# LED Driver

## USC4 LITE

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### Highlights & Features

- Constant current design
- Programmable output current through programing tool
- 6KV Combi-wave surge rating meet ANSI C82.77-5
- UL LISTED, Class P & Type HL , UL Dry & Damp
- 0-10V dimming available
- 50,000hours lifetime

### Safety Standards

c UL us LISTED E336604

**Class P**
**LED Class 2 Output**
**For Dry and Damp Location**

Class2 of UL1310 for 55W

### Model Number: USC4-□□□□□□GB

### Dimensions (L x W x H):

| | |
|---|---|
| USC4-055180GB | 6.59'' x 2.36'' x 1.5'' (167.5 x 60.0 x 37.5mm) |
| USC4-100140GB | 6.59'' x 2.36'' x 1.5'' (167.5 x 60.0 x 37.5mm) |
| USC4-200140GB | 9.45" x 2.36" x 1.5" (240.0 x 60.0 x 37.5mm') |

### General Description

Delta LED drivers come in different series to suit different application needs. The USC4 LITE series features programmable output current level. USC4 LITE series offers the capability to achieve different level of LED brightness via built-in 0-10V dimming function to meet various application and energy optimization needs. The products are designed and rigorously tested to work with various outdoor LED lighting conditions. Featuring high surge immunity (CM: 6kV, DM: 6kV) and complying to Dry and Damp location.

### Model Information

USC4 LITE LED Driver

| Model Number | Input Voltage Range | Rated Output Voltage | Programmable Output Current | Constant Power Current |
|---|---|---|---|---|
| USC4-055180GB | 277-480Vac Typical<br>249 -528Vac Range | 18-52.4Vdc | 520-1800mA | 1050-1800mA |
| USC4-100140GB | | 50-143Vdc | 600-1400mA | 700-1400mA |
| USC4-200140GB | | 75-190Vdc | 600-1400mA | 1050-1400mA |

### Model Numbering

| US | C | 4 | – | □□□ | □□□ | GB |
|---|---|---|---|---|---|---|
| Safety Approval<br>– UL, | Constant current | Outdoor and High voltage input | | Output Power<br>055:55W<br>100:100W/<br>200:200W | Max Output Current<br>140 – 1400mA<br>180 – 1800mA | Programmable output current<br>0-10V dimming |



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### Specifications

| Model Number | USC4-055180GB | USC4-100140GB | USC4-200140GB |
|---|---|---|---|

### Input Ratings / Characteristics

| | | | | |
|---|---|---|---|---|
| Normal Input Voltage | | 277-480Vac | | |
| Input Voltage Range | | 254-528Vac | | |
| Normal Input Frequency | | 50-60Hz | | |
| Input Frequency Range | | 47-63Hz | | |
| Max. Input Current | 277Vac | 0.27A | 0.42A | 0.8A |
| | 480Vac | 0.17A | 0.25A | 0.5A |
| Efficiency [1] | 277Vac | 88.5%@1.05A | 91.5%@0.7A | 92.5%@1.05A |
| | 480Vac | 88.0%@1.05A | 92.5%@0.7A | 93.5%@1.05A |
| Inrush Current @ Cold Start | 277Vac | 100A/200uS | 100A/200uS | 100A/200uS |
| | 480Vac | 200A/200uS | 200A/200uS | 200A/200uS |
| Power Factor | | > 0.9 @Full Load | | |
| Total Harmonic Distortion | | THD < 20% @Full Load | | |
| Leakage Current | | < 0.75mArms per UL8750 | | |

1) 100% Load (typical) and tested after 30 minutes warm up.

### Output Ratings / Characteristics

| | | | |
|---|---|---|---|
| Output Voltage Range | 18-52.4Vdc | 50-143Vdc | 75-190Vdc |
| Max. No Load Output Voltage | 60Vrms | 150Vrms | 230Vrms |
| Output Power Range | 55W | 100W | 200W |
| Adjustable Output Current (AOC) | 520-1800mA | 600-1400mA | 600-1400mA |
| | With steps of 1mA, configurable via software | | |
| Minimum Output Current | 10% of AOC | | |
| Current Accuracy | ± 5% (@ Typical output current range) | | |
| Output Current LF Ripple | 15% (ripple = peak-average/average) and 5% (Low frequency (≤120 Hz) ) @Full Load | | |
| Start-up Time | 1000ms max. @ 277-480Vac @Full Load | | |

# LED Driver

## USC4 LITE

| Model Number | USC4-055180GB | USC4-100140GB | USC4-200140GB |
|---|---|---|---|

### Mechanical

| | | | |
|---|---|---|---|
| Casing | Steel case, color : Black | | |
| Dimensions (L x W x H) [inch]<br>[mm] | 6.59'' x 2.36'' x 1.5''<br>(167.5 x 60.0 x 37.5mm) | | 9.45" x 2.36" x 1.5"<br>(240.0 x 60.0 x 37.5mm) |
| Unit Weight [lb] / [kg] | 1.83 / 0.83 | | 2.53 / 1.15 |
| Cooling System | Convection | | |
| Input Cable | L: Black, N: White; UL1316 18AWG solid copper wires Length 300mm | | |
| Output Cable | Positive: Red, Negative: Blue; NTC/PRG: Orange ; UL1316 18AWG solid copper wires Length 300mm | | |
| Dimming Cable | Dim(+): Purple, Dim(-): Pink ; UL1316 18AWG solid copper wires Length 300mm | | |
| Noise | Sound Pressure Level (SPL) < 24dBA (30cm distance) | | |

### Environment

| | | | | |
|---|---|---|---|---|
| Ambient Temperature | Operating | -40°C to +55°C | | |
| | Storage | -40°C to +85°C | | |
| Maximum Case Temperature | | +80°C | +85°C | +90°C |
| Relative Humidity | Operating | 10 to 85% RH (Non-Condensing) | | |
| | Storage | 5 to 95% RH (Non-Condensing) | | |
| Environmental Locations | | Dry & Damp, Type HL | | |

### Protections

| | | | |
|---|---|---|---|
| Over Voltage | 60Vrms | 150Vrms | 230Vrms |
| | Auto-Recovery when the fault is removed | | |
| Overload / Overcurrent | Reduce output current. Auto-Recovery when the fault is removed | | |
| Short Circuit | Auto-Recovery when the fault is removed | | |
| Over Temperature | Reduce output current. Auto-Recovery when the fault is removed | | |
| Case connection | Case must be grounding | | |

### Reliability Data

| | | | |
|---|---|---|---|
| Lifetime | 50,000 hours at case temp. tc & full load.<br>Refer to "Lifetime VS Case Temperature" | | |
| Lifetime @ tc | +80°C | +75°C | +80°C |

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| Model Number | USC4-055180GB | USC4-100140GB | USC4-200140GB |
|---|---|---|---|

### Safety Standards / Directives

| | | | | |
|---|---|---|---|---|
| Electrical Safety | UL 8750, UL List, Class P, Class2 of UL1310 for 55W | | | |
| Material and Parts | RoHS Directive 2011/65/EU Compliant | | | |
| Isolation | Main | Output | 0-10V dim | Case |
| Main | N/A | 2U + 1000V | 2U + 1000V | 2U + 1000V |
| Output | 2U + 1000V | N/A | 2U + 1000V | 2U + 1000V |
| 0-10V dim | 2U + 1000V | 2U + 1000V | N/A | 2U + 1000V |
| Case | 2U + 1000V | 2U + 1000V | 2U + 1000V | N/A |

### EMC Compliance

| | |
|---|---|
| Emissions (CE & RE) | Compliance to 47 CFR FCC Part 15, Subpart B, Class A<br>Compliance to CAN ICES-005(A) / NMB-005(A) |
| Surge | Compliance to ANSI C82.77-5 CAT C low 6KV<br>Meet Criteria A or B |

1) Criteria A: Normal performance within the specification limits

2) Criteria B: Temporary degradation or loss of function, which is self-recoverable

### 0-10V Dimming Specification

| | |
|---|---|
| Absolute Maximum Voltage | ± 20V |
| Source Current | 100μA (typ) |
| Dimming Input Range | (1)1-10V for 10-100% dimming and 1V for 10% of Io_set and ≥ 8.5V is 100% of Io_set<br>(2) Short is 10% of Io_set (or 100mA minimum) & Open is 100%<br>(3)See 0-10V Dimming Curve |

### Default Settings of the Driver (can be configured with programming tool)

| | | | |
|---|---|---|---|
| Adjustable Output Current (AOC) | 1050mA | 700mA | 1050mA |
| Smart Timer DIM | Disabled Smart Time Dim | | |
| Module Temperature Protection (MTP) | Disabled. Configurable though programming tool | | |
| Constant Lumen Output (CLO) | Disabled. Configurable though programming tool. | | |
| End of Life indication (EOL) | Disabled. Configurable though programming tool | | |

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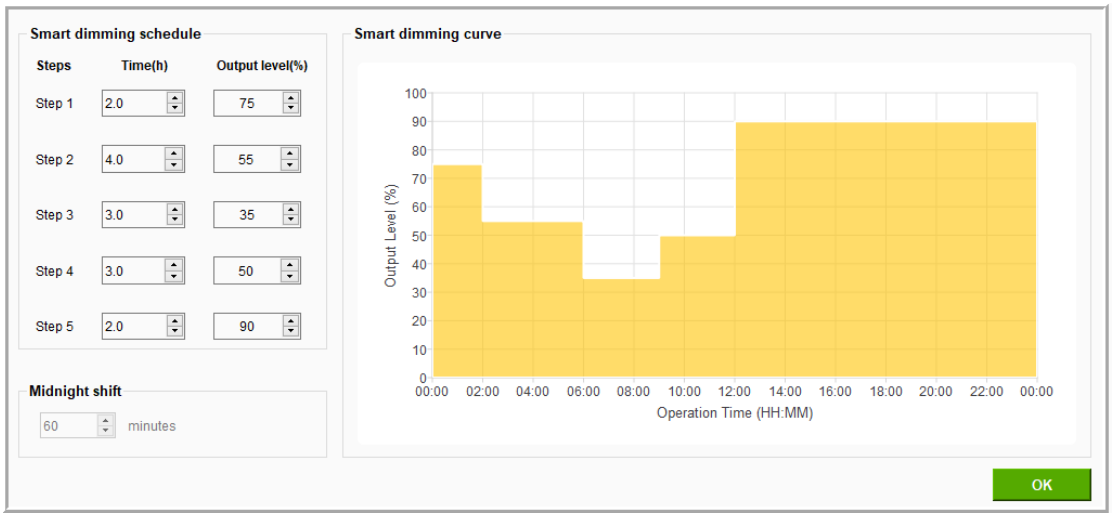
| Model Number | USC4-055180GB | USC4-100140GB | USC4-200140GB |
|---|---|---|---|

### Smart Timer Dim
Provides three operation modes: Fixed Timer, Midnight Centric Timer, Ratio Rescale Timer.

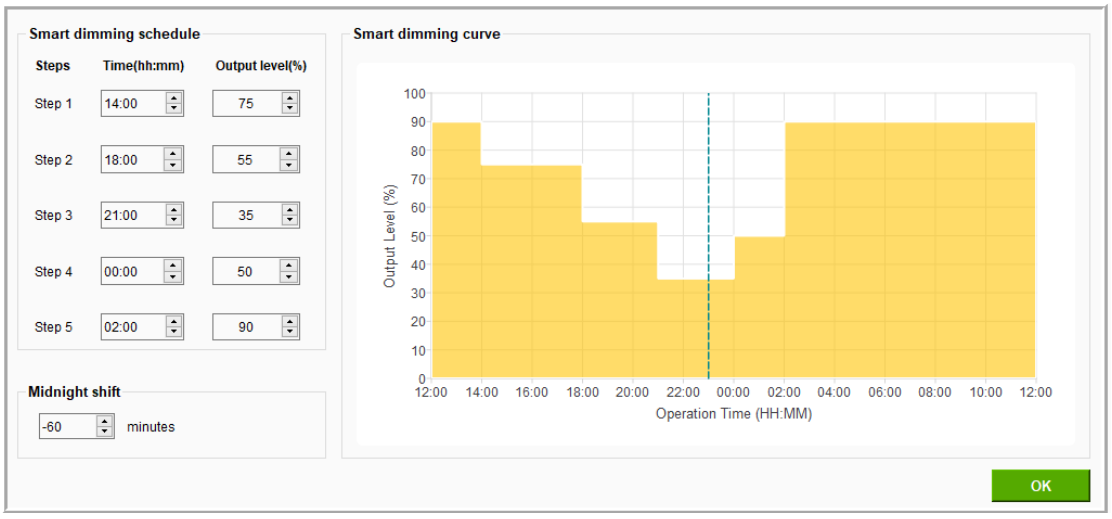
### Fixed Timer

It is a memoryless-based dimming mode that tracks the output level based on the programmed timing curve. The output level is organized by scheduled profile in five steps.




### Midnight Centric Timer

This mode is an memory-based that automatically measures over the past two days the power-on time of the lighting installation at which is the naturally corresponded to night time. The Midnight Centric Timer software calculates the length of power on time and centralized from the given virtual midnight point and change the output level accordingly. More specifically, when the LED driver is power-on during the very first two days or the power-on time difference of past two days is more than 15 minutes, the output current will fixed to the maximum level since there is no valid (reasonable) data for reference. Start from the third day and so on, when the power-on time difference of past two days is less than 15 minutes, the output level is controlled based on the correlation between the midnight point of programmed profile and yesterday power-on duration.



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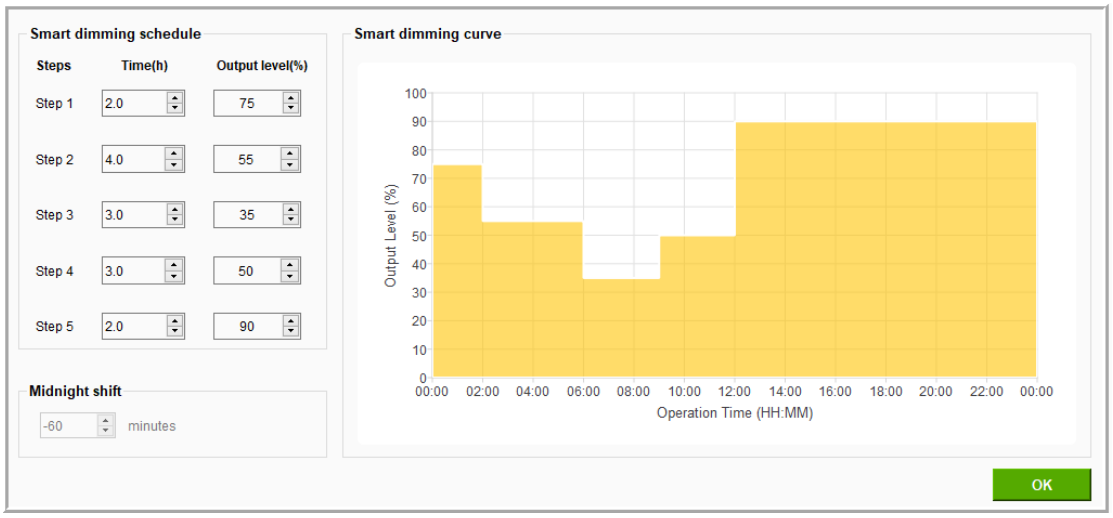
## Ratio Rescale Timer

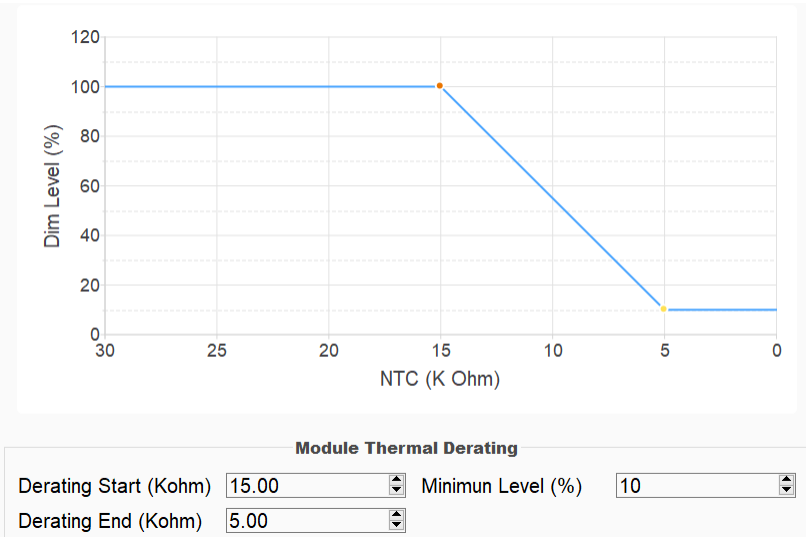
This mode is similar to Midnight Centric Timer that records the power-on time based on the local night time. The Ratio Rescale Timer software rescale programmed output power profile of each step by a calculated percentage of the recorded power-on time (when valid) out of given 5 steps duration.




Note: When all steps are finished, the light level will remain in last level (level in step 5) for all three modes.

## Module Temperature Protection (for LED module)

In the LED luminaire system application, user can enable the MTP function by GUI and be taken to place the NTC thermistor close to the hottest spot on the LED module to avoid the abnormal high temperature on LED module. If LED thermal protection is not required the NTC wire of the LED driver can be left open. The de-rating limits can be programmed using the programming tool



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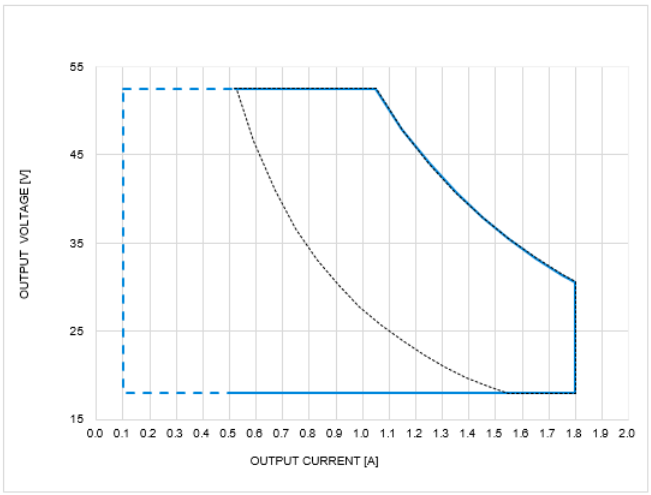
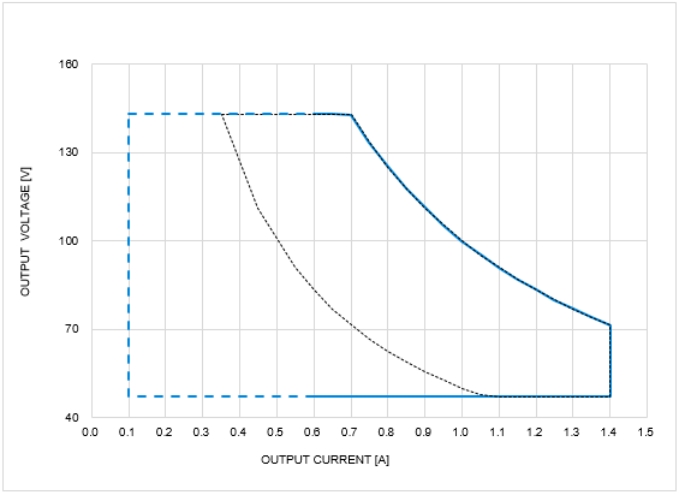
### Operation Window for programing

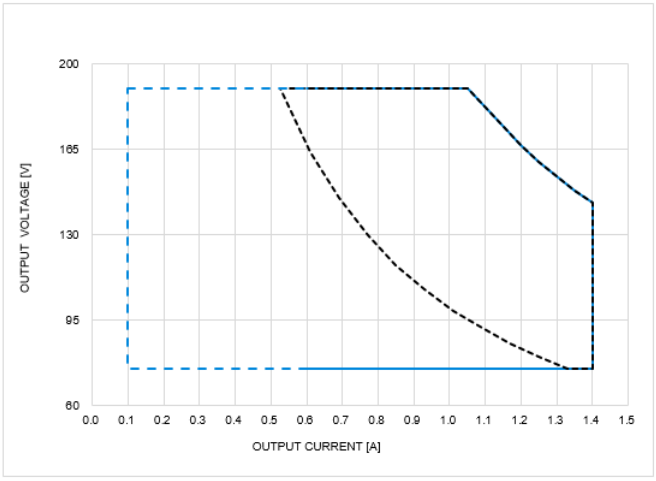
#### 55W operating window



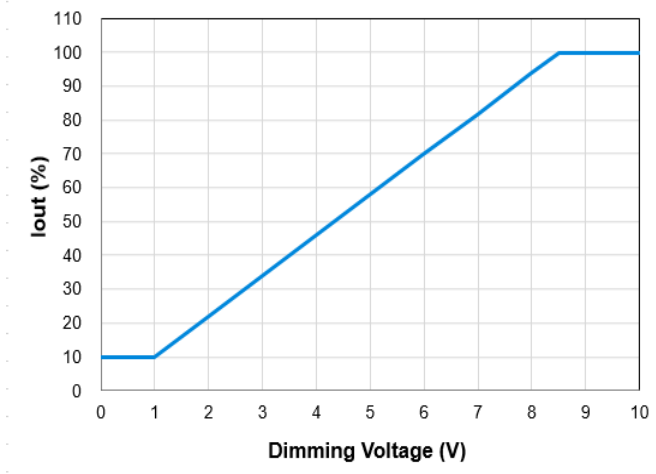

#### 100W operating window




#### 200W operating window




#### Dimming Curve




Note
Blue dot line for 0-10V range
Blue solid line for programming range
Black dot line for performance (PF>0.9V and THD<20%)



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# LED Driver
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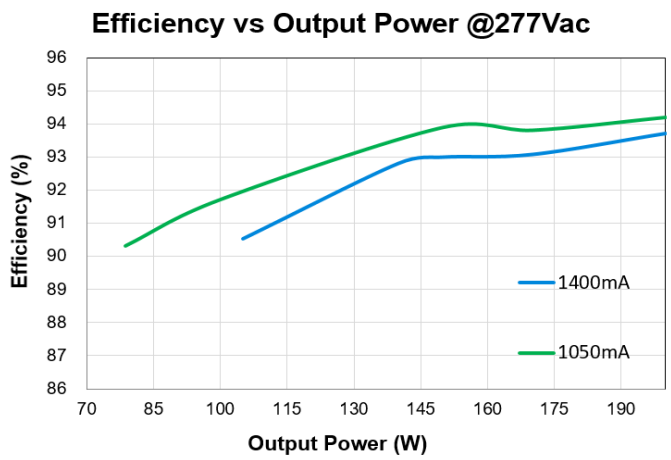
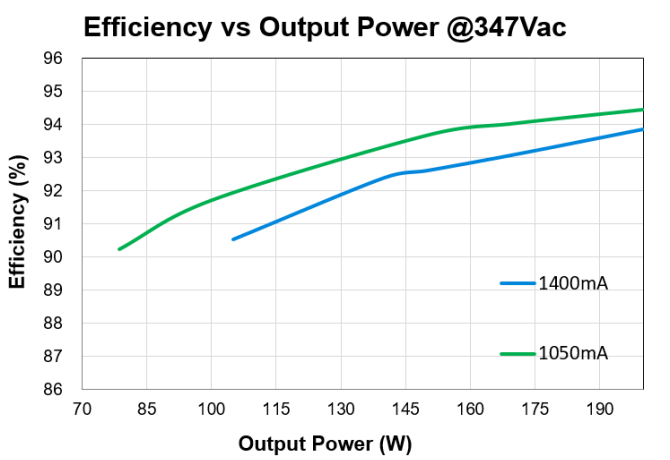
### Efficiency VS Output Power

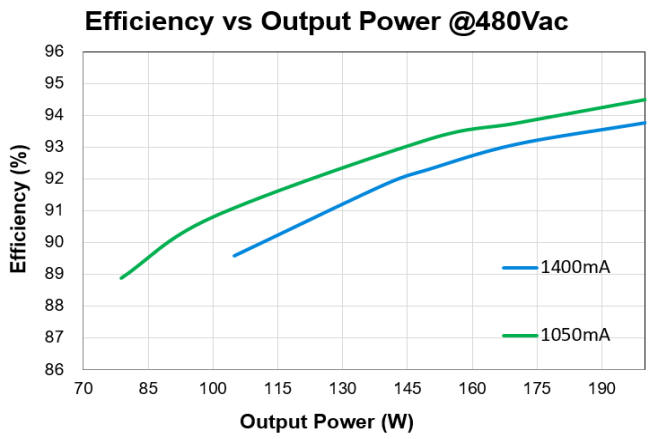
200W @ 277Vac




200W @ 347Vac




200W @ 480Vac



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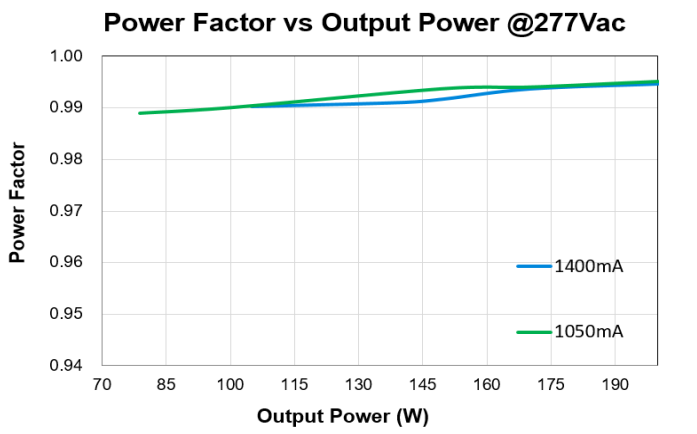
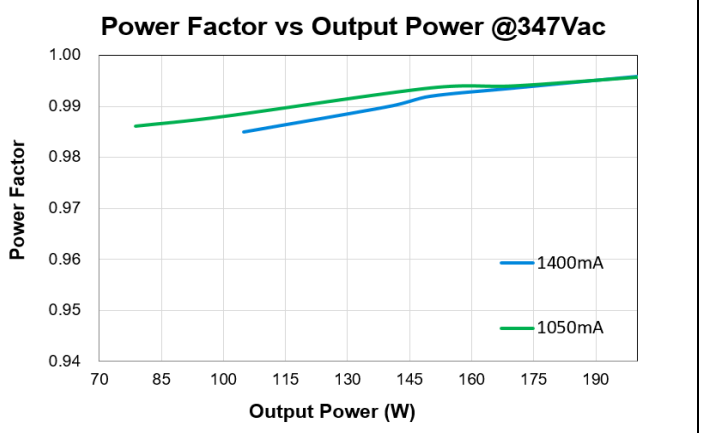
# LED Driver
## USC4 LITE

### Power Factor VS Output Power

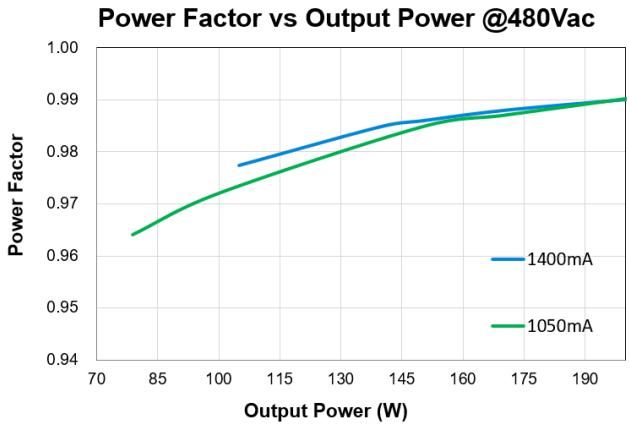
200W @ 277Vac




200W @ 347Vac




200W @ 480Vac



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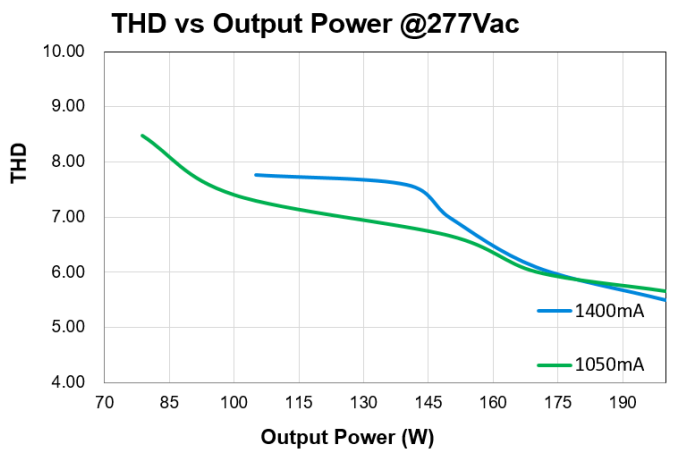
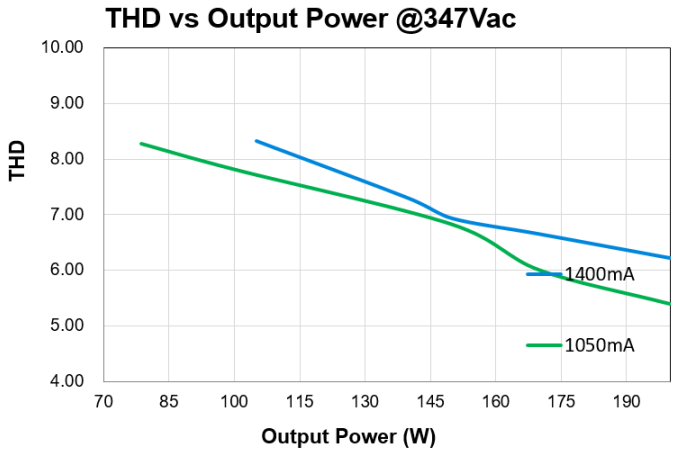
# LED Driver
## USC4 LITE

### Total Harmonic Distortion VS Output Power

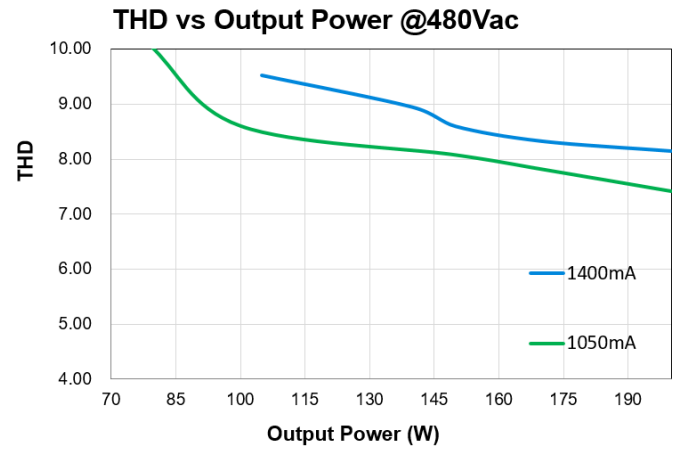
200W @ 277Vac




200W @ 347Vac




200W @ 480Vac



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# LED Driver
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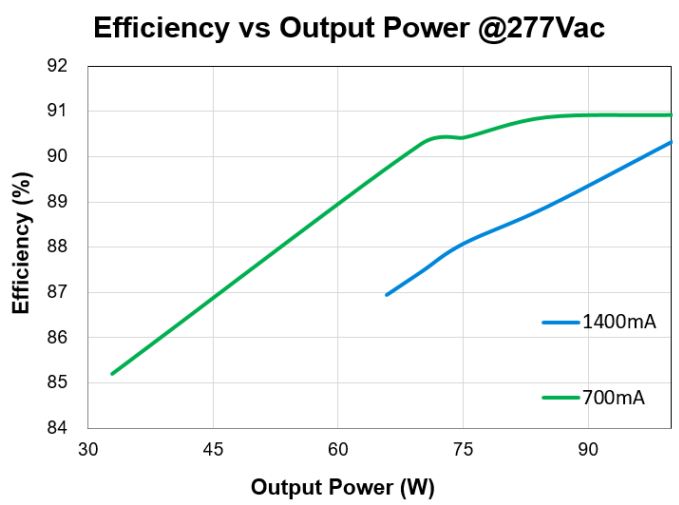
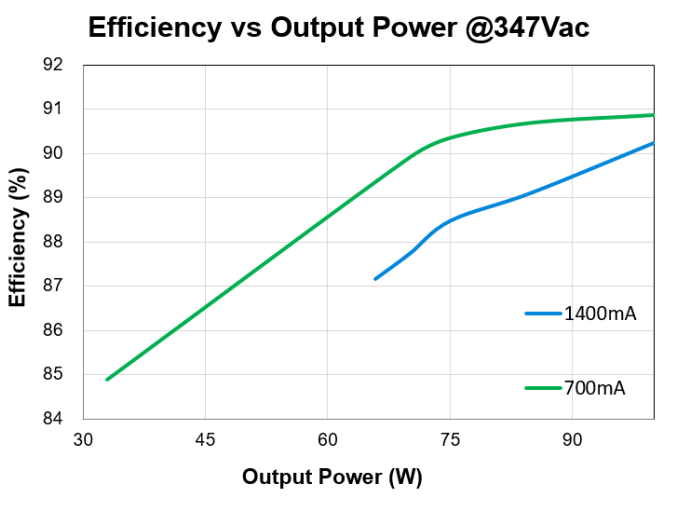
### Efficiency VS Output Power

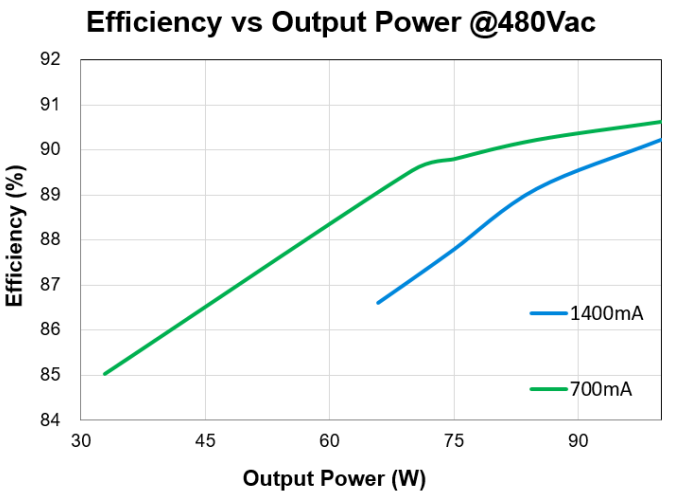
100W @ 277Vac




100W @ 347Vac




100W @ 480Vac



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# LED Driver
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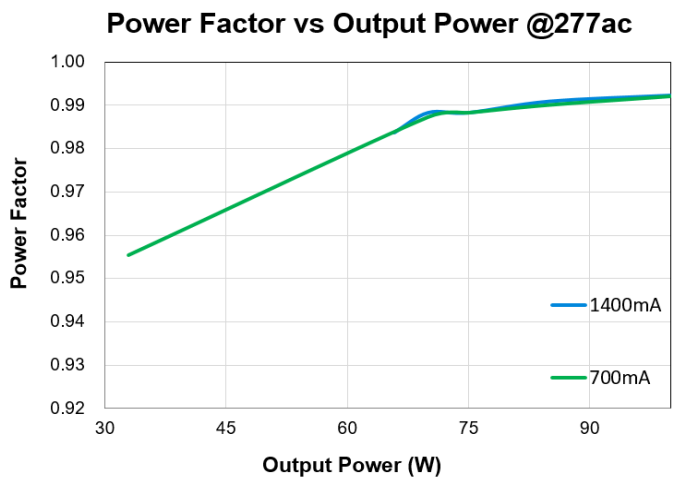
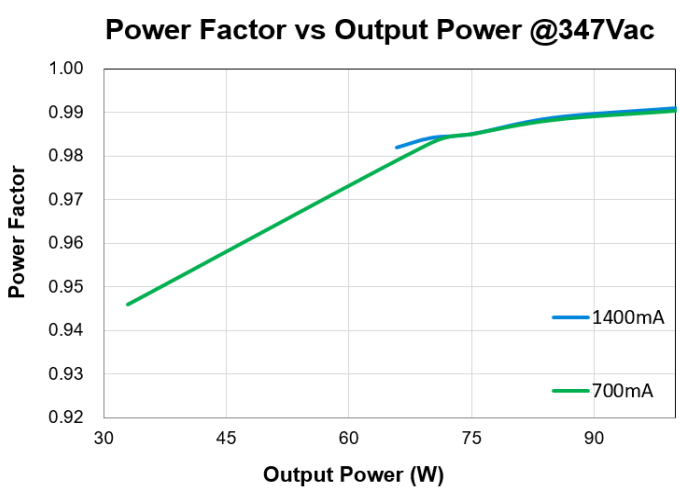
### Power Factor VS Output Power

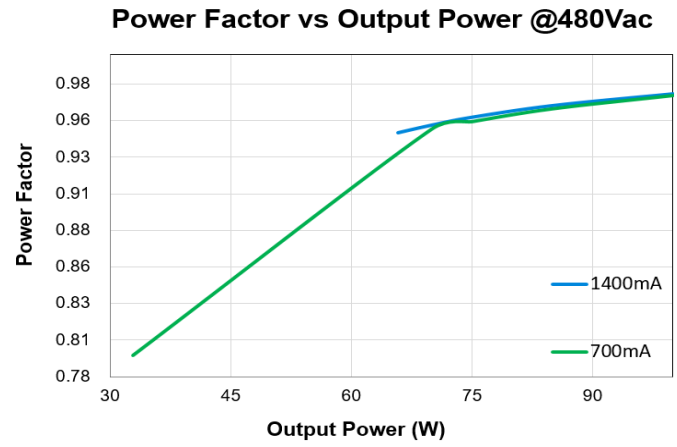
100W @ 277Vac




100W @ 347Vac




100W @ 480Vac



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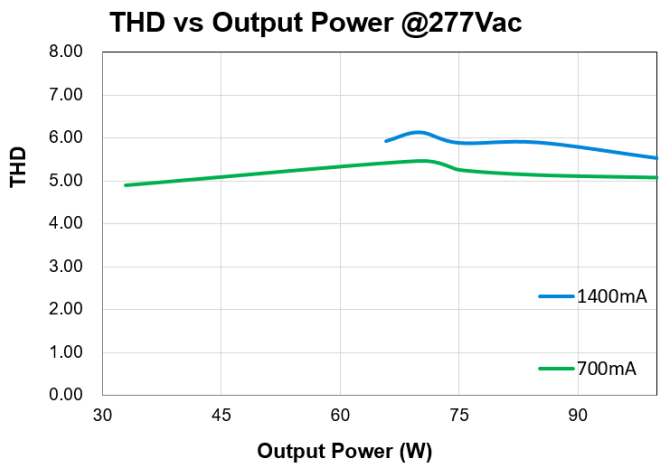
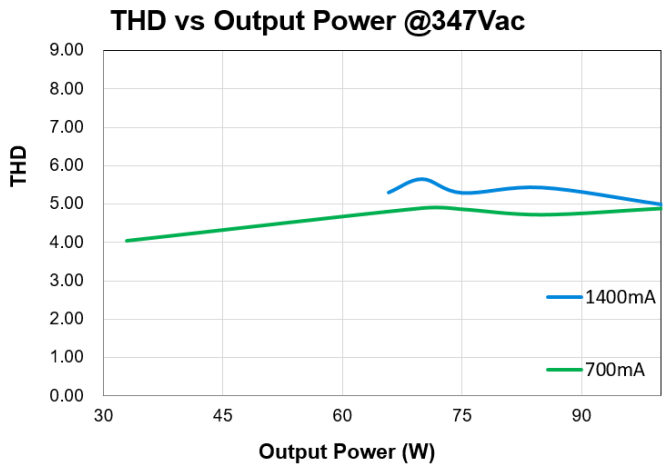
## Total Harmonic Distortion VS Output Power

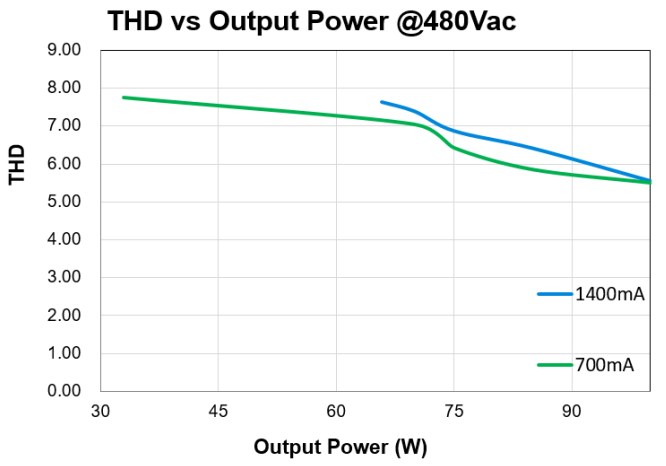
### 100W @ 277Vac




### 100W @ 347Vac

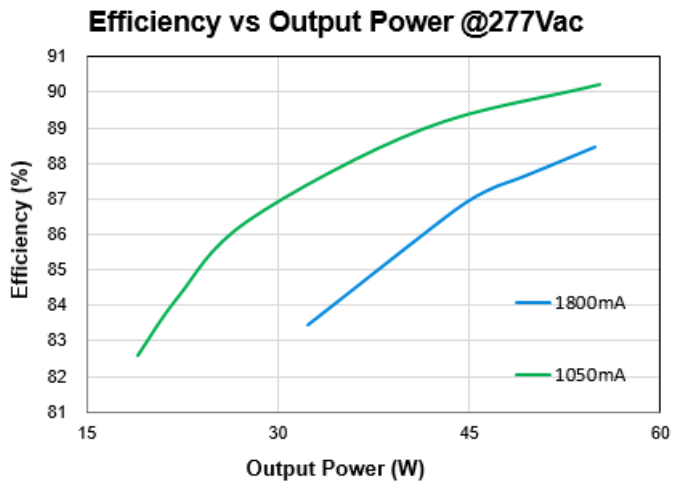



### 100W @ 480Vac

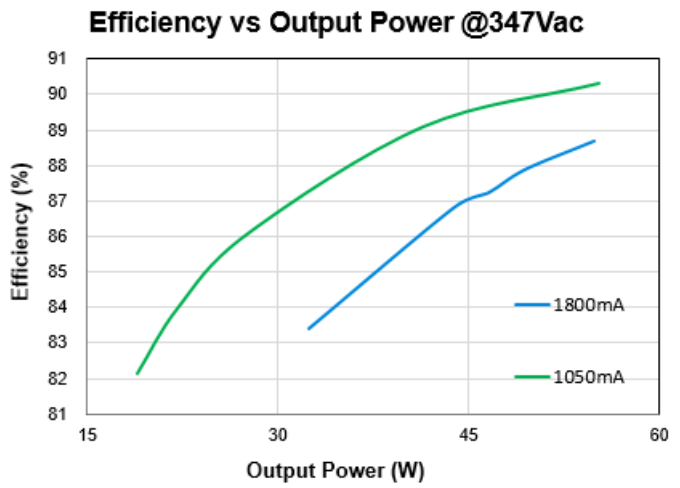


Efficiency VS Output Power

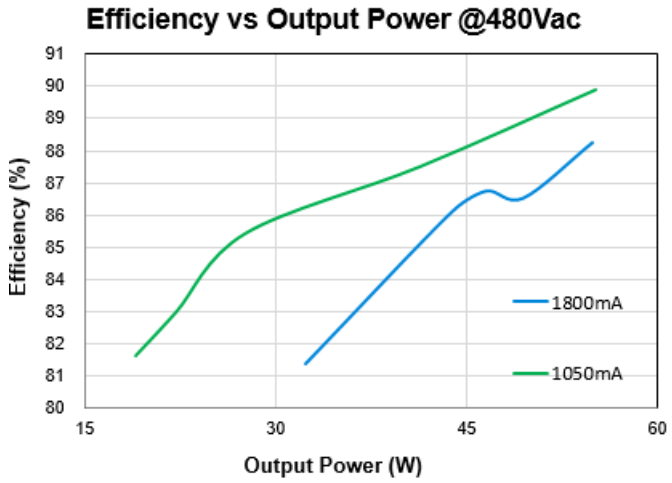
55W @ 277Vac




55W @ 347Vac




55W @ 480Vac



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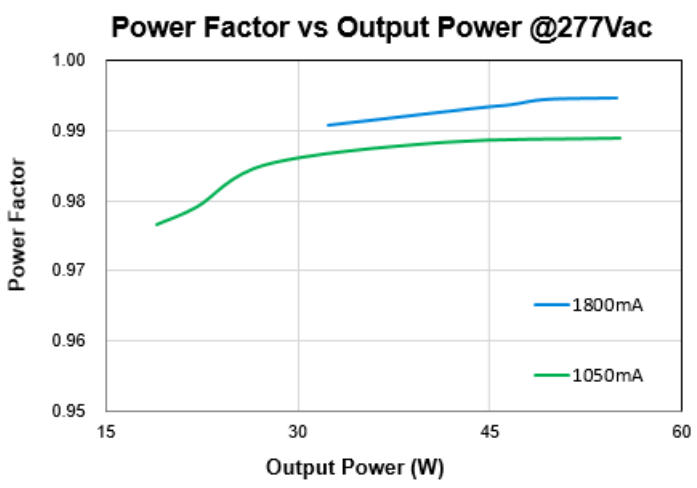
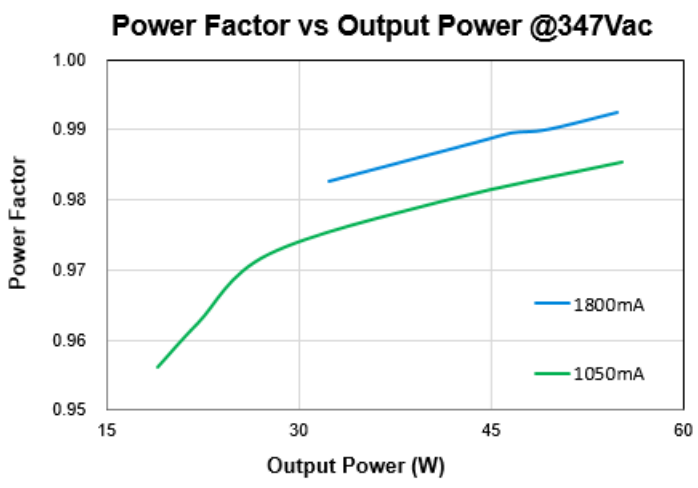
### Power Factor VS Output Power

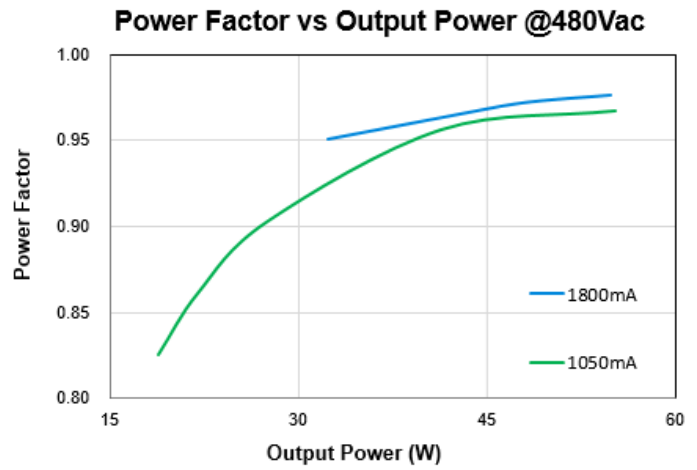
55W @ 277Vac




55W @ 347Vac




55W @ 480Vac



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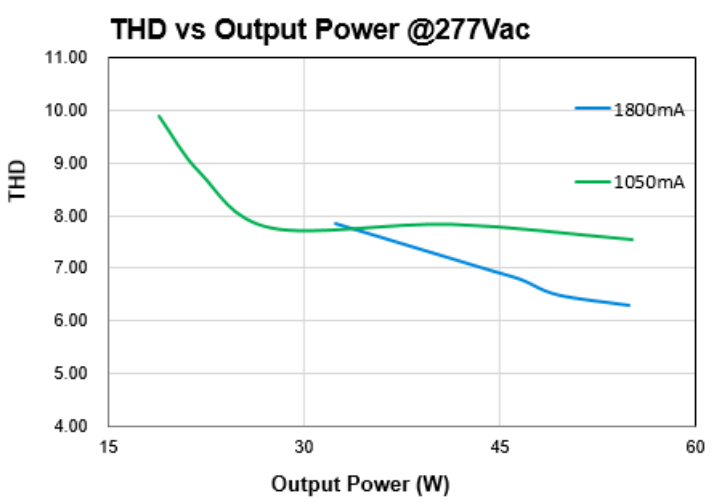
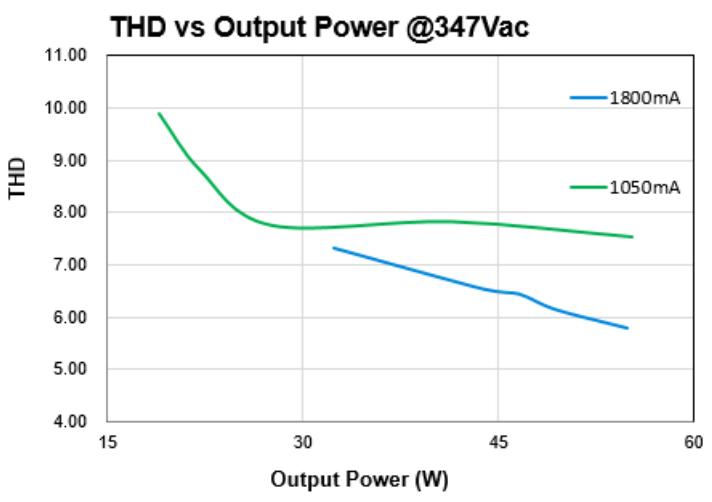
## Total Harmonic Distortion VS Output Power

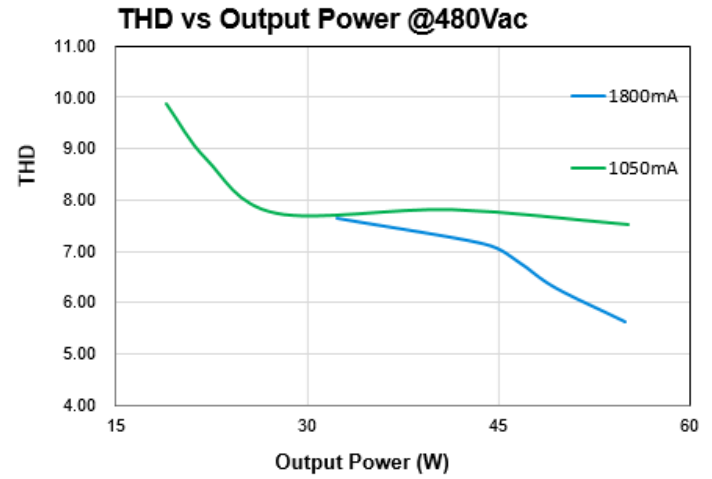
### 55W @ 277Vac




### 55W @ 347Vac




### 55W @ 480Vac

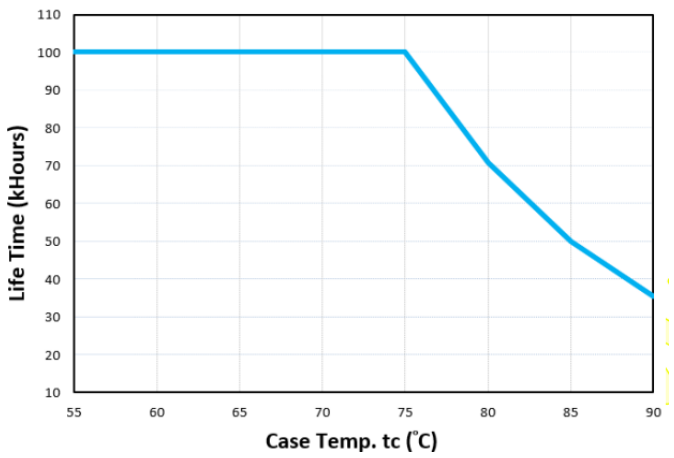


# LED Driver

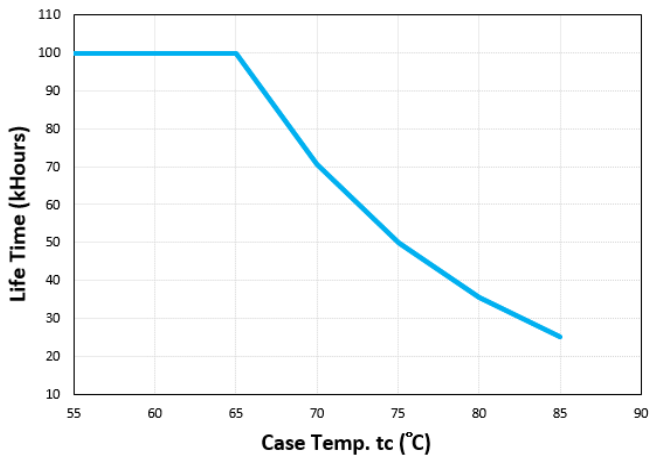
## USC4 LITE

### Lifetime VS Case Temperature

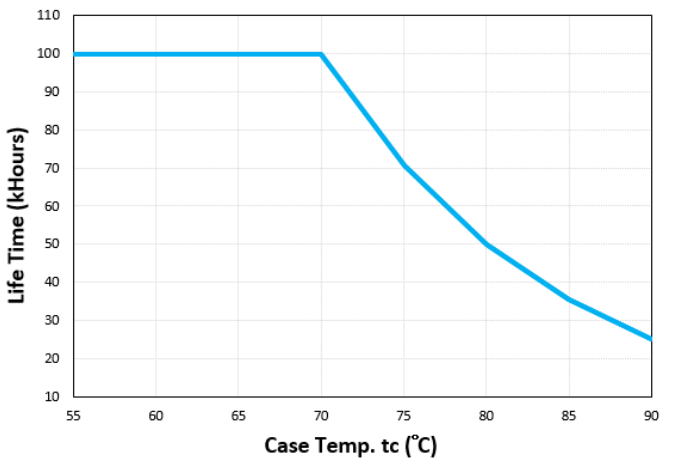
55W




100W




200W



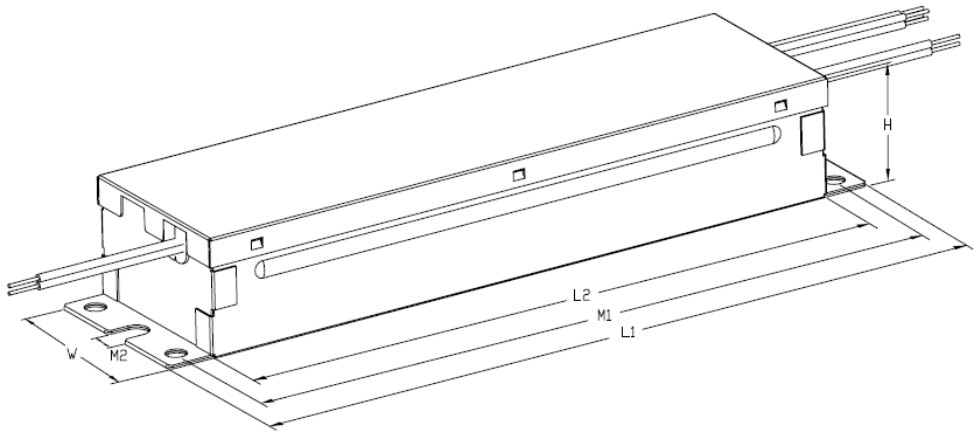



All parameters are specified at 25°C ambient for all products unless otherwise indicated.

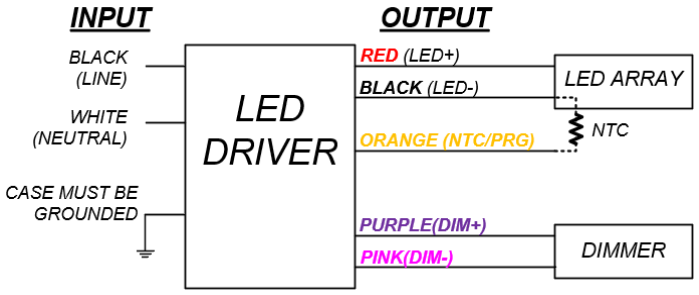
# LED Driver
## USC4 LITE

### Enclosure Dimensions

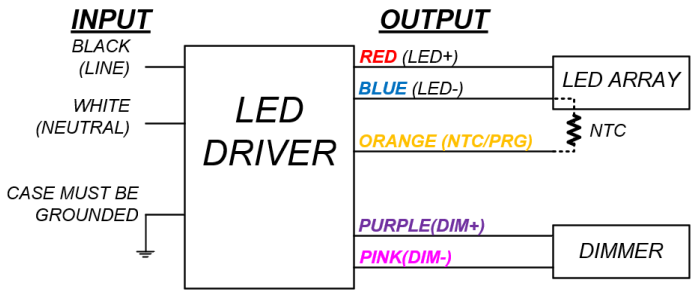
| | USC4-055180GB / USC4-100140GB<br>inch [mm] | USC4-200140GB<br>inch [mm] |
|---|---|---|
| Total length (L1) | 6.59 [167.5] | 9.45 [240] |
| Case length (L2) | 5.48 [139.2] | 8.39 [213.2] |
| Case width (W) | 2.36 [60.0] | 2.36 [60.0] |
| Case height (H) | 1.5 [37.5] | 1.5 [37.5] |
| Mounting length (M1) | 6.03 [153.2] | 8.9 [226] |
| Mounting hole diameter (M2) | 0.32 [8.0] | 0.32 [8.0] |




### Wiring Diagram




(For 55W)




(For 100W/200W)



All parameters are specified at 25°C ambient for all products unless otherwise indicated.
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## Assembly & Installation

The device is not recommended to be placed on low thermal conductive surfaces. For example, plastics.

Base Mounting (Horizontal)


Fig. 2 Recommended Mounting Orientation

## Safety Instructions

- ALWAYS switch mains of input power OFF before connecting and disconnecting the input voltage to the device. If mains are not turned OFF, there is risk of explosion / severe damage.
- To guarantee sufficient convection cooling, keep a distance of 50mm above and lateral distance to other units.
- DO NOT insert any objects into the device.
- The case of LED driver must be connected with grounding (PE).
- The current rating for the output cable must be rated higher than or equal to the output current of the power supply. Please refer to the product specifications..

## Others

### Warranty Policy

Please reach out our Warranty Policy should you require any further clarification.