



Datasheet

MB Series - 50W

Outdoor LED Driver Dimmable(US Standard)

Richmat 豪江

Believe in the Power of Quality

PRODUCT:



FEATURES:

- Efficiency up to 89%
- PF>0.95, THD<10%
- Full power output within recommended operating voltage range
- Constant Current output
- Output current is manually adjustable
- 3 in 1 Dimming Function: 0-10V、PWM、Resistor (Model S)
- Lightning protection level : Difference module 6KV , Common mode 15KV
- IP67 rating for indoor and outdoor
- Protections: BOP、OTP、SCP、OVP- Dimming Interface
- Metal Housing Design with Functional Ground
- Warranty: 5 Years

CERTIFICATIONS:



APPLICATIONS:

LED Street lighting
LED Flood Light
LED Tunnel Lighting
LED High bay Lighting

PRODUCT OVERVIEW:

The HJ-W50-MB series is an isolated two-stage circuit structure outdoor constant current drive power supply with a rated output power of 50W. Applying self-developed patented technology, the driving power supply has superior performance under a wide range of input and output conditions, and has high power conversion efficiency, making it a green and energy-saving product. Its adjustable output current and precise dimming control are beneficial to LED lighting design; it has comprehensive active and passive protection functions, which can effectively cope with various harsh working conditions. It has high reliability and low defect rate, which helps reduce the cost of lighting manufacturers.

MODULE	Rated input voltage	Rated output power	Output voltage range	Recommended operating voltage	Adjustable range of output current	Power factor	T.H.D	Efficiency	Max. Case Temp.
HJ-W50-V56A-MB	120-277V	50W	25-56Vdc	30-56Vdc	0.6-1.7A	0.95	10%	89%	90°C
HJ-W50-V56S-MB	120-277V	50W	25-56Vdc	30-56Vdc	0.6-1.7A	0.95	10%	89%	90°C
HJ-W50-V72A-MB	120-277V	50W	36-72Vdc	48-72Vdc	0.5-1.05A	0.95	10%	89%	90°C
HJ-W50-V72S-MB	120-277V	50W	36-72Vdc	48-72Vdc	0.5-1.05A	0.95	10%	89%	90°C

Remarks: 1. Test conditions of the above parameters: Ta=25C, 230Vac input, full load operation for 30 minutes;
2. The driver can operate normally throughout the entire rated output voltage range, ensuring superior performance of the LED driver within the recommended operating voltage range.

INPUT:

Parameter	Min	Typ.	Max	Note
Rated input voltage	120Vac		277Vac	
Input voltage range	108Vac		305Vac	
Input frequency range	47Hz	50/60Hz	63Hz	
Input current			0.55A	120Vac, Full Load
Input power			66W	120Vac, Full Load
Input surge current peak value			60A	120Vac, Cold Start
			70A	230Vac, Cold Start
			80A	277Vac, Cold Start
Power factor	0.97	0.99		120Vac, Full Load
	0.95	0.96		230Vac, Full Load
	0.93	0.95		277Vac, Full Load
	0.9			120-277Vac 50/60Hz, 70-100% Load
Total harmonic distortion		3%	7%	120Vac, Full Load
		7%	10%	230Vac, Full Load
		9%	15%	277Vac, Full Load
			20%	120-277Vac 50/60Hz, 70-100% Load

Remark: All performance parameters are measured at an ambient temperature of 25°C and with the use of LED load, unless otherwise specified.

OUTPUT: HJ-50W-V56A/S-MB

Parameter	Min	Typ.	Max	Note
Output voltage range	25V		56V	
Rated output voltage	30V		56V	At the rated output voltage, the maximum output power $P_o = V_o \cdot I_o = 50W$
Rated output current	0.89A		1.66A	
Default factory output current		1.5A		
Current adjustment range	0.6A		1.7A	Refer to the AOC curve
Maximum no-load output voltage			80V	
Efficiency	84.5%	85.0%		Input 120Vac, Output 30V/1.66A
	87.0%	87.5%		Input 230Vac, Output 30V/1.66A
	87.5%	88.0%		Input 277Vac, Output 30V/1.66A
	85.0%	86.0%		Input 120Vac, Output 56V/0.89A
	88.0%	89.0%		Input 230Vac, Output 56V/0.89A
	88.5%	89.0%		Input 277Vac, Output 56V/0.89A
Current accuracy	-5%		+5%	100% load Constant Power Range
Output current ripple		5%	10%	$\Delta I = I_{pk} - p_k / I_o \cdot 100\%$
Startup current overshoot			10%	LED Load
Startup time	300ms		1000ms	100%Load@120-277Vac
Linear regulation rate	-3%		+3%	100%Load
Load regulation rate	-3%		+3%	100%Load
Temperature coefficient	-0.03%/°C		+0.03%/°C	Casing Temp. : 0-90°C
Over temperature protection	90°C		100°C	Casing temperature: Prolonged operation at the highest temperature will reduce the reliability of the power supply. Pay attention to heat dissipation when in use.
Short circuit protection			5W	Not damaged by prolonged short circuits, automatic recovery upon fault resolution.
Input undervoltage protection	96Vac	102Vac	108Vac	Derated output, returns to normal after the abnormal condition is resolved.

Remark: After adjusting the current, seal the adjustable potentiometer hole with 704 silicone, and cover it with the waterproof plug.

OUTPUT: HJ-50W-V72A/S-MB

Parameter	Min	Typ.	Max	Note
Output voltage range	36V		72V	
Rated output voltage	48V		72V	At the rated output voltage, the maximum output power $P_o=V_o \cdot I_o=50W$
Rated output current	0.7A		1.05A	
Default factory output current		0.7A		
Current adjustment range	0.6A		1.7A	Refer to the AOC curve
Maximum no-load output voltage			90V	
Efficiency	86.0%	86.5%		Input 120Vac, Output 48V/1.05A
	88.5%	89.0%		Input 230Vac, Output 48V/1.05A
	88.5%	89.0%		Input 277Vac, Output 48V/1.05A
	86.0%	86.5%		Input 120Vac, Output 72V/0.7A
	88.5%	89.0%		Input 230Vac, Output 72V/0.7A
	88.5%	89.0%		Input 277Vac, Output 72V/0.7A
Current accuracy	-5%		+5%	100% load Constant Power Range
Output current ripple		7%	10%	$\Delta I = I_{pk-pk} / 2 / I_o \cdot 100\%$
Startup current overshoot			10%	LED Load
Startup time	300ms		1000ms	100%Load@120-277Vac
Linear regulation rate	-3%		+3%	100%Load
Load regulation rate	-3%		+3%	100%Load
Temperature coefficient	-0.03%/°C		+0.03%/°C	Casing Temp. : 0-90°C
Over temperature protection	90°C		100°C	Casing temperature: Prolonged operation at the highest temperature will reduce the reliability of the power supply. Pay attention to heat dissipation when in use.
Short circuit protection			5W	Not damaged by prolonged short circuits, automatic recovery upon fault resolution.
Input undervoltage protection	98Vac	102Vac	108Vac	Derated output, returns to normal after the abnormal condition is resolved.

Remark: After adjusting the current, seal the adjustable potentiometer hole with 704 silicone, and cover it with the waterproof plug.

DIMMING

Parameter	Description	Min	Typ.	Max	Note
0-10V Dimming	External voltage range	0V		12V	DIM+ output 100uA current
	Recommended dimming voltage	1V		10V	
	Dimming output range	10%		100%	DIM+/DIM-reverse connection prohibited.
	Dimming cutoff voltage	0.45V	0.50V	0.49V	
	Dimming start voltage	0.51V	0.55V	0.60V	
PWM Dimming	PWM High	9.8V		10.2V	DIM+ output 100uA current
	PWM Low	0V		0.3V	DIM+/DIM-reverse connection prohibited.
	PWM Frequency	500Hz		2KHz	
	Recommended dimming duty cycle	10%		100%	
	Dimming output range	10%		100%	
	Dimming cutoff duty cycle	4.0%	4.5%	4.9%	
	Dimming start duty cycle	5.1%	5.5%	6.0%	
Resistor Dimming	External resistor	0Ω		100KΩ	DIM+ output 100uA current
	Dimming output range	10%		100.0%	
	Dimming cutoff resistance	4.0KΩ	4.5KΩ	4.9KΩ	
	Dimming start resistance	5.1KΩ	5.5KΩ	6.0KΩ	
Interface protection	Interface over voltage protection			400Vdc或 277Vac	Interface not damaged within 30 minutes.

Remarks:

1. The dimming interface can withstand voltages within 277Vac for a short period of time (within 30 minutes) without damage, and returns to normal after the fault is resolved; when the dimming interface is connected to AC mains, the output current drops to half of the set current value. Construction Personnel can quickly identify and resolve faults based on this phenomenon to avoid permanent damage to the interface;
2. All performance parameters are typical values measured at an ambient temperature of 25°C and using an LED load, unless otherwise specified;
3. When the dimming line is not in use, please seal the dimming line connector with an insulating sleeve to prevent interference signals from causing damage to the dimming line and affecting the normal operation of the power supply.

OTHER:

Parameter	Description	Note
Estimation of Mean Time Between Failures (MTBF)	175,000 hours	230Vac, full load, ambient temperature 25°C (MIL-HDBK-217F).
Lifetime	50,000 hours	230Vac, full load, Tc=75°C
International Protection	IP67	Suitable for dry and humid environments, avoid prolonged exposure to rain.
Maximum casing temperature	90°C	
Warranty	5 Years	Casing temperature (Tc point) not exceeding 75°C
Weight	0.45kg	Net weight
Dimension	119mm*63mm*32mm	Length * Width * Height

ENVIRONMENT:

Parameter	Min	Typ.	Max	Note
Operating temperature	-40°C	60°C	90°C	Casing temperature
Operating humidity	10%RH		90%RH	No condensation
Storage temperature	-40°C	25°C	90°C	
Storage humidity	10%RH		90%RH	No condensation

Safety and EMC:

Items	Standard	Note
CCC	GB 19510.14-2009、GB/T 17743-2021、GB 17625.1-2022	
ENEC	EN 61347-1:2015 EN 61347-2-13:2014 EN 61347-2-13:2014/A1:2017	
CB	IEC 61347-1, IEC 61347-2-13-2016	
CE	EN 61347-2-13:2014 EN61347-1:2008+A1:2011+A2:2013	
UL	UL8750	
Conducted emission	EN 55015/GB 17743	Conducted emission Test & Radiated emission Test
Radiated emission	FCC Part 15 Subpart B	
Harmonics Current	EN 61000-3-2	Harmonic current emissions
Voltage flicker	EN 61000-3-3	Voltage Fluctuations & Flicker
ESD	EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
Radiated Susceptibility	EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
Surge (transient)	EN 61000-4-5	Surge Immunity Test: Differential Mode 6 kV, Common Mode 15 kV
Conducted immunity	EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
Power frequency magnetic field	EN 61000-4-8	Power Frequency Magnetic Field Test
Voltage dips and interruption	EN 61000-4-11	Voltage Dips
Immunity of lighting equipment	EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment
Oscillatory wave immunity	EN 61000-4-12	Oscillatory Waves Immunity Test
Insulation	I/P-O/P, I/P-FG, O/P-FG:100MΩ / 500VDC / 25°C / 70% RH	
Dielectric strength	I/P-O/P:3.75kVac I/P-FG:1.5kVac O/P-FG:500Vac I/P-DIM&Vaux:3.75kVac O/P-DIM&Vaux:1.5kVac DIM&Vaux-FG:1.5kV	
Ground resistance	<0.1Ω, 25A/1min	
Leakage current	<0.75mA 277Vac	

Note: The power supply complies with relevant EMC standards. As part of the terminal equipment system, EMC needs to be reconfirmed in conjunction with the entire system.

Characteristics Curve:

Vin	Peak current	Duration (@10% peak current)	Duration (@50% peak current)
120Vac	35A	220us	166us
230Vac	46A	217us	156us
277Vac	53A	212us	153us

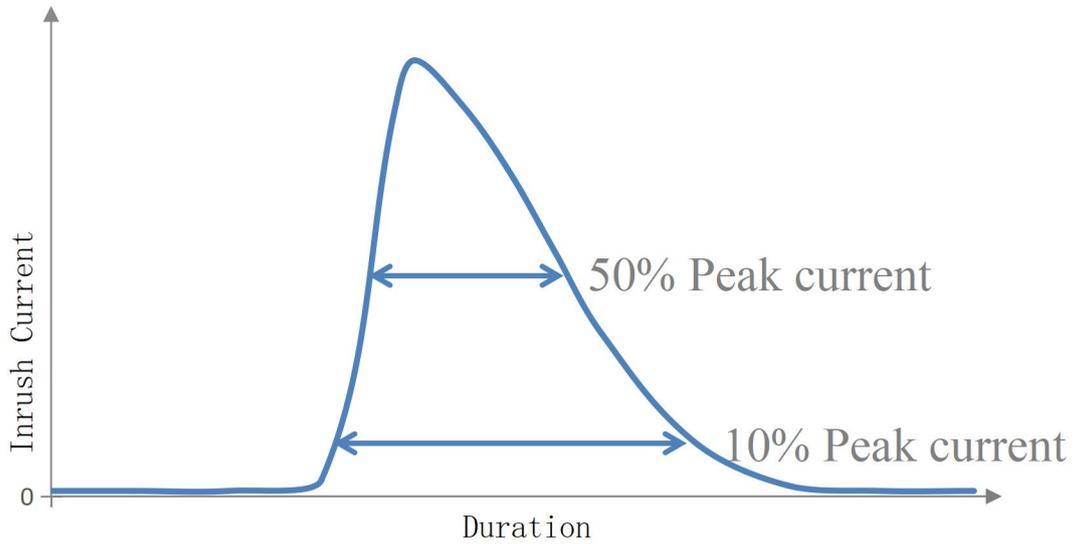


Fig. 1. Inrush Current VS Duration

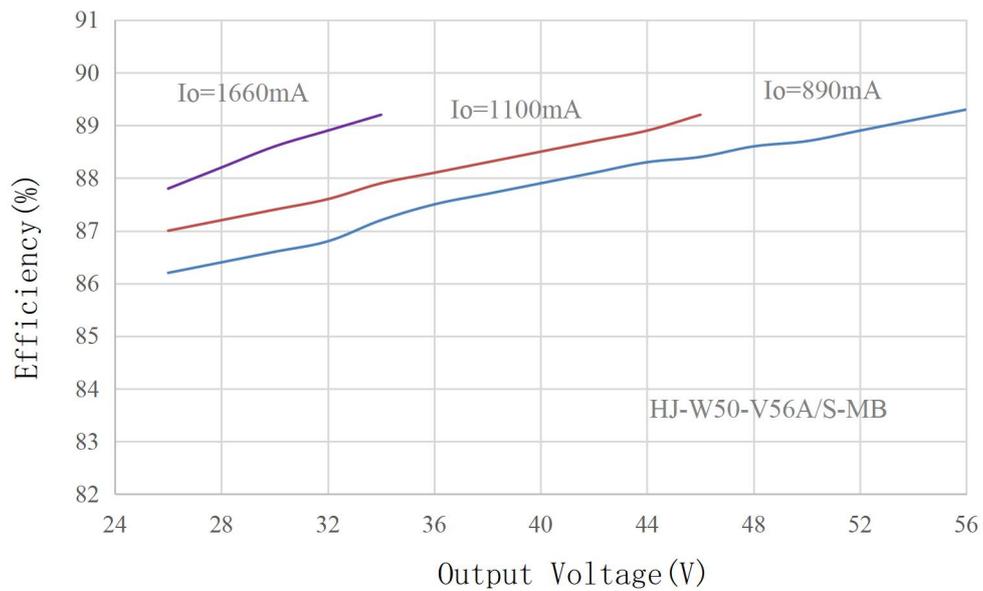


Fig. 2. Efficiency VS Output Voltage

Characteristics Curve:

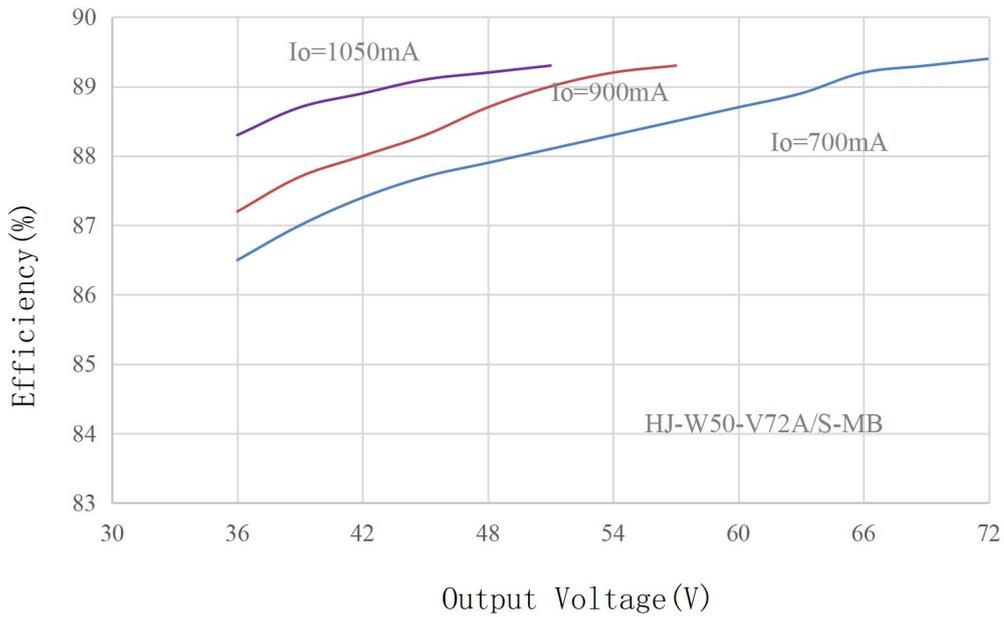


Fig.3. Efficiency VS Output Voltage

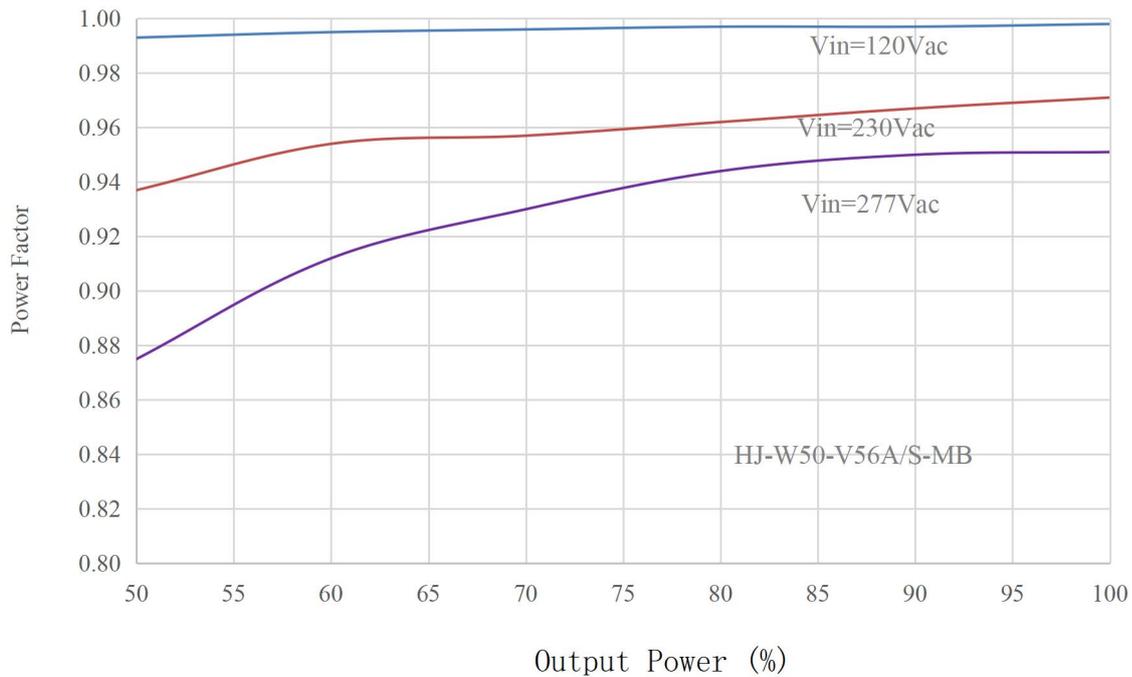


Fig 4. Power Factor VS Output Power

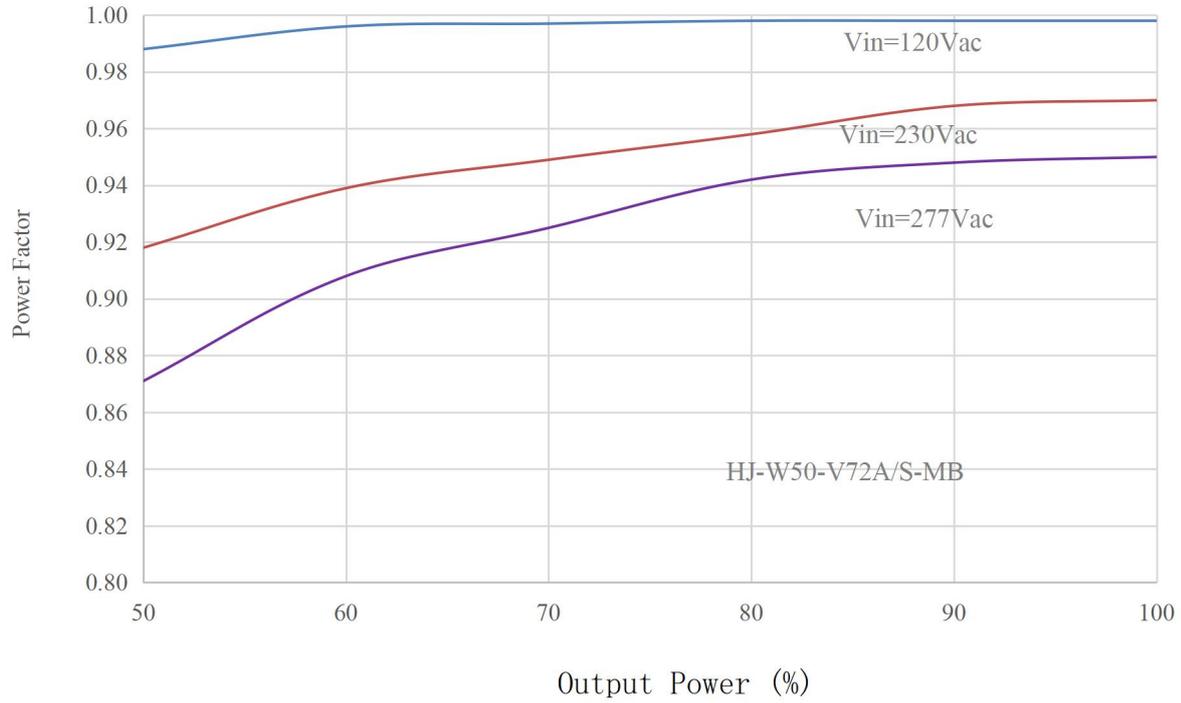


Fig 5. Power Factor VS Out Power

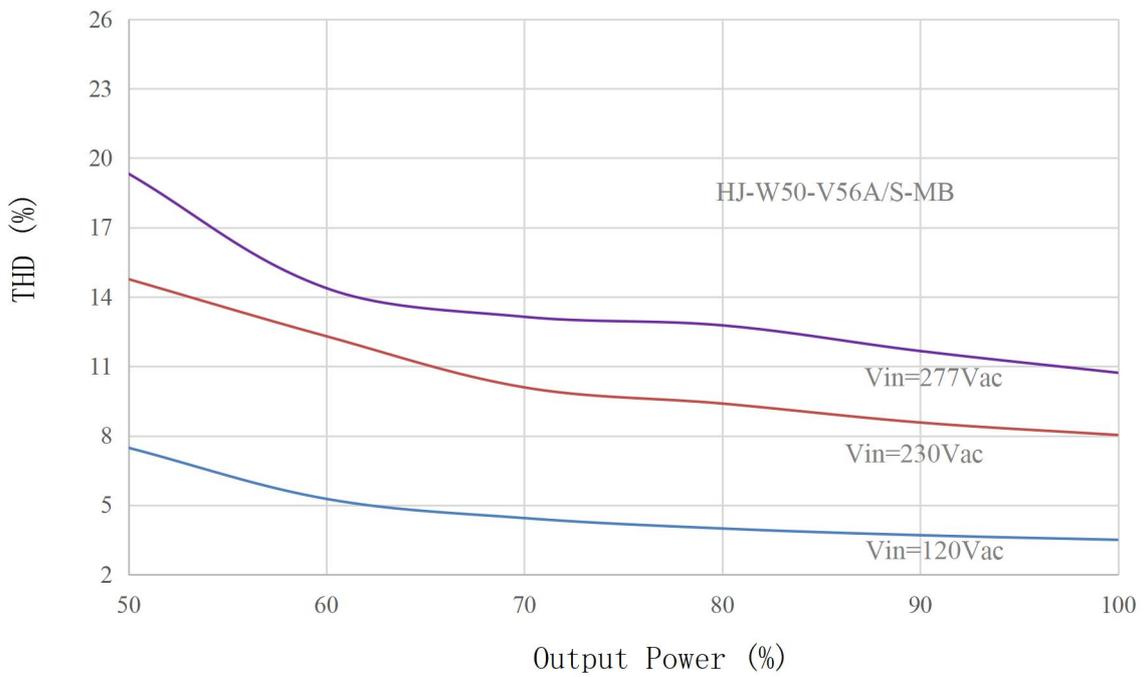


Fig.6 THD VS Output Power

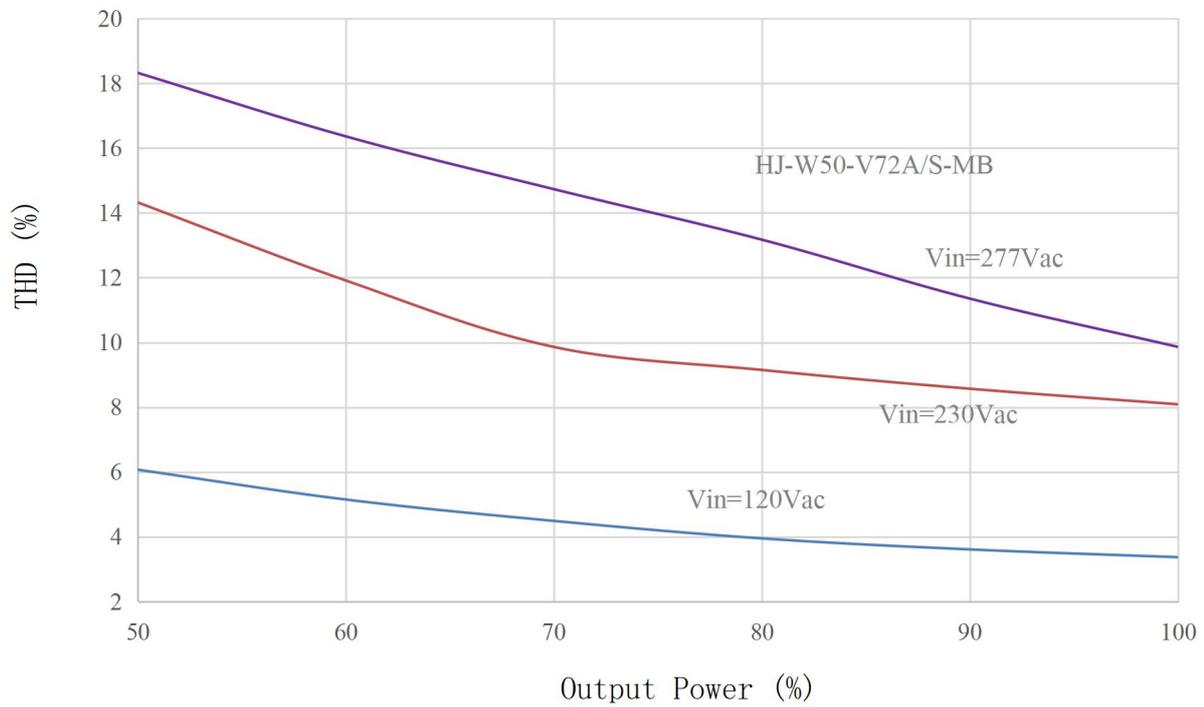


Fig 7. THD VS Output Power

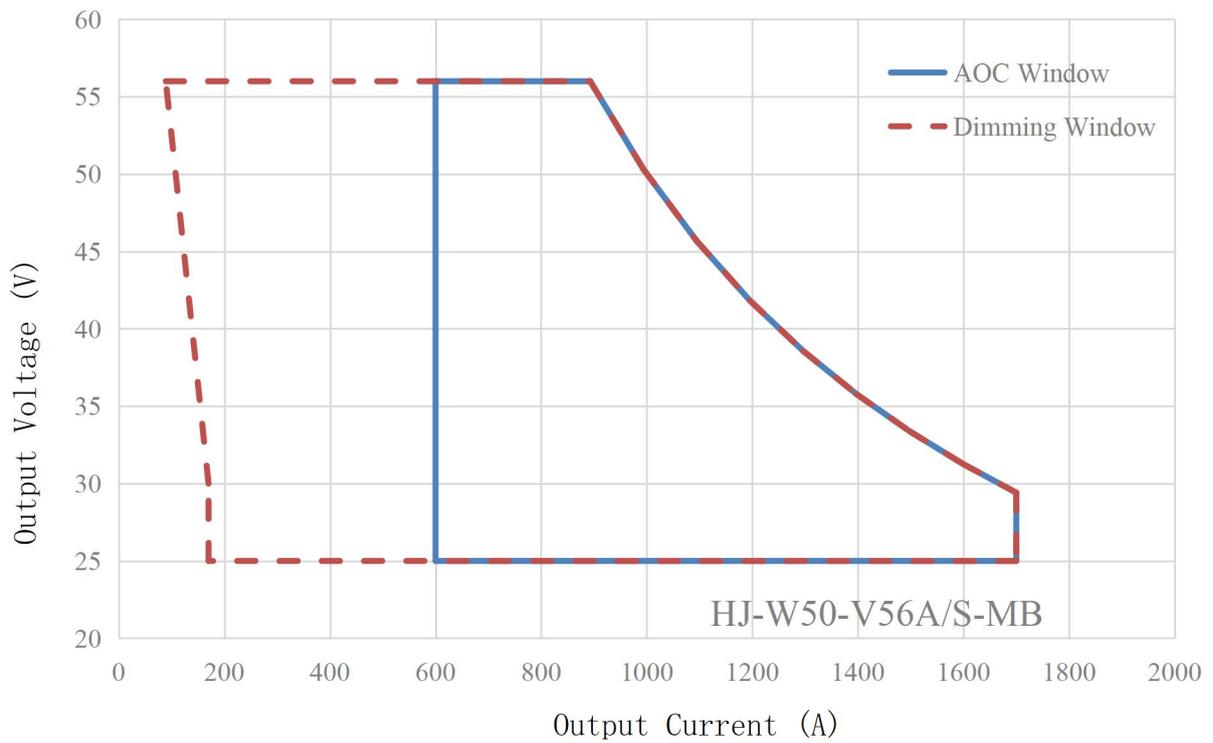


Fig 8. Output Voltage VS Output Current (Dimming/AOC Window)

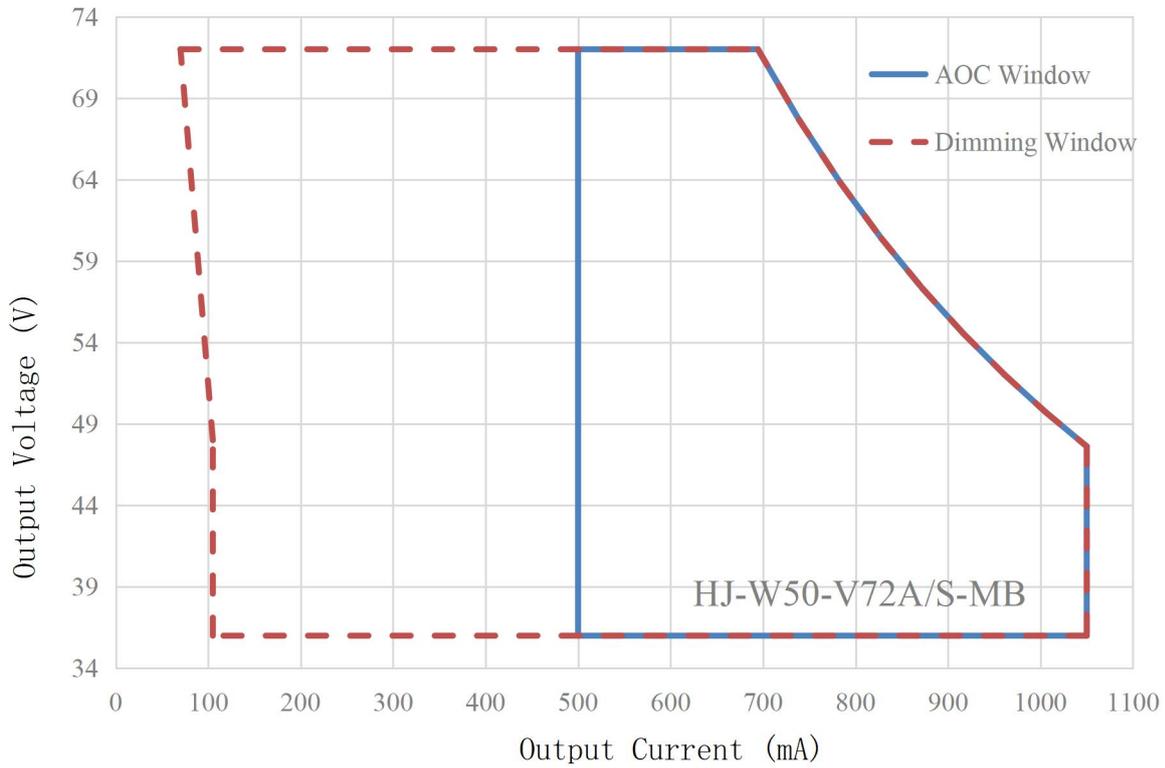


Fig 9. Output Voltage VS Output Current (Dimming/AOC Window)

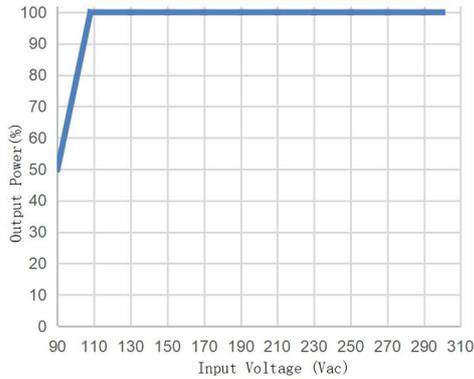


Fig 10. Output Power VS Input Voltage

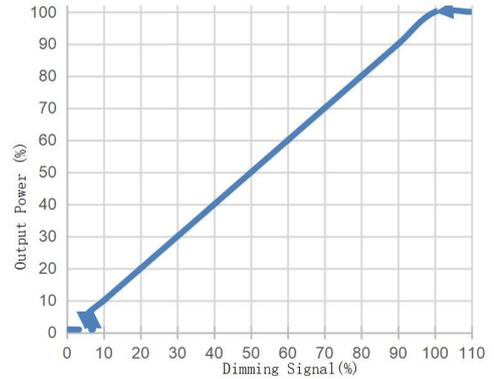


Fig 11. Output Power VS Dimming Signal

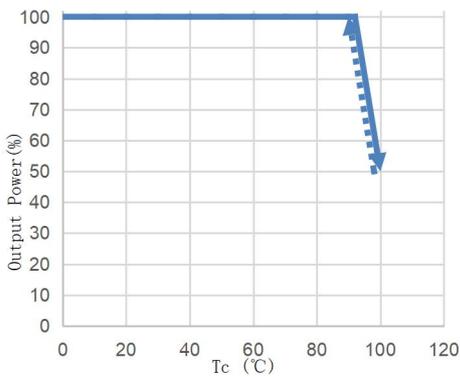


Fig 12. Output Power VS Tc

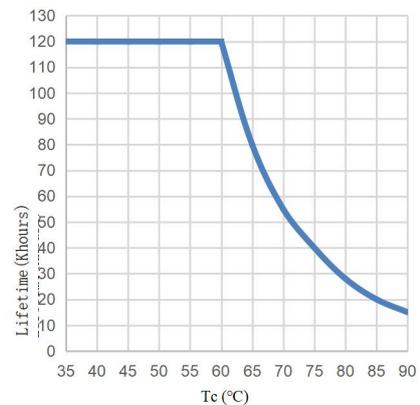
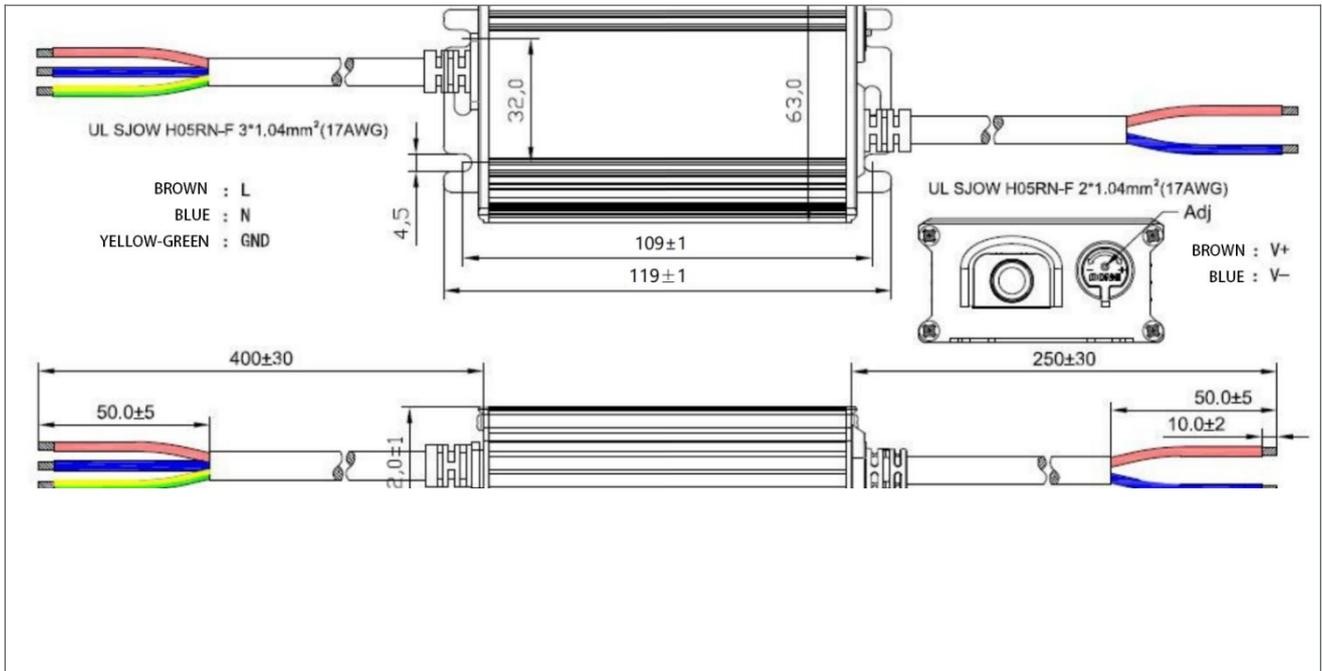


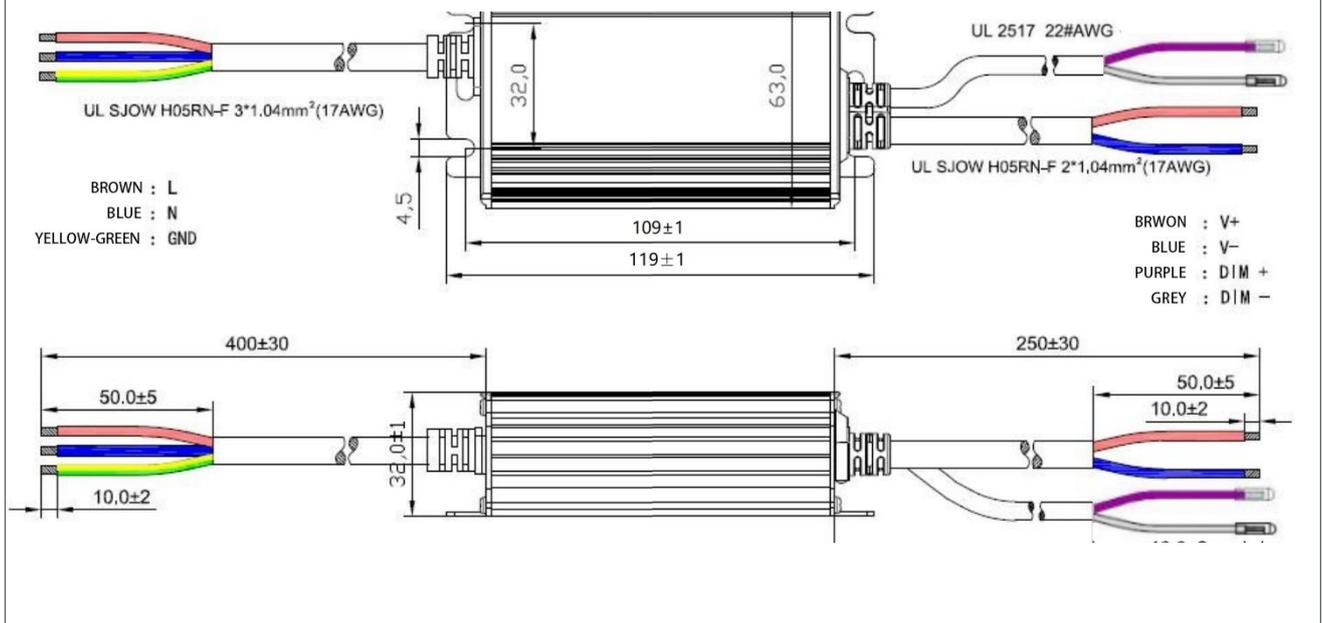
Fig 13. Lifetime VS Tc

Mechanical Specification:

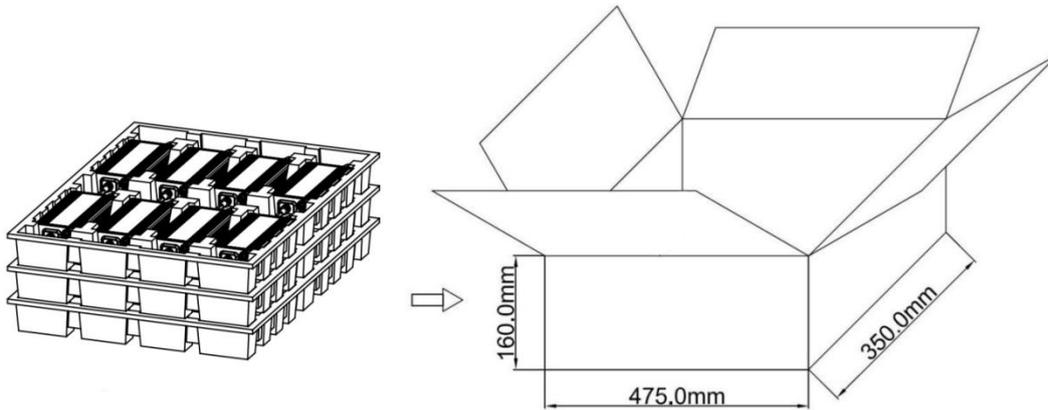
HJ-W50-V56/72A-MB



HJ-W50-V56/72S-MB



Packaging:



Packaging Description:

- The external dimensions of the packaging box (unit: mm) are: Length x Width x Height = 475 x 350 x 160;
- Each box contains 24 units, arranged in 3 layers with 8 units per layer. The gross weight is 11.8kg;
- Net weight per unit: 0.45kg;
- The packaging box includes product name, model, manufacturer's identification, quality department's inspection certificate, manufacturing date, and other information.

Shipping:

The packaging is suitable for transportation by car, ship, and airplane. During transport, it should be protected from moisture, sunlight, and handled with care during loading and unloading.

Storage:

Product storage should comply with the provisions of GB 3873-83.

Products stored for more than 1 year should undergo re-inspection, and only after passing the inspection can they be used.

RoHS:

The product complies with the European Union RoHS Directive (2011/65/EU) and the European Parliament Amendment 2015/863/EU.

Update History:

Versions	Description of Update	Update Date	Note
V00	Initial release	2023.08.25	

Edit	Audit	Approval