

Features

- Ultra High Efficiency (Up to 93%)
- Full Power at 70-100% Max Current (Constant Power)
- DALI Dimmable and Dim-to-Off
- Standby Power ≤ 1 W
- Input Surge Protection: 4kV line-line, 6kV line-earth
- All-Around Protection: OVP, SCP, OTP
- Waterproof (IP67) and UL Dry / Damp Location
- SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location



Description

The EUD-240SxxxBT 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)	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-240S100BT
105-1500mA	1050-1500mA	1400 mA	90~305 Vac/ 127~300 Vdc	50~229Vdc	240 W	93.0%	0.99	0.96	EUD-240S150BT
154-2200mA	1540-2200mA	2100 mA	90~305 Vac/ 127~300 Vdc	33~156Vdc	240 W	93.0%	0.99	0.96	EUD-240S220BT
224-3200mA	2240-3200mA	2800 mA	90~305 Vac/ 127~300 Vdc	23~107Vdc	240 W	92.5%	0.99	0.96	EUD-240S320BT ⁽⁵⁾
322-4600mA	3220-4600mA	4200 mA	90~305 Vac/ 127~300 Vdc	16 ~ 75Vdc	240 W	92.5%	0.99	0.96	EUD-240S460BT ⁽⁵⁾
462-6600mA	4620-6600mA	4900 mA	90~305 Vac/ 127~300 Vdc	11 ~ 52Vdc	240 W	92.0%	0.99	0.96	EUD-240S660BT ⁽⁵⁾

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

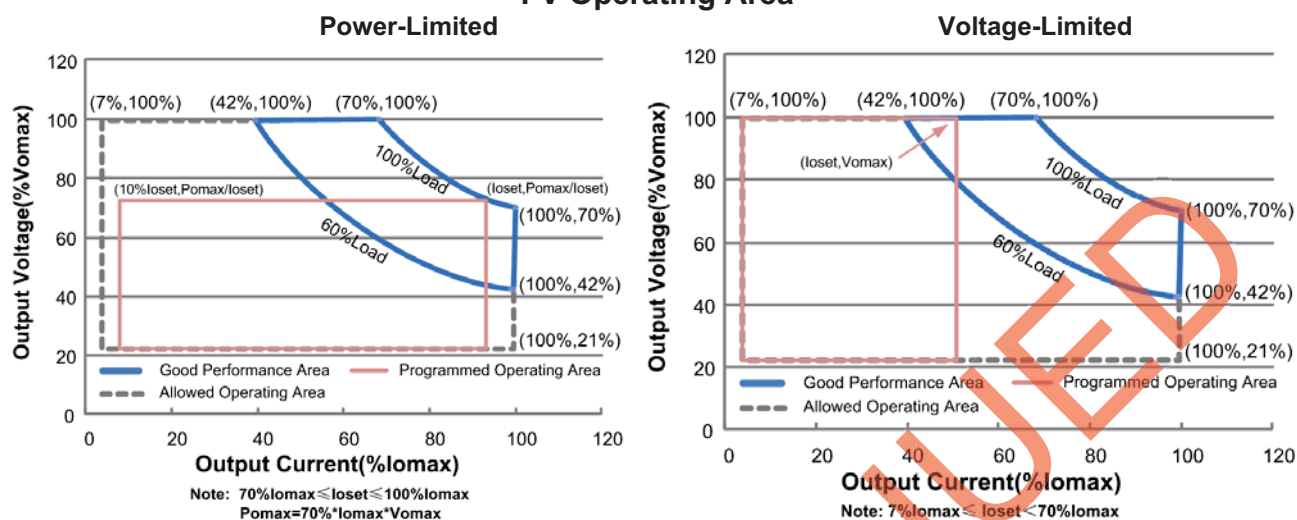
(2) Certified input voltage range: UL, FCC 100-277Vac or 127-300Vdc; otherwise 100-240Vac or 127-250Vd (except KS).

(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-240S100BT and EUD-240S150BT

(5) SELV output

I-V Operating Area



Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	-	305 Vac	127~300 Vdc
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 UIU	UL8750; 277Vac/ 60Hz, grounding effectively
	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz, grounding effectively
Input AC Current	-	-	3.2 A	Measured at full load and 100 Vac input.
	-	-	1.45 A	Measured at full load and 220 Vac input.
Inrush Current(I^2t)	-	-	2.5 A ² s	At 220Vac input, 25°C 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%I _{oset}	-	5%I _{oset}	At full load condition
Output Current Setting(I _{oset}) Range	7%I _{omax}	-	100%I _{omax}	
Output Current Setting Range with Constant Power	70%I _{omax}	-	100%I _{omax}	
Total Output Current Ripple (pk-pk)	-	5%I _{omax}	10%I _{omax}	At full load condition, 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	1%I _{omax}	-	At full load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%I _{omax}	At full load condition

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
No Load Output Voltage				
EUD-240S100BT	-	-	370V	
EUD-240S150BT	-	-	260V	
EUD-240S220BT	-	-	180V	
EUD-240S320BT	-	-	120V	
EUD-240S460BT	-	-	85V	
EUD-240S660BT	-	-	60V	
Line Regulation	-	-	±0.5%	Measured at full 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 I _o set	-	0.03%/°C	-	Case temperature = 0°C ~T _c max

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

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input:				
EUD-240S100BT				
I _o =700 mA	89.0%	91.0%	-	
I _o =1000mA	88.5%	90.5%	-	
EUD-240S150BT				
I _o =1050mA	89.0%	91.0%	-	
I _o =1500mA	88.5%	90.5%	-	
EUD-240S220BT				
I _o =1540mA	89.0%	91.0%	-	
I _o =2200mA	88.5%	90.5%	-	
EUD-240S320BT				
I _o =2240mA	88.5%	90.5%	-	
I _o =3200mA	87.5%	89.5%	-	
EUD-240S460BT				
I _o =3220mA	88.5%	90.5%	-	
I _o =4600mA	87.5%	89.5%	-	
EUD-240S660BT				
I _o =4620mA	87.5%	89.5%	-	
I _o =6600mA	86.0%	88.0%	-	

Measured at full 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-240S100BT I _o =700 mA I _o =1000mA EUD-240S150BT I _o =1050mA I _o =1500mA EUD-240S220BT I _o =1540mA I _o =2200mA EUD-240S320BT I _o =2240mA I _o =3200mA EUD-240S460BT I _o =3220mA I _o =4600mA EUD-240S660BT I _o =4620mA I _o =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 full 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-240S100BT I _o =700 mA I _o =1000mA EUD-240S150BT I _o =1050mA I _o =1500mA EUD-240S220BT I _o =1540mA I _o =2200mA EUD-240S320BT I _o =2240mA I _o =3200mA EUD-240S460BT I _o =3220mA I _o =4600mA EUD-240S660BT I _o =4620mA I _o =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 full 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. T _c curve for the details
Operating Case Temperature for Safety T _{c_s}	-40°C	-	+89°C	
Operating Case Temperature for Warranty T _{c_w}	-40°C	-	+70°C	
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 100%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	-	

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

Dimming Specifications

Parameter	Min.	Typ.	Max.	Notes
DA1,DA2 High Level	9.5V	16V	22.5V	
DA1,DA2 Low Level	-6.5V	0V	6.5V	
DA1,DA2 Current	0mA	-	2mA	
Dimming Output Range	10%I _o set	-	I _o set	70%I _o max ≤ I _o set ≤ 100%I _o max
	7%I _o max	-	I _o set	7%I _o max ≤ I _o set < 70%I _o max

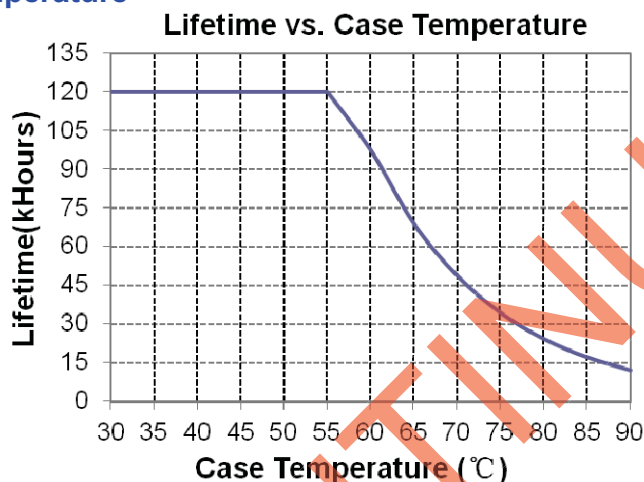
Note: All specifications are typical at 25 °C unless stated otherwise.

Safety & EMC Compliance

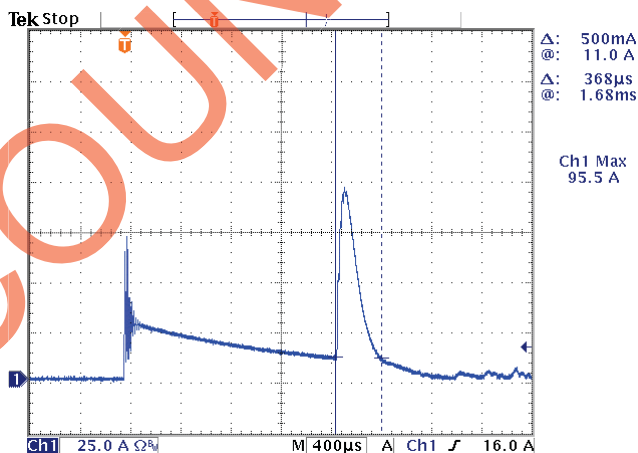
Safety Category	Standard
UL/CUL	UL8750,CAN/CSA-C22.2 No. 250.13
CE	EN 61347-1, EN61347-2-13
KS	KS C 7655
EMI Standards	Notes
EN 55015 ⁽¹⁾	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
FCC Part 15 ⁽¹⁾	ANSI C63.4 Class 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: line to line 4 kV, line to earth 6 kV ⁽²⁾
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
DALI Standards	Notes
DALI	IEC62386-101,102 & part of 207 ⁽³⁾

- 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.
- (2) 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.
- (3) Optional Commands Implemented: 242 (query short circuit), 243 (query open circuit)

Lifetime vs. Case Temperature

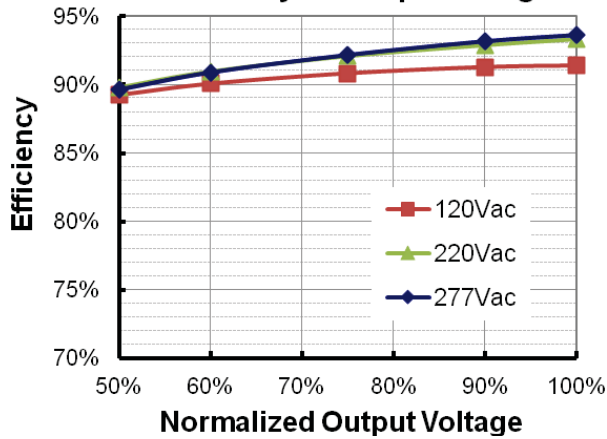


Inrush Current Waveform

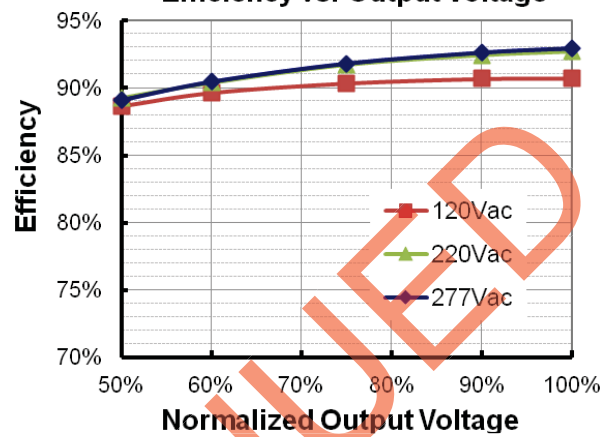


Efficiency vs. Load

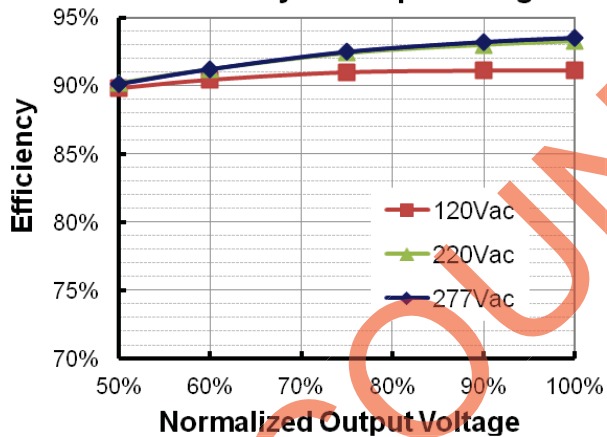
EUD-240S100BT ($I_o=700mA$)
Efficiency vs. Output Voltage



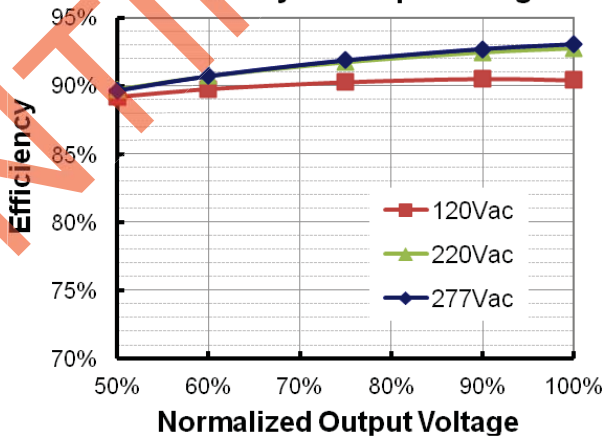
EUD-240S100BT ($I_o=1000mA$)
Efficiency vs. Output Voltage



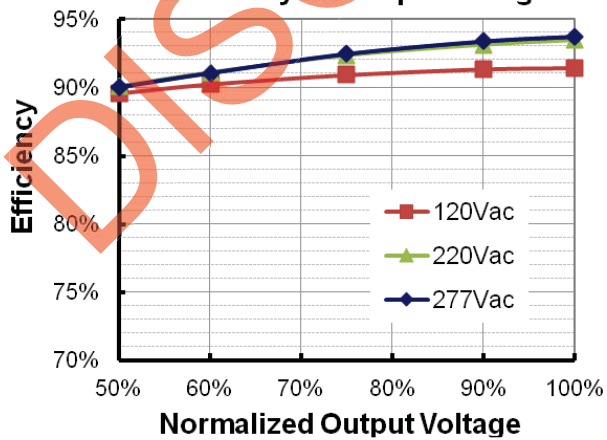
EUD-240S150BT ($I_o=1050mA$)
Efficiency vs. Output Voltage



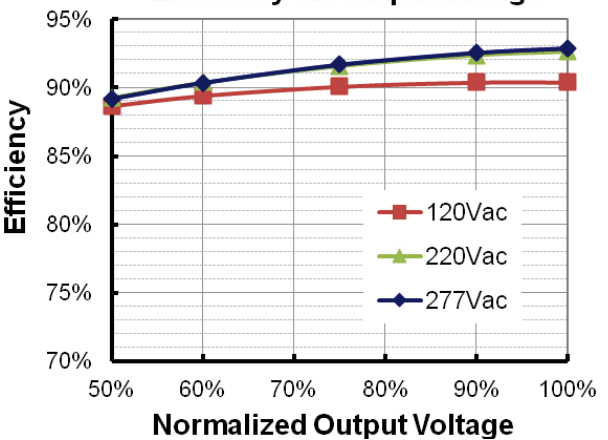
EUD-240S150BT ($I_o=1500mA$)
Efficiency vs. Output Voltage

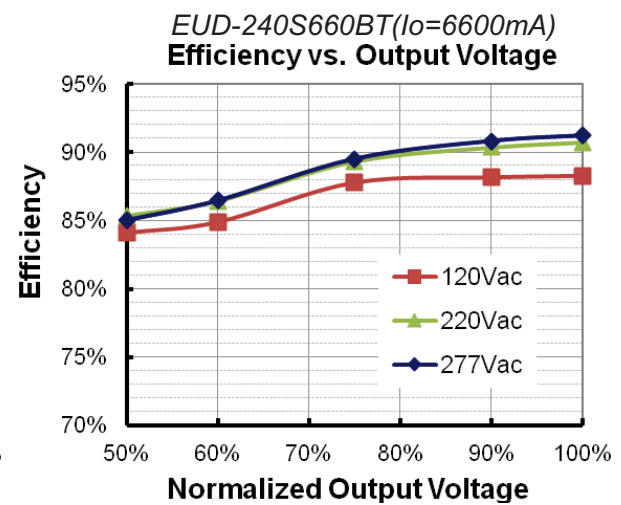
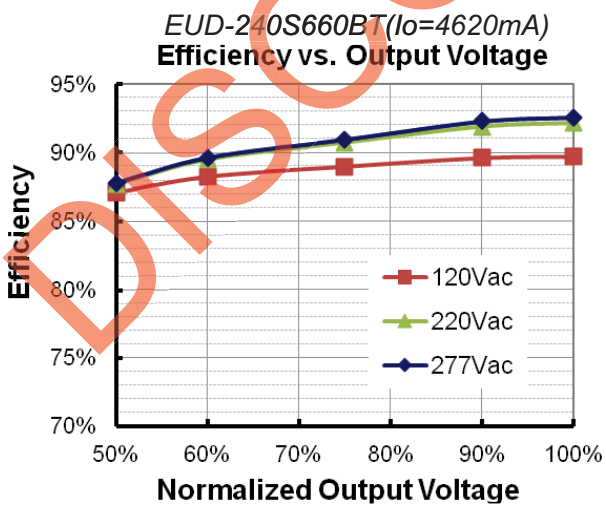
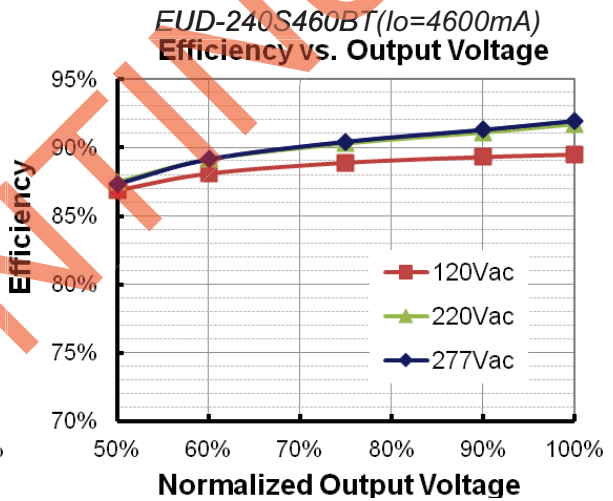
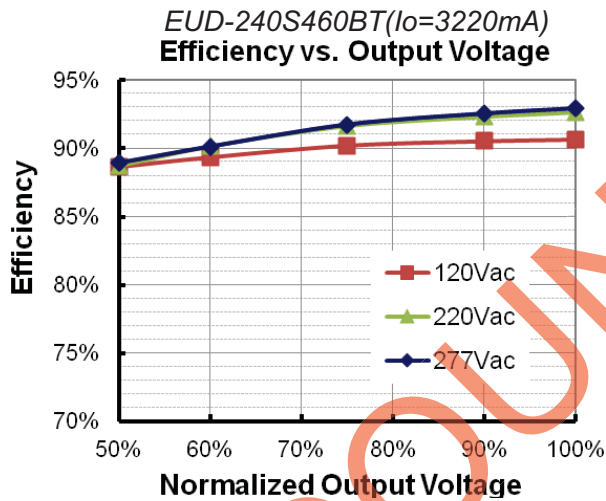
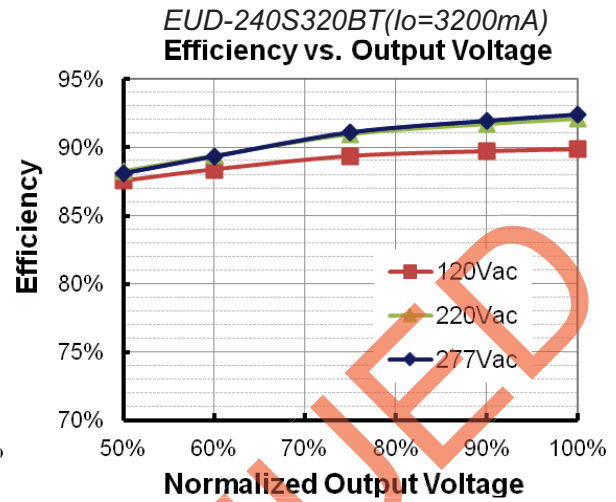
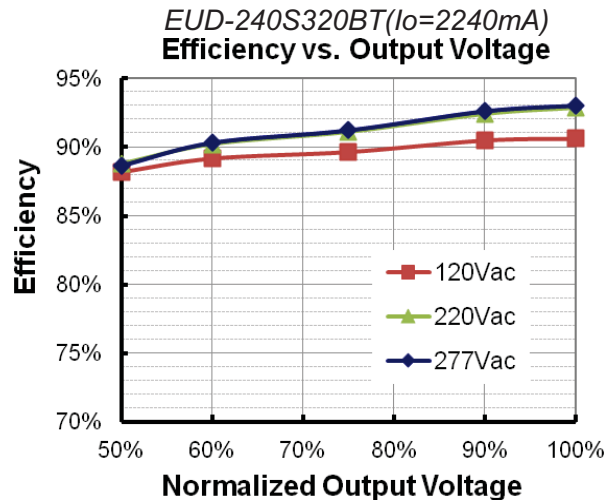


EUD-240S220BT ($I_o=1540mA$)
Efficiency vs. Output Voltage

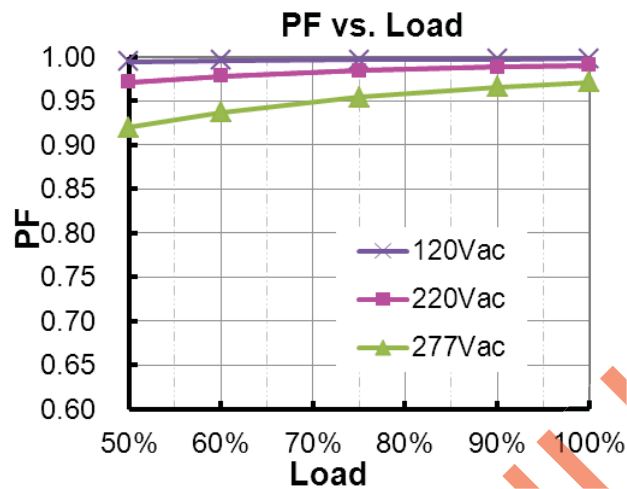


EUD-240S220BT ($I_o=2200mA$)
Efficiency vs. Output Voltage

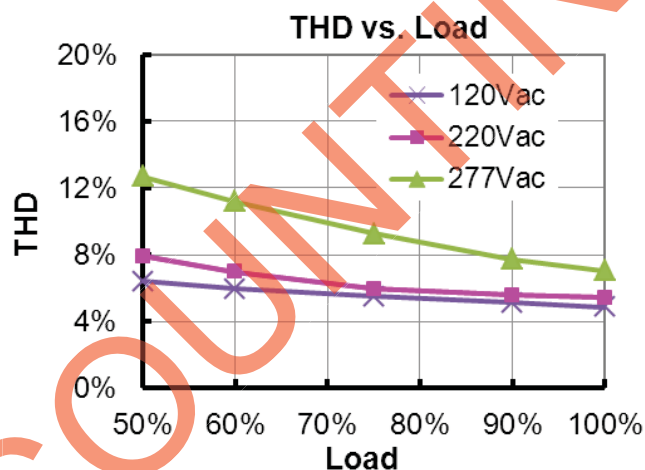




Power Factor



Total Harmonic Distortion



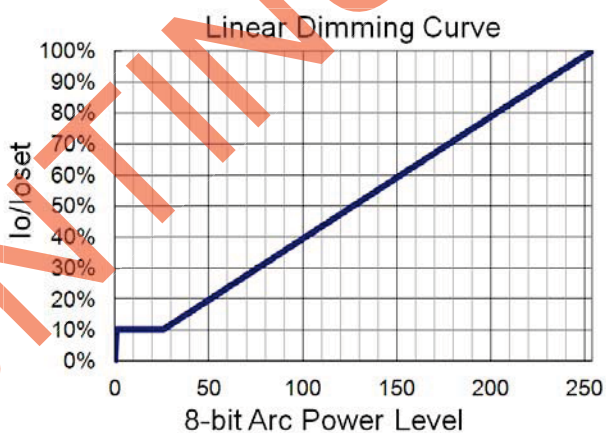
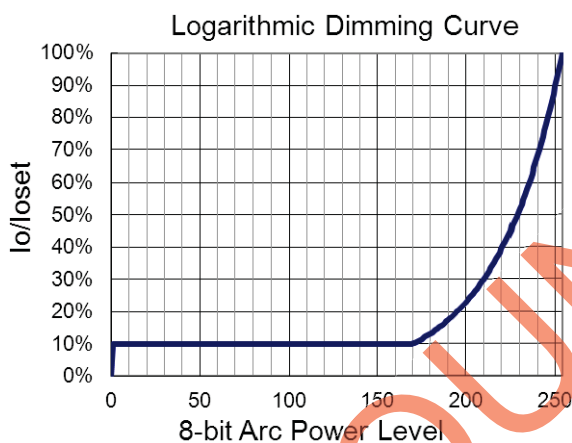
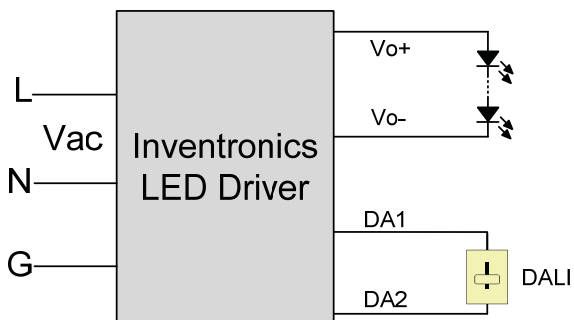
Protection Functions

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

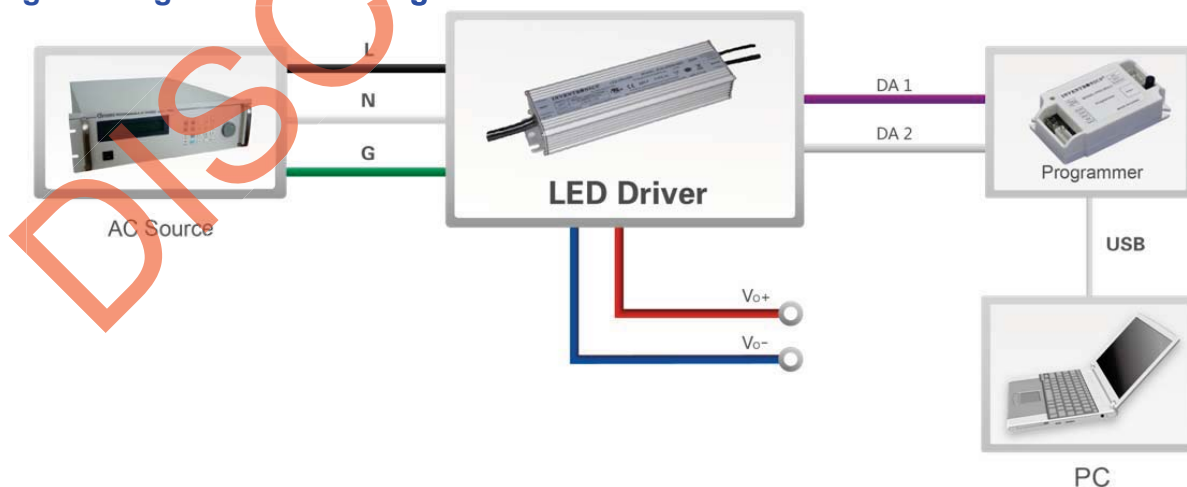
● DALI Dimming

The recommended implementation of the dimming control is provided below.



Implementation: DALI Dimming

Programming Connection Diagram

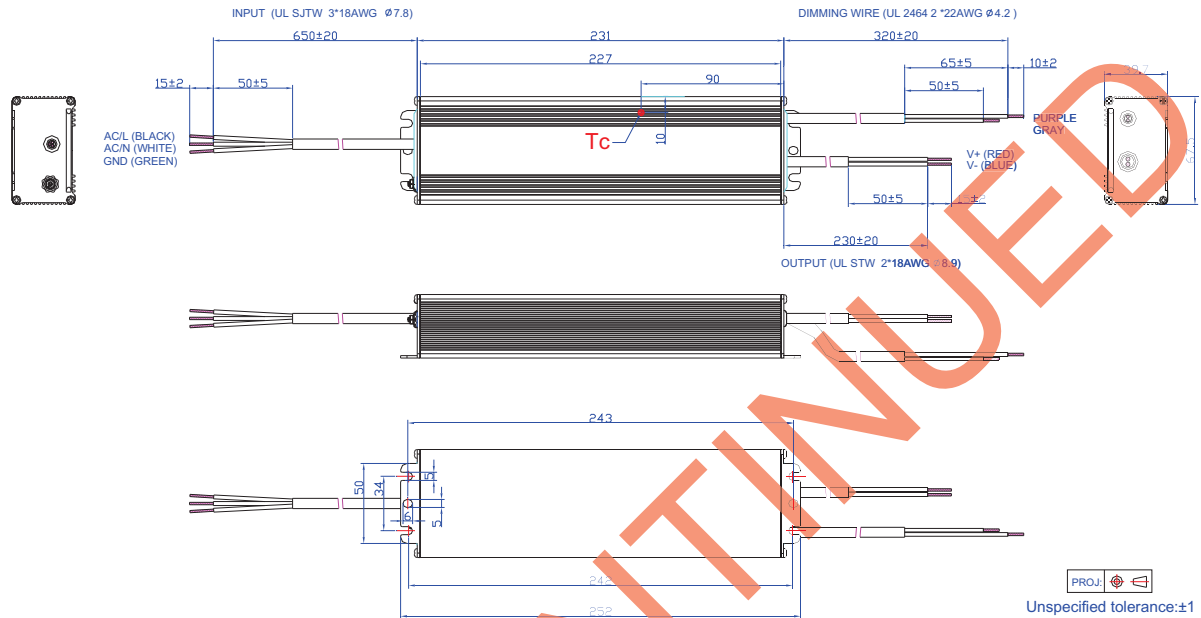


Note: The driver needs to be powered on during the programming process.

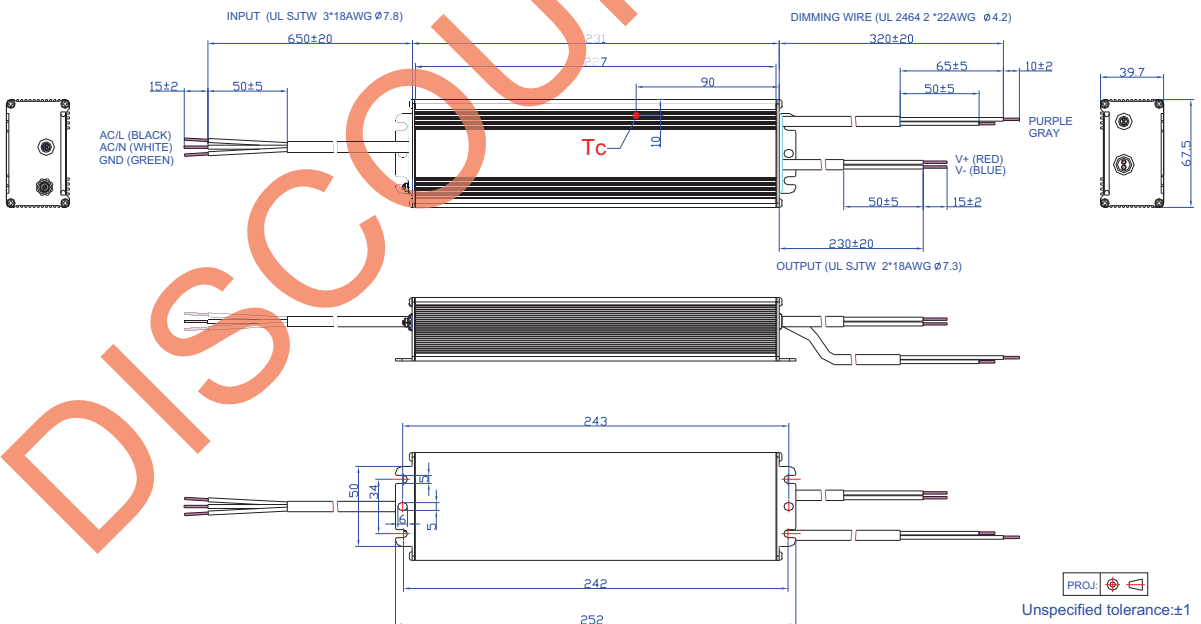
- Please refer to [PRG-MUL2](#) (Programmer) datasheet for details.

Mechanical Outline

EUD-240S100BT



Others



RoHS Compliance

Our products comply with the European Directive 2011/65/EC, 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
2015-09-16	C	KS, DALI Logo	/	Added
		Features	/	Updated
		Safety & EMC Compliance	Safety & EMC Compliance	Standards Compliance
		Standards Compliance	DALI Standards	Added
2015-11-27	D	External Grounding Screw Solution	/	/
		Standards Compliance	/	Updated
		Mechanical Outline	/	Updated
2016-04-08	E	General Specifications	With mounting ear	Added
		General Specifications	Net Weight	Updated
		Standards Compliance	/	Updated
2016-11-09	F	Inrush Current (I ² t)	/	Updated
		Inrush Current Waveform	/	Updated

Revision History (Continued)

Change Date	Rev.	Description of Change		
		Item	From	To
2017/11/21	G	Input Specifications	PF/THD	Updated
		Output Specifications	Turn-on Delay Time	Updated
		Temperature Coefficient of I _o set	Max 0.03%/°C	Typ 0.03%/°C
		Standby power	Max 1W	Typ 1W
		Dimensions	231 × 67.5 × 39.5	231 × 67.5 × 39.7
		Safety & EMC Compliance	/	Updated
		Mechanical Outline	/	Updated