

# SOSEN LED Driver, Your Smart Choice

## Specifications

### SS-240M Series LED Driver

Model: SS-240M-XX

Description: 240W LED Driver

Rev.: V04

Release Date: 2020-04-24

# SS-240M Series LED Driver

**SOSEN**  
LED DRIVER



**LED DRIVER**

**M Series**



## Features:

- Efficiency up to 93%
- Dimming: 0-10V,PWM,Resistor,Timing
- Dim-to-Off
- Surge protection: CM: 10kV, DM: 6kV
- AUX Power : 12V/0.3A
- Constant Lumen O/P
- Optional Standby(STB) Function
- Standby Power<1.5W
- IP67
- Communication function with PC
- TYPE HL, suitable for hazardous locations
- Protections: SCP/OTP/UVP
- Warranty: 5 years



**IP67 Class P**

## Description:

SS-240M series are 240W constant current LED Driver with 249-528Vac input and wide O/P voltage range and adjustable O/P current by program.LED luminaries manufactures can easily to design luminaries and reduce cost.

### Applications:

High bay lighting, Stadium lighting,Square lighting, Plant lighting, Fish lighting,Harbor 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-240M-56BH  | 249-528Vac     | 240W      | 22-56V     | 36-56V              | 0.7-6.7A   | 10%       | 0.95     | 92%        | 90°C   |
| SS-240M-228BH | 249-528Vac     | 240W      | 114-228V   | 137-228V            | 0.35-1.75A | 10%       | 0.95     | 93%        | 90°C   |
| SS-240M-343BH | 249-528Vac     | 240W      | 171-343V   | 228-343V            | 0.1-1.05A  | 10%       | 0.95     | 93%        | 90°C   |

Note:

- 1.Default Tested: at 347Vac, 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-240M 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  |                    | ✓                      |                    | ✓      | ✓                                     |        |

## Input Characteristics:

| Parameter                  | Min.   | Typ.    | Max.   | Remark                             |
|----------------------------|--------|---------|--------|------------------------------------|
| Rated AC Input Range       | 277Vac |         | 480Vac |                                    |
| AC Input Range             | 249Vac |         | 528Vac |                                    |
| Input Frequency Range      | 47Hz   | 50/60Hz | 63Hz   |                                    |
| Max Input Current          |        |         | 1.8A   | 277Vac, Full load                  |
| Max Input Power            |        |         | 270W   | 277Vac, Full load                  |
| Max Inrush Current(277Vac) |        |         | 50A    | Cold start                         |
| Max Inrush Current(347Vac) |        |         | 70A    | Cold start                         |
| Max Inrush Current(480Vac) |        |         | 90A    | Cold start                         |
| No Load Power              |        |         | 1.5W   | 347Vac/60Hz, Dim-off or STB Enable |
| Power Factor               | 0.93   | 0.95    |        | 347Vac/60Hz, Full load             |
|                            | 0.90   |         |        | 277-480Vac, 80-100% load           |
| THD                        |        | 7%      | 10%    | 347Vac/60Hz, Full load             |
|                            |        |         | 20%    | 277-480Vac, 80-100% load           |

# SS-240M Series LED Driver

## O/P Characteristics(SS-240M-56BH):

| Parameter                    | Min.      | Typ.  | Max.      | Remark                                                     |
|------------------------------|-----------|-------|-----------|------------------------------------------------------------|
| O/P Voltage Range            | 22V       |       | 56V       | Power derated @22-36V                                      |
| Rated O/P Voltage            | 36V       |       | 56V       | $P_o = V_o \cdot I_o = 240W$ , Full load                   |
| Rated O/P Current            | 4.3A      |       | 6.7A      | 6.7A for 36V, 4.3A for 56V                                 |
| Adj. O/P Current (AOC) Range | 0.7A      |       | 6.7A      | Adjustable by program                                      |
| No Load Voltage              |           |       | 60V       |                                                            |
| Efficiency @277Vac           | 89.0%     | 91.0% |           | O/P 56V/4.3A                                               |
| Efficiency @347Vac           | 90.0%     | 92.0% |           | O/P 56V/4.3A                                               |
| Efficiency @480Vac           | 90.0%     | 92.0% |           | O/P 56V/4.3A                                               |
| 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      | 277Vac, Full load                                          |
|                              |           |       | 0.5S      | 347Vac, Full load                                          |
| Line Regulation              | -1%       |       | +1%       | 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., Current recovery |
| Short Circuit Protection     |           |       |           | Driver will not be damaged,<br>Constant current mode       |

# SS-240M Series LED Driver

## O/P Characteristics(SS-240M-228BH):

| Parameter                   | Min.      | Typ.  | Max.      | Remark                                                     |
|-----------------------------|-----------|-------|-----------|------------------------------------------------------------|
| O/P Voltage Range           | 114V      |       | 228V      | Power derated @114-137V                                    |
| Rated O/P Voltage           | 137V      |       | 228V      | $P_o = V_o \cdot I_o = 240W$ , Full load                   |
| Rated O/P Current           | 1.05A     |       | 1.75A     | 1.75A for 137V, 1.05A for 228V                             |
| Adj. O/P Current (AOC)Range | 0.35A     |       | 1.75A     | Adjustable by program                                      |
| No Load Voltage             |           |       | 230V      |                                                            |
| Efficiency @277Vac          | 90.0%     | 91.0% |           | O/P 228V/1.05A                                             |
| Efficiency @347Vac          | 91.0%     | 93.0% |           | O/P 228V/1.05A                                             |
| Efficiency @480Vac          | 91.0%     | 93.0% |           | O/P 228V/1.05A                                             |
| 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      | 277Vac, Full load                                          |
|                             |           |       | 0.5S      | 347Vac, Full load                                          |
| Line Regulation             | -1%       |       | +1%       | 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., Current recovery |
| Short Circuit Protection    |           |       |           | Driver will not be damaged,<br>Constant current mode       |

# SS-240M Series LED Driver

## O/P Characteristics(SS-240M-343BH):

| Parameter                   | Min.      | Typ.  | Max.      | Remark                                                     |
|-----------------------------|-----------|-------|-----------|------------------------------------------------------------|
| O/P Voltage Range           | 171V      |       | 343V      | Power derated @171-228V                                    |
| Rated O/P Voltage           | 228V      |       | 343V      | $P_o = V_o \cdot I_o = 240W$ , Full load                   |
| Rated O/P Current           | 0.7A      |       | 1.05A     | 1.05A for 228V, 0.7A for 343V                              |
| Adj. O/P Current (AOC)Range | 0.1A      |       | 1.05A     | Adjustable by program                                      |
| No Load Voltage             |           |       | 360V      |                                                            |
| Efficiency @277Vac          | 90.0%     | 91.0% |           | O/P 343V/0.7A                                              |
| Efficiency @347Vac          | 91.0%     | 93.0% |           | O/P 343V/0.7A                                              |
| Efficiency @480Vac          | 91.0%     | 93.0% |           | O/P 343V/0.7A                                              |
| 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      | 277Vac, Full load                                          |
|                             |           |       | 0.5S      | 347Vac, Full load                                          |
| Line Regulation             | -1%       |       | +1%       | 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., Current recovery |
| Short Circuit Protection    |           |       |           | Driver will not be damaged,<br>Constant current mode       |

# SS-240M Series LED Driver

## Other Characteristics:

| Parameter                               |                  | Min.              | Typ. | Max.      | Remark                                    |
|-----------------------------------------|------------------|-------------------|------|-----------|-------------------------------------------|
| AUX Power                               | O/P Voltage      | 11.5V             | 12V  | 12.5V     |                                           |
|                                         | 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       | 0K                |      | 100K      | Negative dimming by programming           |
|                                         | Dim Range        | 10%               |      | 100%      | DIM+ source current 110uA .               |
| Dim to Off                              | Dim-off          | 3%                | 5%   | 7%        |                                           |
|                                         | Dim-on           | 5%                | 7%   | 9%        |                                           |
| STB function enabled voltage (Optional) | Enabled voltage  | 0V                |      | 0.5V      | Standby power < 1.5W                      |
|                                         | Disabled voltage | 3.5V              |      | 12V       | Disconnect STB wire if not necessary      |
| Timing Curve(Optional)                  |                  | By programming    |      |           |                                           |
| Life Time(Tc≤65°C)                      |                  | 100,000 hours     |      |           | 80% Load                                  |
| Life Time(Tc≤75°C)                      |                  | 62,000 hours      |      |           | 80% Load                                  |
| MTBF                                    |                  | 198,000 hours     |      |           | 347Vac,Full load, Ta=25°C (MIL-HDBK-217F) |
| IP Grade                                |                  | IP67              |      |           |                                           |
| Tc                                      |                  | 90°C              |      |           |                                           |
| Warranty                                |                  | 5 years           |      |           | Tc : 75°C                                 |
| Net Weight                              |                  | 1500g             |      |           |                                           |
| Dimension                               |                  | 254mm*71mm*39.6mm |      |           | 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-240M 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                                                               | ✓      |        |
| TUV           | EN 61347-2-13:2014<br>EN61347-1:2008+A1:2011+A2:2013<br>EN62493:2015 |        |        |
| 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        | FCC Part15: Subpart A ANSI 63.4:2014 | Class A                                              |
| Radiation Emission         | FCC Part15: Subpart A ANSI 63.4:2014 | Class A                                              |
| Harmonic Current Emissions | IEC/EN 61000-3-2                     | Class C                                              |
| Surge                      | IEC/EN61000-4-5                      | Difference mode 6kV,<br>Common mode 10kV,Criterion B |
| Ring Wave                  | IEC/EN 61000-4-12                    | Difference mode 6kV,<br>Common mode 6kV,Criterion B  |



# SS-240M Series LED Driver

## Safety Test Items:

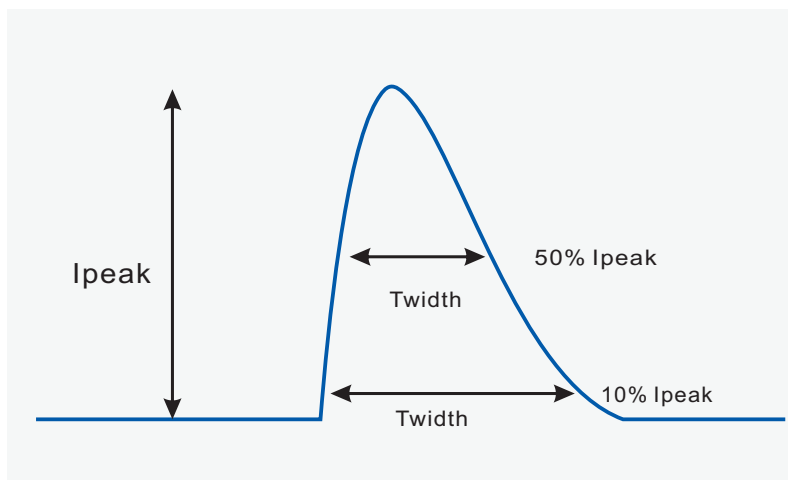
| Safety Test Items       | Technical Indicators       |                             |                             | Remark                          |
|-------------------------|----------------------------|-----------------------------|-----------------------------|---------------------------------|
| Insulation Requirements | UL Insulation Requirements | TUV Insulation Requirements | CCC Insulation Requirements |                                 |
| Input-O/P               | 2U+1000                    | /                           | /                           | Reinforced insulation           |
| Input-Case              | 2U+1000                    | /                           | /                           | Basic insulation                |
| Input-Dim               | 2U+1000                    | /                           | /                           | Reinforced insulation           |
| O/P-Dim                 | 2U+1000                    | /                           | /                           | Basic insulation                |
| O/P-Case                | 2U+1000                    | /                           | /                           | Basic insulation                |
| Dim-Case                | 500                        | /                           | /                           | 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+ 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.
4. "U" means the maximum working voltage between testing terminals.

## Performance Curves:

### Input Inrush Current

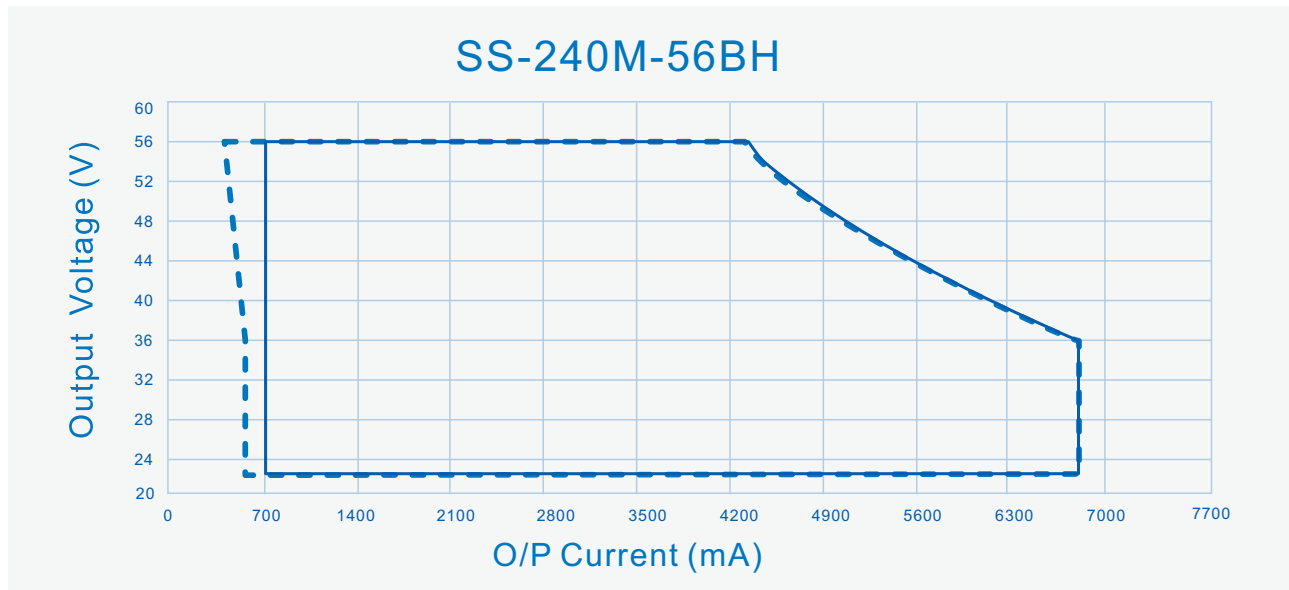


| Vin    | Ipeak | T(@10% of Ipeak) | T(@50% of Ipeak) |
|--------|-------|------------------|------------------|
| 277Vac | 50A   | 542uS            |                  |
| 347Vac | 70A   | 564uS            |                  |
| 480Vac | 90A   | 582uS            |                  |

# SS-240M Series LED Driver

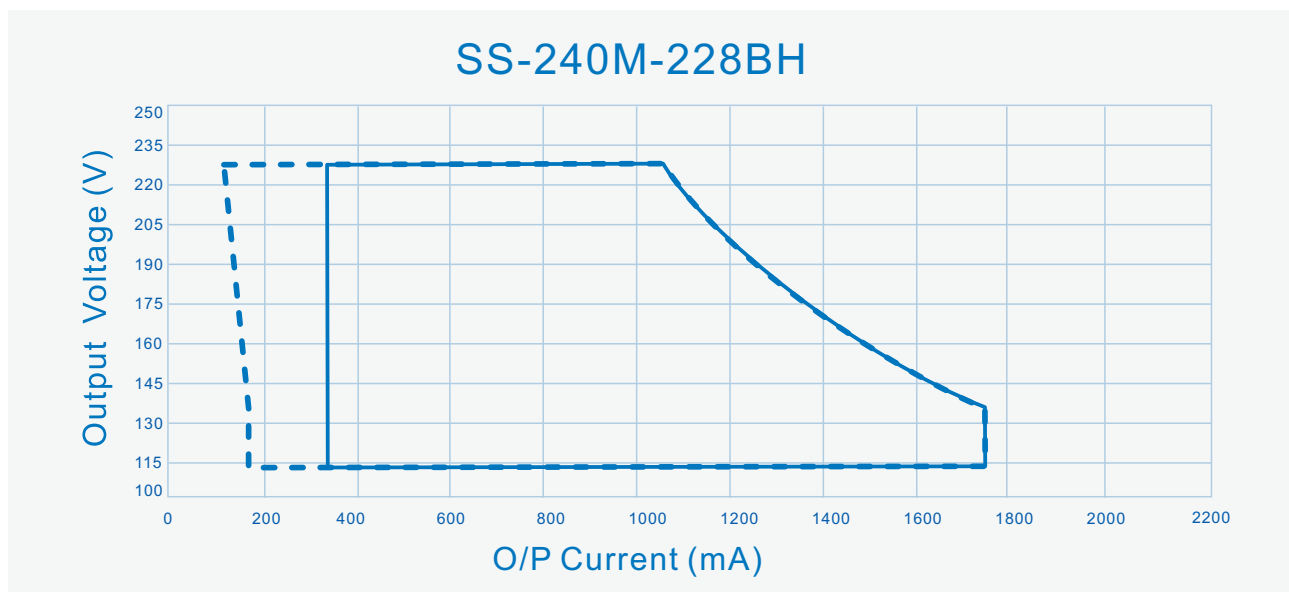
## Performance Curves:

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



----- Dimming Window      ————— AOC Window

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

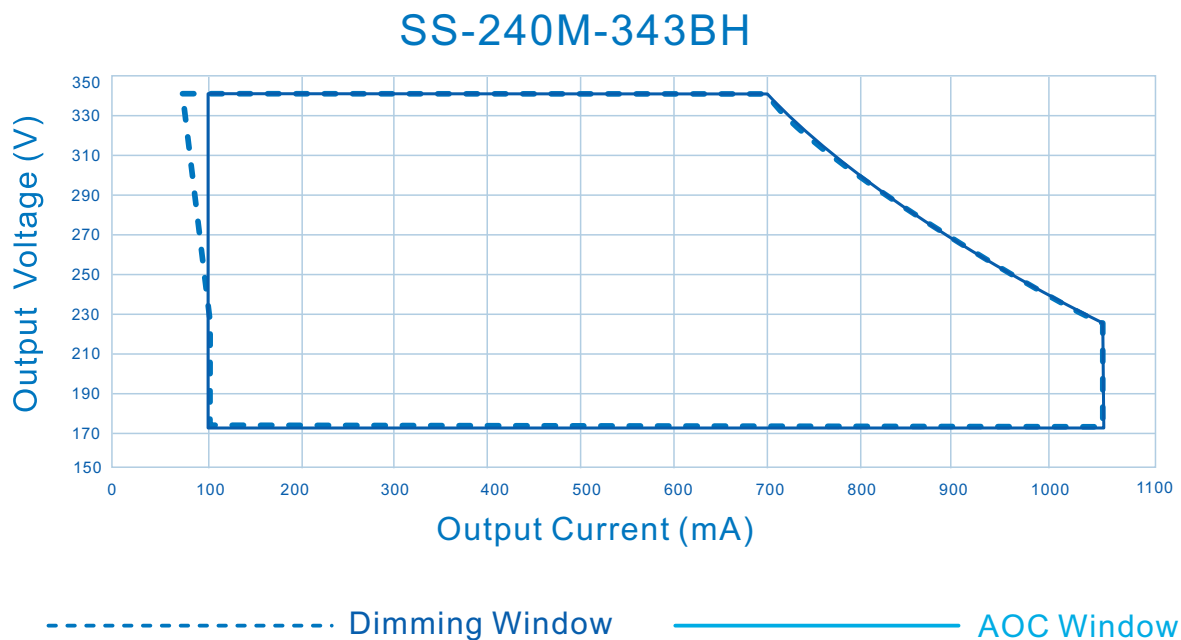


----- Dimming Window      ————— AOC Window

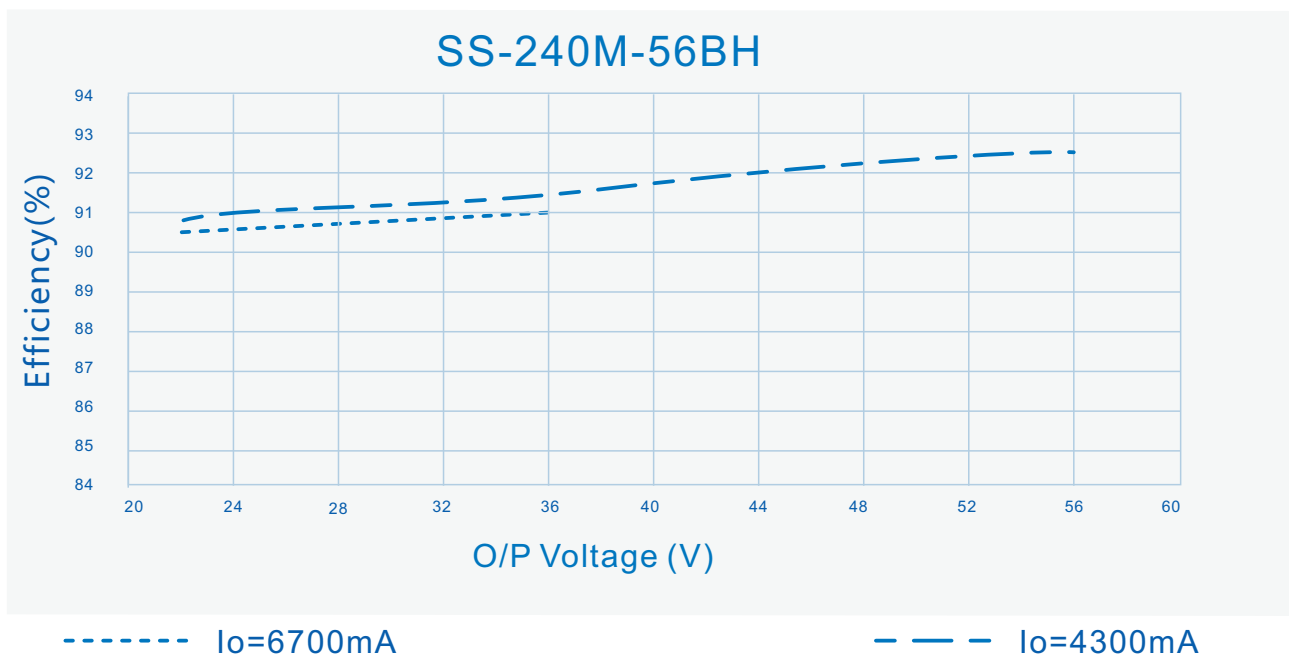
# SS-240M Series LED Driver

## Performance Curves:

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



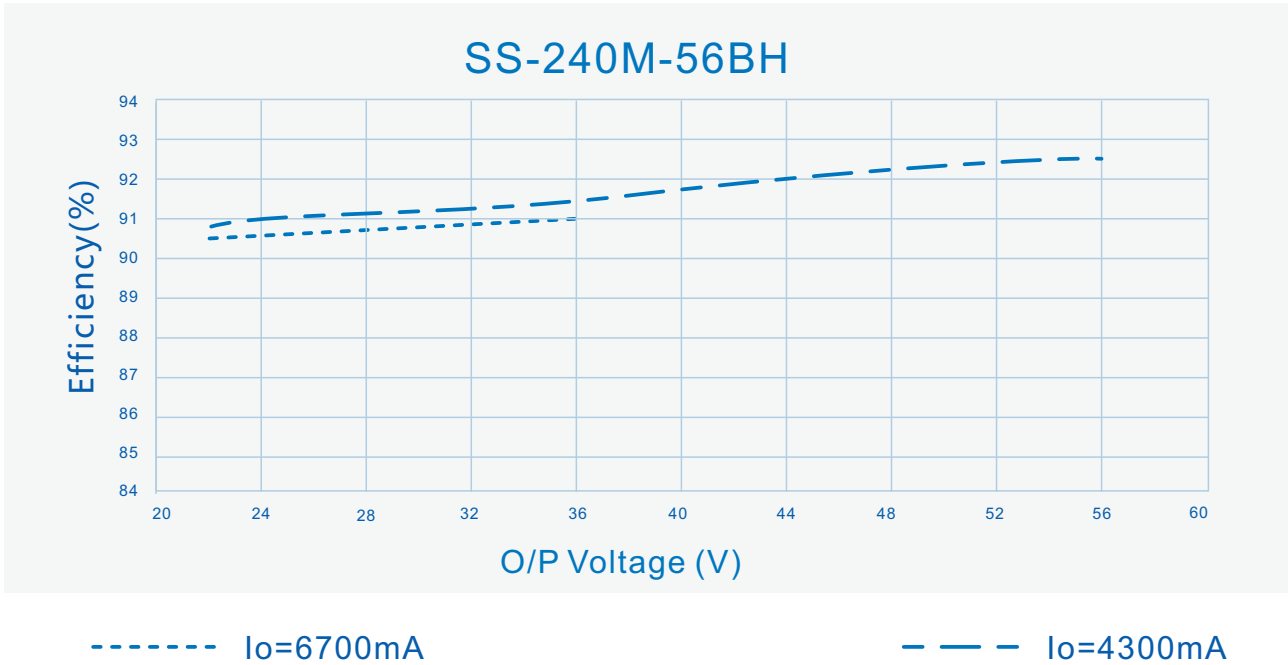
Efficiency Vs. O/P Voltage ( $V_{in}=277V_{ac}$ )



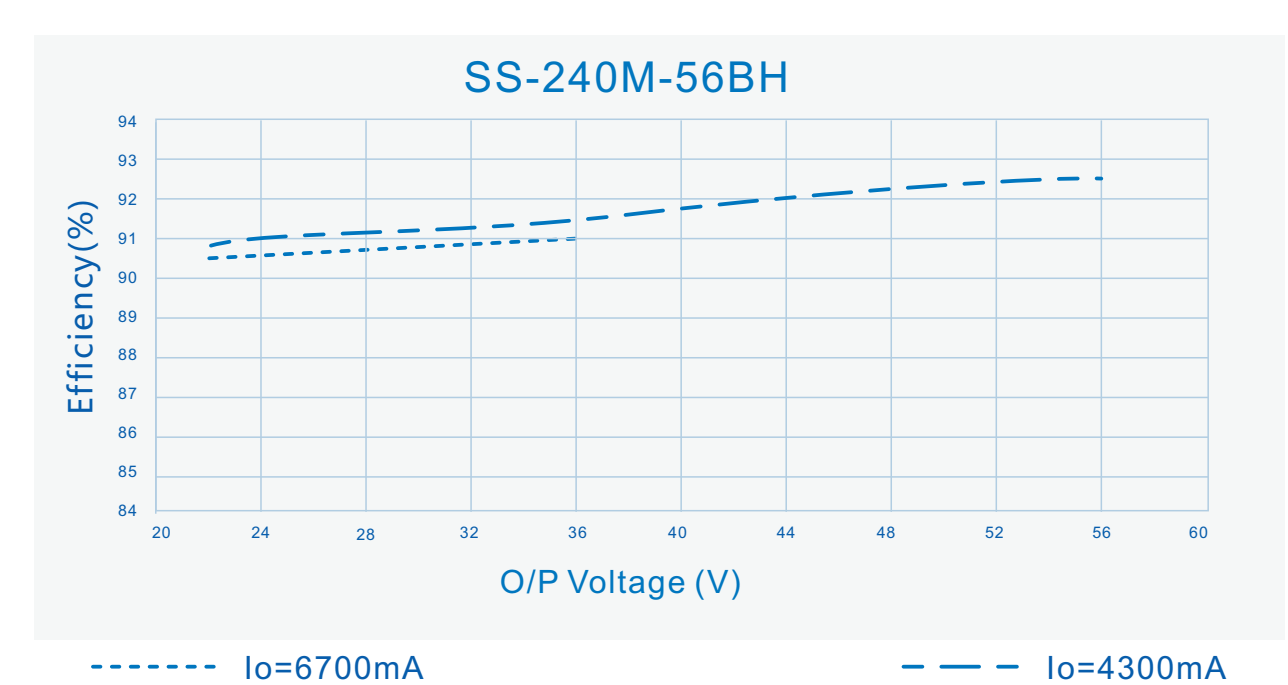
# SS-240M Series LED Driver

## Performance Curves:

Efficiency Vs. O/P Voltage (Vin=347Vac)



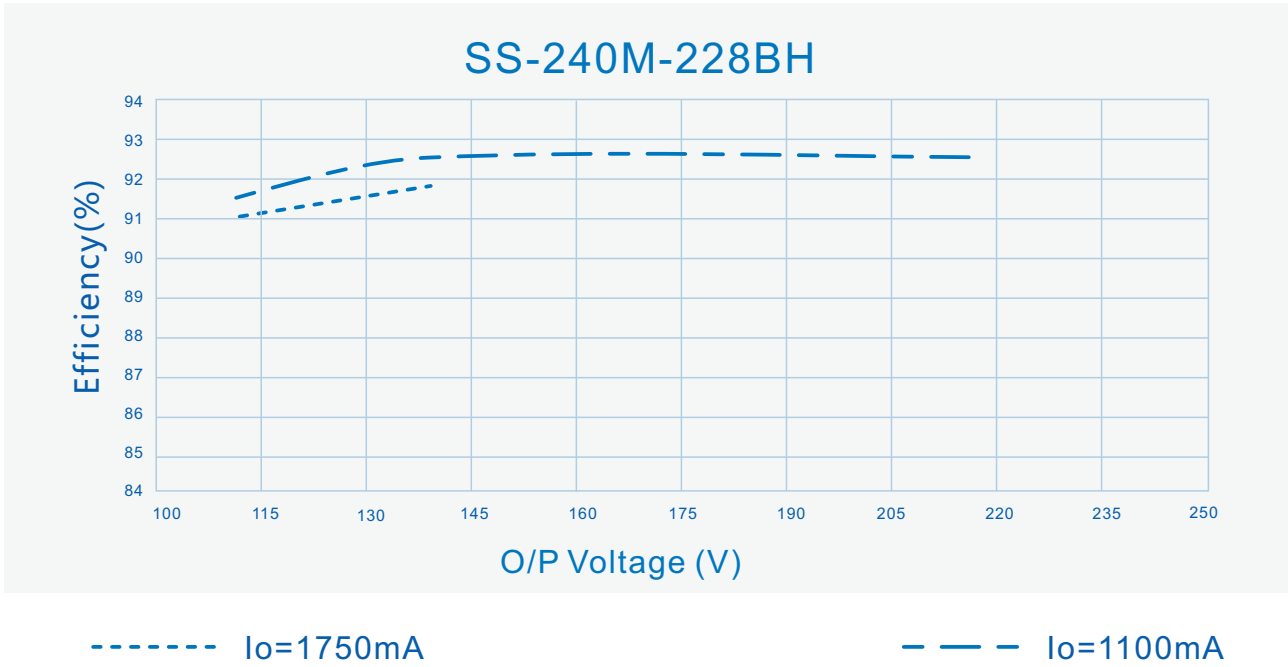
Efficiency Vs. O/P Voltage (Vin=480Vac)



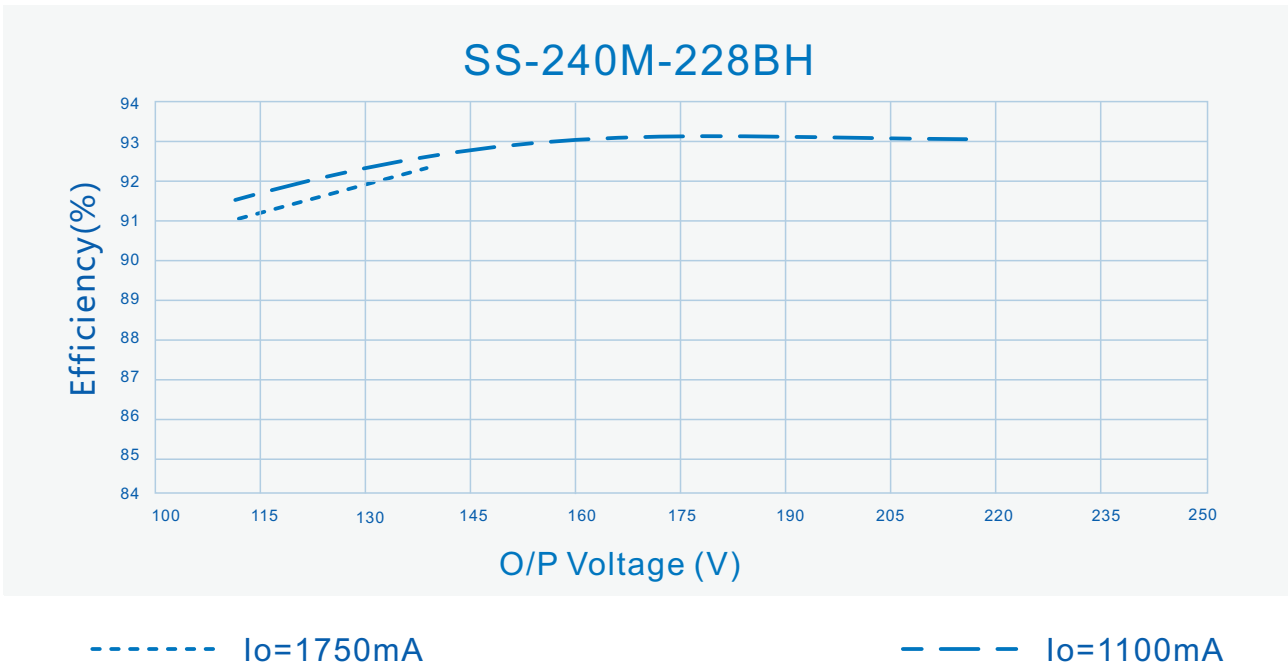
# SS-240M Series LED Driver

## Performance Curves:

Efficiency Vs. O/P Voltage (Vin=277Vac)



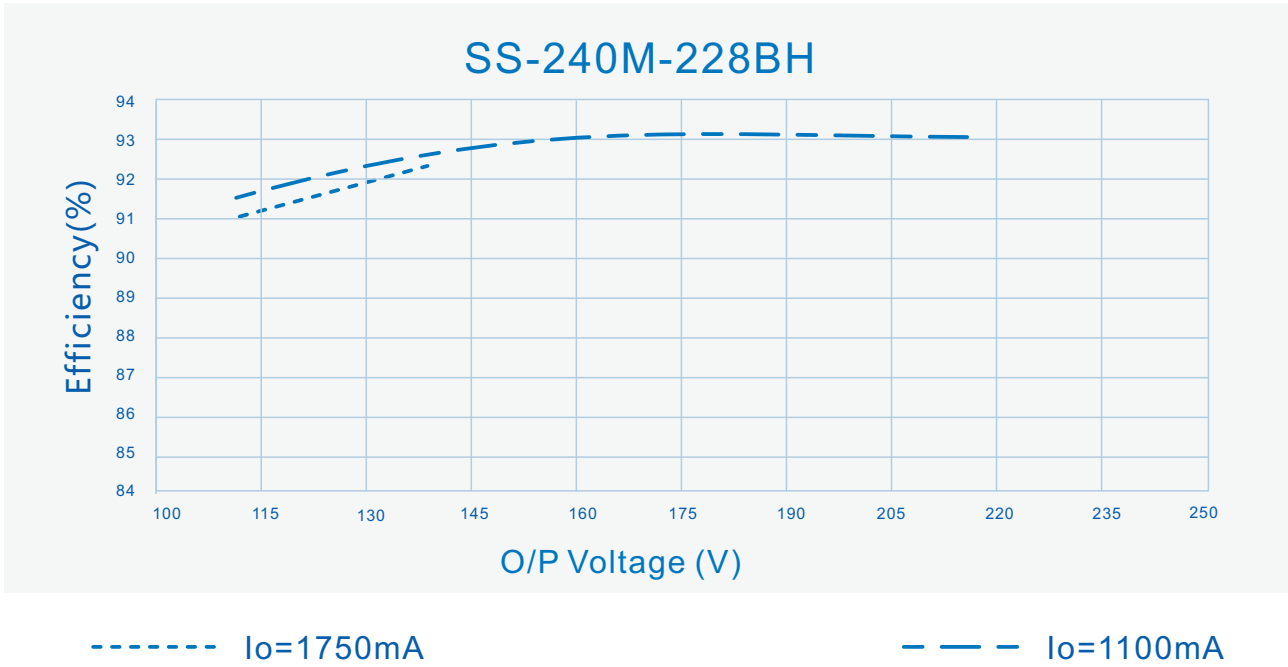
Efficiency Vs. O/P Voltage (Vin=347Vac)



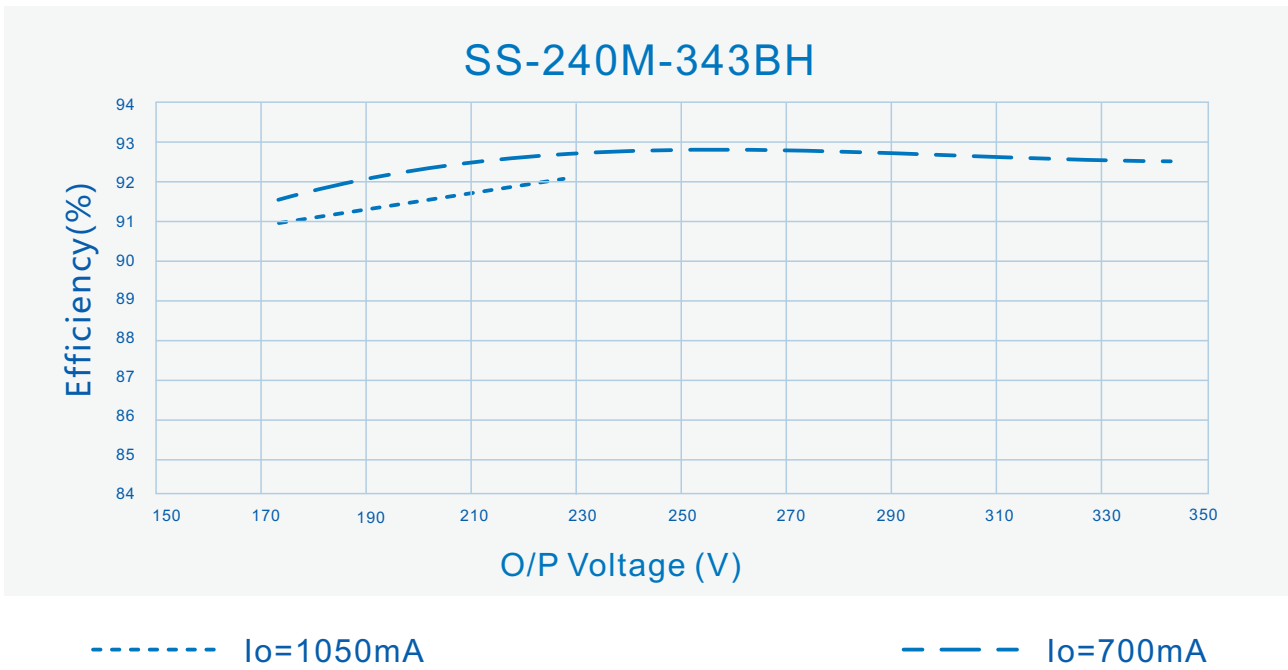
# SS-240M Series LED Driver

## Performance Curves:

Efficiency Vs. O/P Voltage (Vin=480Vac)



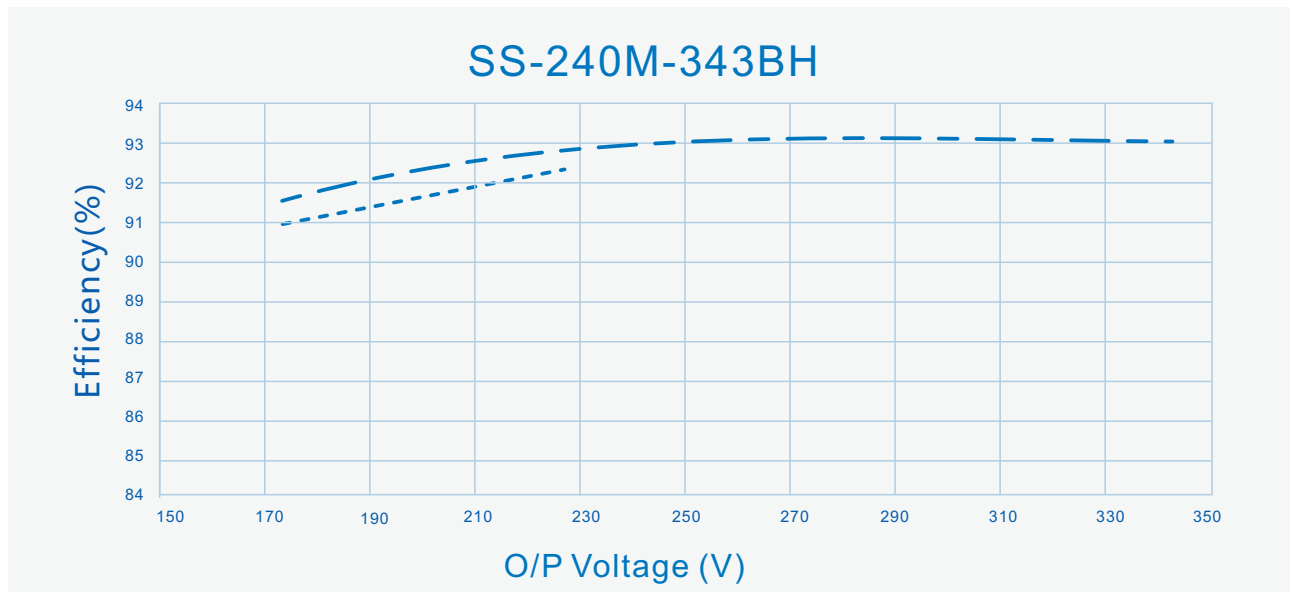
Efficiency Vs. O/P Voltage (Vin=277Vac)



# SS-240M Series LED Driver

## Performance Curves:

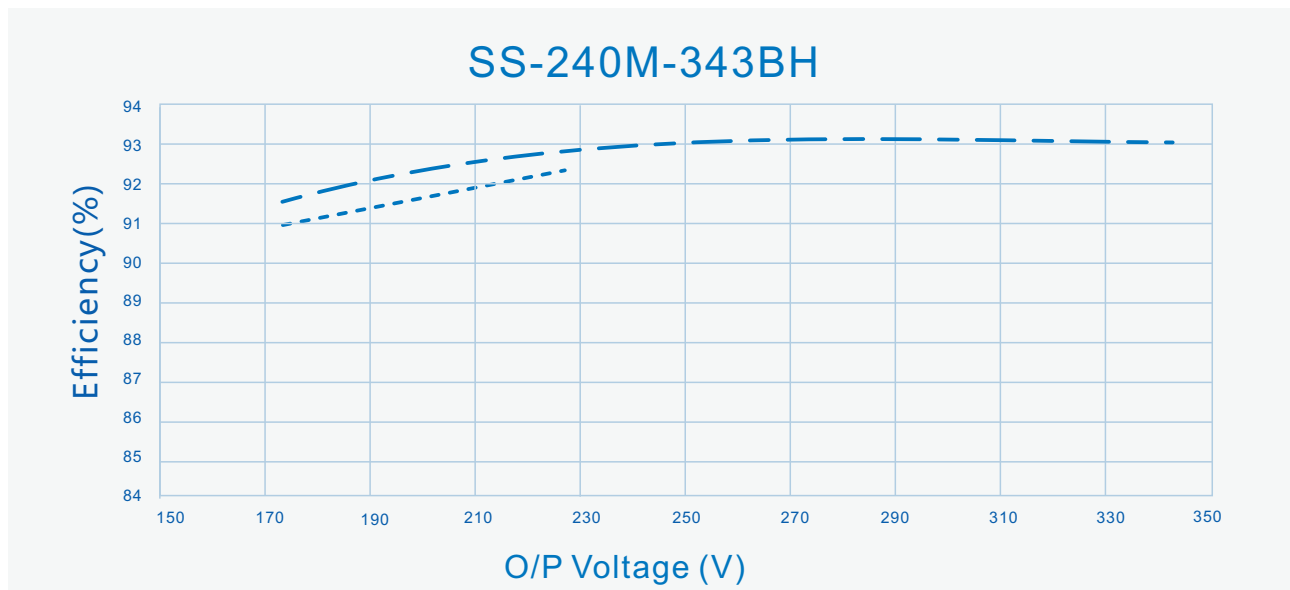
Efficiency Vs. O/P Voltage ( $V_{in}=347V_{ac}$ )



-----  $I_o=1050mA$

- . - .  $I_o=700mA$

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



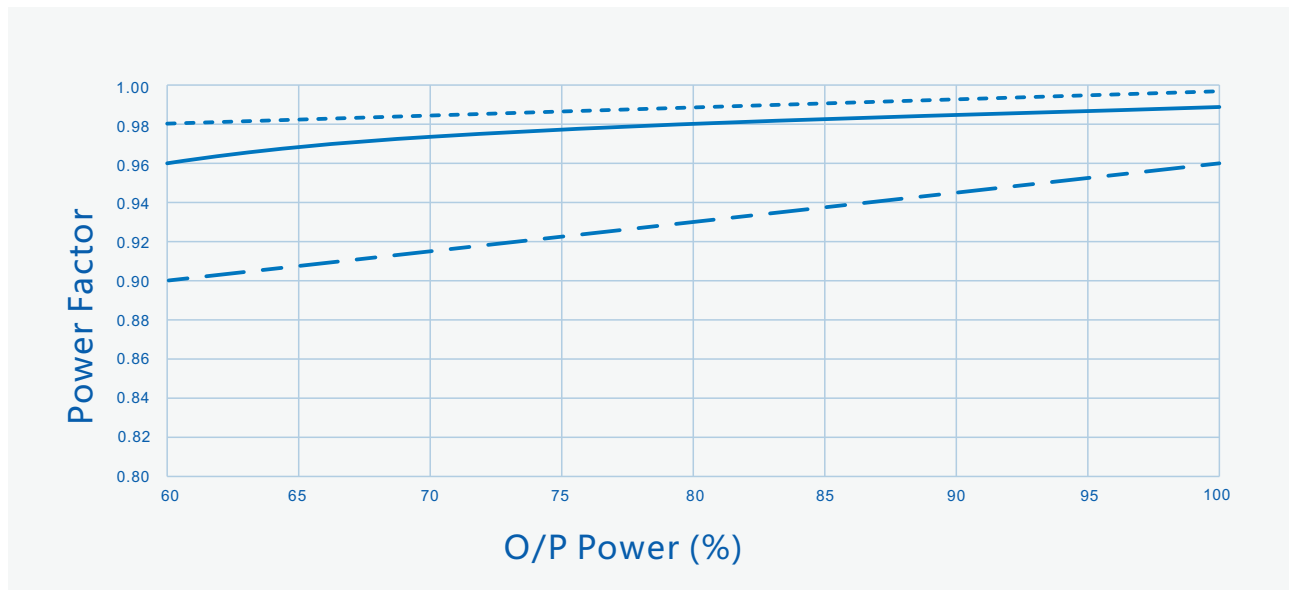
-----  $I_o=1050mA$

- . - .  $I_o=700mA$

# SS-240M Series LED Driver

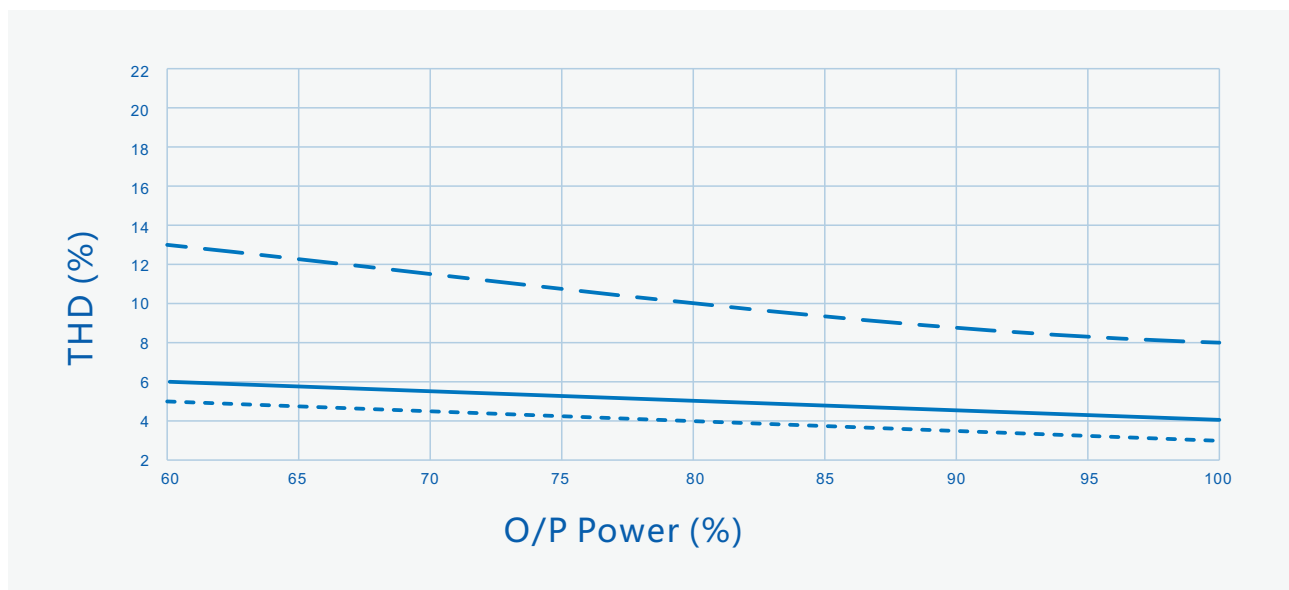
## Performance Curves:

Power Factor Vs. O/P Power



----- Vin=277Vac      ————— Vin=347Vac      - - - Vin=480Vac

THD Vs. O/P Power



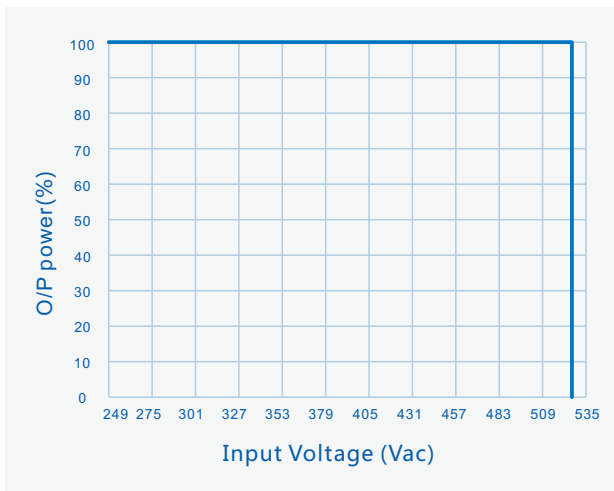
----- Vin=277Vac      ————— Vin=347Vac      - - - Vin=480Vac



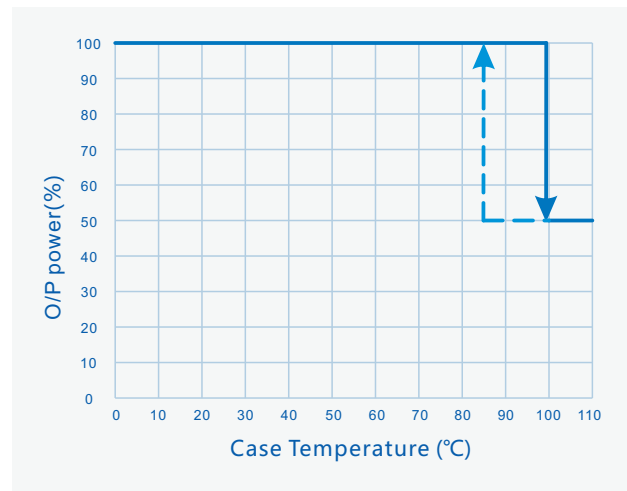
# SS-240M Series LED Driver

## Performance Curves:

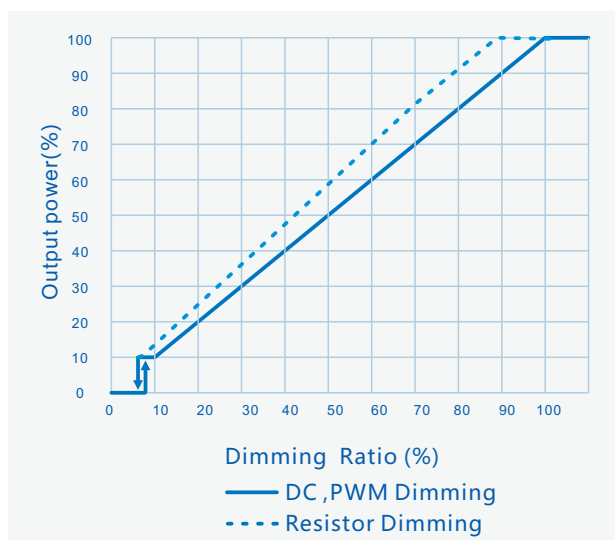
O/P Power Vs. Input Voltage  
(Ta Max.50°C)



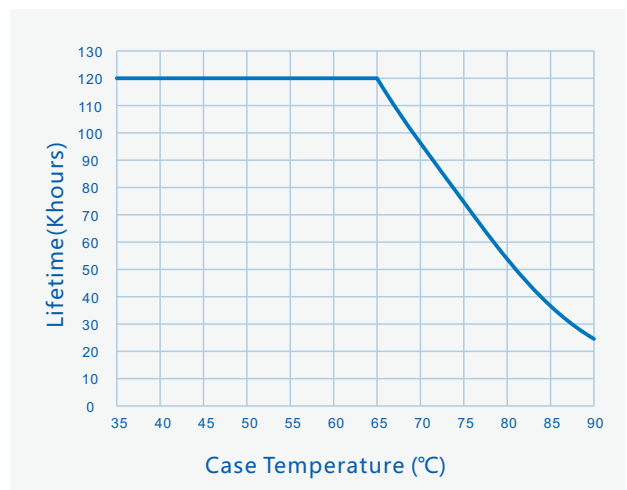
O/P Power Vs. Case Temperature



O/P Power Vs. Dimming



Lifetime Vs. Case Temperature



# SS-240M Series LED Driver

## Constant Lumen O/P

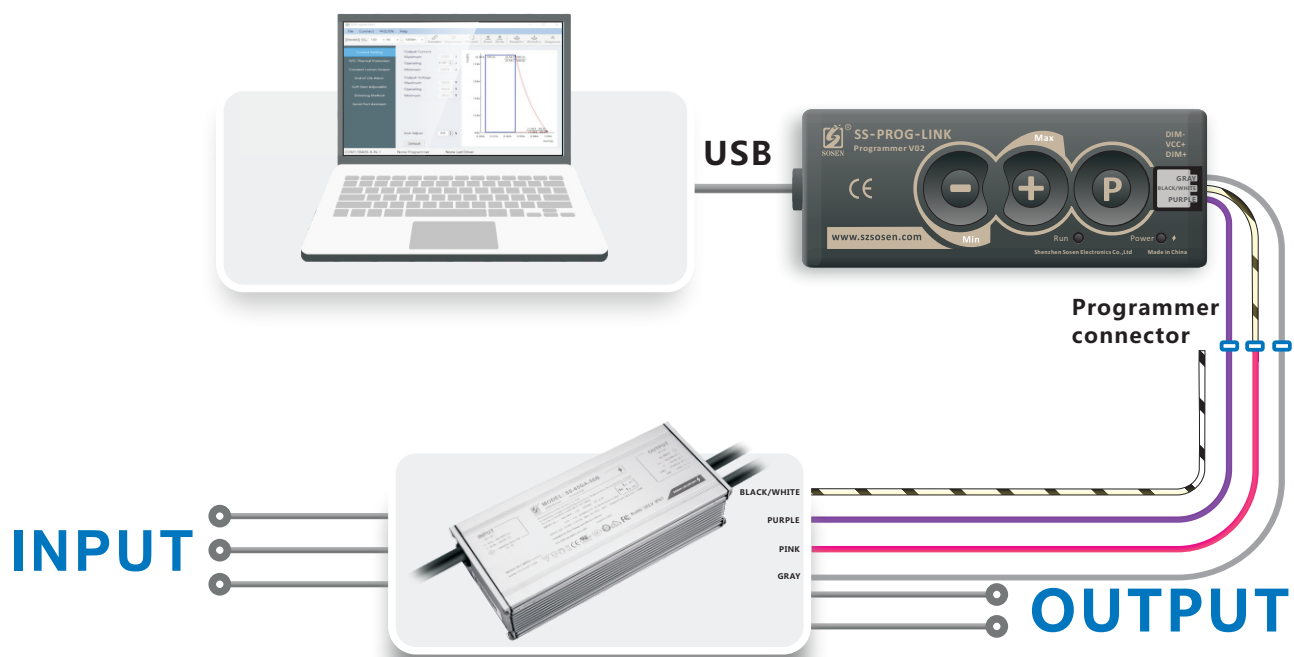
Constant Lumen O/P are design to maintain fixture's stable O/P lumen by increasing driver's O/P current within driver's life span to counteract LED lumen degradation.

## 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-240M Series LED Driver

## Mechanical Characteristics

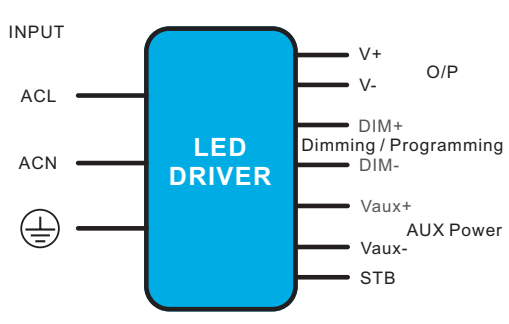


Diagram of the LED DRIVER showing input and output connections:

- INPUT: ACL, ACN, and a ground symbol.
- Output: V+, V-, DIM+ (Dimming / Programming), DIM-, Vaux+, Vaux- (AUX Power), and STB.

**AC Input Cable(Exposed Length 450±10mm):**  
UL model: STW,3\*18AWG,O.D: 9.4mm,Black:L,White:N,Green:⊕

**DC O/P Cable(Exposed Length 250±10mm):**  
SS-240M-56BH:  
UL model: SJTW,2\*16AWG,O.D: 7.8mm,Red:V+ , Black:V-  
SS-240M-228BH/SS-240M-343BH:  
UL model: SJTW,2\*18AWG,O.D: 7.3mm,Red:V+ , Black:V-

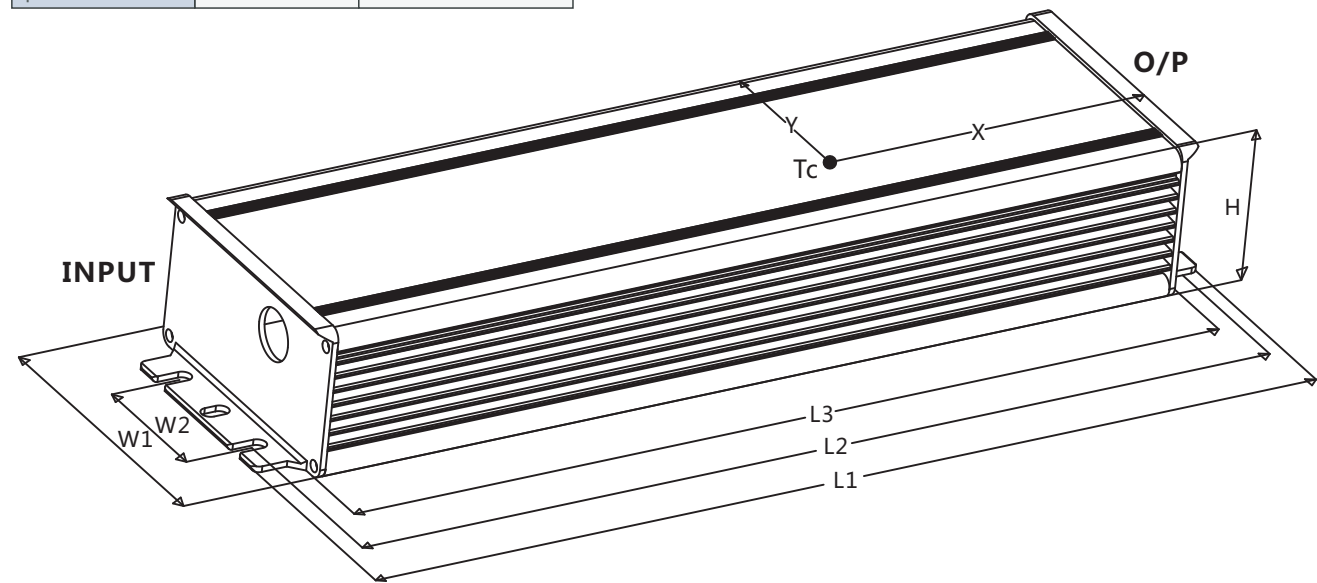
**DIM/AUX Power/Programming Cable (Exposed Length 220±10mm):**  
UL model: STYLE 21996,4\*22AWG, O.D: 5.6mm,Purple : DIM+, Gray: DIM-  
Pink: Vaux+, Black/White: Vaux-  
UL model: STYLE 21996,5\*22AWG, O.D: 6.0mm,Purple : DIM+, Gray: DIM-  
Pink: Vaux+, Black/White: Vaux-, Blue/White: STB

| Name Description     | Standard Code | mm(In.)    |
|----------------------|---------------|------------|
| Case Length          | L3            | 230(9.06)  |
| Case Width           | W1            | 71(2.8)    |
| Case Height          | H             | 39.6(1.56) |
| Overall Length       | L1            | 254(10)    |
| Mounting Hole Length | L2            | 241(9.49)  |
| Mounting Hole Width  | W2            | 34(1.34)   |
| TC point position    | X             | 95(3.74)   |
| 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:6±1mm



# SS-240M 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: 1.5kg;Gross weight/Carton: 11.5kg;
- 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 European Directive 2011/65/EC.

Revision History

| Version | Description of Update                 | Updated Date | Remark |
|---------|---------------------------------------|--------------|--------|
| V00     | Original Release                      | 2018/10/18   |        |
| V01     | Update Structure Diagram              | 2019/04/04   |        |
| V02     | Update Performance Curve              | 2019/05/29   |        |
| V03     | Update Cable Length                   | 2019/07/25   |        |
| V04     | Update Programming Connection Diagram | 2020/04/24   |        |

