Features

- Ultra High Efficiency (Up to 93%)
- Full Power at 70-100% Max Current (Constant Power)
- 0-10V/PWM/3-Timer-Modes Dimmable
- Dim-to-Off with Standby Power ≤ 1 W
- Output Lumen Compensation
- Input Surge Protection: DM 4kV, CM 6kV
- All-Around Protection: OVP, SCP, OTP
- IP67 and UL Dry / Damp / Wet Location
- SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location

E328335

Description

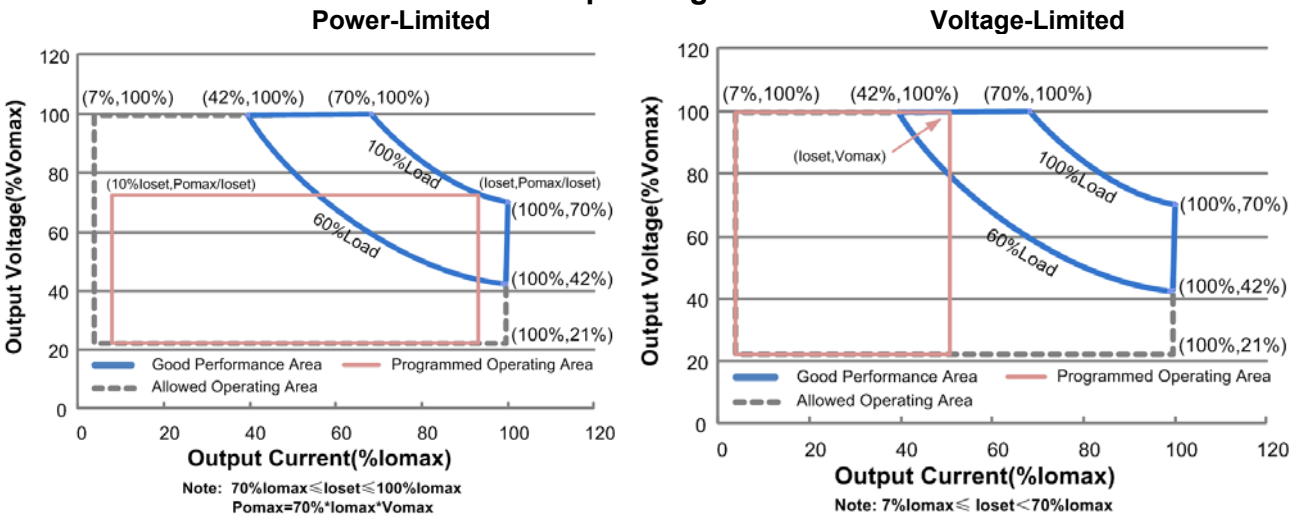
The *EUD-240SxxxDT* series is a 240W, constant-current, programmable LED driver that operates from 90-305 Vac input with excellent power factor. Created for high bay, high mast, arena and roadway lights, it provides a dim-to-off mode with low standby power. The high efficiency of these drivers and compact 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	
70-1000mA	700-1000mA	700 mA	90~305 Vac/ 127~300 Vdc	72~343Vdc	240 W	93.0%	0.99	0.96	EUD-240S100DT
105-1500mA	1050-1500mA	1400 mA	90~305 Vac/ 127~300 Vdc	50~229Vdc	240 W	93.0%	0.99	0.96	EUD-240S150DT
154-2200mA	1540-2200mA	2100 mA	90~305 Vac/ 127~300 Vdc	33~156Vdc	240 W	93.0%	0.99	0.96	EUD-240S220DT
224-3200mA	2240-3200mA	2800 mA	90~305 Vac/ 127~300 Vdc	23~107Vdc	240 W	92.5%	0.99	0.96	EUD-240S320DT(5)
322-4600mA	3220-4600mA	4200 mA	90~305 Vac/ 127~300 Vdc	16 ~ 75Vdc	240 W	92.5%	0.99	0.96	EUD-240S460DT(5)
462-6600mA	4620-6600mA	4900 mA	90~305 Vac/ 127~300 Vdc	11 ~ 52Vdc	240 W	92.0%	0.99	0.96	EUD-240S660DT(5)

Notes: (1) Output current range with constant power at 240W
(2) UL, FCC certified input voltage range: 100-277Vac or 127-300Vdc; other certified input voltage range except UL & FCC: 100-240Vac or 127-250Vdc (except KS).
(3) Measured at a 220Vac input with 70% maximum output current and 100% maximum output voltage.
(4) All the models are certificated to KS, except EUD-240S100DT and EUD-240S150DT
(5) SELV output

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, grounding effectively
	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz, grounding effectively
Input AC Current	-	-	3.2 A	Measured at 100% load and 100 Vac input.
	-	-	1.45 A	Measured at 100% load and 220 Vac input.
Inrush Current(I^2t)	-	-	2.5 A^2s	At 220Vac input, 25℃ cold start, duration=368 μs, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-277Vac, 50-60Hz, 60%-100% Load (144-240W)
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At 100% load condition
Output Current Setting(Ioset) Range	7%Iomax	-	100%Iomax	
Output Current Setting Range with Constant Power	70%Iomax	-	100%Iomax	
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	At 100% load condition, 20 MHz BW

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Output Current Ripple at < 200 Hz (pk-pk)	-	1%Iomax	-	At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%Iomax	At 100% load condition
No Load Output Voltage EUD-240S100DT EUD-240S150DT EUD-240S220DT EUD-240S320DT EUD-240S460DT EUD-240S660DT	 - - - - - -	 - - - - - -	 370V 260V 180V 120V 85V 60V	
Line Regulation	-	-	±0.5%	Measured at 100% load
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	0.8 s	1.5 s	Measured at 120Vac and 220Vac input, 60%-100% Load
Temperature Coefficient of Ioset	-	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	-	200 mA	Return terminal is “Dim−“

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input: EUD-240S100DT Io=700 mA Io=1000mA EUD-240S150DT Io=1050mA Io=1500mA EUD-240S220DT Io=1540mA Io=2200mA EUD-240S320DT Io=2240mA Io=3200mA EUD-240S460DT Io=3220mA Io=4600mA EUD-240S660DT Io=4620mA Io=6600mA	 89.0% 88.5% 89.0% 88.5% 89.0% 88.5% 88.5% 87.5% 88.5% 87.5% 87.5% 86.0%	 91.0% 90.5% 91.0% 90.5% 91.0% 90.5% 90.5% 89.5% 90.5% 89.5% 89.5% 88.0%	 - - - - - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 220 Vac input: EUD-240S100DT Io=700 mA Io=1000mA EUD-240S150DT Io=1050mA Io=1500mA EUD-240S220DT Io=1540mA Io=2200mA EUD-240S320DT Io=2240mA Io=3200mA EUD-240S460DT Io=3220mA Io=4600mA EUD-240S660DT Io=4620mA Io=6600mA	 91.0% 90.5% 91.0% 90.5% 91.0% 90.5% 90.5% 90.0% 90.5% 89.5% 90.0% 88.5%	 93.0% 92.5% 93.0% 92.5% 93.0% 92.5% 92.5% 92.0% 92.5% 91.5% 92.0% 90.5%	 - - - - - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 277 Vac input: EUD-240S100DT Io=700 mA Io=1000mA EUD-240S150DT Io=1050mA Io=1500mA EUD-240S220DT Io=1540mA Io=2200mA EUD-240S320DT Io=2240mA Io=3200mA EUD-240S460DT Io=3220mA Io=4600mA EUD-240S660DT Io=4620mA Io=6600mA	 91.0% 90.5% 91.0% 90.5% 91.0% 90.5% 90.5% 90.0% 90.5% 89.5% 90.0% 88.5%	 93.0% 92.5% 93.0% 92.5% 93.0% 92.5% 92.5% 92.0% 92.5% 91.5% 92.0% 90.5%	 - - - - - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Standby power	-	1 W	-	Measured at 230Vac/50Hz; Dimming off
MTBF	-	234,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	97,000 Hours	-	Measured at 220Vac input, 80%Load and 60°C case temperature; See lifetime vs. Tc curve for the details
Operating Case Temperature for Safety Tc_s	-40°C	-	+89°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+70°C	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)	9.10 × 2.66 × 1.56 231 × 67.5 × 39.7			With mounting ear 9.92 × 2.66 × 1.56 252 × 67.5 × 39.7
Net Weight	-	1370 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	10%Ioset	-	Ioset	70%Iomax ⩽ Ioset ⩽ 100%Iomax
	7%Iomax	-	Ioset	7%Iomax ⩽ Ioset ＜ 70%Iomax
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
CE(1)	EN 61347-1, EN 61347-2-13
KS	KS C 7655
EMI Standards	**Notes**
EN 55015(2)	Conducted emission Test &Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
FCC Part 15(2)	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.

Safety &EMC Compliance (Continued)

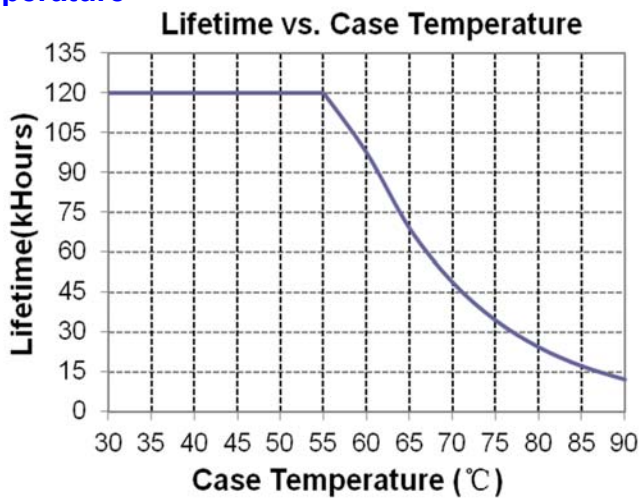
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: Differential Mode 4 kV, Common Mode 6 kV (3)
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) For compliance with EU Directive 2009/125/EC (ecodesign requirements for energy-related products) the Dim-to-Off function shall not be used or alternatively be interrupted through use of a relay or similar device to prevent excessive standby power consumption (as illustrated in Implementation 4).

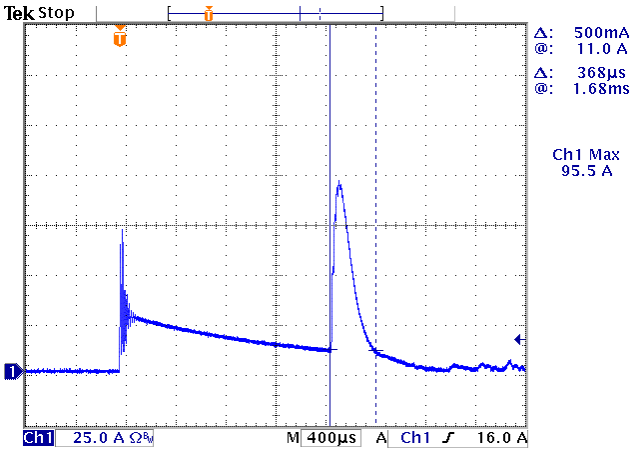
(2) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

(3) To perform electric strength (hi-pot) testing, the “GDT ground disconnect” (nut and metal lock sheet) on the driver end-cap should be removed temporarily to prevent the internal gas discharge tube from conducting (as allowed by IEC 60598-1 Clause 10.2). After testing is completed, these items must be reinstalled to restore line-to-earth surge protection and secure the end cap.

Lifetime vs. Case Temperature

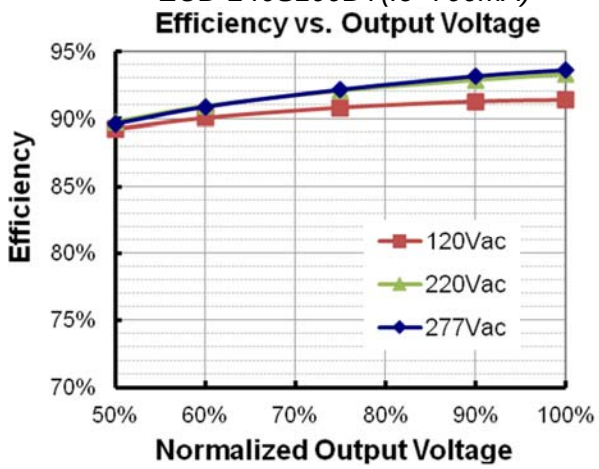


Inrush Current Waveform

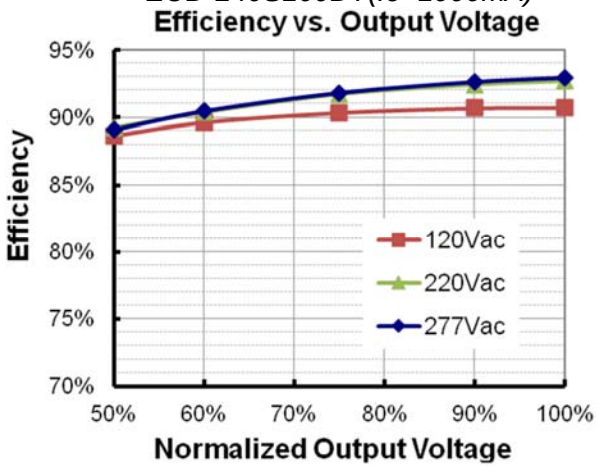


Efficiency vs. Load

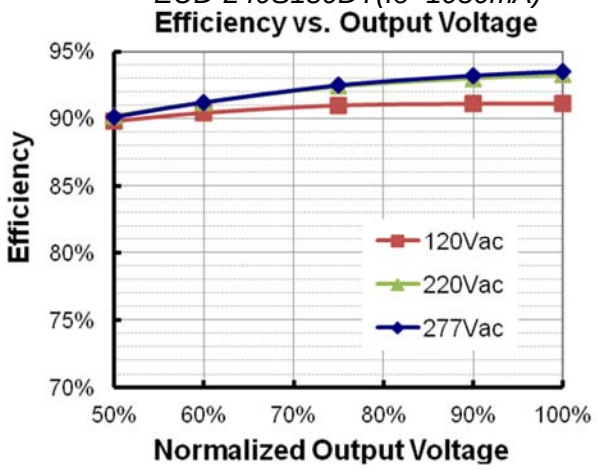
EUD-240S100DT(Io=700mA)



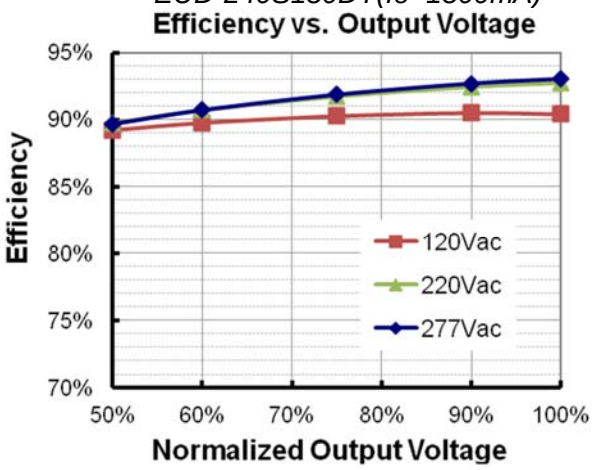
EUD-240S100DT(Io=1000mA)



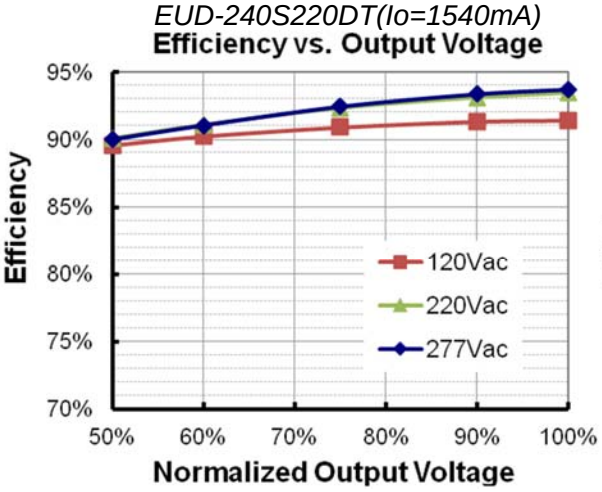
EUD-240S150DT(Io=1050mA)



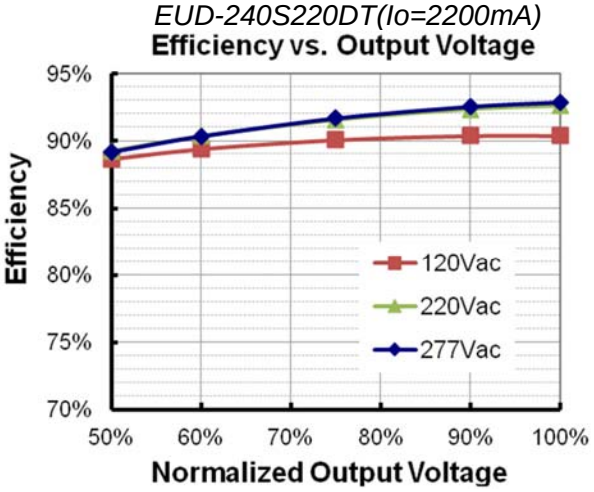
EUD-240S150DT(Io=1500mA)



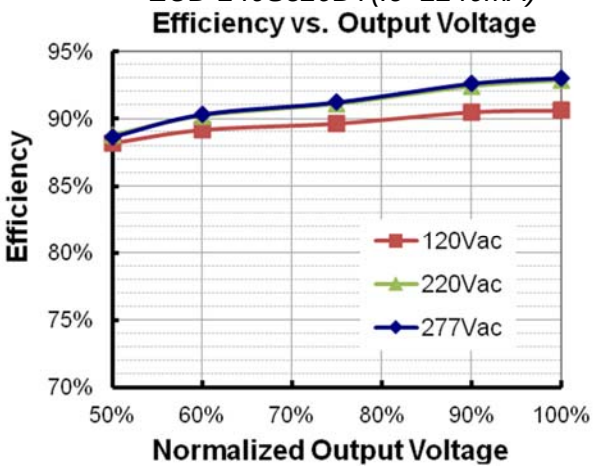
EUD-240S220DT(Io=1540mA)



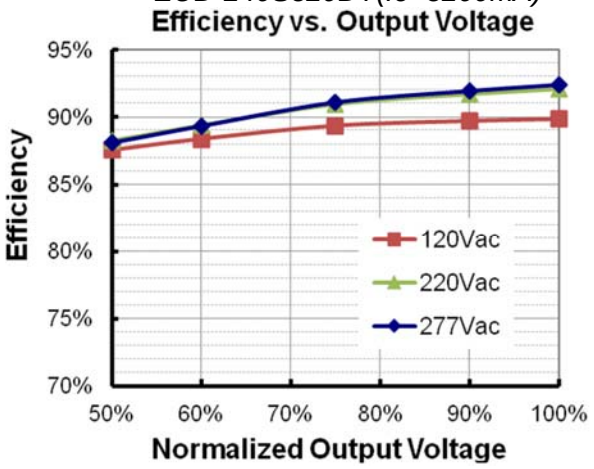
EUD-240S220DT(Io=2200mA)



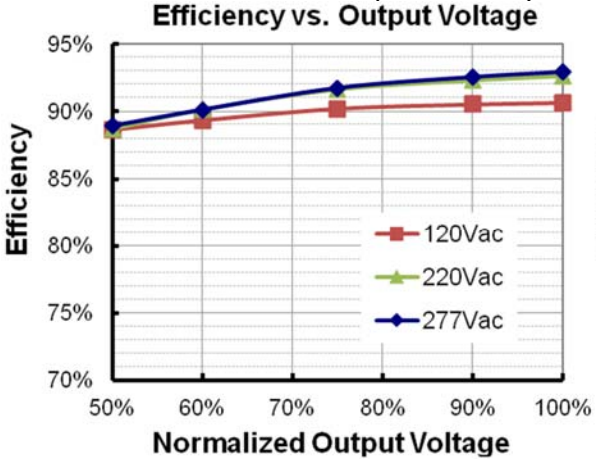
EUD-240S320DT(Io=2240mA)



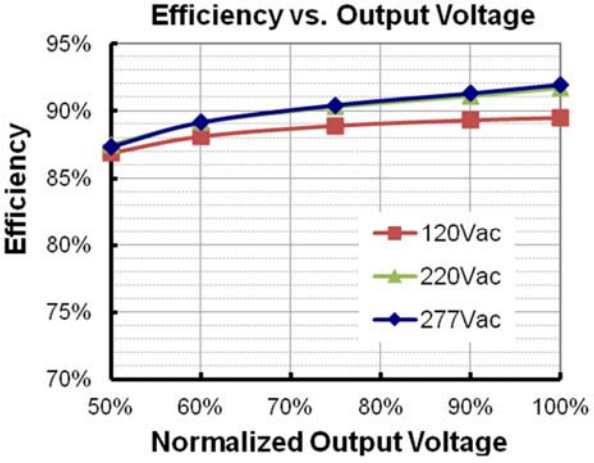
EUD-240S320DT(Io=3200mA)



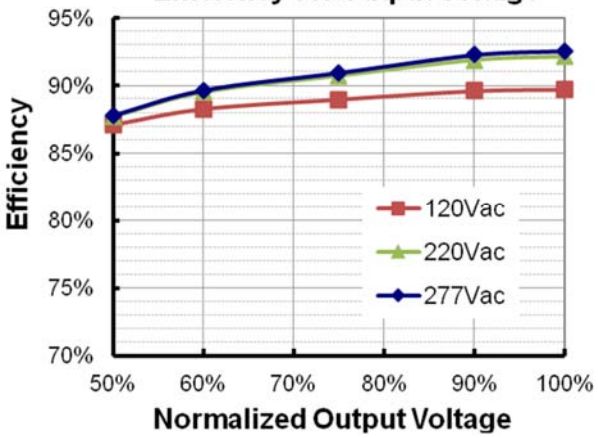
EUD-240S460DT(Io=3220mA)



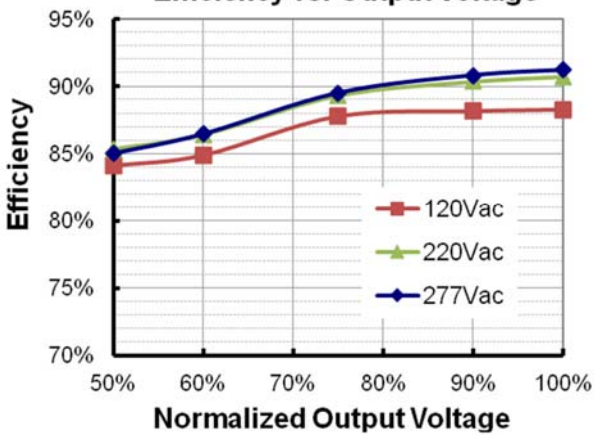
EUD-240S460DT(Io=4600mA)



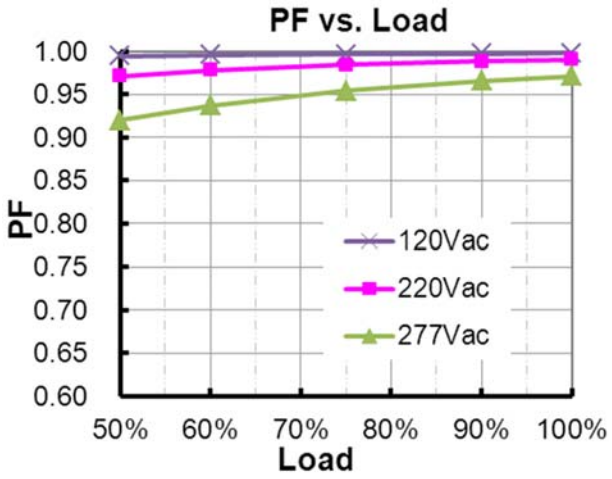
EUD-240S660DT(Io=4620mA)



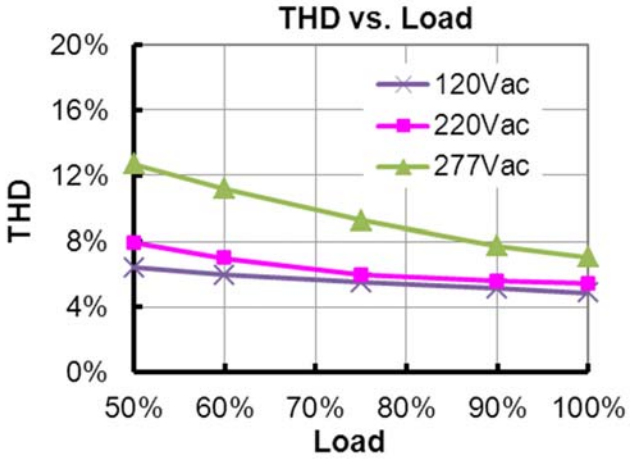
EUD-240S660DT(Io=6600mA)



Power Factor



Total Harmonic Distortion



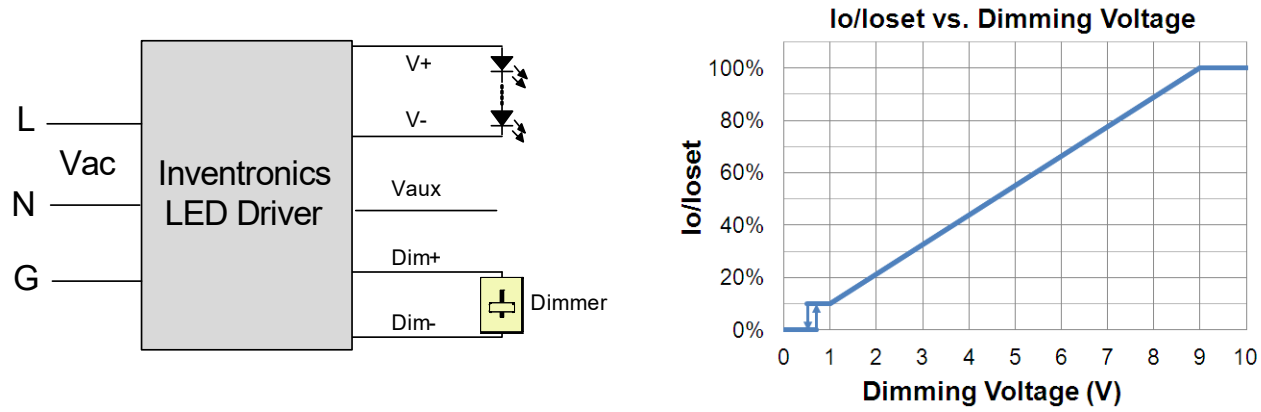
Protection Functions

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

● 0-10V Dimming

The recommended implementation of the dimming control is provided below.

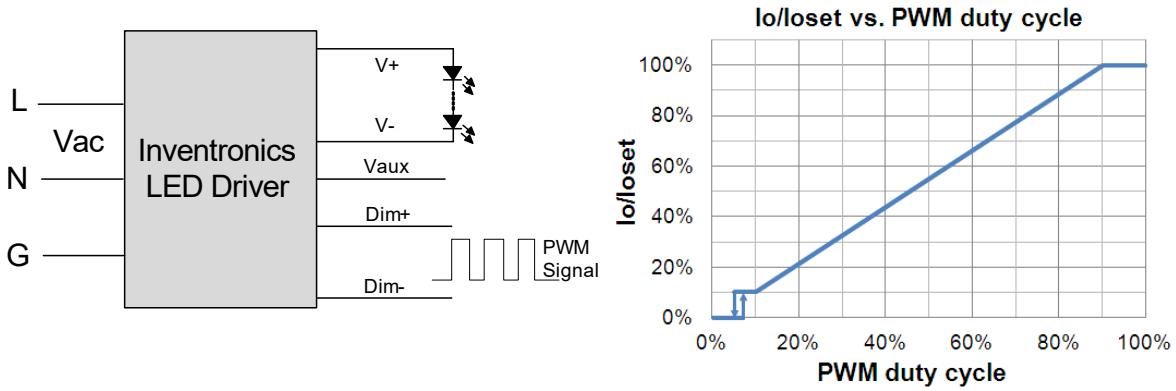


Implementation 1: DC Input

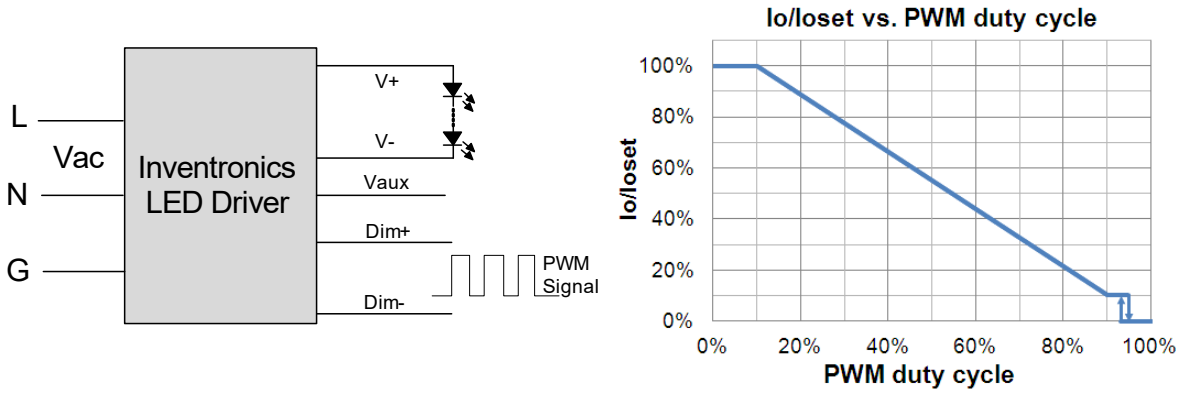
Notes:

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.

● PWM Dimming



Implementation 2: Positive logic



Implementation 3: 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 output minimum current.

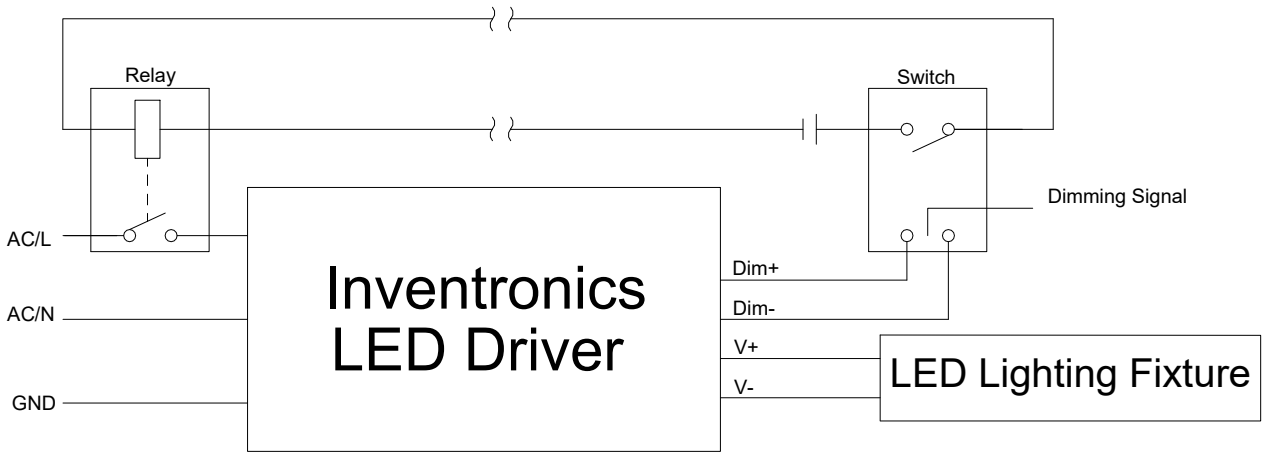
- **Time Dimming**

  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.

- **0% Light Brightness**

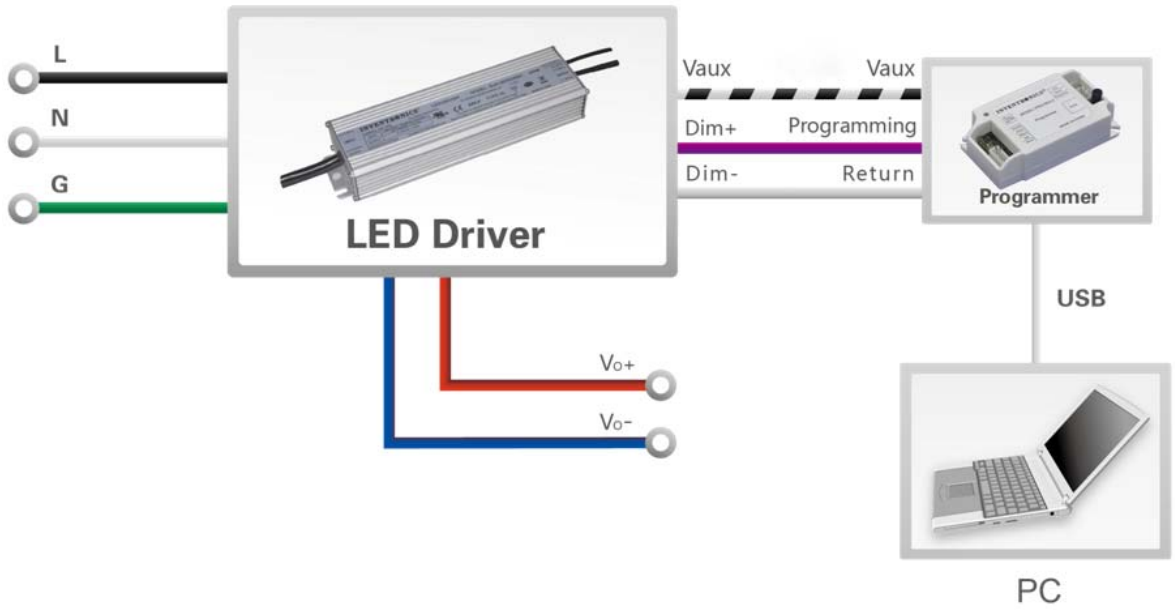
  If the brightness of the LED lighting fixture down to 0%, please refer to the following wiring method. The lamp can be turned on/off using a switch and relay.



Implementation 4: 0% Light Brightness Wiring Method

- **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

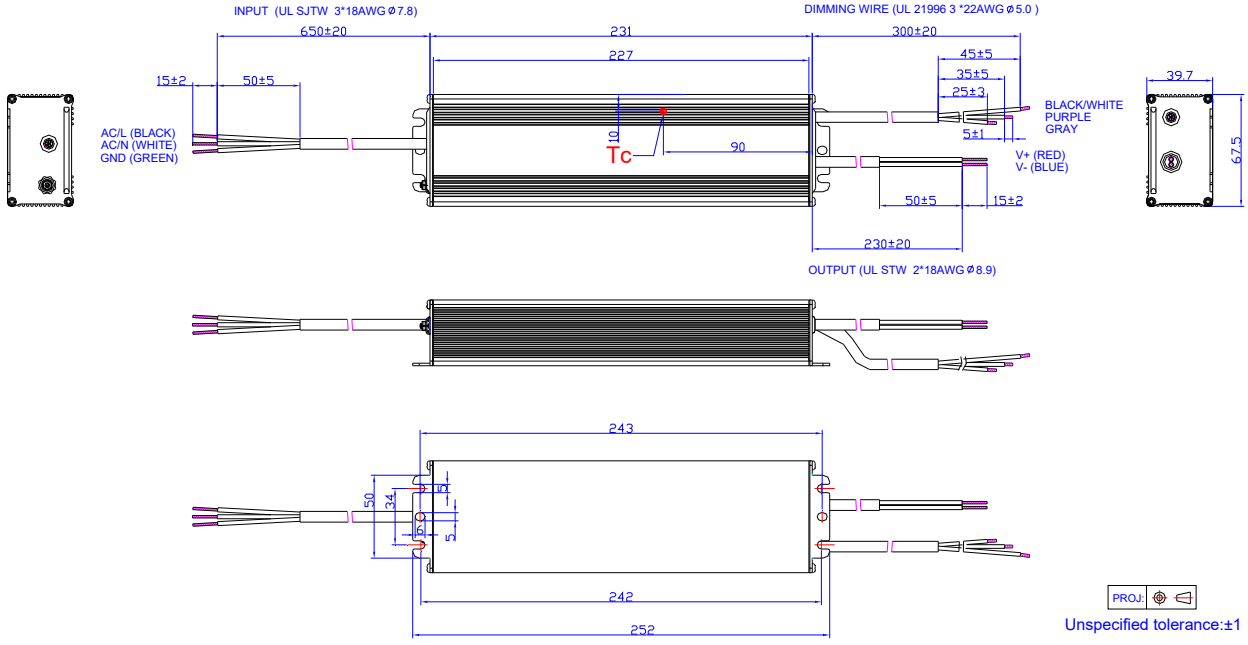


Note: The driver does not need to be powered on during the programming process.

- **Please refer to PRG-MUL2 Multi-Programmer datasheet for details.**

Mechanical Outline

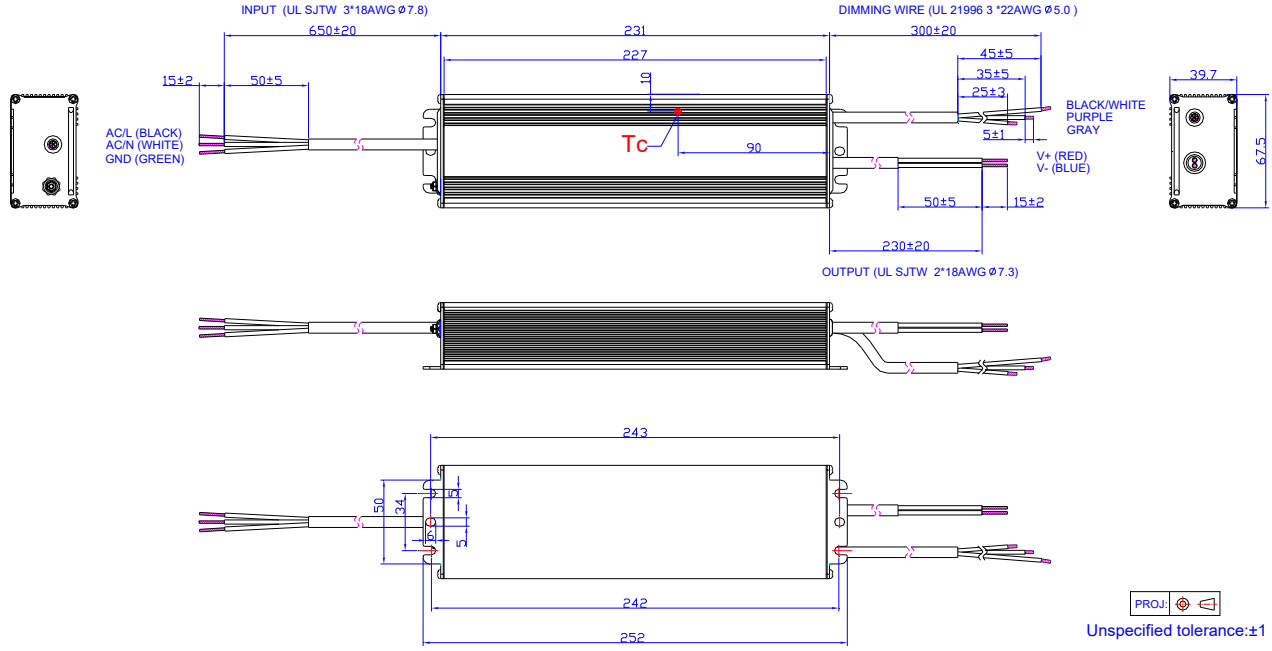
EUD-240S100DT



Specifications are subject to changes without notice. *All specifications are typical at 25℃ unless otherwise stated.*

www.inventronics-co.com **Tel: 86-571-56565800** **Fax: 86-571-86601139** **sales@inventronics-co.com**

Others



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
2014-09-10	A	Datasheets Release	/	/
2015-03-11	B	Features	Input Surge Protection: 4kV line-line, 6kV line-earth	Added
		Output Current Ripple(pk-pk)	Output Current Ripple(pk-pk)	Total Output Current Ripple (pk-pk)
		Output Current Ripple at < 200 Hz (pk-pk)	/	Added
		Operating Case Temperature for Safety Tc_s	/	Updated
		Operating Case Temperature for Warranty Tc_w	/	Updated
		General Specifications	Storage Temperature	Added
		Environmental Specifications	/	Delete
		Safety & EMC Compliance	EN 55015/EN 61000-3-2/EN 61000-3-3	Delete
		Derating	/	Delete
		Time Dimming	/	Updated
2015-12-03	C	CE、KS	/	Added
		External Grounding Screw Solution	/	/
		Features	/	Updated
		Safety &EMC Compliance	/	Updated
		Time Dimming	/	Updated
		Output Lumen Compensation	/	Added
		Mechanical Outline	/	Updated
2016-04-08	D	General Specifications	With mounting ear	Added
		General Specifications	Net Weight	Update
		Safety & EMC Compliance	/	Updated
2016-11-09	E	Inrush Current (I^2t)	/	Updated
		Inrush Current Waveform	/	Updated
2017-08-14	F	Input Specifications	PF/THD	Updated
		Output Specifications	Turn-on Delay Time	Updated
		Output Specifications	Temperature Coefficient of Ioset	Updated
		Standby power	Max 1W	Typ 1W
		Dimensions	231 × 67.5 × 39.5	231 × 67.5 × 39.7
		Safety & EMC Compliance	/	Updated
		Mechanical Outline	/	Updated

Revision History (Continued)

Change Date	Rev.	Description of Change		
		Item	From	To
2021-12-02	G	Features	/	Updated
		Safety &EMC Compliance	Note (1)	Added
		0% Light Brightness	/	Added