MAL SERIES LED DRIVER

DL-100H-MAL SPEC V1.3

GUANGDONG DONE POWER TECHNOLOGY CO.,LTD

Features



- Class I type for insulation
- Input voltage range:100~277VAC

  Rated voltage:200-277 V ~ 50/60 Hz 100W max.

  Input voltage:100~150V ~ 50/60 Hz 50W max.
- Efficiency :91%(Typ.)
- Constant current output ,with power limitation for control mode
- Metal case, protection grade against water and dust: IP67
- Surge level: differential mode :6kV, common mode :15kV
- Available version :

  A version: Output current is dimmed by external potentiometer

  S version: Output current is dimmed by Isolated 3 in 1 dimmer (positive or negative logic dimming available)
- Guaranteed Lifetime: 5 years

Applications

Street 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-100H-58S-MAL DL-100H-58A-MAL	200-277V 50/60Hz	100W	32-58Vdc	2.1A	≥91%	≤10%	≥0.95
DL-100H-143S-MAL DL-100H-143A-MAL	200-277V 50/60Hz	100W	71-143Vdc	0.7A	≥91%	≤10%	≥0.95

Note:

1. Test conditions: Ta=25℃, under 230Vac input,after running for 30 minutes with full load.
2. When the input is less than 165+/-15Vac,the output power gradually decreases to a half.and it recoveries full power of 100W when the input is above 180VAC again. Please refer to "THE OUTPUT POWER VS INPUT VOLTAGE" curve chart for details.

Input characteristics

Parameter	Min	Typ.	Max	remark
Rated input voltage	200Vac	230Vac	277Vac	With full load.
Input voltage range	100Vac		305Vac	Output power decrease to a half when input below 165±15VAC.
Rated frequency range	47Hz	50/60Hz	63Hz	
Power factor	-	0.95	-	@230Vac input ,with full load
Power factor	0.9	-	-	@200-277Vac input ,with 75%-100%
T.H.D.	-	-	10%	@230Vac input ,with full load
T.H.D.	-	-	20%	@200-277Vac input ,with 75%-100%
Input current	-	-	0.65A	@200Vac input ,with full load
Inrush current	-	-	100A	230Vac, cold start (25℃)

Output characteristics

Parameter	Min	Typ.	Max	remark
Rated current DL-100H-58A/S-MAL DL-100H-143A/S-MAL	 - -	 1.73A 0.7A	 - -	 With loading 58VDC With loading 143VDC
Output current range DL-100H-58A/S-MAL DL-100H-143A/S-MAL	 1.3A 0.5A	 - -	 2.38A 1.05A	
Output voltage range DL-100H-58A/S-MAL DL-100H-143A/S-MAL	 32V 71V	 - -	 58V 143V	Constant power voltage range: 42-58VDC 95-143VDC
Rated power	-	100W	-	Under rated input:200-277Vac
Available power	-	50W	-	Under available input:100-150Vac
No-load voltage DL-100H-58A/S-MAL DL-100H-143A/S-MAL	 - -	 -. -	 75V 190V	
Efficiency@200Vac DL-100H-58A/S-MAL	 89% 89%	 90% 90%	 -	 full load@200Vac
Efficiency@230Vac DL-100H-58A/S-MAL DL-100H-143A/S-MAL	 90% 90%	 91% 91%	 -	 @230Vac input ,with full load

Output characteristics

Parameter	Min	Typ.	Max	remark
Accuracy of output current	-5%	-	+5%	For constant-power range , with full load
Line regulation	-5%	-	+5%	full load
Load regulation	-5%	-	+5%	full load
Starting time	-	-	500ms	Full load@230Vac

Note:

1. The output current is limited by the input and output voltage, please refer to "I-V WORKING AREA" for details.
2. When input voltage is between 150~180VAC ,the output power is undefined due to the tolerance of threshold.

Dimming characteristics

Dimming function		Min	Typ.	Max	Instructions
0-10V Dimming (Optional)	Safe operation voltage range	0V	-	12V	Refer to note 2.
	Rated operation voltage range	0V	-	10V	-
	Dimming output range	0%	-	100%	-
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
Resistor Dimming (Optional)	Rated external resistance value	0KΩ	-	100KΩ	Bigger resistor won't increase the output.
	Dimming output range	0%	-	100%	

Note:

1. Output current of dimming port: 100uA (typical value).
2. The default state is to be dim-off with a 0-10V or equivalent 3 in 1 dimmer, but can't meet the ERP requirement of 0.5W standby power consumption. If ERP is necessary, an 1-10V or equivalent 3 in 1 dimmer is suggested, and with no dim-off function. If you don't want it to be dim-off, please contact the relevant people for special design.
3. The dimming port can withstand short-term 230VAC maximum or 300VDC over-voltage, without causing damage. Please try to avoid a long-term connection with so high voltage.
4. The floating voltage at the dimming port may be up to 14.5V,please notice it.
5. For negative logic dimming, the default output is 100% when the dimming port is floating.

Protection

Protection	description
under-voltage protection	When the input voltage is less than 165±15Vac, the output power decreases.
Output over-voltage protection	hiccup mode,and recovers automatically when the fault condition is removed.
Output short circuit protection	Hiccup mode,and recovery automatically when the fault condition is removed.
Over temperature protection	when the temperature of the case is greater than95±5℃, the output power decreases to a half.
Output over-power protection	The maximum output power is limited to about 1.1 time of the rating automatically. Only for P version

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

Environmental characteristics

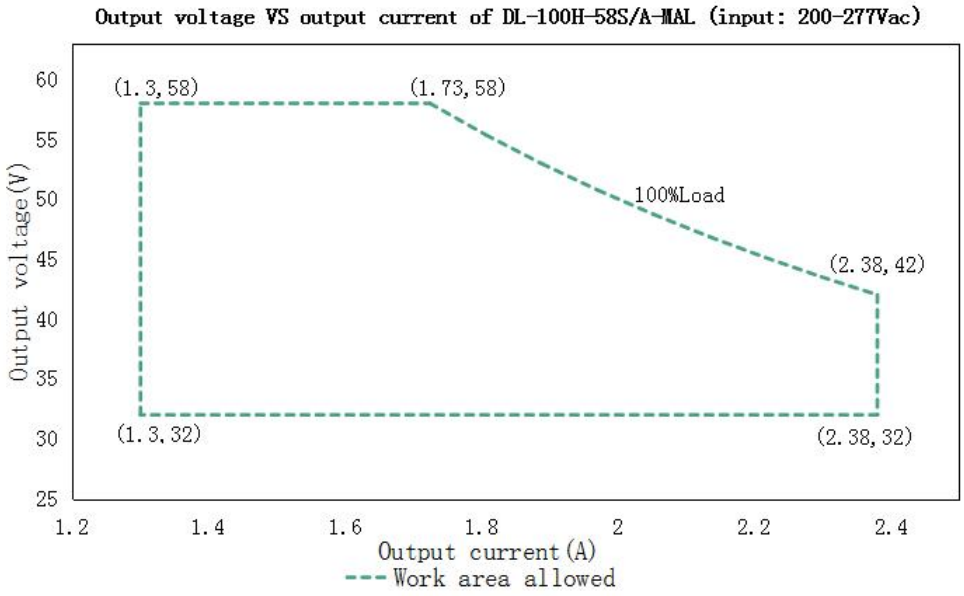
Environmental categories	Parameter
Working temperature	-40 ~ +55℃
Working humidity	20 ~ 95% RH
Storage temperature、humidity	-40~+80℃, 10 ~ 95% RH
Resistant to vibration	10 ~ 500Hz, 5G 12 min/cycle, X, Y, Z axis 72 min each
MTBF	230Khrs min. MIL-HDBK-217F (Ta=25℃)
Lifetime	50000 hours @Tcase=75℃,refer to" **Tcase VS Lifetime**" curve

Safety and EMC

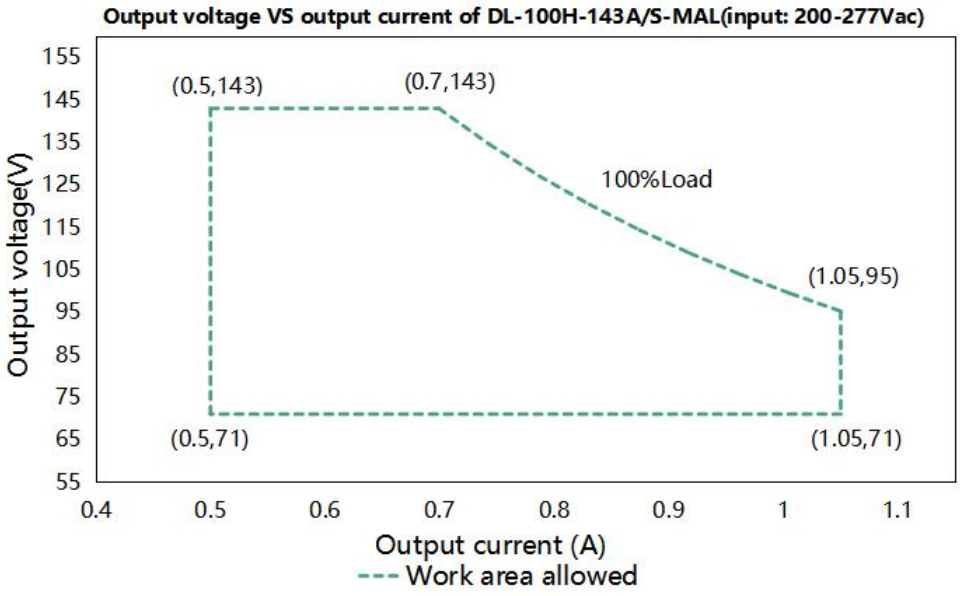
Safety categories	Standard
Safety	GB19510.1、GB19510.14、EN61347-1、EN61347-2-13、IEC61347-1、IEC61347-2-13、AS/NZS61347.1、AS61347.2.13、EN 62384;
EMC	EN 55015、EN 61547、EN 61000-3-2、GB/T 17743、GB17625.1、EN 61000-3-3
Surge level	Differential mode L-N ±6KV（2 ohm）,common mode L，N-PE± 15KV (12 ohm)；Refer to IEC61000-4-5 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:3.75KVac 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: Attention! As a component of the whole, the EMC performance of the final product is not only decided by the driver, even if the driver is well-designed and fulfil all the required compliance. The final equipment manufacturers must re-qualify EMC Directive on the complete product.

I-V Working area

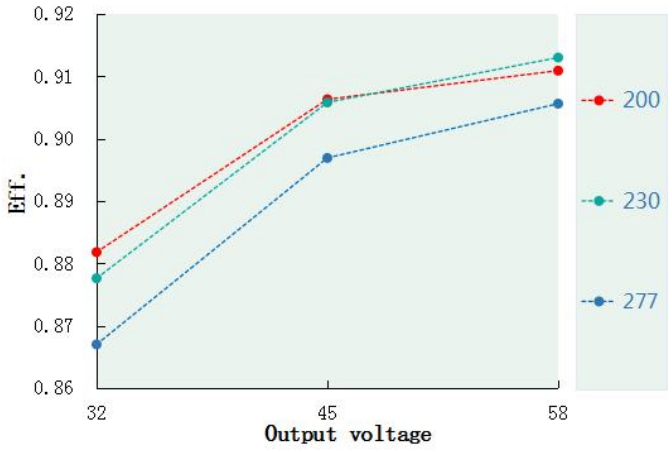


Load	Output								
Load working Voltage	32V	35V	37V	42V	46V	49V	52V	55V	58V
Io_MAX	2.38A	2.38A	2.38A	2.38A	2.17A	2.04A	1.92A	1.82A	1.725A
Po_MAX	76.2W	83.3W	88W	100W	100W	100W	100W	100W	100W

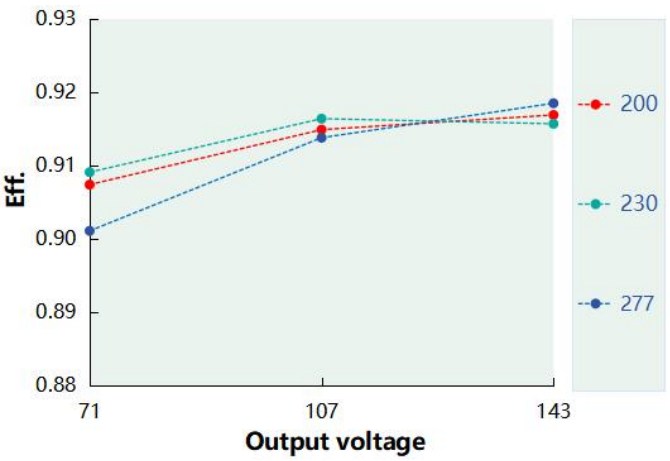


Load	Output								
Load working Voltage	71V	79V	88V	95V	104V	114V	123V	132V	143V
Io_MAX	2.38A	2.38A	1.05A	1.05A	0.96A	0.88A	0.81A	0.76A	0.7A
Po_MAX	74.6W	82.9W	92.4W	100W	100W	100W	100W	100W	100W

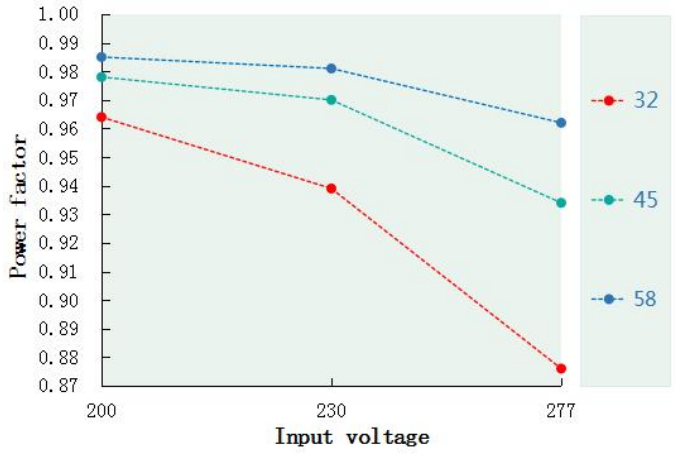
Eff. VS Output voltage(DL-100H-58A/S-MAL)



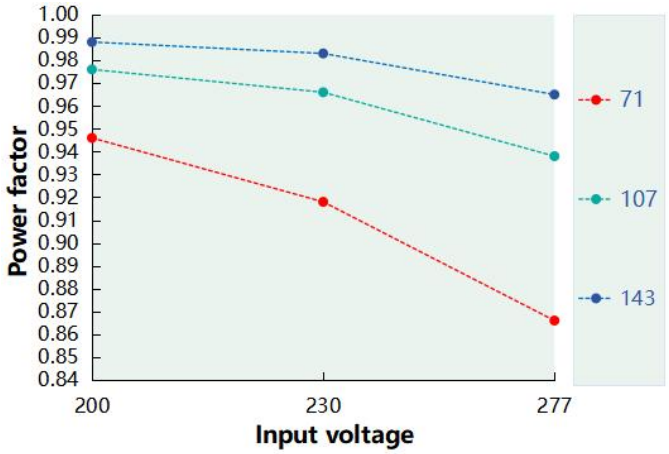
Eff. VS Output voltage(DL-100H-143A/S-MAL)



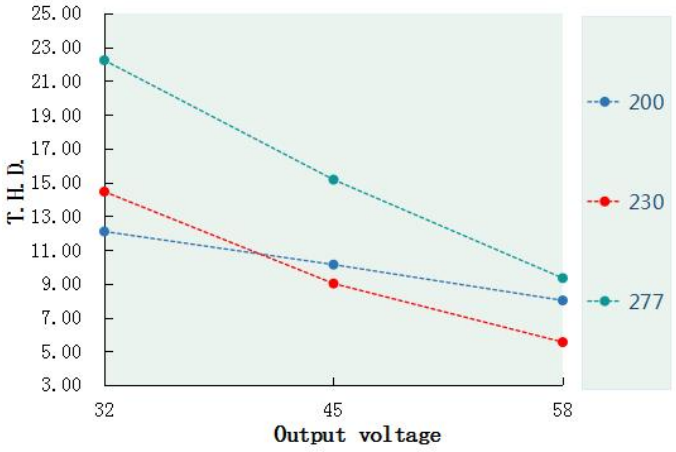
Power factor VS Input voltage(DL-100H-58A/S-MAL)



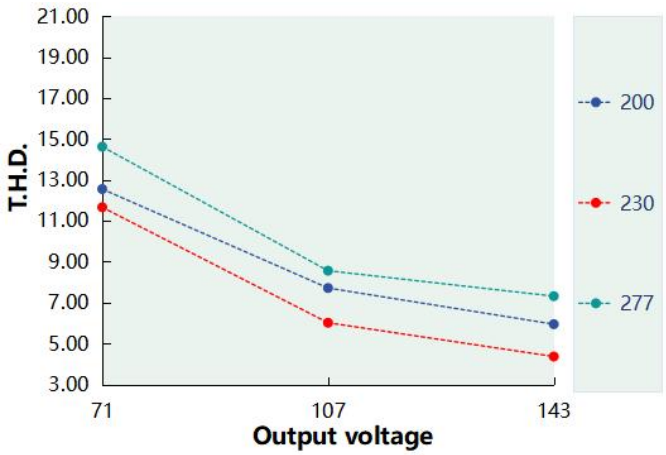
Power factor VS Input voltage(DL-100H-143A/S-MAL)



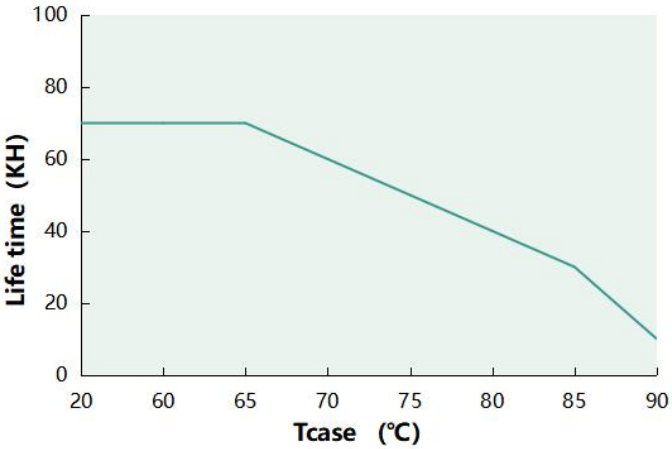
T.H.D. VS Output voltage(DL-100H-58A/S-MAL)



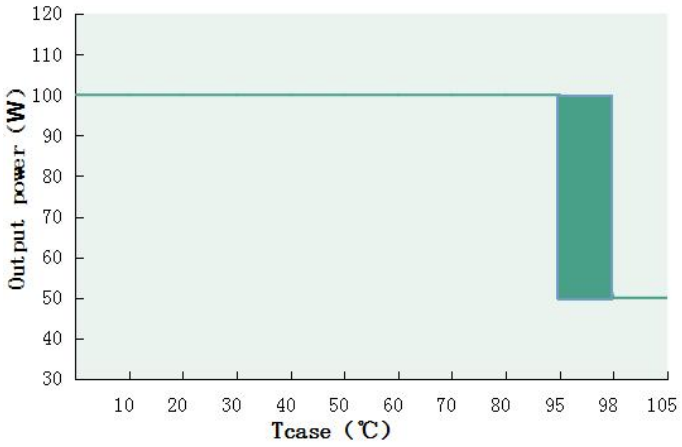
T.H.D. VS Output voltage(DL-100H-143A/S-MAL)



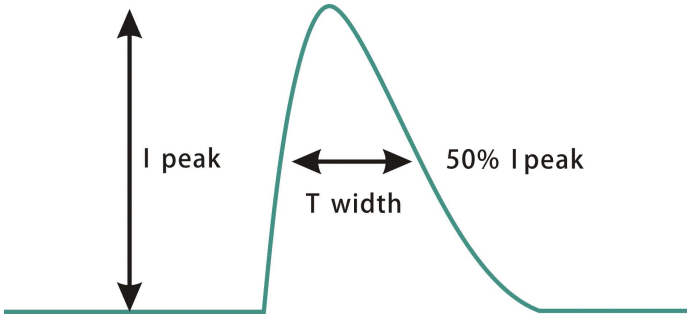
Tcase VS Lifetime(DL-100H-MAL)



Output power VS Tcase (DL-100H-MAL)

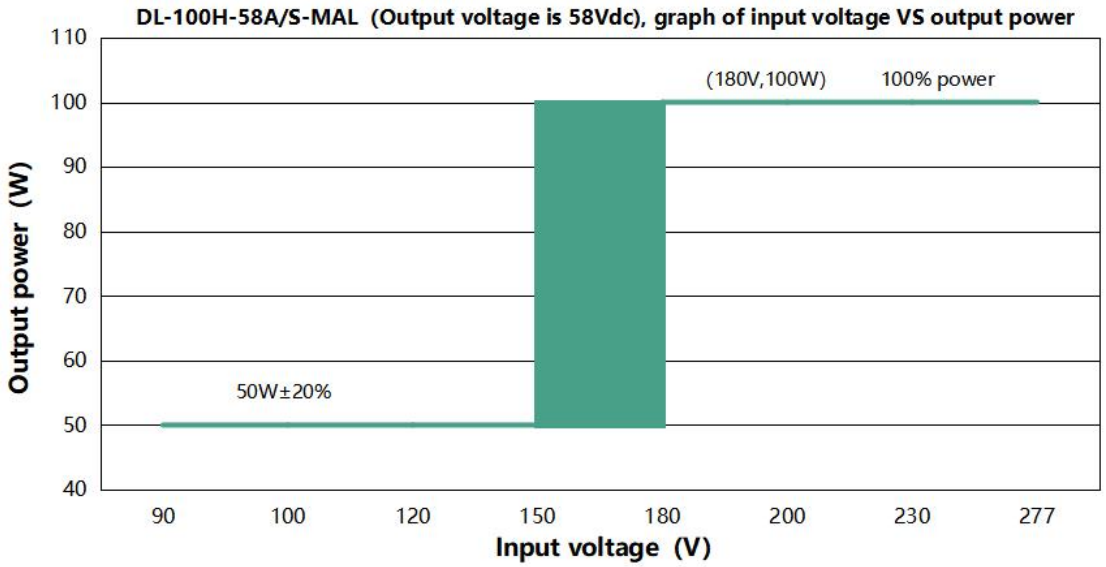


Inrush Current(DL-100H-MAL)



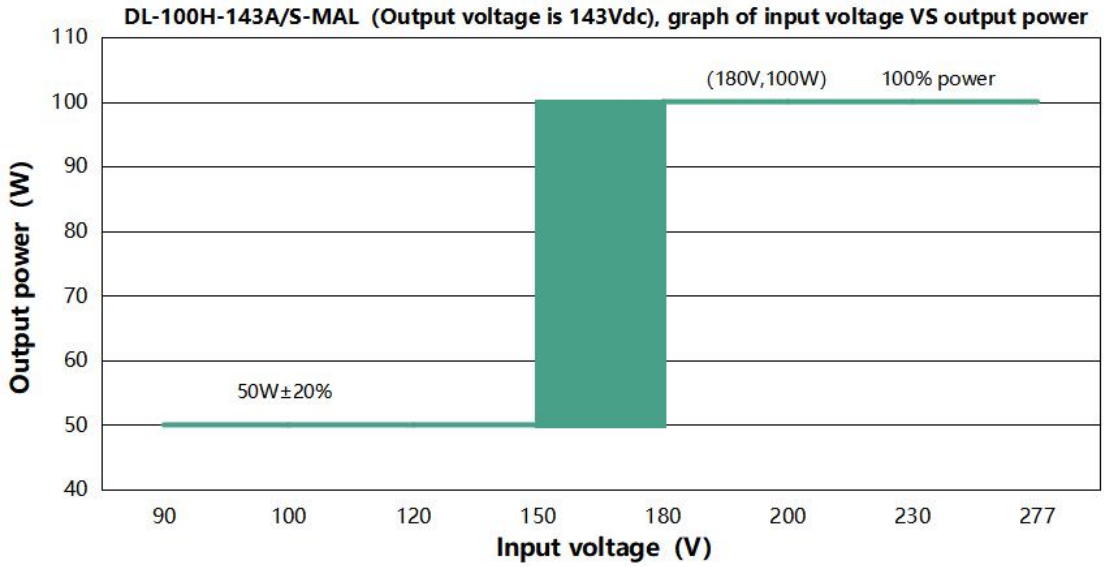
Input voltage	Peak current	T(@50% Peak current)
200Vac	74.3A	1.185us
230Vac	75.4A	1.170us
277Vac	75.9A	1.200us

Output power VS Input voltage



DL-100H-58A/S-MAL (For output 58Vdc, the rated output current & power under different input voltage)							
Input Voltage	100Vac	120Vac	150Vac	180Vac	200Vac	230Vac	277Vac
Iout	0.86A	0.86A	0.86A	1.72A	1.72A	1.72A	1.72A
Pout	50W	50W	50W	100W	100W	100W	100W

Note: When the input voltage is below 165±15Vac,the output power decreases to 50W±20%.



DL-100H-143A/S-MAL (For output 143Vdc, the rated output current & power under different input voltage)								
Input Voltage	90Vac	100Vac	120Vac	150Vac	180Vac	200Vac	230Vac	277Vac
Iout	0.35A	0.35A	0.35A	0.35A	0.7A	0.7A	0.7A	0.7A
Pout	50W	50W	50W	50W	100W	100W	100W	100W

Note: When the input voltage is below 165±15Vac,the output power decreases to 50W±20%.

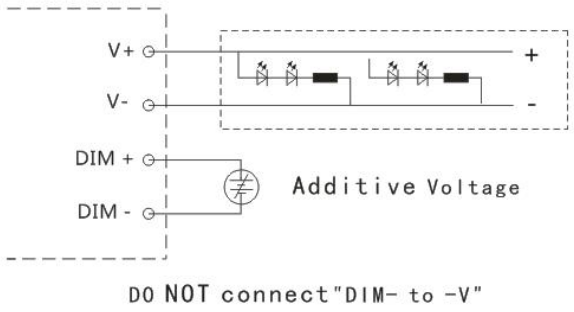
Dimming function

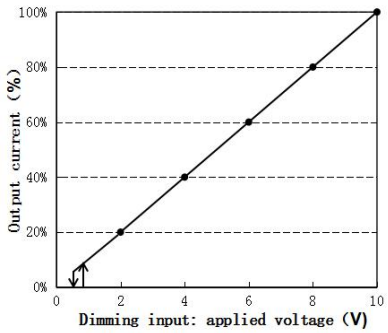
※ Three-in-one dimming function (S version only)

A. To adjust the output current, applying one of the three methods between DIM+ and DIM- : a resistor of 0-100K, or any voltage of 0-10V , or a PWM signal with amplitude of 10V.

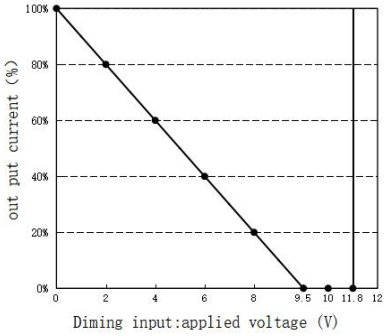
B. output current of dimming port: 100uA (typical value).

◎ **With 0-10V dimming voltage(for both logic,negative and positive):**



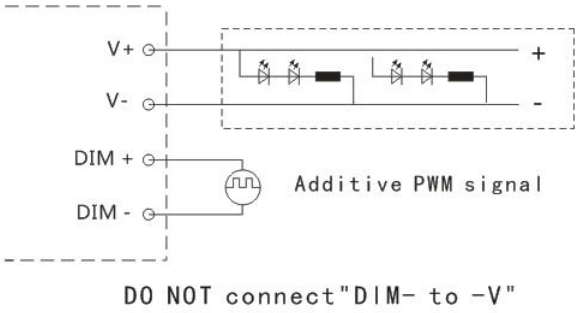


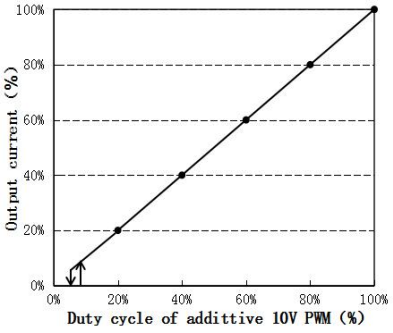
Positive logic dimming curve



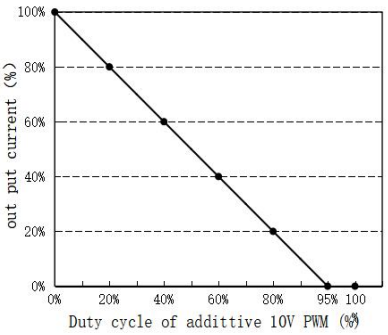
Negative logic dimming curve

◎ **With 10V PWM signal（Frequency range：300Hz-2K Hz）：**



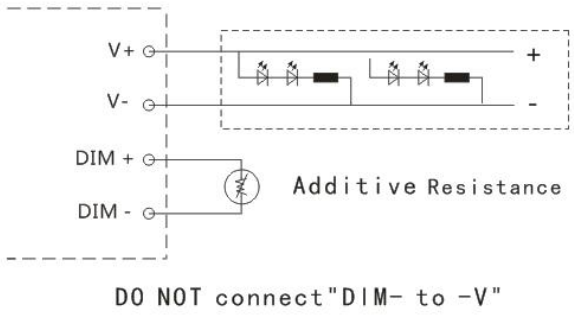


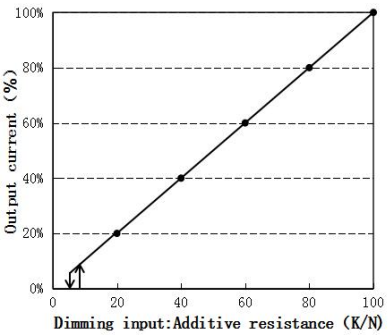
Positive logic dimming curve



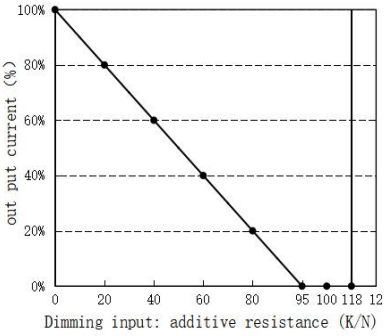
Negative logic dimming curve

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





Positive logic dimming curve



Negative logic dimming curve

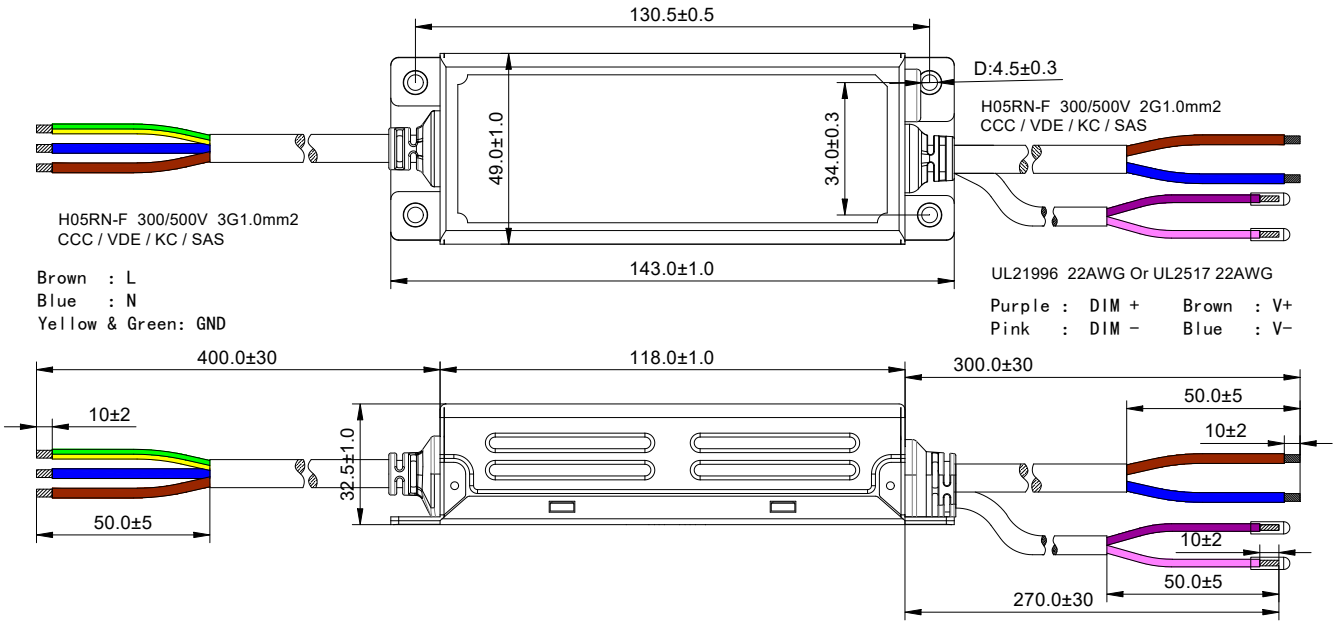
Remark:

1. It is recommended to use 0-10V and the equivalent 3-in-1 dimmer, and the default state is to dim-off but can’ t meet the requirement of less than 0.5W standby power. If ERP is necessary, a 1-10V or equivalent dimming is suggested with no dim-off function. please contact the technicians for help.
2. The dimming logic can’ t be changed because it is not a program controlled type. Make sure you choose the right version of positive logic dimming or negative logic dimming .

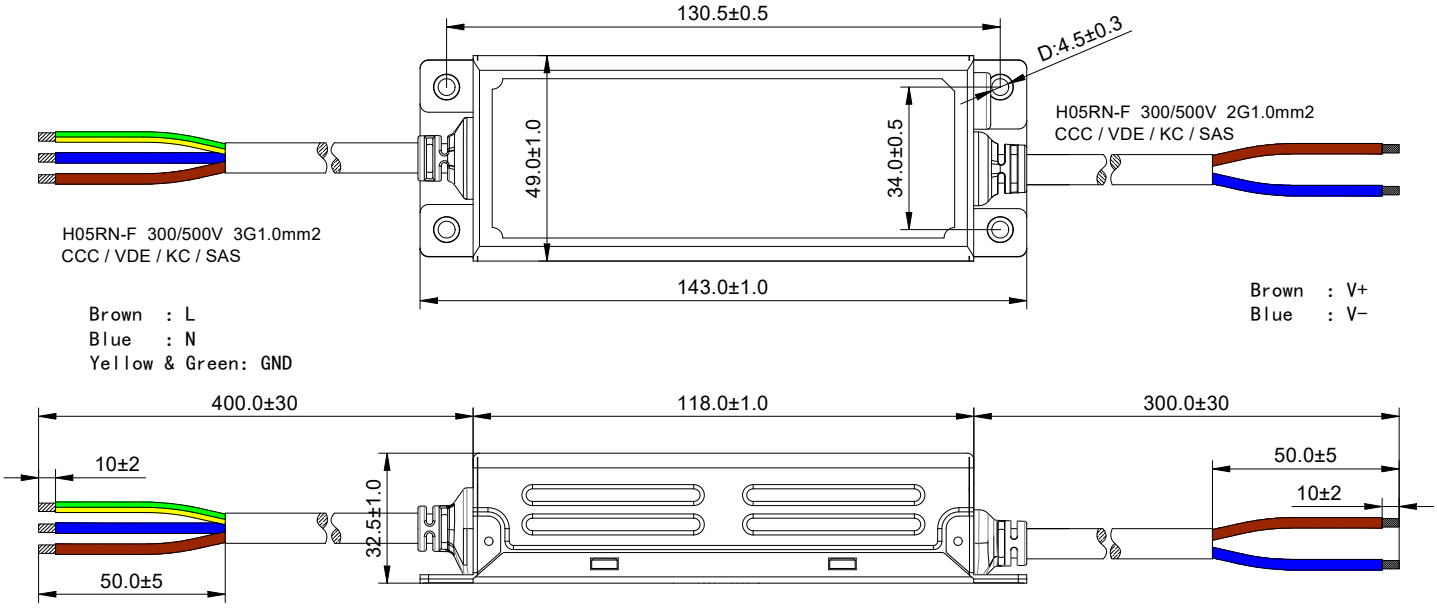
Mechanical specification

Size (mm)	L143*W49*H32.5

DL-100H-58S/143S-MAL



DL-100H-58A/143A-MAL

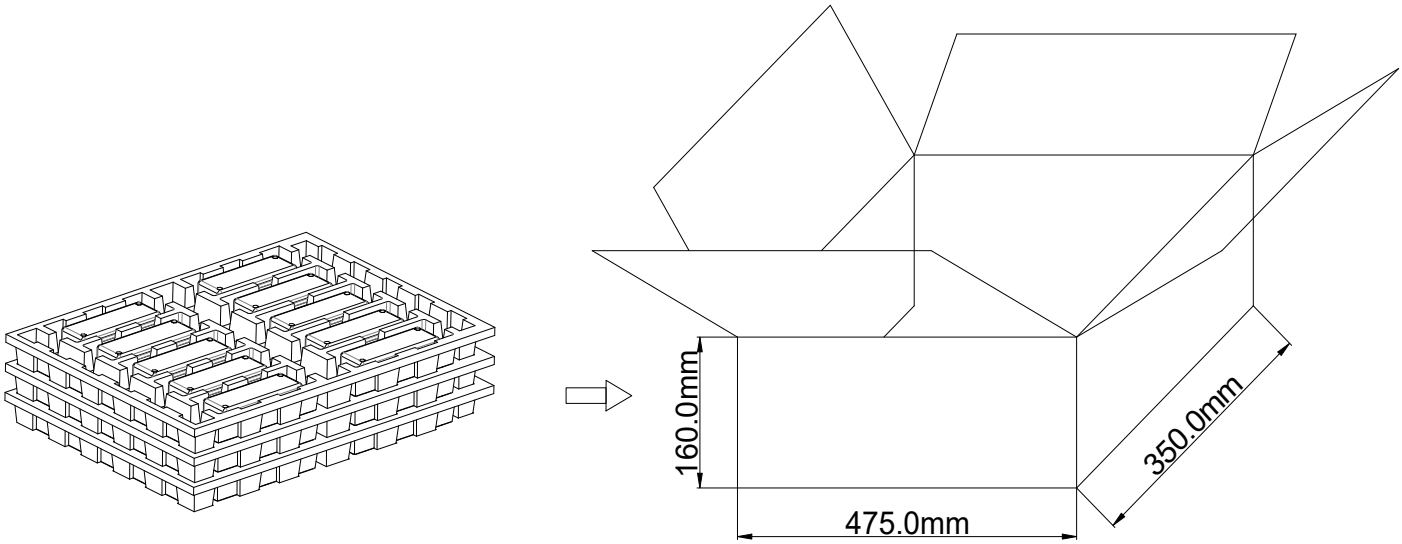


Weight

Weight	450 g

Packaging

Packaging (mm)	L475*W350*H160



Note：One Carton 3 layers and 10 pcs each layer, total 30pcs/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
2023.10.24	Initial version.	V1.0	
2023.11.20	The dimmer port increases the floating voltage, please note	V1.1	
2024.04.08	Added negative logic function	V1.2	
2024.10.21	Add 100H-143A/S-MAL version.	V1.3	

MANUFACTRUER		
EDIT	CHECK	APPROVE