxiliary source: 24V/125mA (FX version only)
- Complies with Zhaga interface specification Book 13
- Ingress protection rating : IP20
- Input surge protection: DM 6kV, CM 10kV(Class I)
- All-Around protection: IUVP/SCP/OVP/OTP
- Warranty: 8 years



Applications

- Road lighting
- Industrial lighting
- Landscape lighting



Model list

Model NO.	Input voltage	Output power	Output voltage	Output current	Default current	Eff. (Typ.)	THD (Typ.)	PF (Typ.)
DL-110H-V158FP-MXK	200-277V	110W	76-158Vdc	0.5-1.05A	0.7A	91%	10%	0.95
DL-110H-V158FX-MXK	50/60Hz							

- Note :**
1. Test conditions of the above parameters: Ta=25°C, 230Vac input, full load operation for 30 minutes;
 2. When the input is less than 180Vac, the output is turned off directly. When the input is 200-277Vac, the rated power is 110W, please refer to the output power vs. input voltage curve
 3. FP Version: 0-10V/PWM/Timer dimming+NFC;
 FX Version: 0-10V/PWM/Timer dimming+24V Aux output+NFC.

Input characteristics

Parameter	Min	Typ.	Max	Note
Rated input voltage	200Vac	230Vac	277Vac	
Input voltage range	176Vac	-	305Vac	
Input frequency	47Hz	50/60Hz	63Hz	
Leakage current	-	-	0.70mA	IEC 60598-1; 240Vac/60Hz
	-	-	0.75mA	UL 8750; 277Vac/60Hz
Power factor(PF)	0.95	0.97	-	At 200~240Vac and 70%~100% load
	0.90	0.95	-	At 277Vac and 70%~100% load
THD	-	-	10%	At 200~277Vac and 70%~100% load
Input current	-	-	0.7A	At 200Vac and full load conditions
Inrush current	-	-	60A	At 230Vac and 25°C cold start

Output characteristic

Parameter	Min	Typ.	Max	Note
Efficiency@200Vac	89.0%	90.0%	-	At full load conditions , Io=0.7A
Efficiency@230Vac	90.5%	91.5%	-	At full load conditions , Io=0.7A
Efficiency@277Vac	91.5%	92.0%	-	At full load conditions , Io=0.7A
Output voltage range	76Vdc	-	158Vdc	Constant power range: 105-158Vdc
Open circuit voltage	-	-	200Vdc	
Output current range	0.5A	-	1.05A	The NFC regulates the output current
Output current tolerance	-5%	-	+5%	At full load conditions
Output Current Ripple(PK-AV)	-	5% Iomax	10% Iomax	At full load conditions , 20 MHz BW
Start-up overshoot current	-	-	10%	At full load conditions
Line regulation	-3%	-	+3%	Measured at full load,input voltage changes from 200Vac to 277Vac.
Load regulation	-3%	-	+3%	At 230Vac input and load change from 70% to 100%
Turn-on delay time	-	-	1.0s	At 200~277Vac and full load
Auxiliary source output voltage	21.6V	24V	26.4V	FX Version only
Auxiliary source output current	0 mA	-	125mA	Reference ground is "Dim -"

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

Dimming characteristic (FP&FX version)

Dimming	Parameter	Min	Typ.	Max	Note
0-10V Dimming (Optional)	Safe operating voltage	0V	-	10V	On the Dim+ pin, Dim+ source current 150uA
	Dimming range	10%	-	100%	
	Recommended dimming input range	0V	-	10V	
	Turn-on voltage	0.6V	0.7	0.9V	
	Turn-off voltage	0.4V	0.5	0.6V	
PWM Dimming (Optional)	PWM in high level	9.5V	-	10.5V	
	PWM in low level	0V	-	0.3V	
	PWM in frequency scope	300Hz	-	2000Hz	-
	PWM in duty cycle	1%	-	99%	-
	Turn-on duty cycle	7%	8%	10%	
	Turn-off duty cycle	4%	6%	7%	
Resistor Dimming (Optional)	External resistor value	10KΩ	-	100KΩ	-
	Dimming range	10%	-	100%	Full power output at 99% duty cycle
Over Temperature Protection	When over temperature protection occurs, the output is turned off and cannot be self-recovered				Default self-recovered. Set by the programmer
Timer Dimming (Optional)	3 modes:Timing,Virtual Midnight,Self-adaptive				Default close, Set by the programmer
Output lumen compensation	Setting the output power with reference to the luminaire life				Default close, Set by the programmer

Note: The P version is 1-10V dimming (0V can be turned off). The maximum voltage of the dimming port is 24V.

Protection

Parameter	Description
Input under-voltage protection	When the input voltage is less than 176Vac, the output is turned off directly
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: All parameters should be measured at a 230Vac/50Hz input voltage, with a rated load and an ambient temperature of 25°C, unless otherwise specified.

Environmental

Categories	Parameter
Operating temperature Ta	-40°C ~ +55°C@200-277Vac
Operating case temperature for Safety Tc_s	-40 ~ +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	70,000 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)	

EMC

EMI/EMS Categories	Area	Standards	Approved
CCC	China	GB/T 17743, GB 17625.1	
CE	Europe	EN IEC 55015 EN 61547 EN IEC 61000-3-2;3-3;4-5	√
FCC	USA	FCC Part 15 Subpart B	

RoHS

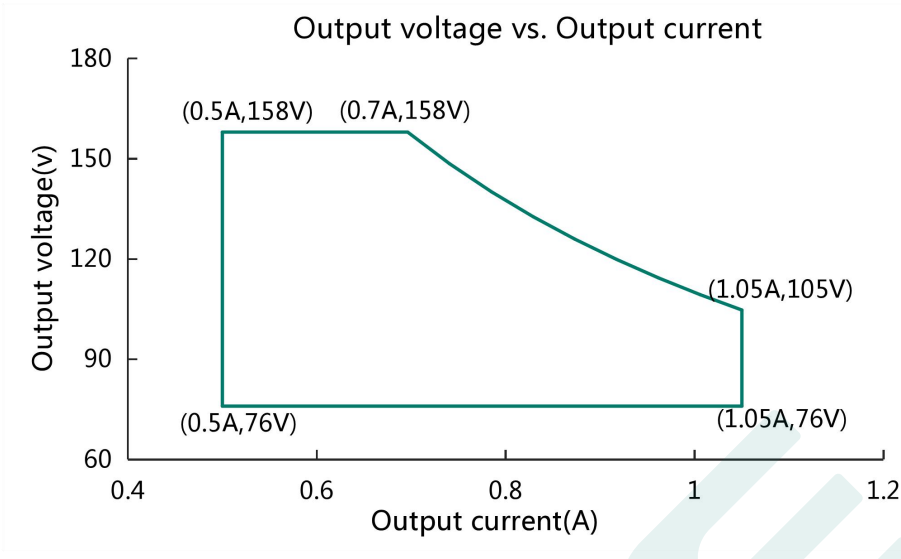
Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.

Safety Test Items:

Safety Test Item	UL	CE/CB/ENEC	CCC	Insulation Requirements
Input-output	-	3200Vac	3900Vac	Reinforced insulation, 1min < 5mA
Input-Case/Ground	-	3200Vac	3200Vac	Basic insulation, 1min < 5mA
Input-Dim	-	1600Vac	1600Vac	Reinforced insulation, 1min < 5mA
Output-Case/Ground	-	500Vac	500Vac	Basic insulation, 1min < 5mA
Output-Dim	-	1400Vac	1400Vac	Basic insulation, 1min < 5mA
Dim-Case	-	500Vac	500Vac	
Insulation Resistance	$\geq 10M\Omega$			Input-Dim, Test voltage: 500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min; Ta=25°C±10°C

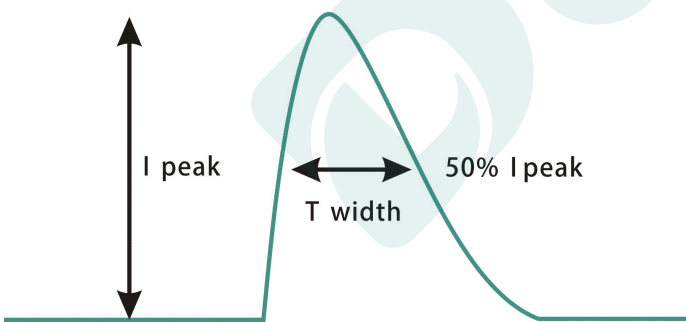
Note: The drive is the component used with the end equipment. As the operational performance of the equipment may be affected by the installation, the final equipment must be tested after installation to ensure that it complies with the EMC Directive.

I-V Working area



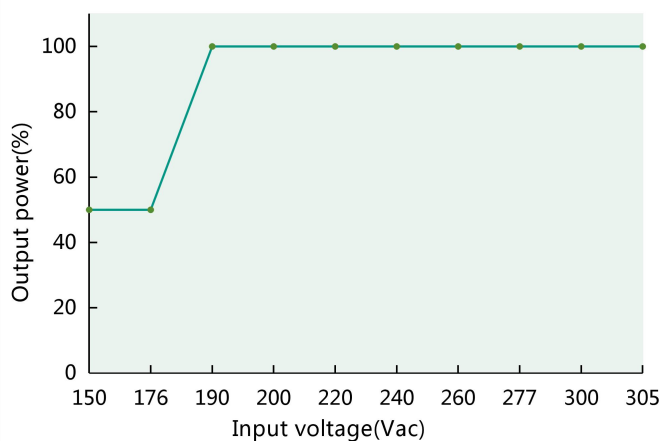
Load	Output parameter								
Output Voltage	76V	86V	95V	105V	111V	119V	125V	134V	158V
Output Current	1.05A	1.05A	1.05A	1.05A	0.99A	0.92A	0.88A	0.82A	0.7A
Output Power	79.8W	90.3W	99.75W	110W	110W	110W	110W	110W	110W

Inrush current

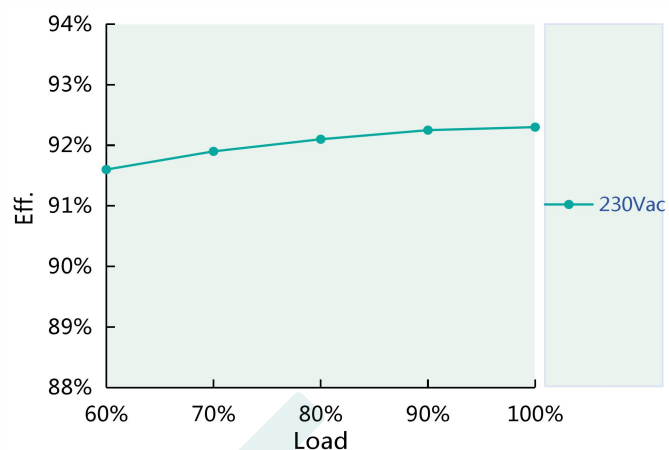


Input voltage	Peak current	T(@50% Peak current)
200Vac	50A	176us
230Vac	60A	176us
277Vac	70A	176us

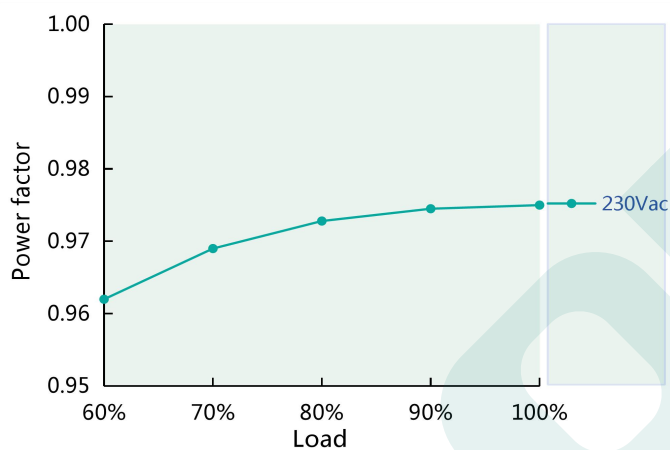
Output power vs. Input voltage



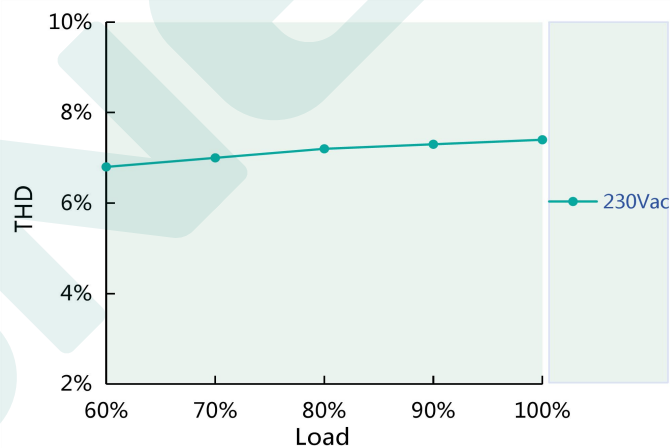
Eff. vs. Load



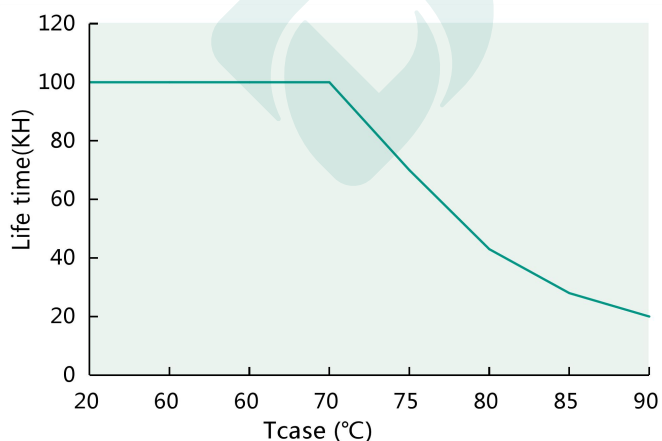
Power Factor vs. Load



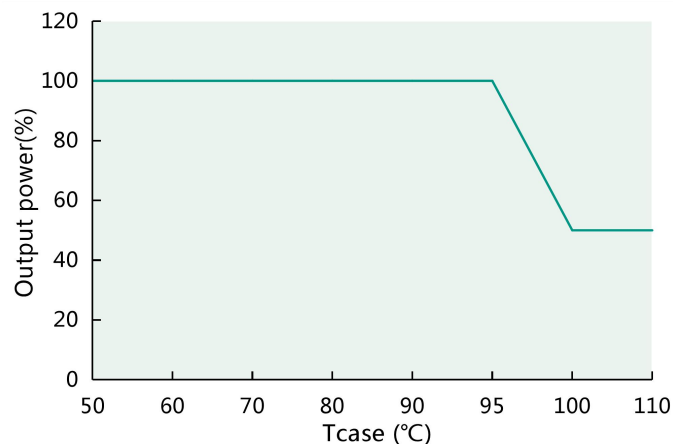
THD vs. Load



Lifetime vs. Tcase



Output power vs. Tcase

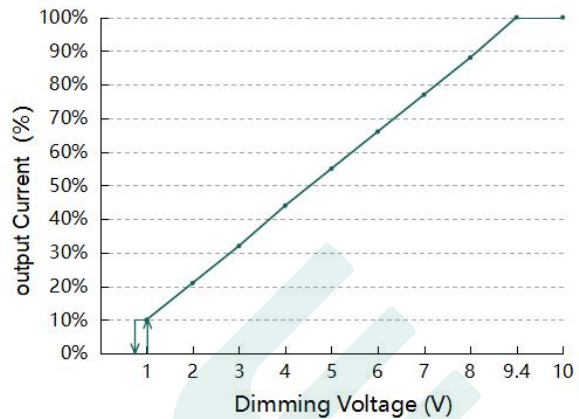
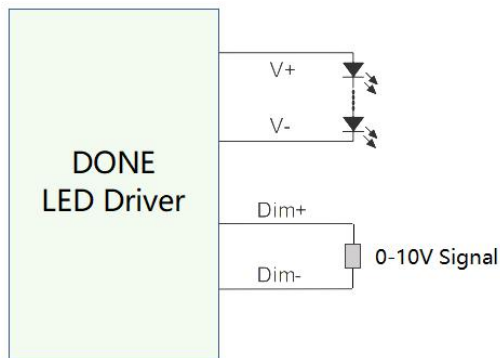


Dimming operation

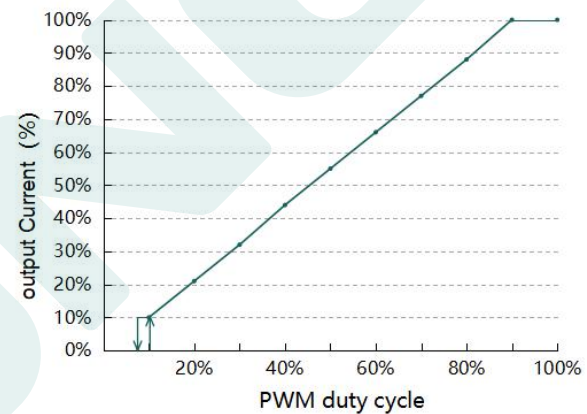
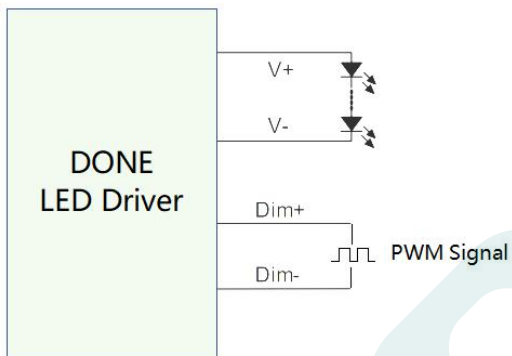
3-in-1 dimming function (FP/FX version)

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

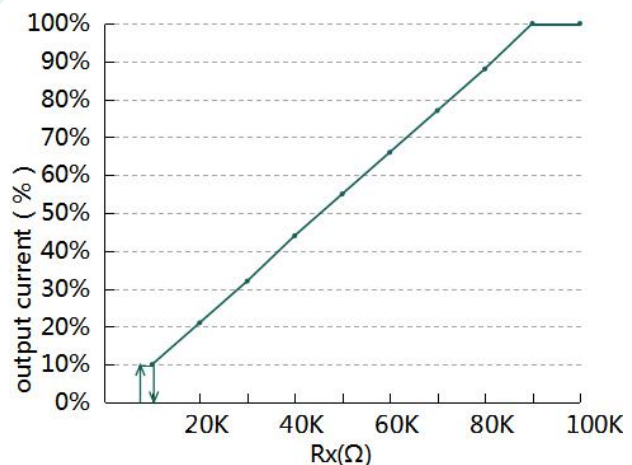
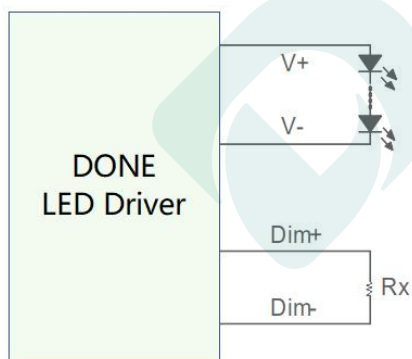
• 0-10V dimming:



• PWM dimming :



• Resistor Dimming:



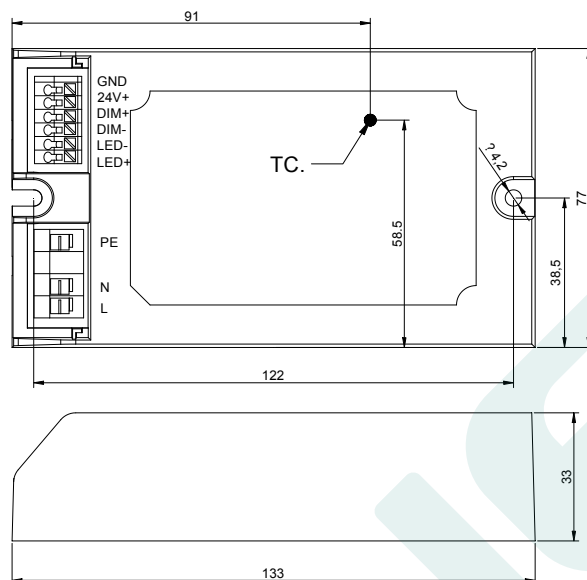
Remark:

1. Positive and negative logic dimming can be programmed.
2. Dimming-off only applies to positive logic.

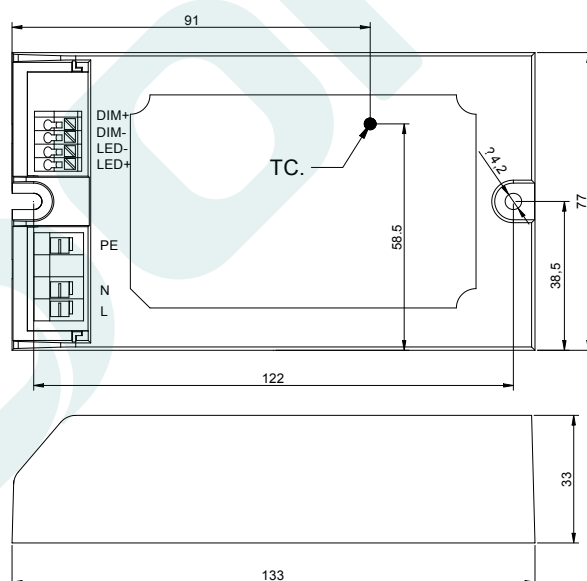
Mechanical specification

Size (mm) L133*W77*H33

DL-110H-V158FX-MXK



DL-110H-V158FP-MXK

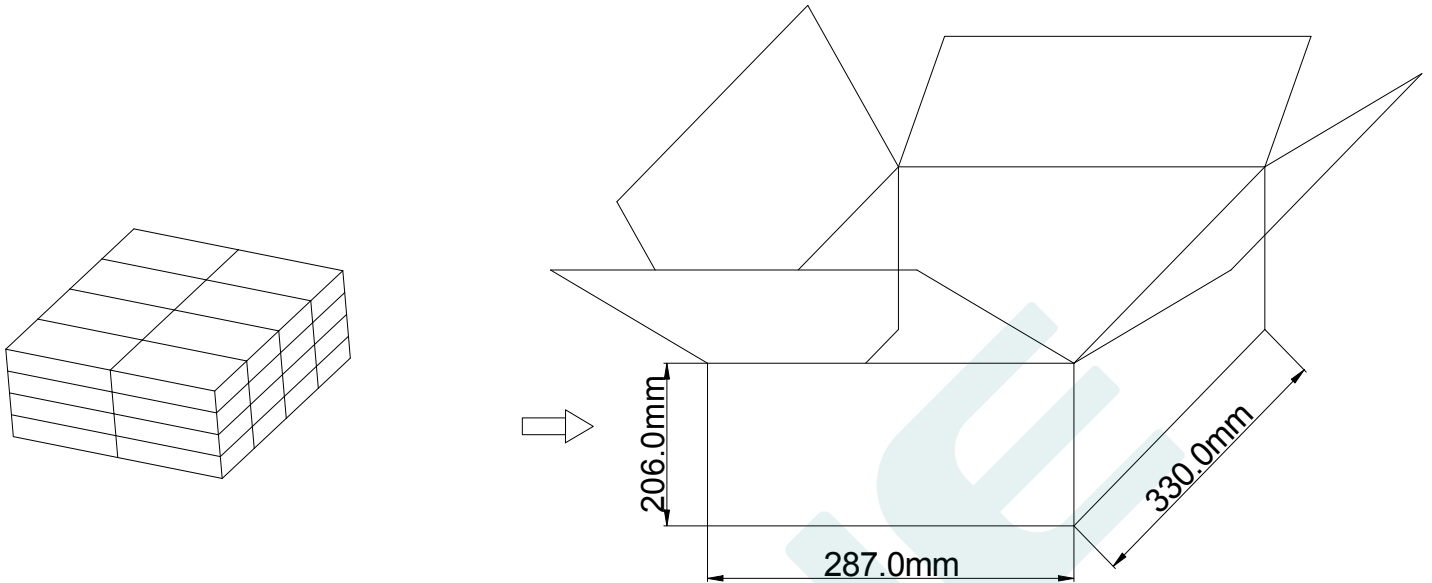


Weight

Weight 535g

Packaging

Packaging (mm) L330*W287*H206



Note: One Carton 4 layers and 8 pcs each layer, total 32 pcs/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
2025.5.29	Initial version.	V1.0	
2025.6.24	Update the Model	V1.1	

MANUFACTRUER		
EDIT	CHECK	APPROVE