

MUG SERIES LED DRIVERS

DL-320U-MUG SPEC V1.1



Features

- Class I structure
- Input voltage: 277-480V ~ 50/60Hz
- Efficiency :93.5%(Typ.)
- Constant power drive and constant current output control mode
- Metal shell structure, protection grade: IP67
- Lightning protection level: differential mode 6kV,
common mode 10kV
- Function selection:

Output current is adjusted by external potentiometer (A version only)

Isolated 3 in 1 dimming (P 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-320U-V56P-MUG	277-480V 50/60Hz	320W	25-56Vdc	6.8A	≥93.5%	≤10%	≥0.95

Note :

1. Test conditions of the above parameters: Ta=25°C, 380Vac input, full load operation for 30 minutes;
2. When the input is less than 320Vac,the output power gradually decreases.When the input 277-480VAC,rated power 100W.
Please refer to "THE OUTPUT POWER VS INPUT VOLTAGE" curve chart for details.

Input characteristics

Parameter	Min	Typ.	Max	Note
Rated input voltage	277Vac	380Vac	480Vac	
Input voltage range	249Vac		528Vac	
Rated frequency	47Hz	50/60Hz	63Hz	
Power factor	-	0.97	-	@380Vac full load
T.H.D.	-	-	10%	@380Vac full load
Input current	-	-	$I_{in} < 1.3A$	@277Vac full load
Inrush current	-	-	<126A	380Vac, cold start (25°C)

Output characteristic

Parameter	Min	Typ.	Max	Note
Rated current DL-320U-V56P-MUG	-	5.7A	-	
Output current range DL-320U-V56P-MUG	4.2A	-	7.65A	
Output voltage range DL-320U-V56P-MUG	25V	-	56V	
Rated power((277-480Vac)	-	320W	-	The derating begins when the input voltage is less than 240Vac
Rated power((277-480Vac)	-	320W	-	
No-load voltage DL-320U-V56P-MUG	-	-	68V	
Efficiency@277Vac DL-320U-V56P-MUG	91%	93%	-	full load

Output characteristic

Parameter	Min	Typ.	Max	Note
Efficiency@380VVac DL-320U-V56P-MUG	92%	93.5%	-	full load@380Vac
Accuracy of output current	-5%	-	+5%	full load
Line regulation	-3%	-	+3%	full load
Load regulation	-3%	-	+3%	full load
Starting time	300ms	-	1000ms	Full load@277-480Vac

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
1-10V Dimming (Optional)	Safe applied voltage range	1V	-	12V	When the external voltage is $\geq 12V$, the dimming will fail
	Dimming output range	10%	-	100%	-
	Rated dimming voltage range	1V	-	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	-
	PWM frequency band	300Hz	-	2000Hz	-
	PWM duty cycle	10%	-	99%	Output full power at 99% duty cycle
Resistor Dimming (Optional)	External resistance value	10K Ω	-	100K Ω	-
	Dimming output range	10%	-	100%	-

Note:

1. Output current of dimming port: 108uA $\pm$ 10%(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 reversely connected, the power supply will be damaged ;

Protection

Function	Function instructions
Input under-voltage protection	When the input voltage is less than 240Vac, 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°C, 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 380Vac (50Hz), rated load and 25°C of ambient temperature;
2. Including setting error, line regulation and load regulation.

Environmentals

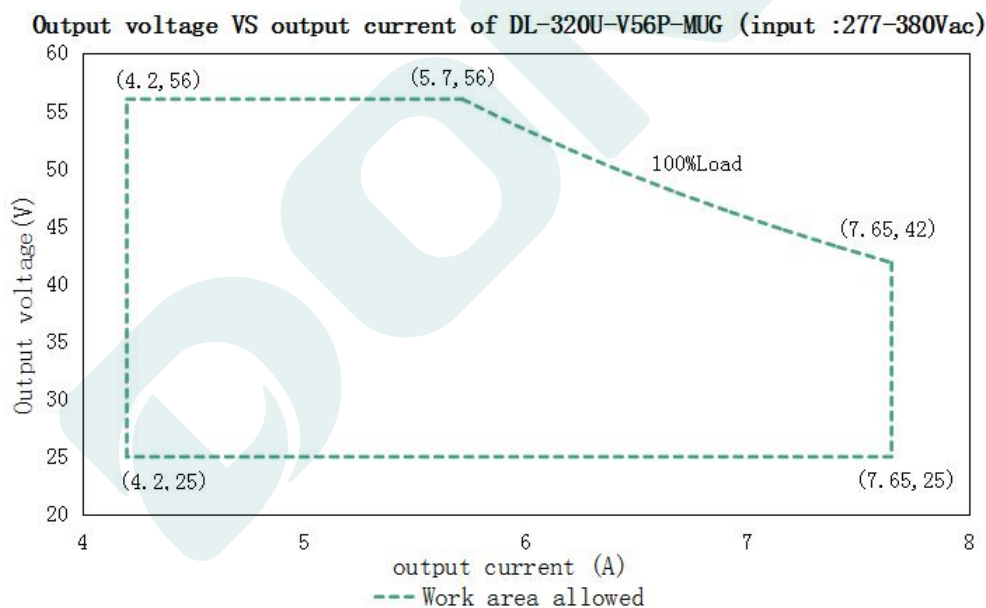
Environmental categories	Parameter
Working temperature	-40 ~ +55°C@277-480Vac, -40 ~ +45°C @277-480Vac (refer to "Life Curve ")
Working humidity	20 ~ 95% RH, non condensing
Storage temperature、 humidity	-40~+80°C, 10 ~ 95% RH
Resistant to vibration	10 ~ 500Hz, 5G 12 min/cycle, X, Y, Z axis 72 min each
MTBF	230Khrs min. MIL-HDBK-217F (Ta=25°C)

Safety and EMC

Safety categories	Standard
Safety	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 $\pm 6\text{KV}$ (2 ohm) ,common mode L , N-PE $\pm 10\text{KV}$ (12 ohm) ; Refer to IEC61000-4-5 2014 Criterion B
High-pot test	I/P-O/P:2.25KVac I/P-PE :2.25KVac O/P-PE : 0.5KVac I/P-DIM:2.25KVac O/P-DIM:0.5KVac
Insulation impedance	I/P-PE:100M Ω / 500VDC; I/P-O/P:100M Ω / 500VDC / 25°C/ 70% RH
Leakage current	<0.7mA@480Vac

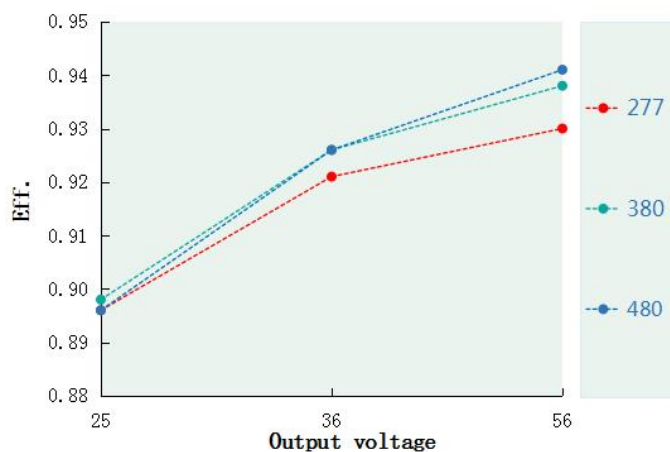
Note: The driver is considered as a component that will be operated in combination with the final equipment. Since EMC performance will be affected by the complete installation,the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.

I-V Working area

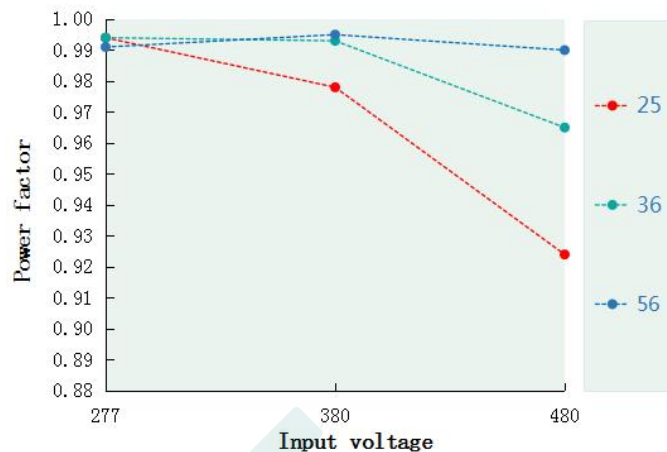


Load	Output								
Load working Voltage	25V	29V	33V	36V	42V	44V	48V	52V	56V
Io_MAX	7.65A	7.65A	7.65A	7.65A	7.65A	7.287A	6.68A	6.165A	5.725A
Po_MAX	191.25W	221.85W	252.45W	275.4W	321.3W	320.62W	320.64W	320.58W	320.6W

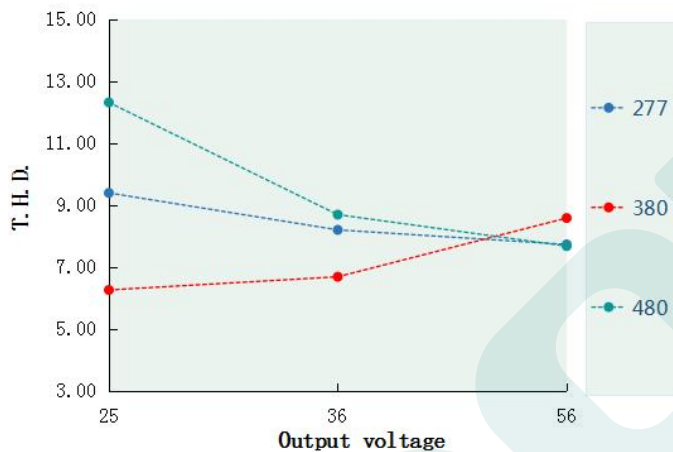
Eff. VS Output voltageDL-320U-V56P-MUG



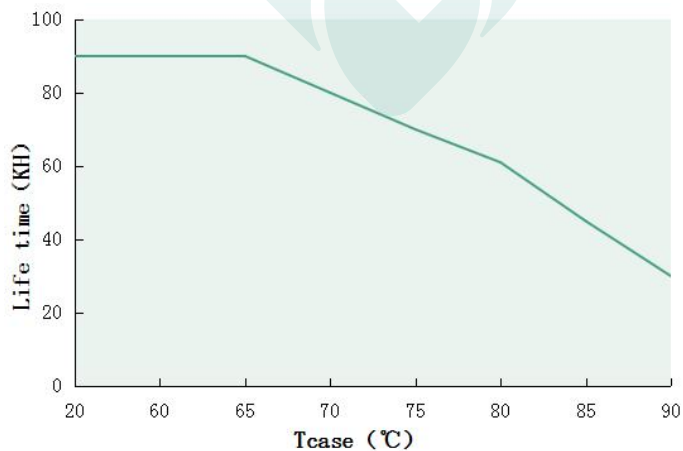
Power factor VS Input voltageDL-320U-V56P-MUG



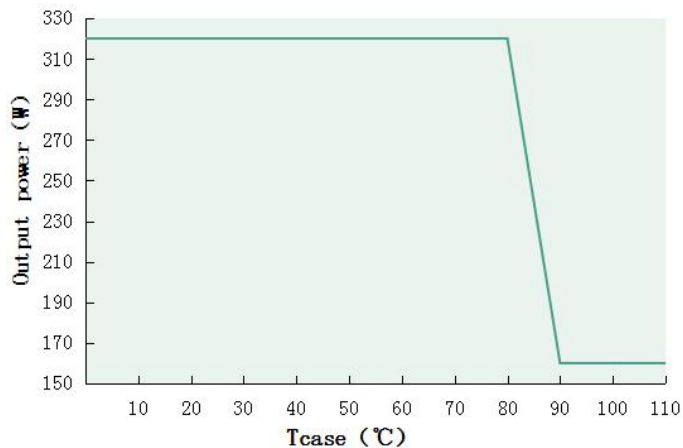
T.H.D. VS Output voltage(DL-32U-V56P-MUG)



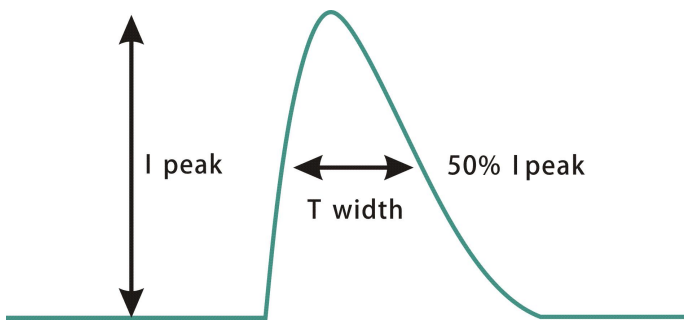
Tcase VS Lifetime(DL-320U-V56P-MUG)



Output power VS Tcase (DL-320U-V56P-MUG)

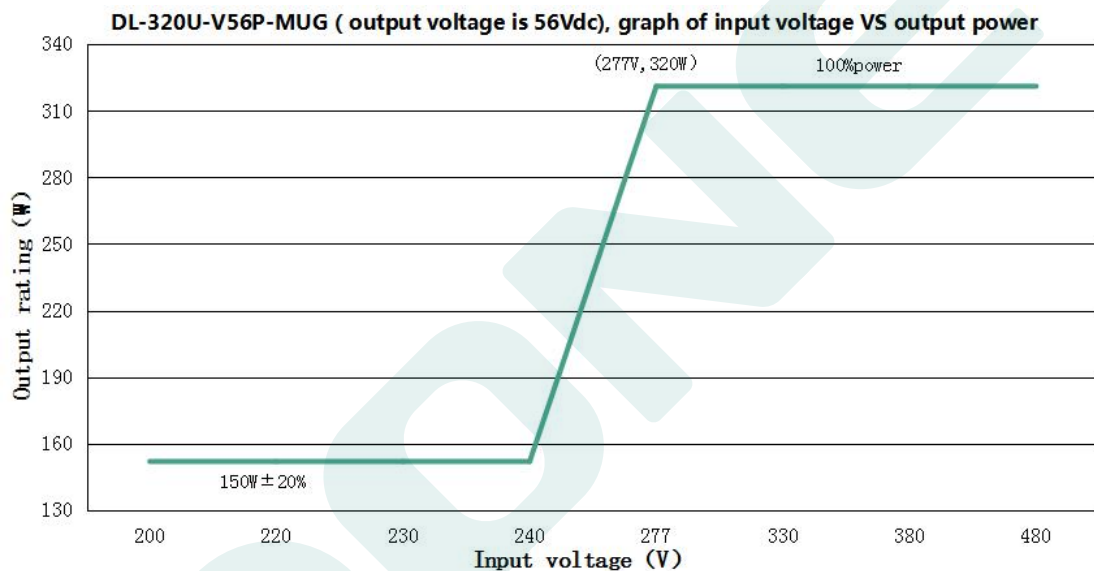


Inrush Current(DL-320U-V56P-MUG)



Input voltage	Peak current	T(@50% Peak current)
480Vac	158A	2.34us
380Vac	126A	2.32us
277Vac	98A	2.32us

Output power VS Input voltage



DL-320U-V56P-MUG (When the output voltage is 56Vdc, the rated output current value and output power corresponding to different input voltage)

Input Voltage	200Vac	220Vac	230Vac	240Vac	277Vac	330Vac	380Vac	480Vac
I _{out}	2.73A	2.73	2.73A	2.89A	5.74A	5.74A	5.74A	5.74A
P _{out}	153W	153W	153W	162W	321W	321W	321W	321W

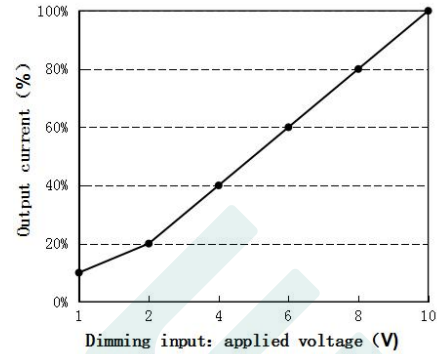
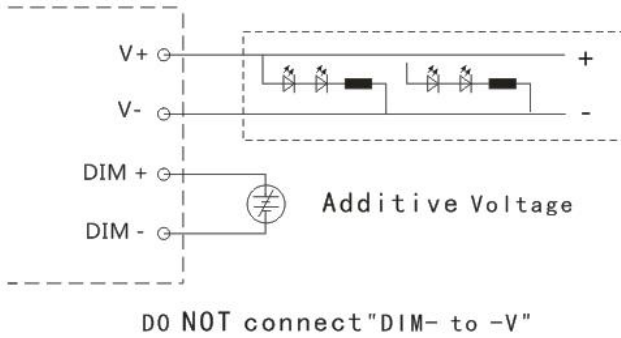
Note: Note: the input voltage is lower than 10% + 240 Vac, the output power is falling, when the 220 Vac output power derating gradually to 160 w + 20

Dimming operation

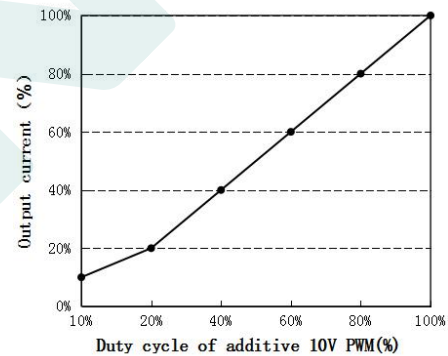
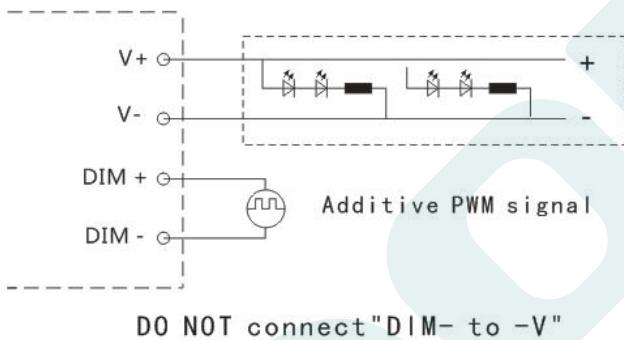
※ Three-in-one dimming function (P version only)

- A. connect a resistor 10-100K or 1-10V DC voltage or 10V PWM signal between DIM+ and DIM- to adjust the output current.
B. output current of dimming port: 100uA (typical value).

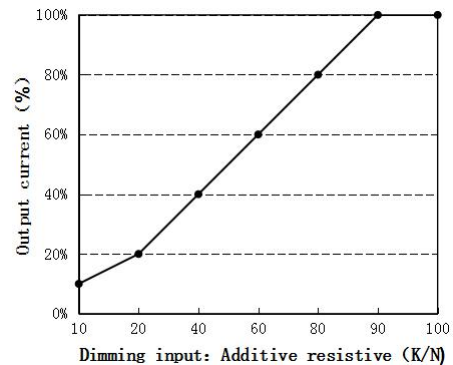
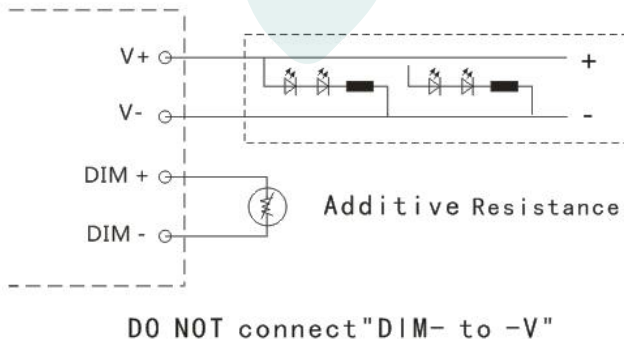
• With an applied voltage of 1-10V:



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



• With an additional 10-100K resistor:



Mechanical specification

Size (mm) L244mm*W83mm*H40mm

General product dimension drawing
 DL-320U-V56P-MUG

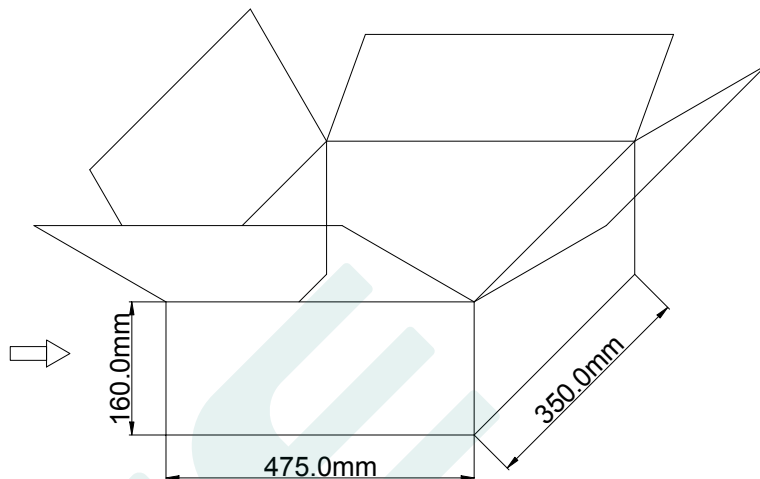
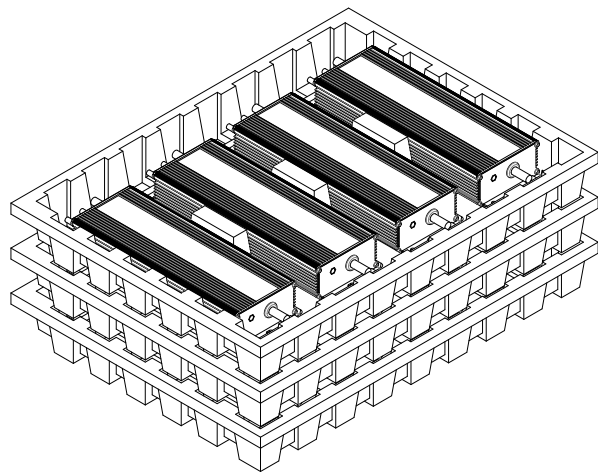


Weight

Weight 1057.4 g

Packaging

Packaging (mm) L475*W350*H160



Note : One Carton 3layers and 4 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
2022.12.28	Initial version.	V1.0	
2025.7.19	Modify High-pot test on page 6	V1.1	

MANUFACTRUER		
EDIT	CHECK	APPROVE