

SOSEN LED Driver, Your Smart Choice

Specifications

SS-500MS Series LED Driver

Model: SS-500MS-XX

Description: 500W LED Driver

Rev.: V01

Release Date: 2024-08-12

SS-500MS Series LED Driver

SOSEN
LED DRIVER



LED DRIVER

MS Series



Features:

- Input voltage: 180-528Vac
- Efficiency up to 95.5%
- Dimming: 0-10V,PWM,Resistor,Timing,DALI-2
- Isolated Dim-to-Off
- Surge protection: IEC: CM: 10kV, DM: 6kV
ANSI: CM: 6kV, DM: 6kV
- AUX Power: 12V/0.3A
- Constant Lumen O/P
- Lifespan Early Warning
- LED module over-temperature protection
- IP67
- Communication function with PC
- Type HL, suitable for hazardous locations
- Protections: SCP/OTP/UVF
- Warranty: 5 years



Description:

SS-500MS series product is 500W 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.

Applications:

Stadium lighting, Horticultural lighting, High Mast Lighting, Fish lighting

Model List:

Model	AC Input Range	Max. Pout	Vout Range	Full Power Working Voltage	Iout	Iout (DALI-2)	Default Output Current	THD (Typ.)	PF (Typ.)	Eff. (Typ.)	Max.Tc
SS-500MS-200*	180-528Vac	500W	100-200V	150-200V	0.35-3.33A	1.85-3.33A	2.5A	5%	0.95	95.5%	90°C
SS-500MS-290*	180-528Vac	500W	145-290V	210-290V	0.35-2.38A	1.35-2.38A	1.72A	5%	0.95	95.5%	90°C
SS-500MS-400*	180-528Vac	500W	200-400V	300-400V	0.35-1.66A	0.95-1.66A	1.25A	5%	0.95	95.5%	90°C

Note:

- Default Tested: at 347Vac, full load, Ta 25°C;
- 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-500MS Series LED Driver

“★” Means Additional Function

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

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			3A	200Vac, Full load
Max Input Power			600W	200Vac, Full load
Max Inrush Current(220Vac)			16A	Cold start
Max Inrush Current(347Vac)			19A	Cold start
Max Inrush Current(480Vac)			25A	Cold start
Standby Power			0.5W	230Vac/50Hz, Dim-off
Power Factor	0.95	0.97		347Vac/60Hz, Full load
	0.90			200-480Vac, 70-100% load
THD		5%	10%	347Vac/60Hz, Full load
			20%	200-480Vac, 70-100% load

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O/P Characteristics(SS-500MS-200*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	100V		200V	Power derated @100-150V
Rated O/P Voltage	150V		200V	$P_o=V_o \cdot I_o=500W$, Full load
Rated O/P Current	2.5A		3.33A	2.5A for 200V, 3.33A for 150V
Adj. O/P Current (AOC) Range	0.35A		3.33A	Adjustable by program
	1.85A		3.33A	DALI-2
No Load Voltage			220V	
Efficiency @220Vac	93.0%	95.0%		O/P 200V/2.5A
Efficiency @347Vac	93.5%	95.5%		O/P 200V/2.5A
Efficiency @480Vac	94.0%	95.5%		O/P 200V/2.5A
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	200-480Vac, Full load
			0.8S	200-480Vac, DALI-2, Full load
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	95°C	100°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged
				Driver will not be damaged, Shut down for DALI-2

SS-500MS Series LED Driver

O/P Characteristics(SS-500MS-290*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	145V		290V	Power derated @145-210V
Rated O/P Voltage	210V		290V	$P_o = V_o \cdot I_o = 500W$, Full load
Rated O/P Current	1.72A		2.38A	1.72A for 290V, 2.38A for 210V
Adj. O/P Current (AOC) Range	0.35A		2.38A	Adjustable by program
	1.35A		2.38A	DALI-2
No Load Voltage			310V	
Efficiency @220Vac	93.0%	95.0%		O/P 290V/1.72A
Efficiency @347Vac	93.5%	95.5%		O/P 290V/1.72A
Efficiency @480Vac	94.0%	96.0%		O/P 290V/1.72A
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	200-480Vac, Full load
			0.8S	200-480Vac, DALI-2, Full load
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	95°C	100°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged
				Driver will not be damaged, Shut down for DALI-2

SS-500MS Series LED Driver

O/P Characteristics(SS-500MS-400*):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	200V		400V	Power derated @200-300V
Rated O/P Voltage	300V		400V	$P_o = V_o \cdot I_o = 500W$, Full load
Rated O/P Current	1.25A		1.66A	1.25A for 400V, 1.66A for 300V
Adj. O/P Current (AOC) Range	0.35A		1.66A	Adjustable by program
	0.95A		1.66A	DALI-2
No Load Voltage			440V	
Efficiency @220Vac	93.0%	95.0%		O/P 400V/1.25A
Efficiency @347Vac	93.5%	95.5%		O/P 400V/1.25A
Efficiency @480Vac	94.0%	96.0%		O/P 400V/1.25A
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	200-480Vac, Full load
			0.8S	200-480Vac, DALI-2, Full load
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	95°C	100°C	Drop current when OTP, and it can be automatically restored after the abnormality is removed.
Short Circuit Protection				Driver will not be damaged
				Driver will not be damaged, Shut down for DALI-2

SS-500MS Series LED Driver

Other Characteristics:

Parameter		Min.	Typ.	Max.	Remark
AUX Power	O/P Voltage	10.8V	12V	13.2V	
	O/P Current			300mA	Operate max 15min at 400mA
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	Not available with negative logic
	Dim Range	10%lomax		100%loset	DIM+ source current 110uA .
Dim to Off	Dim-off	7%	8%	9%	By DC voltage, PWM, resistance dimming ratio
	Dim-on	8%	9%	10%	By DC voltage, PWM, resistance dimming ratio
DALI Dimming Level		1-170(10%)		254(100%)	Logarithmic dimming curve
Timing Curve(Optional)		By programming			DALI models does not support this function
DALI Dimming(Optional)		Meet DALI-2			
Constant Lumen(Optional)		By programming			DALI models does not support this function
Life Warning(Optional)		By programming			DALI models does not support this function
Life Time(Tc≤75°C)		50,000 hours			80% Load
MTBF		200,000 hours			347Vac, Full load, Ta=25°C (MIL-HDBK-217F)
IP Grade		IP67			
Tc		90°C			
Warranty		5 years			Tc: 75°C
Net Weight		2300g			
Dimension		262mm*105mm*44.5mm			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.

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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	✓	
RCM	AS/NZS61347.2.13	✓	
CCC	GB19510.1-2009;GB19510.14-2009	✓	
CE	EN 61347-1:2015/A1:2021 EN 61347-2-13:2014/A1:2017 EN 62493:2015	✓	

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
	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:

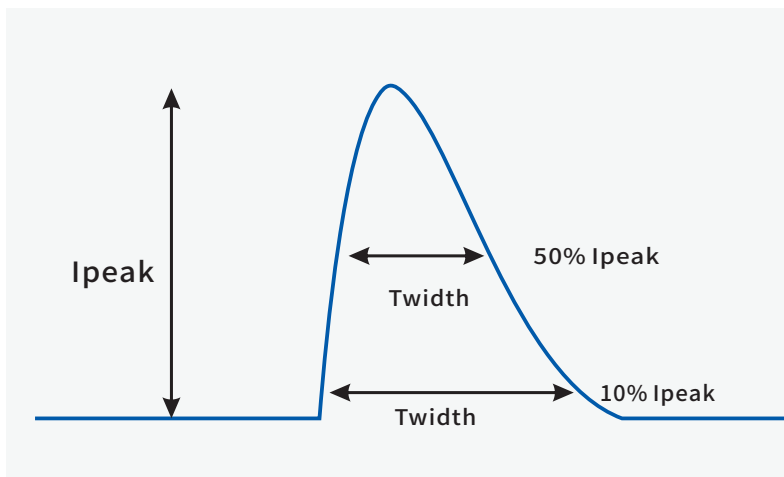
Safety Test Items	Technical Indicators			Remark
Insulation Requirements	UL Insulation Requirements	ENEC Insulation Requirements	CCC Insulation Requirements	
Input-Case	2000Vac	1500Vac	1875Vac	Basic insulation
Input-Dim	2000Vac	3000Vac	3750Vac	Reinforced insulation
Dim-Case	500Vac	500Vac	500Vac	Basic insulation
Insulation Resistance	$\geq 10M\Omega$			Input-O/P, Test voltage: 500Vdc
Ground Resistance	$\leq 0.1\Omega$			25A/1min
Leakage Current	$\leq 0.75mA$			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.
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

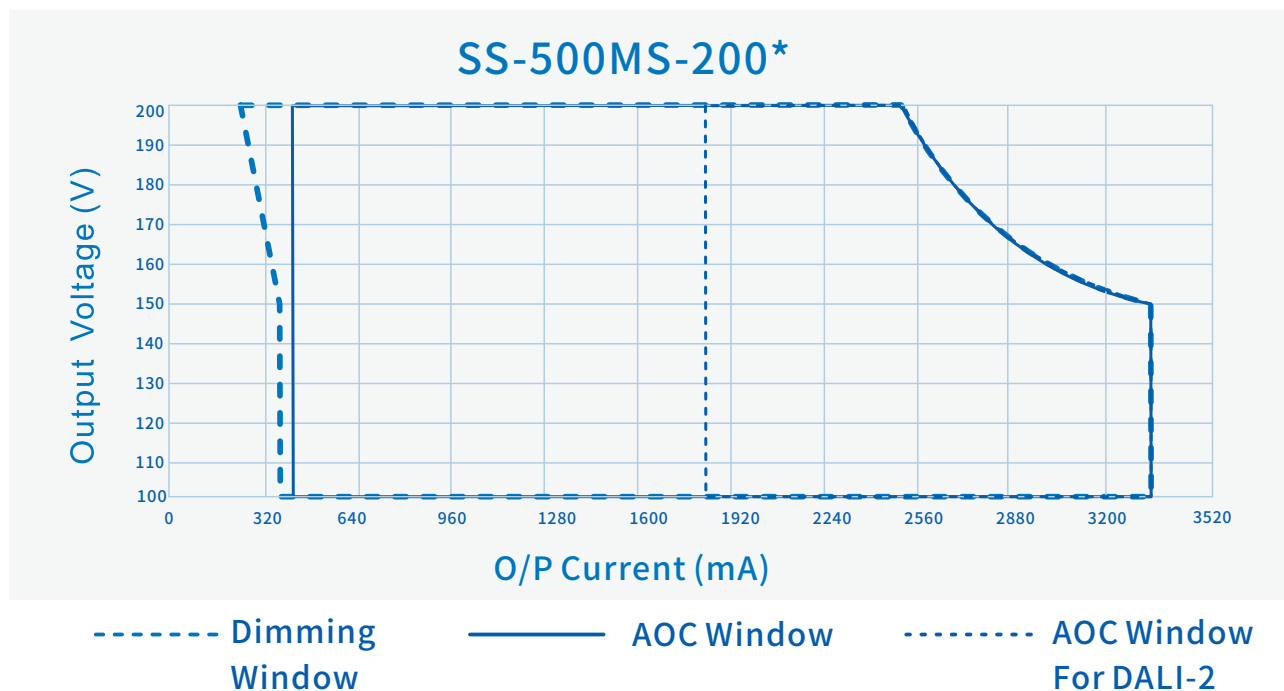


Vin	Ipeak	T(@10% of Ipeak)	T(@50% of Ipeak)
220Vac	16A	10mS	4.3mS
347Vac	19A	10.5mS	3.5mS
400Vac	22A	11mS	3.7mS
480Vac	25A	12.5mS	4mS

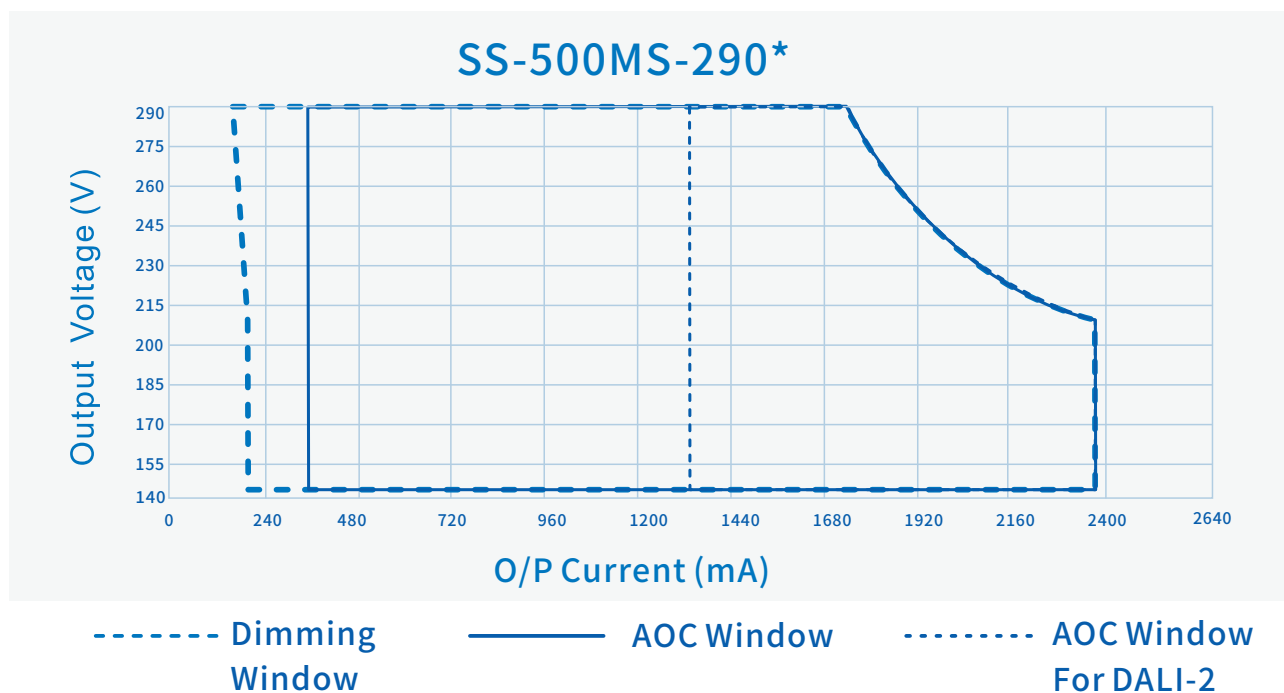
SS-500MS Series LED Driver

Performance Curves:

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



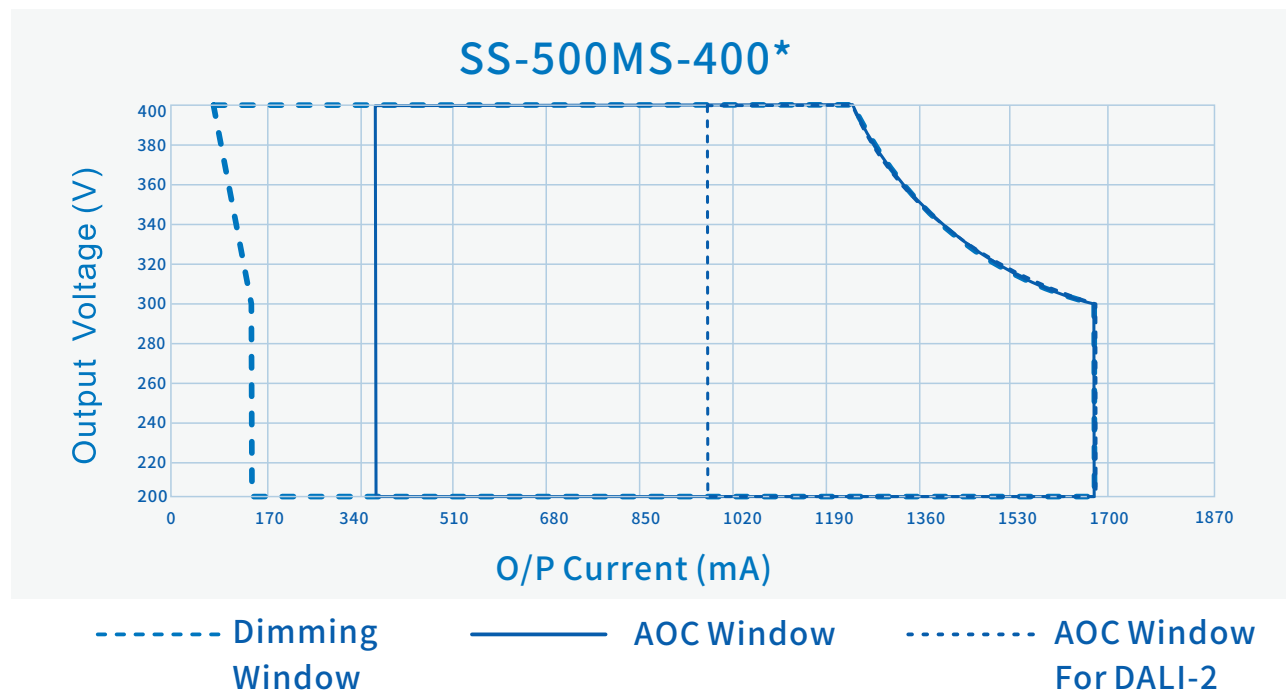
O/P Voltage Vs. O/P Current(Dim/AOC Window)



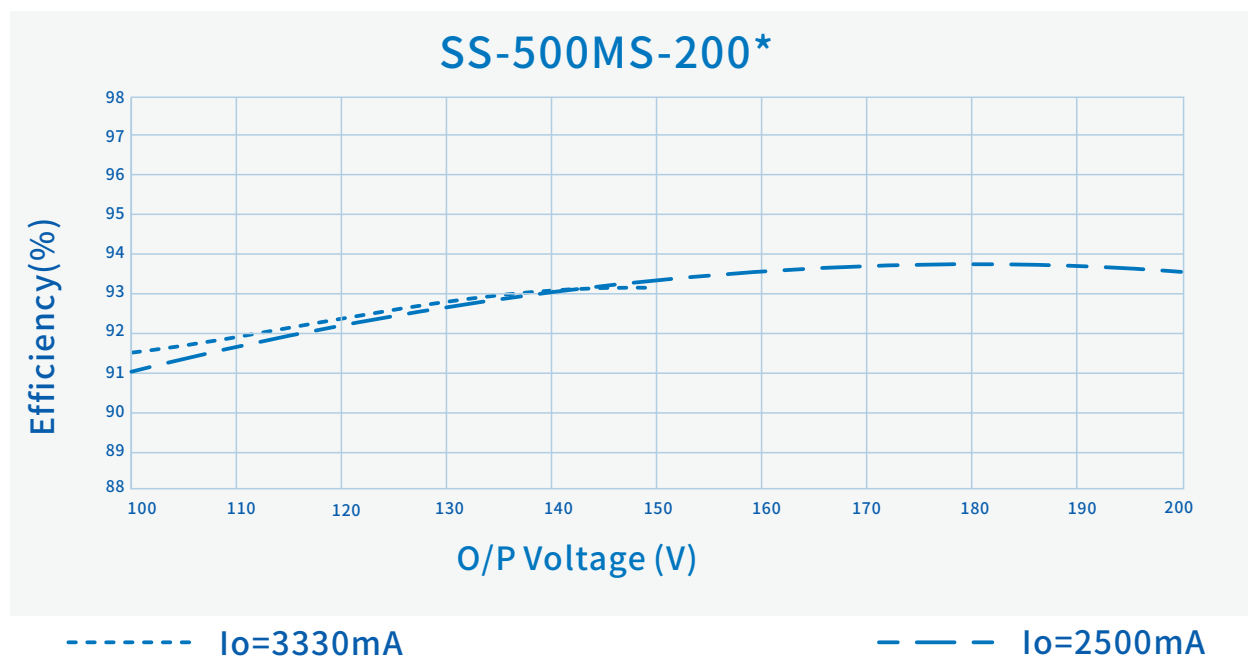
SS-500MS Series LED Driver

Performance Curves:

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



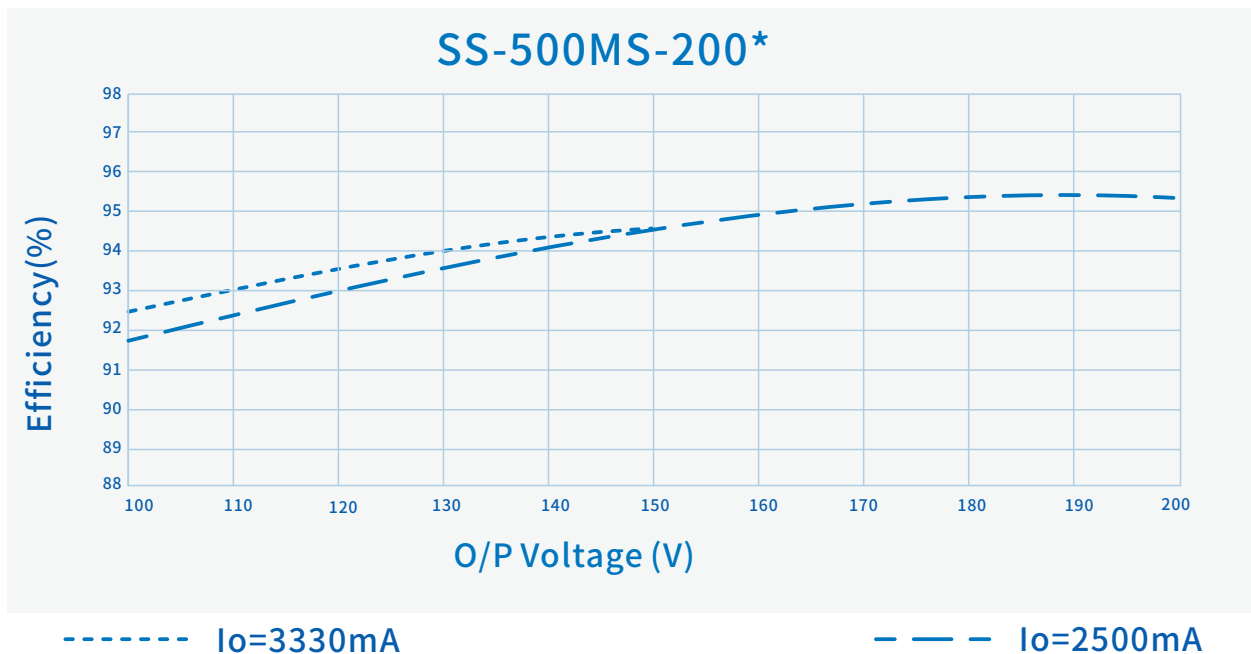
Efficiency Vs. O/P Voltage (Vin=220Vac)



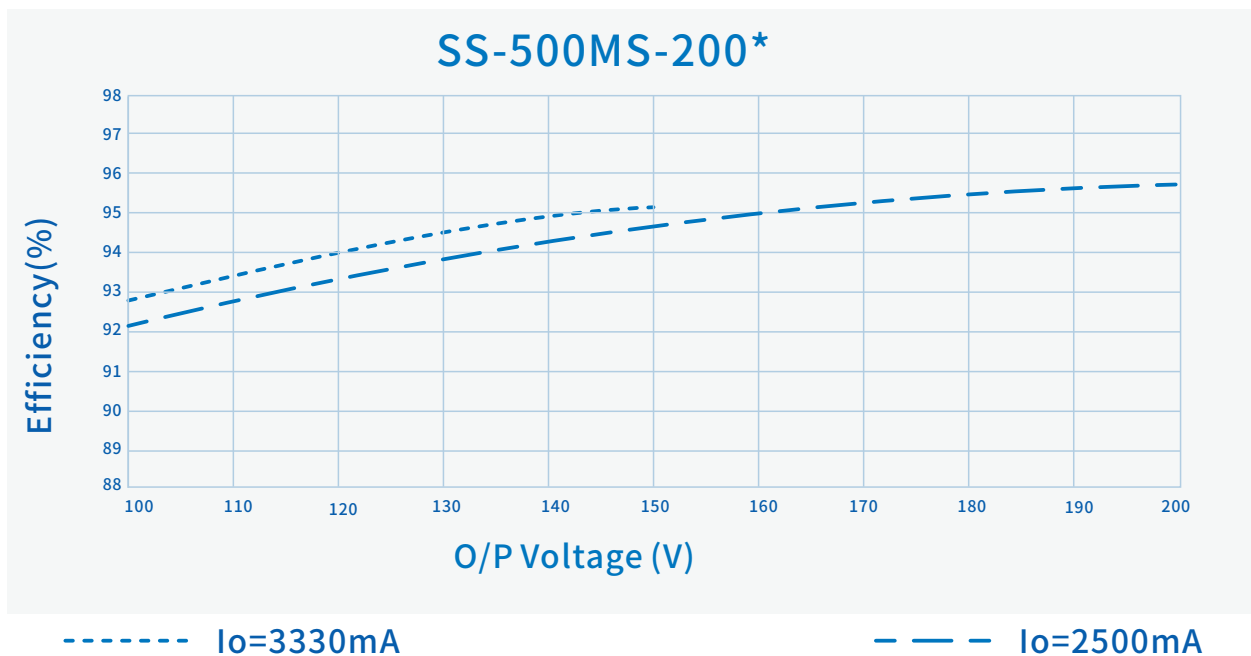
SS-500MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=347V_{ac}$)



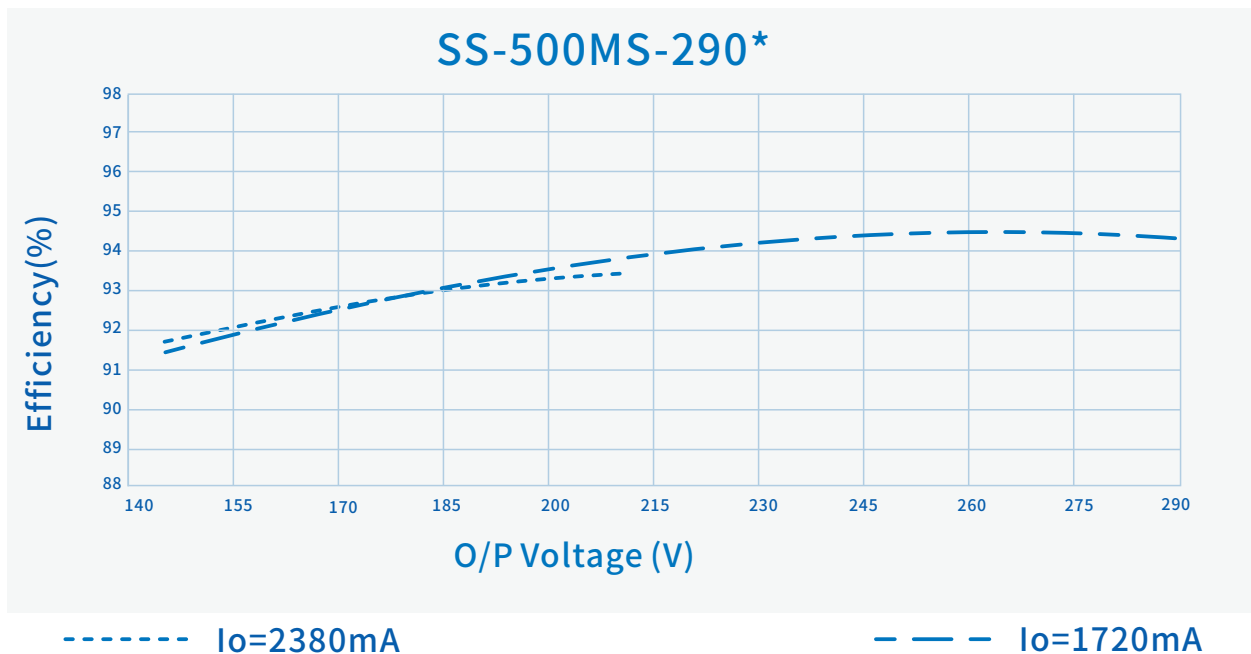
Efficiency Vs. O/P Voltage ($V_{in}=480V_{ac}$)



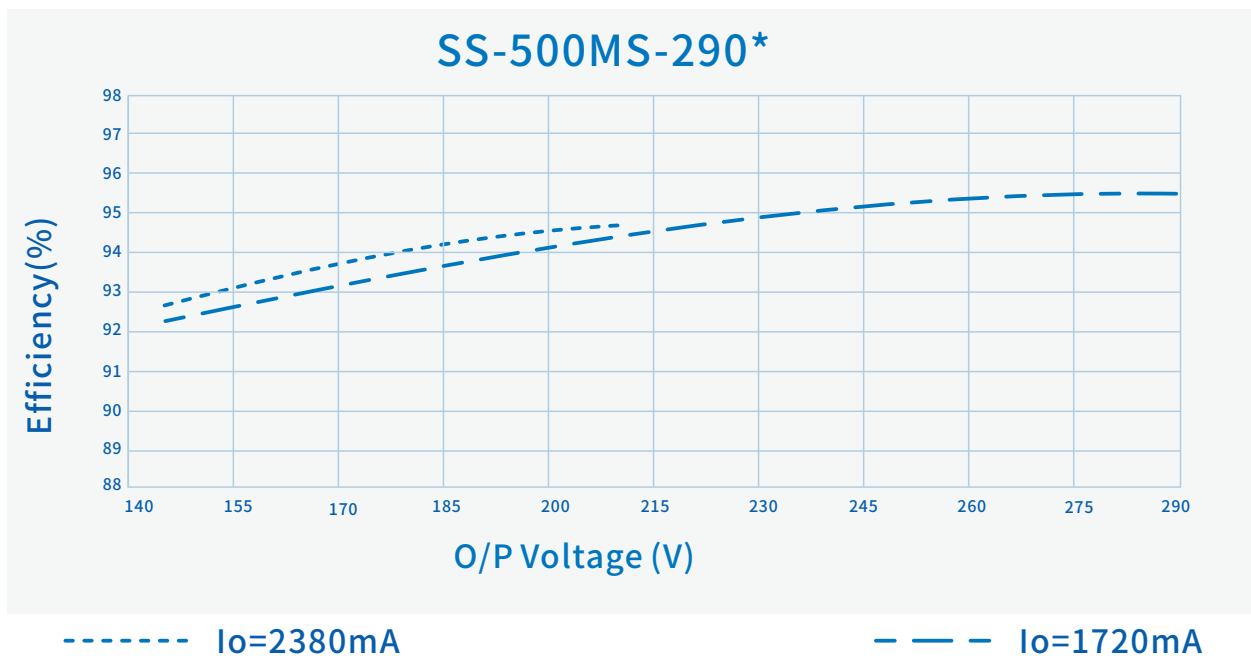
SS-500MS Series LED Driver

Performance Curves:

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



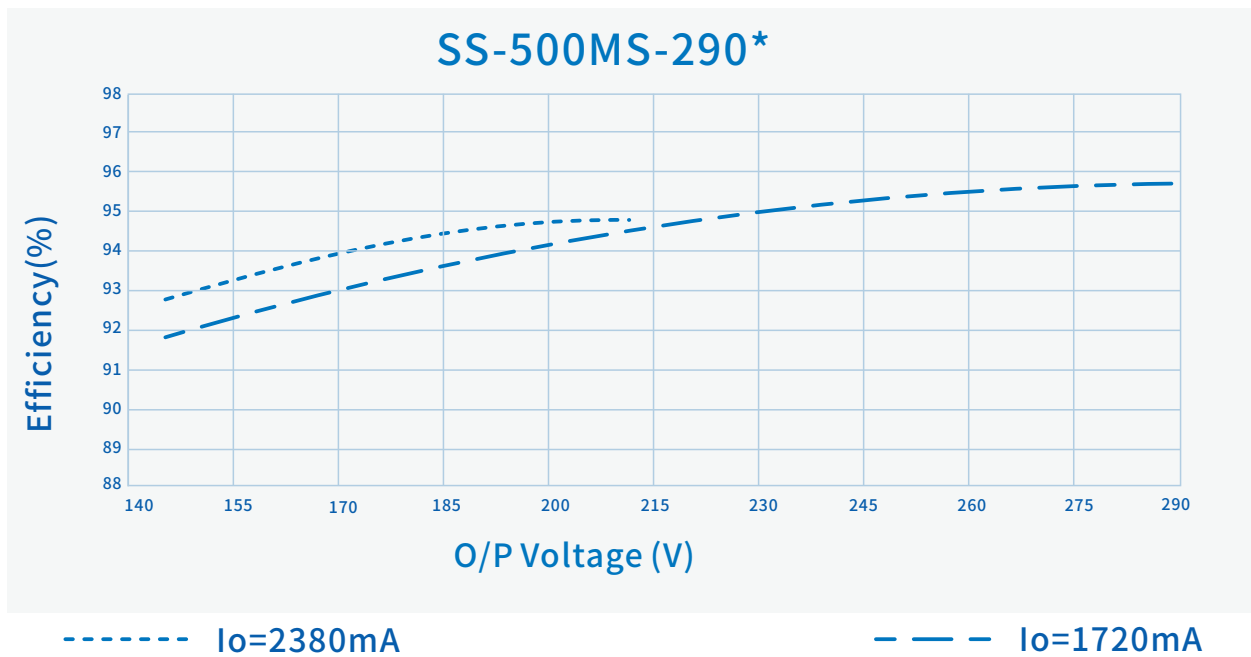
Efficiency Vs. O/P Voltage ($V_{in}=347V_{ac}$)



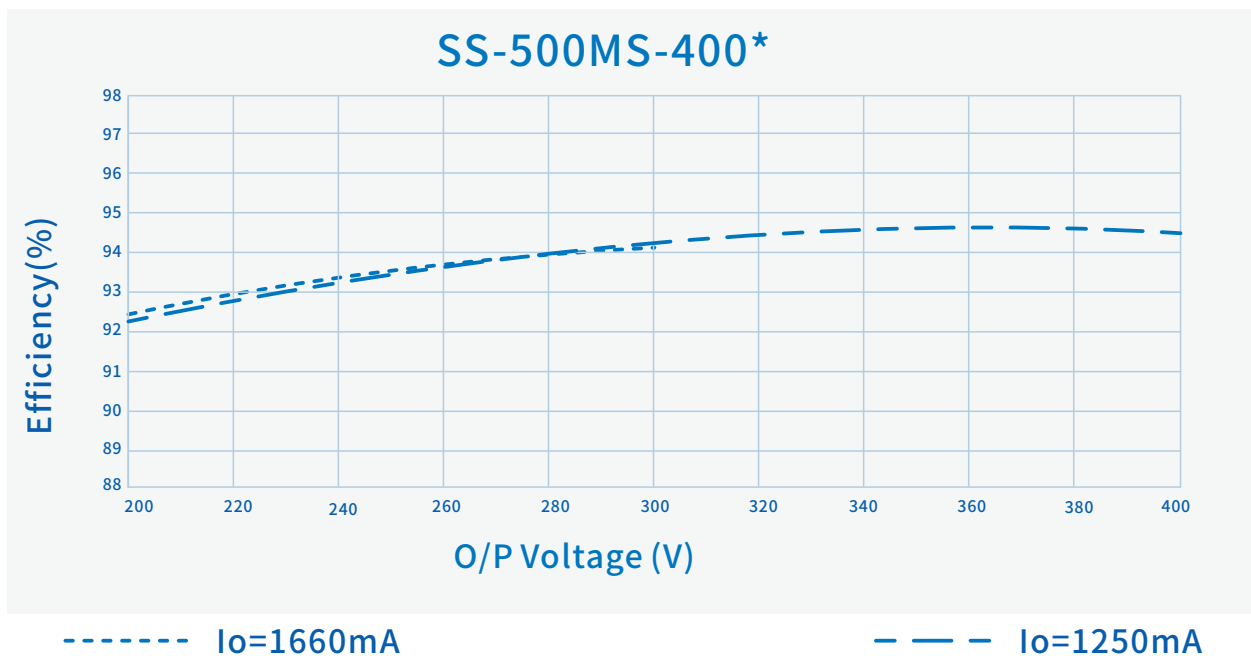
SS-500MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=480V_{ac}$)



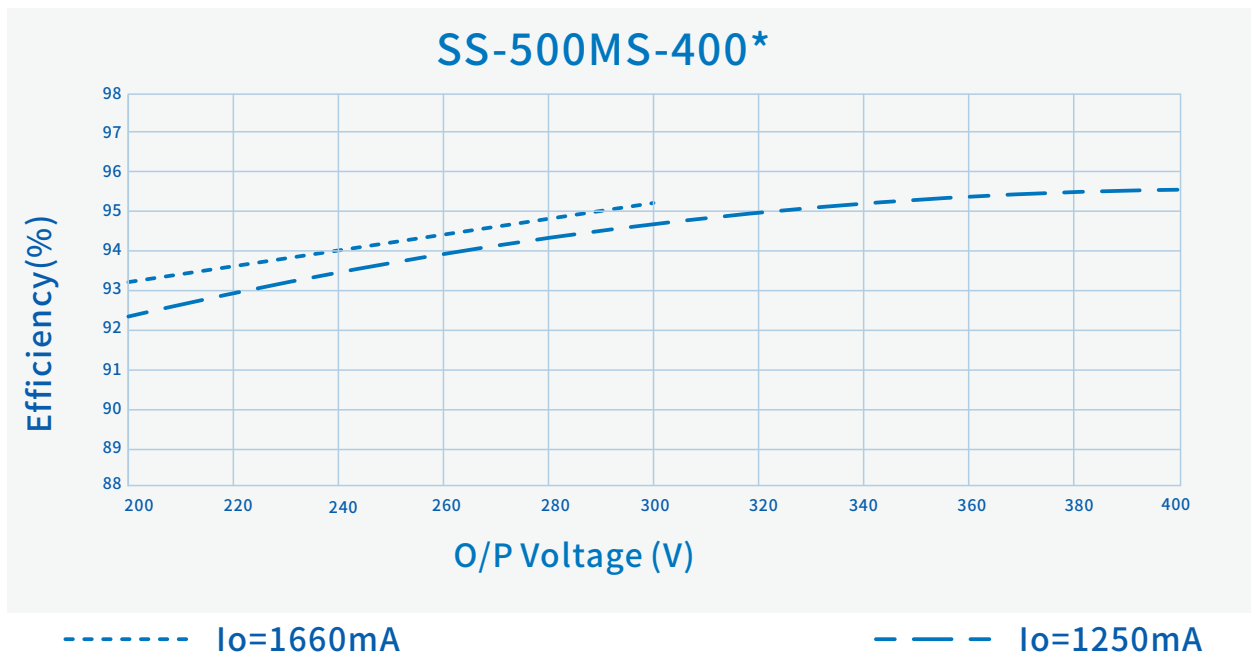
Efficiency Vs. O/P Voltage ($V_{in}=220V_{ac}$)



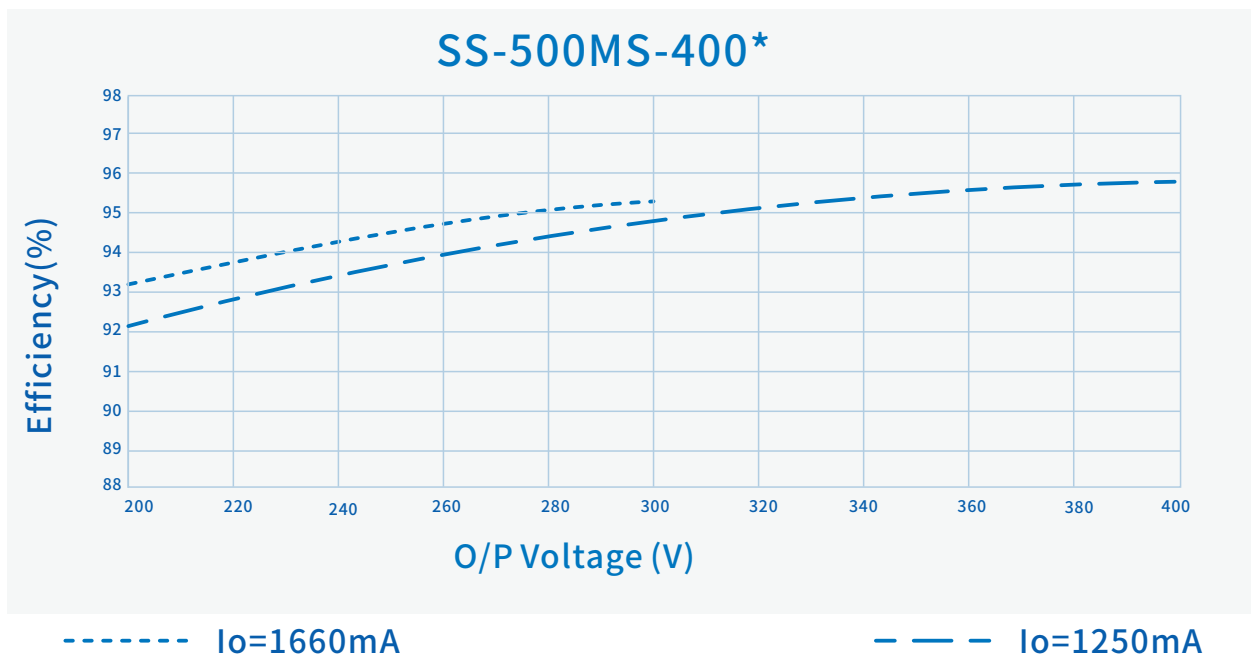
SS-500MS Series LED Driver

Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=347V_{ac}$)



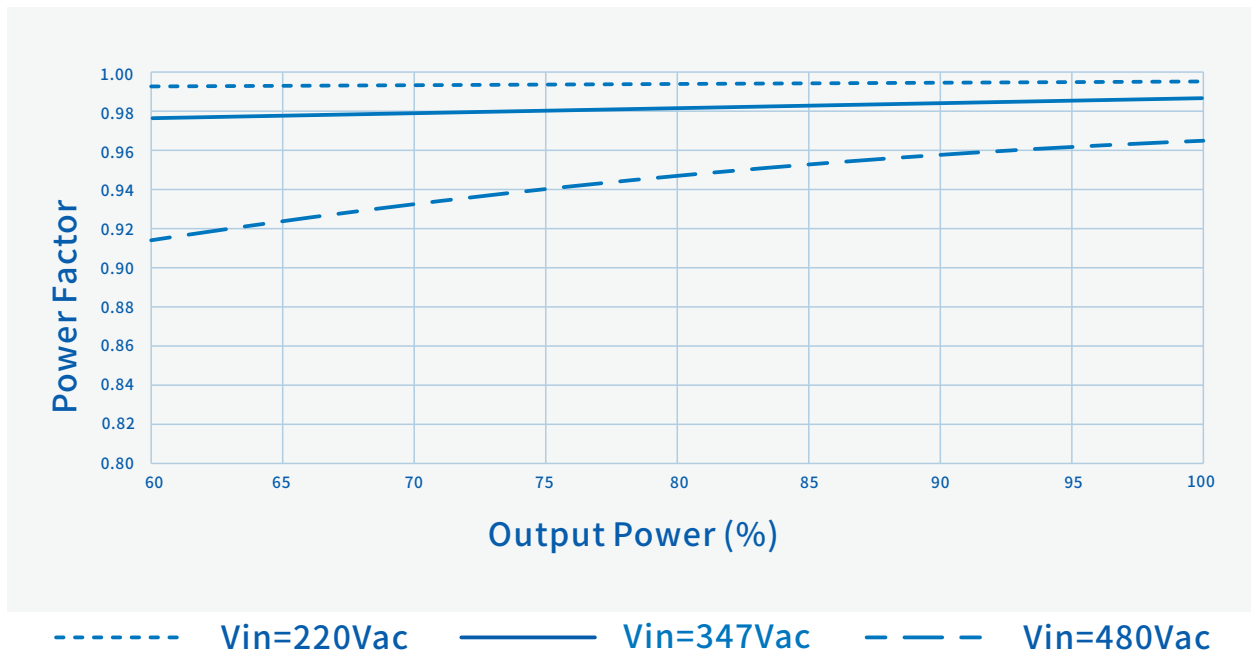
Efficiency Vs. O/P Voltage ($V_{in}=480V_{ac}$)



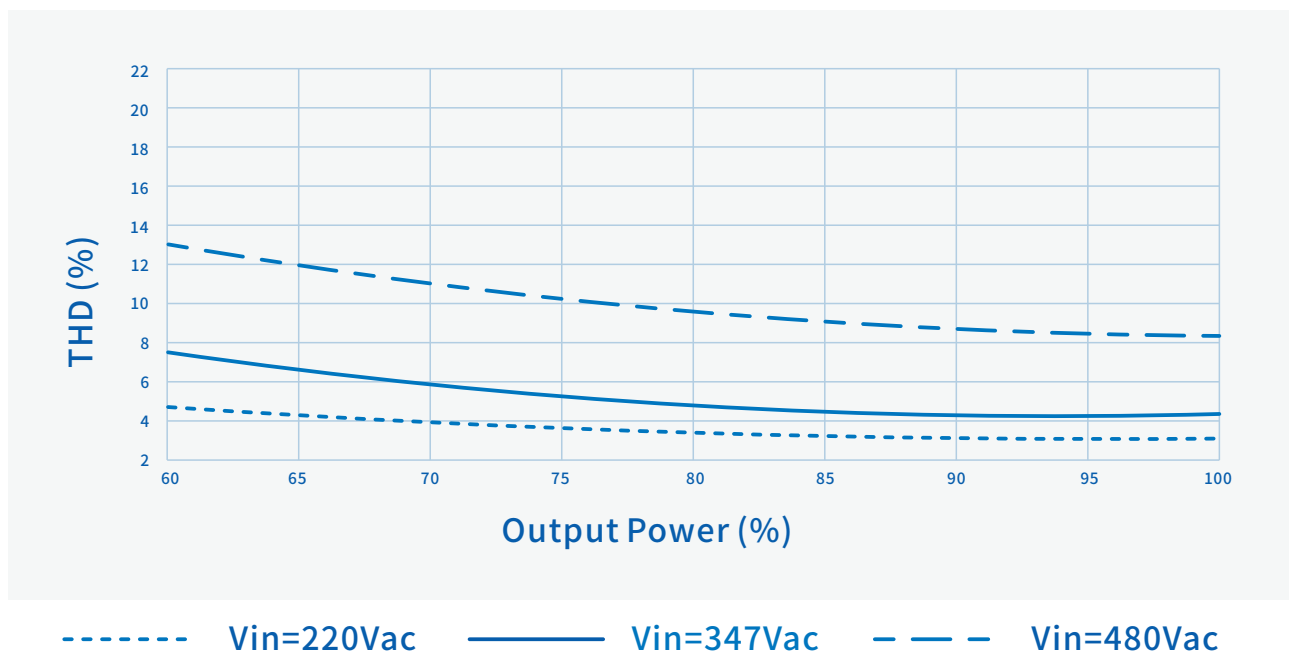
SS-500MS Series LED Driver

Performance Curves:

Power Factor Vs. O/P Power



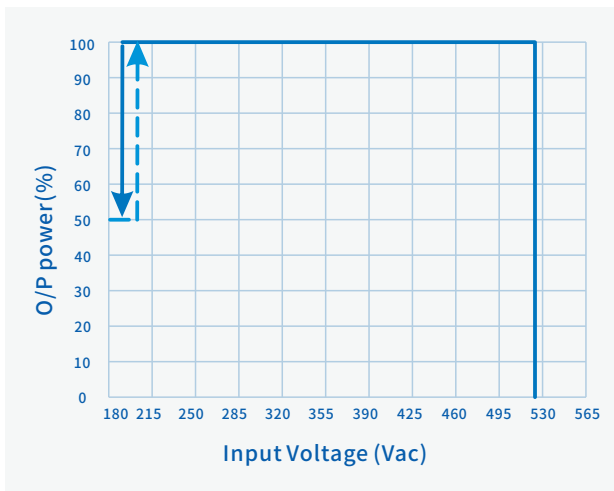
THD Vs. O/P Power



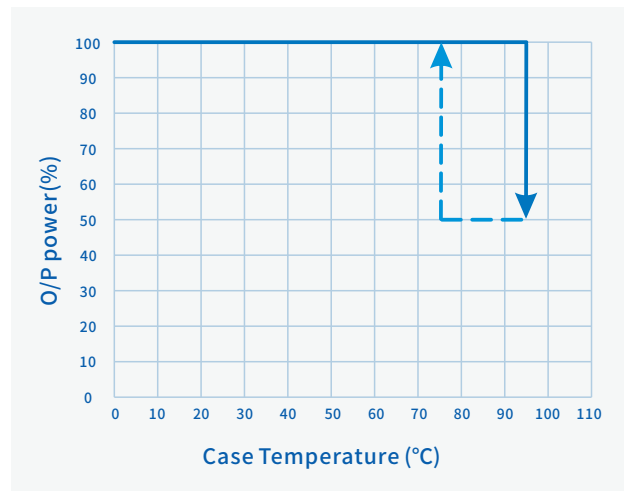
SS-500MS Series LED Driver

Performance Curves:

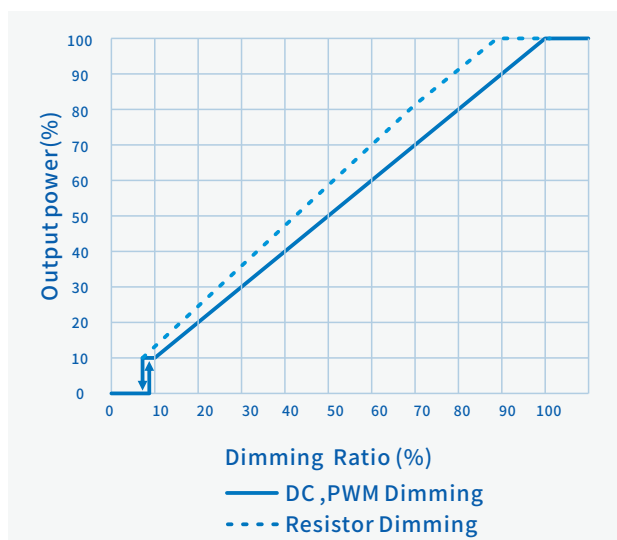
O/P Power Vs. Input Voltage



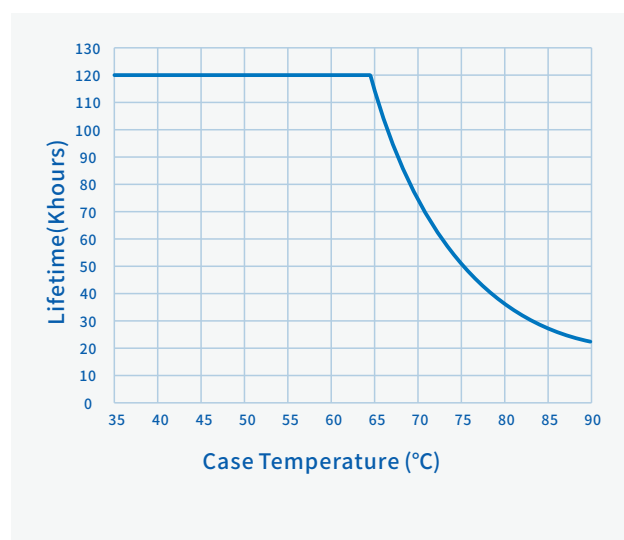
O/P Power Vs. Case Temperature



O/P Power Vs. Dimming



Lifetime Vs. Case Temperature



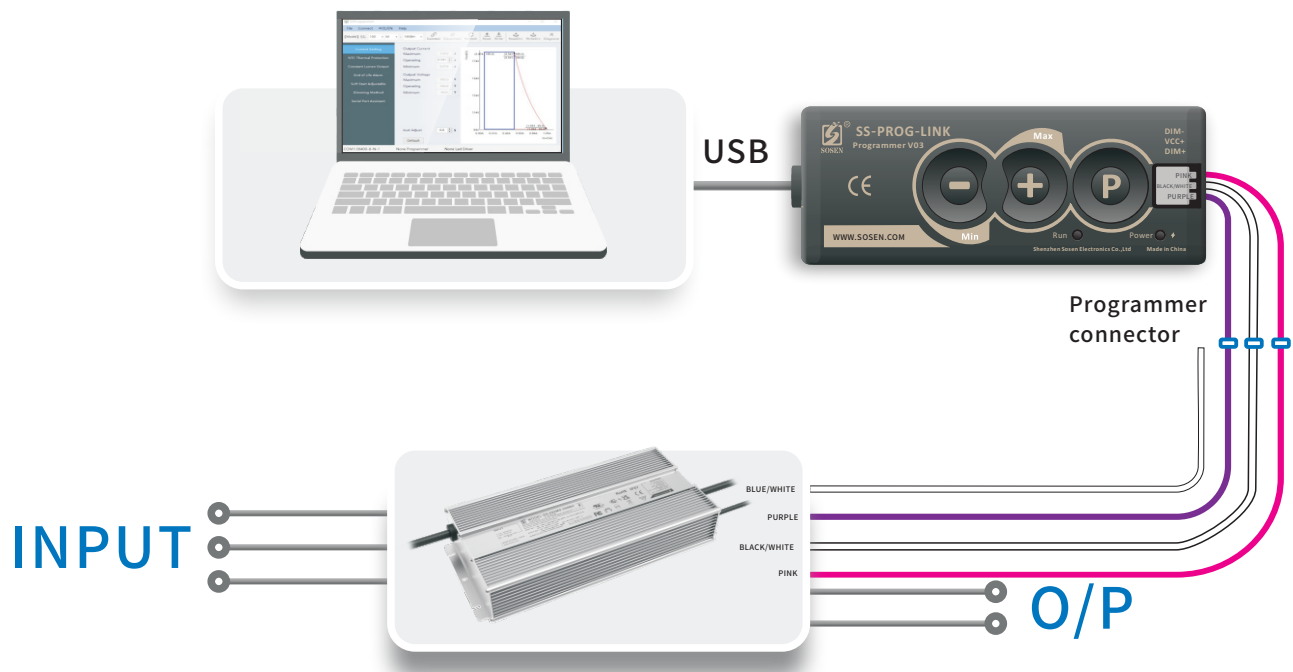
SS-500MS Series LED Driver

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.



Constant Lumen Output

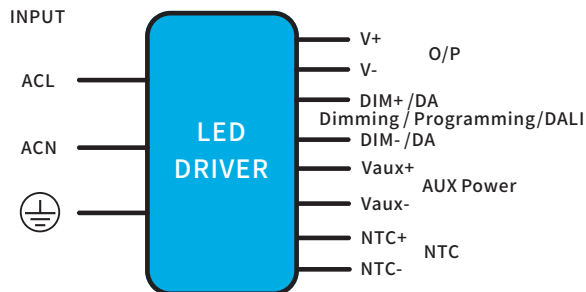
Constant Lumen Output are design to maintain fixture's stable output lumen by increasing driver's output current within driver's life span to counteract LED lumen degradation.

Note:

1. Programming could be completed by off-line mode either without turn on the driver nor without PC, other than the traditional on-line mode.
2. The DALI-2 models only support setting the rated output current through SS-DALI-PUSH and does not support programming through SS-PROG-LINK with PC.

SS-500MS Series LED Driver

Mechanical Characteristics



AC Input Cable(Exposed Length $450\pm 10\text{mm}$):

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

DC O/P Cable(Exposed Length $250\pm 10\text{mm}$):

Global model: SJOW,2*17AWG,O.D: 7.7mm,Brown:V+, Blue:V-
Global model: SJOW,3*17AWG,O.D: 7.7mm,Brown:V+, Blue:V-,
Yellow/Green:GND(-G)

BH/DH Model:

DIM/AUX Power/Programming Cable

(Exposed Length $220\pm 10\text{mm}$):

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

DHN Model:

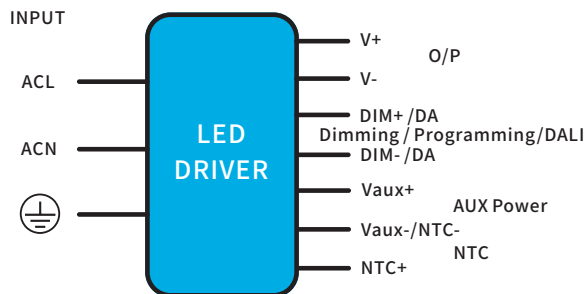
DIM/AUX Power/Programming Cable

(Exposed Length $220\pm 10\text{mm}$):

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

NTC Cable(Exposed Length $220\pm 10\text{mm}$):

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



AC Input Cable(Exposed Length $450\pm 10\text{mm}$):

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

DC O/P Cable(Exposed Length $250\pm 10\text{mm}$):

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

BHN Model:

DIM/AUX Power/Programming/NTC Cable

(Exposed Length $220\pm 10\text{mm}$):

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

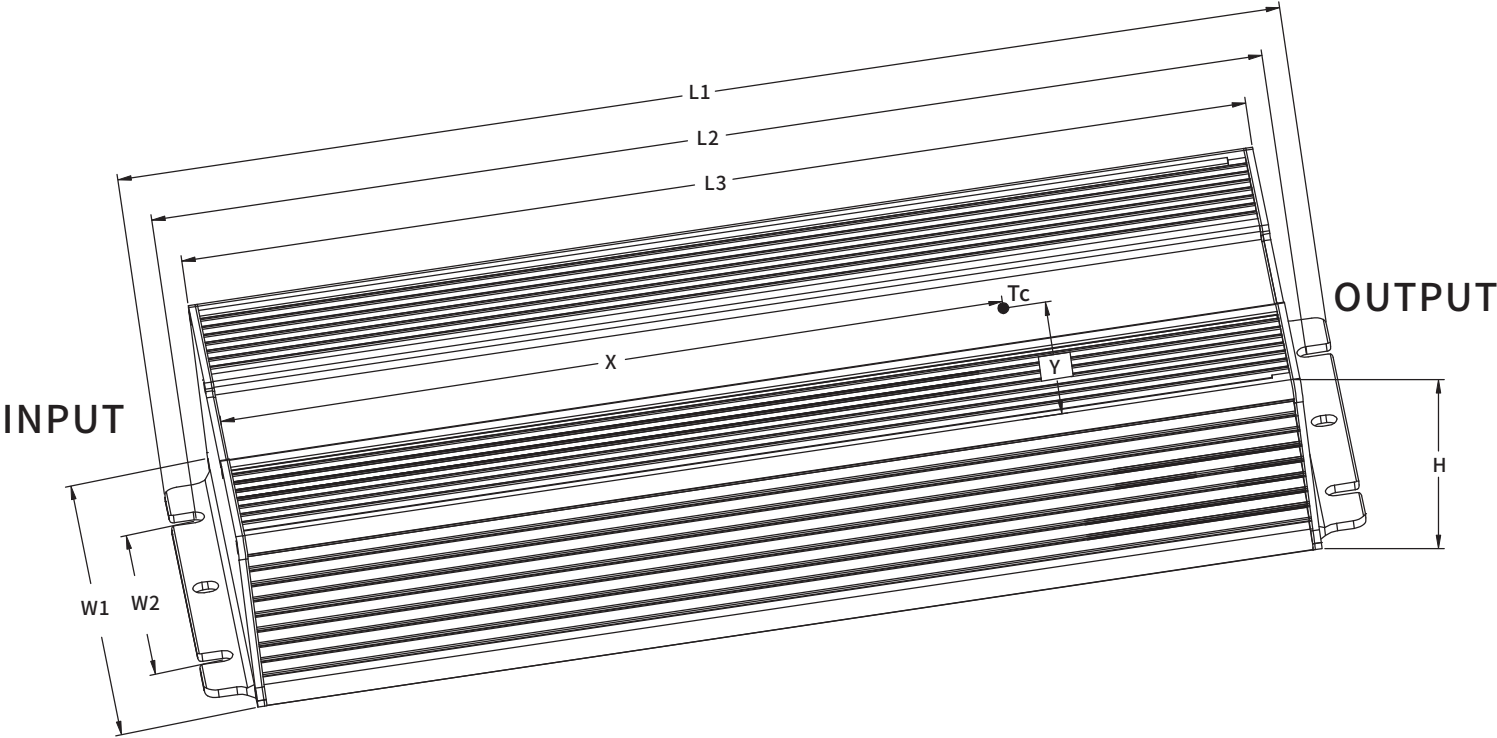
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Mechanical Characteristics

Name Description	Standard Code	mm(In.)
Overall Length	L1	262(10.31)
Mounting Hole Length	L2	251(9.88)
Case Length	L3	240(9.45)
Case Height	H	44.5(1.75)

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 ± 5 mm,
Tinned length of wire: 10 ± 2 mm

Name Description	Standard Code	mm(In.)
Case Width	W1	105(4.13)
Mounting Hole Width	W2	60(2.36)
TC Point Position	X	170(6.69)
TC Point Position	Y	45(1.77)



SS-500MS Series LED Driver



Assembly Tips

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

Package

- Outside carton dimension: $L \times W \times H = 493\text{mm} \times 385\text{mm} \times 132\text{mm}$;
- 7PCS/Carton;
- Net weight/Piece: 2.3kg; Gross weight/Carton: 17kg;
- 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	2023/11/30	
V01	Updated certification, added default output current	2024/08/12	