

## Features

- Ultra High Efficiency (Up to 96.0%)
- Full Power at Wide Output Current Range (Constant Power)
- Adjustable Output Current (AOC)with Programmability
- Isolated 0-10V/PWM/3-Timer-Modes Dimmable
- INV Digital Dimming, UART Based Communication Protocol
- Dim-to-Off with Standby Power  $\leq 0.5$  W
- Minimum Dimming Level with 5% or 10% Selectable
- Maximum Dimming Level with 9V or 10V Selectable
- Fade Time Adjustable
- Always-on Auxiliary Power: 12Vdc, 250mA
- Low inrush current
- Output Lumen Compensation
- End-of-Life Indicator
- Input Surge Protection: DM 6kV, CM 10kV
- All-Around Protection: IOVP, IUV, OVP, SCP, OTP
- IP66 / IP67 and UL Dry / Damp / Wet Location
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location
- 5 Years Warranty



## Description

The *EUM-680SxxxMx* series is a 680W, constant-current, programmable and IP66/IP67 rated LED driver that operates from 90-305Vac input with excellent power factor. Created for many lighting applications including high mast, sports, UV-LED, aquaculture and horticulture, etc. It provides an auxiliary voltage and dim-to-off functionality for powering low voltage, wireless controls. The dimming control supports 0-10V dimming as well as two-way communication via Digital Dimming, a UART based communication protocol. The high efficiency of these drivers and compact metal case enables them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against input surge, input under voltage, input over voltage, output over voltage, short circuit, and over temperature.

## Models

| Adjustable Output Current Range | Full-Power Current Range(1) | Default Output Current | Input Voltage Range(2)  | Output Voltage Range | Max. Output Power | Typical Efficiency (3) | Typical Power Factor |        | Model Number                 |
|---------------------------------|-----------------------------|------------------------|-------------------------|----------------------|-------------------|------------------------|----------------------|--------|------------------------------|
|                                 |                             |                        |                         |                      |                   |                        | 120Vac               | 220Vac |                              |
| 0.125-1.7A                      | 1.25-1.7A                   | 1.7 A                  | 90~305Vac<br>127~300Vdc | 200 ~ 544Vdc         | 680 W             | 95.5%                  | 0.99                 | 0.96   | EUM-680S170Mx                |
| 0.18-2.4A                       | 1.8-2.4A                    | 2.1 A                  | 90~305Vac<br>127~300Vdc | 141.5 ~ 378Vdc       | 680 W             | 94.5%                  | 0.99                 | 0.96   | EUM-680S240Mx                |
| 0.26-3.5A                       | 2.6-3.5A                    | 3.5 A                  | 90~305Vac<br>127~300Vdc | 97.1 ~ 262Vdc        | 680 W             | 95.0%                  | 0.99                 | 0.96   | EUM-680S350Mx                |
| 0.42-5.6A                       | 4.2-5.6A                    | 5.6 A                  | 90~305Vac<br>127~300Vdc | 60.7 ~ 163Vdc        | 680 W             | 94.5%                  | 0.99                 | 0.96   | EUM-680S560Mx                |
| 0.63-8.4A                       | 6.3-8.4A                    | 8.4 A                  | 90~305Vac<br>127~300Vdc | 40.4 ~ 108Vdc        | 680 W             | 95.0%                  | 0.99                 | 0.96   | EUM-680S840Mx <sup>(4)</sup> |
| 1.26-15.0A                      | 12.6-15.0A                  | 15.0 A                 | 90~305Vac<br>127~300Vdc | 22.6 ~ 54Vdc         | 680 W             | 95.5%                  | 0.99                 | 0.96   | EUM-680S15AMx <sup>(4)</sup> |

**Notes:** (1) Output current range with constant power at 680W.

(2) Certified input voltage range: UL, FCC, CB 100-277Vac; otherwise 100-240Vac

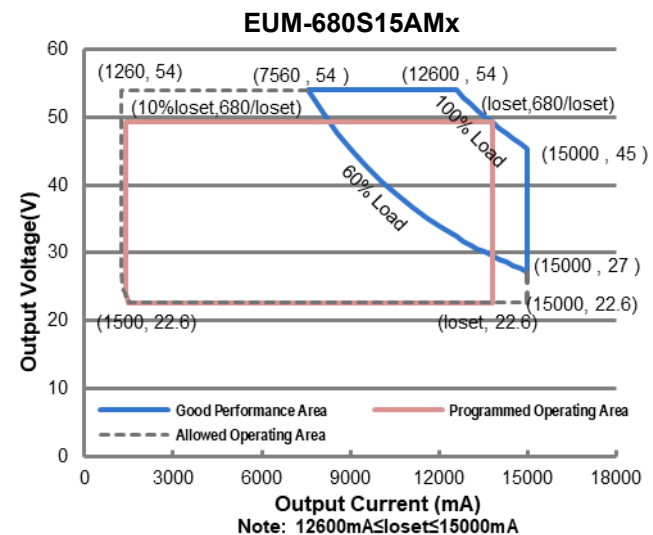
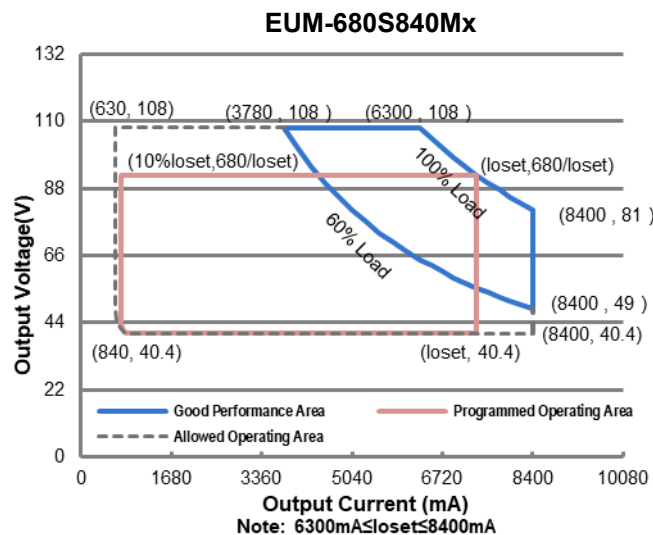
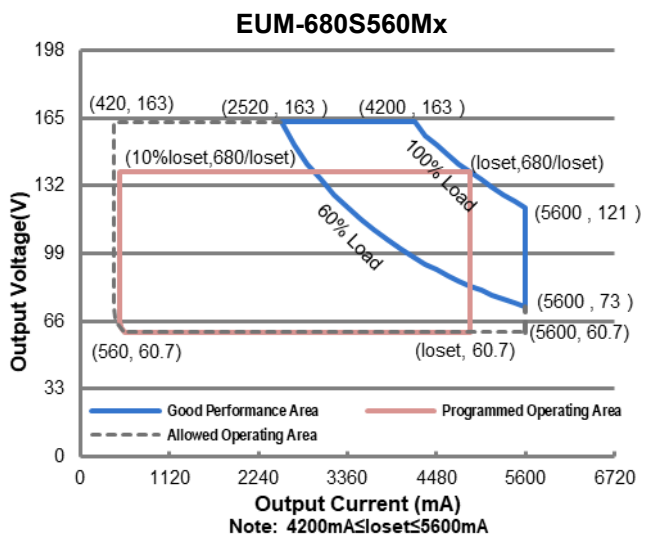
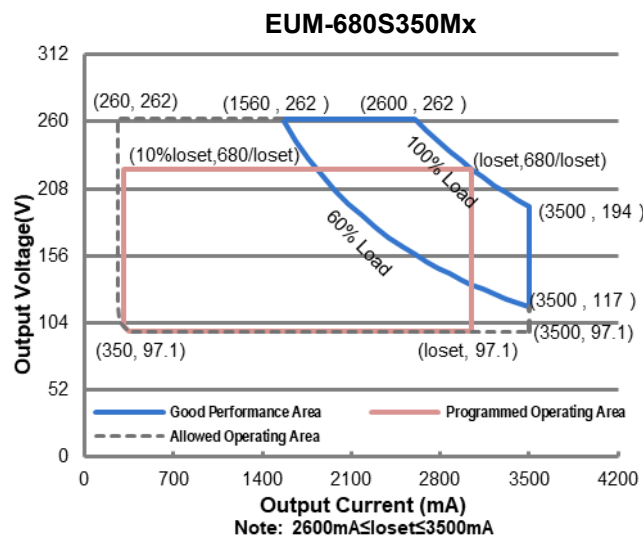
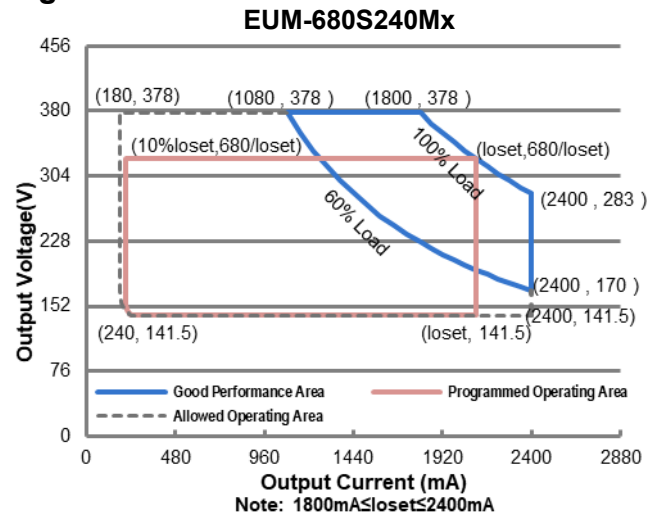
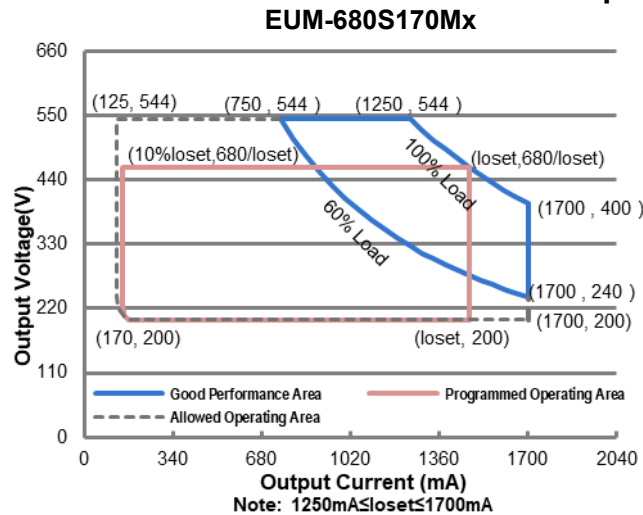
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Specifications are subject to changes without notice.

All specifications are typical at 25°C unless otherwise stated.

- (3) Measured at 100% load and 220Vac input (see below "General Specifications" for details).
- (4) SELV output
- (5) x = G are UL Recognized, ENEC and CCC, etc. models; x = T are UL Class P models.

## I-V Operating Area



## Input Specifications

| Parameter                        | Min.    | Typ. | Max.                 | Notes   |
|----------------------------------|---------|------|----------------------|---|
| Input AC Voltage                 | 90 Vac  | -    | 305 Vac              |   |
| Input DC Voltage                 | 127 Vdc | -    | 300 Vdc              |   |
| Input Frequency                  | 47 Hz   | -    | 63 Hz                |   |
| Leakage Current                  | -       | -    | 0.75 MIU             | UL8750; 277Vac/ 60Hz  |
|                                  |         |      | 0.70 mA              | IEC60598-1; 240Vac/ 60Hz,   |
| Input AC Current                 | -       | -    | 6.9 A                | Measured at 100% load and 120 Vac input.  |
|                                  | -       | -    | 3.6 A                | Measured at 100% load and 220 Vac input.  |
| Inrush Current(I <sup>2</sup> t) | -       | -    | 2.1 A <sup>2</sup> s | At 220Vac input, 25°C cold start, duration=14.2 ms, 10%I <sub>pk</sub> -10%I <sub>pk</sub> . See Inrush Current Waveform for the details. |
| PF                               | 0.90    | -    | -                    | At 100-277Vac, 50-60Hz, 60%-100% Load (408 - 680W)  |
| THD                              | -       | -    | 20%                  |   |
| THD                              |         |      | 10%                  | At 220-240Vac, 50-60Hz, 75%-100% Load (510 - 680W)  |

## Output Specifications

| Parameter  | Min.     | Typ.    | Max.     | Notes                |
|--|----------|---------|----------|----------------------|
| Output Current Tolerance                         | -5%loset | -       | 5%loset  | 100% load            |
| Output Current Setting(loset Range)              |          |         |          |                      |
| EUM-680S170Mx                                    | 125 mA   | -       | 1700 mA  |                      |
| EUM-680S240Mx                                    | 180 mA   | -       | 2400 mA  |                      |
| EUM-680S350Mx                                    | 260 mA   | -       | 3500 mA  |                      |
| EUM-680S560Mx                                    | 420 mA   | -       | 5600 mA  |                      |
| EUM-680S840Mx                                    | 630 mA   | -       | 8400 mA  |                      |
| EUM-680S15AMx                                    | 1260 mA  | -       | 15000 mA |                      |
| Output Current Setting Range with Constant Power |          |         |          |                      |
| EUM-680S170Mx                                    | 1250 mA  | -       | 1700 mA  |                      |
| EUM-680S240Mx                                    | 1800 mA  | -       | 2400 mA  |                      |
| EUM-680S350Mx                                    | 2600 mA  | -       | 3500 mA  |                      |
| EUM-680S560Mx                                    | 4200 mA  | -       | 5600 mA  |                      |
| EUM-680S840Mx                                    | 6300 mA  | -       | 8400 mA  |                      |
| EUM-680S15AMx                                    | 12600 mA | -       | 15000 mA |                      |
| Total Output Current Ripple (pk-pk)              | -        | 5%lomax | 10%lomax | 100% load, 20 MHz BW |
| Output Current Ripple at < 200 Hz (pk-pk)        | -        | -       | 2%lomax  | 70%-100% load        |
| Startup Overshoot Current                        | -        | -       | 10%lomax | 100% load            |

## Output Specifications (Continued)

| Parameter                                       | Min.   | Typ.     | Max.   | Notes  |
|---|--------|----------|--------|--|
| No Load Output Voltage                          |        |          |        |  |
| EUM-680S170Mx                                   | -      | -        | 600 V  |  |
| EUM-680S240Mx                                   | -      | -        | 420 V  |  |
| EUM-680S350Mx                                   | -      | -        | 300 V  |  |
| EUM-680S560Mx                                   | -      | -        | 200 V  |  |
| EUM-680S840Mx                                   | -      | -        | 120 V  |  |
| EUM-680S15AMx                                   | -      | -        | 60 V   |  |
| Line Regulation                                 | -      | -        | ±0.5%  | 100% load  |
| Load Regulation                                 | -      | -        | ±3.0%  |  |
| Turn-on Delay Time                              | -      | -        | 0.5 s  | Measured at 120-277Vac input, 60%-100% Load  |
| Temperature Coefficient of Isolet               | -      | 0.03%/°C | -      | Case temperature = 0°C ~Tc max   |
| 12V Auxiliary Output Voltage                    | 10.8 V | 12 V     | 13.2 V |  |
| 12V Auxiliary Output Source Current             | 0 mA   | -        | 250 mA | Return terminal is "Dim-"  |
| 12V Auxiliary Output Transient Peak Current@6W  | -      | -        | 500 mA | 500mA peak for a maximum duration of 2.2 ms in a 6.0ms period during which time the average should not exceed 250mA. |
| 12V Auxiliary Output Transient Peak Current@10W | -      | -        | 850 mA | 850mA peak for a maximum duration of 1.3 ms in a 5.2ms period during which time the average should not exceed 250mA. |

## General Specifications

| Parameter                    | Min.  | Typ.  | Max. | Notes |
|------------------------------|-------|-------|------|-------|
| Efficiency at 120 Vac input: |       |       |      |       |
| EUM-680S170Mx                |       |       |      |       |
| Io= 1250 mA                  | 92.0% | 94.0% | -    |       |
| Io= 1700 mA                  | 92.0% | 94.0% | -    |       |
| EUM-680S240Mx                |       |       |      |       |
| Io= 1800 mA                  | 90.5% | 92.5% | -    |       |
| Io= 2400 mA                  | 90.0% | 92.0% | -    |       |
| EUM-680S350Mx                |       |       |      |       |
| Io= 2600 mA                  | 90.0% | 92.0% | -    |       |
| Io= 3500 mA                  | 90.5% | 92.5% | -    |       |
| EUM-680S560Mx                |       |       |      |       |
| Io= 4200 mA                  | 90.0% | 92.0% | -    |       |
| Io= 5600 mA                  | 90.0% | 92.0% | -    |       |
| EUM-680S840Mx                |       |       |      |       |
| Io= 6300 mA                  | 90.5% | 92.5% | -    |       |
| Io= 8400 mA                  | 90.5% | 92.5% | -    |       |
| EUM-680S15AMx                |       |       |      |       |
| Io= 12600 mA                 | 92.0% | 94.0% | -    |       |
| Io= 15000 mA                 | 92.0% | 94.0% | -    |       |

## General Specifications (Continued)

| Parameter  | Min.   | Typ.   | Max.   | Notes   |  |
|--|--|--|--|---|--|
| Efficiency at 220 Vac input:<br>EUM-680S170Mx<br>Io= 1250 mA<br>Io= 1700 mA<br>EUM-680S240Mx<br>Io= 1800 mA<br>Io= 2400 mA<br>EUM-680S350Mx<br>Io= 2600 mA<br>Io= 3500 mA<br>EUM-680S560Mx<br>Io= 4200 mA<br>Io= 5600 mA<br>EUM-680S840Mx<br>Io= 6300 mA<br>Io= 8400 mA<br>EUM-680S15AMx<br>Io= 12600 mA<br>Io= 15000 mA | <br>93.5%<br>93.5%<br><br>92.5%<br>92.5%<br><br>92.5%<br>93.0%<br><br>92.5%<br>92.5%<br><br>93.0%<br>93.0%<br><br>93.5%<br>93.5% | <br>95.5%<br>95.5%<br><br>94.5%<br>94.5%<br><br>94.5%<br>95.0%<br><br>94.5%<br>94.5%<br><br>95.0%<br>95.0% | <br>-<br>-<br><br>-<br>-<br><br>-<br>-<br><br>-<br>-<br><br>-<br>- | Measured at 100% load and steady-state temperature in 25°C ambient;<br>(Efficiency will be about 2.0% lower if measured immediately after startup.) |  |
| Efficiency at 277 Vac input:<br>EUM-680S170Mx<br>Io= 1250 mA<br>Io= 1700 mA<br>EUM-680S240Mx<br>Io= 1800 mA<br>Io= 2400 mA<br>EUM-680S350Mx<br>Io= 2600 mA<br>Io= 3500 mA<br>EUM-680S560Mx<br>Io= 4200 mA<br>Io= 5600 mA<br>EUM-680S840Mx<br>Io= 6300 mA<br>Io= 8400 mA<br>EUM-680S15AMx<br>Io= 12600 mA<br>Io= 15000 mA | <br>93.5%<br>93.5%<br><br>93.0%<br>93.0%<br><br>93.0%<br>93.5%<br><br>93.0%<br>93.0%<br><br>93.0%<br>93.0%<br><br>94.0%<br>94.0% | <br>95.5%<br>95.5%<br><br>95.0%<br>95.0%<br><br>95.0%<br>95.5%<br><br>95.0%<br>95.0%<br><br>95.0%<br>95.0% | <br>-<br>-<br><br>-<br>-<br><br>-<br>-<br><br>-<br>-<br><br>-<br>- |   |  |
| Standby Power  | -  | -  | 0.5 W  |   | Measured at 230Vac/50Hz; Dimming off   |
| MTBF   | -  | 201,000 Hours  | -  |   | Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)                         |
| Lifetime   | -  | 107,000 Hours  | -  |   | Measured at 220Vac input, 80%Load and 70°C case temperature; See lifetime vs. Tc curve for the details |
|  | -  | 67,000 Hours   | -  |   | Measured at 220Vac input, 100%Load and 40°C ambient temperature  |
| Operating Case Temperature for Safety Tc_s   | -40°C  | -  | +90°C  |   |  |
| Operating Case Temperature for Warranty Tc_w   | -40°C  | -  | +80°C  |   | Case temperature for 5 years warranty<br>Humidity: 10%RH to 95%RH                                      |
| Storage Temperature  | -40°C  | -  | +85°C  |   | Humidity: 5%RH to 100%RH   |
| Dimensions<br>Inches (L × W × H)<br>Millimeters (L × W × H)  | 9.84 × 5.31 × 1.81<br>250 × 135 x 46   |  |  |   | With mounting ear<br>10.83 × 5.31 × 1.81<br>275 ×135 x 46  |
| Net Weight   | -  | 3079 g   | -  |   |  |

## Dimming Specifications

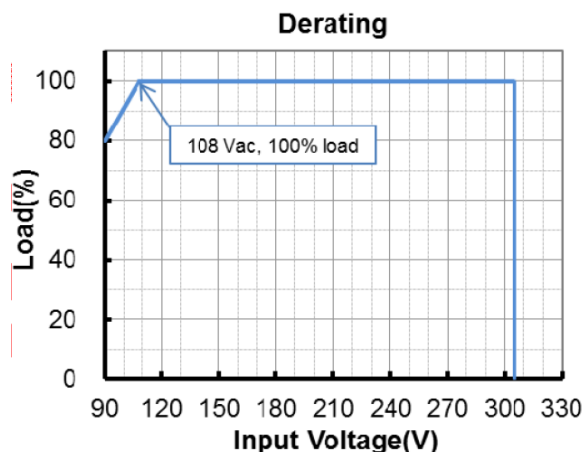
| Parameter                                    |  | Min.  | Typ.   | Max.   | Notes  |
|--|--|---|--------|--------|--|
| Absolute Maximum Voltage on the Vdim (+) Pin |  | -20 V   | -      | 20 V   |  |
| Source Current on Vdim (+)Pin                |  | 200 uA  | 300 uA | 450 uA | Vdim(+) = 0 V  |
| Dimming Output Range with 10%-100% (Default) | EUM-680S170Mx<br>EUM-680S240Mx<br>EUM-680S350Mx<br>EUM-680S560Mx<br>EUM-680S840Mx<br>EUM-680S15AMx | 10%loset  | -      | loset  | 1250 mA ≤ loiset ≤ 1700 mA<br>1800 mA ≤ loiset ≤ 2400 mA<br>2600 mA ≤ loiset ≤ 3500 mA<br>4200 mA ≤ loiset ≤ 5600 mA<br>6300 mA ≤ loiset ≤ 8400 mA<br>12600 mA ≤ loiset ≤ 15000 mA |
|  | EUM-680S170Mx<br>EUM-680S240Mx<br>EUM-680S350Mx<br>EUM-680S560Mx<br>EUM-680S840Mx<br>EUM-680S15AMx | 125 mA<br>180 mA<br>260 mA<br>420 mA<br>630 mA<br>1260 mA | -      | loset  | 125 mA ≤ loiset < 1250 mA<br>180 mA ≤ loiset < 1800 mA<br>260 mA ≤ loiset < 2600 mA<br>420 mA ≤ loiset < 4200 mA<br>630 mA ≤ loiset < 6300 mA<br>1260 mA ≤ loiset < 12600 mA       |
| Dimming Output Range with 5%-100% (Settable) | EUM-680S170Mx<br>EUM-680S240Mx<br>EUM-680S350Mx<br>EUM-680S560Mx<br>EUM-680S840Mx<br>EUM-680S15AMx | 5%loset   | -      | loset  | 1250 mA ≤ loiset ≤ 1700 mA<br>1800 mA ≤ loiset ≤ 2400 mA<br>2600 mA ≤ loiset ≤ 3500 mA<br>4200 mA ≤ loiset ≤ 5600 mA<br>6300 mA ≤ loiset ≤ 8400 mA<br>12600 mA ≤ loiset ≤ 15000 mA |
|  | EUM-680S170Mx<br>EUM-680S240Mx<br>EUM-680S350Mx<br>EUM-680S560Mx<br>EUM-680S840Mx<br>EUM-680S15AMx | 63 mA<br>90 mA<br>130 mA<br>210 mA<br>315 mA<br>630 mA    | -      | loset  | 125 mA ≤ loiset < 1250 mA<br>180 mA ≤ loiset < 1800 mA<br>260 mA ≤ loiset < 2600 mA<br>420 mA ≤ loiset < 4200 mA<br>630 mA ≤ loiset < 6300 mA<br>1260 mA ≤ loiset < 12600 mA       |
| Recommended Dimming Input Range              |  | 0 V   | -      | 10 V   | Default 0-10V dimming mode.  |
| Dim off Voltage                              |  | 0.35 V  | 0.5 V  | 0.65 V |  |
| Dim on Voltage                               |  | 0.55 V  | 0.7 V  | 0.85 V |  |
| Hysteresis                                   |  | -   | 0.2 V  | -      |  |
| PWM_in High Level                            |  | 3 V   | -      | 10 V   | Dimming mode set to PWM in PC interface.   |
| PWM_in Low Level                             |  | -0.3 V  | -      | 0.6 V  |  |
| PWM_in Frequency Range                       |  | 200 Hz  | -      | 3 KHz  |  |
| PWM_in Duty Cycle                            |  | 1%  | -      | 99%    |  |
| PWM Dimming off (Positive Logic)             |  | 3%  | 5%     | 8%     |  |
| PWM Dimming on (Positive Logic)              |  | 5%  | 7%     | 10%    |  |
| PWM Dimming off ( Negative Logic)            |  | 92%   | 95%    | 97%    |  |
| PWM Dimming on ( Negative Logic)             |  | 90%   | 93%    | 95%    |  |
| Hysteresis                                   |  | -   | 2%     | -      |  |

## Safety & EMC Compliance

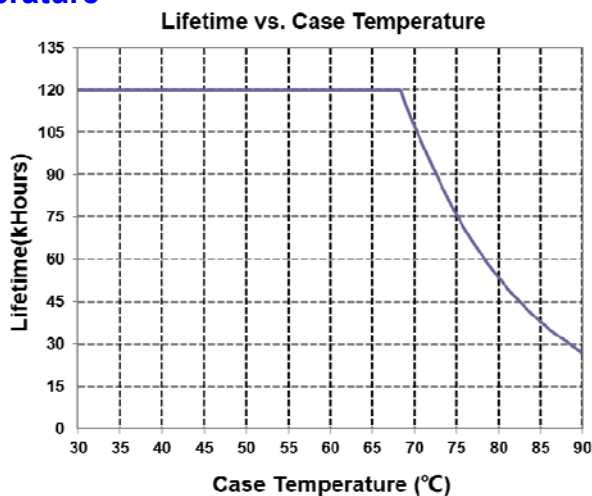
| Safety Category                  | Standard  |
|----------------------------------|---|
| UL/CUL                           | UL8750,CAN/CSA-C22.2 No. 250.13   |
| ENEC & CE                        | EN 61347-1, EN 61347-2-13   |
| CB                               | IEC 61347-1, IEC 61347-2-13   |
| CCC                              | GB 19510.1, GB 19510.14   |
| NOM                              | NOM-058-SCFI  |
| EMI Standards                    | Notes   |
| EN 55015/GB 17743 <sup>(1)</sup> | Conducted emission Test & Radiated emission Test  |
| EN 61000-3-2/GB 17625.1          | Harmonic current emissions  |
| EN 61000-3-3                     | Voltage fluctuations & flicker  |
| FCC Part 15 <sup>(1)</sup>       | ANSI C63.4 Class B  |
|                                  | This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired Operation. |
| EMS Standards                    | Notes   |
| EN 61000-4-2                     | Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge   |
| EN 61000-4-3                     | Radio-Frequency Electromagnetic Field Susceptibility Test-RS  |
| EN 61000-4-4                     | Electrical Fast Transient / Burst-EFT   |
| EN 61000-4-5                     | Surge Immunity Test: AC Power Line: Differential Mode 6 kV, Common Mode 10 kV   |
| EN 61000-4-6                     | Conducted Radio Frequency Disturbances Test-CS  |
| EN 61000-4-8                     | Power Frequency Magnetic Field Test   |
| EN 61000-4-11                    | Voltage Dips  |
| EN 61547                         | Electromagnetic Immunity Requirements Applies To Lighting Equipment   |

**Note:** (1) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

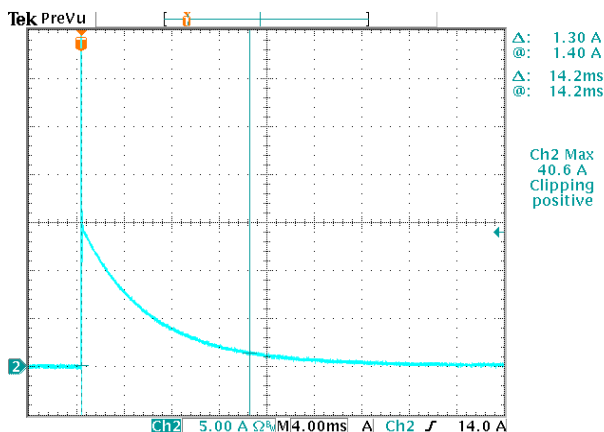
## Derating



## Lifetime vs. Case Temperature



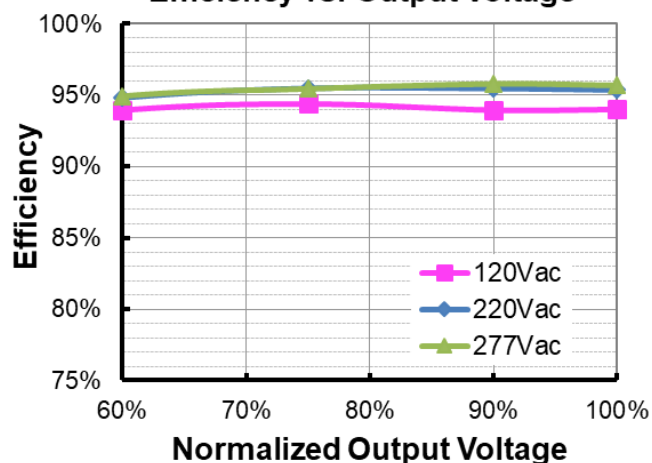
## Inrush Current Waveform



## Efficiency vs. Load

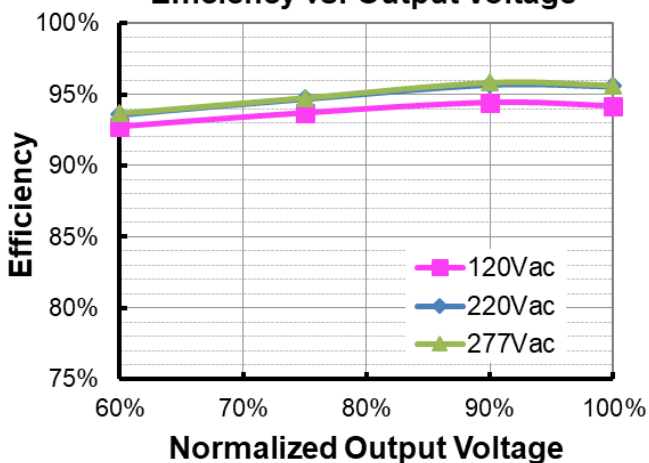
EUM-680S170Mx( $I_o=1250mA$ )

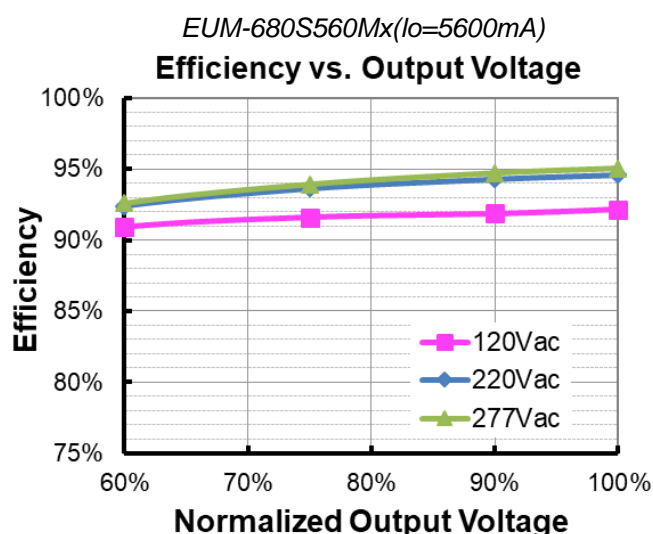
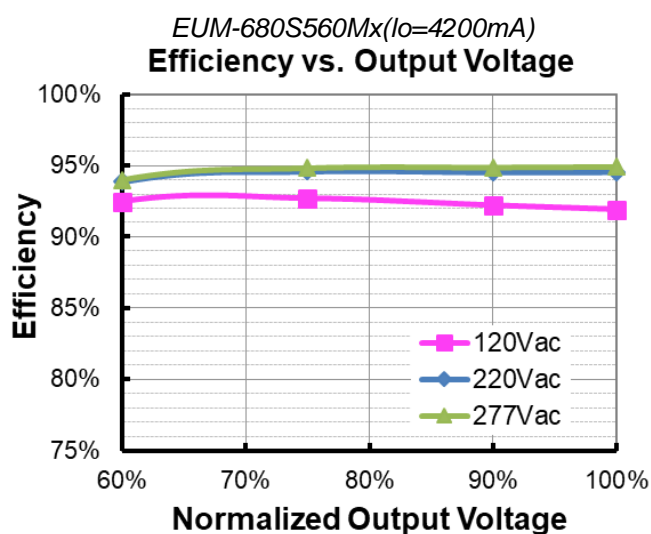
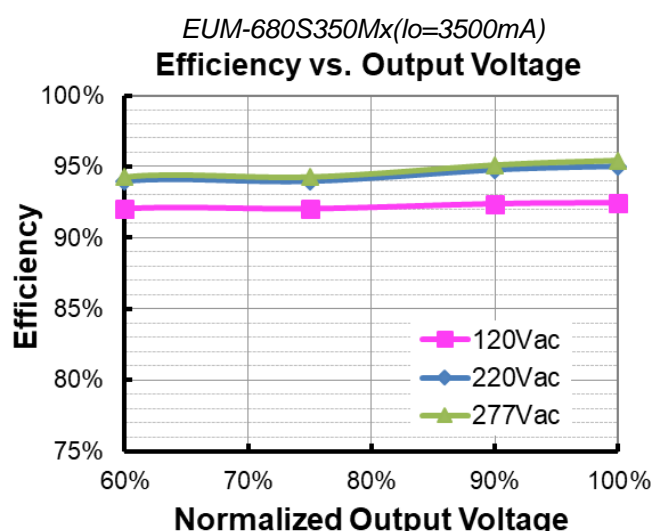
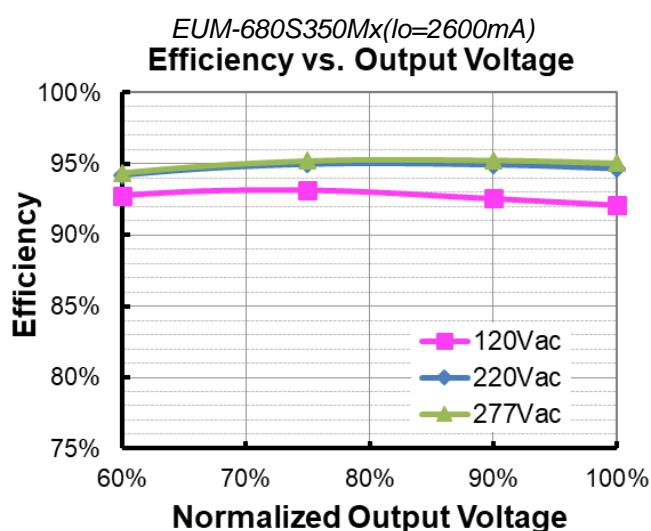
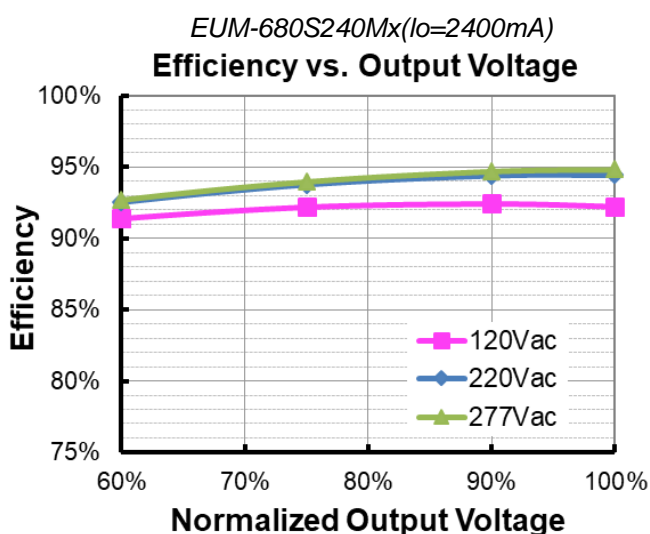
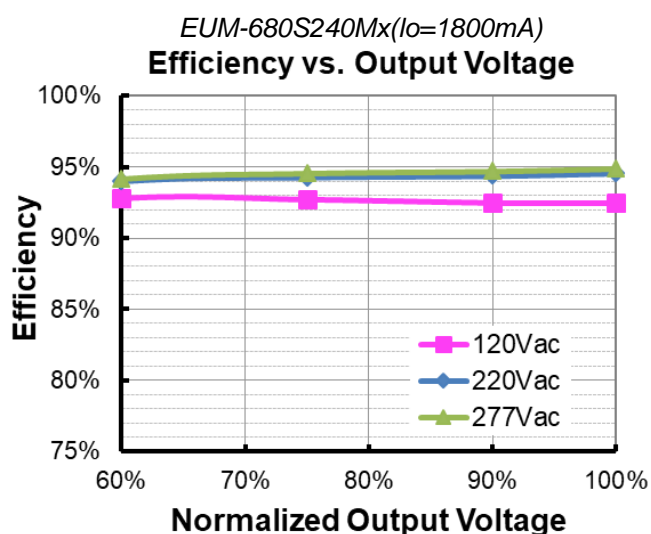
### Efficiency vs. Output Voltage

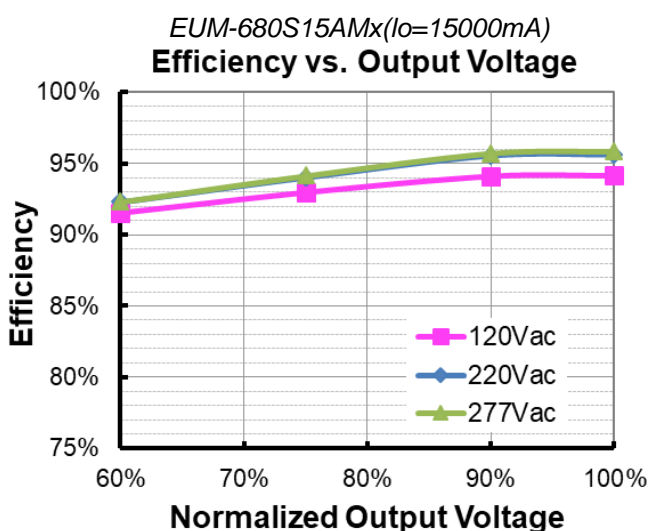
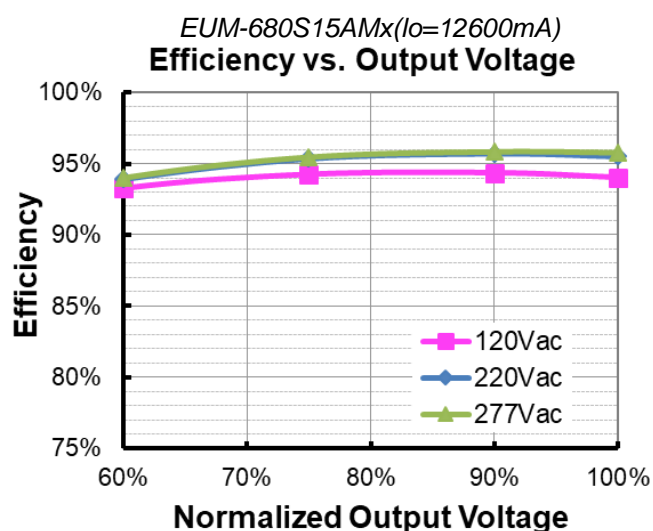
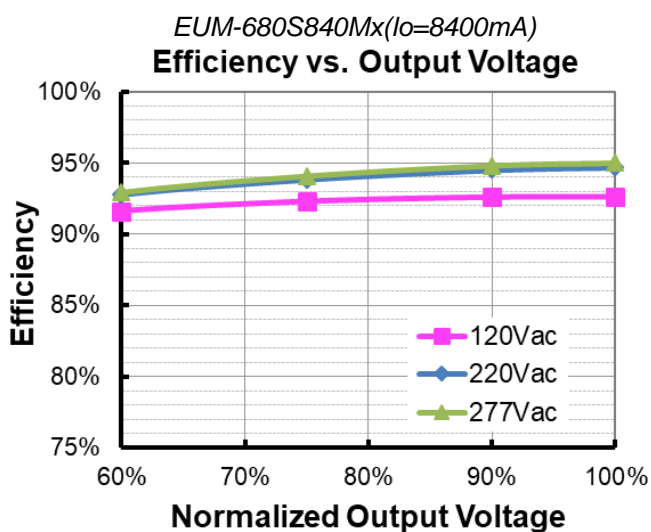
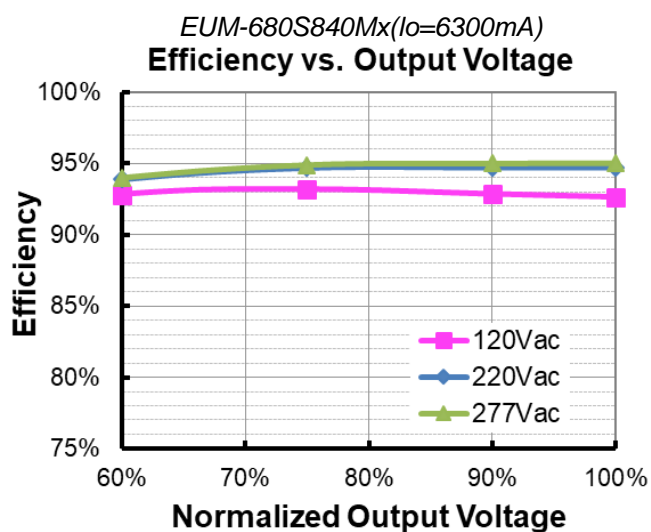


EUM-680S170Mx( $I_o=1700mA$ )

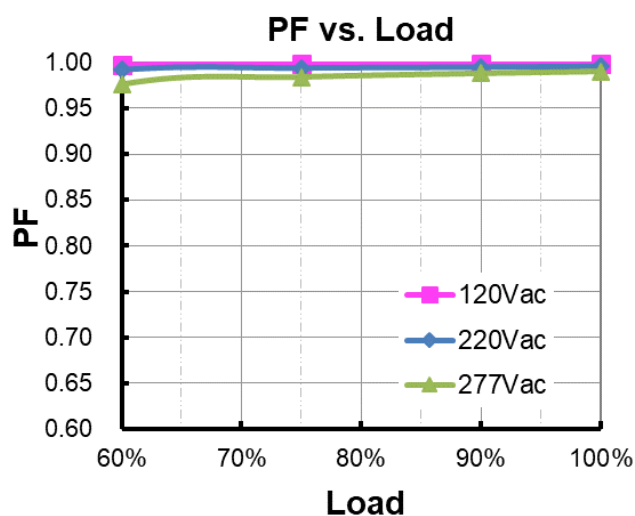
### Efficiency vs. Output Voltage



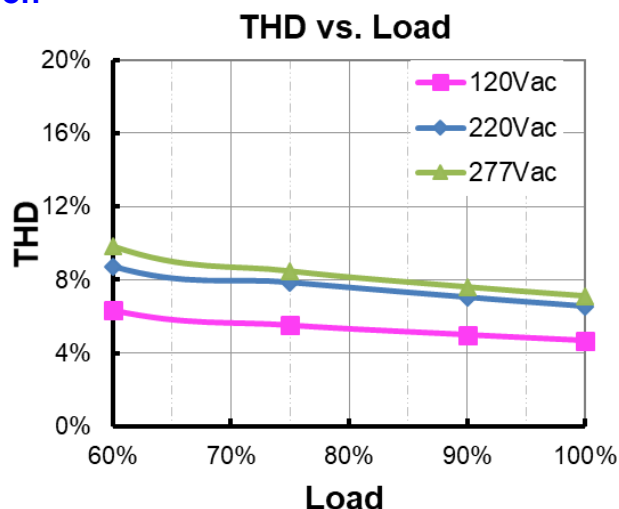




## Power Factor



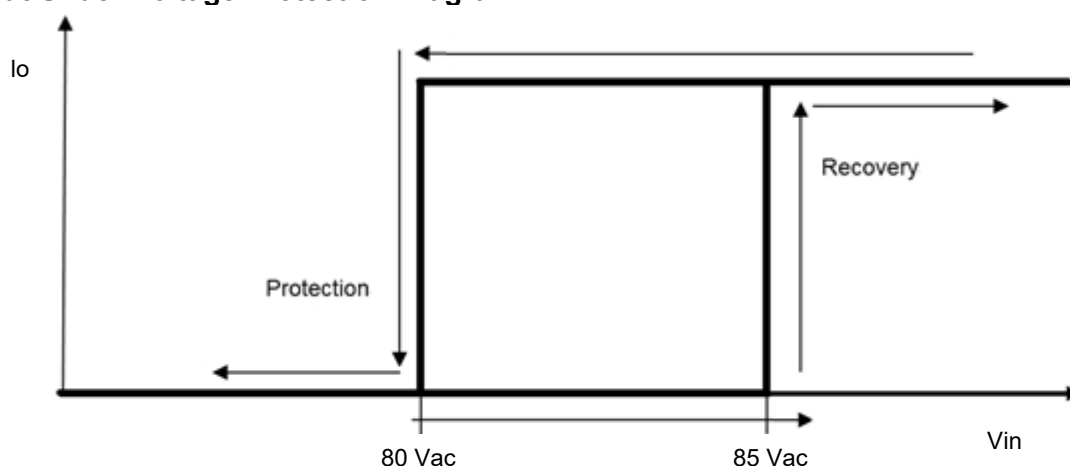
## Total Harmonic Distortion



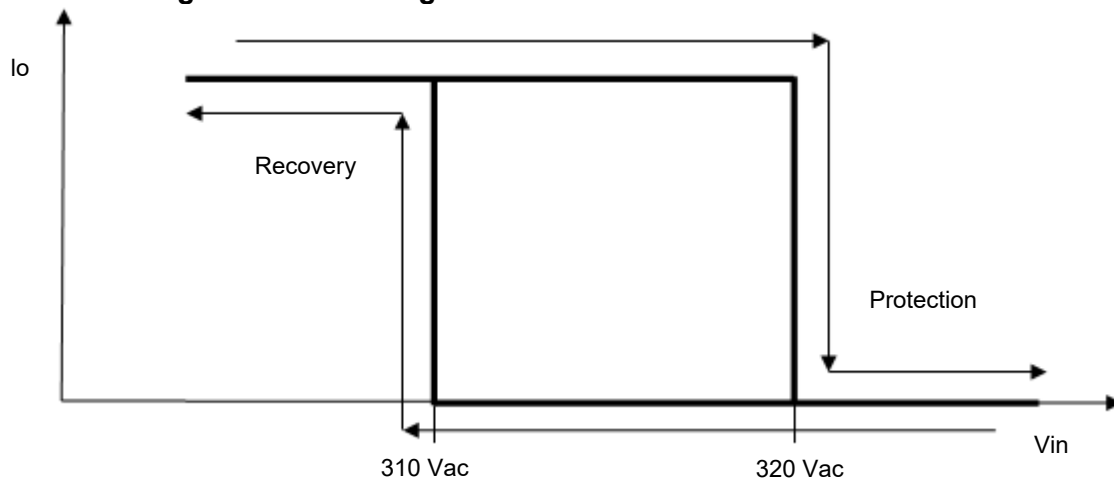
## Protection Functions

| Parameter                             |                               | Min.   | Typ.    | Max.    | Notes   |
|---------------------------------------|-------------------------------|--|---------|---------|---|
| Over Temperature Protection           |                               | Decreases output current, returning to normal after over temperature is removed.   |         |         |   |
| Short Circuit Protection              |                               | Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed. |         |         |   |
| Over Voltage Protection               |                               | Limits output voltage at no load and in case the normal voltage limit fails.   |         |         |   |
| Input Under Voltage Protection (IUVP) | Input Protection Voltage      | 70 Vac   | 80 Vac  | 90 Vac  | Turn off the output when the input voltage falls below protection voltage.                  |
|                                       | Input Recovery Voltage        | 75 Vac   | 85 Vac  | 95 Vac  | Auto Recovery. The driver will restart when the input voltage exceeds recovery voltage.     |
| Input Over Voltage Protection (IOVP)  | Input Over Voltage Protection | 310 Vac  | 320 Vac | 330 Vac | Turn off the output when the input voltage exceeds protection voltage.                      |
|                                       | Input Over Voltage Recovery   | 300 Vac  | 310 Vac | 320 Vac | Auto Recovery. The driver will restart when the input voltage falls below recovery voltage. |
|                                       | Max. of Input Over Voltage    | -  | -       | 350 Vac | The driver can survive for 8 hours with a stable input voltage stress of 350Vac.            |

### ● Input Under Voltage Protection Diagram



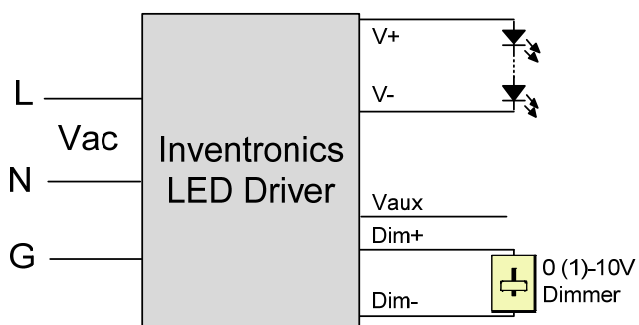
## ● Input Over Voltage Protection Diagram



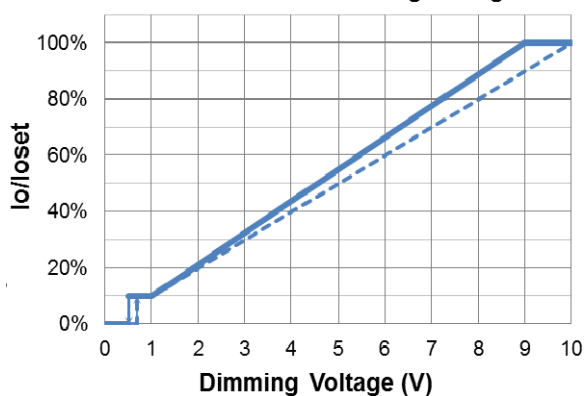
## Dimming

### ● 0-10V Dimming

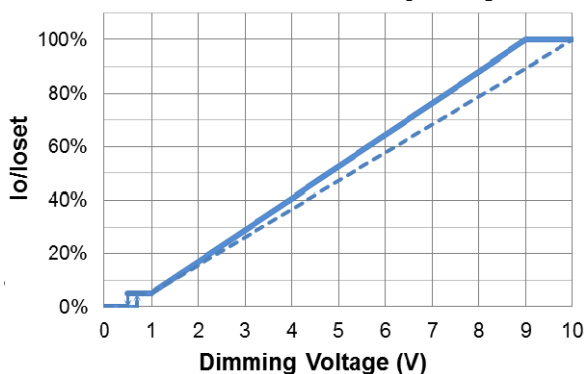
The recommended implementation of the dimming control is provided below.



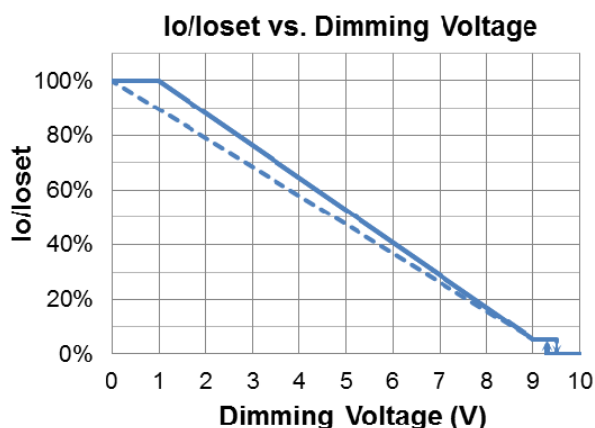
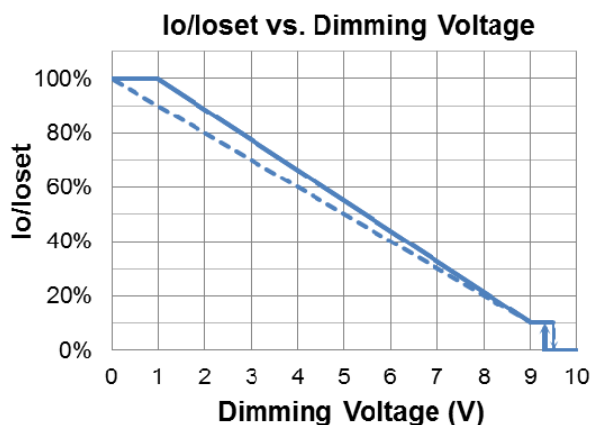
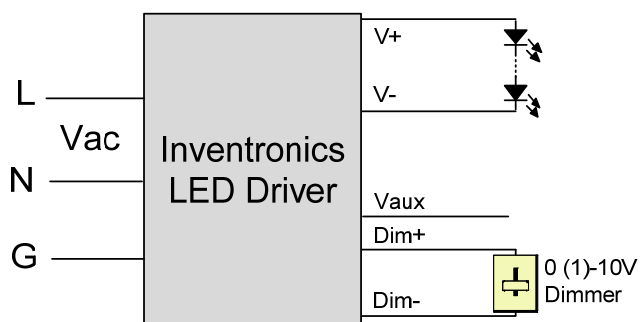
$I_o/I_{o\text{set}}$  vs. Dimming Voltage



$I_o/I_{o\text{set}}$  vs. Dimming Voltage



### Implementation 1: Positive logic



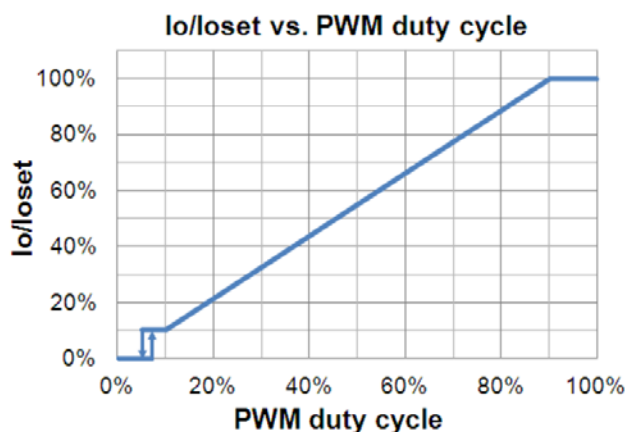
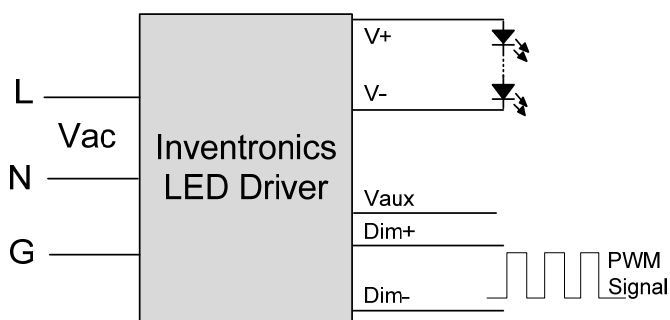
## Implementation 2: Negative logic

### Notes:

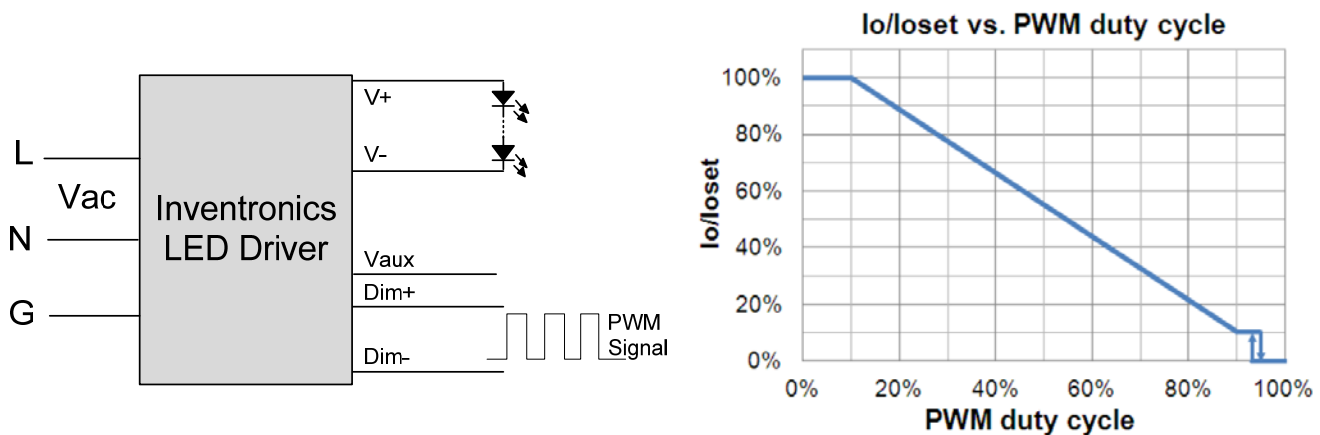
1. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
2. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like zener.
3. When 0-10V negative logic dimming mode and Dim+ is open, the driver will dim to off and be standby.

### ● PWM Dimming

The recommended implementation of the dimming control is provided below.



## Implementation 3: Positive logic



Implementation 4: Negative logic

## Notes:

1. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
2. When PWM negative logic dimming mode and Dim+ is open, the driver will dim to off and be standby.

## ● Time Dimming

Time dimming control includes 3 kinds of modes, they are Self Adapting-Midnight, Self Adapting-Percentage and Traditional Timer.

- **Self Adapting-Midnight:** Automatically adjusts the dimming curve based on the on-time of past two days (if difference <15 minutes), assuming that the center point of the dimming curve is midnight local time.
- **Self Adapting-Percentage:** Automatically adjusts the on-time of each step by a constant percentage = (actual on-time for the past 2 days if difference <15 min) / (programmed on-time from the dimming curve).
- **Traditional Timer:** Follows the programmed timing curve after power on with no changes.

## ● Output Lumen Compensation

Output Lumen Compensation (OLC) may be used to maintain constant light output over the life of the LEDs by driving them at a reduced current when new, then gradually increasing the drive current over time to counteract LED lumen degradation.

## ● Minimum Dimming Level with 5% or 10% Selectable

The minimum dimming level can be set as 5% or 10% by Inventronics Multi Programmer, 10% is default.

## ● Maximum Dimming Level with 9V or 10V Selectable

The maximum dimming level can be set as corresponding dimming voltage is 9V or 10V by Inventronics Multi Programmer, 9V is default.

## ● Fade Time Adjustable

Soft-start time and dimming slope can be adjusted by Inventronics Multi Programmer to get customized fade time experience, disable mode is default.

## ● End Of Life

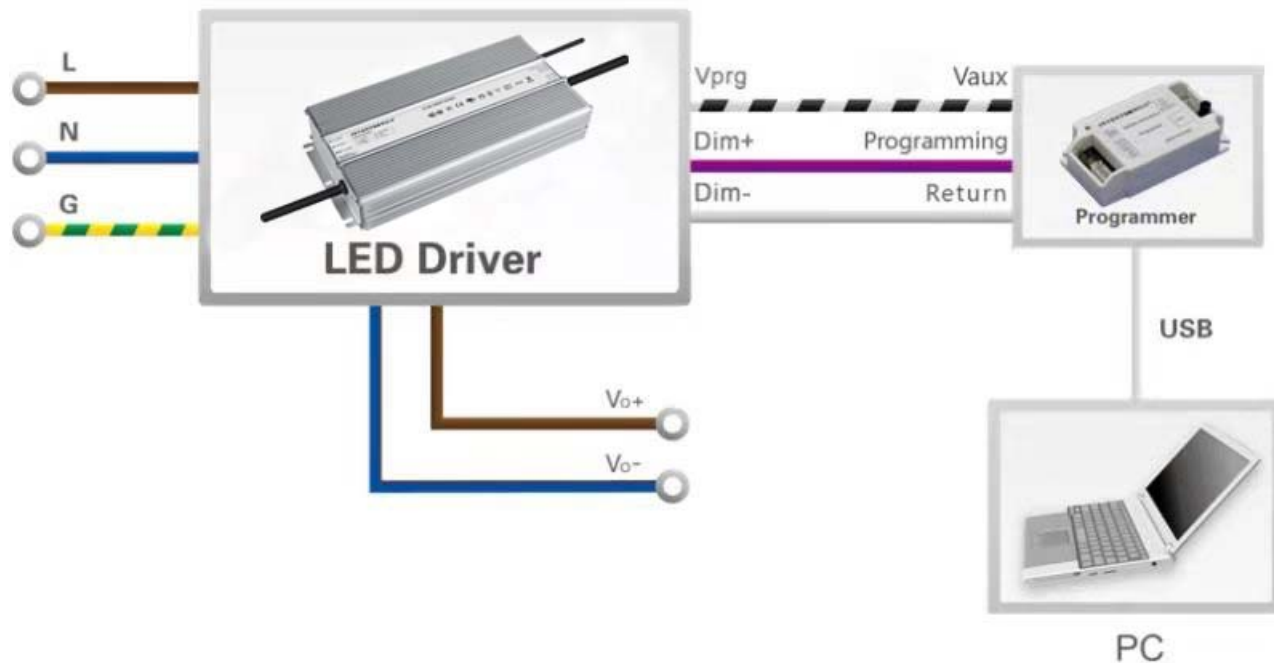
End-of-Life (EOL) is providing a visual notification to a user that the LED module has reached the end of manufacturer-specified life and that the replacement is recommended. Once active, an indication is given at each power-up of the driver, which the driver indicates this through a lower light output during the first 1 minute before normal operation is continued.

## ● Digital Dimming

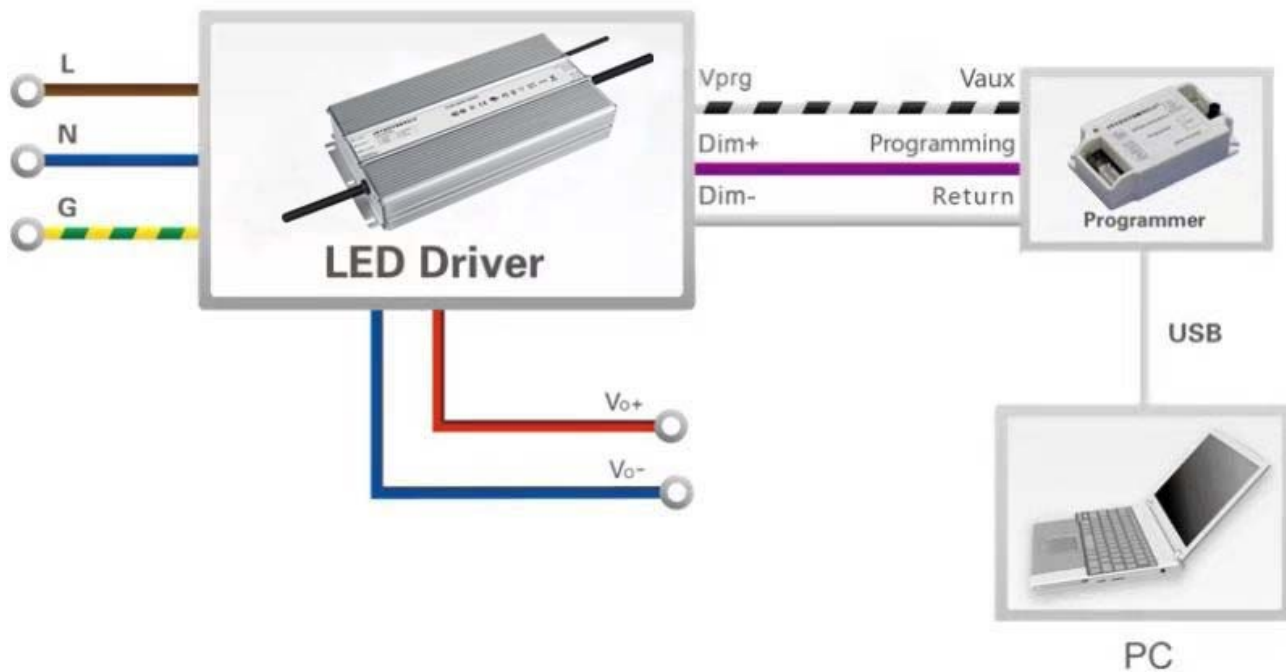
Inventronics Digital Dimming is a UART (Universal Asynchronous Receive Transmitter) based communication protocol. Please refer to [Inventronics Digital Dimming](#) file for details

## Programming Connection Diagram

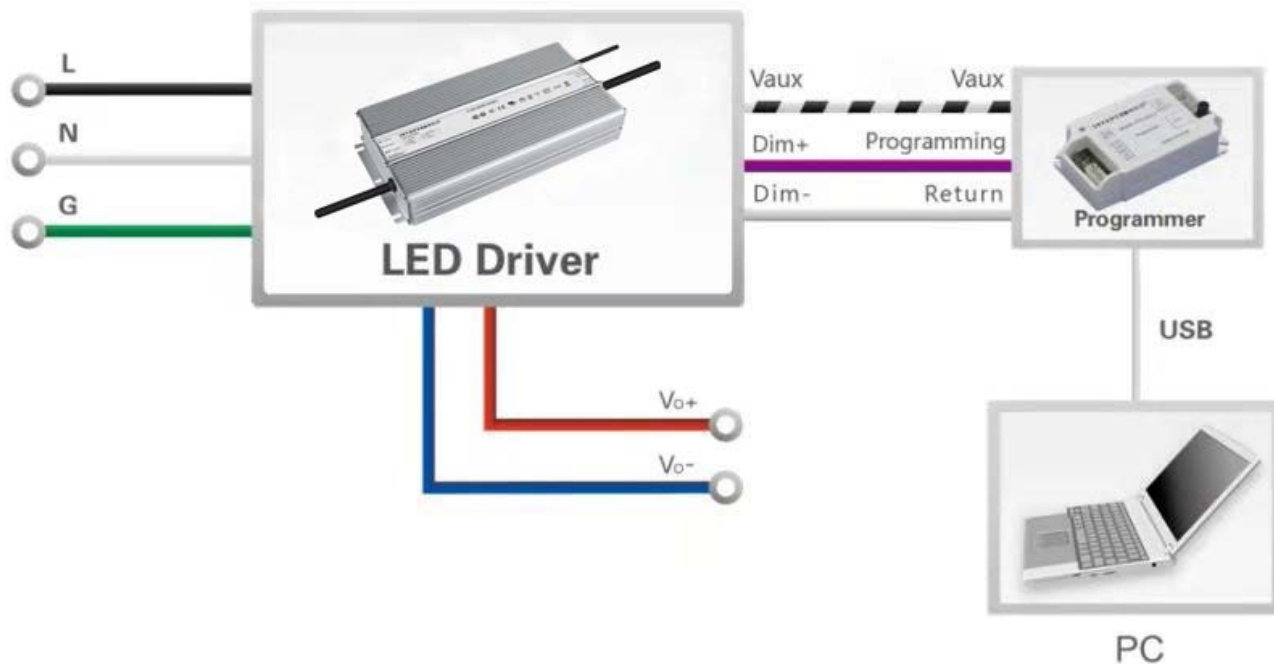
EUM-680S170/240/350/560/840MG



EUM-680S15AMG



## EUM-680SxxxMT

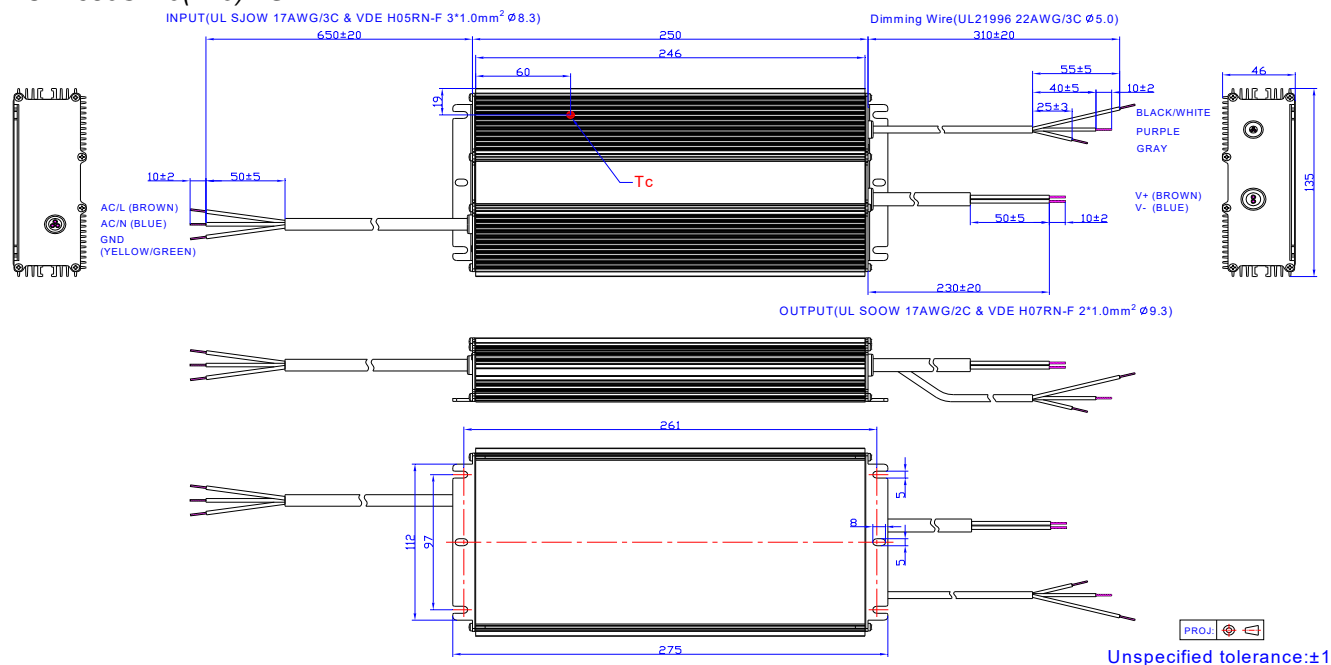


**Note:** The driver does not need to be powered on during the programming process.

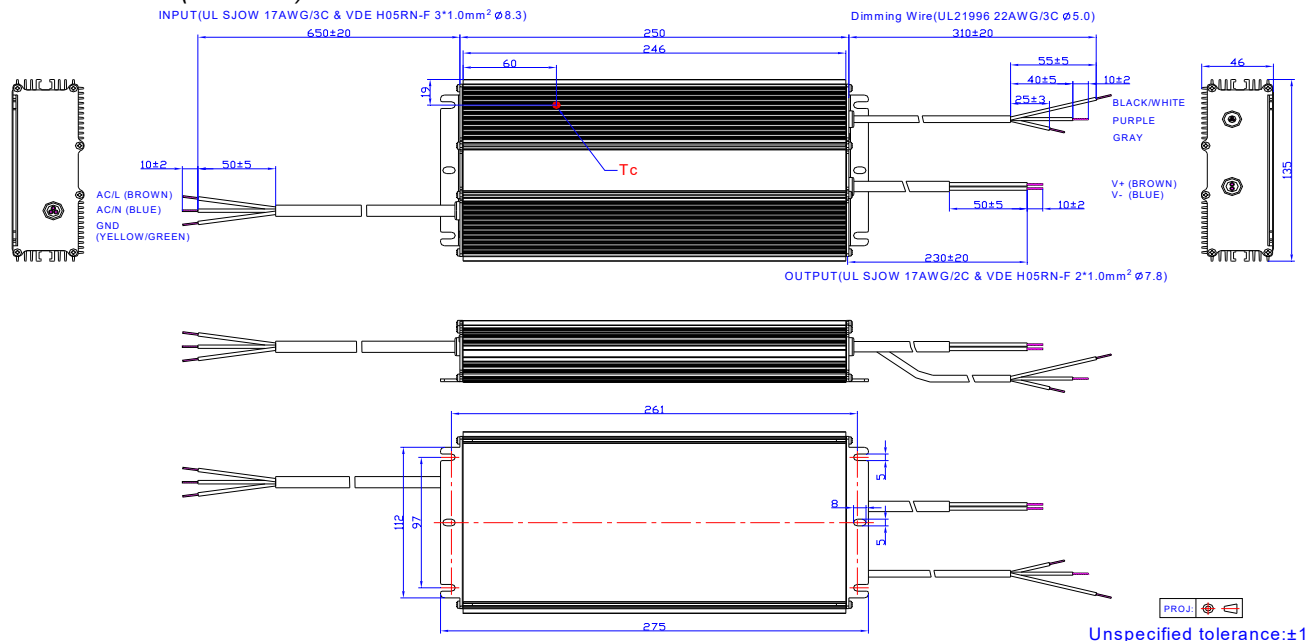
- Please refer to [PRG-MUL2](#) (Programmer) datasheet for details.

## Mechanical Outline

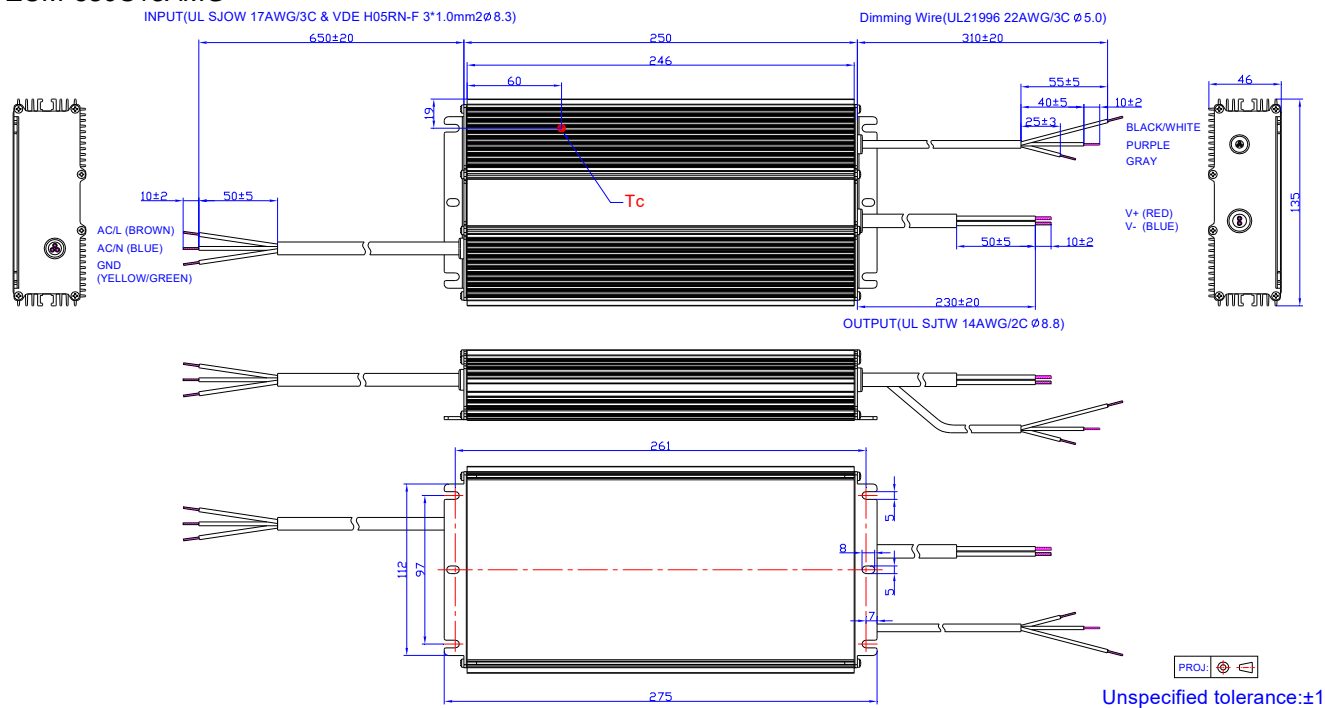
### EUM-680S170(240)MG



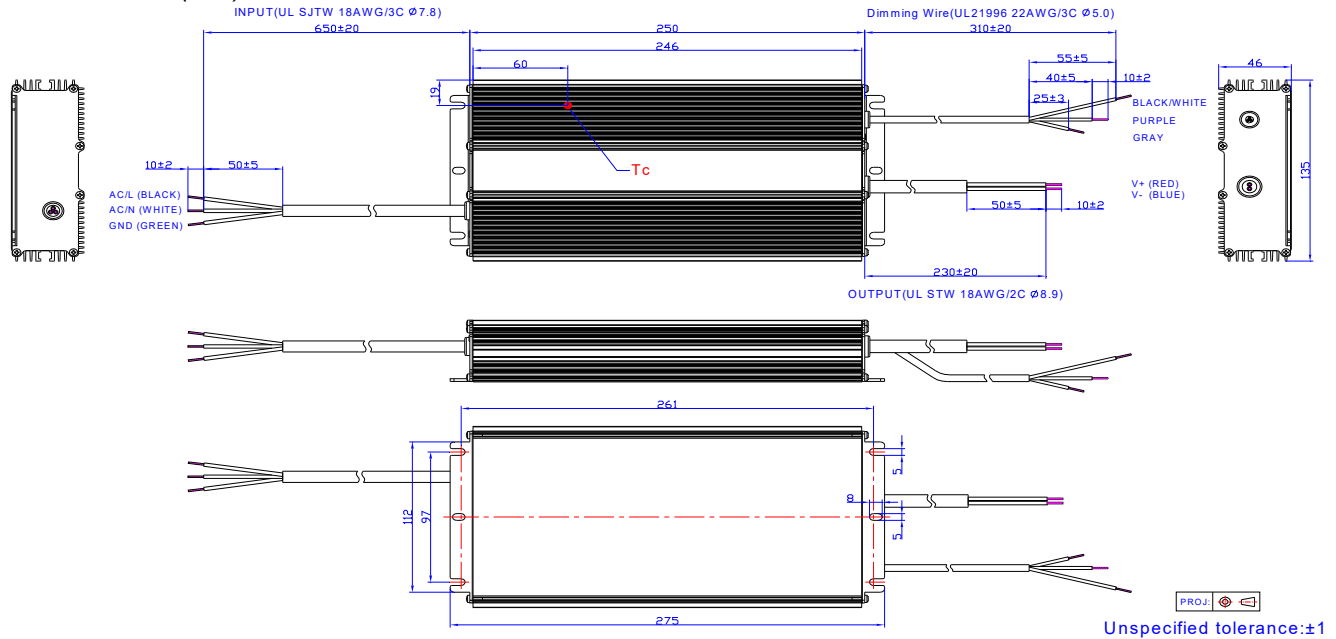
## EUM-680S350(560&840)MG



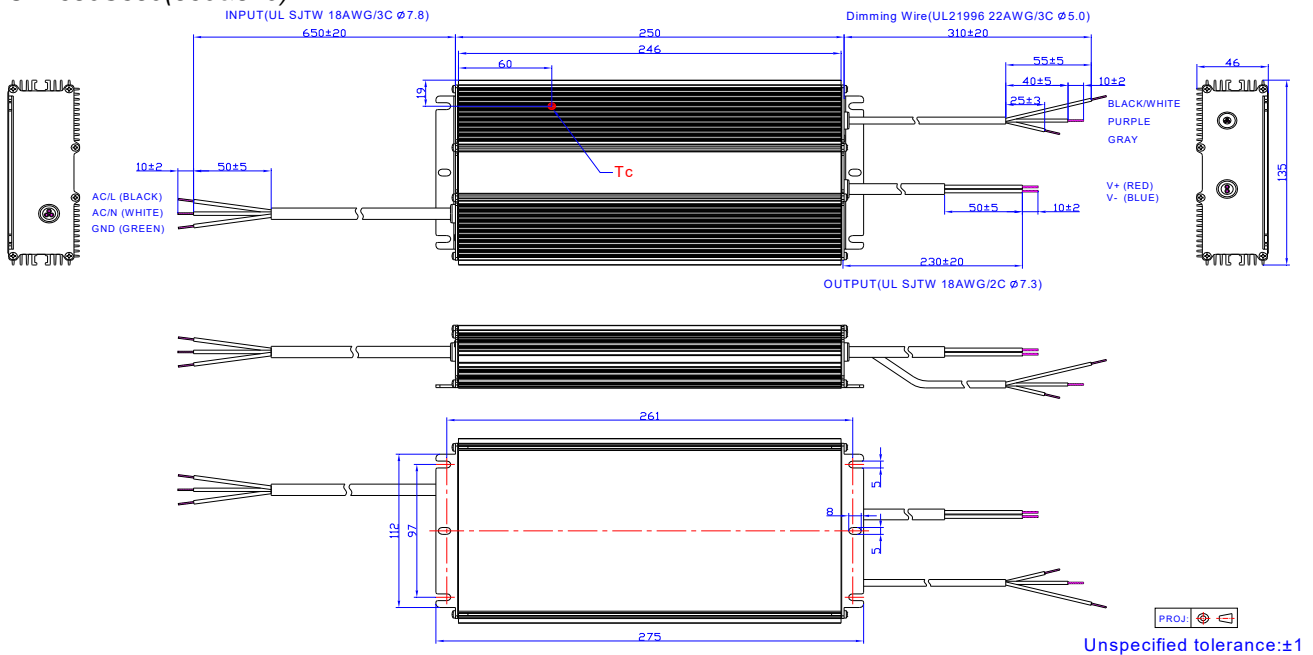
## EUM-680S15AMG



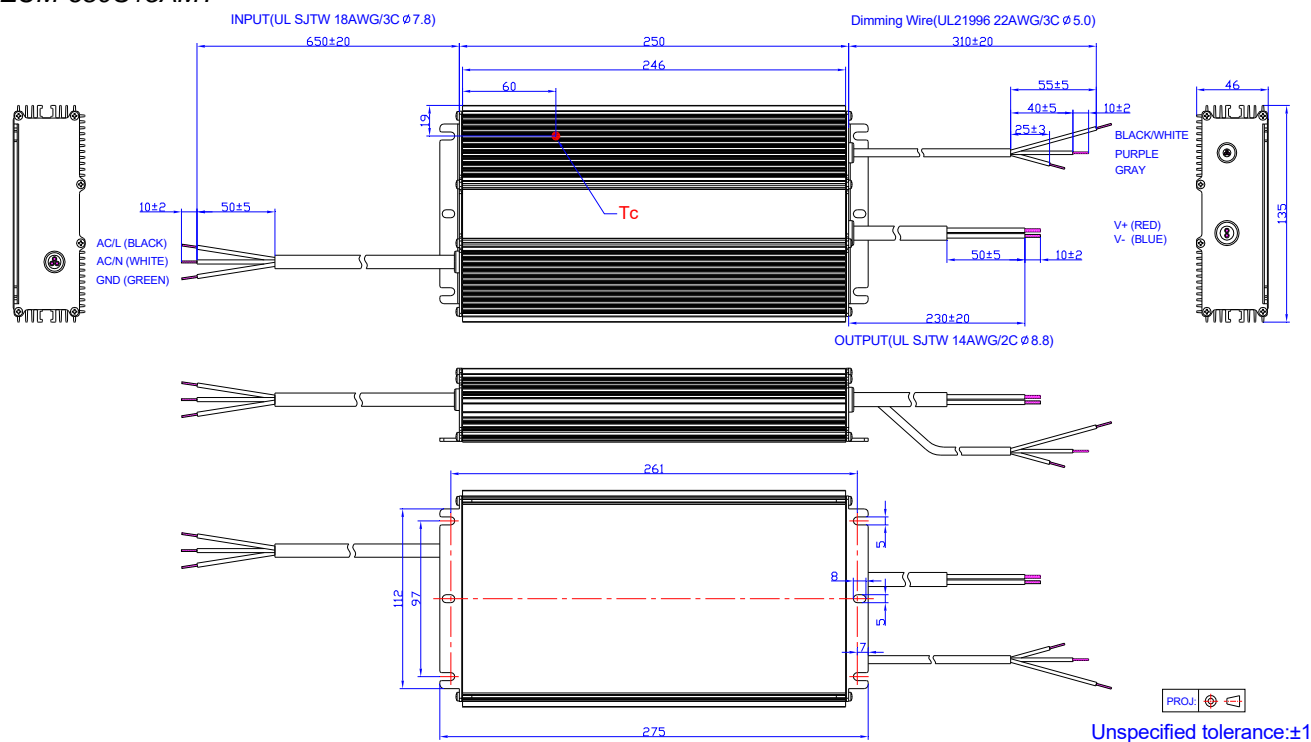
**EUM-680S170(240)MT**



**EUM-680S350(560&840)MT**



*EUM-680S15AMT*



## RoHS Compliance

Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU, calling for the elimination of lead and other hazardous substances from electronic products..

## Revision History

| Change Date | Rev. | Description of Change |      |    |
|-------------|------|-----------------------|------|----|
|             |      | Item                  | From | To |
| 2021-07-02  | A    | Datasheet Release     |      |    |