

# **SOSEN LED Driver, Your Smart Choice**

## **Specifications**

### **SS-500VP-H Series LED Driver**

Model: SS-500VP-HXX

Description: 500W LED Driver

Rev.: V00

Release Date: 2023-04-16

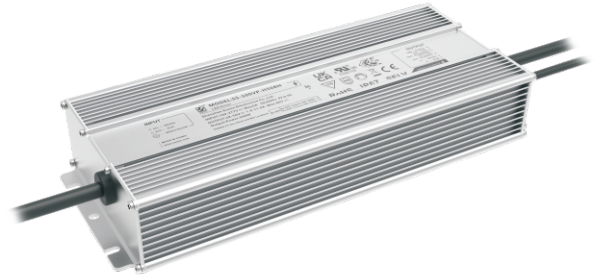
# SS-500VP-H Series LED Driver

**SOSEN**  
LED DRIVER



**LED DRIVER**

**VP-H Series**



## Features:

- Efficiency up to 95.5%
- 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
- External NTC to Protect LED Module
- Standby Power < 0.5W
- IP67
- Communication Function With PC
- Type HL, suitable for hazardous locations
- Protections: SCP/OTP/OVP
- Warranty: 5 years
- Warranty: 8 years (Optional)



## Description:

SS-500VP-H series are 500W constant current LED Driver with wide O/P voltage range and adjustable O/P current by program. LED luminaries manufactures can easily to design luminaries and reduce cost.

### Application:

Stadium lighting, Square lighting, Plant lighting, Fish lighting

## Model List:

| Model         | AC Input Range | Max. Pout | Vout Range | Full Power Working Voltage | Iout      | Iout (DALI-2) | THD (Typ.) | PF (Typ.) | Eff. (Typ.) | Max.Tc |
|---------------|----------------|-----------|------------|----------------------------|-----------|---------------|------------|-----------|-------------|--------|
| SS-500VP-H56* | 90-305Vac      | 500W      | 28-56V     | 44-56V                     | 1.4-11.4A | 6.33-11.4A    | 8%         | 0.97      | 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-500VP-H 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) | Remark |
|-----|--------------------|-----------------------|-------------------|--------|---------------------------------------|--------|
| BH  |                    | ✓                     |                   | ✓      | ✓                                     |        |
| BHN |                    | ✓                     | ✓                 | ✓      | ✓                                     |        |
| DH  | ✓                  | ✓                     |                   |        |                                       |        |
| DHN | ✓                  | ✓                     | ✓                 |        |                                       |        |

## Input Characteristics:

| Parameter                  | Min.   | Typ.    | Max.   | Remark                        |
|----------------------------|--------|---------|--------|-------------------------------|
| Rated AC Input Range       | 100Vac |         | 277Vac | Ref. derating curve           |
| AC Input Range             | 90 Vac |         | 305Vac | Ref. derating curve           |
| Input Frequency Range      | 47Hz   | 50/60Hz | 63Hz   |                               |
| Max Input Current          |        |         | 6A     | 120Vac, full load             |
| Max Input Power            |        |         | 600W   | 120Vac, full load             |
| Max Inrush Current(120Vac) |        |         | 25A    | Cold Start                    |
| Max Inrush Current(220Vac) |        |         | 30A    | Cold Start                    |
| Max Inrush Current(277Vac) |        |         | 40A    | Cold Start                    |
| Standby Power              |        |         | 0.5W   | 220Vac/50Hz, Dim to off       |
| Power Factor               | 0.95   | 0.97    |        | 220Vac/50Hz, full load        |
|                            | 0.90   |         |        | 100-277Vac/50Hz, 70-100% load |
| THD                        |        | 8%      | 10%    | 220Vac/50Hz, full load        |
|                            |        |         | 20%    | 100-277Vac/50Hz, 70-100% load |

# SS-500VP-H Series LED Driver

## O/P Characteristics(SS-500VP-H56\*):

| Parameter                   | Min.      | Typ.  | Max.      | Remark                                                    |
|-----------------------------|-----------|-------|-----------|-----------------------------------------------------------|
| O/P Voltage Range           | 28V       |       | 56V       | Power Derated @28-44V                                     |
| Rated O/P Voltage           | 44V       |       | 56V       | Po=Vo*Io=500W, full load                                  |
| Rated O/P Current           | 8.9A      |       | 11.4A     | 11.4A for 44V,8.9A for 56V                                |
| Adj. O/P Current (AOC)Range | 1.4A      |       | 11.4A     | By Programming                                            |
|                             | 6.33A     |       | 11.4A     | For DALI-2                                                |
| No Load Voltage             |           |       | 60V       |                                                           |
| Efficiency @120Vac          | 90.0%     | 92.0% |           | O/P 56V/8.9A                                              |
| Efficiency @220Vac          | 93.0%     | 95.0% |           | O/P 56V/8.9A                                              |
| Efficiency @277Vac          | 93.5%     | 95.5% |           | O/P 56V/8.9A                                              |
| 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<br><Tc min., Operates Recovery |
| Short Circuit Protection    |           |       | 10W       | Driver will not be damaged,<br>Hiccup mode                |
|                             |           |       |           | Driver will not be damaged,<br>Shut down for DALI-2       |

# SS-500VP-H 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 |           |                                              |
| 0-10V Dimming (Optional)    | Dim Vcc       | 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   | Negative dimming by programming              |
|                             | Dim Range     | 10%                |       | 100%      | 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                        |               | 198,200 hours      |       |           | 220Vac,full load, Ta=25°C (MIL-HDBK-217F)    |
| IP Grade                    |               | IP67               |       |           |                                              |
| Tc                          |               | 90°C               |       |           |                                              |
| Warranty                    |               | 5 years            |       |           | Tc: 75°C                                     |
| Net Weight                  |               | 2270g              |       |           |                                              |
| 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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# SS-500VP-H 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<br>EN 61347-2-13:2014<br>EN 61347-2-13:2014/A1:2017                                                                                       | ✓      |        |
| UKCA          | EN 61347-1:2015+A1:2021<br>EN 61347-2-13:2014+A1:2017<br>EN 62493:2015<br>BS EN 61347-1:2015+A1:2021<br>BS EN 61347-2-13:2014+A1:2017<br>BS EN 62493:2015 | ✓      |        |
| RCM           | AS/NZS61347.2.13                                                                                                                                          |        |        |
| CCC           | GB 19510.14-2009                                                                                                                                          | ✓      |        |
| CE            | EN 61347-2-13:2014<br>EN61347-1:2008+A1:2011+A2:2013                                                                                                      | ✓      |        |

| 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                                              | DM: 6kV,CM: 6kV,Criterion B  |

# SS-500VP-H Series LED Driver

## Safety Test Items:

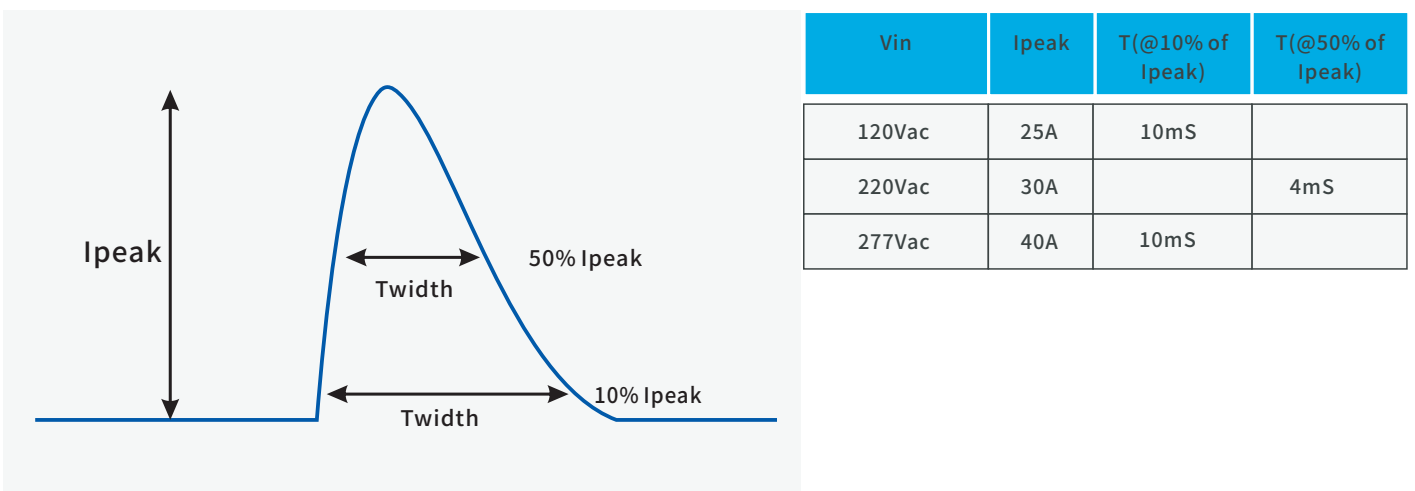
| Safety Test Items       | Technical Indicators       |                              |                             | Remark                          |
|-------------------------|----------------------------|------------------------------|-----------------------------|---------------------------------|
| Insulation Requirements | UL Insulation Requirements | ENEC Insulation Requirements | CCC Insulation Requirements |                                 |
| Input-O/P               | 1600Vac                    | 3000Vac                      | 3750Vac                     | Reinforced insulation           |
| Input-Case              | 1600Vac                    | 1500Vac                      | 1875Vac                     | Basic insulation                |
| Input-Dim               | 1600Vac                    | 3000Vac                      | 3750Vac                     | Reinforced insulation           |
| O/P-Dim                 | 1600Vac                    | 1000Vac                      | 1000Vac                     | Basic insulation                |
| O/P-Case                | 1600Vac                    | 1000Vac                      | 1000Vac                     | Basic insulation                |
| Dim-Case                | 500Vac                     | 250Vac                       | 500Vac                      | Basic insulation                |
| Insulation Resistance   | $\geq 10M\Omega$           |                              |                             | Input-O/P, Test voltage: 500Vdc |
| Ground Resistance       | $\leq 0.1\Omega$           |                              |                             | 25A/1min                        |
| Leakage Current         | $\leq 0.75mA$              |                              |                             | 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-) 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:

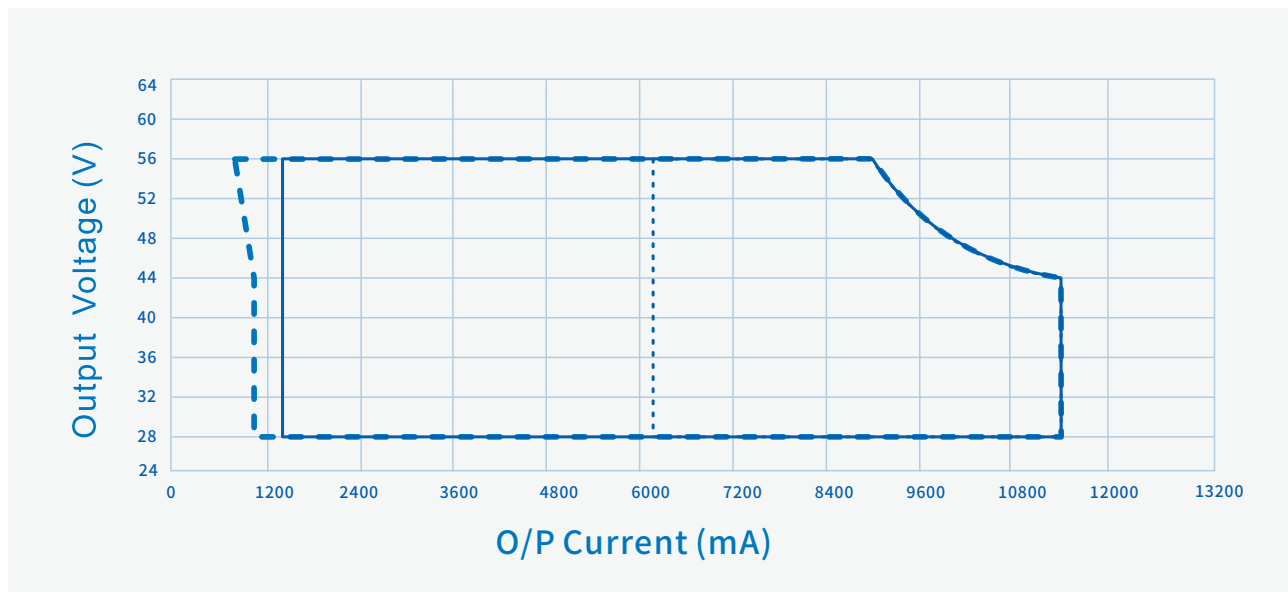
### Input Inrush Current



# SS-500VP-H Series LED Driver

## Performance Curves:

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

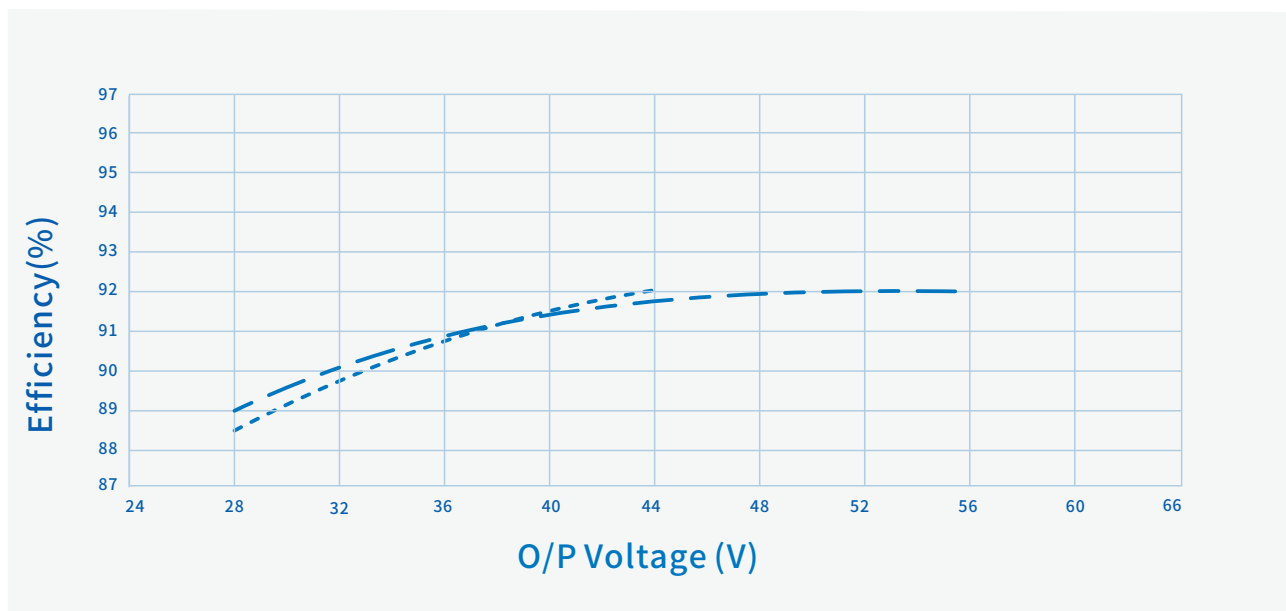


----- Dimming Window

———— AOC Window

..... AOC Window For DALI-2

Efficiency Vs. O/P Voltage (Vin=120Vac)



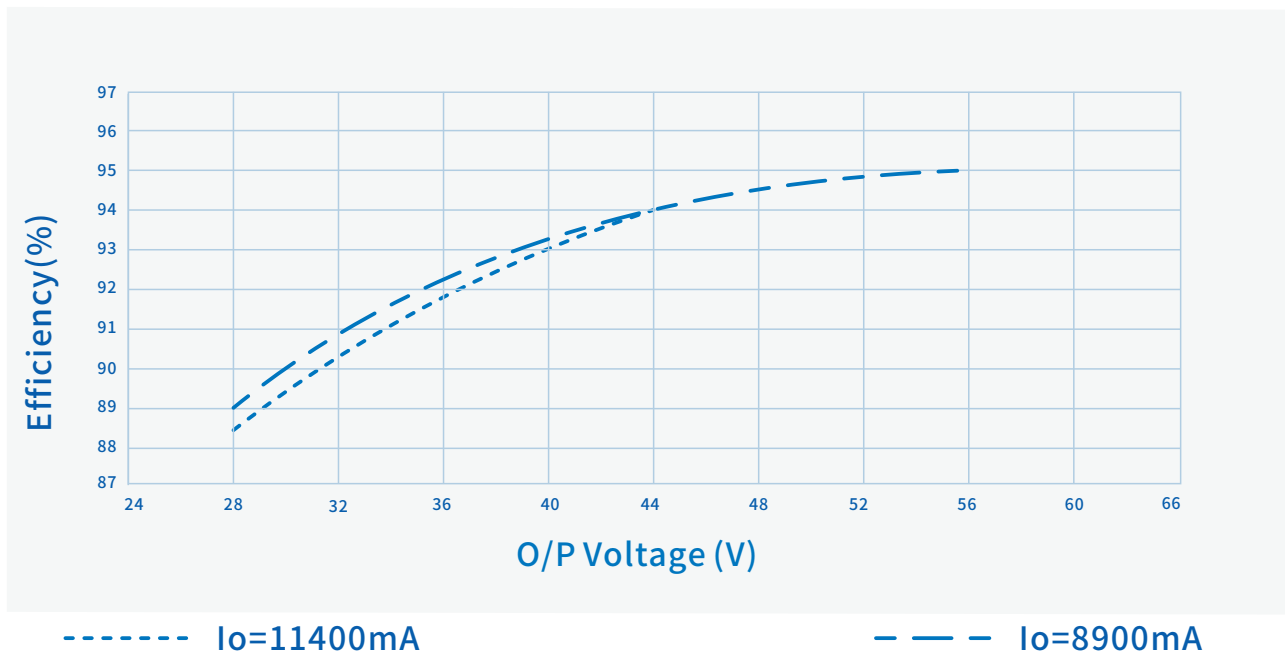
----- Io=11400mA

———— Io=8900mA

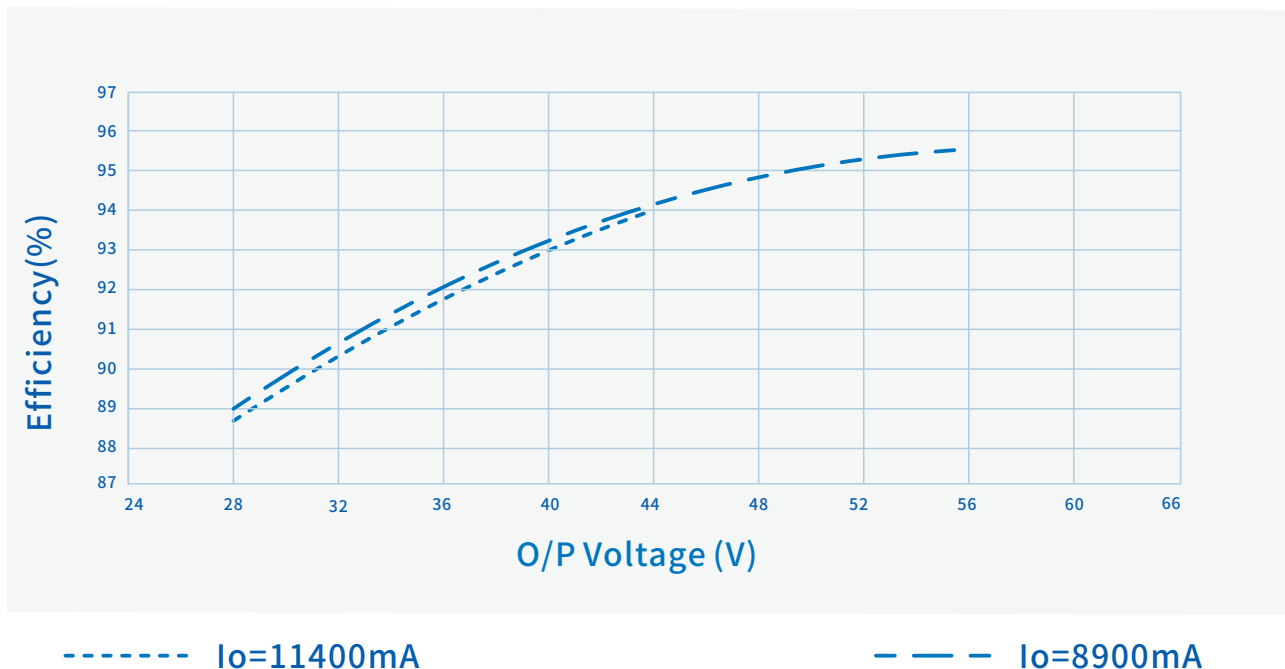
# SS-500VP-H Series LED Driver

## Performance Curves:

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



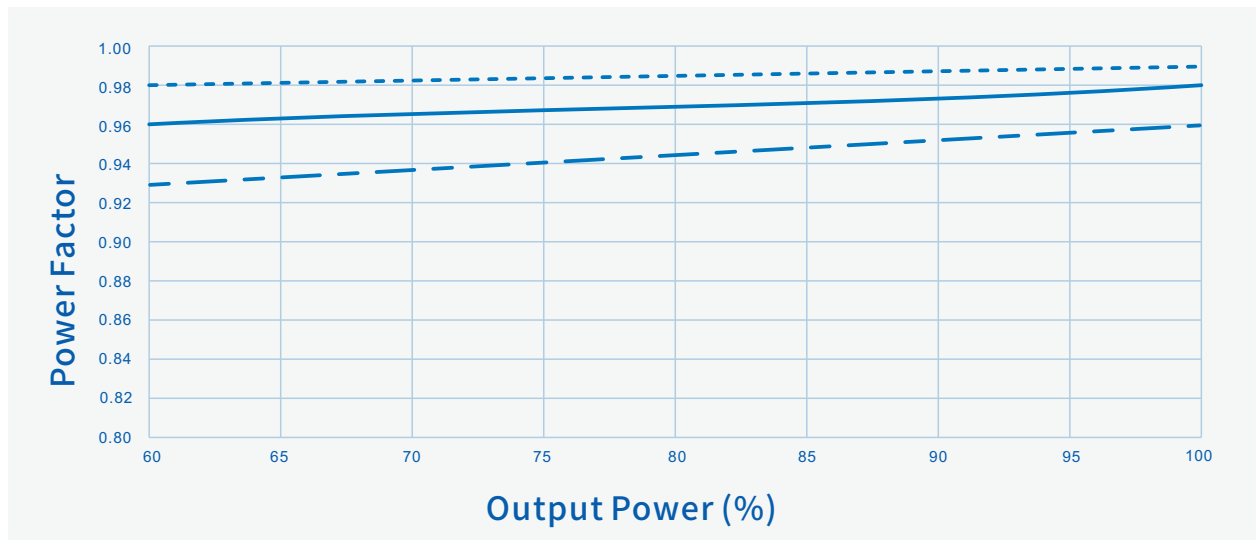
Efficiency Vs. O/P Voltage ( $V_{in}=277V_{ac}$ )



# SS-500VP-H Series LED Driver

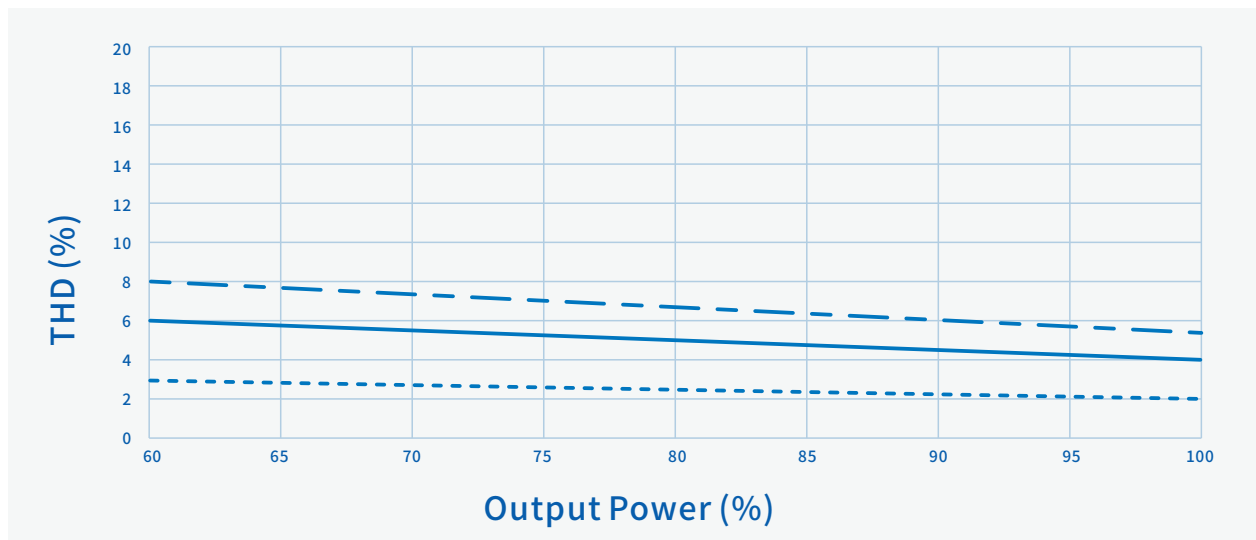
## Performance Curves:

### Power Factor Vs. O/P Power



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

### THD Vs. O/P Power

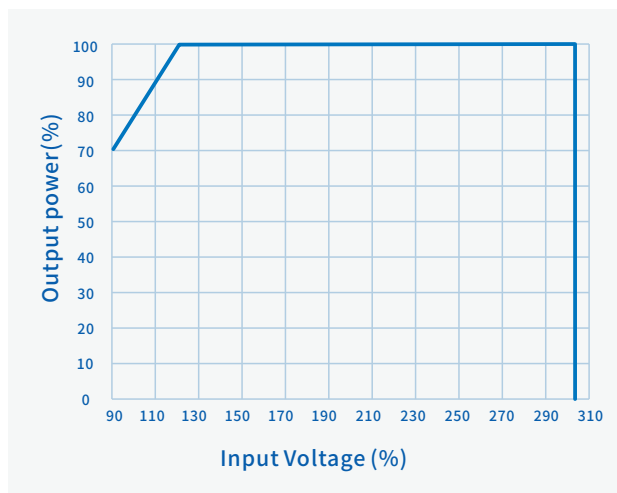


----- Vin=120Vac      ————— Vin=220Vac      - . - . Vin=277Vac

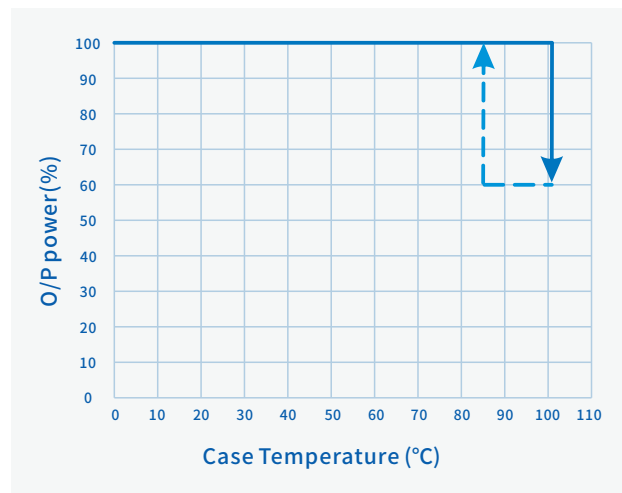
# SS-500VP-H Series LED Driver

## Performance Curves:

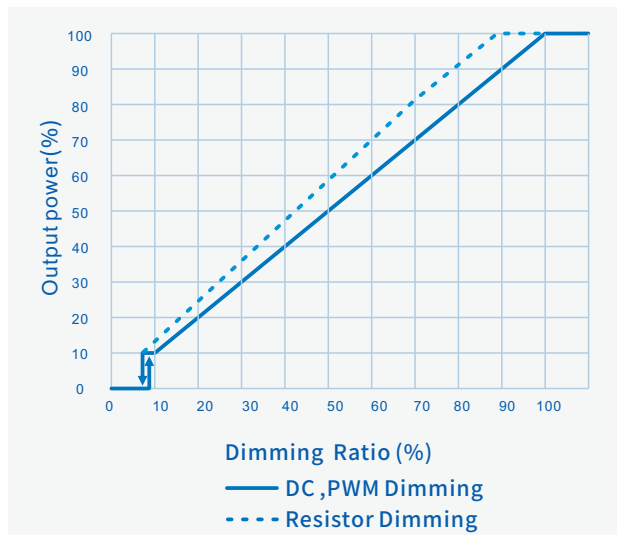
### O/P Power Vs. Input Voltage



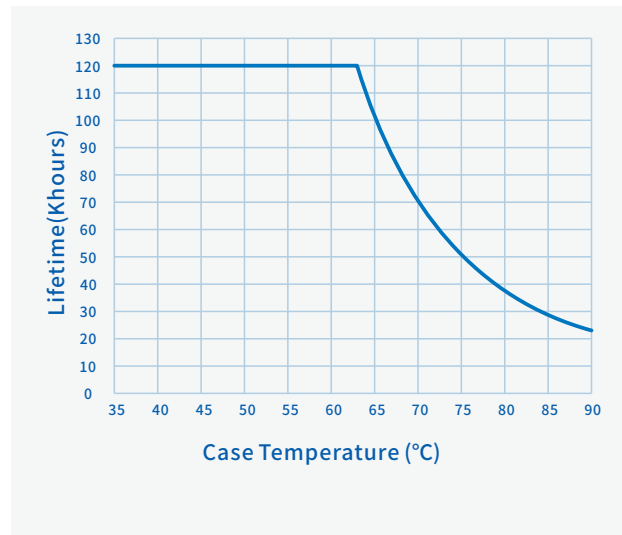
### O/P Power Vs. Case Temperature



### O/P Power Vs. Dimming



### Life Time Vs. Case Temperature



# SS-500VP-H Series LED Driver

## Constant Lumen Output

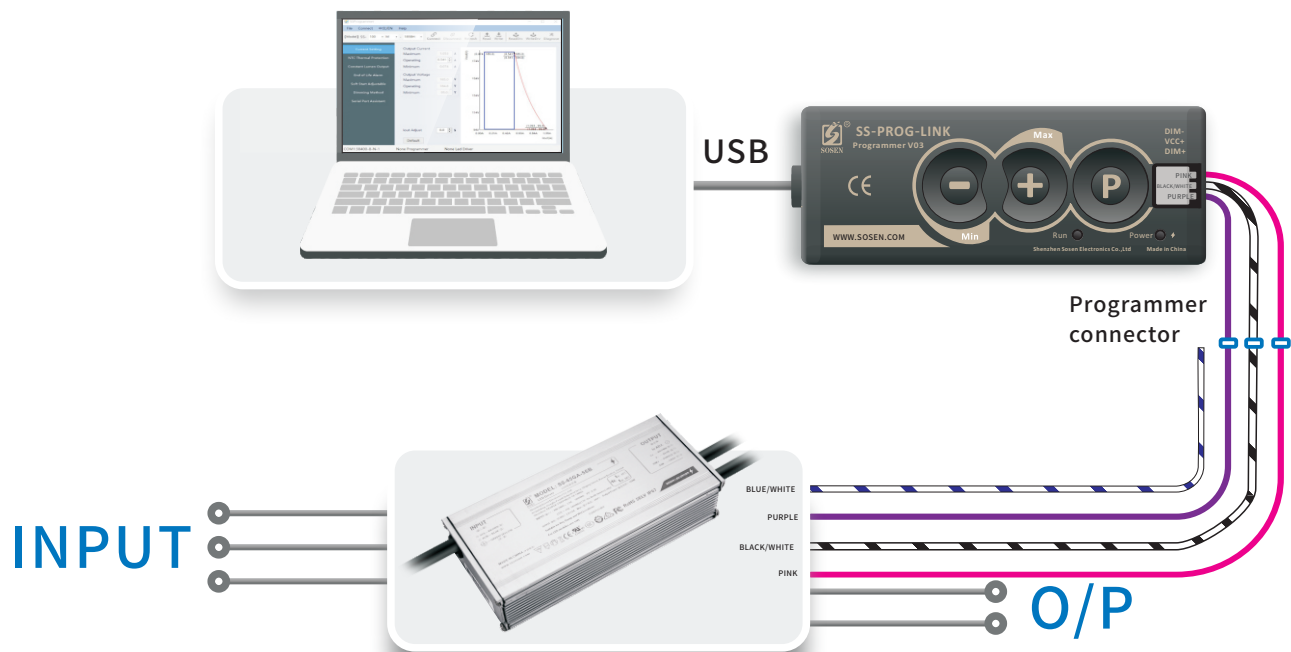
Constant Lumen Output are design to maintain fixture's stable output lumen by increasing driver's output current within driver's life span to counteract LED lumen degradation.

## 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.

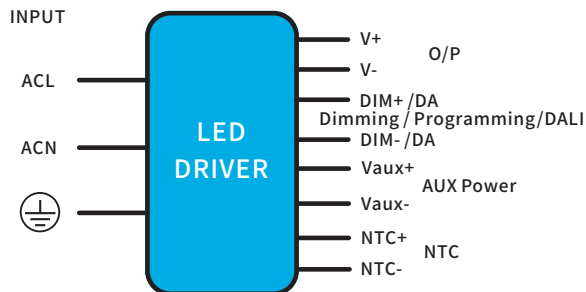


### Note:

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-500VP-H 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\*16AWG, O.D: 8.5mm, Black:L, White:N, Green: ⊕

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

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

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-

### BH/DH Model:

### DIM/AUX Power/Programming Cable

### (Exposed Length 220±10mm):

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

### BHN Model:

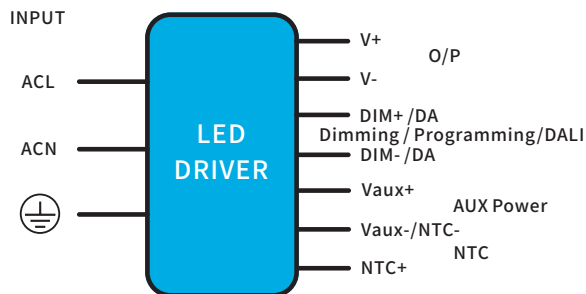
### DIM/AUX Power/Programming Cable

### (Exposed Length 220±10mm):

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

### NTC Cable(Exposed Length 300±10mm):

EU model: H05RN-F, 2\*1.0mm<sup>2</sup>, O.D: 7.0mm, Brown: NTC+, Blue: NTC-



### 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\*16AWG, O.D: 8.5mm, Black:L, White:N, Green: ⊕

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

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

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-

### BHN Model:

### DIM/AUX Power/Programming/NTC Cable

### (Exposed Length 220±10mm):

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

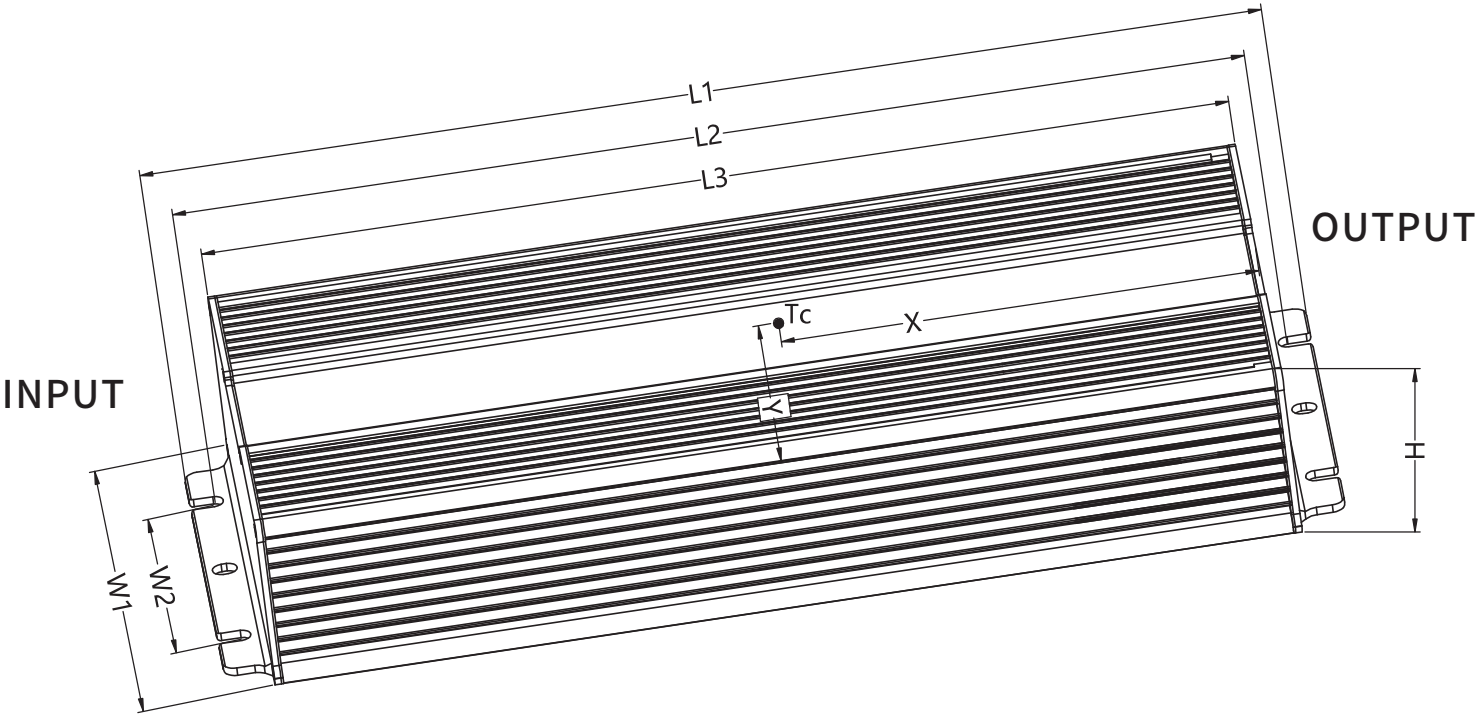
# SS-500VP-H Series LED Driver

## 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 Cable:  
Peeled length of cable:  $43 \pm 5$ mm,  
Tinned length of wire:  $10 \pm 2$ mm

| Name Description    | Standard Code | mm(In.)   |
|---------------------|---------------|-----------|
| Case Width          | W1            | 105(4.13) |
| Mounting Hole Width | W2            | 60(2.36)  |
| TC Point Position   | X             | 112(4.41) |
| TC Point Position   | Y             | 56(2.2)   |



# SS-500VP-H 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:  $L \times W \times H = 493\text{mm} \times 385\text{mm} \times 132\text{mm}$ ;
- 7PCS/Carton;
- Net weight/Piece: 2.27kg; Gross weight/Carton: 16.9kg;
- 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      | 2023/04/16   |        |
|         |                       |              |        |
|         |                       |              |        |
|         |                       |              |        |
|         |                       |              |        |
|         |                       |              |        |
|         |                       |              |        |
|         |                       |              |        |