Datasheet

NA Series - 105W

Outdoor LED Driver Dimmable

Richmat 豪江

Believe in the Power of Quality

PRODUCT:

FEATURES:

- Efficiency up to 91.5%
- PF>0.95,THD<10%
- Constant Current output
- Output current is manually adjustable
- 3 in 1 Dimming Function：0-10V、PWM、Resistor（Model S）
- Lightning protection level : Difference module 6 kV , Common mode 15 kV
- IP67 rating for indoor and outdoor
- Protections：BOP、OTP、SCP、OVP- Dimming Interface、Reverse connection prevention
- Metal Housing Design with Functional Ground
- Warranty：5 Years

CERTIFICATIONS:

APPLICATIONS:

LED Street lighting
LED Tunnel Lighting
LED Floodlighting
LED Bay Lighting

PRODUCT OVERVIEW:

HJ-W105-NA series is an isolated single-stage outdoor constant current drive power supply with a rated output power of 105W. It features high energy conversion efficiency and can achieve constant power output within a certain range of output voltage. Its adjustable output current and precise dimming control are advantageous for LED lighting design. The power supply is equipped with comprehensive active and passive protection functions, effectively addressing various harsh conditions, ensuring high reliability, and low failure rate, and contributing to reducing costs for luminance manufacturers. The HJ-W105-NA series has two versions: Version A, which allows adjustment of the overall output current through a potentiometer, and Version S, which combines three-in-one dimming with potentiometer-adjustable current.

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-W105-V38A-NA	100-277V	105W	20-38Vdc	20-38Vdc	1.9-3.5A	0.97	10.0%	90.5%	90℃
HJ-W105-V38S-NA	100-277V	105W	20-38Vdc	20-38Vdc	1.9-3.5A	0.97	10.0%	90.5%	90℃
HJ-W105-V58A-NA	100-277V	105W	32-58Vdc	32-58Vdc	1.3-2.5A	0.97	10.0%	91.5%	90℃
HJ-W105-V58S-NA	100-277V	105W	32-58Vdc	32-58Vdc	1.3-2.5A	0.97	10.0%	91.5%	90℃

Remarks:

- **Test conditions: 230Vac input, maximum output voltage, full load operation for 30 minutes, ambient temperature: 25℃.**
- **Input voltage below 180Vac±5%, output power gradually decreases; when input voltage falls below 150Vac±10%, output power is 52.5W±20%. For input voltages between 200 -277Vac, the output maintains a rated power of 105W. Special attention is required during application; please refer to the output power vs. input voltage curve for specific details.**
- **Throughout the entire output voltage range, the driver can operate normally and ensure superior performance of LED driving within the recommended operating voltage range.**

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INPUT:

Parameter	Min	Typ.	Max	Note
Rated input voltage	100Vac		277Vac	
Input voltage range	90Vac		305Vac	
Input frequency range	47Hz	50/60Hz	63Hz	
Input current			0.35A	100Vac，Half Load
			0.7A	180Vac，Full Load
Input power			70W	100Vac，Half Load
			130W	180Vac，Full Load
Input surge current peak value			45A	180Vac，Cold Start
			65A	230Vac，Cold Start
			80A	277Vac，Cold Start
Standby power consumption			1W	
Power factor	0.97	0.99		100Vac，Half Load
	0.96	0.98		180Vac，Full Load
	0.95	0.97		230Vac，Full Load
	0.93	0.95		277Vac，Full Load
	0.90			180-277Vac 50/60Hz, 70-100% Load
Total harmonic distortion		5%	7%	100Vac，Half Load
		6%	8%	180Vac，Full Load
		7%	9%	230Vac，Full Load
		10%	15%	277Vac，Full Load
			20%	100-277Vac 50/60Hz, 70-100% Load

Remark:

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

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OUTPUT: HJ-105W-V38A/S-NA

Parameter	Min	Typ.	Max	Note
Output voltage range	20V		38V	
Rated output voltage	20V		38V	At the rated output voltage, the maximum output power = Po =Vo * Io = 105W
Rated output current	2.8A		3.5A	Input 180-277Vac
	1.4A		1.75A	Input 100-179Vac
Default factory output current		3A		Input 230Vac
Current adjustment range	1.9A		3.5A	Refer to the AOC curve
Maximum no-load output voltage			50Vac	
Efficiency	85.0%	85.5%		Input 180Vac, Output 20V/3.5A
	86.0%	87.0%		Input 230Vac, Output 20V/3.5A
	86.0%	87.0%		Input 277Vac, Output 20V/3.5A
	88.0%	89.0%		Input 120Vac, Output 38V/2.8A
	89.5%	90.5%		Input 230Vac, Output 38V/2.8A
	89.5%	90.5%		Input 277Vac, Output 38V/2.8A
Current accuracy	-5%		+5%	100% load Constant Power Range
Output current ripple		50%	60%	ΔI=Ipk-pk/2/Io*100%
Startup current overshoot			10%	LED Load
Startup time	300ms		1000ms	100%Load@100-277Vac
Linear regulation rate	-5%		+5%	100%Load
Load regulation rate	-5%		+5%	100%Load
Temperature coefficient	-0.03%/℃		+0.03%/℃	Casing Temp. : 0-90℃
Over temperature protection	90℃		100℃	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			10W	Not damaged by prolonged short circuits, automatic recovery upon fault resolution.
Input undervoltage protection	150Vac	160Vac	175Vac	Derated output, returns to normal after the abnormal condition is resolved.

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OUTPUT: HJ-105W-V58A/S-NA

Parameter	Min	Typ.	Max	Note
Output voltage range	32V		58V	
Rated output voltage	32V		58V	At the rated output voltage, the maximum output power = Po =Vo * Io = 105W
Rated output current	1.8A		2.5A	Input 180-277Vac
	0.9A		1.25A	Input 100-179Vac
Default factory output current		2.1A		Input 230Vac
Current adjustment range	1.3A		2.5A	Refer to the AOC curve
Maximum no-load output voltage			70Vac	
Efficiency	88.0%	88.5%		Input 180Vac, Output 32V/2.5A
	89%	89.5%		Input 230Vac, Output 32V/2.5A
	89%	89.5%		Input 277Vac, Output 32V/2.5A
	90%	90.5%		Input 120Vac, Output 58V/1.8A
	90.5%	91.5%		Input 230Vac, Output 58V/1.8A
	90.5%	91.5%		Input 277Vac, Output 58V/1.8A
Current accuracy	-5%		+5%	100% load Constant Power Range
Output current ripple		50%	60%	ΔI=Ipk-pk/2/Io*100%
Startup current overshoot			10%	LED Load
Startup time	300ms		1000ms	100%Load@100-277Vac
Linear regulation rate	-5%		+5%	100%Load
Load regulation rate	-5%		+5%	100%Load
Temperature coefficient	-0.03%/℃		+0.03%/℃	Casing Temp. : 0-90℃
Over temperature protection	90℃		100℃	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			10W	Not damaged by prolonged short circuits, automatic recovery upon fault resolution.
Input undervoltage protection	150Vac	160Vac	175Vac	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.

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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	0.4V	0.50V	0.59V	
	Dimming start voltage	0.61V	0.70V	0.80V	
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%	5.0%	5.9%	
	Dimming start duty cycle	6.1%	7.0%	8%	
Resistor Dimming	External resistor	0Ω		100KΩ	DIM+ output 100uA current
	Dimming output range	10%		100.0%	
	Dimming cutoff resistance	4.0KΩ	5.0KΩ	5.9KΩ	
	Dimming start resistance	6.1KΩ	7.0KΩ	8KΩ	
Interface protection	Interface over voltage protection			400Vdc or 277Vac	Interface not damaged within 30 minutes.
	DIM+/DIM- Reversal		Main Output Shutdown		Interface not damaged within 30 minutes.

Remarks:

1. The dimming interface can withstand voltages up to 277Vac without damage for a short period (within 30 minutes), and returns to normal operation after the fault is resolved. When the dimming interface is connected to AC mains, the output current decreases to half of the set current value. Construction personnel can quickly identify and resolve faults based on this phenomenon, avoiding permanent damage to the interface.

2. All performance parameters are typical values measured at an ambient temperature of 25℃ and with the use of LED load, unless otherwise specified.

3. When the dimming line is not in use, please seal the dimming line connector with insulating tubing to prevent disturbances signals from entering, which could damage the dimming line and affect the normal operation of the power supply.

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OTHER:

Parameter	Description	Note
Estimation of Mean Time Between Failures (MTBF)	210,500 hours	230Vac, full load, ambient temperature 25℃ (MIL-HDBK-217F).
Lifetime	50,000 hours	230Vac, full load, Tc=75℃
International Protection	IP 67	Suitable for dry and humid environments, avoid prolonged exposure to rain.
Maximum casing temperature	90℃	
Warranty	5 Years	Casing temperature (Tc point) not exceeding 75℃
Weight	520g	Net weight
Dimension	164mm*53mm*31mm	Length * Width * Height

ENVIRONMENT:

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

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Safety and EMC:

Items	Standard	Note
CCC	GB 19510.14-2009、GB/T 17743-2021、GB17625.1-2022	
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	
Conducted emission	EN 55015/GB 17743 FCC Part 15 Subpart B	Conducted emission Test &Radiated emission Test
Radiated emission		
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℃/ 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.

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Characteristics Curve:

Vin	Peak current	Duration (@10% peak current)	Duration (@50% peak current)
180Vac	28.5A	326us	155us
230Vac	52.6A	332us	162us
277Vac	57.5A	315us	165us

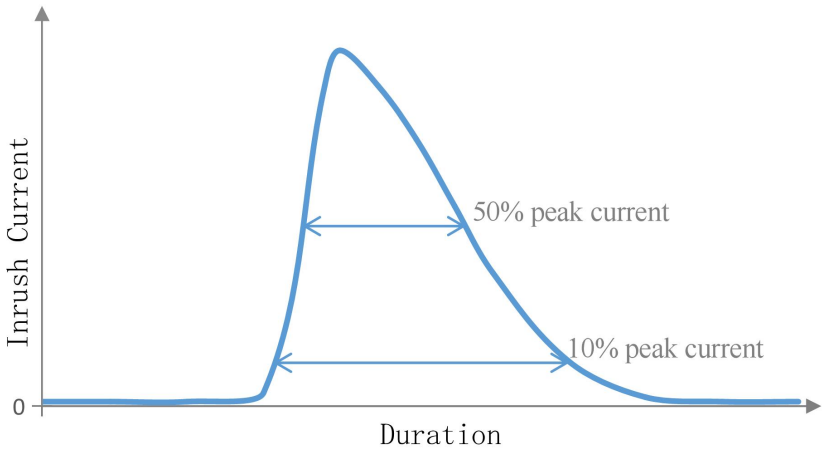

Fig. 1. Inrush Current VS Duration

Characteristics Curve:

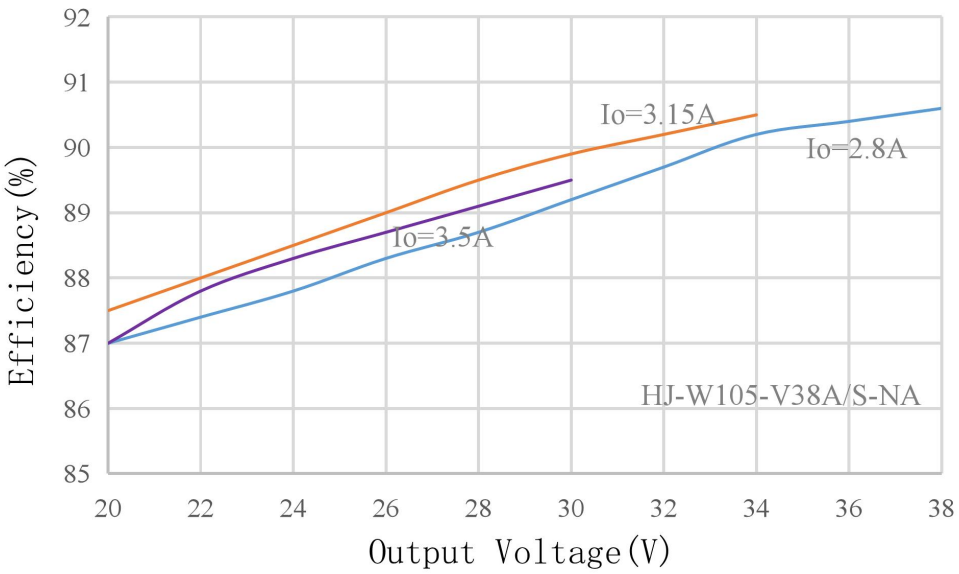

Fig. 2. Efficiency VS Output Voltage

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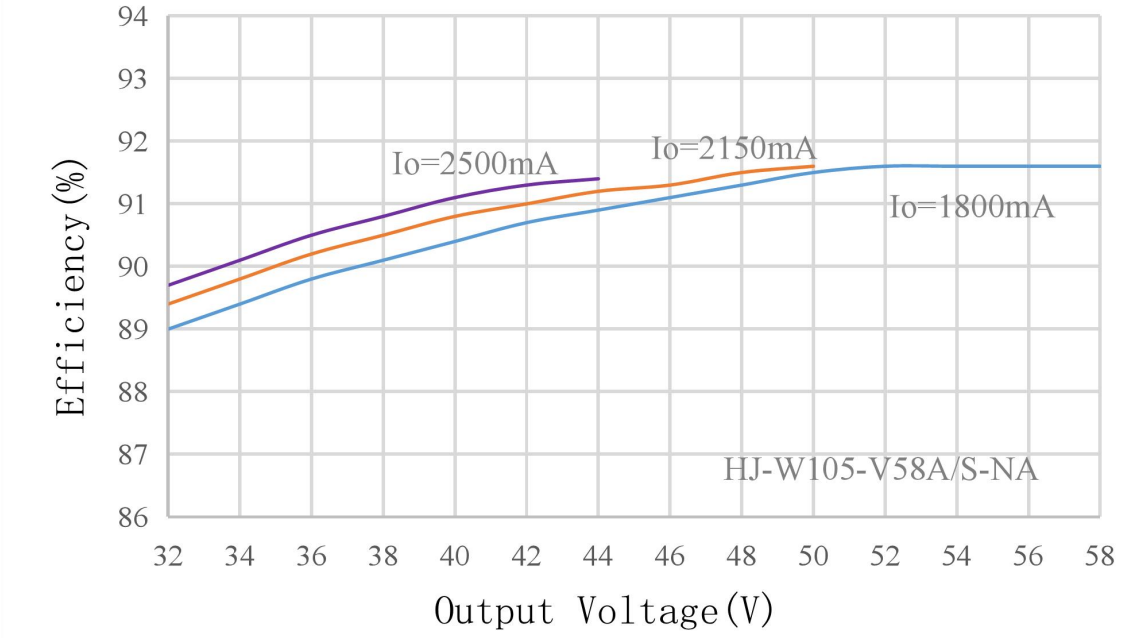

Fig 3.Efficiency VS Output Voltage

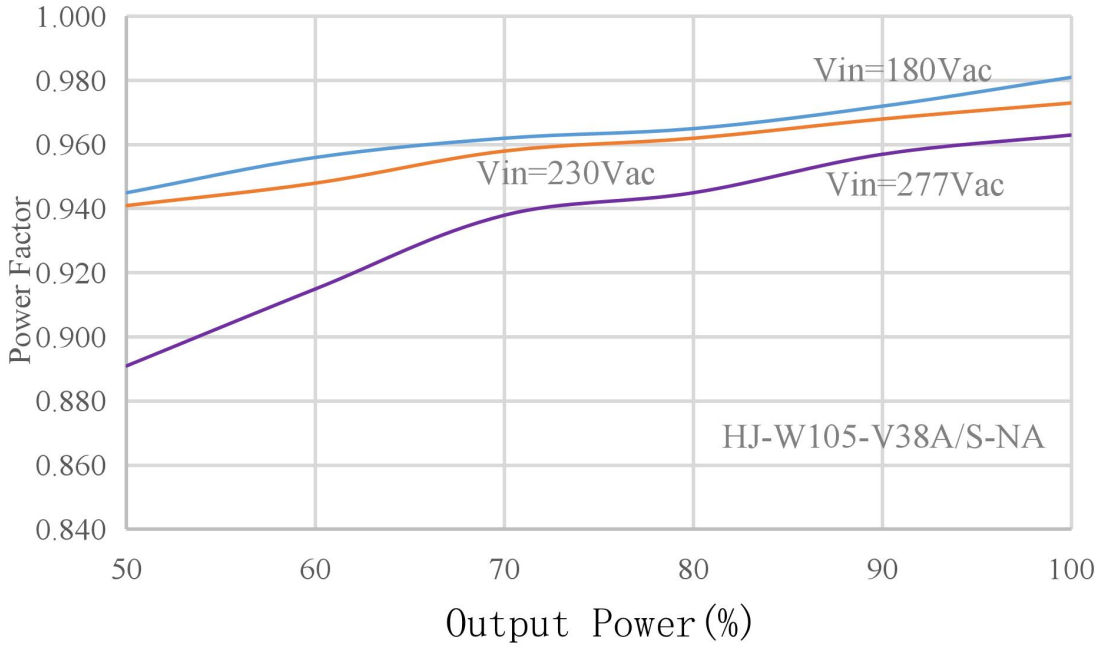

Fig4.Power Factor VS Output Power

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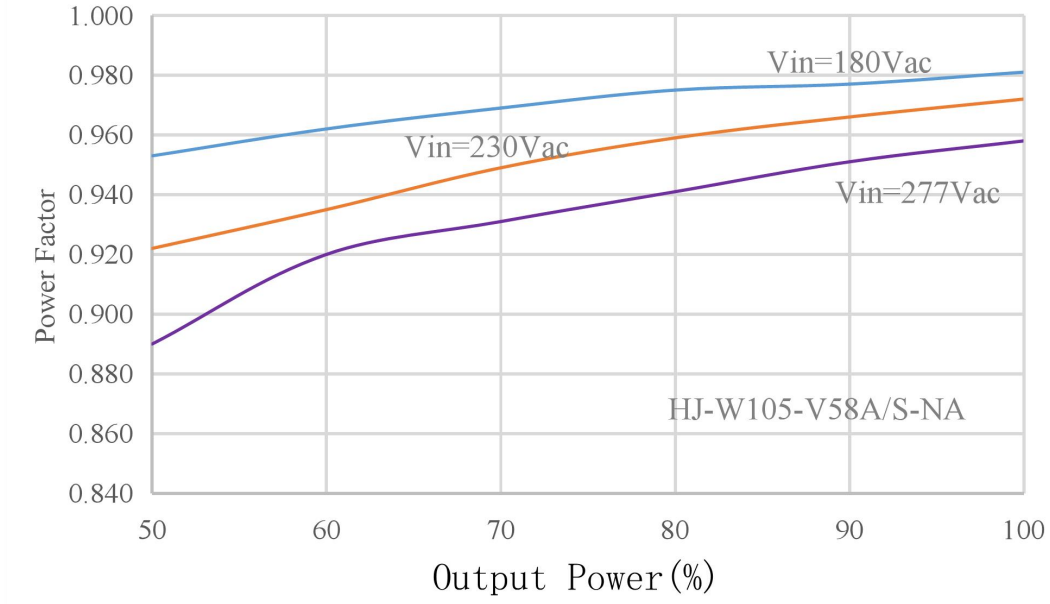

Fig5. Power Factor Vs Output Power

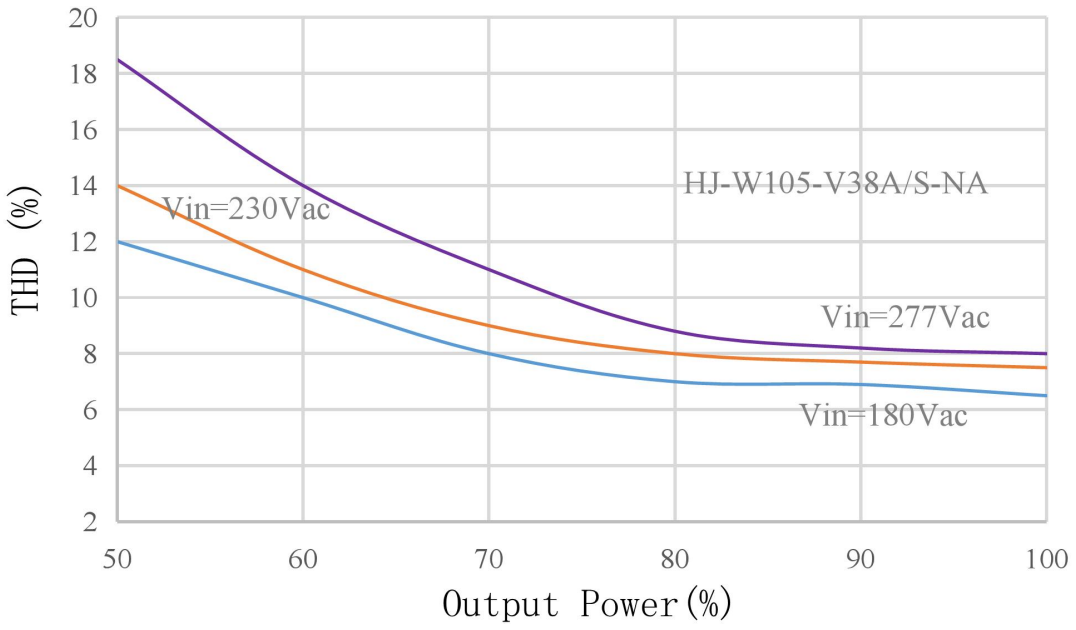

Fig6. THD VS Output Power

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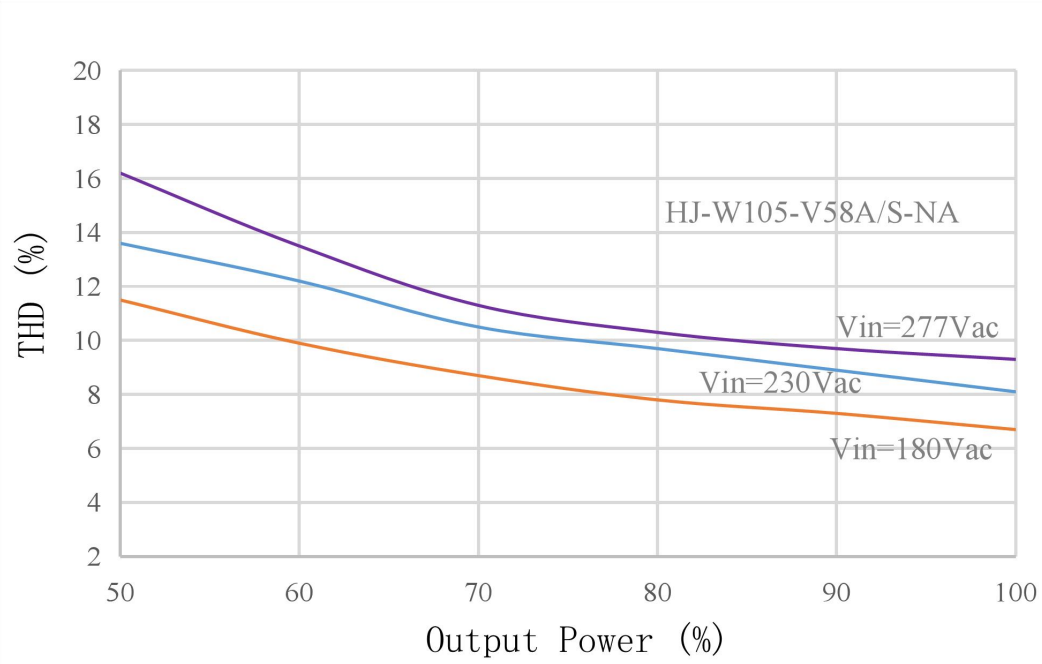

Fig 7. THD VS Output Power

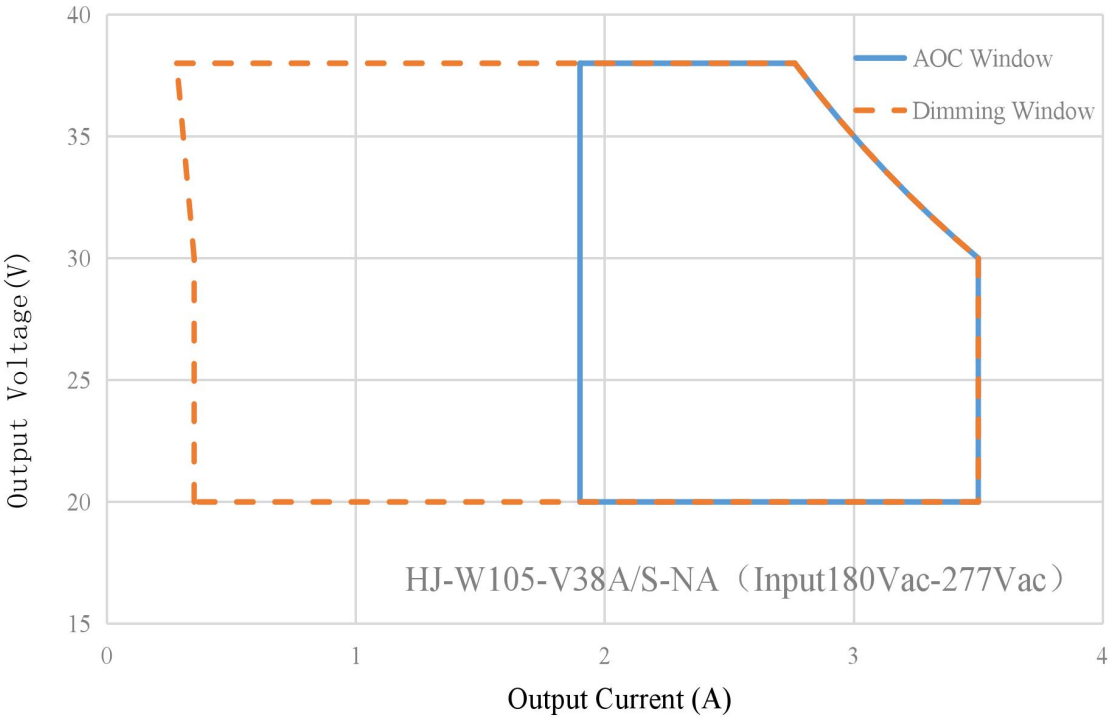

Fig 8. Output Voltage VS Output Current (Dimming/AOC Window)

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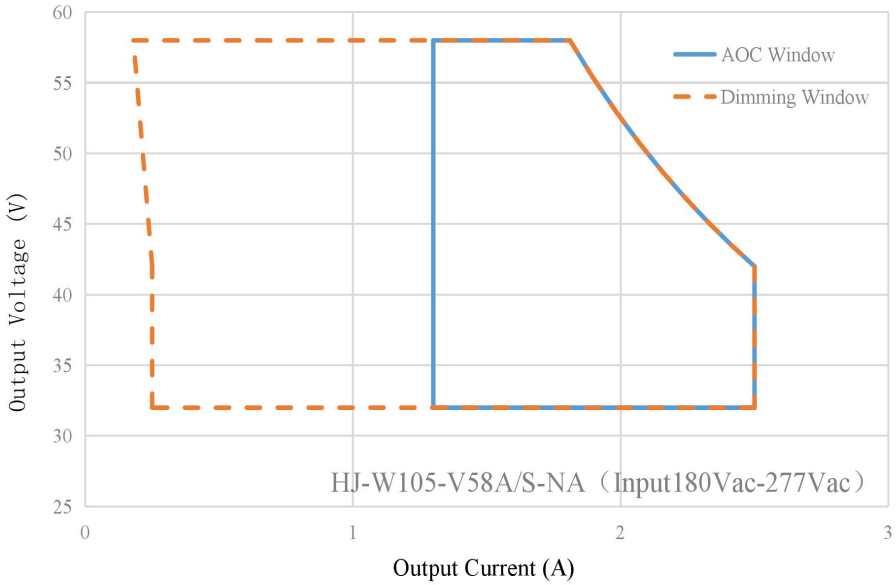

Fig 9. Output Voltage VS Output Current (Dimming/AOC Window)

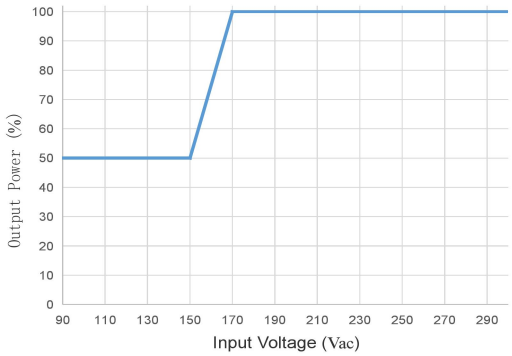

Fig10.Output Power VS Input Voltage

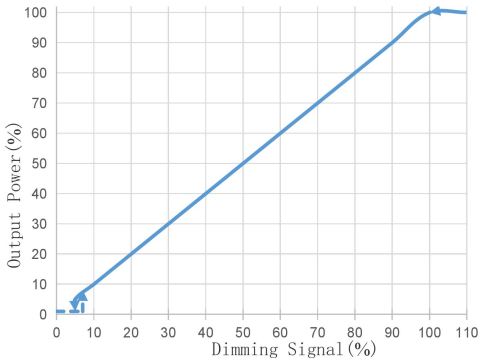

Fig11.Output Power VS Dimming Signal

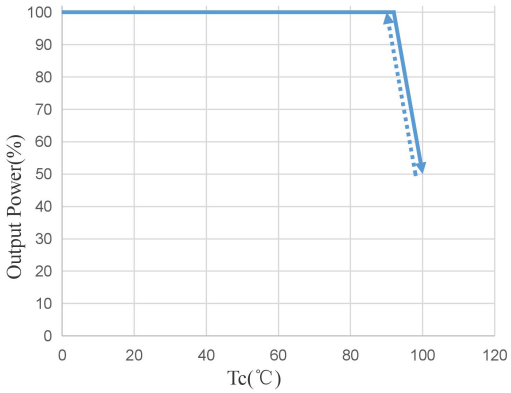

Fig 12.Output Power VS Tc

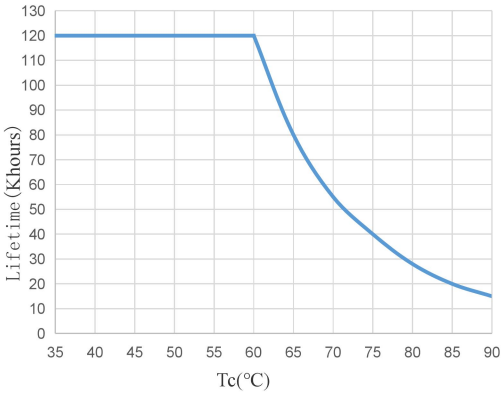

Fig 13. Lifetime VS Tc

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Mechanical Specification:

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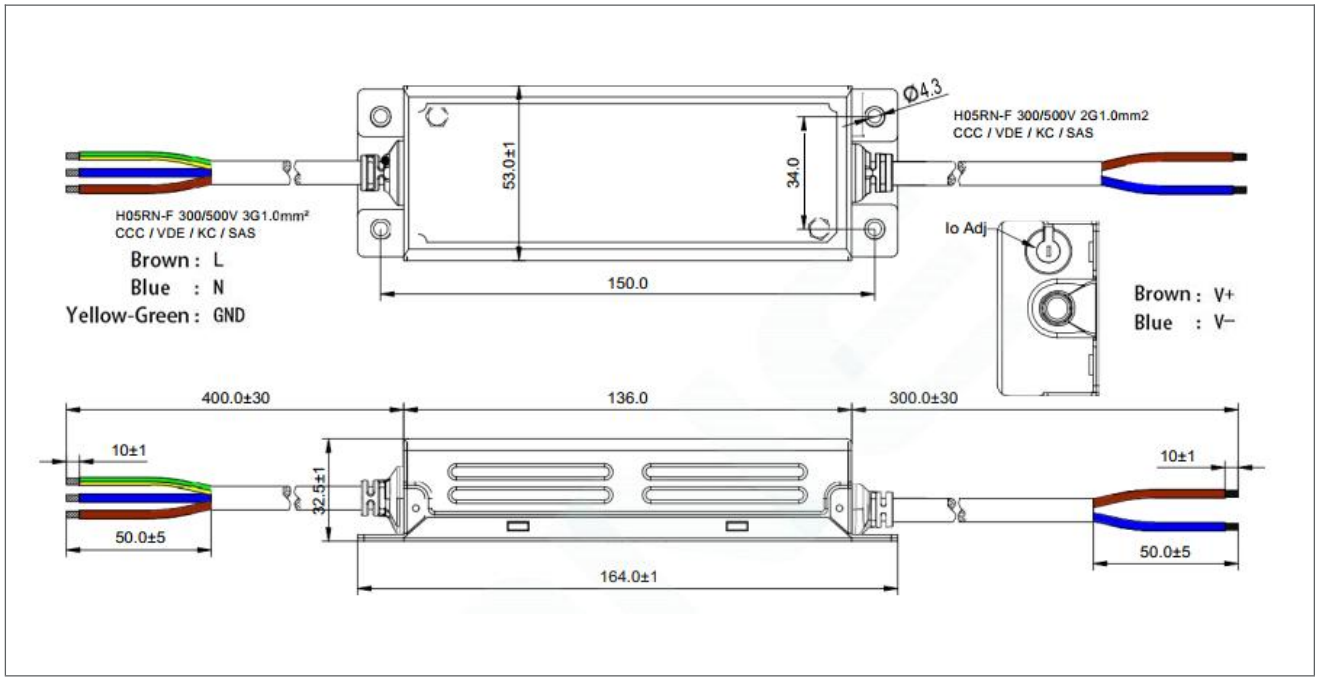
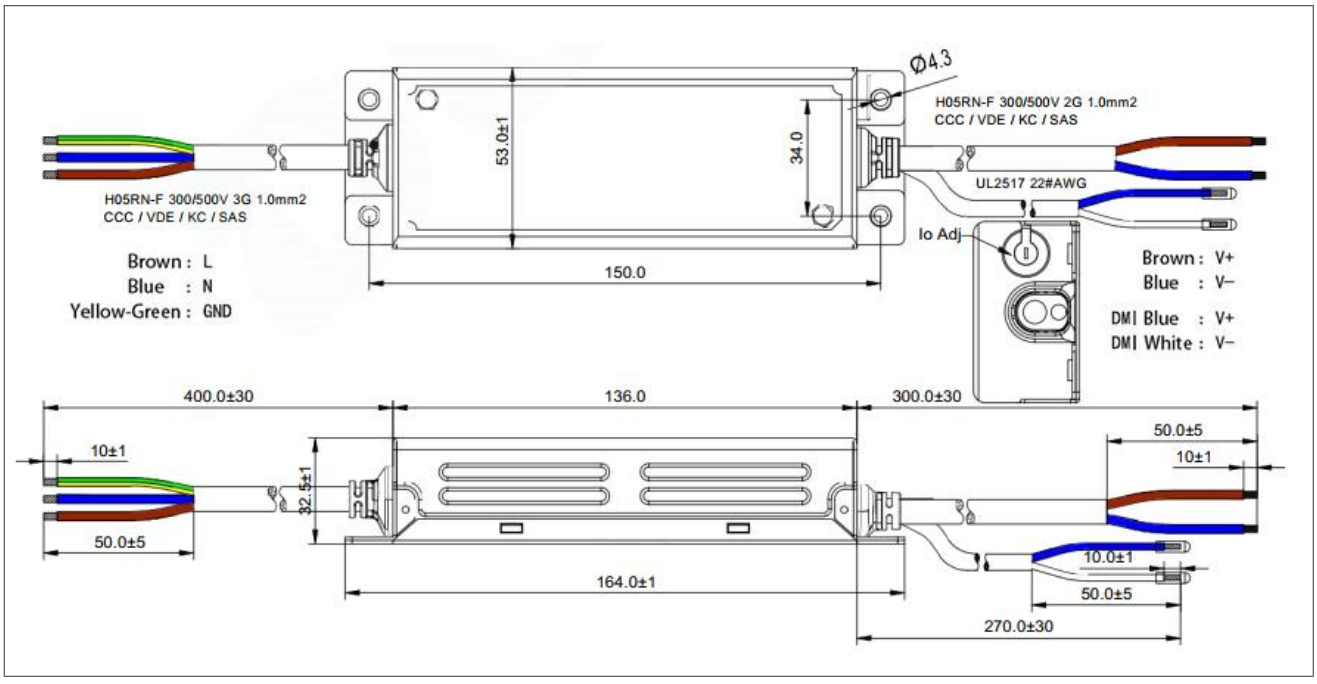


HJ-W105-V38S/58S-NA



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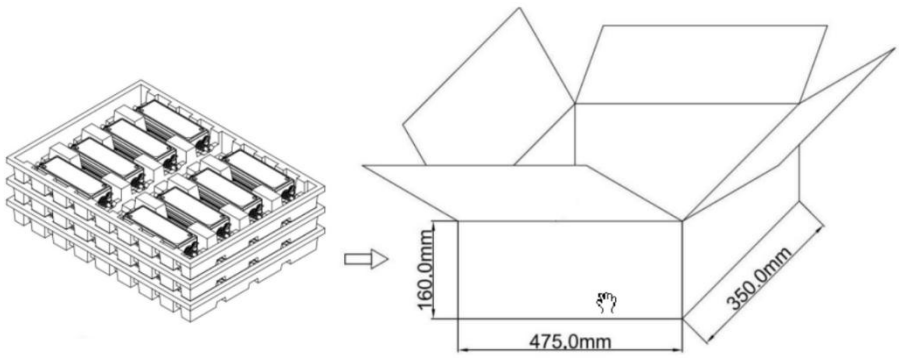
Packaging:



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 14 Kg;
- Net weight per unit: 520g;
- 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.

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Update History:

Versions	Description of Update	Update Date	Note
V00	NEW	2023.08.25	
V01	Layout Upgrade	2024.01.20	

Edit	Audit	Approval
Zhukun Jun	Lisheng Pang	Jiyuan Chen

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