

SOSEN LED Driver, Your Smart Choice

Specifications

SS-650L-N360BH Series LED Driver

Model: SS-650L-N360BH

Description: 650W LED Driver

Rev.: V02

Release Date: 2025-07-04

SS-650L-N360BH Series LED Driver

SOSEN
LED DRIVER



LED DRIVER

L-N Series



RoHS CE IP67

Features:

- Efficiency up to 96%
- Dimming: 0-10V,PWM,Resistor,Timing
- Surge protection: CM: 6kV, DM: 6kV
- AUX Power: 12V/0.2A
- Constant Lumen O/P
- Standby Power<0.5W
- IP67
- Communication with PC
- Protections: SCP/OTP
- Warranty: 5 years

Description:

SS-650L-N360BH is 650W non-isolated constant current LED Driver with 180-305Vac 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, Square lighting, High Pole 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-650L-N360BH	180-305Vac	650W	210-360V	240-360V	0.35-2.7A	7%	0.98	96%	90°C

Note:

- 1.Default Tested: at 220Vac, 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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Input Characteristics:

Parameter	Min.	Typ.	Max.	Remark
Rated AC Input Range	200Vac		277Vac	
AC Input Range	180Vac		305Vac	
Input Frequency Range	47Hz	50/60Hz	63Hz	
Max Input Current			3.83A	200Vac, Full load
Max Input Power			766W	200Vac, Full load
Max Inrush Current(220Vac)			22A	Cold start
Max Inrush Current(277Vac)			25A	Cold start
Standby Power			0.5W	220Vac/50Hz, Dim-off
Power Factor	0.95	0.98		220Vac/50Hz, Full load
	0.90			220-277Vac, 70-100% load
THD		7%	10%	220Vac/50Hz, Full load, 25°C
			15%	220-277Vac, 70-100% load, 25°C

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O/P Characteristics:

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	210V		360V	Power derated @210-240V
Rated O/P Voltage	240V		360V	$P_o = V_o \cdot I_o = 650W$, Full load
Rated O/P Current	1.8A		2.7A	2.7A for 240V, 1.8A for 360V
Adj. O/P Current (AOC) Range	0.35A		2.7A	Adjustable by program
No Load Voltage			390V	
Efficiency @220Vac	93.0%	95.0%		O/P 360V/1.8A
Efficiency @277Vac	94.0%	96.0%		O/P 360V/1.8A
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	220Vac, Full load
			0.5S	277Vac, Full load
Line Regulation	-2%		+2%	Full load
Load Regulation	-2%		+2%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	$T_c: 0^{\circ}C \sim 90^{\circ}C$
OTP	90°C	100°C	110°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection			10W	Driver will not be damaged

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Other Characteristics:

Parameter		Min.	Typ.	Max.	Remark
AUX Power	O/P Voltage	10.8V	12V	13.8V	
	O/P Current			200mA	
0-10V Dimming (Optional)	Dim Vmax	0V		12V	Negative dimming by programming
	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	Negative dimming by programming
	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%lomax		100%loset	DIM+ source current 110uA .
Dim to Off	Dim-off	7%	8%	9%	By DC voltage, PWM,dimming ratio
	Dim-on	9%	10%	12%	By DC voltage, PWM,dimming ratio
Timing Curve(Optional)		By programming			Set by program
Constant Lumen(Optional)		By programming			Set by program
Life Warning(Optional)		By programming			Set by program
Life Time($T_c \leq 72^\circ\text{C}$)		62,000 hours			80% Load
MTBF		200,000 hours			220Vac,Full load, $T_a=25^\circ\text{C}$ (MIL-HDBK-217F)
IP Grade		IP67			
T_c		90°C			
Warranty		5 years			$T_c: 72^\circ\text{C}$
Net Weight		1745g			
Dimension		252mm*89.5mm*44.5mm			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: $101\text{K}\Omega/\text{N}$.

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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/A1:2021 EN 61347-2-13:2014/A1:2017 EN/IEC62384:2020	✓	
UKCA	EN 61347-1:2015/A1:2021 EN 61347-2-13:2014/A1:2017 EN 62493:2015	✓	
CCC	GB 19510.14-2009		
CE	EN 61347-1:2015/A1:2021 EN61347-2-13:2014/A1:2017 EN62493:2015	✓	

EMI/EMS	Criterion	Remark
Conduction Emission	EN55015:2013+A1:2015	Class B
Radiation Emission	EN55015:2013+A1:2015	Class B
Harmonic Current Emissions	IEC/EN 61000-3-2	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:

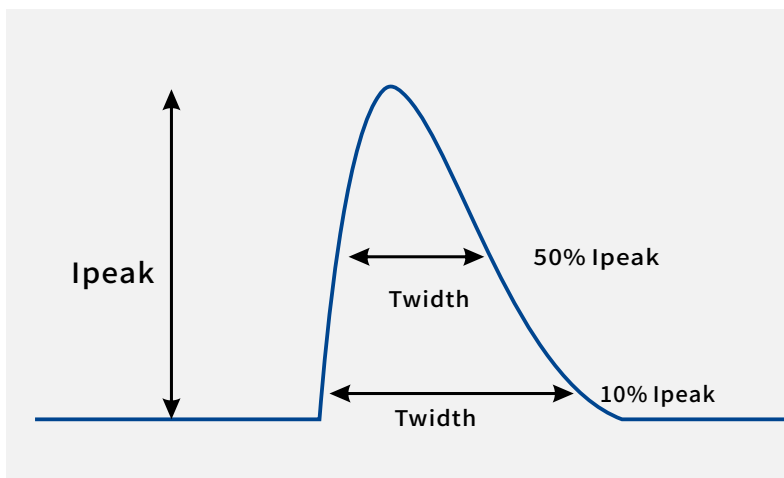
Safety Test Items	Technical Indicators			Remark
Insulation Requirements	UL Insulation Requirements	TUV Insulation Requirements	CCC Insulation Requirements	
Input-Case	1600Vac	1500Vac	/	Basic insulation
Input-Dim	1600Vac	3000Vac	/	Reinforced insulation
O/P-Dim	1600Vac	3000Vac	/	Reinforced insulation
Dim-Case	500Vac	500Vac	/	Basic insulation
Insulation Resistance	$\geq 10M\Omega$			Input-DIM,Test voltage:500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min
Leakage Current	$\leq 0.75mA$			277Vac

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.
- 3.The CCC withstand voltage test needs to disconnect the built-in lightning protection tube.According to the IEC 60598-1:14 standard section 10.2, the “built-in lightning protection tube” can be marked on the nameplate to disconnect the discharge tube on testing.

Performance Curves:

Input Inrush Current

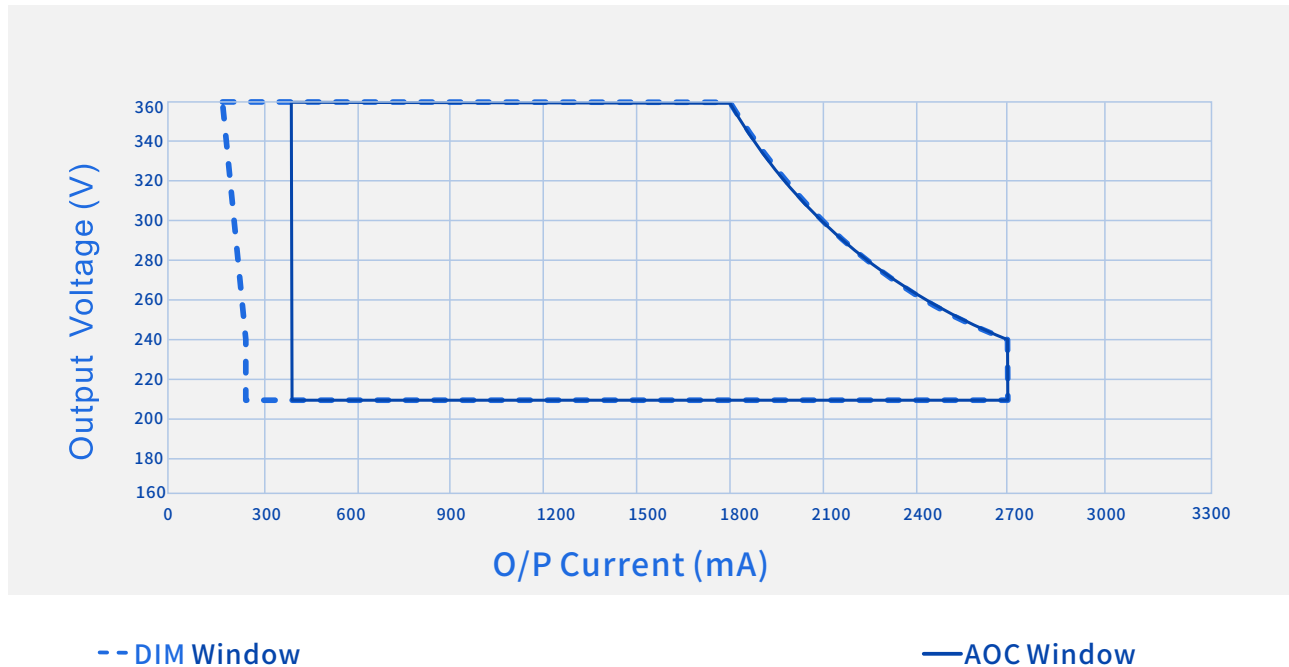


Vin	Ipeak	T(@10% of Ipeak)	T(@50% of Ipeak)
220Vac	22A		1.4mS
277Vac	25A	5.5mS	

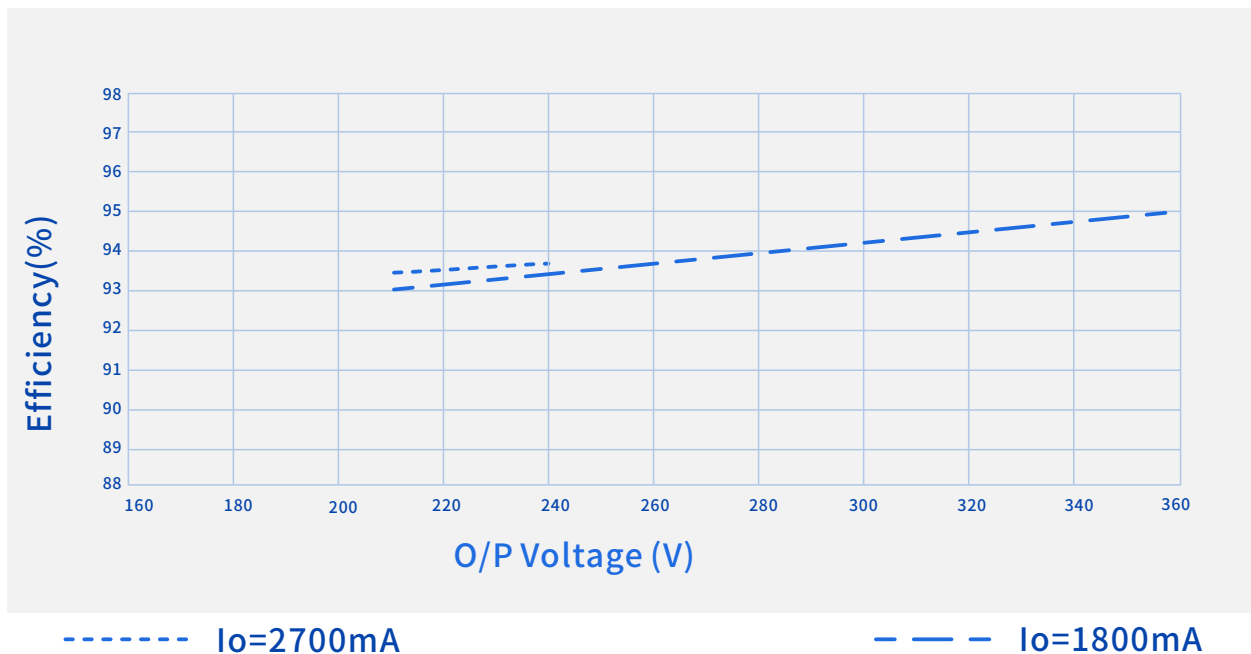
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Performance Curves:

O/P Voltage Vs. O/P Current(Dim/AOC Window)



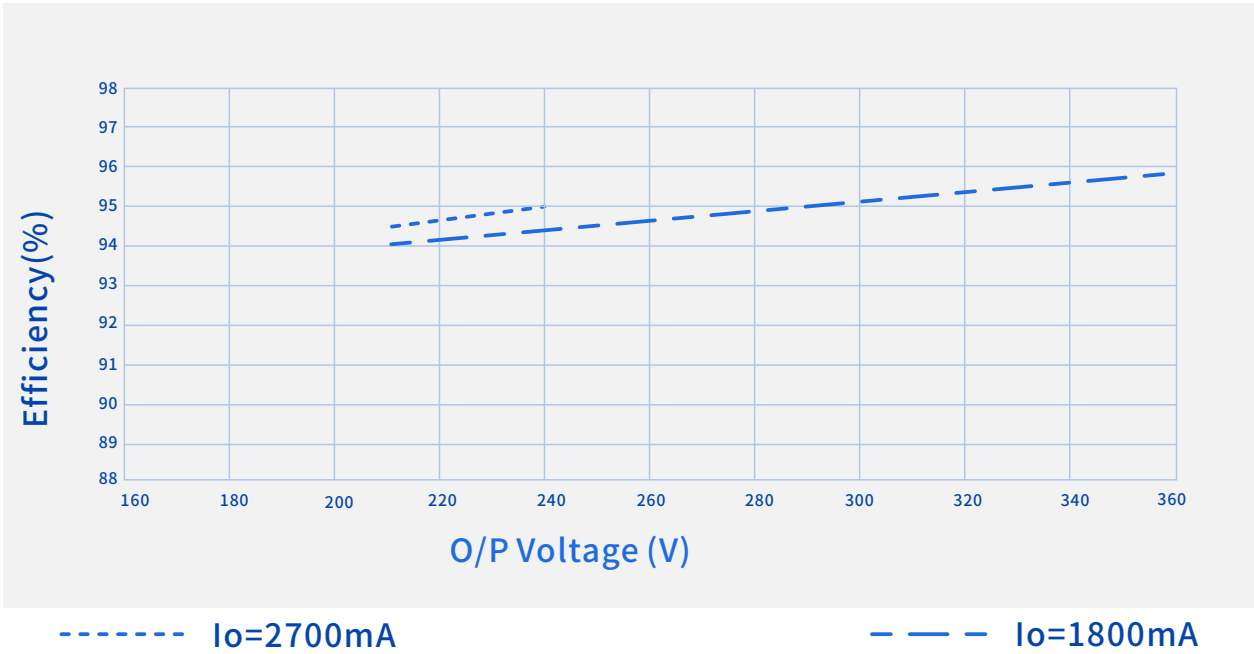
Efficiency Vs. O/P Voltage ($V_{in}=220V_{ac}$)



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Performance Curves:

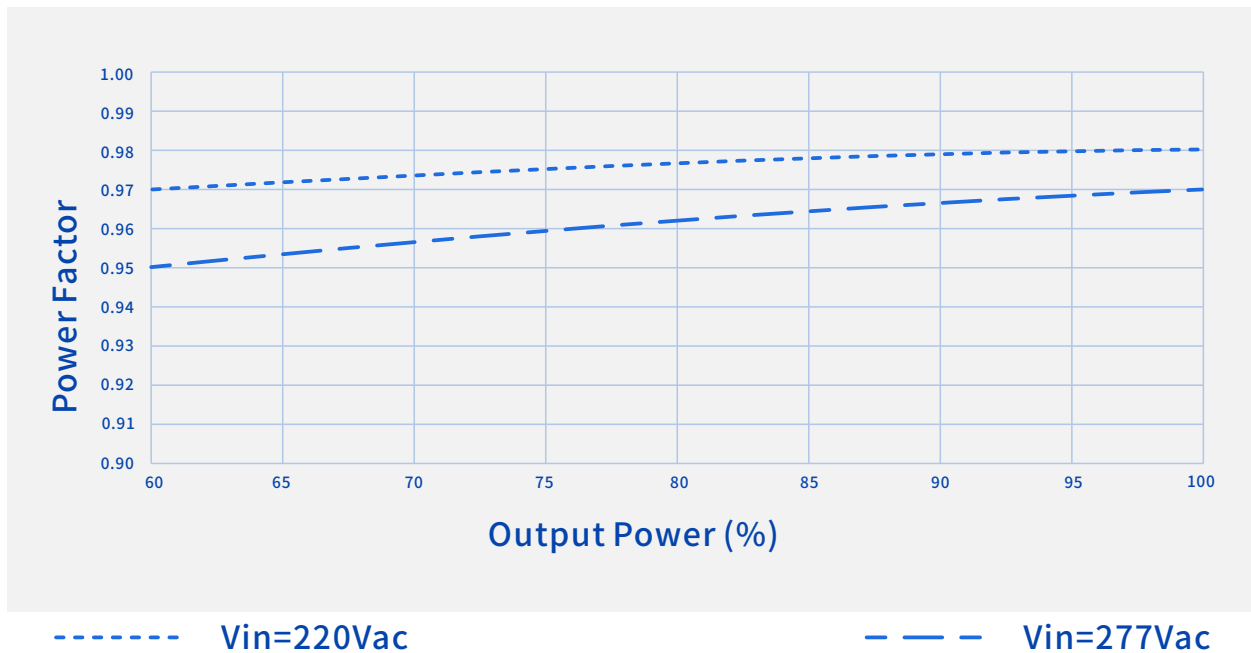
Efficiency Vs. O/P Voltage (Vin=277Vac)



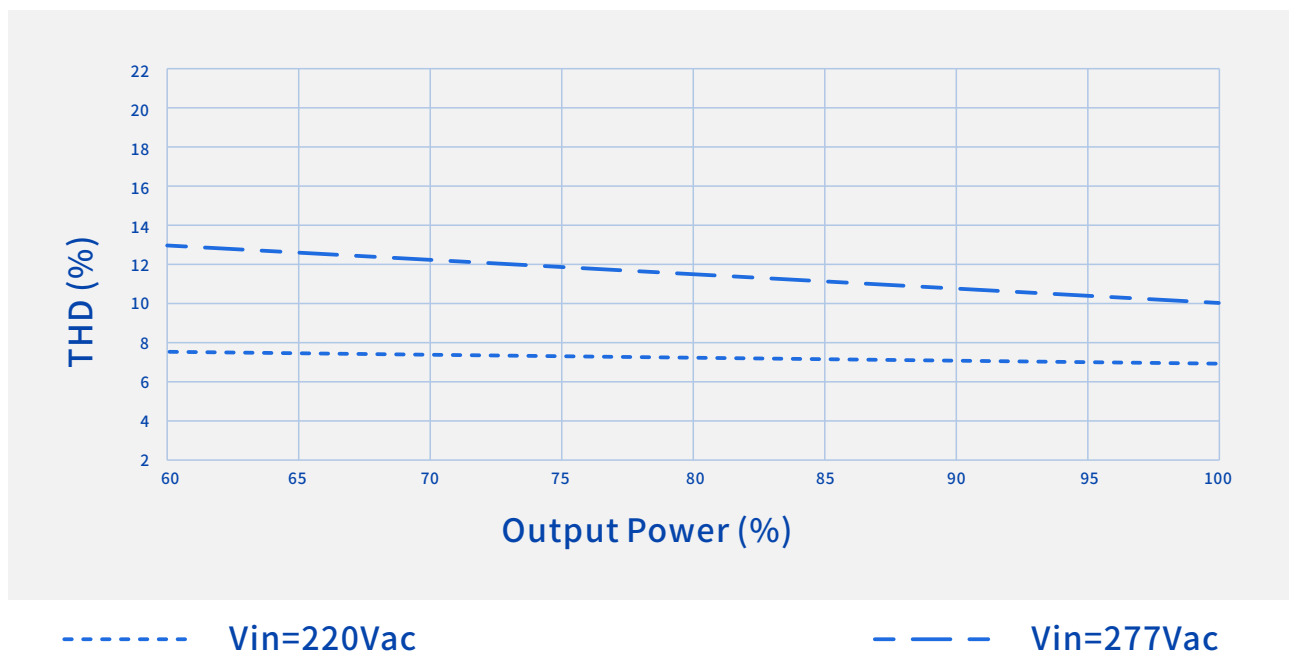
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Performance Curves:

Power Factor Vs. O/P Power



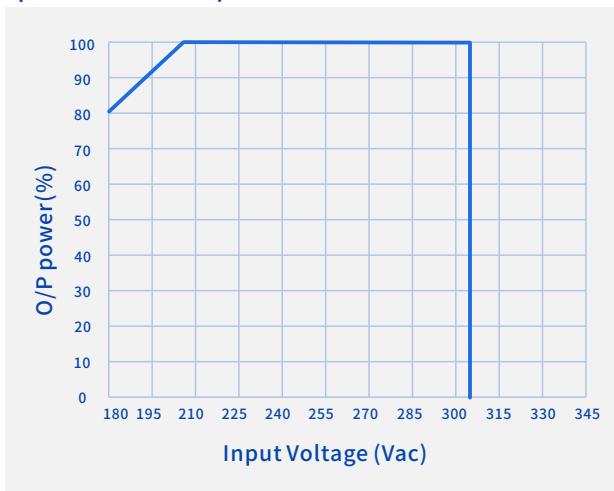
THD Vs. O/P Power



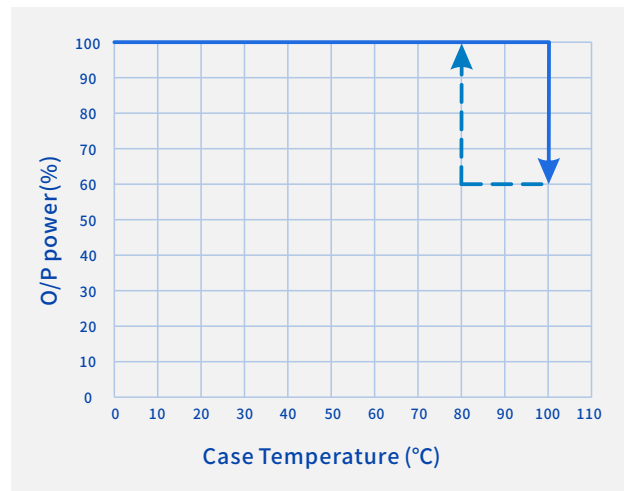
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Performance Curves:

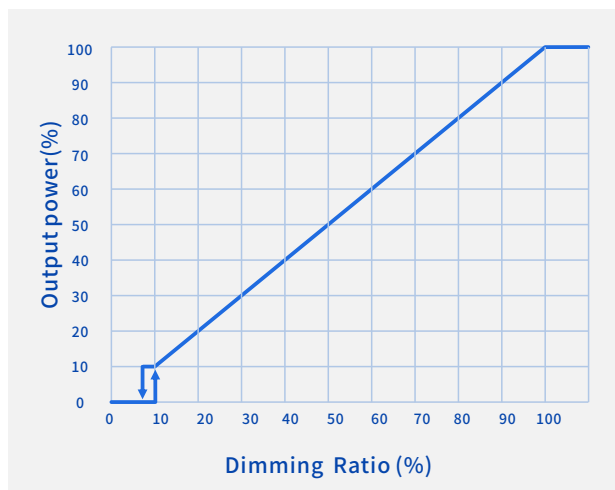
O/P Power Vs. Input Voltage
(Ta Max.50°C)



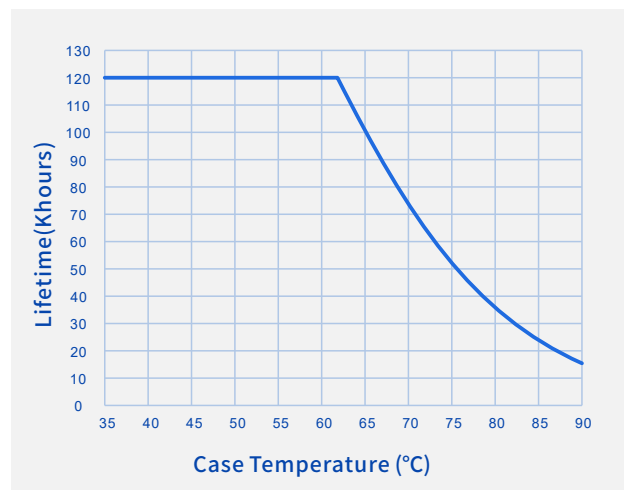
O/P Power Vs. Case Temperature



O/P Power Vs. Dimming



Lifetime Vs. Case Temperature



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Constant Lumen Output

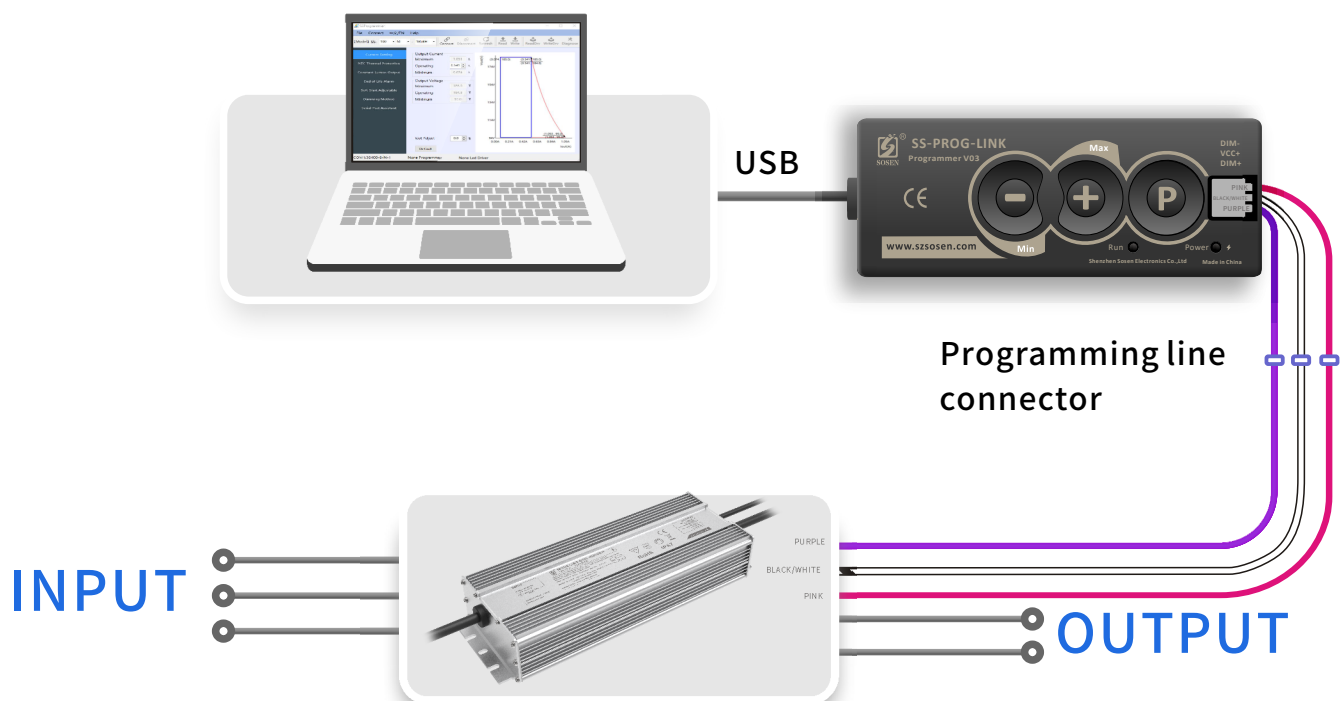
Constant Lumen Output are design to maintain fixture's stable output lumen by increasing driver's output current within driver's life span to counteract LED lumen degradation.

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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Mechanical Characteristics

INPUT

ACL

ACN



LED DRIVER

V+

V-

DIM+ / PROG
Dimming / Programming

DIM- / VGND

Vaux+ / VPROG
AUX Power

Vaux-

OUTPUT

AC Input Cable(Exposed Length $450\pm10\text{mm}$):

UL model: SJTW,3*18AWG,O.D: 7.8mm,Black:ACL,White:ACN,Green: 

EU model: H05RN-F,3*1.0mm²,O.D: 7.3mm,Brown:ACL,Blue:ACN, Yellow/Green: 

DC O/P Cable(Exposed Length $250\pm10\text{mm}$):

UL model: SJTW,2*18AWG,O.D: 7.3mm,Red: V+, Black: V

EU model: H05RN-F,2*1.0mm²,O.D: 7.0mm,Brown: V+, Blue: V-

DIM/AUX Power/Programming Cable (Exposed Length $220\pm10\text{mm}$):

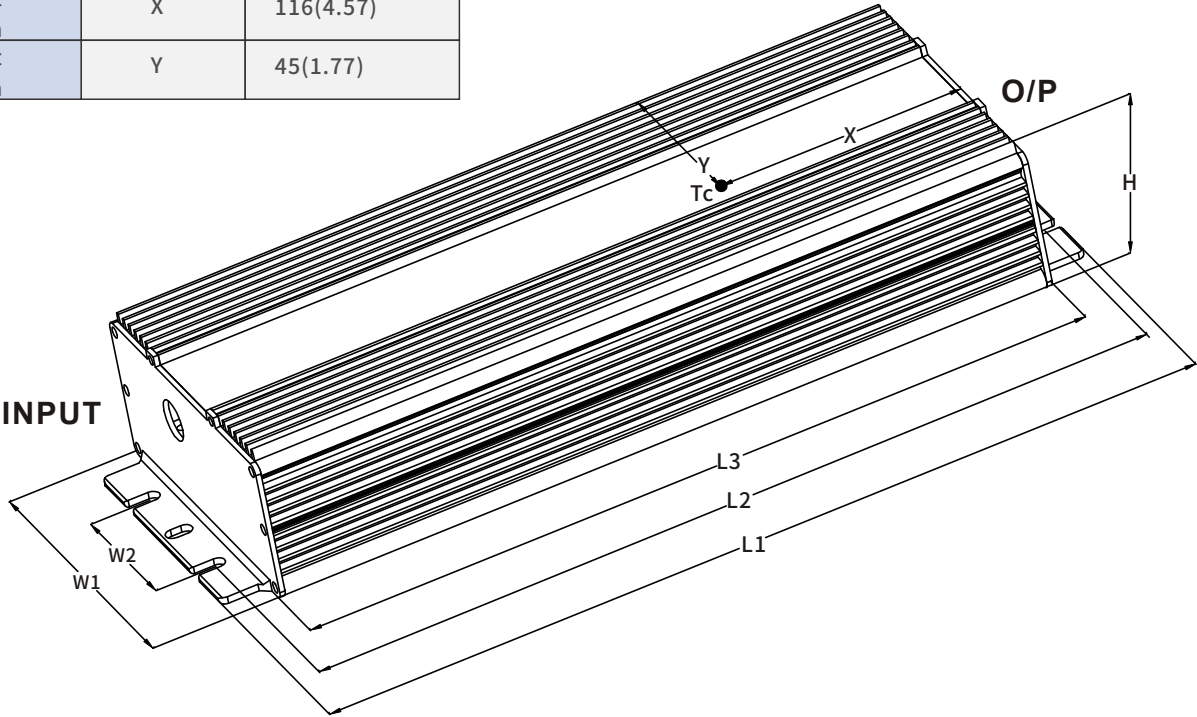
UL/EU model: STYLE 21996, 4*22AWG , O.D: 5.6mm, Purple: DIM+, Pink: DIM-, Black/White: Vaux+, Blue/White: Vaux-

Name Description	Standard Code	mm(In.)
Case Length	L3	225(8.86)
Case Width	W1	89.5(3.52)
Case Height	H	44.5(1.75)
Overall Length	L1	252(9.92)
Mounting Hole Length	L2	238.3(9.38)
Mounting Hole Width	W2	40(1.57)
TC Point Position	X	116(4.57)
TC Point Position	Y	45(1.77)

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: $43\pm5\text{mm}$, Tinned length of wire: $10\pm2\text{mm}$



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Assembly Tips

1. Please take isolation and waterproof measures if the dimming cable is not in use.
2. Withstand voltage of dielectric layers between aluminum PCB and LED>3KV.
3. Safety space between aluminum base and LED coppers >5mm.
4. Safety space/coppers between LED+ and LED- >1.8mm.
5. Minimize the copper area on the aluminum PCB to reduce parasitic capacitance and leakage current.
6. It is recommended to design LED beads in parallel first and then in series.
7. It's recommended to add resistors or capacitors in parallel with the LED on PCB to reduce the risk of surge when a non isolated LED driver is used for the luminaire

Package

- Outside carton dimension: L×W×H=493mm×385mm×116mm;
- 7PCS/Carton;
- Net weight/Piece: 1.745kg;Gross weight/Carton: 13.2kg;
- 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	2022/03/26	
V01	Updated Rendering	2024/08/03	
V02	Version upgrade	2025/07/04	