

SOSEN LED Driver, Your Smart Choice

Specifications

SS-400VP Series LED Driver

Model: SS-400VP-XX

Description: 400W LED Driver

Rev.: V05

Release Date: 2023-02-01

SS-400VP Series LED Driver

SOSEN
LED DRIVER



LED DRIVER

VP Series



Features:

- Efficiency up to 95%
- Dimming: DALI-2, 0-10V, PWM, Resistor, Timing
- Dim-to-Off
- Surge Protection: CM: 10kV, DM: 6kV
- AUX Power : 12V/0.2A
- Constant Lumen, Life Warning
- Optional Standby(STB) Function
- External NTC to Protect LED Module
- Standby Power < 0.5W
- IP67
- Communication Function With PC
- Type HL, suitable for hazardous locations
- Protections: SCP/OTP
- Warranty: 8 years



DALI-2 CE IP67 Class P

Description:

SS-400VP series are 400W constant current LED Driver with wide O/P voltage range and adjustable O/P current by program. LED luminaries manufactures can easily design luminaries and reduce cost.

Application:

High bay light, Stadium light, Square light, Plant light, Fish light

Model List:

Model	AC Input Range	Max. Pout	Vout Range	Full Power Vout Range	Iout	THD(Typ.)	PF(Typ.)	Eff.(Typ.)	Max.Tc
SS-400VP-56*	90-305Vac	400W	28-56V	48-56V	1.05-8.35A	10%	0.95	95%	90°C
SS-400VP-228*	90-305Vac	400W	114-228V	160-228V	0.35-2.5A	10%	0.95	95%	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-400VP Series LED Driver

“*” Means Additional Function

“*”	DALI (suffix:D)	AUX 12V (suffix:H)	NTC (suffix:N)	Timing	0-10V/PWM Dim /Resistor (suffix:B)	Remark
BH		✓		✓	✓	
BHN		✓	✓	✓	✓	
DH	✓	✓				
DHN	✓	✓	✓			

Input Characteristics(SS-400VP-56*):

Parameter	Min.	Typ.	Max.	Remark
Rated AC Input Range	100Vac		277Vac	<120Vac , Ta:40℃
AC Input Range	90 Vac		305Vac	
Input Frequency Range	47Hz	50/60Hz	63Hz	
Max Input Current			5A	100Vac, full load
Max Input Power			500W	100Vac, full load
Max Inrush Current(120Vac)			20A	Cold Start
Max Inrush Current(220Vac)			30A	Cold Start
Max Inrush Current(277Vac)			35A	Cold Start
Standby Power			0.5W	220Vac/50Hz, Dim to off or Enable STB
Power Factor	0.95	0.97		220Vac/50Hz, full load
	0.90			277Vac/50Hz, 70-100% load
THD		8%	10%	220Vac/50Hz, full load
			20%	277Vac/50Hz, 70-100% load

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Input Characteristics(SS-400VP-228*):

Parameter	Min.	Typ.	Max.	Remark
Rated AC Input Range	100Vac		277Vac	<120Vac , Ta:40℃
AC Input Range	90 Vac		305Vac	
Input Frequency Range	47Hz	50/60Hz	63Hz	
Max Input Current			5A	100Vac, full load
Max Input Power			500W	100Vac, full load
Max Inrush Current(120Vac)			55A	Cold Start
Max Inrush Current(220Vac)			110A	Cold Start
Max Inrush Current(277Vac)			140A	Cold Start
Standby Power			0.5W	220Vac/50Hz, Dim to off or Enable STB
Power Factor	0.95	0.97		220Vac/50Hz, full load
	0.90			277Vac/50Hz, 70-100% load
THD		8%	10%	220Vac/50Hz, full load
			20%	277Vac/50Hz, 70-100% load

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O/P Characteristics(SS-400VP-56*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	28V		56V	Power Derated @28-48V
Rated O/P Voltage	48V		56V	$P_o = V_o \cdot I_o = 400W$, full load
Rated O/P Current	7.15A		8.35A	8.35A for 48V, 7.15A for 56V
Adj. O/P Current (AOC) Range	1.05A		8.35A	By Programming
	4.175A		8.35A	For DALI-2
No Load Voltage			60V	
Efficiency @120Vac	89.5%	91.5%		O/P 50V/8A
Efficiency @220Vac	91.5%	93.5%		O/P 50V/8A
Efficiency @277Vac	92.0%	94.0%		O/P 50V/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	120Vac, Full load
			0.5S	220Vac, Full load
			0.7S	230Vac, For DALI-2
Line Regulation	-2%		+2%	Full load
Load Regulation	-2%		+2%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc: 0°C~90°C
OTP	90°C	100°C	110°C	> Tc typ., Current Derating < Tc min., Operates Recovery
Short Circuit Protection			10W	Driver will not be damaged, Hiccup mode
			0.5W	Driver will not be damaged, Shut down for DALI-2

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O/P Characteristics(SS-400VP-228*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	114V		228V	Power Derated @114-160V
Rated O/P Voltage	160V		228V	$P_o = V_o \cdot I_o = 400W$, full load
Rated O/P Current	1.75A		2.5A	2.5A for 160V, 1.75A for 228V
Adj. O/P Current (AOC) Range	0.35A		2.5A	By Programming
	1.25A		2.5A	For DALI-2
No Load Voltage			250V	
Efficiency @120Vac	89.5%	91.5%		O/P 228V/1.75A
Efficiency @220Vac	92.5%	94.5%		O/P 228V/1.75A
Efficiency @277Vac	92.5%	94.5%		O/P 228V/1.75A
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	120Vac, Full load
			0.5S	220Vac, Full load
			0.7S	230Vac, For DALI-2
Line Regulation	-2%		+2%	Full load
Load Regulation	-2%		+2%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc: 0°C~90°C
OTP	90°C	100°C	110°C	> Tc typ., Current Derating < Tc min., Operates Recovery
Short Circuit Protection			10W	Driver will not be damaged, Hiccup mode
			0.5W	Driver will not be damaged, Shut down for DALI-2

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Other Characteristics:

Parameter		Min.	Typ.	Max.	Remark
AUX Power	O/P Voltage	11.4V	12V	12.6V	
	O/P Current	0mA		200mA	
0-10V Dimming (Optional)	Dim Vcc	0V		12V	Negative dimming by programming
	Dim Range	10%Io _{set}		100%Io _{set}	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	0K		100K	Negative dimming by programming
	Dim Range	10%		100%	DIM+ source current 110uA .
Dim to Off	Dim off	7%	8%	9%	
	Dim on	8%	9%	10%	
Dimming Level		170		254	Logarithmic dimming curve
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(Tc≤75°C)		71,000 hours			80% Load
MTBF		198,200 hours			220Vac,full load, Ta=25°C (MIL-HDBK-217F)
IP Grade		IP67			
Tc		90°C			
Warranty		8 years			Tc : 75°C
Net Weight		1980g			
Dimension		252mm*89.5mm*44.5mm 9.92in*3.52in*1.75in			L x W x H

NOTE: 1,All the parameters above are tested Ta 25°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: 91KΩ/N.

SS-400VP Series LED Driver

Environmental Requirements

Parameter	Min.	Typ.	Max.	Remark
Operating Temperature(Tcase)	-40℃	25℃	+90℃	
Storage Temperature	-40℃	25℃	+90℃	
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	✓	
BIS	IS15885:2012 Part 2 Sec 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 FCC Part 15 Subpart B; ANSI C63.4:2014	Class B
Radiation Emission	EN55015:2013+A1:2015 FCC Part 15 Subpart B; ANSI C63.4:2014	Class B
Harmonic Current Emissions	IEC/EN 61000-3-2	Class C
Surge	IEC/EN 61000-4-5	DM: 6kV,CM: 10kV,Criterion B
Ring Wave	IEC/EN 61000-4-12	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-Output	1600Vac	3000Vac	3750Vac	Reinforced insulation
Input-Case	1600Vac	1500Vac	1875Vac	Basic insulation
Input-Dim	1600Vac	3000Vac	3750Vac	Reinforced insulation
Output-Dim	1600Vac	1000Vac	1000Vac	Basic insulation
Output-Case	1600Vac	1000Vac	1000Vac	Basic insulation
Dim-Case	500Vac	500Vac	500Vac	Basic insulation
Insulation Resistance	$\geq 10M\Omega$			Input-Output, Test voltage: 500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min
Leakage Current	$\leq 0.75mA$			277Vac

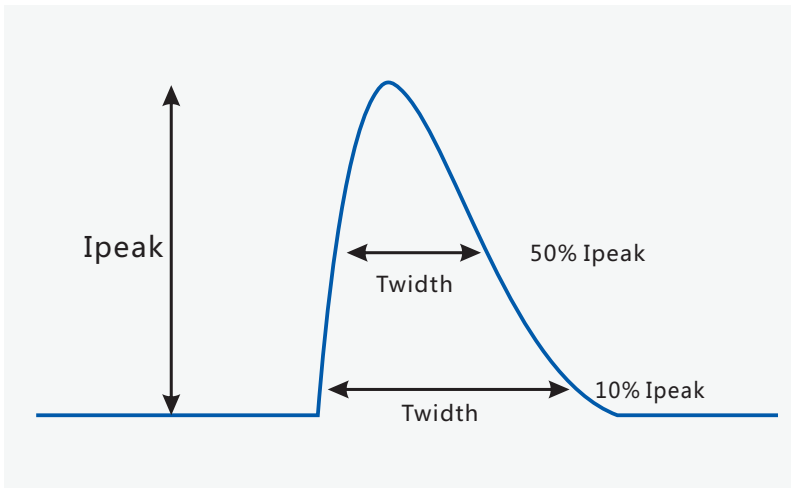
NOTE:

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- and NTC+ and NTC-), (Dim+ and Dim - and Vaux+ and Vaux- and STB) 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.

SS-400VP Series LED Driver

Performance Curves(SS-400VP-56*):

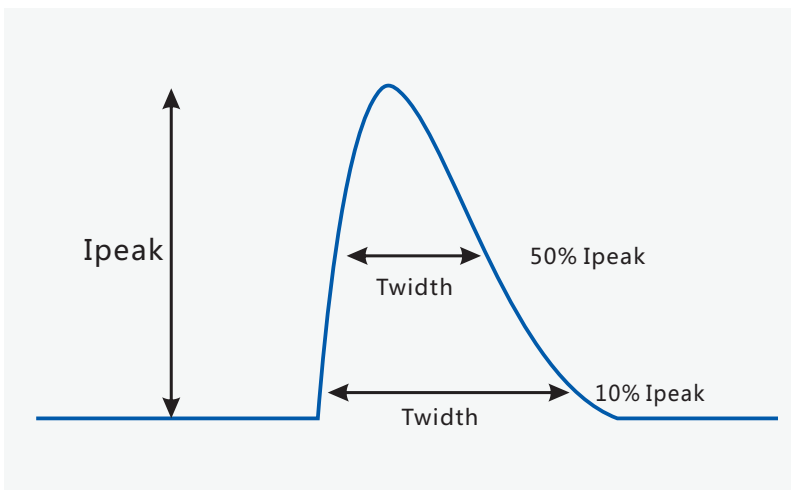
Input Inrush Current



Vin	Ipeak	T(@10% of Ipeak)	T(@50% of Ipeak)
120Vac	20A	3600uS	
220Vac	30A		1500uS
277Vac	35A	3000uS	

Performance Curves(SS-400VP-228*):

Input Inrush Current

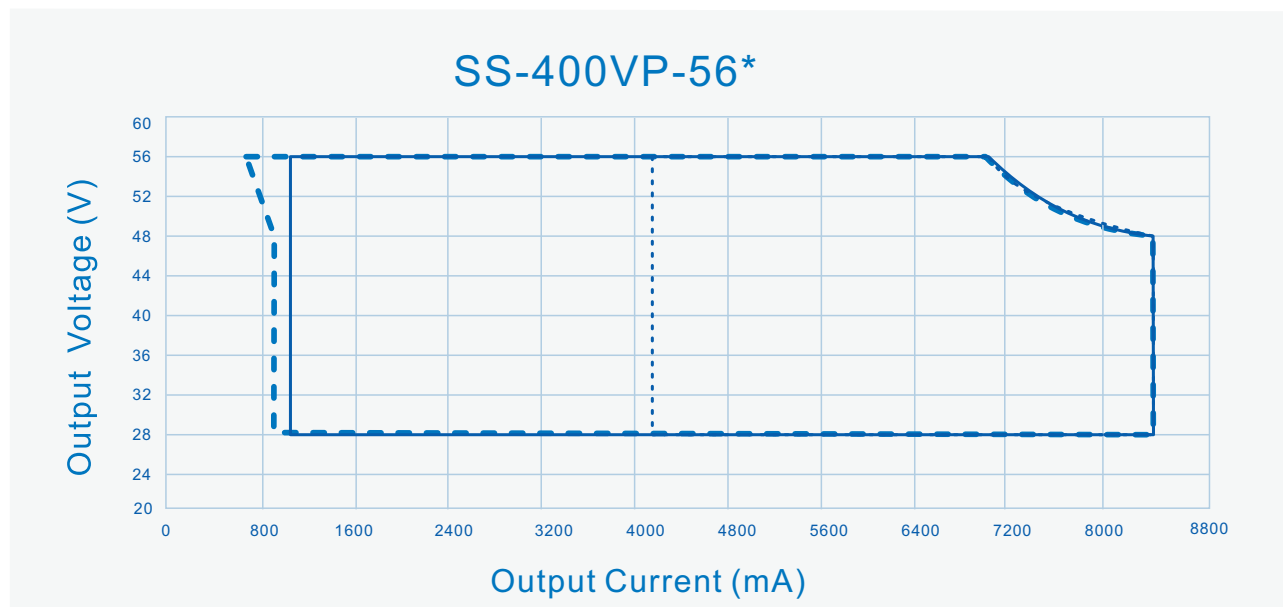


Vin	Ipeak	T(@10% of Ipeak)	T(@50% of Ipeak)
120Vac	55A	1200uS	
220Vac	110A		500uS
277Vac	140A	800uS	

SS-400VP Series LED Driver

Performance Curves:

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

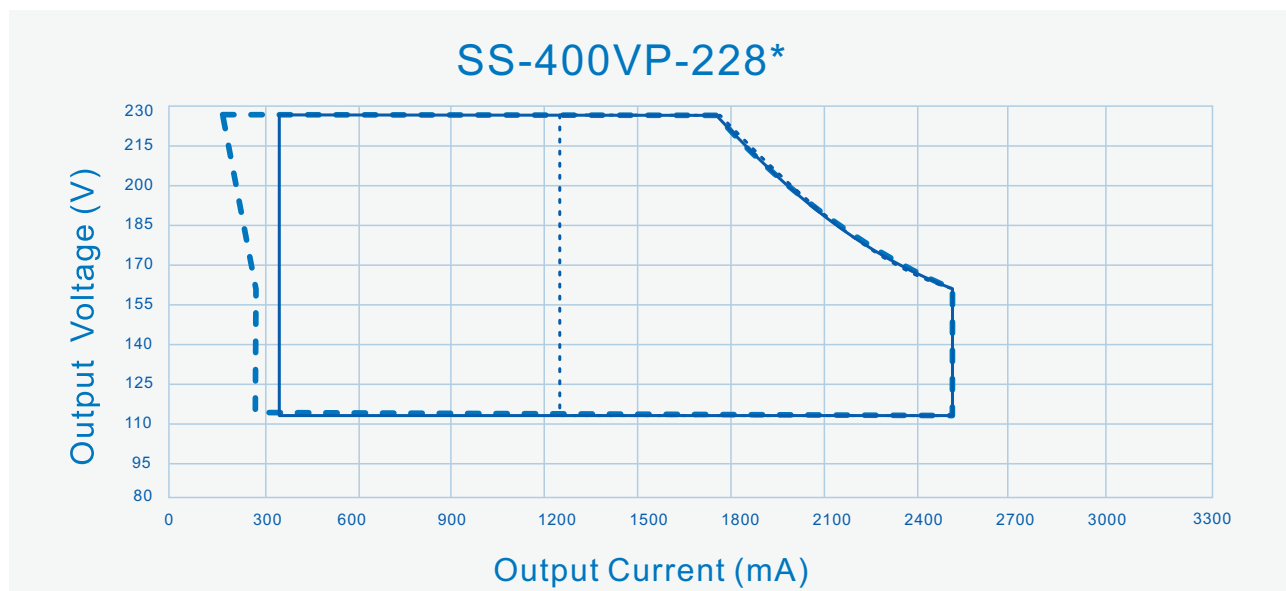


----- Dimming Window

———— AOC Window

..... AOC Window For DALI-2

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



----- Dimming Window

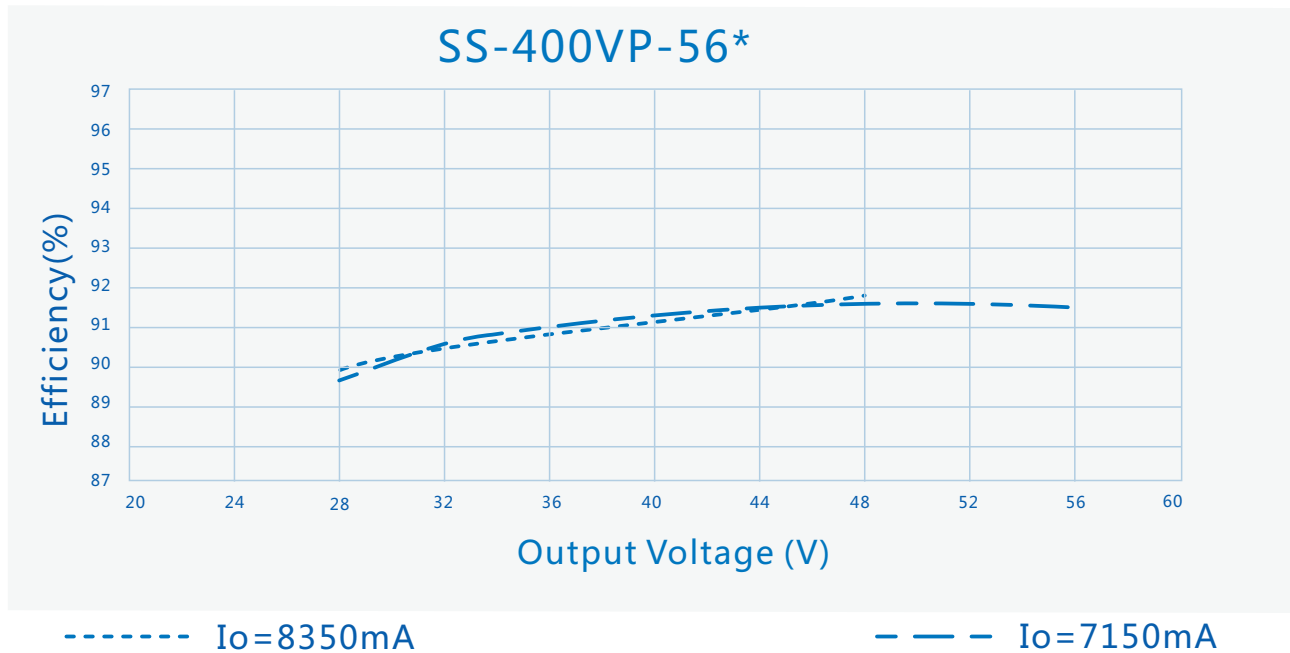
———— AOC Window

..... AOC Window For DALI-2

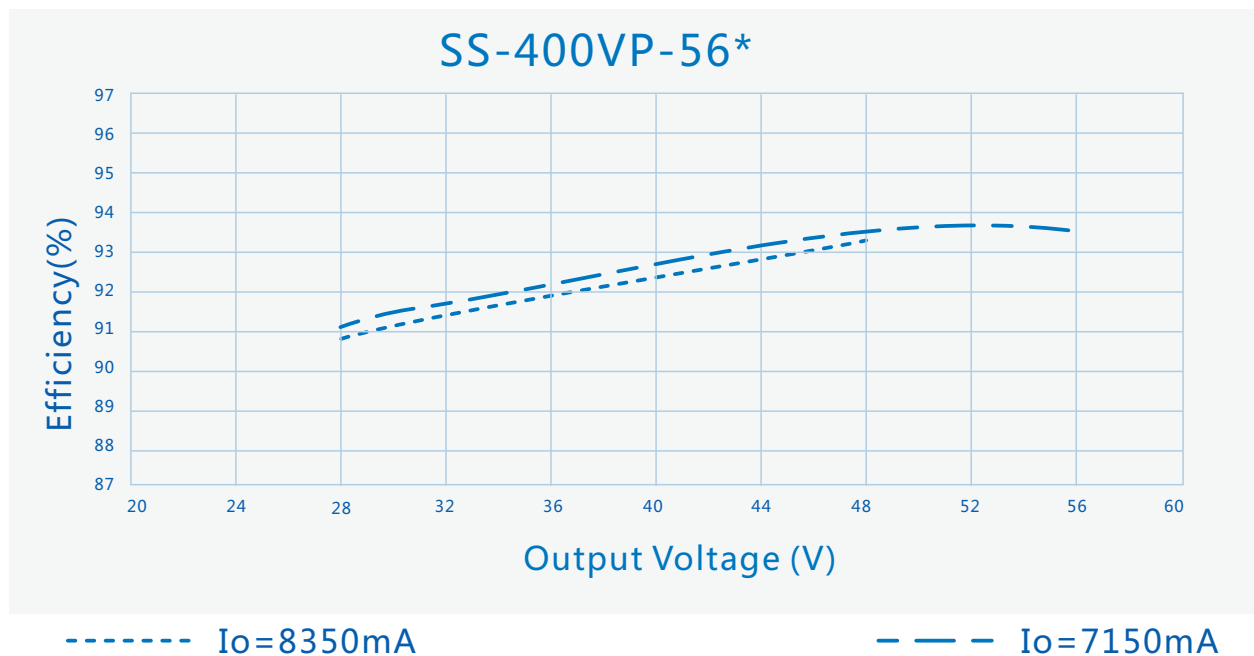
SS-400VP Series LED Driver

Performance Curves:

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



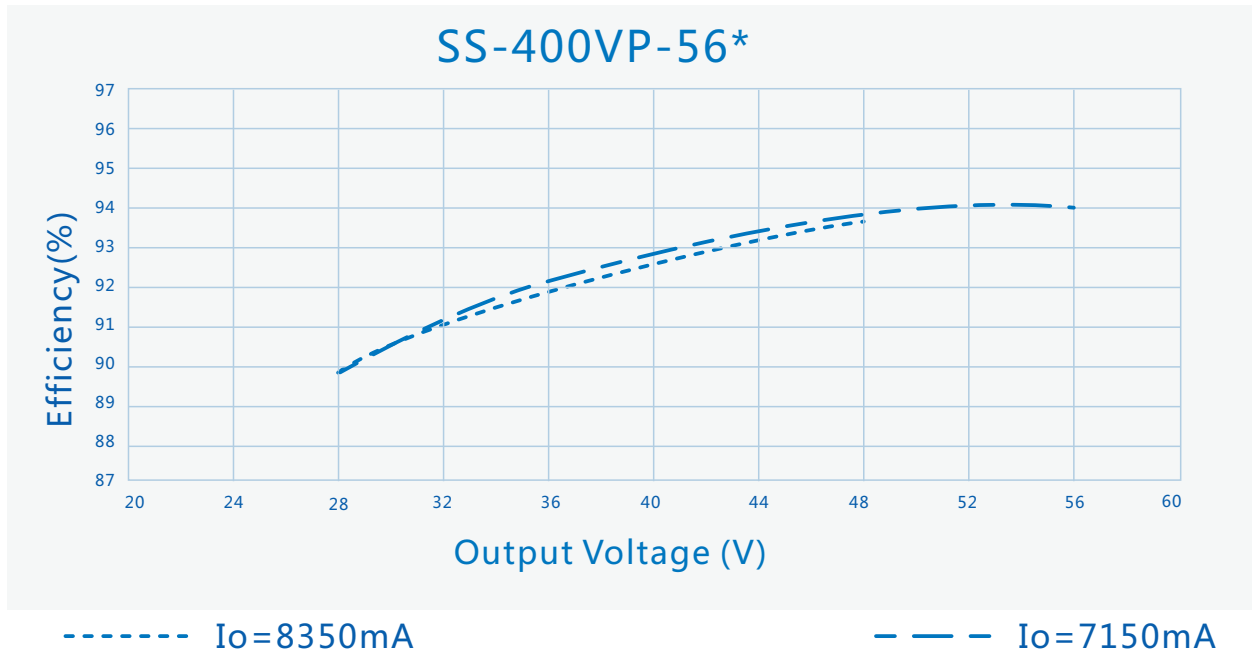
Efficiency Vs. O/P Voltage ($V_{in}=220V_{ac}$)



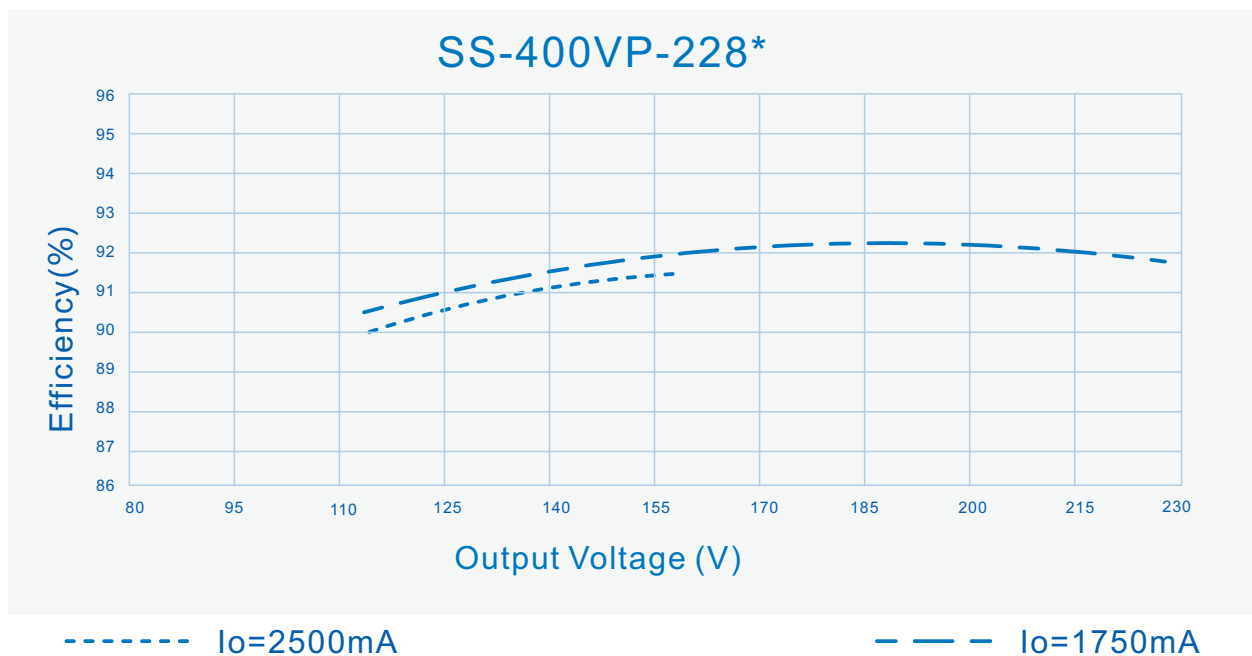
SS-400VP Series LED Driver

Performance Curves:

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



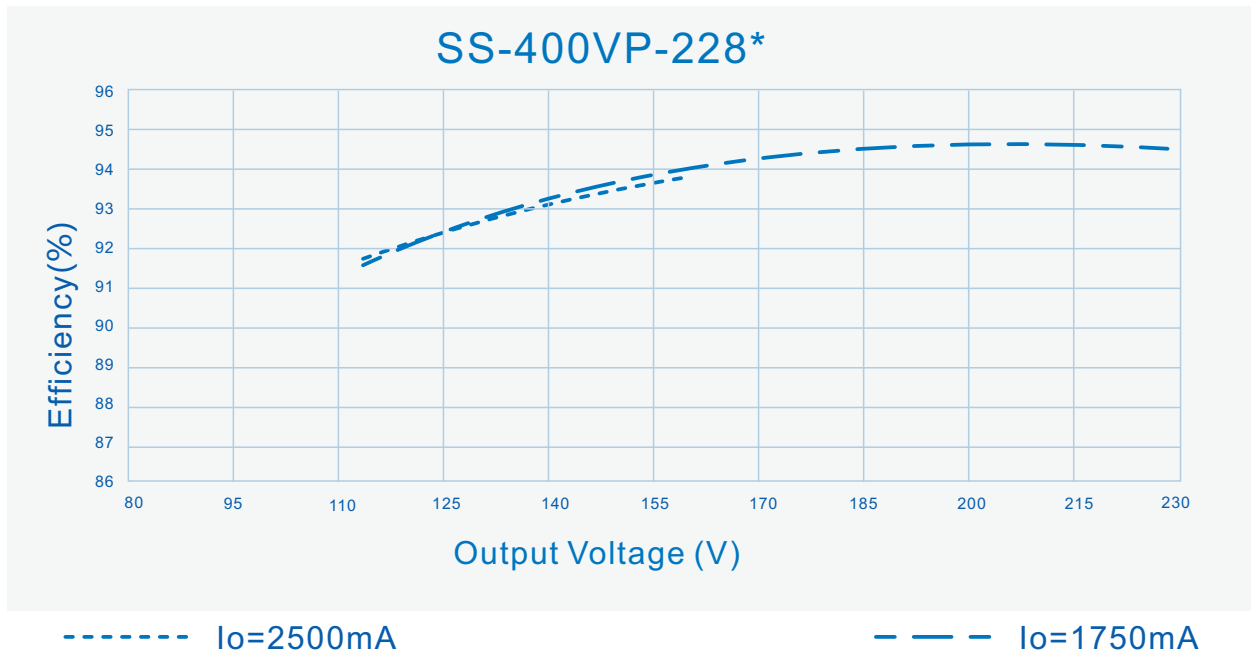
Efficiency Vs. O/P Voltage ($V_{in}=120V_{ac}$)



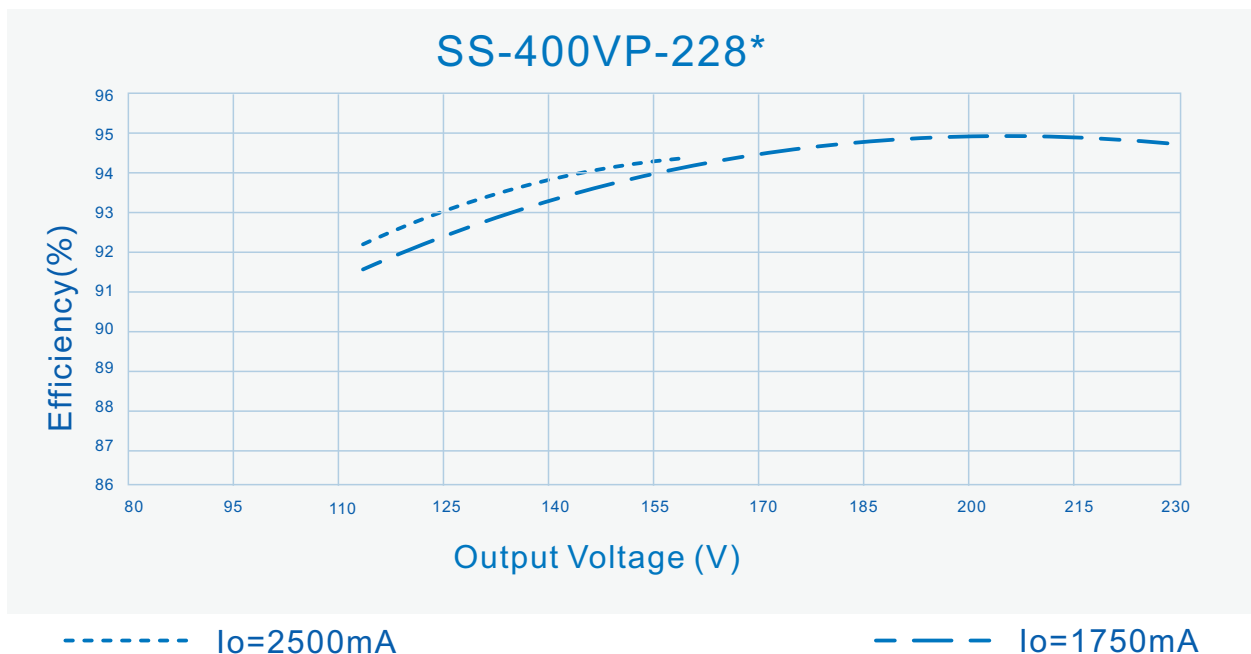
SS-400VP Series LED Driver

Performance Curves:

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



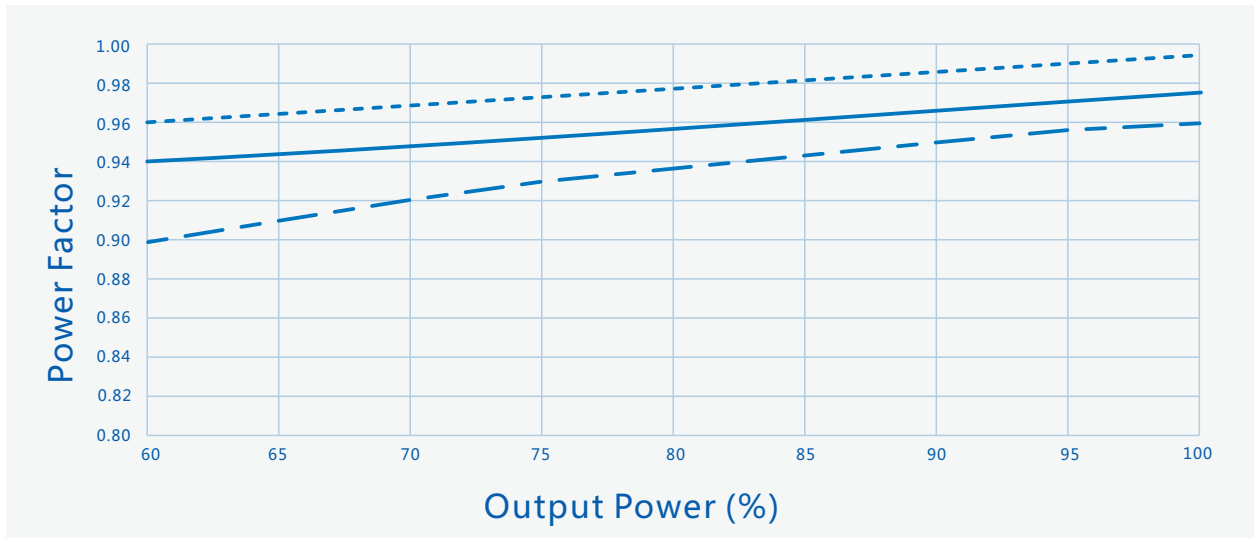
Efficiency Vs. O/P Voltage ($V_{in}=277V_{ac}$)



SS-400VP Series LED Driver

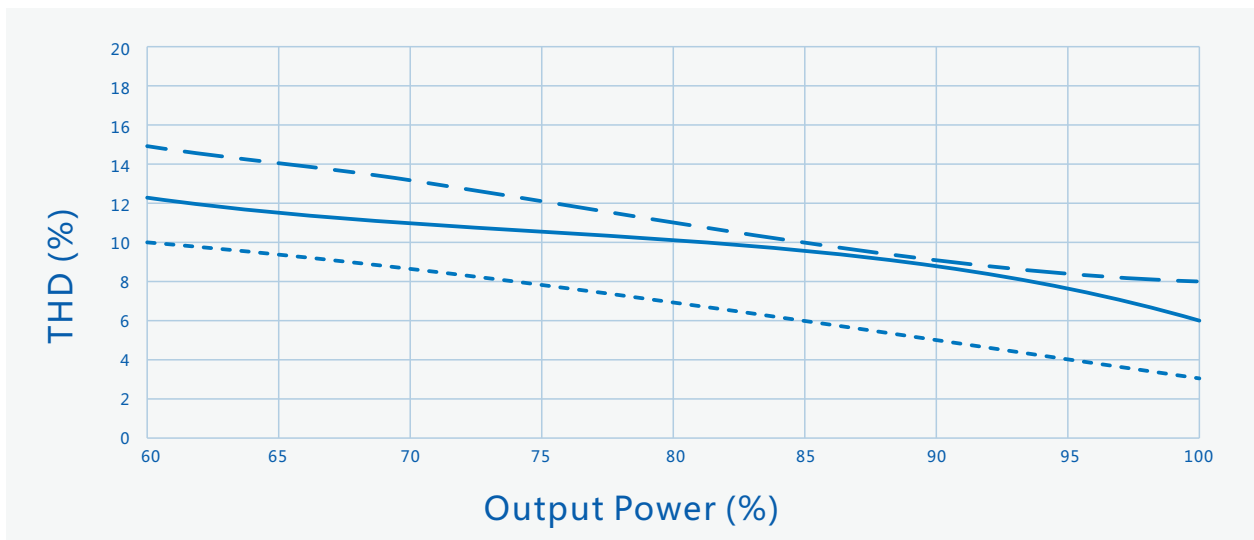
Performance Curves:

Power Factor Vs. O/P Power



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

THD Vs. O/P Power

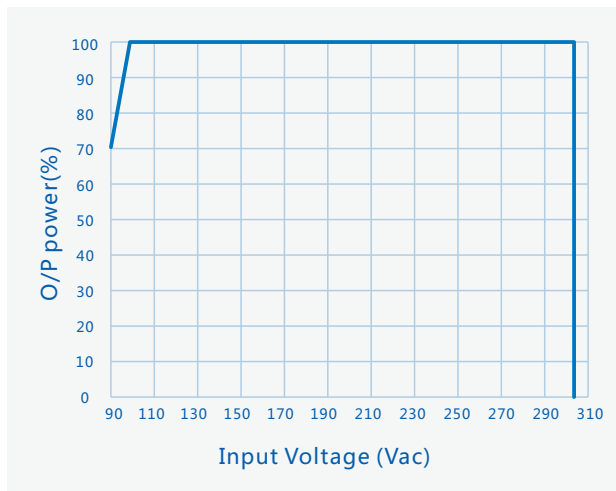


----- Vin=120Vac ————— Vin=220Vac - . - . Vin=277Vac

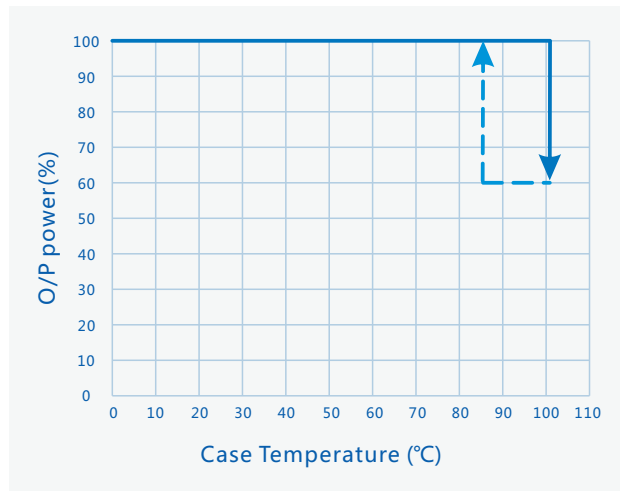
SS-400VP Series LED Driver

Performance Curves:

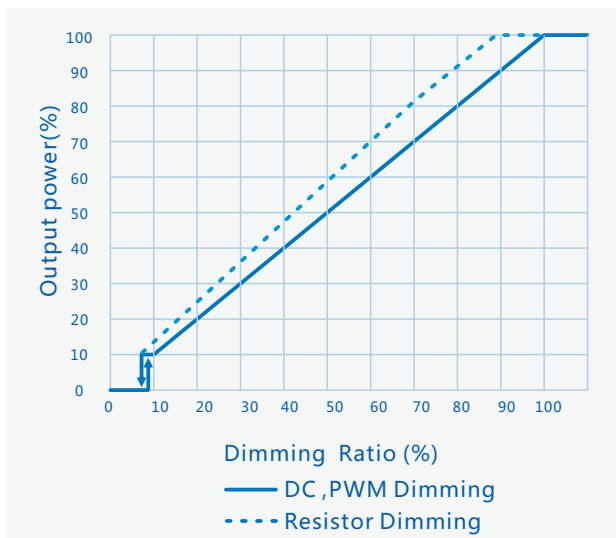
O/P Power Vs. Input Voltage



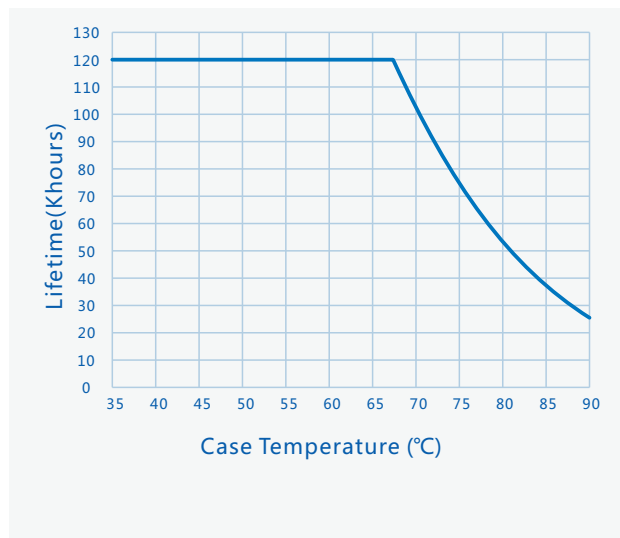
O/P Power Vs. Case Temperature



O/P Power Vs. Dimming



Life Time Vs. Case Temperature



SS-400VP Series 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.

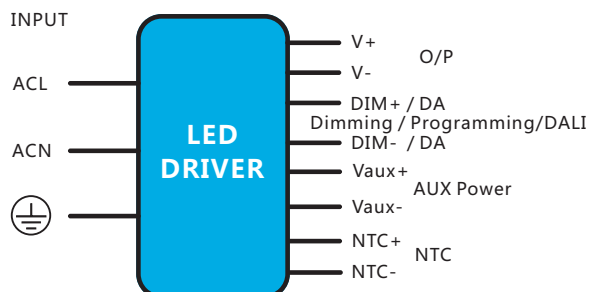


Note:

Programming could be completed by off-line mode either without turn on the Driver nor without PC, other than the traditional on-line mode.

SS-400VP Series LED Driver

Mechanical Characteristics



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

Global model: SJOW,3*17AWG,O.D: 8.0mm,Brown:L,Blue:N,Yellow/Green:⊕

UL model: SJTW,3*18AWG,O.D: 7.8mm,Black:L,White:N,Green:⊕

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

SS-400VP-56*:

Global model: SJOW,2*14AWG,O.D: 8.8mm,Brown:V+ , Blue:V-

UL model: SJTW,2*14AWG,O.D: 9.0mm,Red: V+ , Black: V-

SS-400VP-228*:

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

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

DIM/AUX Power/Programming Cable (Exposed Length 220±10mm):

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

NTC Cable(Exposed Length 300±10mm):

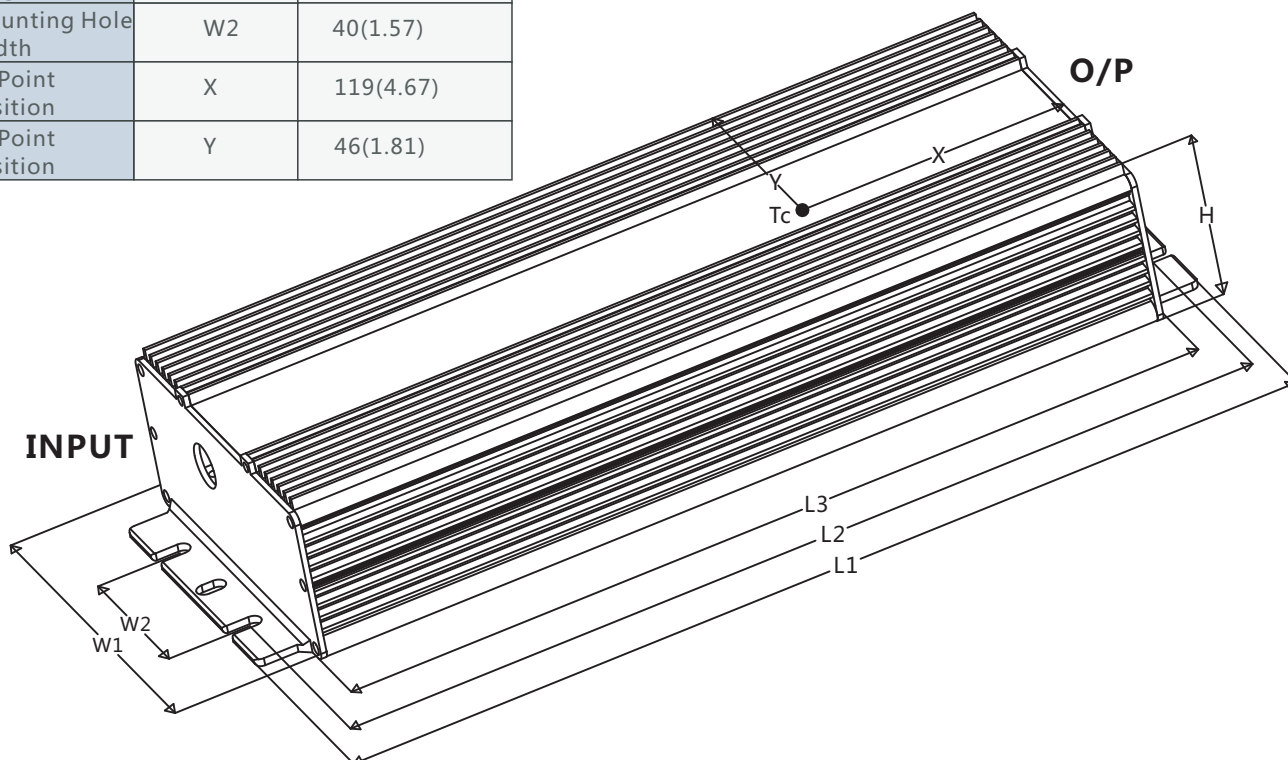
UL model:STYLE 21996 2*22AWG , O.D: 4.7mm, Red: NTC+ , Blue/White: NTC-

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	119(4.67)
TC Point Position	Y	46(1.81)

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



SS-400VP Series LED Driver



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.

Package

- Outside carton dimension: L×W×H =493mm×385mm×116mm;
- 7PCS/Carton;
- Net weight/Piece: 1.98kg;Gross weight/Carton: 14.86kg;
- 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	2020/09/01	
V01	Add ENEC, CCC Certification	2021/04/09	
V02	Update Tinned Length Of Wire	2021/07/02	
V03	Update DIM Cable Color	2021/09/02	
V04	Update Efficiency Curves	2021/12/22	
V05	Add Page Number	2023/02/01	