

## Features

- Full Power at Wide Output Current Range (Constant Power)
- Adjustable Output Current (AOC) with Programmability
- Isolated 1-5V/1-10V/10V PWM/3-Timer-Modes Dimmable
- Output Lumen Compensation
- Input Surge Protection: DM 6kV, CM 10kV
- All-Around Protection: OVP, SCP, OTP
- IP66/IP67
- SELV Output
- Suitable for Luminaires with Protection Class I and II
- 5 Years Warranty



## Description

The *EUM-240SxxxDE* series is a 240W, constant-current, programmable and IP66/IP67 rated LED driver that operates from 90-305Vac input with excellent power factor. It is created for many lighting applications including high bay, high mast and roadway etc. 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, 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 (4)
							120Vac	220Vac	
53-700mA	530-700mA	530 mA	90~305 Vac/ 127~300 Vdc	171~453Vdc	240 W	94.0%	0.99	0.96	EUM-240S070DE
70-1050mA	700-1050mA	700 mA	90~305 Vac/ 127~300 Vdc	115~343Vdc	240 W	94.0%	0.99	0.96	EUM-240S105DE
105-1500mA	1050-1500mA	1050 mA	90~305 Vac/ 127~300 Vdc	80~229 Vdc	240 W	93.5%	0.99	0.96	EUM-240S150DE
215-3500mA	2150-3500mA	2150 mA	90~305 Vac/ 127~300 Vdc	35~111 Vdc	240 W	93.0%	0.99	0.96	EUM-240S350DE <sup>(5)</sup>
420-6700mA	4200-6700mA	4900 mA	90~305 Vac/ 127~300 Vdc	18~57 Vdc	240 W	92.5%	0.99	0.96	EUM-240S670DE <sup>(5)</sup>

**Notes:** (1) Output current range with constant power at 240W

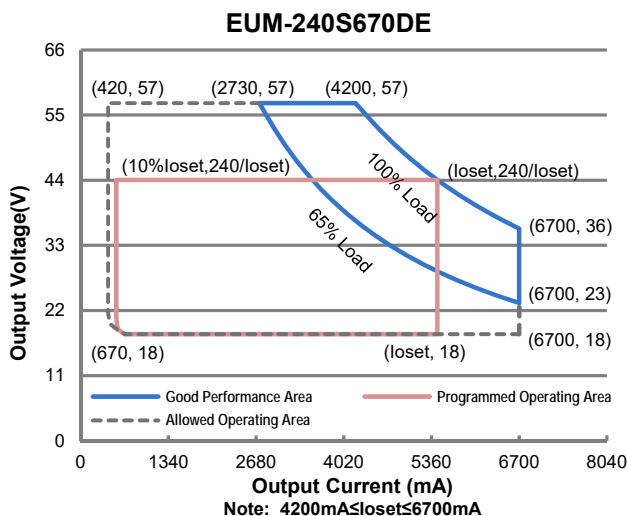
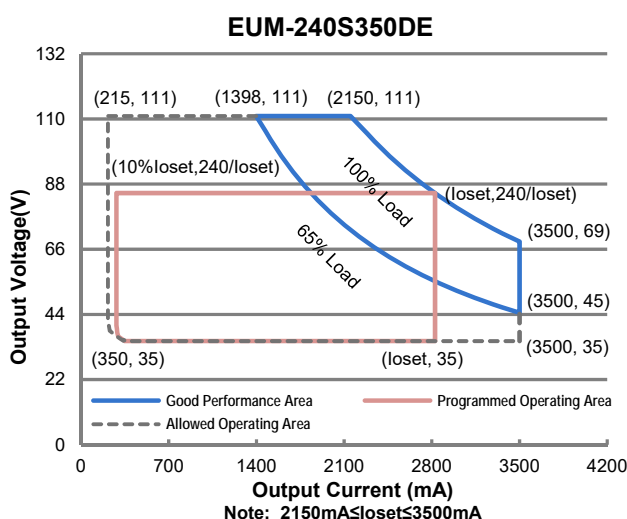
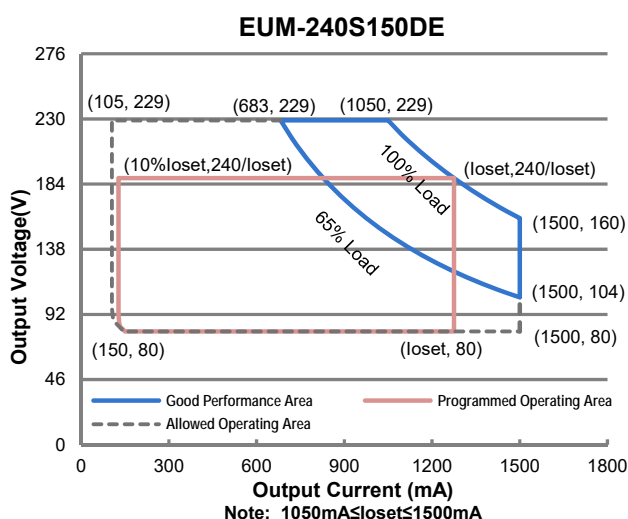
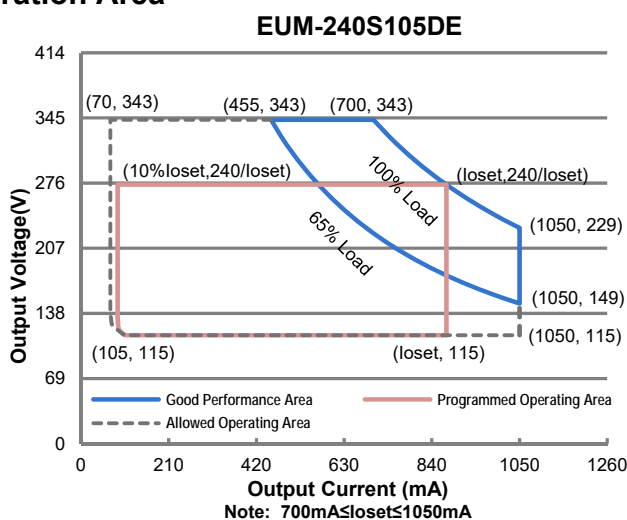
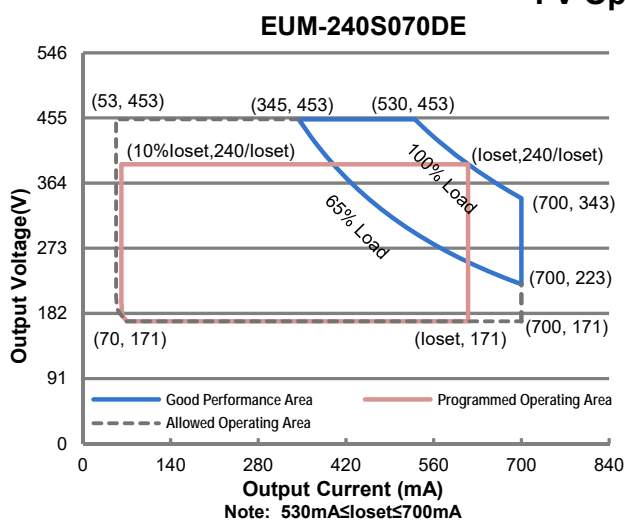
(2) Certified input voltage range: 100-240Vac.

(3) Measured at 100% load and 220Vac input (see below "General Specifications" for details).

(4) All the models are certificated to KS, except EUM-240S070DE and EUM-240S105DE.

(5) SELV output

## I-V Operation 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	-	-	0.70 mA	IEC 60598-1; 240Vac/ 60Hz
Input AC Current	-	-	2.45 A	Measured at 100% load and 120 Vac input.
	-	-	1.30 A	Measured at 100% load and 220 Vac input.
Inrush Current(I <sup>2</sup> t)	-	-	5.43 A <sup>2</sup> s	At 220Vac input, 25°C cold start, duration=1.34 ms, 10%I <sub>pk</sub> -10%I <sub>pk</sub> . See Inrush Current Waveform for the details.
PF	0.9	-	-	At 100-277Vac, 50-60Hz, 65%-100% Load (156-240W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100% Load (180-240W)

## Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%loset	-	5%loset	At 100% load condition
Output Current Setting(I <sub>o</sub> set) Range				
EUM-240S070DE	53 mA	-	700 mA	
EUM-240S105DE	70 mA	-	1050 mA	
EUM-240S150DE	105 mA	-	1500 mA	
EUM-240S350DE	215 mA	-	3500 mA	
EUM-240S670DE	420 mA	-	6700 mA	
Output Current Setting Range with Constant Power				
EUM-240S070DE	530 mA	-	700 mA	
EUM-240S105DE	700 mA	-	1050 mA	
EUM-240S150DE	1050 mA	-	1500 mA	
EUM-240S350DE	2150 mA	-	3500 mA	
EUM-240S670DE	4200 mA	-	6700 mA	
Total Output Current Ripple (pk-pk)	-	5%I <sub>omax</sub>	10%I <sub>omax</sub>	At 100% load condition. 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%I <sub>omax</sub>	-	At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%I <sub>omax</sub>	At 100% load condition
No Load Output Voltage				
EUM-240S070DE	-	-	500 V	
EUM-240S105DE	-	-	380 V	
EUM-240S150DE	-	-	260 V	
EUM-240S350DE	-	-	120 V	
EUM-240S670DE	-	-	70 V	
Line Regulation	-	-	±0.5%	Measured at 100% load

## Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Load Regulation	-	-	± 1.5%	
Turn-on Delay Time	-	-	0.5 s	Measured at 120-277Vac input, 65%-100% Load
Temperature Coefficient of Isot	-	0.03%/°C	-	Case temperature = 0°C ~Tc max

## General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input: EUM-240S070DE				Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Io= 530 mA	89.0%	91.0%	-	
Io= 700 mA	89.0%	91.0%	-	
EUM-240S105DE				
Io= 700 mA	89.0%	91.0%	-	
Io=1050 mA	89.0%	91.0%	-	
EUM-240S150DE				
Io=1050 mA	89.0%	91.0%	-	
Io=1500 mA	89.0%	91.0%	-	
EUM-240S350DE				
Io=2150 mA	88.0%	90.0%	-	
Io=3500 mA	88.0%	90.0%	-	
EUM-240S670DE				
Io=4200 mA	87.5%	89.5%	-	
Io=6700 mA	87.0%	89.0%	-	
Efficiency at 220 Vac input: EUM-240S070DE				Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Io= 530 mA	92.0%	94.0%	-	
Io= 700 mA	92.0%	94.0%	-	
EUM-240S105DE				
Io= 700 mA	92.0%	94.0%	-	
Io=1050 mA	92.0%	94.0%	-	
EUM-240S150DE				
Io=1050 mA	91.5%	93.5%	-	
Io=1500 mA	91.5%	93.5%	-	
EUM-240S350DE				
Io=2150 mA	91.0%	93.0%	-	
Io=3500 mA	91.0%	93.0%	-	
EUM-240S670DE				
Io=4200 mA	90.5%	92.5%	-	
Io=6700 mA	90.0%	92.0%	-	
Efficiency at 277 Vac input: EUM-240S070DE				Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Io= 530 mA	92.5%	94.5%	-	
Io= 700 mA	92.5%	94.5%	-	
EUM-240S105DE				
Io= 700 mA	92.5%	94.5%	-	
Io=1050 mA	92.5%	94.5%	-	
EUM-240S150DE				
Io=1050 mA	92.0%	94.0%	-	
Io=1500 mA	92.0%	94.0%	-	
EUM-240S350DE				
Io=2150 mA	91.5%	93.5%	-	
Io=3500 mA	91.0%	93.0%	-	
EUM-240S670DE				
Io=4200 mA	91.0%	93.0%	-	
Io=6700 mA	90.0%	92.0%	-	

## General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
MTBF	-	228,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	100,000 Hours	-	Measured at 220Vac input, 80%Load and 70°C case temperature; See lifetime vs. Tc curve for the details
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 Humidity: 10% RH to 95% RH;
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 95%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	8.11 × 2.36 × 1.52 206 × 60 × 38.5			With mounting ear 8.78 × 2.36 × 1.52 223 × 60 × 38.5
Net Weight	-	960 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 μA	300 μA	450 μA	Vdim(+) = 0 V
Dimming Output Range	EUM-240S070DE EUM-240S105DE EUM-240S150DE EUM-240S350DE EUM-240S670DE	10%loset	-	loset	530 mA≤ loiset ≤ 700mA 700 mA ≤ loiset ≤ 1050 mA 1050 mA ≤ loiset ≤ 1500 mA 2150 mA ≤ loiset ≤ 3500 mA 4200 mA ≤ loiset ≤ 6700 mA
	EUM-240S070DE EUM-240S105DE EUM-240S150DE EUM-240S350DE EUM-240S670DE	53 mA 70 mA 105 mA 215 mA 420 mA	-	loset	53 mA ≤ loiset ≤ 530 mA 70 mA ≤ loiset < 700 mA 105 mA ≤ loiset < 1050 mA 215 mA ≤ loiset < 2150 mA 420 mA ≤ loiset < 4200 mA
Recommended Dimming Range for 1-5V		0.25 V	-	4.75 V	Dimming mode set to 1-5V in PC interface.
Recommended Dimming Range for 1-10V		1 V	-	9 V	Default 1-10V dimming mode with positive logic.
PWM_in High Level		-	10V	-	
PWM_in Low Level		-	0V	-	
PWM_in Frequency Range		200 Hz	-	2 KHz	
PWM_in Duty Cycle		0%	-	100%	

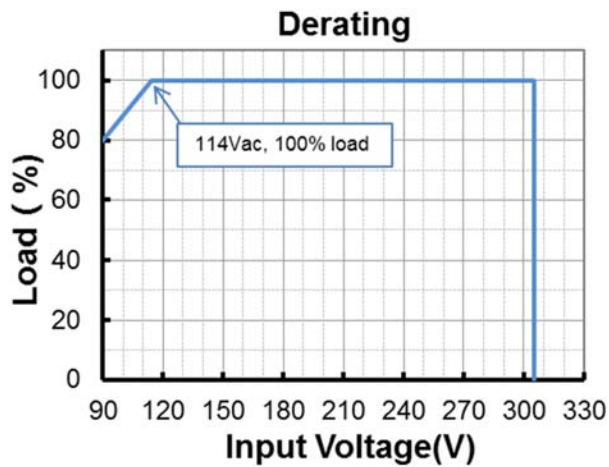
## Safety & EMC Compliance

Safety Category	Standard
ENEC & CE	EN 61347-1 <sup>(1)</sup> , EN 61347-2-13
UKCA	BS EN 61347-1 <sup>(1)</sup> , BS EN 61347-2-13
CB	IEC 61347-1 <sup>(1)</sup> , IEC 61347-2-13
KS	KS C 7655
Performance	Standard
ENEC	EN 62384
EMI Standards	Notes
BS EN/EN 55015 <sup>(2)</sup>	Conducted emission Test & Radiated emission Test
BS EN/EN 61000-3-2	Harmonic current emissions
BS EN/EN 61000-3-3	Voltage fluctuations & flicker
EMS Standards	Notes
BS EN/EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
BS EN/EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
BS EN/EN 61000-4-4	Electrical Fast Transient / Burst-EFT
BS EN/EN 61000-4-5	Surge Immunity Test: AC Power Line: Differential Mode 6 kV, Common Mode 10 kV
BS EN/EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
BS EN/EN 61000-4-8	Power Frequency Magnetic Field Test
BS EN/EN 61000-4-11	Voltage Dips
BS EN/EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

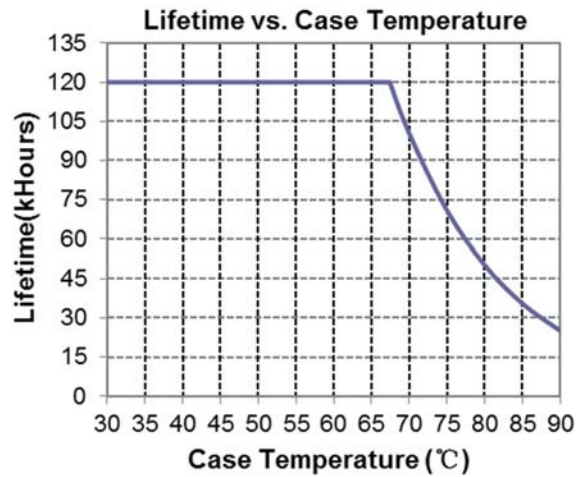
**Note:** (1) This product meets the requirements for IEC/BS EN/EN 61347-1(Class II), when the driver is energized, the allowed leakage current is perceptible but harmless.

(2) 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.

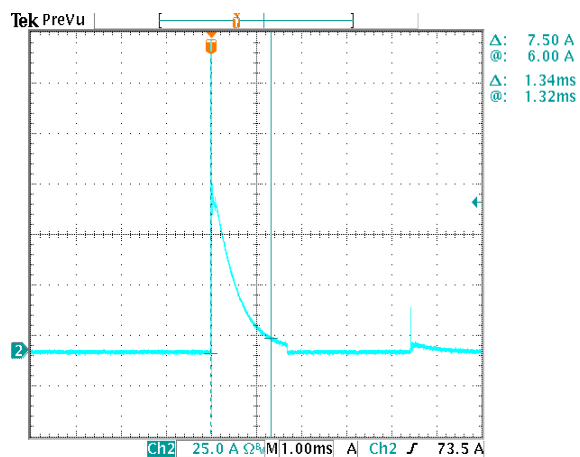
## Derating



## Lifetime vs. Case Temperature



## Inrush Current Waveform

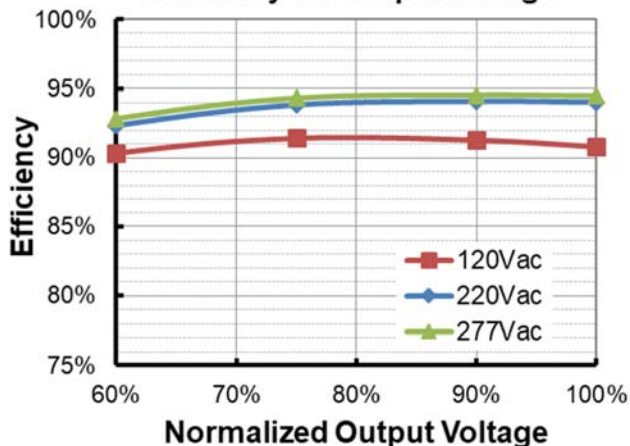




## Efficiency vs. Load

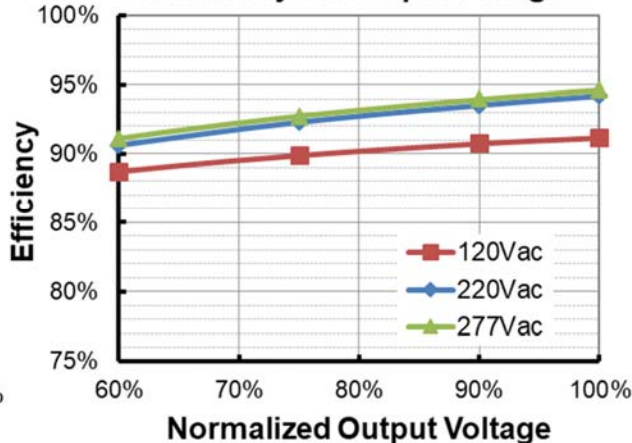
*EUM-240S070DE(I<sub>o</sub>=530mA)*

**Efficiency vs. Output Voltage**



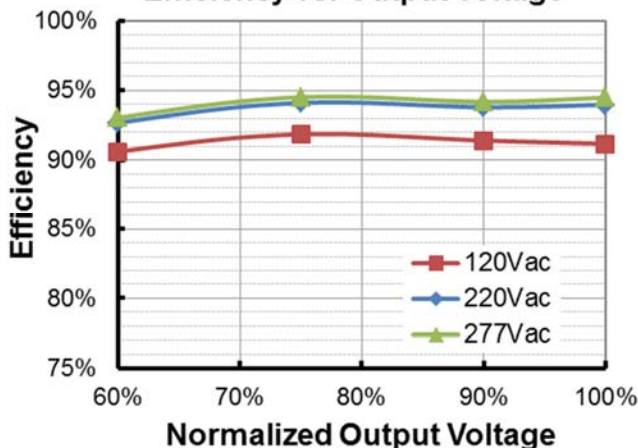
*EUM-240S070DE(I<sub>o</sub>=700mA)*

**Efficiency vs. Output Voltage**



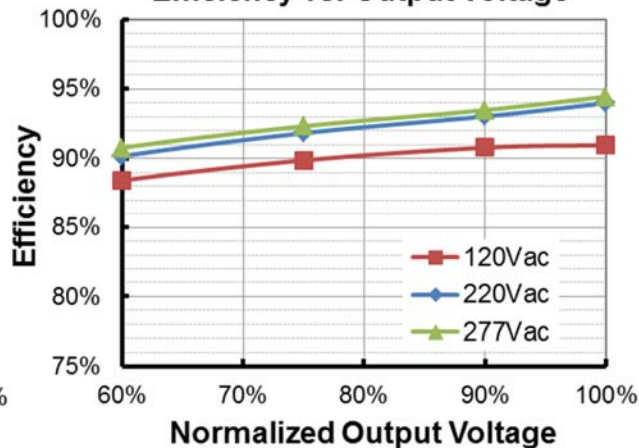
*EUM-240S105DE(I<sub>o</sub>=700mA)*

**Efficiency vs. Output Voltage**



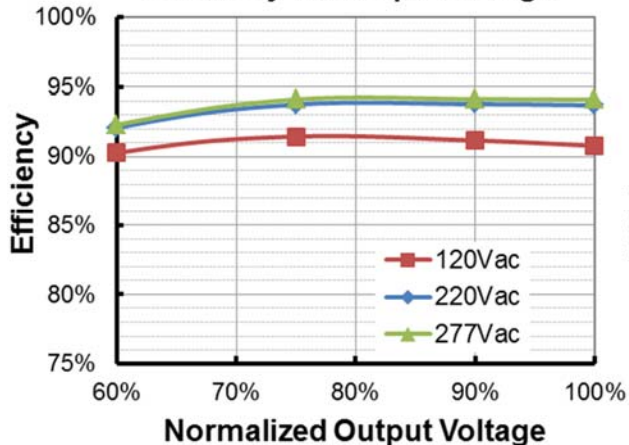
*EUM-240S105DE(I<sub>o</sub>=1050mA)*

**Efficiency vs. Output Voltage**



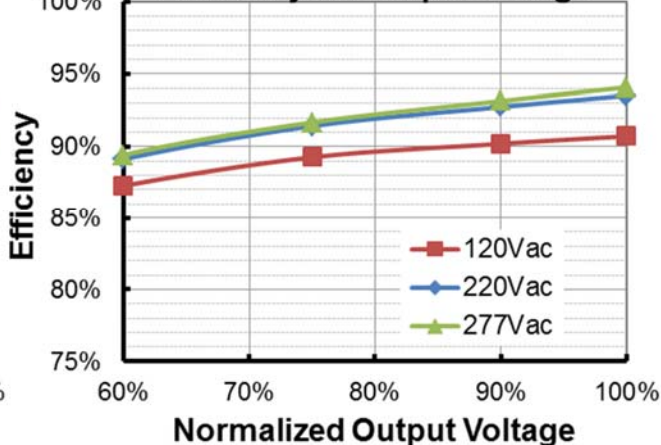
*EUM-240S150DE(I<sub>o</sub>=1050mA)*

**Efficiency vs. Output Voltage**



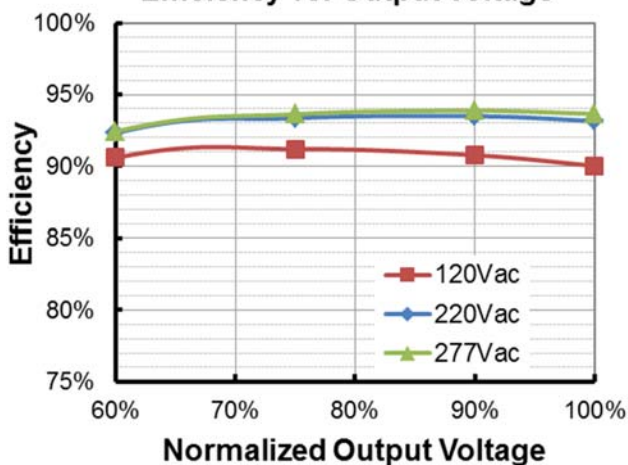
*EUM-240S150DE(I<sub>o</sub>=1500mA)*

**Efficiency vs. Output Voltage**

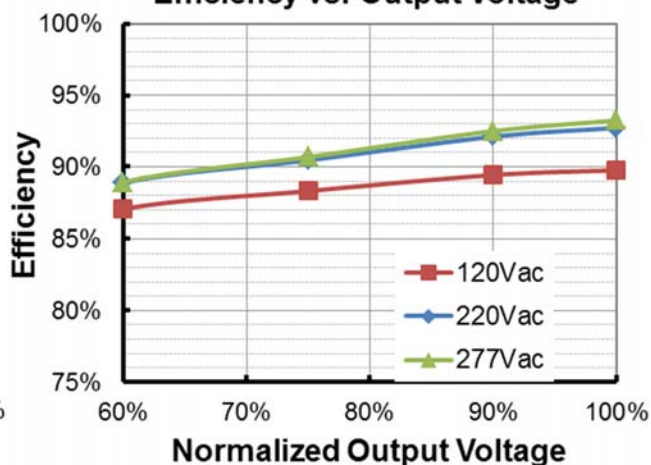




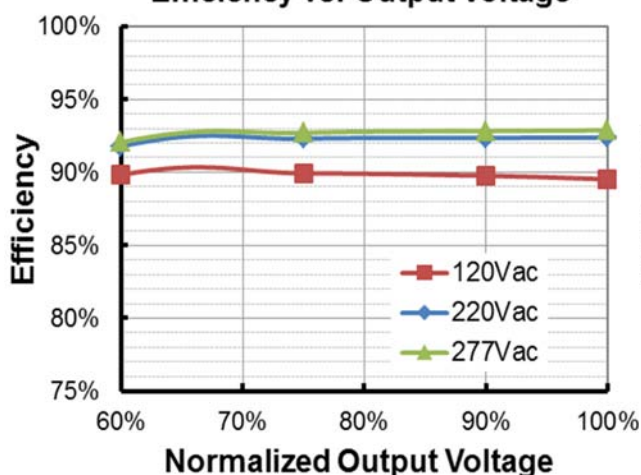
*EUM-240S350DE(I<sub>o</sub>=2150mA)*  
**Efficiency vs. Output Voltage**



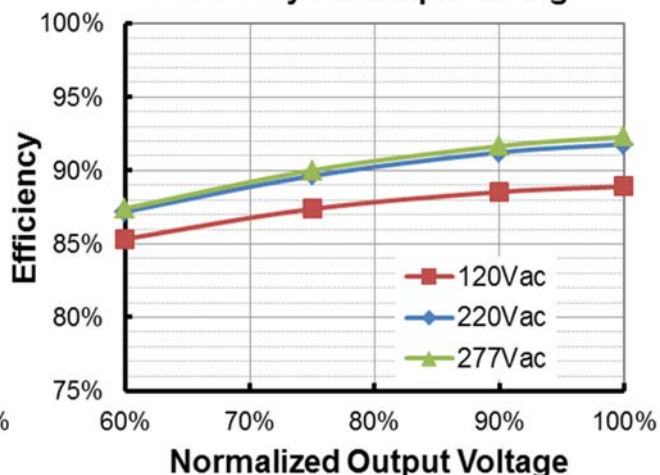
*EUM-240S350DE(I<sub>o</sub>=3500mA)*  
**Efficiency vs. Output Voltage**



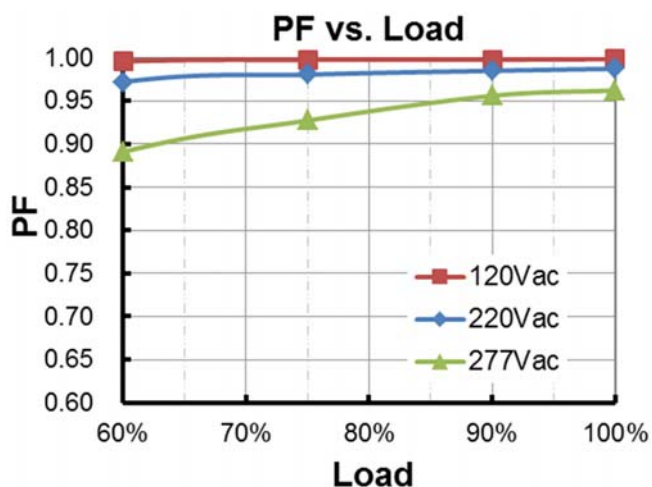
*EUM-240S670DE(I<sub>o</sub>=4200mA)*  
**Efficiency vs. Output Voltage**



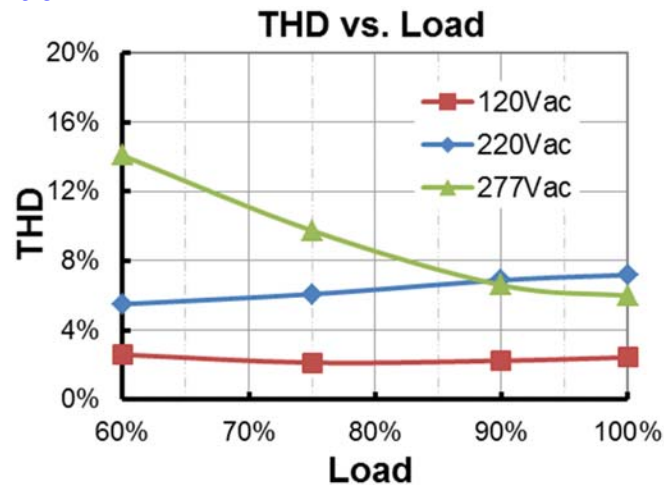
*EUM-240S670DE(I<sub>o</sub>=6700mA)*  
**Efficiency vs. Output Voltage**



## Power Factor



## Total Harmonic Distortion



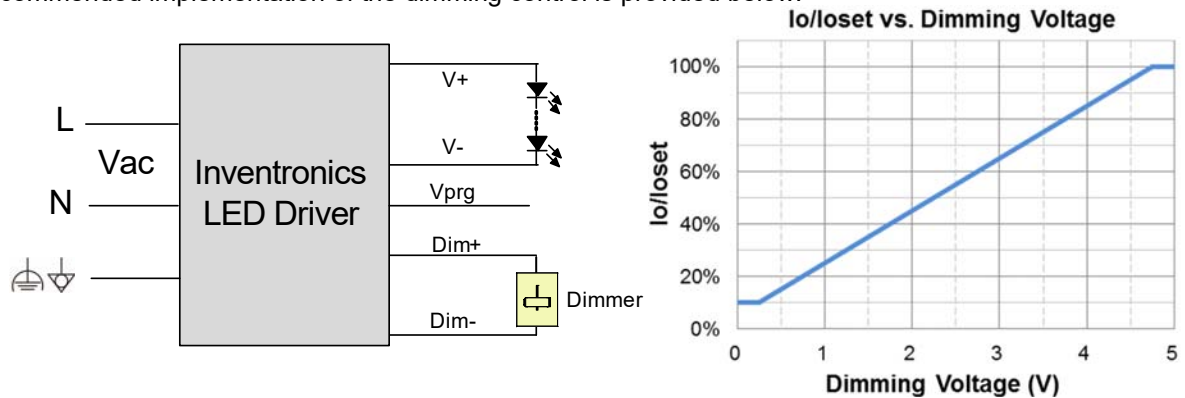
## Protection Functions

Parameter	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.

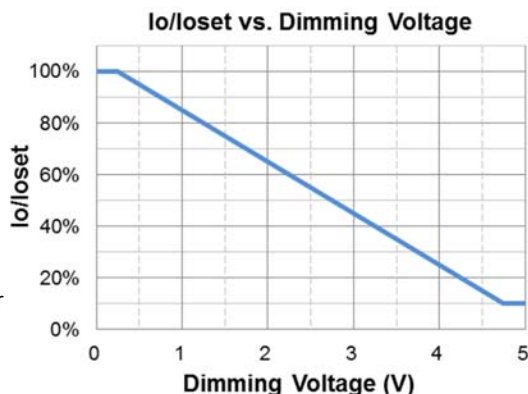
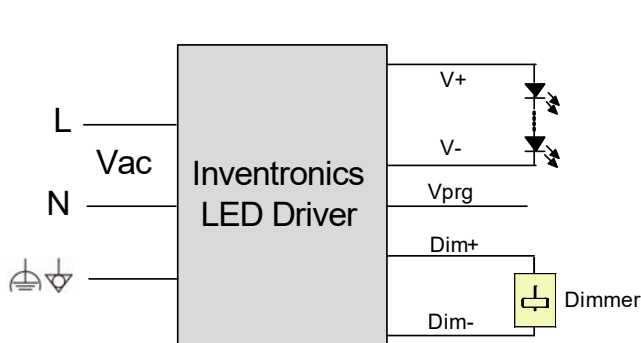
## Dimming

### ● 1-5V Dimming

The recommended implementation of the dimming control is provided below.



Implementation 1: Positive logic



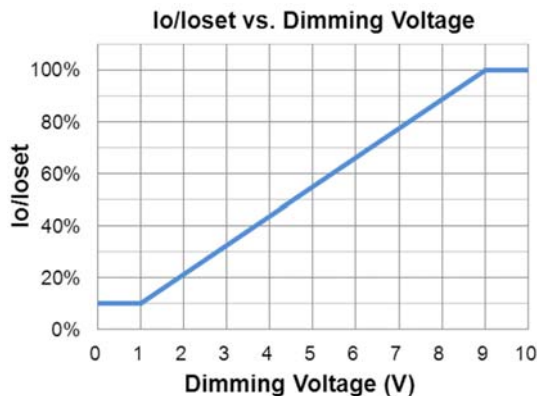
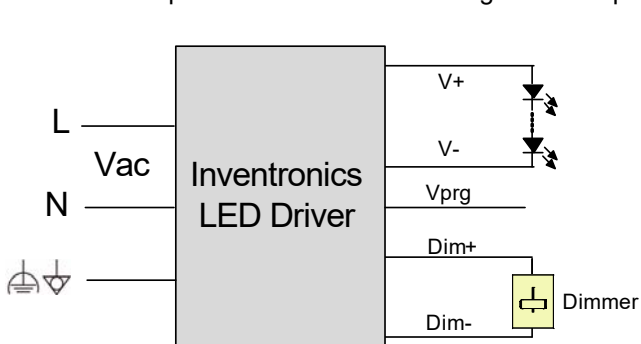
**Implementation 2: Negative logic**

**Notes:**

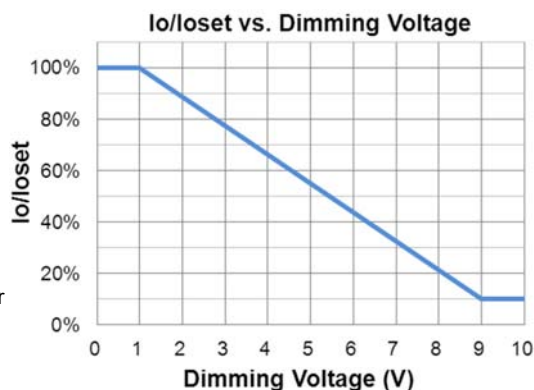
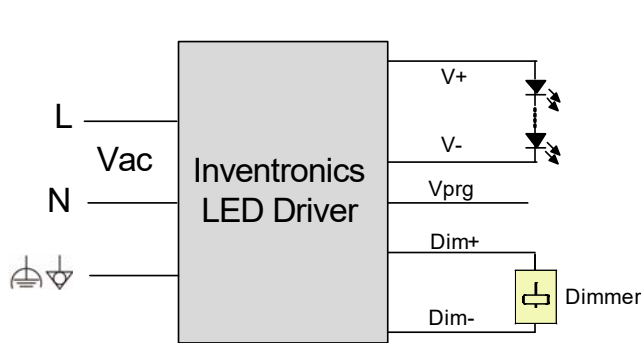
1. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
2. The dimmer can also be replaced by an active 1-5V voltage source signal or passive components like zener.
3. When 1-5V negative logic dimming mode and Dim+ is open, the driver will output maximum current.

● **1-10V Dimming**

The recommended implementation of the dimming control is provided below.



**Implementation 3: Positive logic**



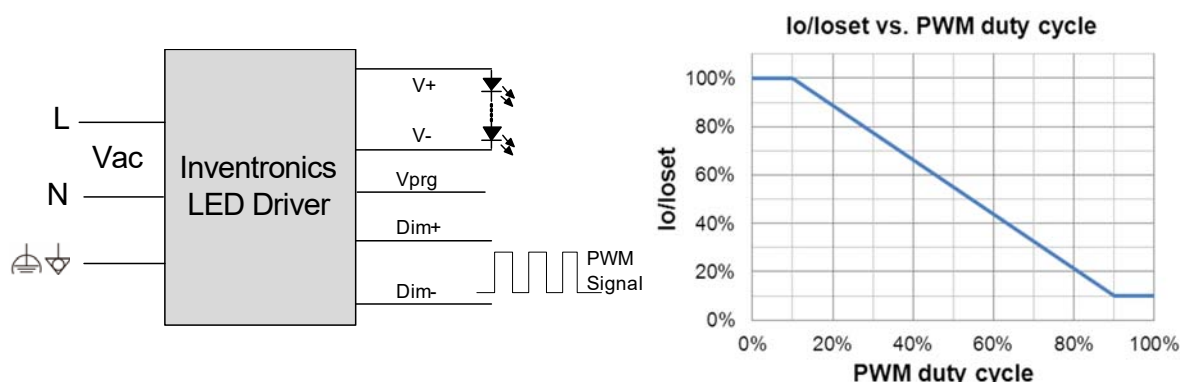
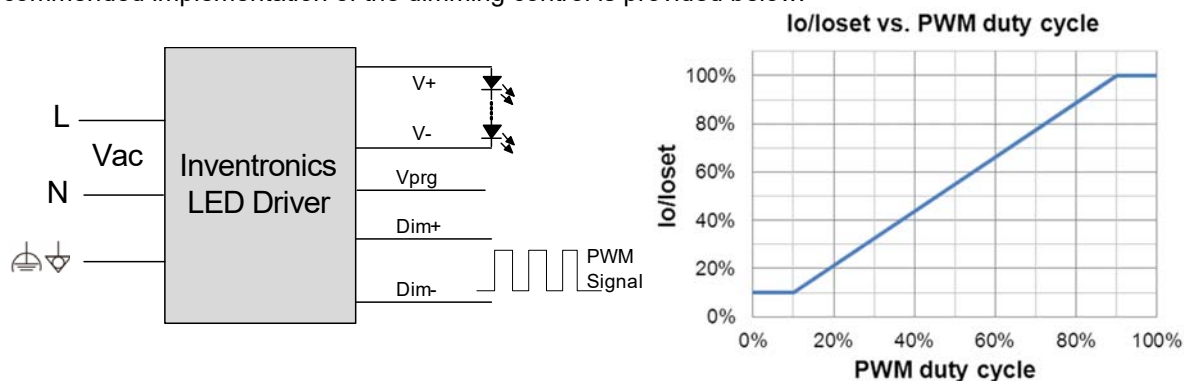
**Implementation 4: Negative logic**

## Notes:

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

## ● 10V PWM Dimming

The recommended implementation of the dimming control is provided below.



## Notes:

1. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly
2. When 10V PWM negative logic dimming mode and Dim+ is open, the driver will output minimum current.

## ● Time Dimming

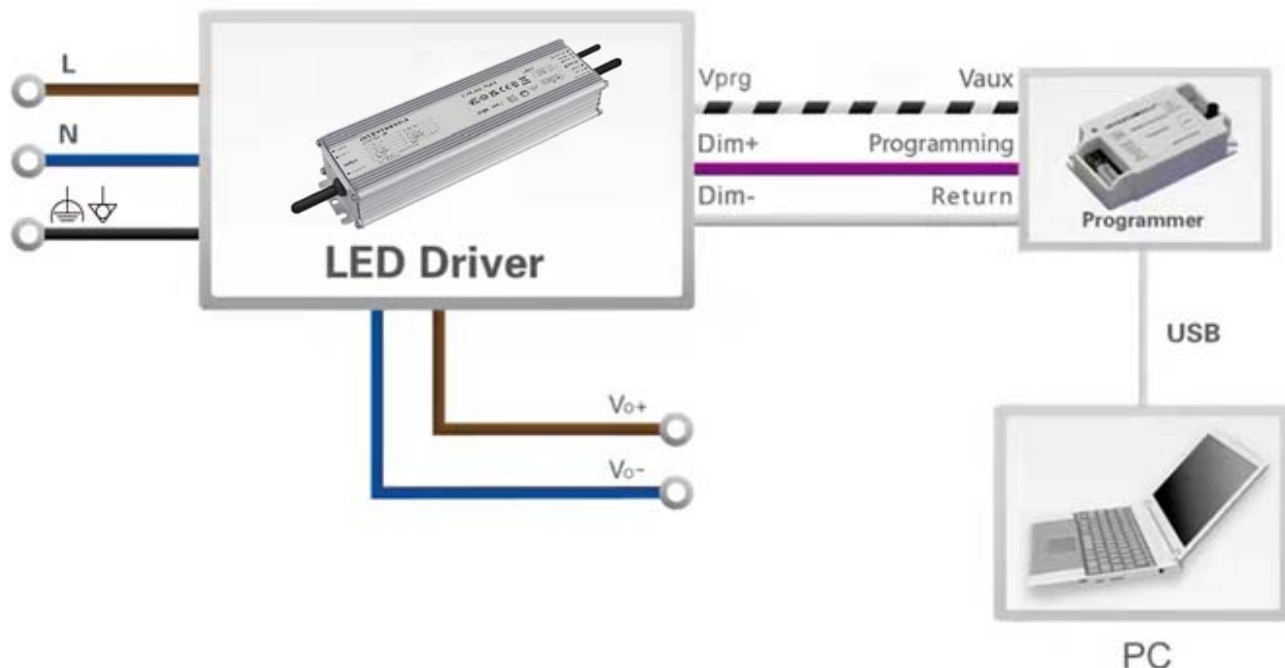
Time dimming control includes 3 kinds of modes, they are Self Adapting-Midnight, Self Adapting-Percentage and Traditional Timer.

- **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.

## Programming Connection Diagram

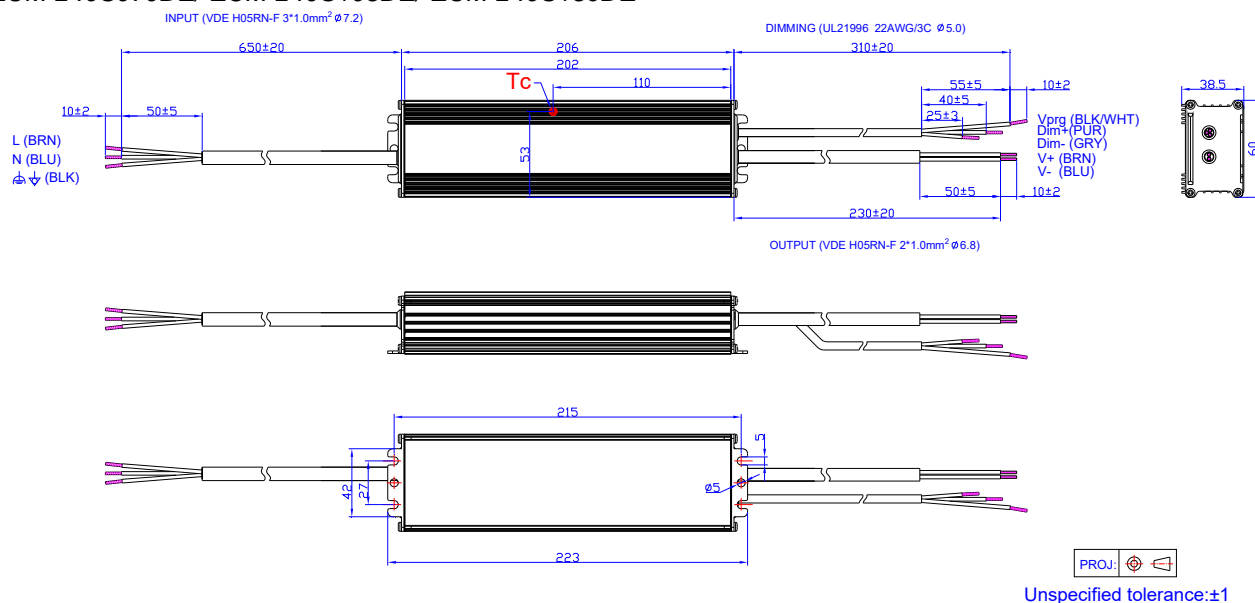


**Note:** The driver does not need to be powered on during the programming process.

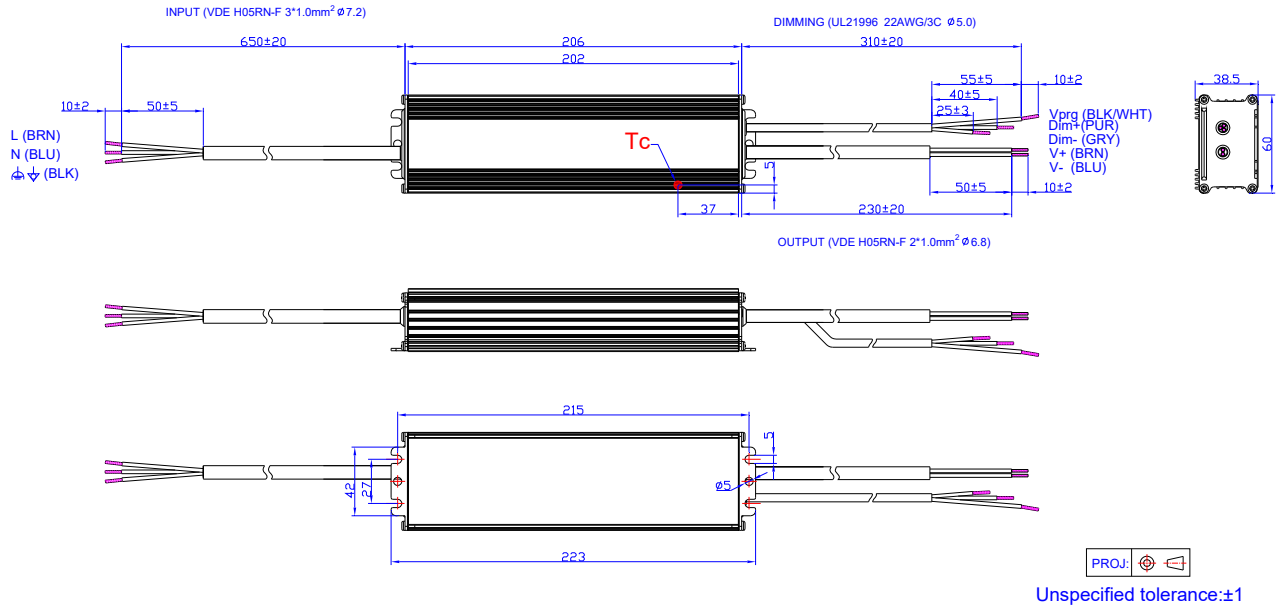
- Please refer to [PRG-MUL2](#) (Programmer) datasheet for details.

## Mechanical Outline

EUM-240S070DE/ EUM-240S105DE/ EUM-240S150DE



**EUM-240S350DE/ EUM-240S670DE**



## 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
2022-07-05	A	Datasheet Release	/	/