

SOSEN LED Driver, Your Smart Choice

Specifications

SS-60VH-PXX^{*} LED Driver

Model: SS-60VH-PXX^{*}

Description: 60W LED Driver

Rev.: V00

Release Date: 2024-04-30

SS-60VH-PXX* LED Driver

SOSEN
LED DRIVER



LED DRIVER

VH-PXX*



Features:

- Efficiency up to 89%
- Programmable isolation dimming: voltage(positive or negative logic) , PWM, Resistor, Timing
- Surge protection: CM: 6kV, DM: 6kV
- CLO, ELA, SSA
- Suitable for Class I and Class II applications
- IP65
- Protections: SCP/OVP/OTP
- Warranty: 5 years

EN05 UK CA CCC CE
CB IP65 RoHS

Description:

SS-60VH-PXX* is 60W waterproof constant current LED drive power supply, adapts to global voltage input, is compatible with a variety of dimming, has high power factor, high reliability, high efficiency, and a compact housing. Good heat dissipation and comprehensive protection are conducive to the design of LED lamps and reduce the cost of LED lamp manufacturers.

Applications:

Tunnel lighting, Wall washer lighting, Street lighting, Stage lighting, Plant lighting, Venue 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-60VH-P54*	90-305Vac	60W	27-54V	36-54V	0.35-1.67A	12%	0.97	88.0%	90°C
SS-60VH-P86*	90-305Vac	60W	43-86V	54-86V	0.35-1.1A	12%	0.97	89.0%	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.

SS-60VH-PXX* LED Driver

“★” Means Additional Function

“★”	0-10V/PWM Dim /Resistor Or 10-0V (suffix:B)	DALI (suffix:D)	NFC	Class I	Class II	Remark
B	✓			✓		
BE	✓				✓	

Input Characteristics:

Parameter	Min.	Typ.	Max.	Remark
Rated AC Input Range	100Vac		277Vac	
AC Input Range	90Vac		305Vac	Reference derating curve
Input Frequency Range	47Hz	50/60Hz	63Hz	
Max Input Current			0.8A	100Vac, Full load
			0.33A	277Vac, Full load
Max Input Power			75W	100Vac, Full load
Max Inrush Current(120Vac)			50A	Cold start
Max Inrush Current(220Vac)			65A	Cold start
Max Inrush Current(277Vac)			75A	Cold start
No Load Power			3W	220Vac/50Hz
Power Factor	0.95	0.97		220Vac/50Hz, Full load
	0.90			100-277Vac/50Hz, 80-100% load
THD		12%	15%	220Vac/50Hz, Full load
			20%	100-277Vac/50Hz, 80-100% load

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O/P Characteristics(SS-60VH-P54*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	27V		54V	Power derated @27-36V
Rated O/P Voltage	36V		54V	Po=Vo*Io=60W, Full load
Rated O/P Current	1.11A		1.67A	1.67A for 36V,1.11A for 54V
Adj. O/P Current (AOC)Range	0.35A		1.67A	
No Load Voltage			75V	
Efficiency @120Vac	85.0%	87.0%		O/P 54V/1.11A
Efficiency @220Vac	87.0%	89.0%		O/P 54V/1.11A
Efficiency @277Vac	86.0%	88.0%		O/P 54V/1.11A
O/P Current Tolerance	-8%		+8%	
O/P Current Ripple(PK-AV)		70%	90%	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			1.0S	120Vac,Full load
			0.5S	220Vac,Full load
Line Regulation	-8%		+8%	Full load
Load Regulation	-8%		+8%	
Temperature Coefficient	-0.07%/°C		+0.07%/°C	Tc:0°C~90°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				Driver will not be damaged

SS-60VH-PXX* LED Driver

O/P Characteristics(SS-60VH-P86*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	43V		86V	Power derated @43-54V
Rated O/P Voltage	54V		86V	Po=Vo*Io=60W, Full load
Rated O/P Current	0.7A		1.1A	1.1A for 54V,0.7A for 86V
Adj. O/P Current (AOC)Range	0.35A		1.1A	
No Load Voltage			115V	
Efficiency @120Vac	86.5%	88.5%		O/P 86V/0.7A
Efficiency @220Vac	88.0%	90.0%		O/P 86V/0.7A
Efficiency @277Vac	88.0%	90.0%		O/P 86V/0.7A
O/P Current Tolerance	-8%		+8%	
O/P Current Ripple(PK-AV)		70%	100%	Full load
Start-up Current Overshoot		10%	15%	Full load
Start-up Time			1.0S	120Vac,Full load
			0.5S	220Vac,Full load
Line Regulation	-8%		+8%	Full load
Load Regulation	-8%		+8%	
Temperature Coefficient	-0.07%/°C		+0.07%/°C	Tc:0°C~90°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				Driver will not be damaged

SS-60VH-PXX* LED Driver

Other Characteristics:

Parameter		Min.	Typ.	Max.	Remark
0-10V Positive Dimming (Configurable)	Dim Vmax	0V		12V	DIM+ source current 110uA. Dimming prohibits reverse connection Configurable to 0-5V
	Dim Range	10%Iomax		100%loset	
	Rec.Dim Range	0V		10V	
10-0V Negative Dimming (Configurable)	Rec.Dim Range	0V		10V	DIM+ sink current I _{max} 40uA. Dimming prohibits reverse connection
PWM Dimming (Optional)	PWM High	9.8V		10.2V	DIM+ source current 110uA. Dimming prohibits reverse connection
	PWM Low	0V		0.3V	
	Frequency	1KHz		2KHz	
	PWM Duty	0%		100%	
Resistor Dimming (Optional)	Resistance	0Kohm		100Kohm	Not available with negative logic
	Dim Range	10%Iomax		100%loset	DIM+ source current 110uA .
0-10V Dim to Off	Dim off	0.6V	0.8V	1.0V	If the led is less than maximum rated output voltage of 75%,the luminaries may possibly have slight light when dim-to-off. Thus the whole lighting system needs to be tested
	Dim on	0.7V	0.9V	1.1V	
10-0V Dim to Off	Dim off	9.0V	9.2V	9.4V	
	Dim on	8.8V	9.0V	9.2V	
Timing Curve(Optional)		By programming			Set by program (Externally programmable)
Lifetime(Tc≤75°C)		≥50,000 hours			80% load
MTBF		262,000 hours			220Vac,Full load, Ta=25°C (MIL-HDBK-217F)
IP Grade		IP65			
Tc		90°C			
Warranty		5 years			Tc: 75°C
Net Weight		440g			
Dimension		105mm*66mm*35mm			L x W x H

NOTE: All the parameters above are tested Ta 25°C and LED load, unless specified.

SS-60VH-PXX* LED Driver

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
ENEC	EN 61347-1:2015 EN 61347-2-13:2014 EN 61347-2-13:2014/A1:2017	✓	
UKCA	EN 61347-1:2015+A1:2021 EN 61347-2-13:2014+A1:2017 EN 62493:2015 BS EN 61347-1:2015+A1:2021 BS EN 61347-2-13:2014+A1:2017 BS EN 62493:2015	✓	
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	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
Ring Wave	IEC/EN 61000-4-12	DM: 6kV,CM: 6kV,Criterion B

SS-60VH-PXX* LED Driver

Safety Test Items(Class I equipment):

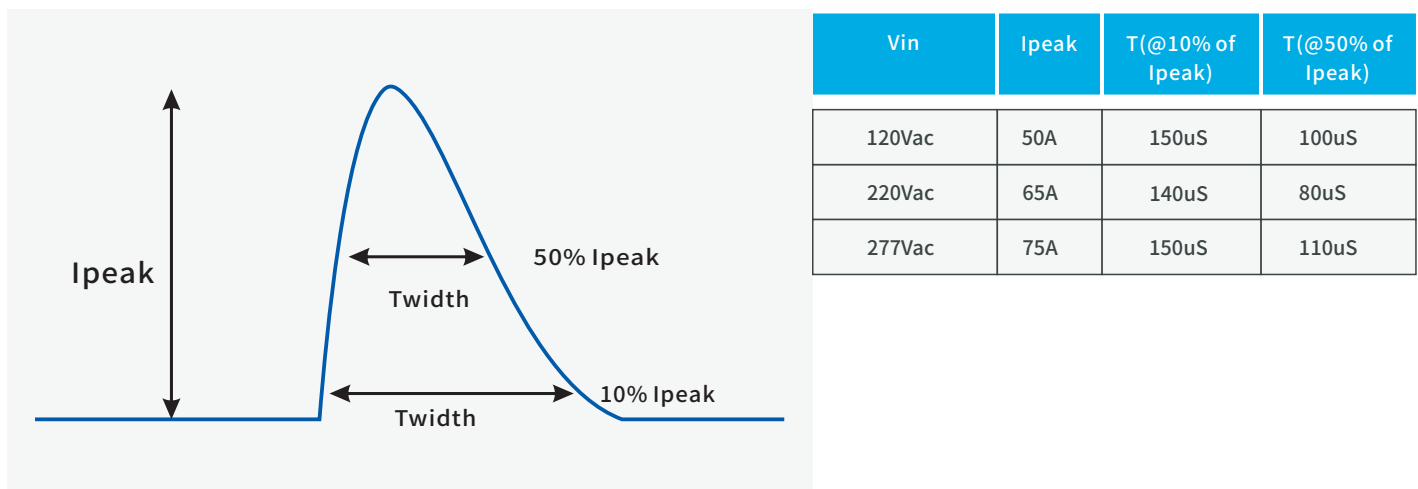
Safety Test Items	Technical Indicators			Remark
Insulation Requirements	UL Insulation Requirements	ENEC Insulation Requirements	CCC Insulation Requirements	
Input-O/P	/	3000Vac	3750Vac	Reinforced insulation
Input-Case	/	1500Vac	1875Vac	Basic insulation
Input-Dim	/	3000Vac	3750Vac	Reinforced insulation
O/P-Dim	/	1000Vac	1000Vac	Basic insulation
O/P-Case	/	1000Vac	1000Vac	Basic insulation
Dim-Case	/	250Vac	500Vac	Basic insulation
Insulation Resistance	$\geq 10M\Omega$			Input-O/P,Test voltage:500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min

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 of components.
2. Please short (ACL and ACN), (V+ and V-), (Dim+ and Dim - and VPP+)when Hi-pot test.

Performance Curves:

Input Inrush Current



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Safety Test Items(Class II equipment):

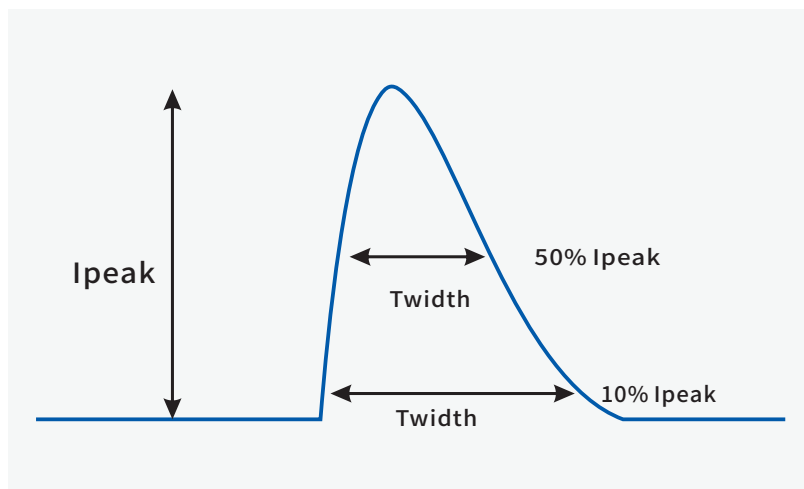
Safety Test Items	Technical Indicators			Remark
Insulation Requirements	UL Insulation Requirements	ENEC Insulation Requirements	CCC Insulation Requirements	
Input-O/P	/	3000Vac	3750Vac	Reinforced insulation
Input-Case	/	3000Vac	3750Vac	Reinforced insulation
Input-Dim	/	3000Vac	3750Vac	Reinforced insulation
O/P-Dim	/	1000Vac	1000Vac	Basic insulation
O/P-Case	/	1000Vac	1000Vac	Basic insulation
Dim-Case	/	250Vac	500Vac	Basic insulation
Insulation Resistance	$\geq 10M\Omega$			Input-O/P,Test voltage:500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min
Touch Current(IEC Class II)	$\leq 0.7mA(\text{peak})$			IEC60598-1 ; 220Vac/50Hz

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 of components.
2. Please short (ACL and ACN), (V+ and V-), (Dim+ and Dim - and VPP+) when Hi-pot test.

Performance Curves:

Input Inrush Current

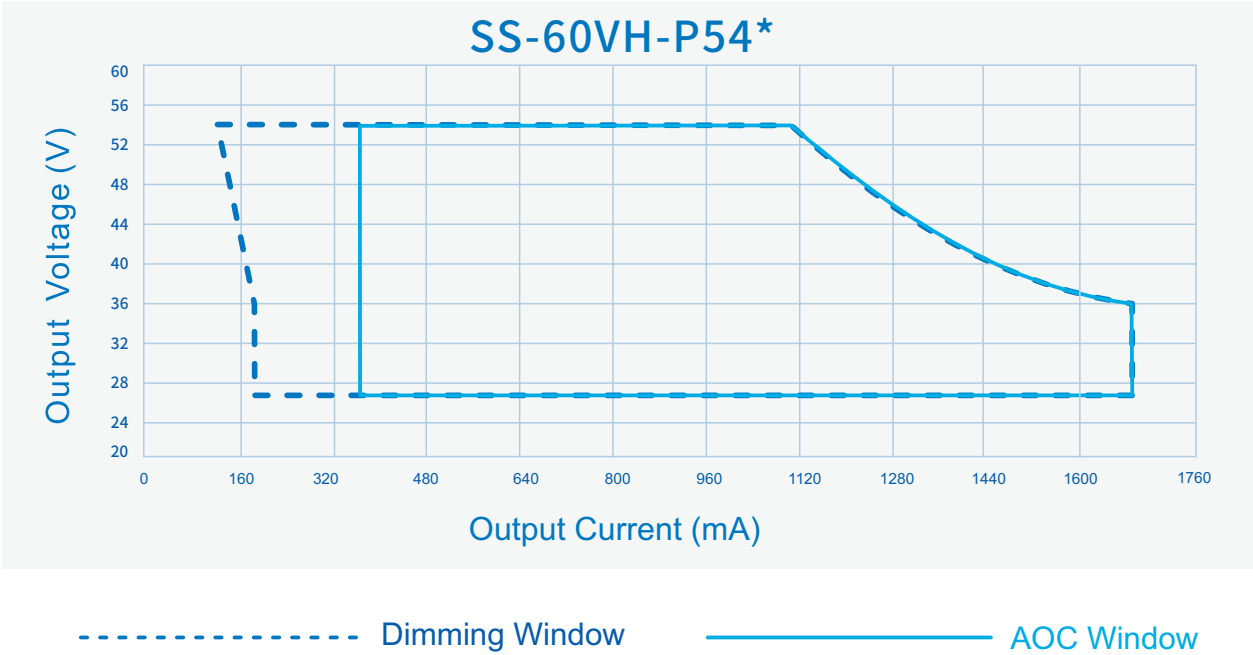


Vin	Ipeak	T(@10% of Ipeak)	T(@50% of Ipeak)
120Vac	50A	150uS	100uS
220Vac	65A	140uS	80uS
277Vac	75A	150uS	110uS

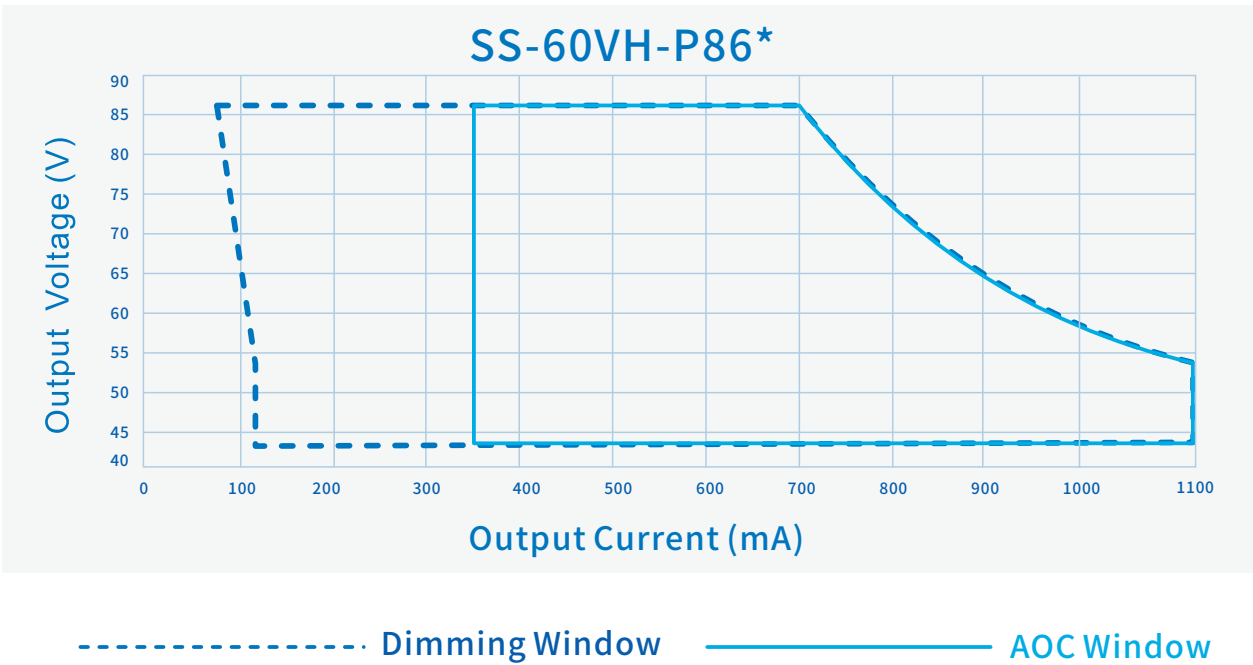
SS-60VH-PXX* LED Driver

Performance Curves:

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



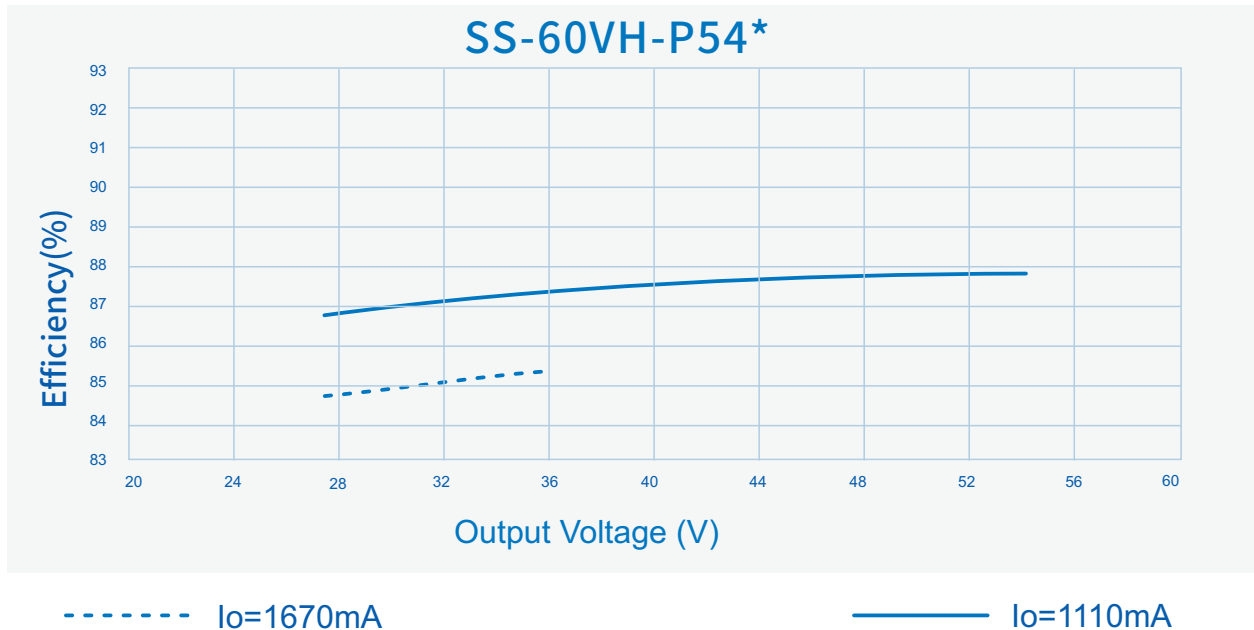
O/P Voltage Vs. O/P Current(Dim/AOC Window)



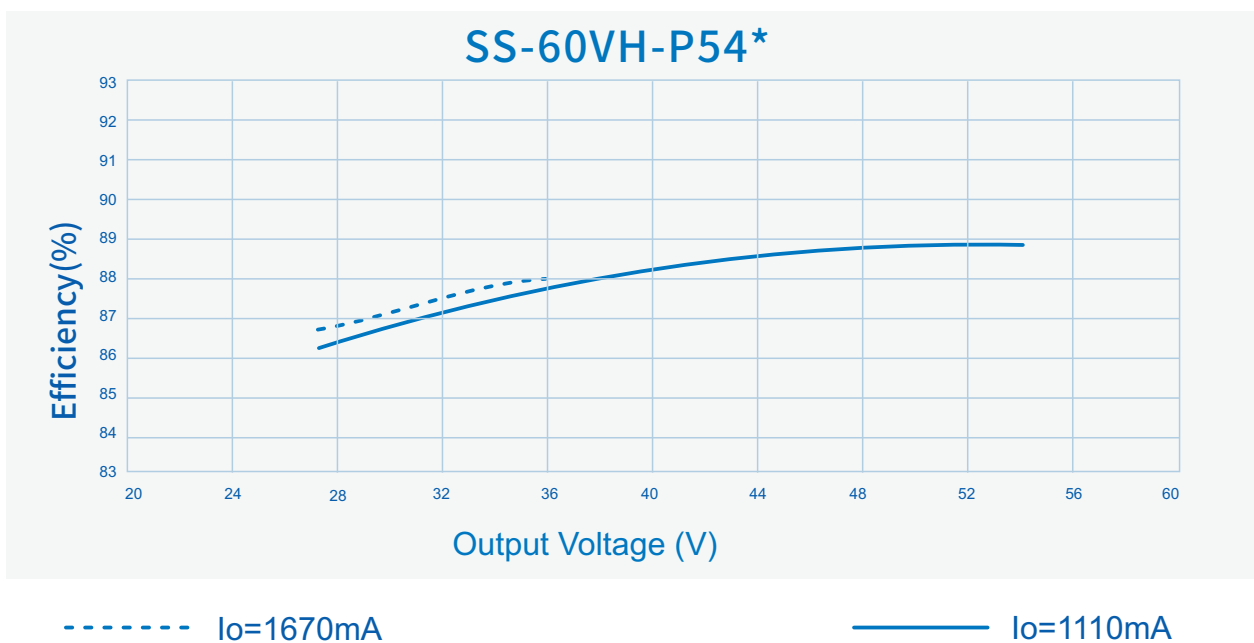
SS-60VH-PXX* LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=120V_{ac}$)



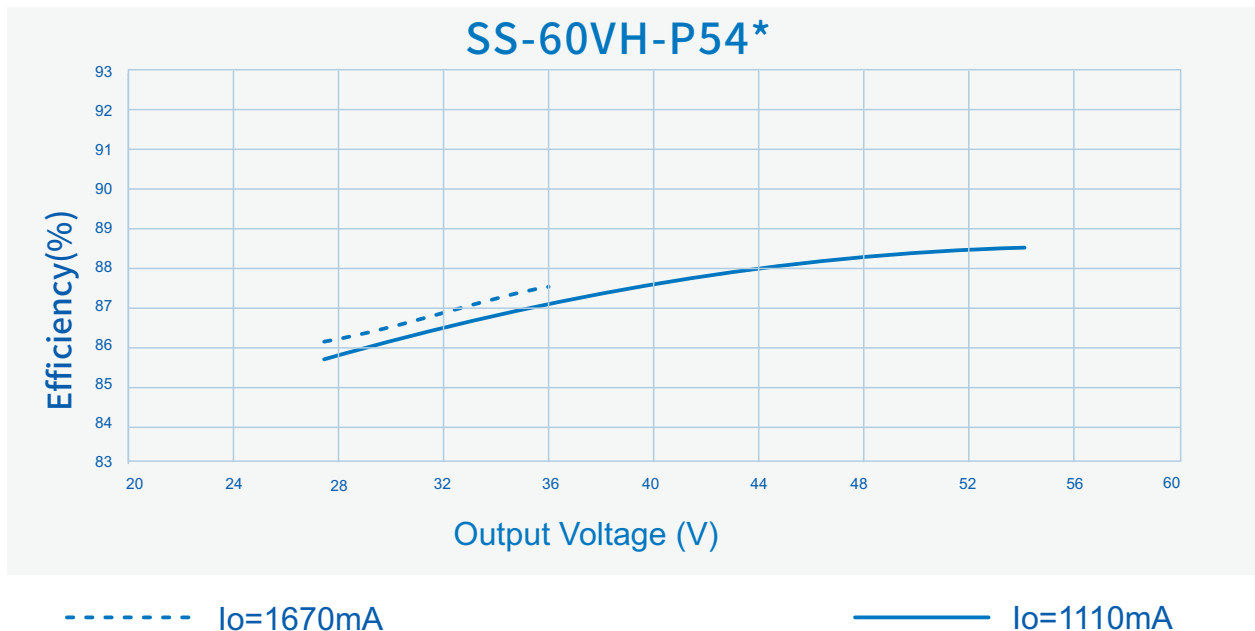
Efficiency Vs. O/P Voltage ($V_{in}=220V_{ac}$)



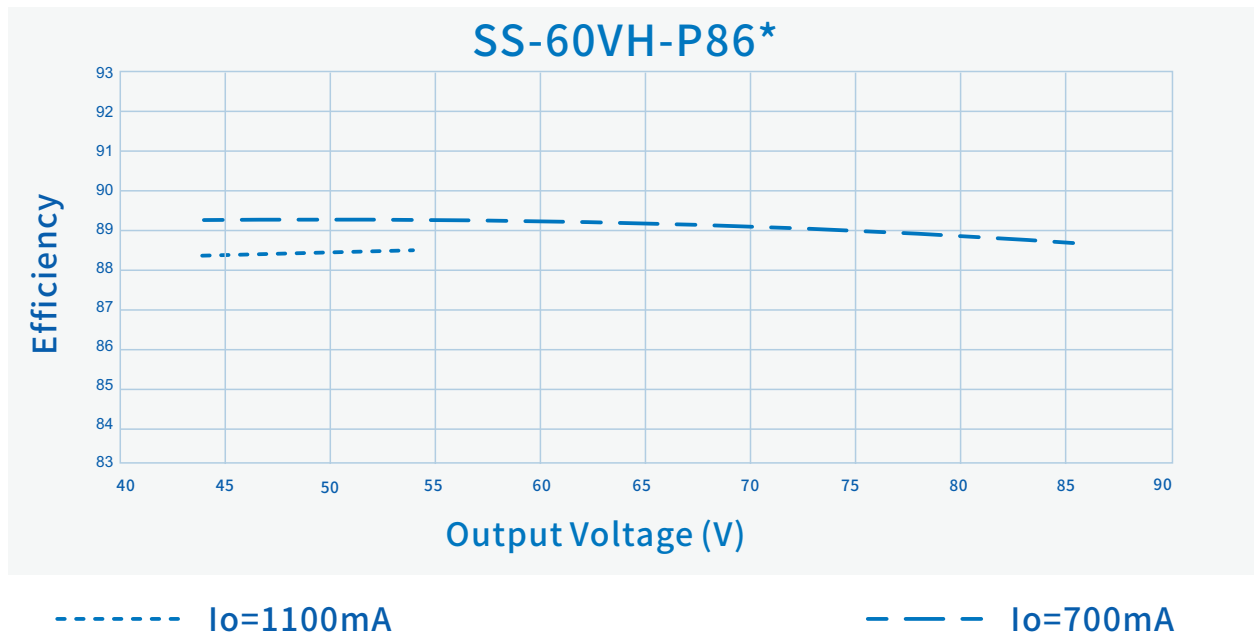
SS-60VH-PXX* LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=277V_{ac}$)



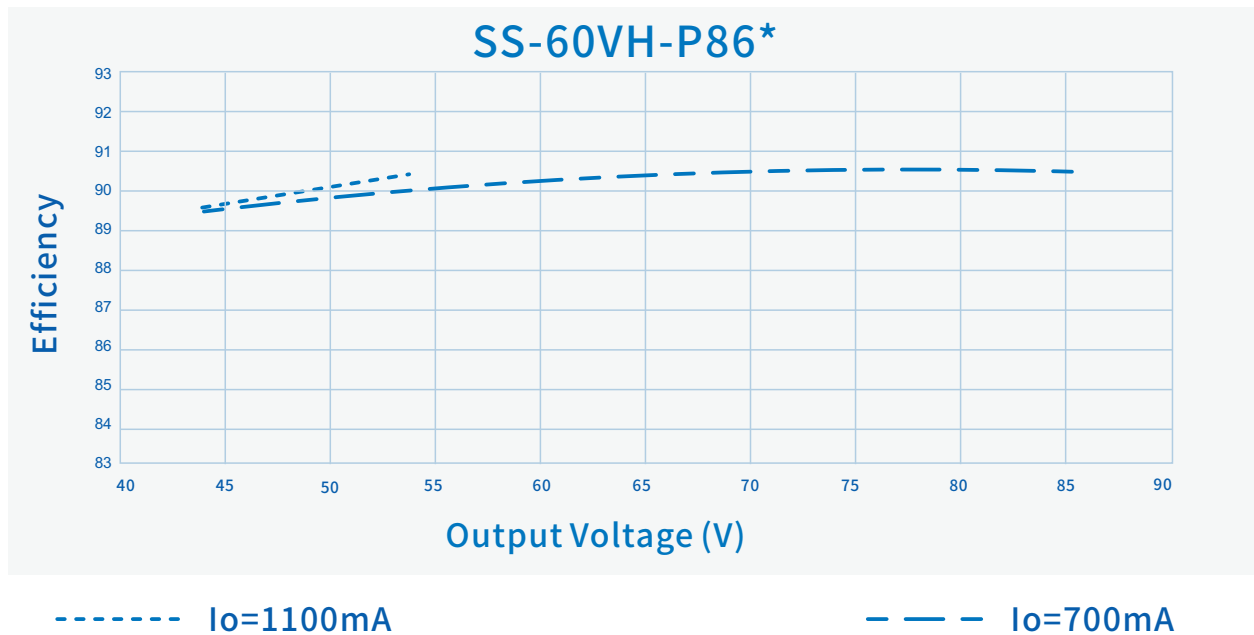
Efficiency Vs. O/P Voltage ($V_{in}=120V_{ac}$)



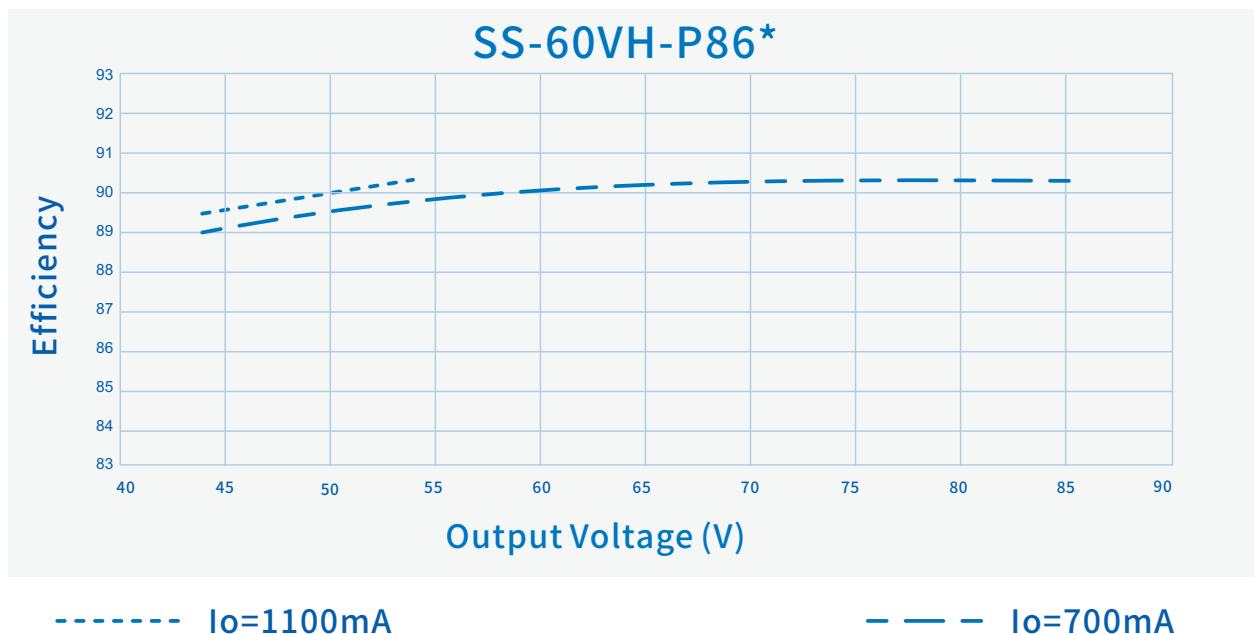
SS-60VH-PXX* LED Driver

Performance Curves:

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



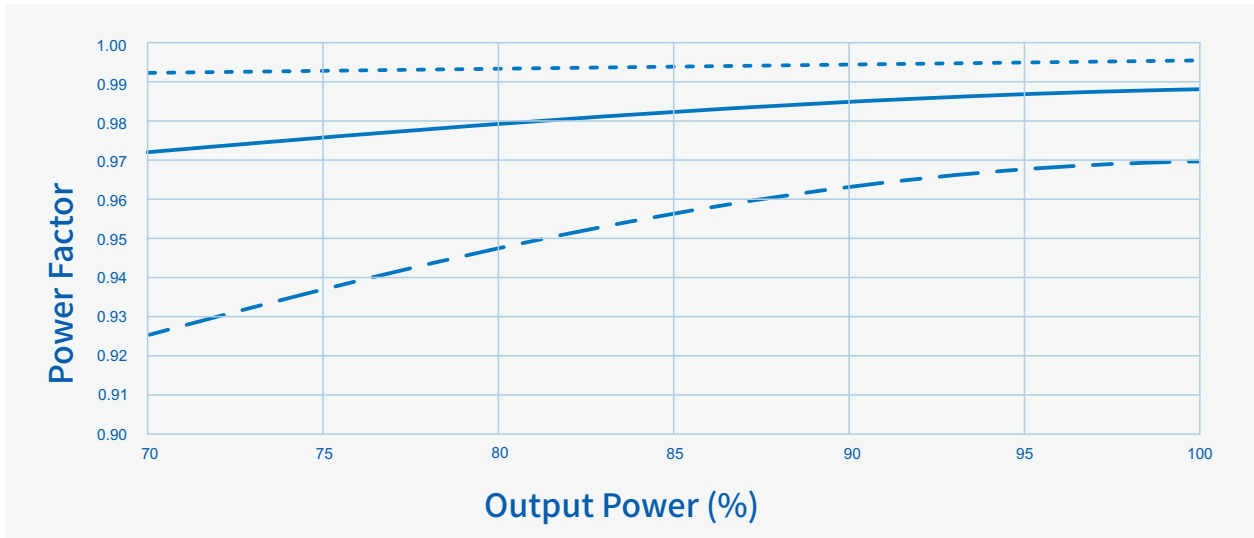
Efficiency Vs. O/P Voltage ($V_{in}=277V_{ac}$)



SS-60VH-PXX* LED Driver

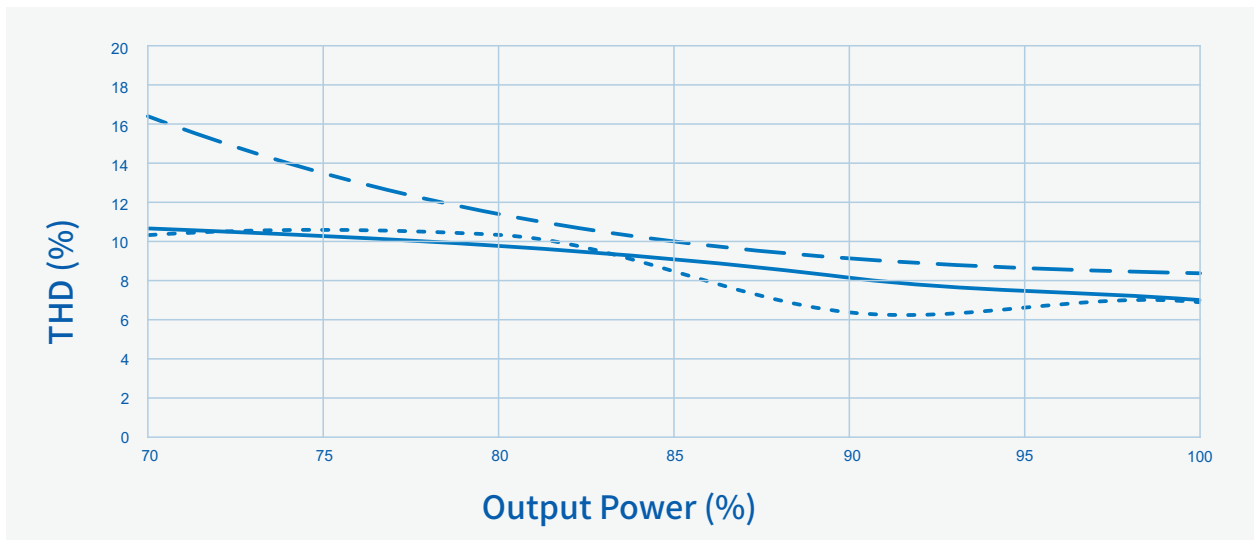
Performance Curves(SS-60VH-P54*):

Power Factor Vs. O/P Power



----- Vin=120Vac ————— Vin=220Vac - . - . Vin=277Vac

THD Vs. O/P Power

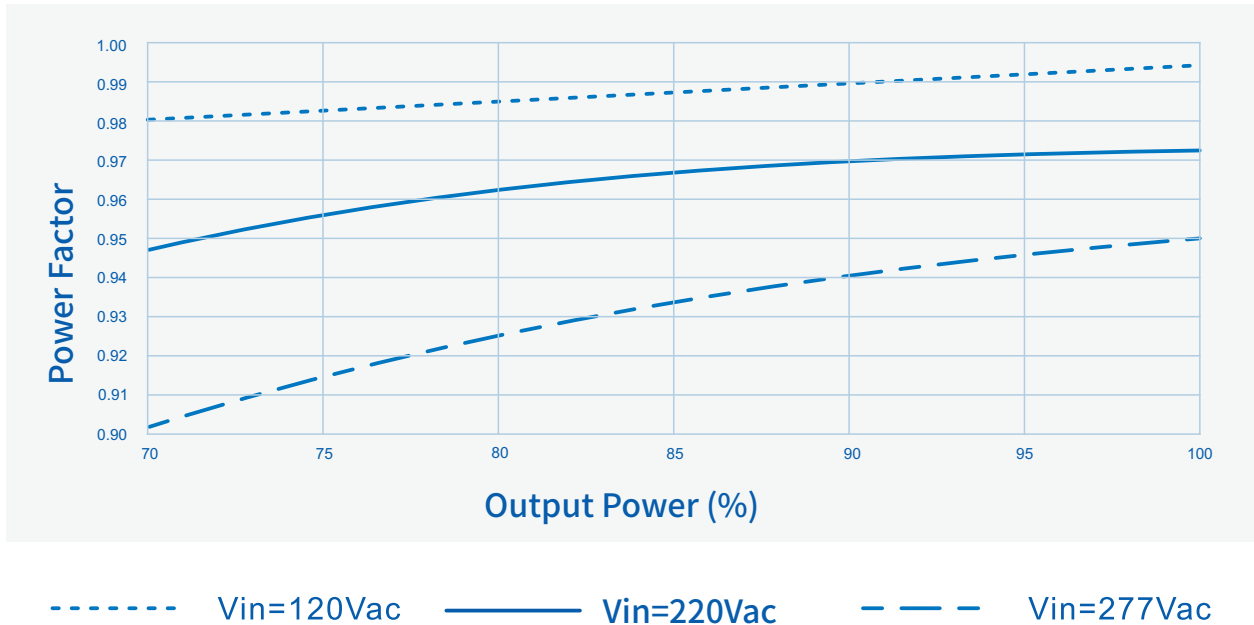


----- Vin=120Vac ————— Vin=220Vac - . - . Vin=277Vac

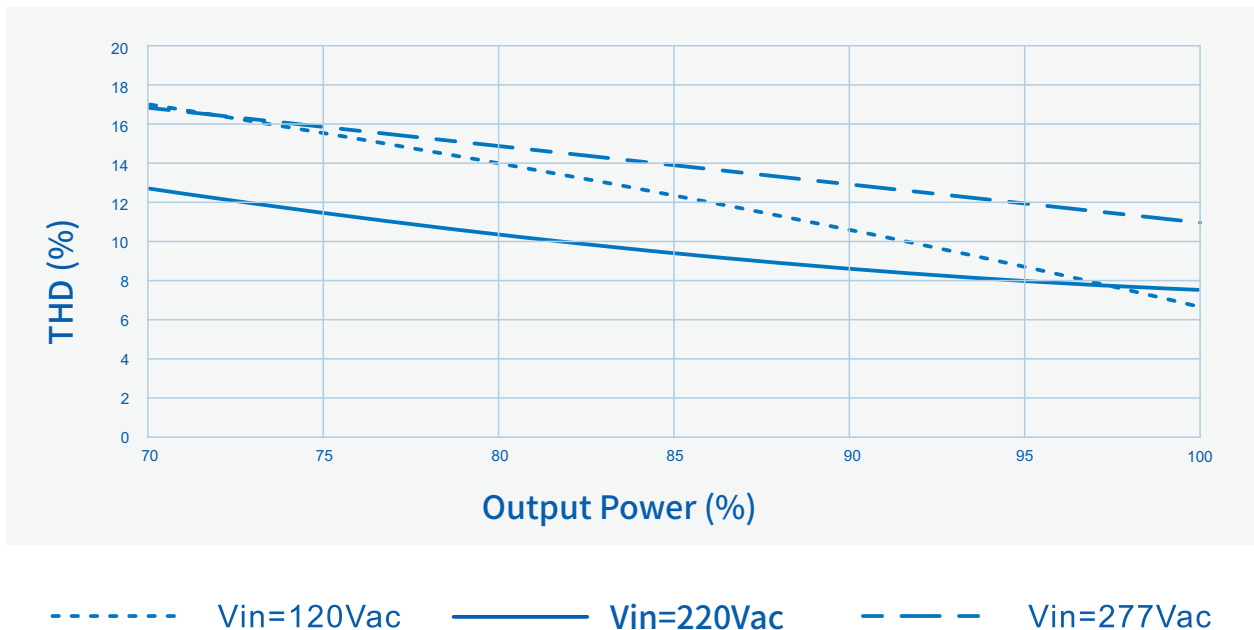
SS-60VH-PXX* LED Driver

Performance Curves(SS-60VH-P86*):

Power Factor Vs. O/P Power



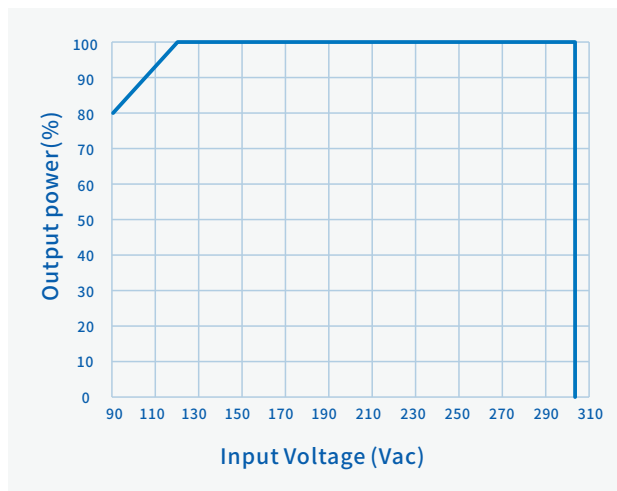
THD Vs. O/P Power



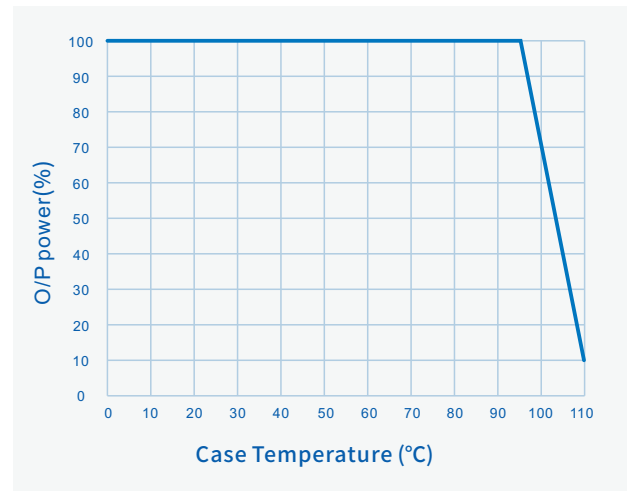
SS-60VH-PXX* LED Driver

Performance Curves:

O/P Power Vs. Input Voltage



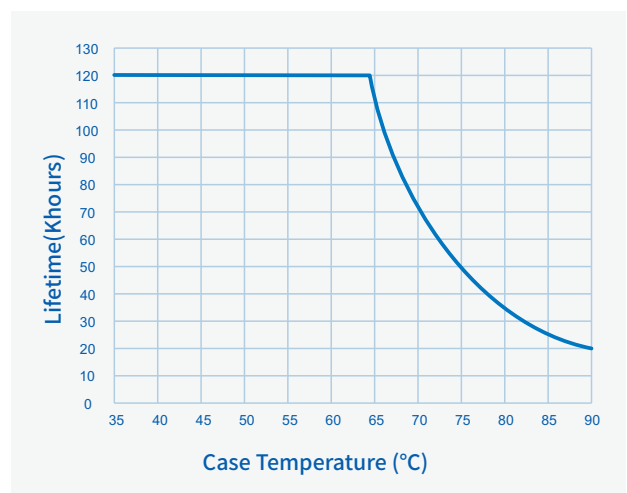
Output power Vs. Case Temperature



O/P Power Vs. Dimming



Lifetime Vs. Case Temperature



- 0-10V,0-5V,PWM
- 10-0V
- Resistor Dimming(100KΩ)

SS-60VH-PXX* LED Driver

Constant Lumen Output

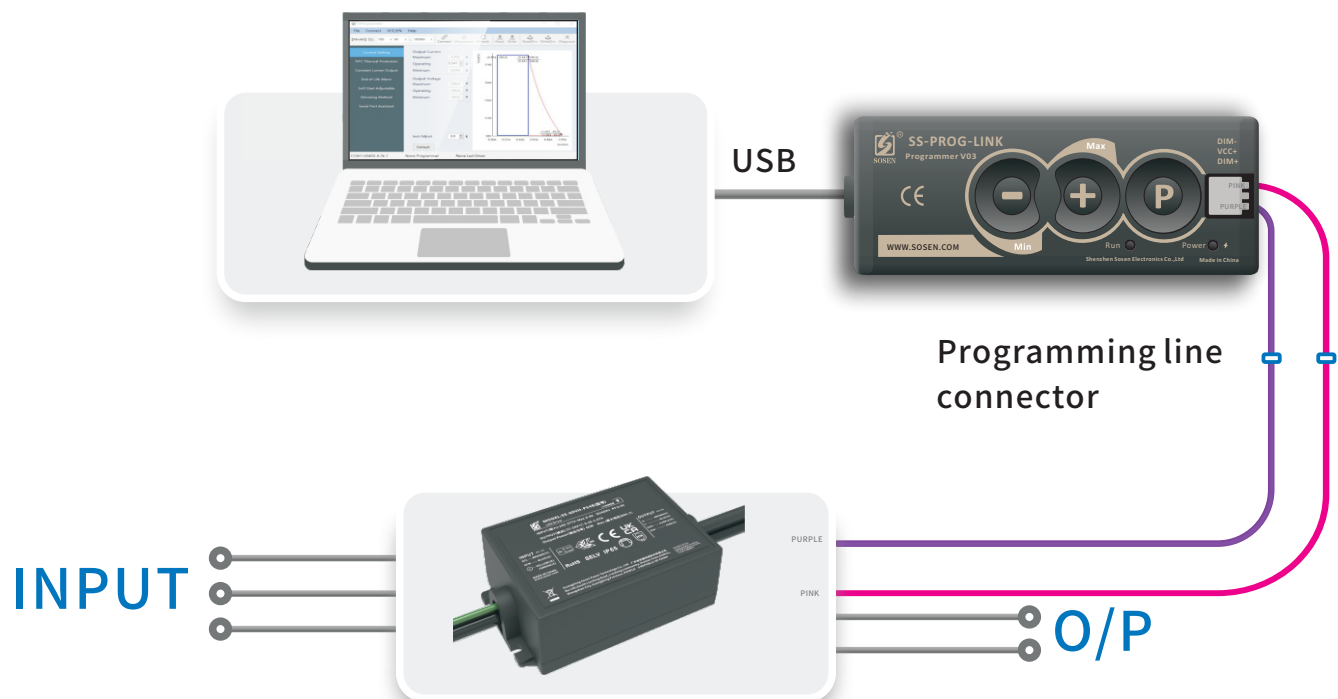
Constant Lumen output are design to maintain fixture's stable output lumen by increasing driver's output current within driver's life span to counteract LED lumen degradation.

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.

SS-60VH-PXX* LED Driver

Mechanical Characteristics(Class I equipment)

The diagram shows a central blue rectangle labeled "LED DRIVER". On the left side, under the heading "INPUT", there are four terminals: "ACL", "ACN", a ground symbol, and another ground symbol. On the right side, under the heading "OUTPUT", there are four terminals: "V+", "V-", "DIM+", and "DIM-". The "DIM+" and "DIM-" terminals are grouped under the heading "Dimming".

AC Input Cable(Exposed Length $450\pm10\text{mm}$):
EU model: H05RN-F, $3\times1.0\text{mm}^2$, O.D: 7.3mm, Brown:L, Blue:N, Yellow/Green: $\oplus$

PE Ground Wire With Copper Ear (Exposed Length $60\pm10\text{mm}$):
UL model: 21996, 18AWG, O.D: 2.7-2.85mm, 600V, Yellow/Green: $\oplus$

DC O/P Cable(Exposed Length $250\pm10\text{mm}$):
EU model: H05RN-F, $2\times1.0\text{mm}^2$, O.D: 7.0mm, Red:V+, Black:V-

DIM/Timing Cable(Exposed Length $220\pm10\text{mm}$):
UL model: UL 21996, $3\times22\text{AWG}$, O.D: 4.7mm, Purple: DIM+, Pink: DIM-

Name Description	Standard Code	mm(In.)
Case Length	L3	92(3.62)
Case Width	W1	66(2.6)
Case Height	H	35(1.38)
Overall Length	L1	105(4.13)
Mounting Hole Length	L2	100(3.94)
Mounting Hole Width	W2	32(1.26)
TC Point Position	X	57(2.24)
TC Point Position	Y	28(1.1)

Note:

- Please follow the "LED Driver User Manual" obtained from SOSEN's official website for assembly.
- AC Input Cable, DC O/P Cable, DIM/AUX Power/Programming Cable: Peeled length of cable: $43\pm5\text{mm}$, Tinned length of wire: $10\pm2\text{mm}$

The 3D drawing shows the physical dimensions of the LED driver. It is a rectangular component with a central square area. Dimensions are labeled as follows: "INPUT" points to the left side, "OUTPUT" points to the right side, "W1" is the case width, "W2" is the mounting hole width, "L1" is the overall length, "L2" is the mounting hole length, "H" is the case height, "X" is the distance from the left edge to the center of the top terminal, and "Y" is the distance from the top edge to the center of the terminal. A point "Tc" is marked at the center of the top terminal.

SS-60VH-PXX* LED Driver

Mechanical Characteristics(Class II equipment)

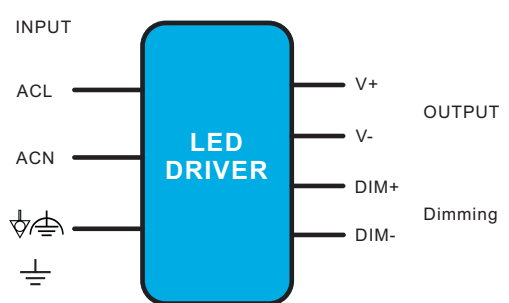


Diagram showing the LED DRIVER pinout. INPUT: ACL, ACN, and a ground symbol. OUTPUT: V+, V-, DIM+, and DIM-. The DIM+ and DIM- pins are grouped under the label "Dimming".

AC Input Cable(Exposed Length 450±10mm):
EU model: H05RN-F, 2*1.0mm², O.D: 7.3mm, Brown:L, Blue:N

PE Ground Wire With Copper Ear (Exposed Length 60±10mm):
UL model: 21996, 18AWG, O.D: 2.7-2.85mm, 600V, Black, ENEC:  CCC: 

DC O/P Cable(Exposed Length 250±10mm):
EU model: H05RN-F, 2*1.0mm², O.D: 7.0mm, Red:V+, Black:V-

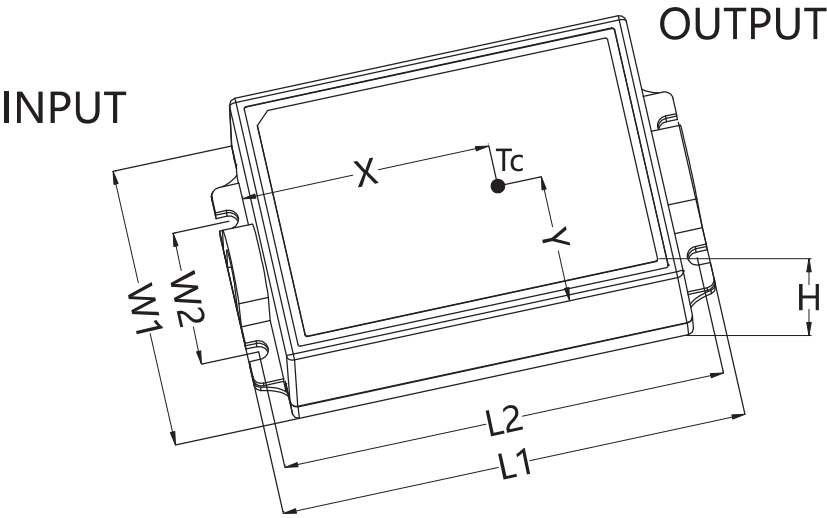
DIM/Timing Cable(Exposed Length 220±10mm):
UL model: UL 21996, 3*22AWG, O.D: 4.7mm, Purple: DIM+, Pink: DIM-

Name Description	Standard Code	mm(In.)
Case Length	L3	92(3.62)
Case Width	W1	66(2.6)
Case Height	H	35(1.38)
Overall Length	L1	105(4.13)
Mounting Hole Length	L2	100(3.94)
Mounting Hole Width	W2	32(1.26)
TC Point Position	X	57(2.24)
TC Point Position	Y	28(1.1)

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. Please take isolation and waterproof measures if the dimming cable is not in use.

Package

- Outside carton dimension: $L \times W \times H = 495\text{mm} \times 385\text{mm} \times 162\text{mm}$;
- 28PCS/Carton;
- Net weight/Piece: 0.44kg; Gross weight/Carton: 13.8kg;
- 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	2024/03/15	