MAL SERIES LED DRIVER

DL-60ZK-B58A/P-MAL Specification V1.1

GUANGDONG DONE POWER TECHNOLOGY CO.,LTD

Features

- Suitable for luminaire with protection Class II
- Efficiency :90%(Typ.)
- Function selection:

  A: Adjusted by external potentiometer

  P: Isolated 3-in-1 dimming 0-10V/PWM/Resistor
- Ingress protection rating：IP67
- Input surge protection：DM 4kV
- All-Around protection: SCP/OTP/OVP
- Warranty: 5 years



Applications

Road lighting

Venue lighting

Floodlight lighting

Landscape lighting

Model list

Model NO.	Input voltage	Output power	Output voltage	Output current	Default current	Eff. (Typ.)	THD	PF
DL-60ZK-B58A-MAL DL-60ZK-B58P-MAL	100-277V	60W	32-58Vdc	0.86-1.43A	1.03A	90%	≤10%	0.97

Note :

1.Test conditions for the above parameters: At 100%Load 30 minutes,230 Vac;

2.The maximum output power is 60W ; please refer to the output power Vs. input voltage curve.

Input characteristics

Parameter	Min	Typ.	Max	Notes
Input AC voltage range	90Vac	-	305Vac	Refer to output power Vs. input voltage derating curve
Input frequency	47Hz	50/60Hz	63Hz	
Leakage current	-	-	0.70 mA	IEC 60598-1; 277Vac/60Hz
Power factor(PF)	0.93	0.95	-	230V 50Hz，100% load
	0.90	-	-	120-277V 50Hz，70%-100% load
THD	-	-	10%	230Vac，100% load
	-	-	20%	120-277Vac，70%-100% load
Input current	-	-	0.77A	120Vac，100% load
Inrush current	-	-	55A	At 230Vac and 25℃ cold start

Output characteristics

Parameter	Min	Typ.	Max	Notes
Efficiency	88%	90%	-	@230Vac,100% load ,Io=1.03A
Output voltage range	32V	-	58V	100%load output voltage range: 42-58V
Open circuit voltage	-	-	75V	
Output current range	0.86A	-	1.43A	Default current :1.03A
Output current tolerance	-5%	-	+5%	100% load
Line regulation	-5%	-	+5%	100% load
Load regulation	-5%	-	+5%	60%-100% load
Turn-on delay time	-	-	1.0s	@230Vac,100% load

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

Dimming characteristics(P version only)

Parameter		Min	Typ.	Max	Notes
0-10V Dimming	Absolute Maximum Voltage on the Vdim (+) Pin	0V	-	15V	
	Source Current on Vdim (+)Pin	-	90μA	100μA	
	Safe operating voltage	0V	-	12V	
	Dimming range	0%	-	100%	
	Recommended dimming input range	1V	-	10V	Drive can be dimmed off at 0V , but the standby power > 0.5W
	Turn-on voltage	0.6V	0.8V	1.0V	Dimming off may result in afterglow, which needs to be verified through the whole-lamp test
	Turn-off voltage	0.4V	0.5V	0.6V	
PWM Dimming	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	0%	-	99%	Full power output at 99% duty cycle
	Turn-on duty cycle	6%	8%	10%	
	Turn-off duty cycle	4%	5%	6%	
Resistor Dimming	External resistor value	0Ω	-	100KΩ	
	Dimming range	0%	-	100%	

Note:

1. Factory default: Three-in-one dimming, 0-10V, positive logic, with cut-off. (There may be residual light after cut-off. It needs to be tested on the entire lamp to confirm.)

2. Other dimming methods (0-5V voltage, negative logic, no cut-off, etc.) can be programmed.

Typical values of each parameter at 25 °C, unless otherwise noted.

Protection

Protection	description
Output overload protection	recovers automatically after fault condition is removed
Output short circuit protection	recovers automatically after fault condition is removed
Over temperature protection	Self-recovery type ,when the casing temperature is 90-105℃, the output power decreases , recovers automatically after fault condition is removed
Output over-voltage protection	recovers automatically after fault condition is removed

Environmental

Categories	Parameter
Operating temperature Ta	-40℃ - +45℃@100-199Vac -40℃ - +55℃@200-277Vac
Operating case temperature	-40℃ ~ 90℃
Operating case temperature for a 5 year warranty	-40℃ ~ +75℃
Storage temperature,humidity	-40℃ ~ +80℃, 5% ~ 95% RH
Resistant to vibration	10Hz ~ 500Hz, 5G 12 min/cycle, X, Y, Z axis 72 min each
MTBF	200,000 hours (MIL-HDBK-217F),Ta=25℃,230Vac, 80% load
Lifetime	50,000 hours @Tc≤75℃,230Vac, 80% Load

Safety

Safety Categories	Area	Standards	Approved
CCC	China	GB/T 19510.1, GB/T 19510.213	√
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)	

Typical values of each parameter at 25 °C, unless otherwise noted.

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	√
EAC	Russia	ГОСТ IEC 61547-2013 ГОСТ CISPR 15-2014 ГОСТ IEC 6100-3-2-2017 ГОСТ IEC 6100-3-3-2015	
FCC	USA	FCC Part 15 Subpart B	

Note:

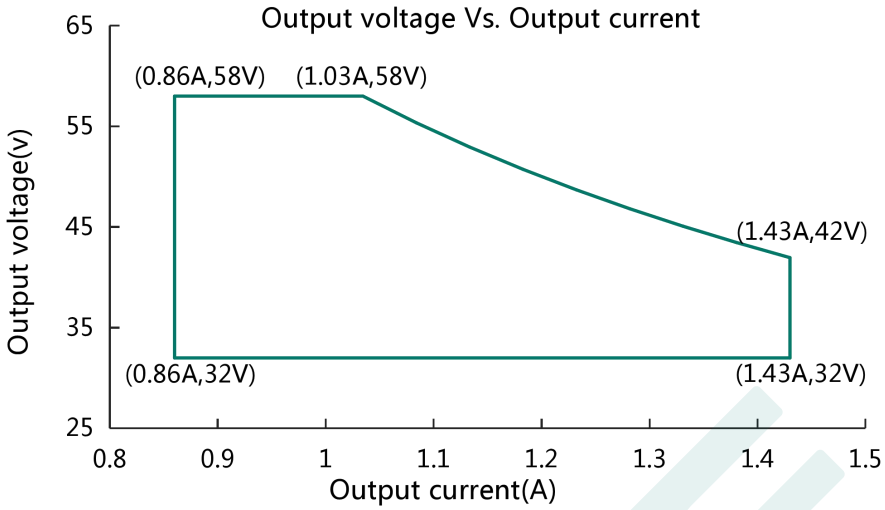
1.Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.

2.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.

Safety Test Items:

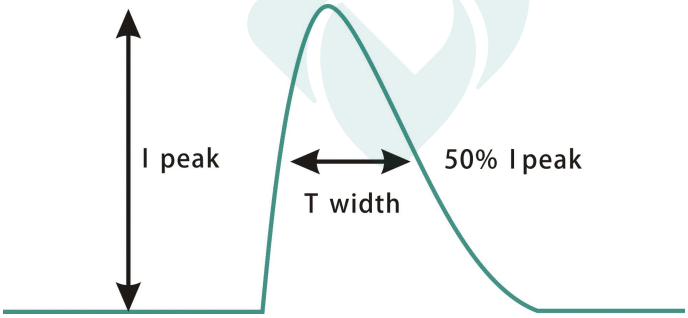
Safety Test Items	Input	Output	Dim	Case
Input	/	Reinforced Insulation	Reinforced Insulation	Reinforced Insulation
Output	Reinforced Insulation	/	Reinforced Insulation	Reinforced Insulation
Dim	Reinforced Insulation	Reinforced Insulation	/	Basic Insulation
Case	Reinforced Insulation	Reinforced Insulation	Basic Insulation	/
Insulation Resistance	≥10MΩ			
Grounding Resistance	≤0.1Ω			

I-V Working area



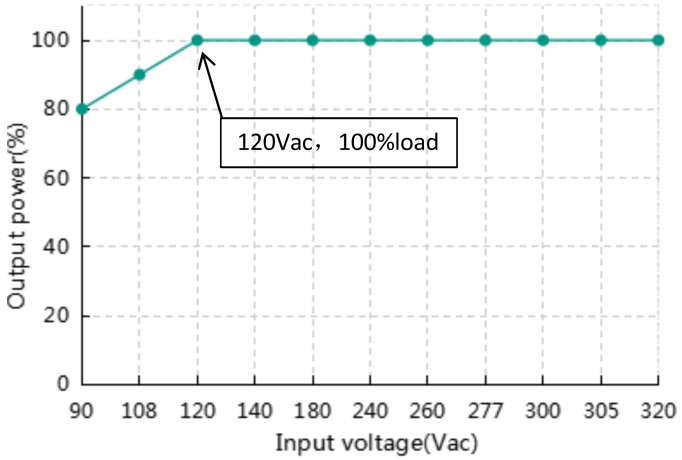
Load	Output								
Output Voltage	32V	36V	39V	42V	46V	49V	52V	55V	58V
Output Current Io_MAX	1.43A	1.43A	1.43A	1.43A	1.30A	1.22	1.15A	1.09A	1.03A
Output Power Po_MAX	45.8W	51.5W	55.8W	60.0W	60.0W	60.0W	60.0W	60.0W	60.0W

Inrush Current

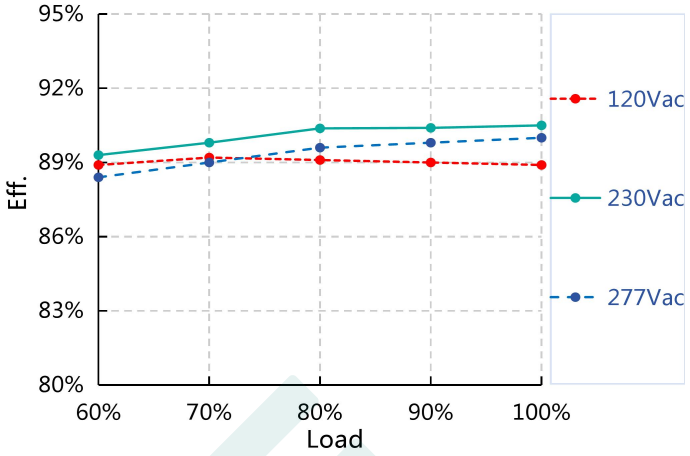


Input voltage	Peak current	T(@50% Peak current)
120Vac	30A	160us
230Vac	55A	165us
277Vac	60A	175us

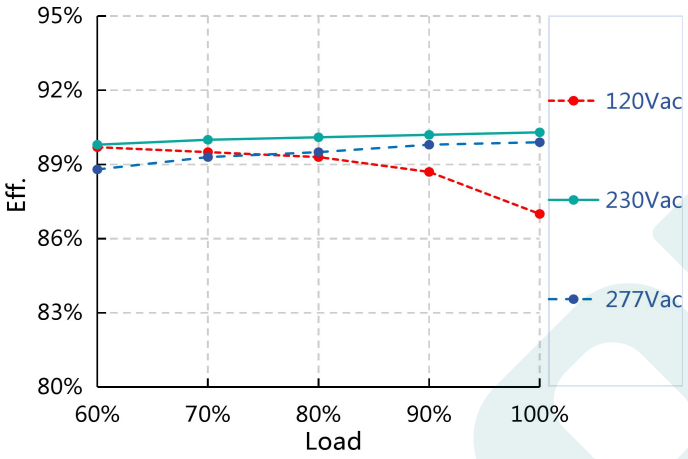
Output power Vs. Input voltage



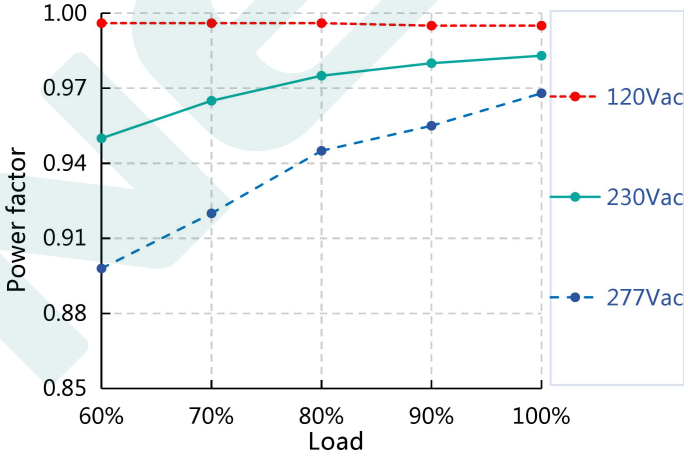
Eff. Vs. Load (Io=1.03A)



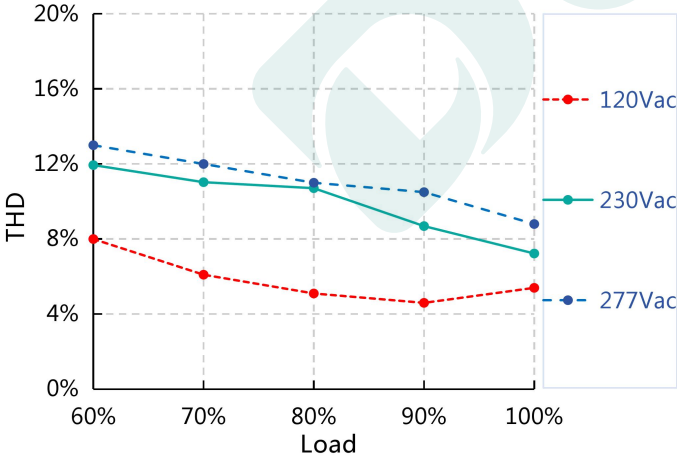
Eff. Vs. Load (Io=1.43A)



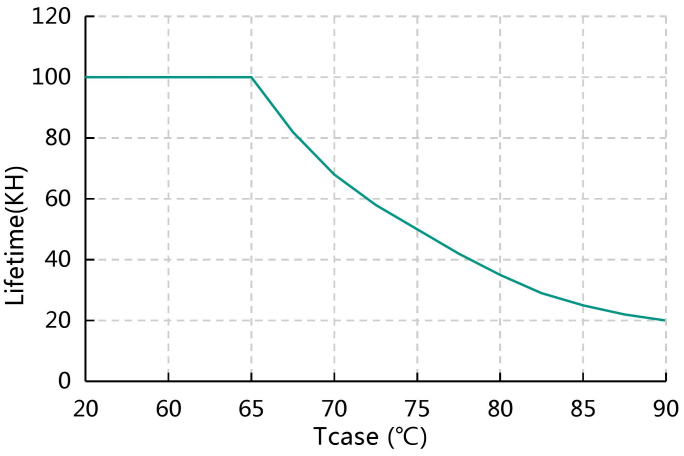
PF Vs. Load



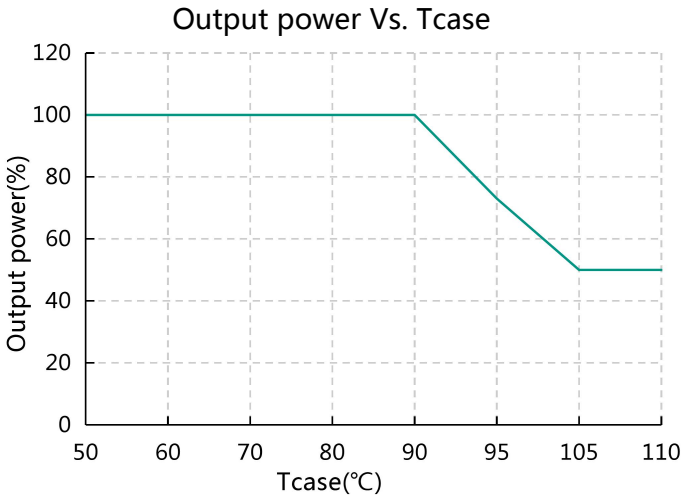
THD Vs. Load



Lifetime Vs. Tcase



Typical values of each parameter at 25 °C, unless otherwise noted.

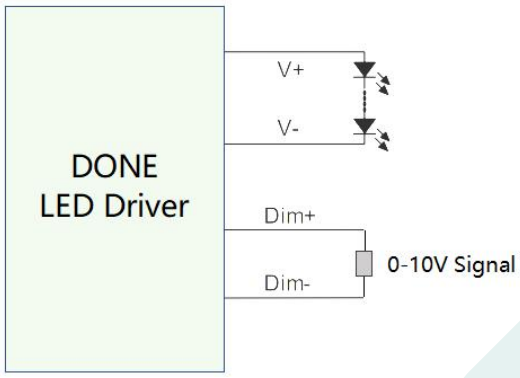


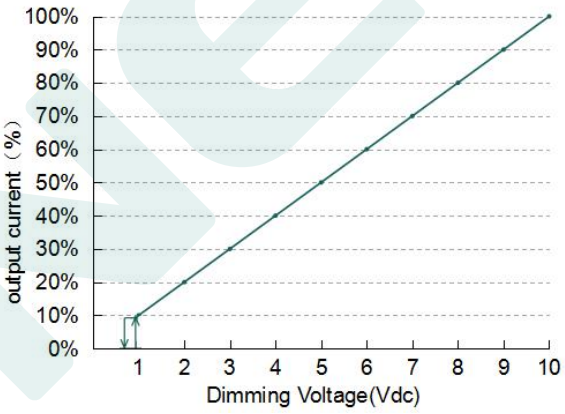
Dimming operation

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

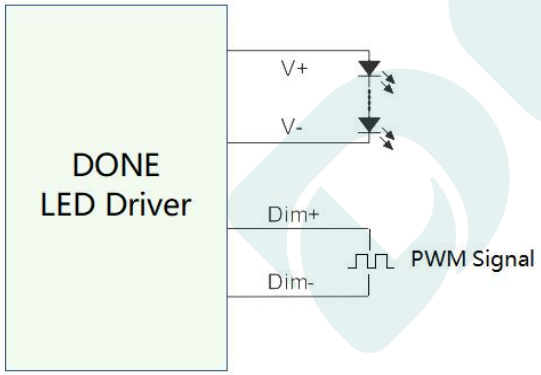
Connect a 0-10V Dimmer or 10V PWM signal or resistor between DIM+ and DIM-

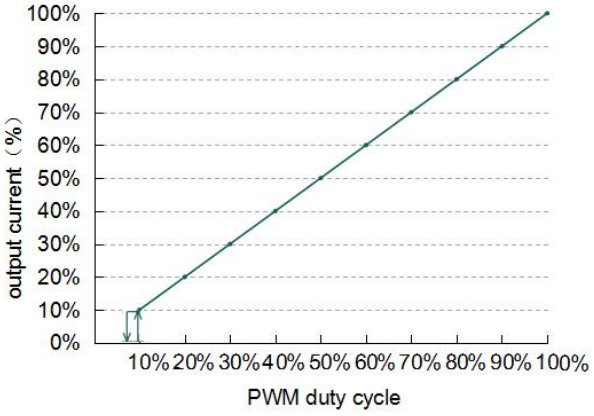
- **0-10V dimming:**



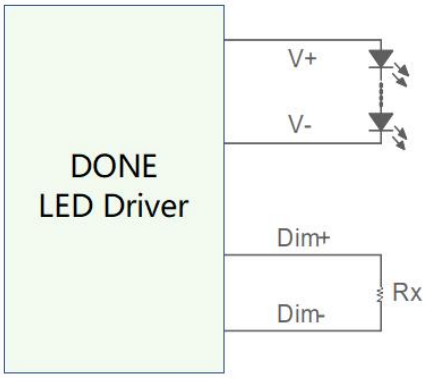


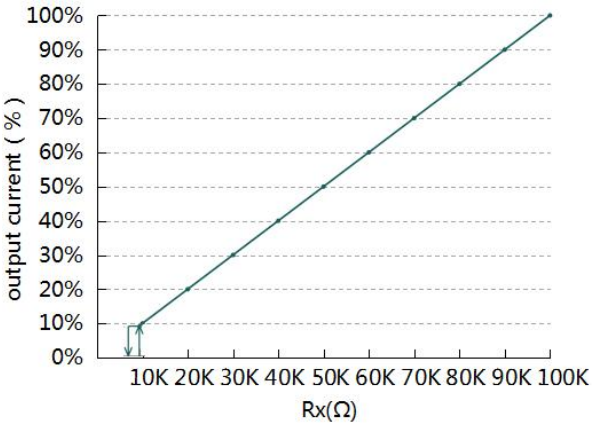
- **PWM dimming：**





- **Resistor Dimming:**





Typical values of each parameter at 25 °C, unless otherwise noted.

Programmable Connections

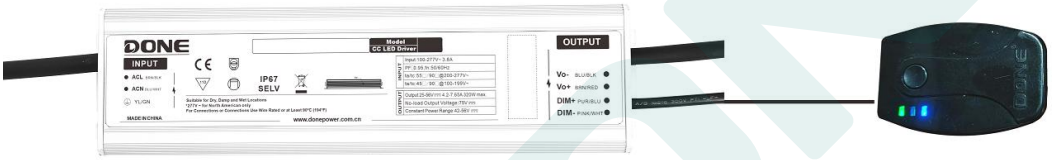
Mode 1



Visual Programming

1. Set the output parameters, output current, positive/negative logic for dimming, dimming shutdown, and dimming without shutdown through the control of signal lines.
2. After setting is completed, click the "Save" button to download it to the offline program, and the driver settings are finished.

Mode 2

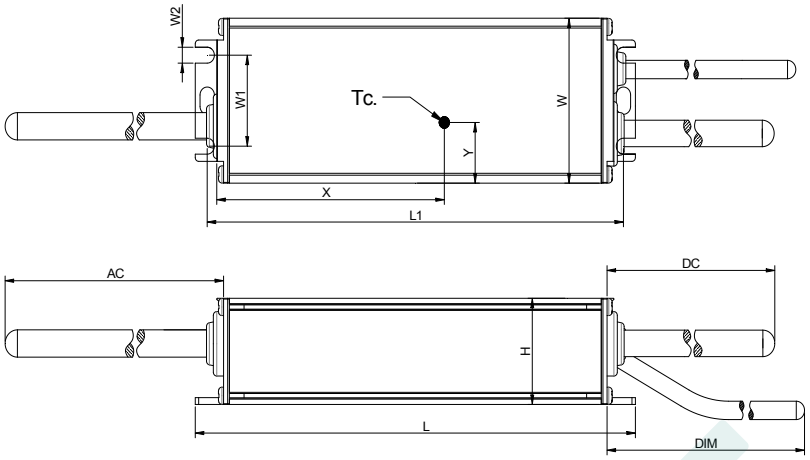


Offline Programming:

1. Download the program to the programmer;
2. Connect the programming cable to the programmer and press the programmer button. The programmer will emit a "beep" sound, and the indicator light will turn green, indicating that the installation is complete.

For detailed information, please refer to the "DONE POWER OFFLINE PROGRAMMING TOOL V2.0" file.

Mechanical Size Drawing



Installation Size

Type	Reference No.	Overall Size (mm)	Reference No.	Mounting Hole Size (mm)	Reference No.	Screw Hole Size (mm)	Reference No.	Tc Point (mm)
Length	L	130±1	L1	123±1	-	-	X	66.5
Width	W	43.5±0.5	W1	24±0.5	W2	4.2	Y	16
Height	H	28±0.5	-	-	-	-	-	-
Size	L130*W43.5*H28 (mm)							
Weight	345g							

Line Specification

Type	AC Line			DC Line		DIM Dimming Line		
Line Name	L	N	GND	V+	V-	DIM+	DIM-	Vaux+
	Brown	Blue	/	Brown	Blue	Purple	Pink	/
Exposed Length (mm)	400±15			250±15		270±15		
Strip Length (mm)	50±5			50±5		50±5		
Tinning Length (mm)	10±2			10±2		10±2		
Line Specification	H05RN-F 2x1.0mm² OD:6.8mm VDE / CCC / KC / SAA			H05RN-F 2x1.0mm² OD:6.8mm VDE / CCC / KC / SAA		UL21996 22AWG OD:5.0mm		

Packaging

Packaging Size	L475*W350*H160mm
Package Qty	42PCS/Carton

Version

DATE	DESCRIPTION	REV.	CHECK
2026.9.8	Initial version	V1.0	
2026.9.24	Adjust input current	V1.1	JH 2026.09.29 08:53:51 +08'00' LYF 2026.09.29 17:19:19 +08'00'

MANUFACTRUER		
EDIT	CHECK	APPROVE
LYS 2026.09.27 13:48:45 +08'00' LX 2026.09.28 08:10:26 +08'00'	TQC 2026.09.28 20:32:31 +08'00'	数字签名者：ZHS DN：cn=ZHS, o=DONE, ou=YFZX, email=zhanghongsheng@donepower.com, c=CN 日期：2026.09.30 08:31:23 +08'00'