

# SOSEN LED Driver, Your Smart Choice

## Specifications

### SS-95MS Series LED Driver

Model: SS-95MS-XX

Description: 95W LED Driver

Rev.: V00

Release Date: 2025-02-11

# SS-95MS Series LED Driver

**SOSEN**  
LED DRIVER



**LED DRIVER**

**MS Series**



## Features:

- Input voltage: 180-528Vac
- Efficiency up to 90.5%
- Dimming: 0-10V,PWM,Resistor,Timing
- Isolated Dim-to-Off
- Surge protection: IEC: CM: 10kV, DM: 6kV  
ANSI: CM: 6kV, DM: 6kV
- AUX Power: 12V/0.2A
- Standby Power<1W
- Constant Lumen O/P
- Lifespan Early Warning
- LED module over-temperature protection
- IP66/IP67
- Communication function with PC
- Type HL, suitable for hazardous locations
- Protections: SCP/OTP/OVP/UVP
- Warranty: 5 years

## Description:

SS-95MS series product is 95W 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, Street lamps, floodlights, industrial and mining lamps.

## Model List:

| Model       | AC Input Range | Max. Pout | Vout Range | Full Power Working Voltage | Iout      | Default Output Current | THD (Typ.) | PF (Typ.) | Eff. (Typ.) | Max.Tc |
|-------------|----------------|-----------|------------|----------------------------|-----------|------------------------|------------|-----------|-------------|--------|
| SS-95MS-54* | 180-528Vac     | 95W       | 17-54V     | 34-54V                     | 0.35-2.8A | 1.75A                  | 10%        | 0.95      | 90%         | 90°C   |

Note:

- Default Tested: at 480Vac, 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-95MS Series LED Driver

## “★” Means Additional Function

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

## 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          |        |         | 0.6A   | 200Vac, Full load         |
| Max Input Power            |        |         | 120W   | 200Vac, Full load         |
| Max Inrush Current(230Vac) |        |         | 30A    | Cold start                |
| Max Inrush Current(347Vac) |        |         | 40A    | Cold start                |
| Max Inrush Current(400Vac) |        |         | 50A    | Cold start                |
| Max Inrush Current(480Vac) |        |         | 60A    | Cold start                |
| Standby Power              |        |         | 0.5W   | 230Vac/50Hz 60Hz, Dim-off |
|                            |        |         | 1.0W   | 480Vac/50Hz 60Hz, Dim-off |
| Power Factor               | 0.95   |         |        | 480Vac/60Hz, Full load    |
|                            | 0.90   |         |        | 200-480Vac, 60-100% load  |
| THD                        |        | 10%     |        | 480Vac/ 60Hz, Full load   |
|                            |        |         | 20%    | 200-480Vac, 60-100% load  |

# SS-95MS Series LED Driver

## O/P Characteristics(SS-95MS-54\*):

| Parameter                    | Min.      | Typ.  | Max.      | Remark                                                                                             |
|------------------------------|-----------|-------|-----------|----------------------------------------------------------------------------------------------------|
| O/P Voltage Range            | 17V       |       | 54V       | Power derated @17-34V                                                                              |
| Rated O/P Voltage            | 34V       |       | 54V       | $P_o = V_o \cdot I_o = 95W$ , Full load                                                            |
| Rated O/P Current            | 1.75A     |       | 2.8A      | 2.8A for 34V, 1.75A for 54V                                                                        |
| Adj. O/P Current Range (AOC) | 0.35A     |       | 2.8A      | Adjustable by program                                                                              |
| No Load Voltage              |           |       | 60V       |                                                                                                    |
| Efficiency @230Vac           | 87.0%     | 89.0% |           | O/P 54V/1.75A                                                                                      |
| Efficiency @400Vac           | 87.5%     | 89.5% |           | O/P 54V/1.75A                                                                                      |
| Efficiency @480Vac           | 88.0%     | 90.0% |           | O/P 54V/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      | 200-480Vac, 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, and it can be automatically restored after the abnormality is removed. |

# SS-95MS Series LED Driver

## Other Characteristics:

| Parameter                             |               | Min.           | Typ. | Max.      | Remark                                                                                                                                                                          |
|---------------------------------------|---------------|----------------|------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AUX Power                             | O/P Voltage   | 10.8V          | 12V  | 13.2V     |                                                                                                                                                                                 |
|                                       | O/P Current   | 0mA            |      | 200mA     | Operate max 15min at 400mA                                                                                                                                                      |
| 0-10V Positive Dimming (Configurable) | Dim Vmax      | 0V             |      | 12V       | DIM+ source current 110uA.<br>Dimming prohibits reverse connection<br>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 <sub>max</sub> 40uA.<br>Dimming prohibits reverse connection<br>Configurable to 5-0V                                                                        |
| PWM Dimming (Optional)                | PWM High      | 9.8V           |      | 10.2V     | DIM+ source current 110uA.<br>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       | 0.7V           | 0.8V | 0.9V      | If the led is less than maximum rated output voltage of 75%,the luminaries may possibly have slight light when dim-to-off.<br>Thus the whole lighting system needs to be tested |
|                                       | Dim on        | 0.8V           | 0.9V | 1.0V      |                                                                                                                                                                                 |
| 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 |      |           |                                                                                                                                                                                 |
| Constant Lumen(Optional)              |               | By programming |      |           |                                                                                                                                                                                 |
| Life Warning(Optional)                |               | By programming |      |           |                                                                                                                                                                                 |
| NTC function(Optional)                |               |                |      |           | 10KΩ B3950K<br>10KΩ B3435K                                                                                                                                                      |

# SS-95MS Series LED Driver

## Other Characteristics:

|                                          |                     |                                                                |
|------------------------------------------|---------------------|----------------------------------------------------------------|
| Life Time( $T_c \leq 80^\circ\text{C}$ ) | 50,000 hours        | Rated full load                                                |
| MTBF                                     | 205,000 hours       | 480Vac, Full load, $T_a = 25^\circ\text{C}$<br>(MIL-HDBK-217F) |
| IP Grade                                 | IP67                |                                                                |
| $T_c$                                    | $90^\circ\text{C}$  |                                                                |
| Warranty                                 | 5 years             | $T_c: 80^\circ\text{C}$                                        |
| Net Weight                               | 820g                |                                                                |
| Dimension                                | 148mm*76.5mm*36.7mm | 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:  $91\text{K}\Omega/\text{N}$ .

# SS-95MS Series 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 |
|---------------|---------------------------------------------------------------------------|--------|--------|
| UL/cUL        | UL8750                                                                    |        |        |
| ENEC          | EN 61347-1:2015/A1:2021<br>EN 61347-2-13:2014/A1:2017<br>EN/IEC62384:2020 |        |        |
| UKCA          | EN 61347-1:2015/A1:2021<br>EN 61347-2-13:2014/A1:2017<br>EN 62493:2015    |        |        |
| RCM           | AS/NZS61347.2.13                                                          |        |        |
| CCC           | GB19510.1-2009;GB19510.14-2009                                            |        |        |
| CE            | EN 61347-1:2015/A1:2021<br>EN 61347-2-13:2014/A1:2017<br>EN 62493:2015    |        |        |

| EMI/EMS                    | Criterion                                                      | Remark                       |
|----------------------------|----------------------------------------------------------------|------------------------------|
| Conduction Emission        | EN55015:2013+A1:2015<br>FCC Part 15 Subpart B; ANSI C63.4:2014 | Class B                      |
| Radiation Emission         | EN55015:2013+A1:2015<br>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  |

# SS-95MS Series LED Driver

## Safety Test Items:

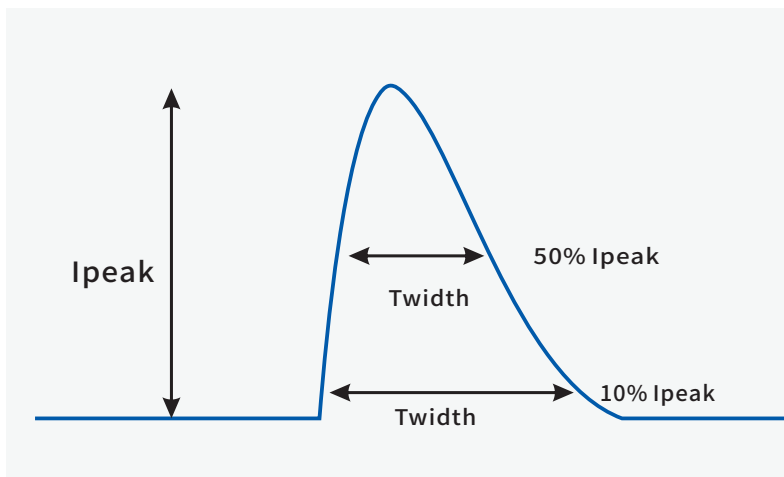
| Safety Test Items       | Technical Indicators       |                              |                             | Remark                          |
|-------------------------|----------------------------|------------------------------|-----------------------------|---------------------------------|
| Insulation Requirements | UL Insulation Requirements | ENEC Insulation Requirements | CCC Insulation Requirements |                                 |
| Input-Case              | 2U+1000Vac                 | 2U+1000Vac                   | 2U+1000Vac                  | Basic insulation                |
| Input-Dim               | 2U+1000Vac                 | 4U+2000Vac                   | 4U+2750Vac                  | 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 60598-1:2014 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



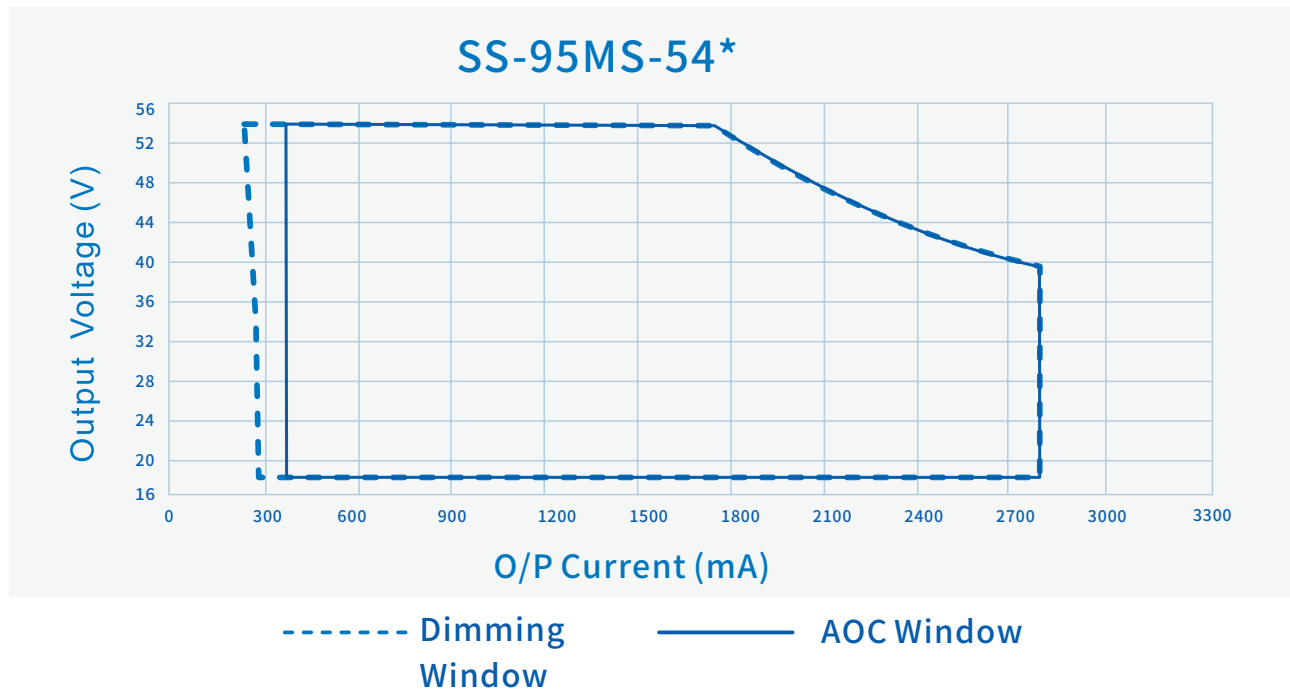
| Vin    | Ipeak | T(@10% of Ipeak) | T(@50% of Ipeak) |
|--------|-------|------------------|------------------|
| 230Vac | 30A   | 1600uS           | 430uS            |
| 347Vac | 40A   | 1300uS           | 420uS            |
| 400Vac | 50A   | 1300uS           | 400uS            |
| 480Vac | 60A   | 1200uS           | 400uS            |



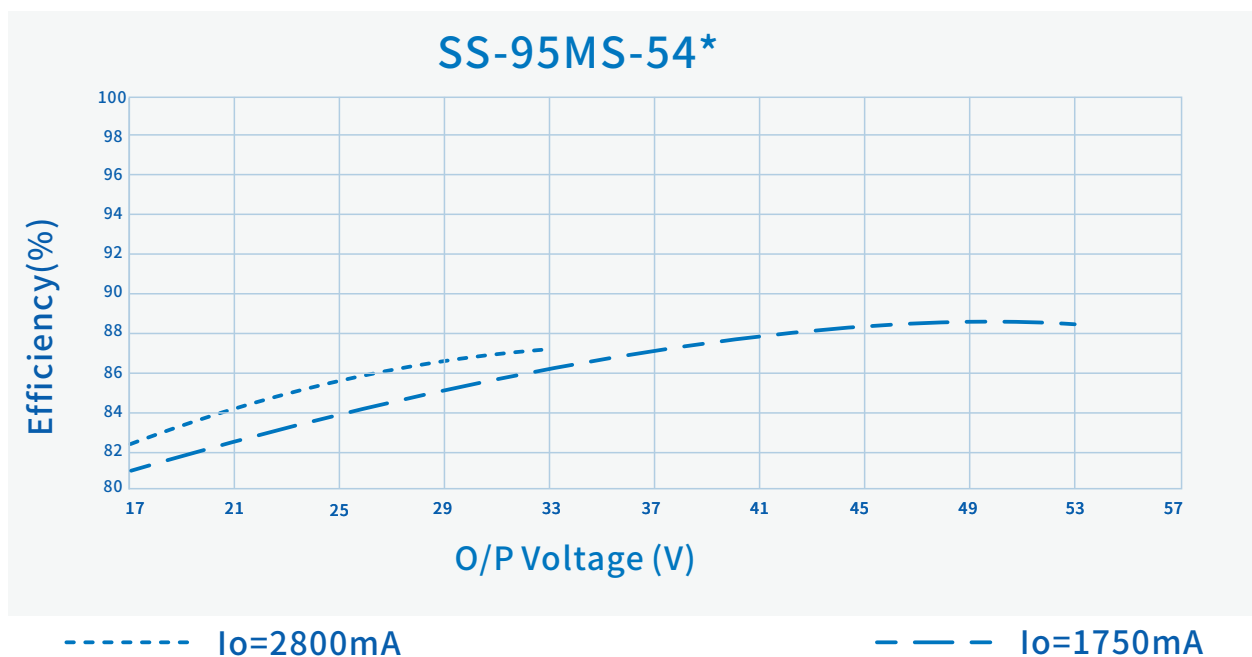
# SS-95MS Series LED Driver

## Performance Curves:

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



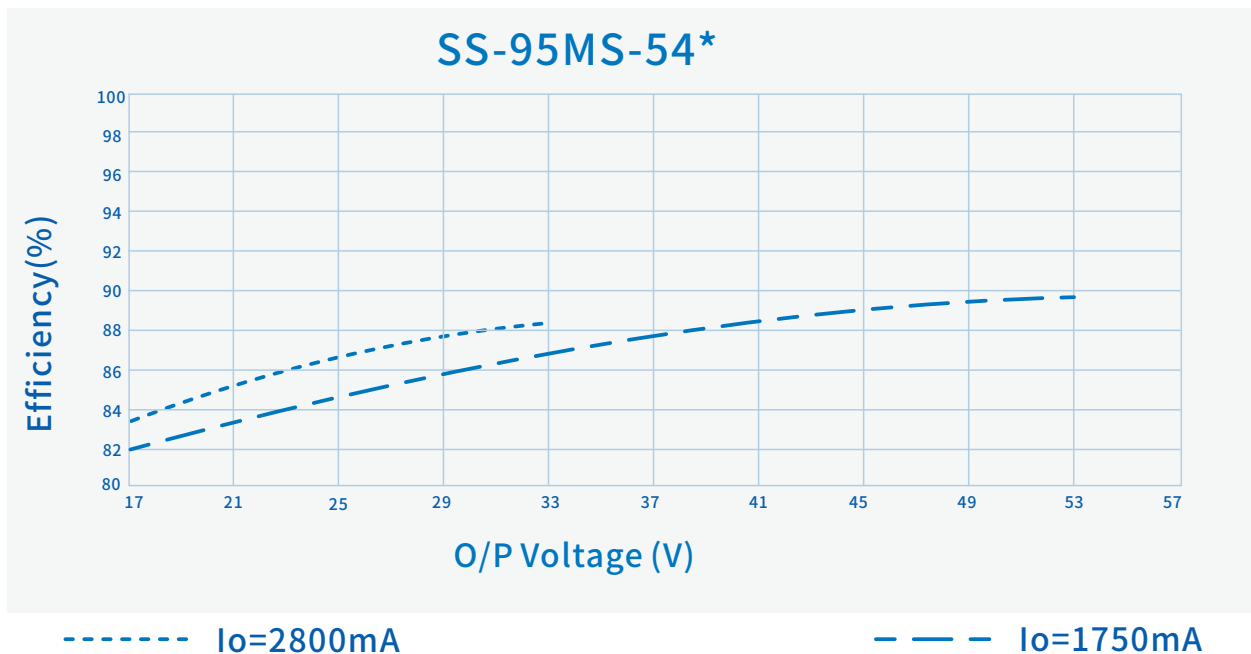
Efficiency Vs. O/P Voltage (Vin=230Vac)



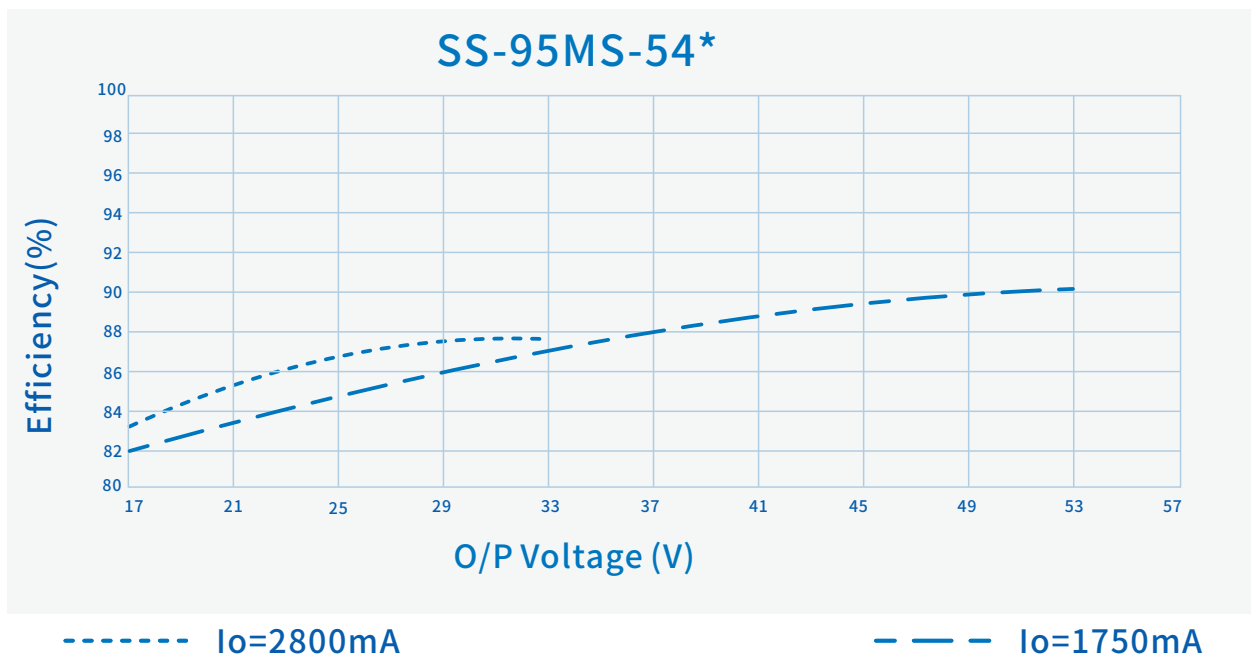
# SS-95MS Series LED Driver

## Performance Curves:

Efficiency Vs. O/P Voltage ( $V_{in}=400V_{ac}$ )



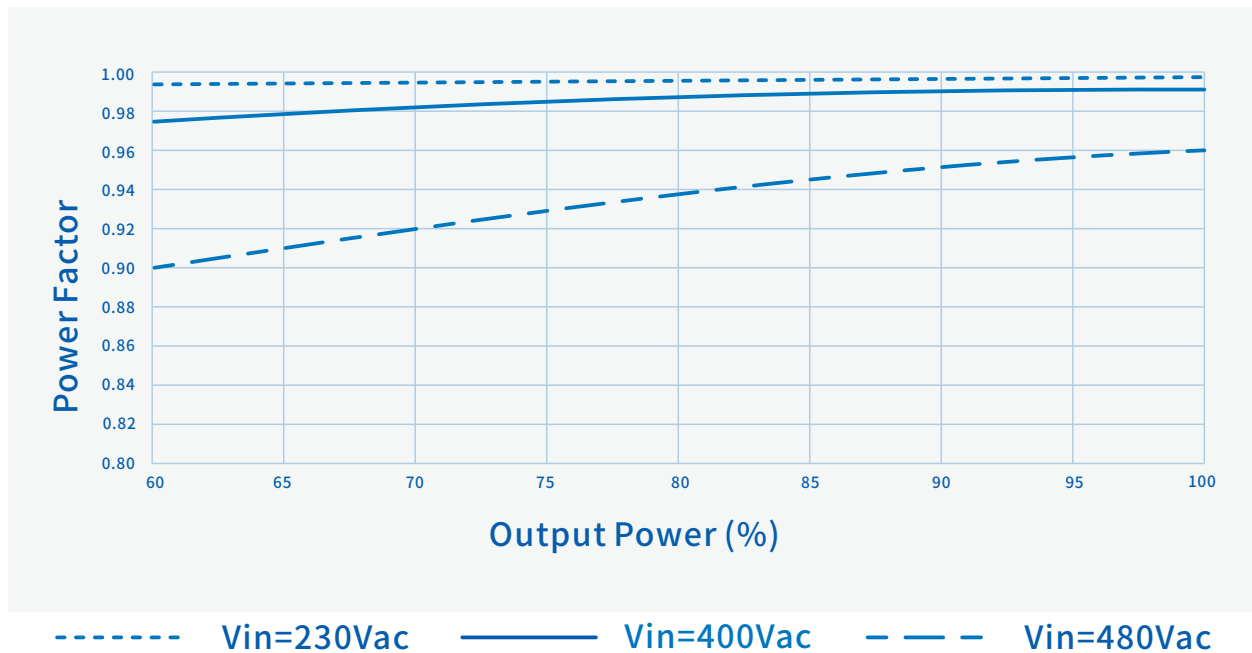
Efficiency Vs. O/P Voltage ( $V_{in}=480V_{ac}$ )



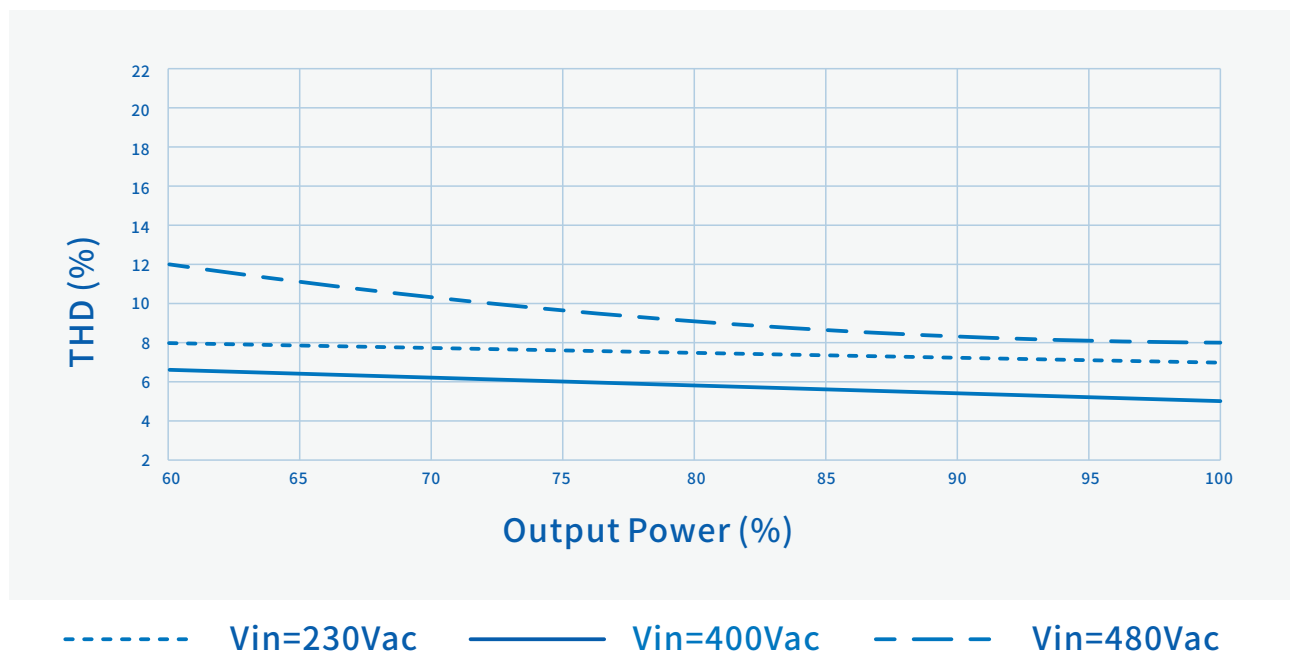
# SS-95MS Series LED Driver

## Performance Curves:

Power Factor Vs. O/P Power



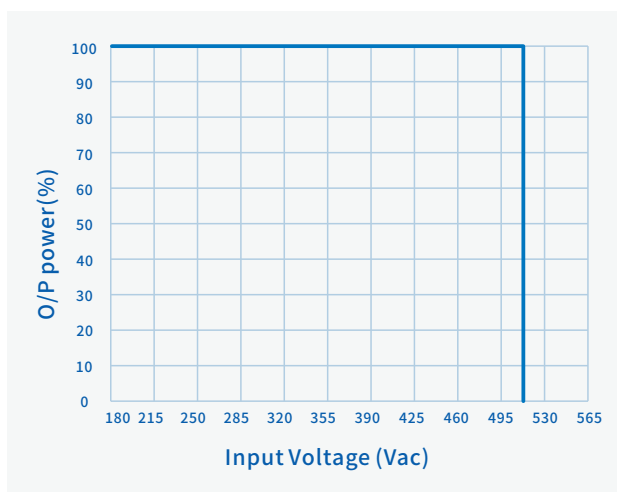
THD Vs. O/P Power



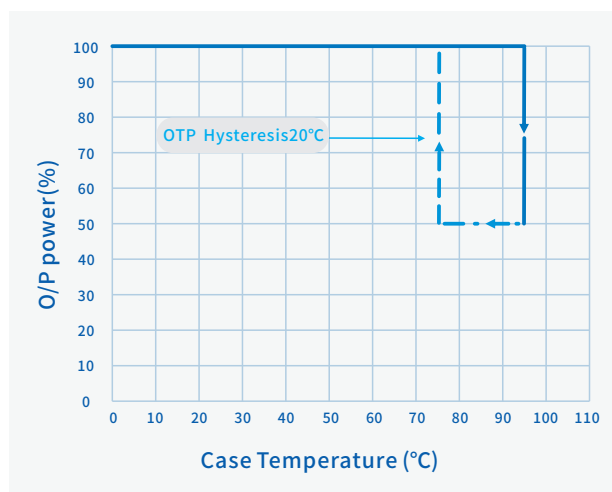
# SS-95MS Series LED Driver

## Performance Curves:

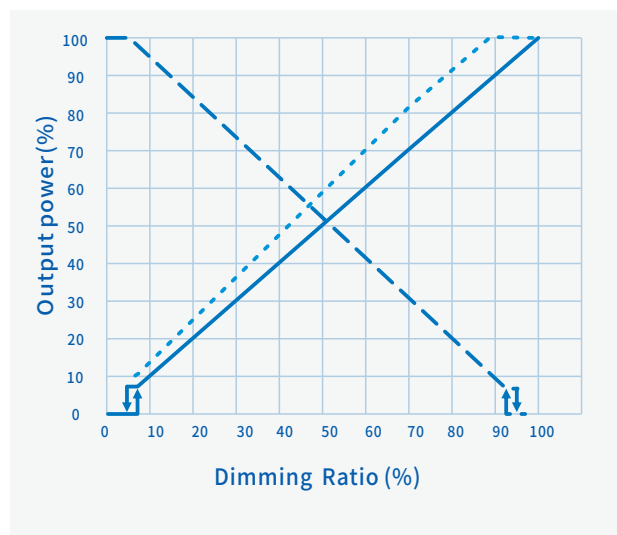
### O/P Power Vs. Input Voltage



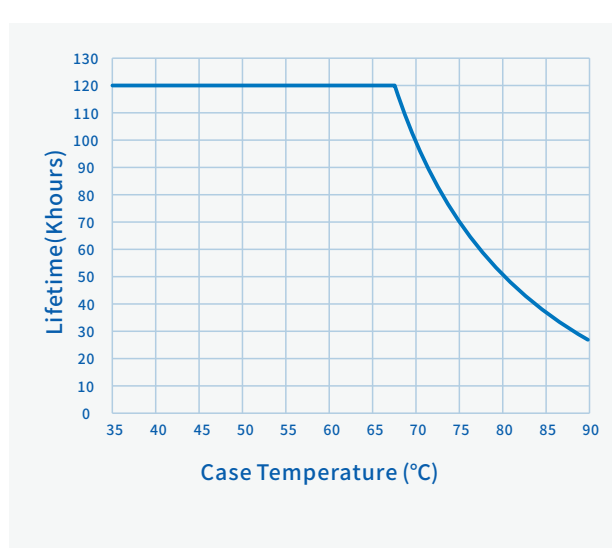
### O/P Power Vs. Case Temperature



### O/P Power Vs. Dimming



### Lifetime Vs. Case Temperature



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

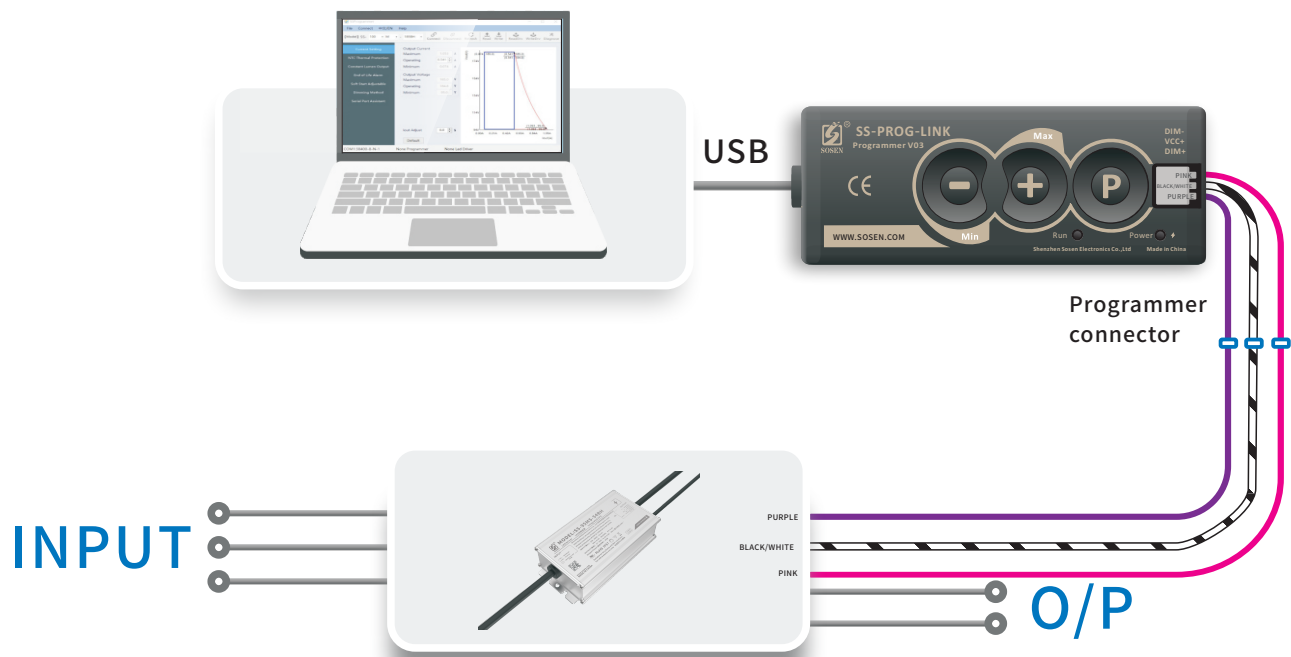
# SS-95MS Series LED Driver

## 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.

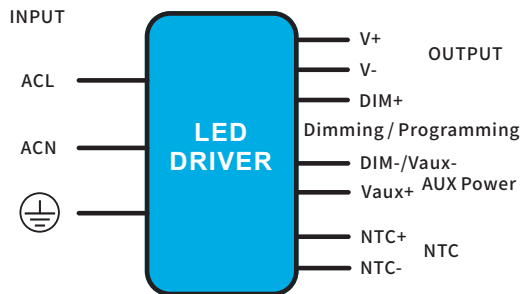


## Constant Lumen Output

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.

# SS-95MS Series LED Driver

## Mechanical Characteristics



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

UL model:STW, 3\*18AWG, O.D.: 9.4mm, Black: L, White: N, Green:  $\oplus$

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

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

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

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

### BH Model:

#### DIM/AUX Power/Programming Cable

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

UL /Global model: STYLE 21996, 3\*22AWG, O.D.: 4.9mm, Purple: DIM+,

Pink: DIM- /Vaux-,Black/White: Vaux+

### BHN Model:

#### DIM/AUX Power/Programming Cable

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

UL /Global model: STYLE 21996, 3\*22AWG, O.D.: 4.9mm, Purple: DIM+,

Pink: DIM-/Vaux-, Black/White: Vaux+

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

ULmodel: SJTW,2\*18AWG,O.D.: 7.3mm,Red:NTC+, Black:NTC-

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

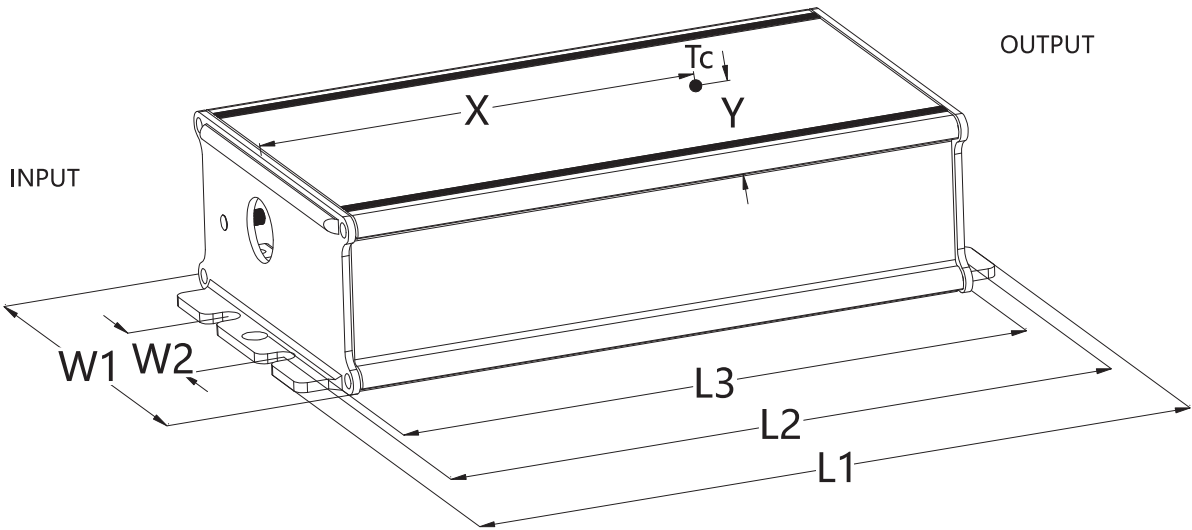
# SS-95MS Series LED Driver

## Mechanical Characteristics

| Name Description     | Standard Code | mm(In.)    |
|----------------------|---------------|------------|
| Overall Length       | L1            | 148(5.83)  |
| Mounting Hole Length | L2            | 140(5.51)  |
| Case Length          | L3            | 131(5.15)  |
| Case Height          | H             | 36.7(1.44) |

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

| Name Description    | Standard Code | mm(In.)    |
|---------------------|---------------|------------|
| Case Width          | W1            | 76.5(3.01) |
| Mounting Hole Width | W2            | 27(1.06)   |
| TC Point Position   | X             | 95(3.74)   |
| TC Point Position   | Y             | 42(1.65)   |



# SS-95MS 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: 0.82kg; Gross weight/Carton: 7.5kg;
- 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      | 2025/02/11   |        |
|         |                       |              |        |
|         |                       |              |        |
|         |                       |              |        |
|         |                       |              |        |