

SOSEN LED Driver, Your Smart Choice

Specifications

SS-680NP-M Series LED Driver

Model: SS-680NP-MXX

Description: 680W LED Driver

Rev.: V01

Release Date: 2024-10-21

SS-680NP-M Series LED Driver

SOSEN
LED DRIVER



LED DRIVER

NP-M Series



Features:

- Efficiency up to 97%
- Dimming: DALI-2, 0-10V, PWM, Resistor, Timing
- Dim-to-Off without afterglow
- Dual-live-wire input off without afterglow
- Surge protection: CM: 6kV, DM: 6kV
- AUX Power: 12V/0.3A
- Constant Lumen, Life Warning
- External NTC to Protect LED Module
- Standby Power < 0.5W
- IP67
- Communication with PC
- Protections: SCP/OTP
- Warranty: 5 years



IP67

RoHS



Description:

SS-680NP-M is 680W non-isolated constant current LED Driver with 180-528Vac input and wide O/P voltage range and adjustable O/P current by program. LED luminaire manufactures can easily design luminaires and reduce cost.

Applications:

Horticulture lighting, Stadium lighting, Fish lighting

Model List:

Model	AC Input Range	Max. Pout	Vout Range	Full Power Vo Range	Iout	THD (Typ.)	PF(Typ.)	Eff.(Typ.)	Max.Tc
SS-680NP-M500*	180-528Vac	680W	150-500V	252-500V	0.35-2.70A	8%	0.95	96%	90°C

Note:

1. Default Tested: at 347Vac, full load, Ta 25°C;
2. The performance of the LED Driver can be guaranteed within the full power Vo range. The voltage lower than full power Vo range, it is need to test the performance with the LED module ;

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“★” Means Additional Function

“★”	DALI (suffix:D)	AUX 12V (suffix:H)	NTC (suffix:N)	Timing	0-10V/PWM Dim /Resistor (suffix:B)	Output- Ground	Dual-live- wire input off	Remark
BH		✓		✓	✓		✓	
BHN		✓	✓	✓	✓		✓	
DH	✓	✓		✓			✓	
DHN	✓	✓	✓	✓			✓	
BH-G		✓		✓	✓	✓	✓	
BHN-G		✓	✓	✓	✓	✓	✓	
DH-G	✓	✓		✓		✓	✓	
DHN-G	✓	✓	✓	✓		✓	✓	

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Input Characteristics:

Parameter	Min.	Typ.	Max.	Remark
Rated AC Input Range	200Vac		277Vac	<Ta:50°C
	277Vac		480Vac	<Ta:55°C
AC Input Range	180Vac		528Vac	
Input Frequency Range	47Hz	50/60Hz	63Hz	
Max Input Current			4.0A	200Vac
Max Input Power			800W	200Vac
Max Inrush Current(220Vac)			15A	Cold start
Max Inrush Current(347Vac)			20A	Cold start
Max Inrush Current(480Vac)			25A	Cold start
Standby Power			0.5W	230Vac/50Hz, Dim-off
Power Factor	0.95	0.97		230Vac/50Hz, Full load
	0.90			200-480Vac, 70-100% load
THD		6%	10%	347Vac/60Hz, Full load
			20%	200-480Vac, 70-100% load

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O/P Characteristics:

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	150V		500V	Power derated @150-252V
Rated O/P Voltage	252V		500V	$P_o = V_o \cdot I_o = 680W$, Full load
Rated O/P Current	1.36A		2.70A	2.70A for 252V, 1.36A for 500V
Adj. O/P Current (AOC) Range	0.35A		2.70A	Adjustable by program
No Load Voltage			600V	
Efficiency @220Vac	92.0%	94.0%		O/P 500V/1.36A
Efficiency @347Vac	94.0%	96.0%		O/P 500V/1.36A
Efficiency @480Vac	95.0%	97.0%		O/P 500V/1.36A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			0.5S	230Vac, Full load
Line Regulation	-3%		+3%	Full load
Load Regulation	-3%		+3%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	$T_c: 0^{\circ}C \sim 90^{\circ}C$
OTP	90°C	95°C	110°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged, Constant current mode

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Other Characteristics:

Parameter		Min.	Typ.	Max.	Remark
AUX Power	O/P Voltage	10.8V	12V	13.8V	
	O/P Current			300mA	
0-10V Dimming (Optional)	Dim Vmax	0V		12V	
	Dim Range	10%loset		100%loset	DIM+ source current 110uA .
	Rec.Dim Range	0V		10V	Dimming prohibits reverse connection.
PWM Dimming (Optional)	PWM High	9.8V		10.2V	
	PWM Low	0V		0.3V	DIM+ source current 110uA .
	Frequency	1KHz		2KHz	Dimming prohibits reverse connection.
	PWM Duty	0%		100%	
Resistor Dimming (Optional)	Resistance	0Kohm		100Kohm	
	Dim Range	10%		100%	DIM+ source current 110uA .
Dim to Off	Dim off	7%	8%	9%	By DC voltage, PWM, resistance dimming ratio
	Dim on	9%	10%	12%	By DC voltage, PWM, resistance dimming ratio
DALI Dimming Level		1-170(10%)		254(100%)	
NTC Founction(Optional)		By programming			External resistance value 10K Ω , B value 3950 or 3435 NTC thermistor, set parameters through corresponding programs
Timing Curve(Optional)		By programming			Set by program
DALI Dimming(Optional)		Meet DALI-2			
Constant Lumen(Optional)		By programming			Set by program
Life Warning(Optional)		By programming			Set by program
Life Time($T_c \leq 75^\circ\text{C}$)		50,000 hours			80% Load, 347Vac
MTBF		198,800 hours			347Vac, Full load, $T_a = 25^\circ\text{C}$ (MIL-HDBK-217F)
IP Grade		IP67			
T_c		90 $^\circ\text{C}$			
Warranty		5 years			T_c : 75 $^\circ\text{C}$
Net Weight		2320g			
Dimension		230mm*125mm*44.5mmm			L x W x H

NOTE: 1, All the parameters above are tested $T_a 25^\circ\text{C}$ and LED load, unless specified.

2. When using resistor dimming (parallel connection of dimming wires), if the number of parallels is: N, the dimming resistor should be realized 0-100% dimming range, resistance value: $91\text{K}\Omega/\text{N}$.

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Environmental Requirements

Parameter	Min.	Typ.	Max.	Remark
Operating Temperature(Tcase)	-40°C	25°C	+90°C	
Storage Temperature	-40°C	25°C	+90°C	
Operation Humidity	10%RH		90%RH	
Storage Humidity	5%RH		95%RH	
Altitude	-65m		4000m	

Safety and EMI/EMS Standards

Certification	Standard	Status	Remark
UL/cUL	UL8750	✓	
ENEC	EN 61347-1:2015 EN 61347-2-13:2014 EN 61347-2-13:2014/A1:2017	✓	
RCM	AS/NZS61347.2.13		
CCC	GB 19510.14-2009		
CE	EN 61347-2-13:2014 EN61347-1:2008+A1:2011+A2:2013	✓	

EMI/EMS	Criterion	Remark
Conduction Emission	EN IEC 55015:2019+A11:2020	Class B
Radiation Emission	EN IEC 55015:2019+A11:2020	Class B
Harmonic Current Emissions	IEC/EN 61000-3-2:2019+A1:2021	Class C
Surge	IEC/EN61000-4-5	DM: 6kV,CM: 6kV,Criterion B
	ANSI/C82.77-5-2017	DM: 6kV,CM: 6kV,Criterion B
Ring Wave	IEC/EN 61000-4-12;ANSI/C82.77-5-2017	DM: 6kV,CM: 6kV,Criterion B

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Safety Test Items:

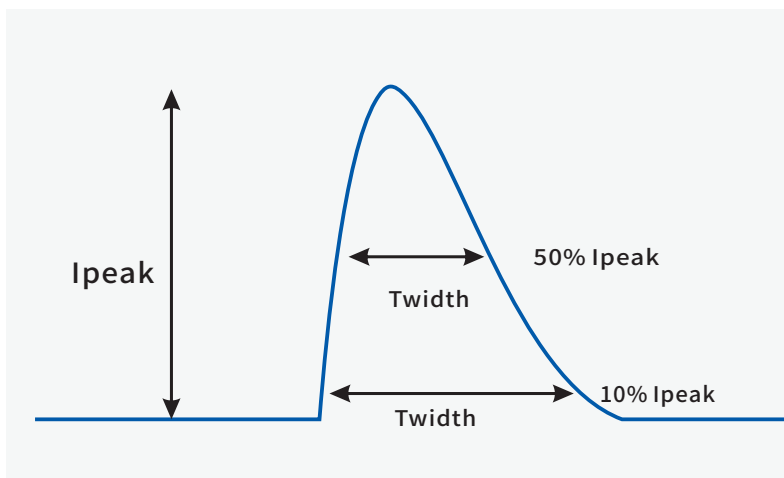
Safety Test Items	Technical Indicators			Remark
Insulation Requirements	UL Insulation Requirements	ENEC Insulation Requirements	CCC Insulation Requirements	
Input-Case	2U+1000	2U+1000	/	Basic insulation
Input-Dim	2U+1000	4U+2000	/	Reinforced insulation
Dim-Case	500Vac	500Vac	/	Basic insulation
Insulation Resistance	$\geq 10\text{M}\Omega$			Input-DIM, Test voltage: 500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min
Leakage Current	$\leq 0.75\text{mA}$			480Vac

NOTE:

1. SOSEN warrants the LED Driver itself complies with EMC standard. However, LED Driver's EMC should be re-checked when integrated into lighting systems due to unexpected interference as component.
2. Please short (ACL and ACN), (V+ and V-), (Dim+ and Dim - and Vaux+) when Hi-pot test (Turn off ARC) .
3. When applying withstand voltage to ground, the input and output lines need to be short-circuited together.

Performance Curves:

Input Inrush Current

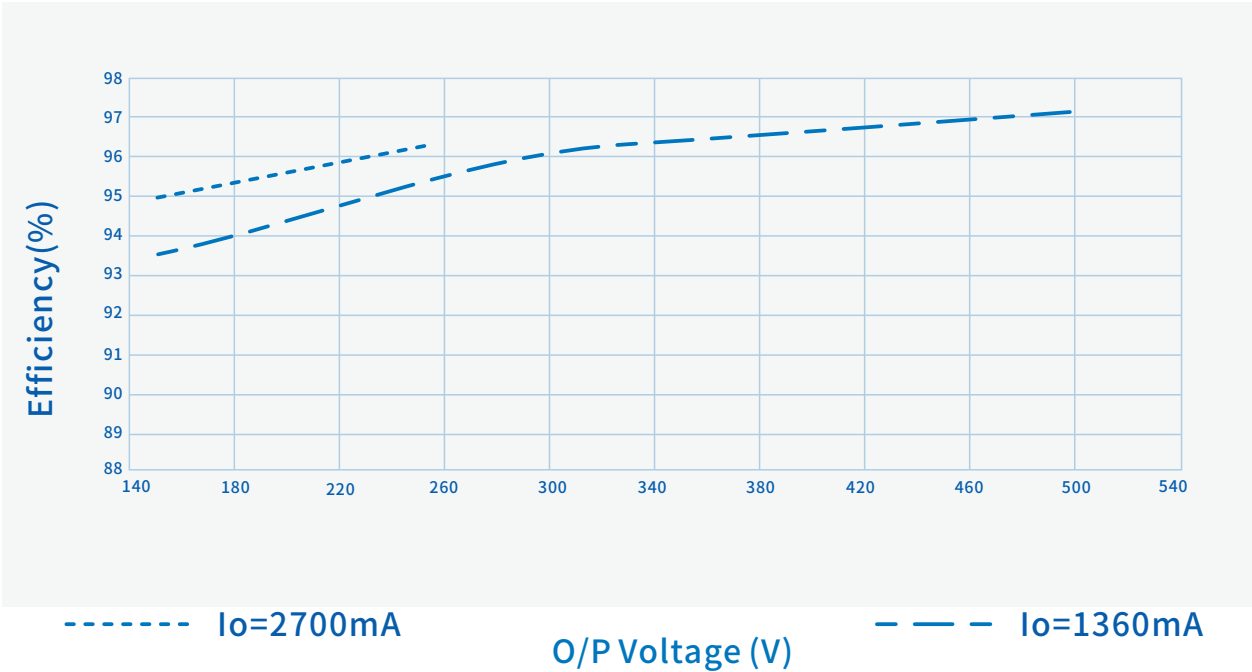


Vin	Ipeak	T(@10% of Ipeak)	T(@50% of Ipeak)
220Vac	15A	10mS	3mS
347Vac	20A	11mS	4mS
480Vac	25A	12mS	4mS

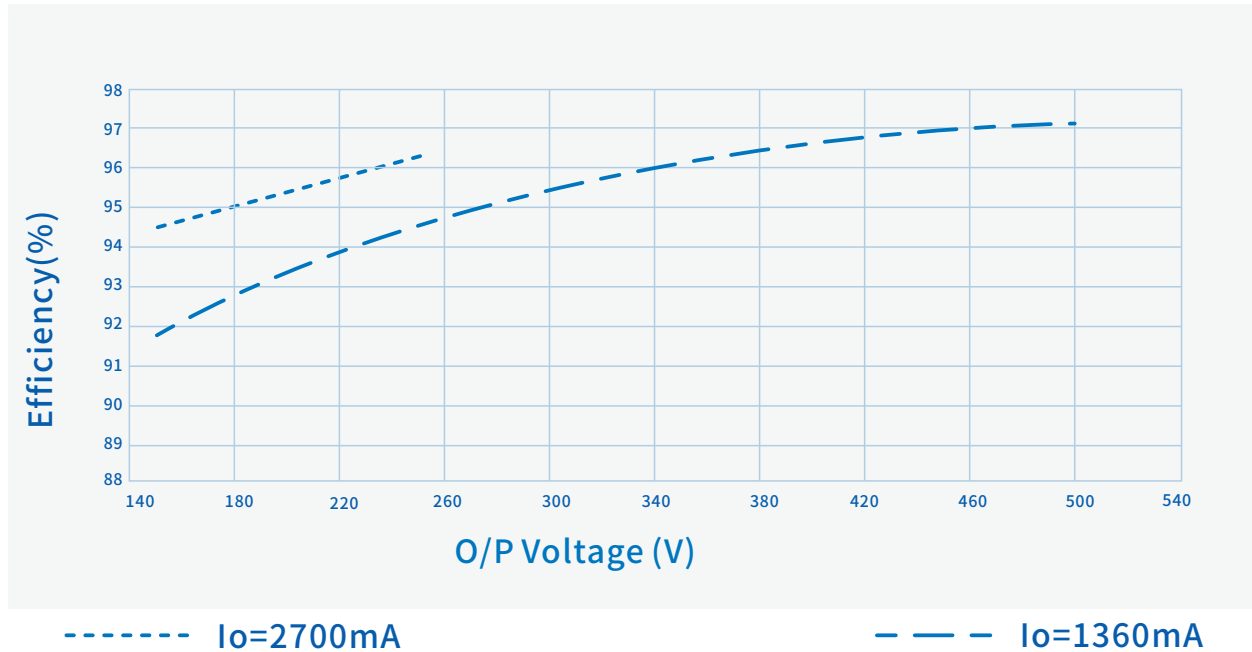
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Performance Curves:

Efficiency Vs. O/P Voltage (Vin=347Vac)



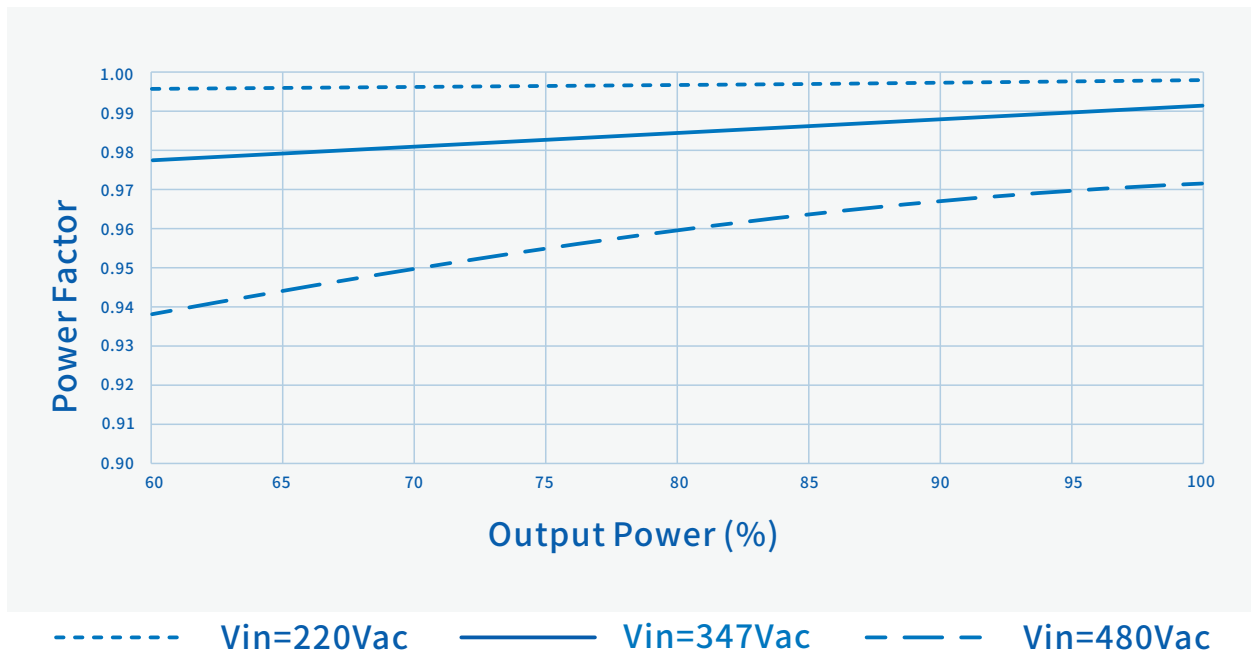
Efficiency Vs. O/P Voltage (Vin=480Vac)



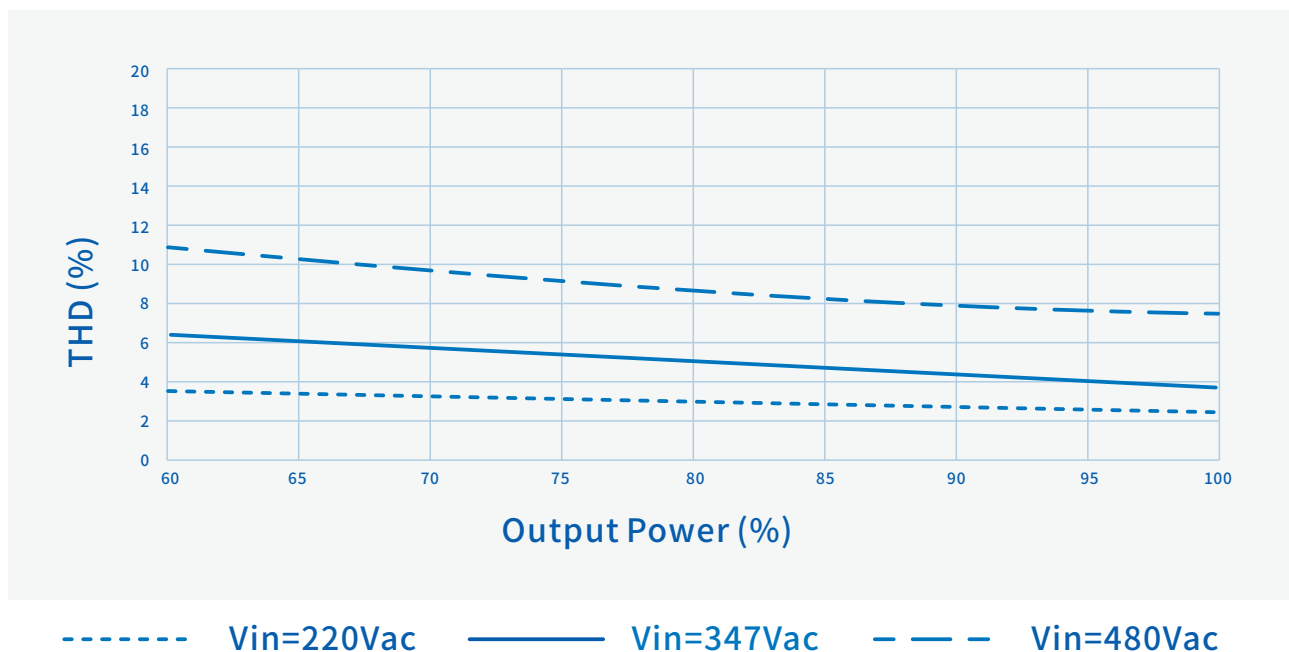
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Performance Curves:

Power Factor Vs. O/P Power



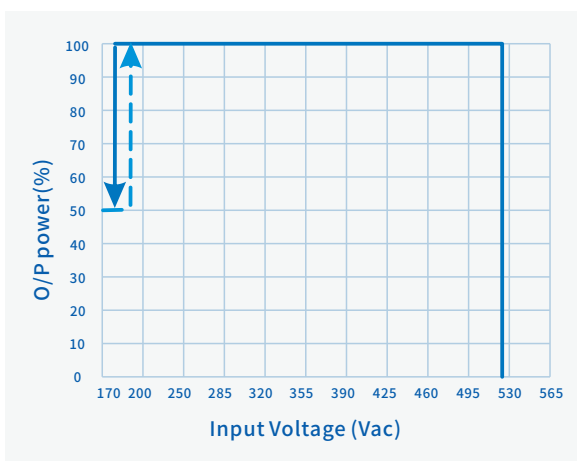
THD Vs. O/P Power



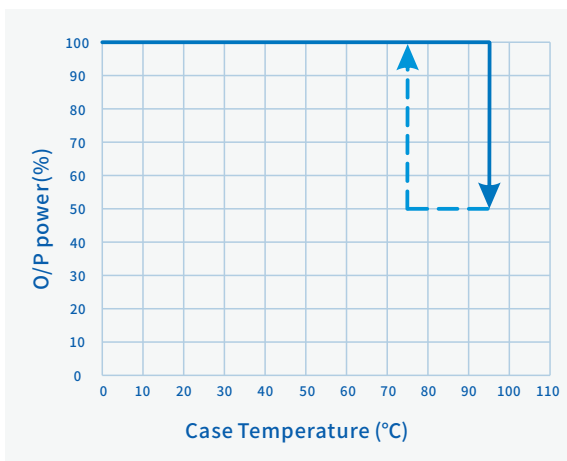
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Performance Curves:

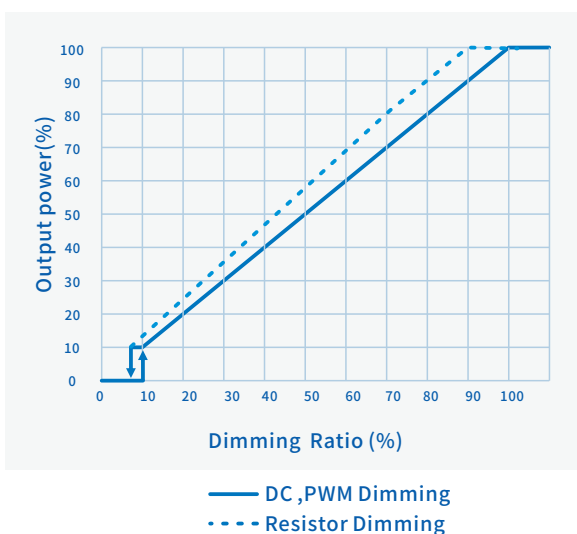
O/P Power Vs. Input Voltage



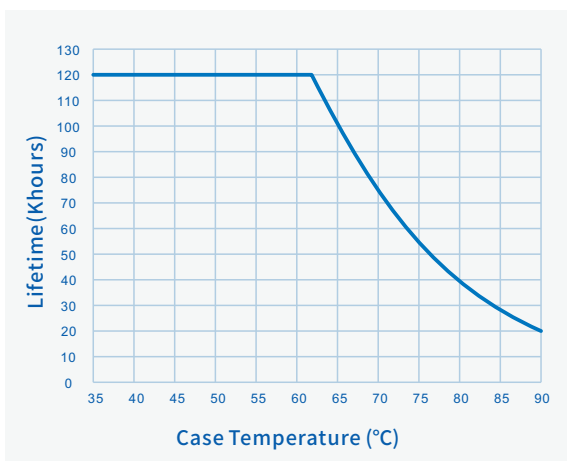
O/P Power Vs. Case Temperature



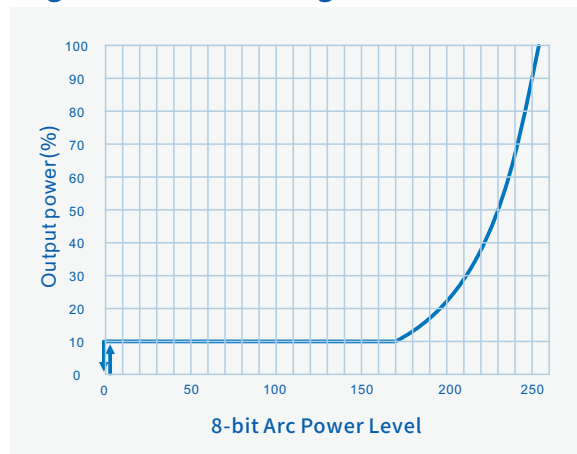
O/P Power Vs. Dimming



Lifetime Vs. Case Temperature



Logarithmic Dimming Curve



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Constant Lumen Output

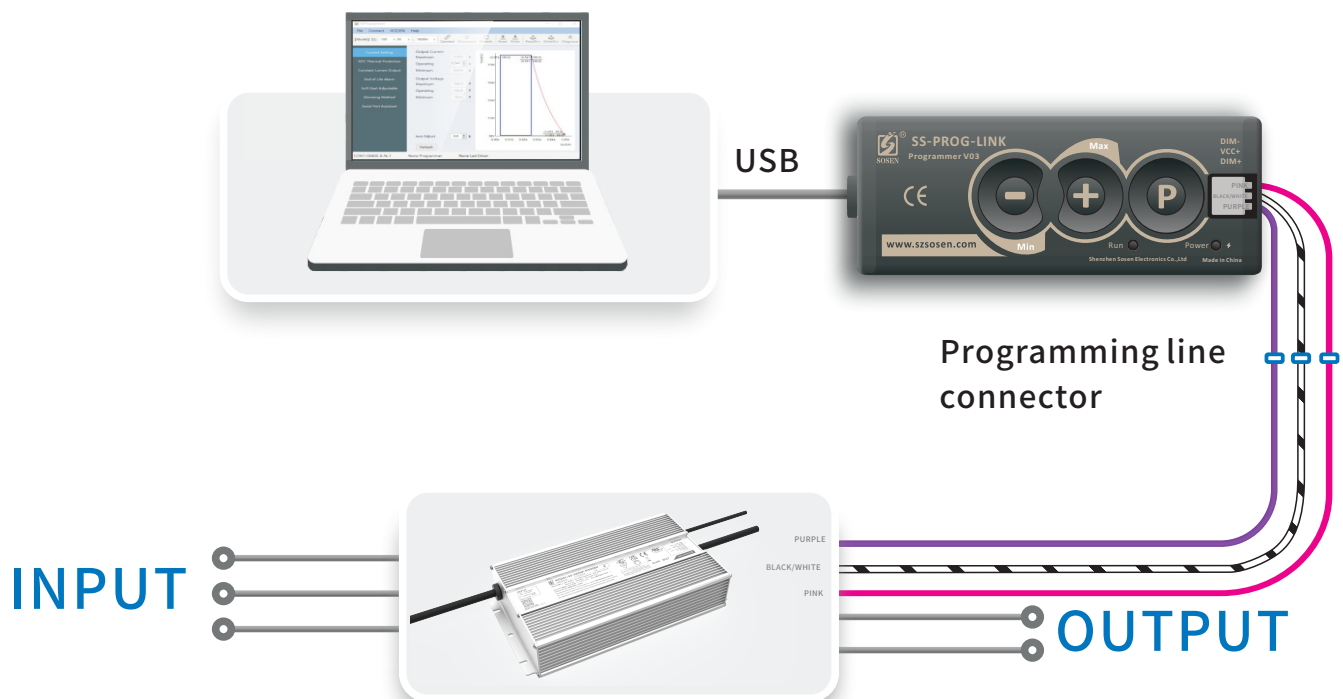
Constant Lumen Output are design to maintain fixture's stable output lumen by increasing driver's output current within driver's life span to counteract LED lumen degradation.

Programming connection diagram:

Legacy Timer: Driver's O/P follows the pre-programmed timing curve after turn-on.

Auto-Adjust by Percentage: Driver's O/P will be adjusted by automatically changed dimming curve by the period percentage based on the latest 5 dimming curve.

Auto-Adjust by Mid-point: Driver's O/P will be adjusted by automatically changed dimming curve by mid-point based on the latest 5 dimming curve.



Note:

Programming could be completed by off-line mode either without turn on the driver or without PC, other than the traditional on-line mode.

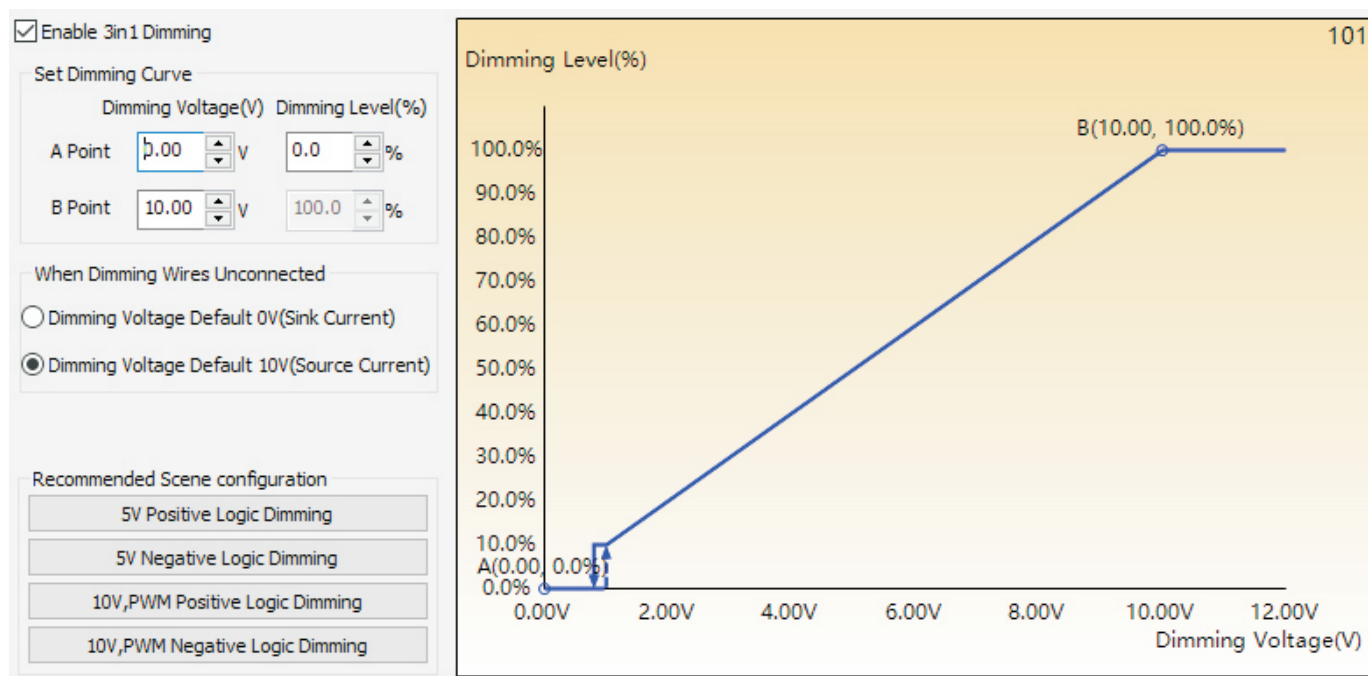
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Parameter			Remark
Default setting	Positive logic dimming (0-10V)	Dimming voltage default 10V (source current)	
	Negative logic dimming (10-0V)	Dimming voltage default 0V (sink current)	
Dimming optional function	Positive logic dimming (0-10V)	Dimming voltage default 0V (sink current)	When the dimming wire is not connected, the LED driver output is the minimum (to be noted in the order)
		Resistance dimming not available	For parallel dimming applications with multiple LED drivers, it is recommended to use the sink current mode (to be noted in the order)

Note:

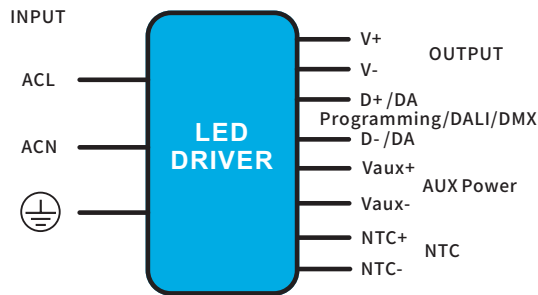
Select "Dimming voltage defaults to 10V (source current)" / "Dimming voltage defaults to 0V (sink current)", which needs to be set according to the dimmer used by the end user.

Settings Interface



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Mechanical Characteristics



AC Input Cable(Exposed Length 450±10mm):

Global model: SOOW,3*17AWG,O.D: 9.8mm,Brown:L,Blue:N,Yellow/Green:⊕

DC O/P Cable(Exposed Length 250±10mm):

Global model: SOOW,2*17AWG,O.D: 9.3mm,Brown:V+, Blue:V-

Global model:SOOW,3*17AWG,O.D:9.8mm,Brown:V+,Blue:V-, Yellow/Green:GND(Suffix-G) ⊕

XH/DH Model:

DIM/AUX Power/Programming Cable

(Exposed Length 220±10mm):

UL model: 21996, 4*22AWG , O.D: 5.6mm, Purple: D+/DA, Pink: D-/DA, Black/White: Vaux+, Blue/White: Vaux-

XHN/DHN Model:

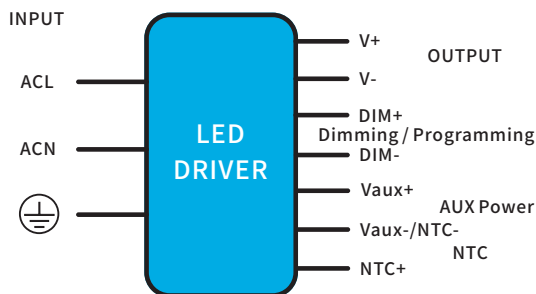
DIM/AUX Power/Programming Cable

(Exposed Length 220±10mm):

UL model:21996,4*22AWG,O.D:5.6mm,Purple:D+/DA,Pink:D-/DA, Black /White:Vaux+,Blue/White:Vaux-

NTC Cable(Exposed Length 220±10mm):

Global model:SJOW,2*17AWG,O.D:7.7mm,Brown:NTC+,Blue:NTC-



AC Input Cable(Exposed Length 450±10mm):

Global model: SOOW,3*17AWG,O.D: 9.8mm,Brown:L,Blue:N,Yellow/Green: ⊕

DC O/P Cable(Exposed Length 250±10mm):

Global model: SOOW,2*17AWG,O.D: 9.3mm,Brown:V+, Blue:V-

-Global model:SOOW,3*17AWG,O.D:9.8mm,Brown:V+,Blue:V-, Yellow/Green:GND(Suffix-G) ⊕

BH Model:

DIM/AUX Power/Programming Cable

(Exposed Length 220±10mm):

UL model: 21996, 4*22AWG , O.D: 5.6mm, Purple: DIM+, Pink: DIM-, Black/White: Vaux+, Blue/White: Vaux-

BHN Model:

DIM/AUX Power/Programming/NTC Cable

(Exposed Length 220±10mm):

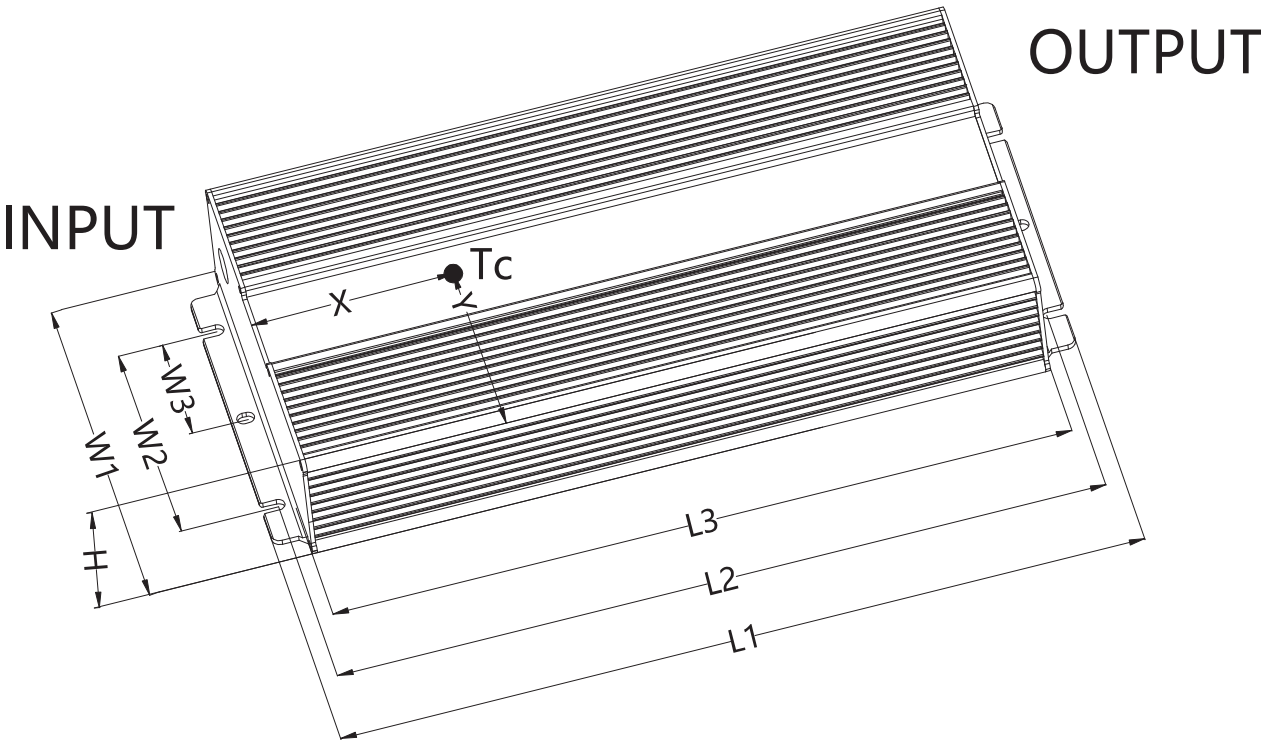
UL model: 21996, 5*22AWG , O.D: 6.0mm, Purple: DIM+, Pink: DIM-, Black/White: Vaux+, Blue/White: Vaux-/NTC-, Red/White: NTC+

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Mechanical Characteristics

Name Description	Standard Code	mm(In.)
Case Length	L3	208(8.19)
Case Width	W1	125(4.92)
Case Height	H	44.5(1.75)
Overall Length	L1	230(9.06)
Mounting Hole Length	L2	219(8.62)
Mounting Hole Width	W2	78(3.07)
TC Point Position	X	80(3.15)
TC Point Position	Y	75(2.95)

Note:
1,Please follow the "LED Driver User Manual" obtained from SOSEN's official website for assembly.
2,AC Input Cable,DC O/P Cable,DIM/AUX Power/Programming Cable:
Peeled length of cable:43±5mm, Tinned length of wire:10±2mm



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Assembly Tips

1. Dimming or AUX Power tinned connectors should be capped if not used to avoid dimming or AUX Power parts damage from external signals.
2. Safety space between aluminum base and LED coppers >5.6mm.
3. Safety space/coppers between LED+ and LED- >1.8mm.
4. Minimize the copper area on the aluminum PCB to reduce parasitic capacitance and leakage current.
5. It is recommended to design LED beads in parallel first and then in series.
6. The insulation level of LED light panels should meet the reliability design requirements.
7. For other precautions, please refer to the "LED Driver User Manual" .

Package

- Outside carton dimension: $L \times W \times H = 495\text{mm} \times 385\text{mm} \times 162\text{mm}$;
- 6PCS/Carton;
- Net weight/Piece: 2.335kg;Gross weight/Carton: 15.085kg;
- Please refer to the product name, model number, manufacturer identification, QC PASS, manufacturing date on the package.

Transportation

Packaging is designed suitable for transportation by trucks, vessels and flights. The products should be avoided direct sunlight and rain, loaded/unloaded with caution.

Storage

The product storage meets the standard of the GB 3873—83.
Products should be rechecked if stored for over 1 year before assembly.

RoHS

Products comply with RoHS Directive (2011/65/EU) and amendment 2015/863/EU.

Revision History

Version	Description of Update	Updated Date	Remark
V00	Original Release	2024/06/04	
V01	Change the maximum no-load output voltage	2024/10/21	

