Features

- Ultra High Efficiency (Up to 95%)
- Full Power at Wide Output Current Range (Constant Power)
- Thermal Sensing and Protection for LED Module
- DALI/Timer Dimmable (3 Timer Modes)
- Dim-to-Off with Standby Power ≤ 0.5 W
- Always-on Auxiliary Power: 12Vdc, 200mA
- Output Lumen Compensation
- Input Surge Protection: 6kV line-line, 10kV line-earth
- All-Around Protection: OVP, SCP, OTP
- Waterproof (IP67)
- SELV Output
- Suitable for Independent Use
- 7 Years Warranty

Description

The *EUD-600SxxxBV* series is a 600W, constant-current, programmable LED driver that operates from 90-305 Vac input with excellent power factor. Created for many lighting applications including high bay, sports and horticultural, 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.

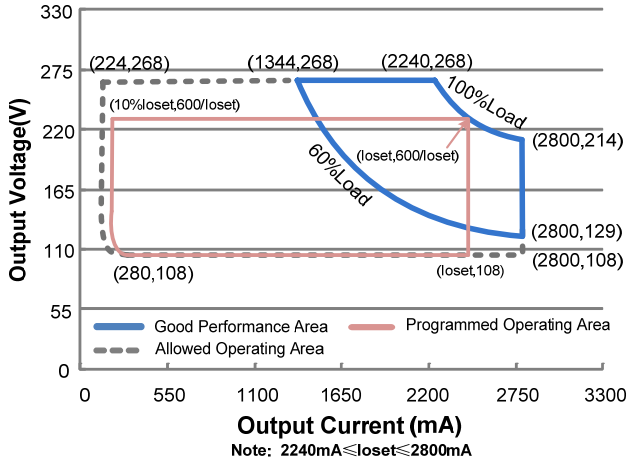
Models

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
							120Vac	220Vac	
0.224-2.80A	2.24–2.80A	2.8 A	90~305Vac/ 127~250Vdc	108 ~ 268Vdc	600 W	95.0%	0.99	0.96	EUD-600S280BV
0.336-4.20A	3.36–4.20A	4.2 A	90~305Vac/ 127~250Vdc	72 ~ 178Vdc	600 W	94.5%	0.99	0.96	EUD-600S420BV
0.448-5.60A	4.48–5.60A	5.6 A	90~305Vac/ 127~250Vdc	54 ~ 134Vdc	600 W	94.5%	0.99	0.96	EUD-600S560BV
0.592-7.40A	5.92–7.40A	7.0 A	90~305Vac/ 127~250Vdc	41 ~ 101Vdc	600 W	94.0%	0.99	0.96	EUD-600S740BV(4)
0.784-9.80A	7.84–9.80A	9.8 A	90~305Vac/ 127~250Vdc	31 ~ 76Vdc	600 W	94.0%	0.99	0.96	EUD-600S980BV(4)

Notes: (1) Output current range with constant power at 600W
(2) Certified voltage range: 100-240Vac or 127-250Vdc (except CCC)
(3) Measured at full load and 220Vac input (see below “General Specifications” for details).
(4) SELV Output

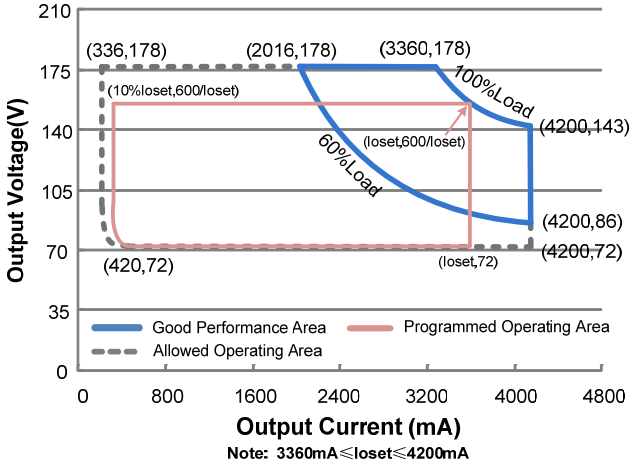
I-V Operating Area

EUD-600S280BV



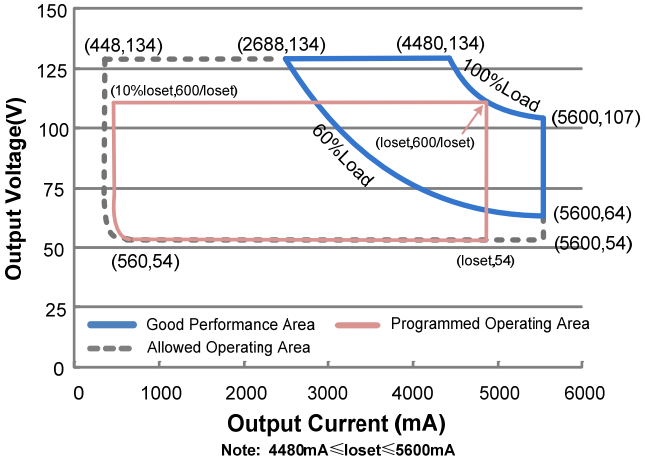
Note: 2240mA≤Ioset≤2800mA

EUD-600S420BV



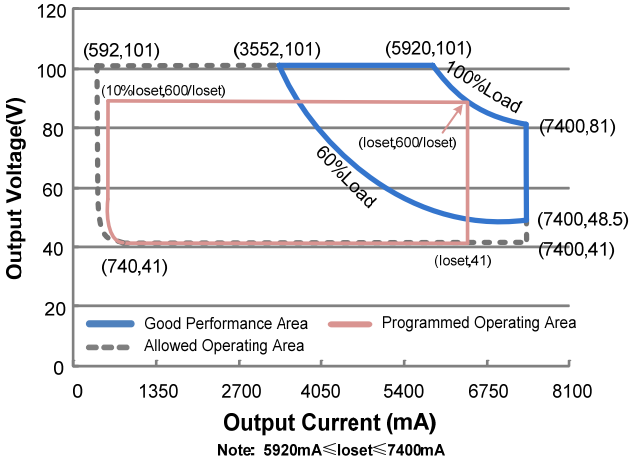
Note: 3360mA≤Ioset≤4200mA

EUD-600S560BV



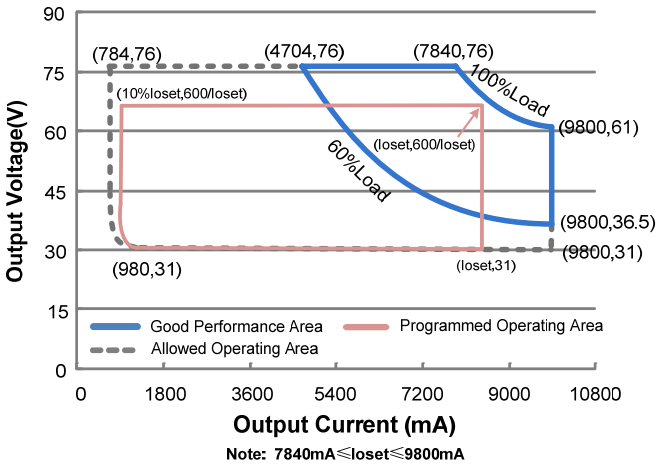
Note: 4480mA≤Ioset≤5600mA

EUD-600S740BV



Note: 5920mA≤Ioset≤7400mA

EUD-600S980BV



Note: 7840mA≤Ioset≤9800mA

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

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	-	305 Vac	127-250 Vdc
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz, grounding effectively
Input AC Current	-	-	6.0 A	Measured at full load and 120 Vac input.
	-	-	3.5 A	Measured at full load and 220 Vac input.
Inrush Current(I^2t)	-	-	4.70 A^2s	At 220Vac input, 25℃ cold start, duration=7.64 ms, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-240Vac, 50-60Hz, 60%-100% Load (360 - 600W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100% Load (450- 600W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At full load condition
Output Current Setting(Ioset) Range				
EUD-600S280BV	224 mA	-	2800 mA	
EUD-600S420BV	336 mA	-	4200 mA	
EUD-600S560BV	448 mA	-	5600 mA	
EUD-600S740BV	592 mA	-	7400 mA	
EUD-600S980BV	784 mA	-	9800 mA	
Output Current Setting Range with Constant Power				
EUD-600S280BV	2240 mA	-	2800 mA	
EUD-600S420BV	3360 mA	-	4200 mA	
EUD-600S560BV	4480 mA	-	5600 mA	
EUD-600S740BV	5920 mA	-	7400 mA	
EUD-600S980BV	7840 mA	-	9800 mA	
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	At full load condition, 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%Iomax	-	At full load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%Iomax	At full load condition
No Load Output Voltage				
EUD-600S280BV	-	290 V	295 V	
EUD-600S420BV	-	190 V	200 V	
EUD-600S560BV	-	150 V	155 V	
EUD-600S740BV	-	118 V	120 V	
EUD-600S980BV	-	87 V	95 V	
Line Regulation	-	-	±0.5%	Measured at full load
Load Regulation	-	-	±1.5%	

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Turn-on Delay Time	-	-	1.0 s	Measured at 120Vac input, 60%-100% Load.
	-	-	0.5 s	Measured at 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 "OTP−"

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

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input:				Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
EUD-600S280BV				
Io= 2240 mA	91.0%	93.0%	-	
Io= 2800 mA	90.0%	92.0%	-	
EUD-600S420BV				
Io= 3360 mA	90.5%	92.5%	-	
Io= 4200 mA	89.5%	91.5%	-	
EUD-600S560BV				
Io= 4480 mA	90.0%	92.0%	-	
Io= 5600 mA	89.5%	91.5%	-	
EUD-600S740BV				
Io= 5920 mA	89.5%	91.5%	-	
Io= 7400 mA	89.0%	91.0%	-	
EUD-600S980BV				
Io= 7840 mA	90.0%	92.0%	-	
Io= 9800 mA	89.5%	91.5%	-	
Efficiency at 220 Vac input:				Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
EUD-600S280BV				
Io= 2240 mA	93.0%	95.0%	-	
Io= 2800 mA	92.5%	94.5%	-	
EUD-600S420BV				
Io= 3360 mA	92.5%	94.5%	-	
Io= 4200 mA	92.0%	94.0%	-	
EUD-600S560BV				
Io= 4480 mA	92.5%	94.5%	-	
Io= 5600 mA	92.0%	94.0%	-	
EUD-600S740BV				
Io= 5920 mA	92.0%	94.0%	-	
Io= 7400 mA	91.5%	93.5%	-	
EUD-600S980BV				
Io= 7840 mA	92.0%	94.0%	-	
Io= 9800 mA	91.0%	93.0%	-	

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 277 Vac input: EUD-600S280BV Io= 2240 mA Io= 2800 mA EUD-600S420BV Io= 3360 mA Io= 4200 mA EUD-600S560BV Io= 4480 mA Io= 5600 mA EUD-600S740BV Io= 5920 mA Io= 7400 mA EUD-600S980BV Io= 7840 mA Io= 9800 mA	 93.0% 92.5% 93.0% 92.0% 93.0% 92.5% 92.5% 91.5% 92.5% 91.5%	 95.0% 94.5% 95.0% 94.0% 95.0% 94.5% 94.5% 93.5% 94.5% 93.5%	 - - - - - - - - - -	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	-	-	0.5 W	Measured at 230Vac/50Hz; Dimming off
MTBF	-	200,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	108,000 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	-	+89°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+75°C	Case temperature for 7 years warranty. *Please see Inventronics Warranty Statement for complete details.*
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 100%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	9.84 × 5.67 × 1.91 250 × 144 × 48.5			With mounting ear 10.83× 5.67 × 1.91 275 × 144 × 48.5
Net Weight	-	3515 g	-	

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

Dimming Specifications

Parameter	Min.	Typ.	Max.	Notes
DA, DA High Level	9.5V	16V	22.5V	
DA, DA Low Level	-6.5V	0V	6.5V	
DA, DA Current	0mA	-	2mA	

Dimming Specifications (Continued)

Parameter		Min.	Typ.	Max.	Notes
Dimming Output Range	EUD-600S280BV EUD-600S420BV EUD-600S560BV EUD-600S740BV EUD-600S980BV	10%Ioset	-	Ioset	2240mA ⩽ Ioset ⩽ 2800mA 3360mA ⩽ Ioset ⩽ 4200mA 4480mA ⩽ Ioset ⩽ 5600mA 5920mA ⩽ Ioset ⩽ 7400mA 7840mA ⩽ Ioset ⩽ 9800mA
	EUD-600S280BV EUD-600S420BV EUD-600S560BV EUD-600S740BV EUD-600S980BV	224 mA 336 mA 448 mA 592 mA 784 mA	-	Ioset	224mA ⩽ Ioset < 2240mA 336mA ⩽ Ioset < 3360mA 448mA ⩽ Ioset < 4480mA 592mA ⩽ Ioset < 5920mA 784mA ⩽ Ioset < 7840mA

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

Standards Compliance

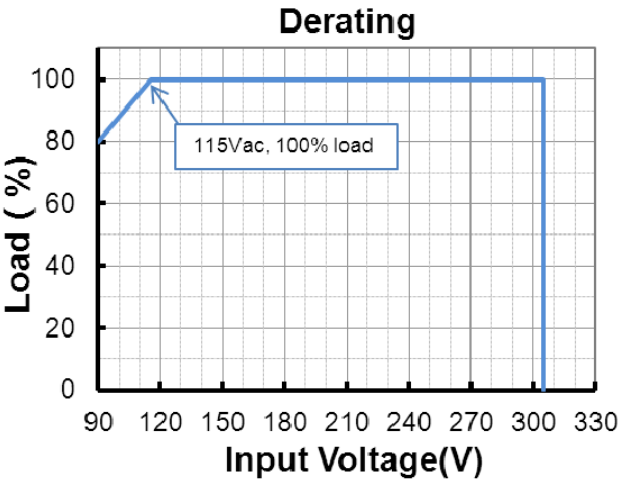
Safety Category	Standard
CE	EN 61347-1, EN61347-2-13
EMI Standards	**Notes**
EN 55015(1)	Conducted emission Test &Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EMS Standards	**Notes**
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 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 6 kV, line to earth 10 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.

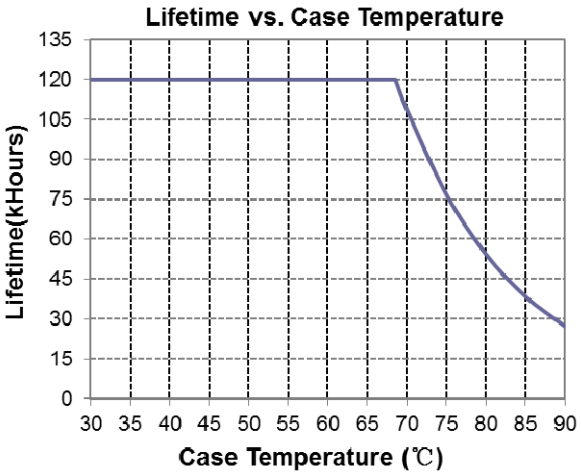
(2) To perform electric strength (hi-pot) testing, the “GDT ground disconnect” (nut and metal lock sheet) on the driver end-cap should be removed temporarily to prevent the internal gas discharge tube from conducting (as allowed by IEC 60598-1 Clause 10.2). After testing is completed, these items must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

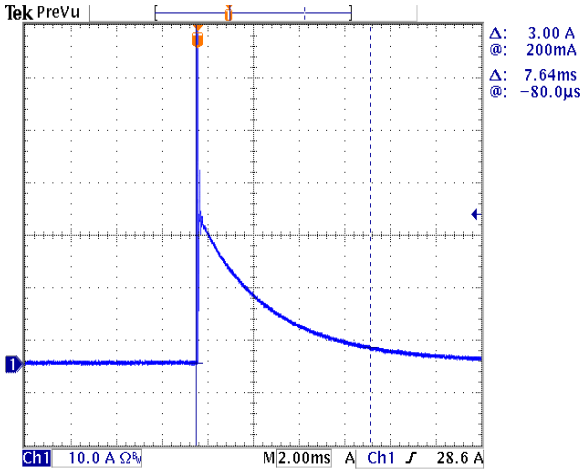
Derating



Lifetime vs. Case Temperature

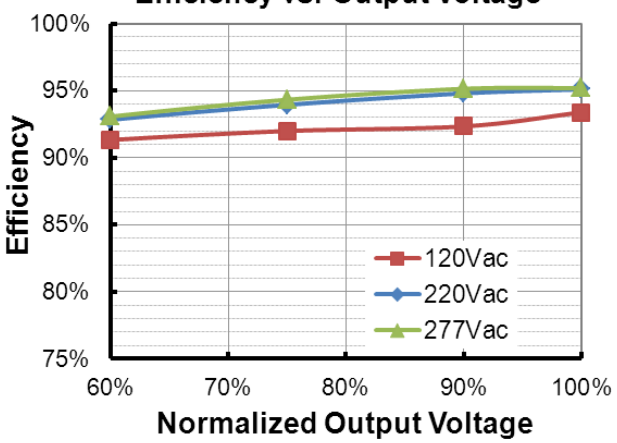


Inrush Current Waveform

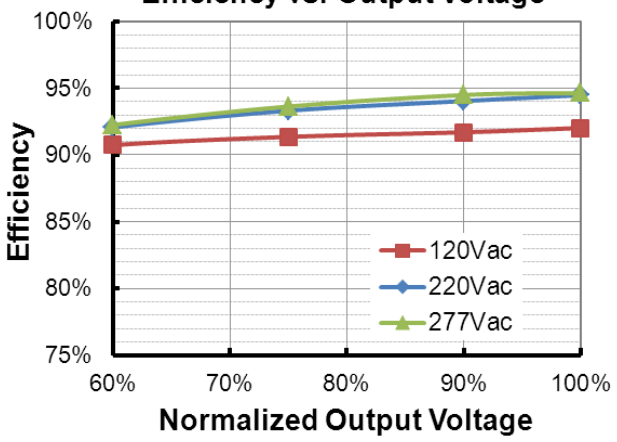


Efficiency vs. Load

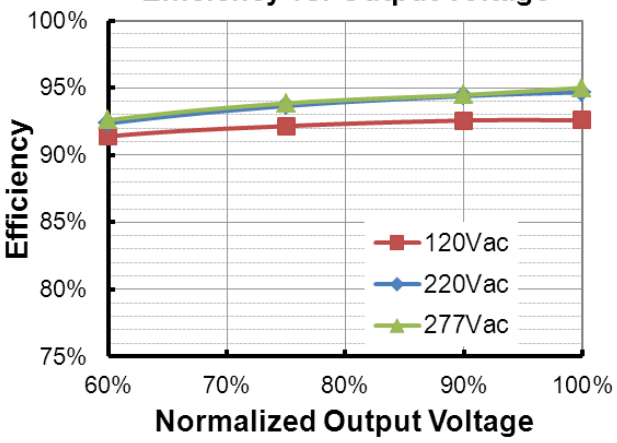
EUD-600S280BV(Io=2240mA)



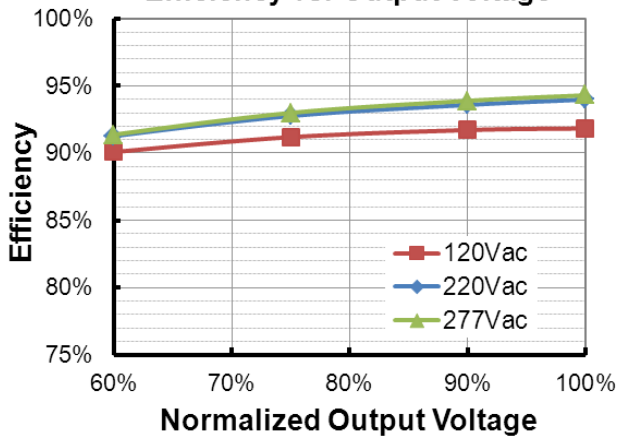
EUD-600S280BV(Io=2800mA)



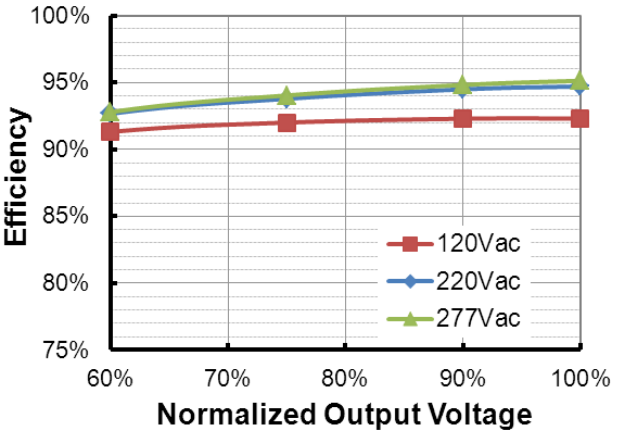
EUD-600S420BV(Io=3360mA)



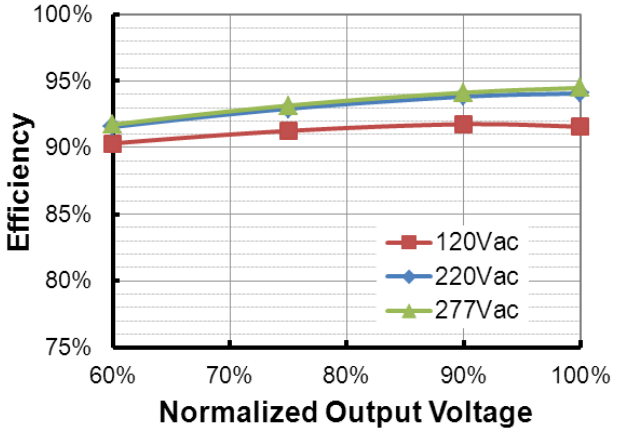
EUD-600S420BV(Io=4200mA)



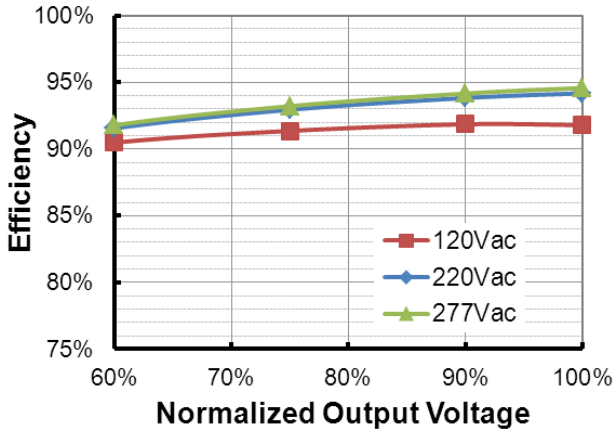
EUD-600S560BV(Io=4480mA)



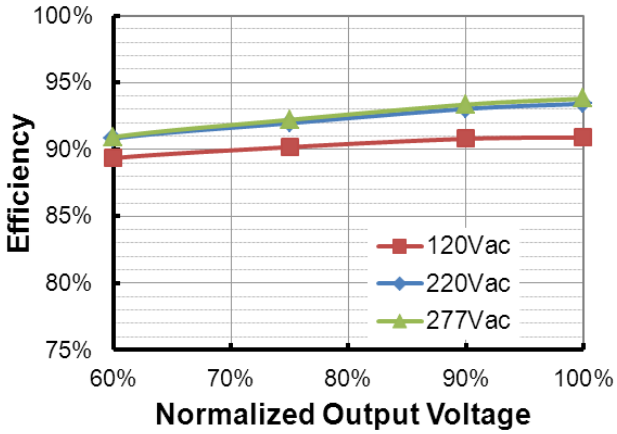
EUD-600S560BV(Io=5600mA)



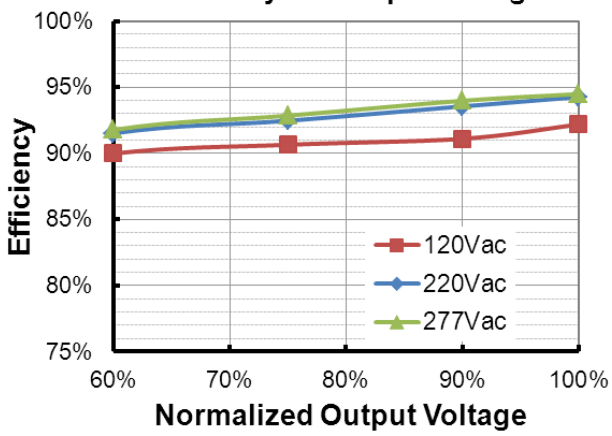
EUD-600S740BV(Io=5920mA)



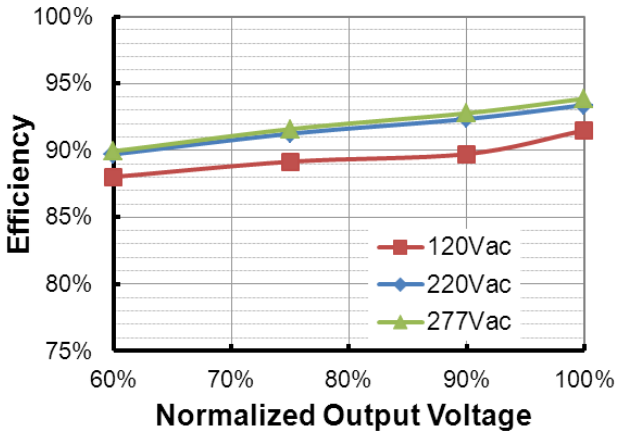
EUD-600S740BV(Io=7400mA)



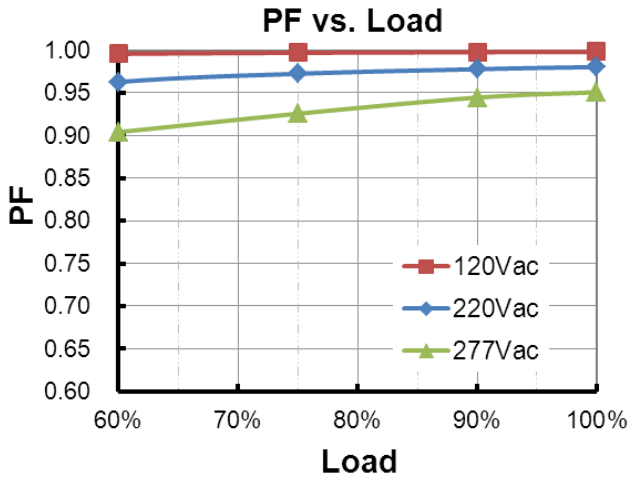
EUD-600S980BV(Io=7840mA)



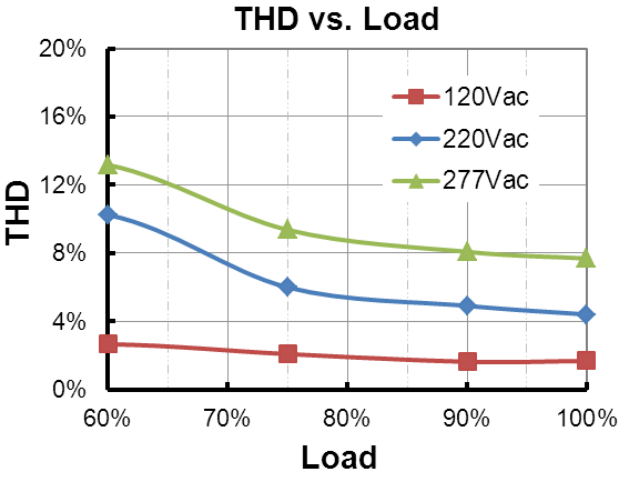
EUD-600S980BV(Io=9800mA)



Power Factor



Total Harmonic Distortion



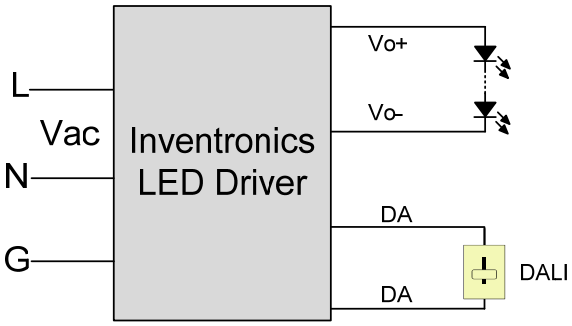
Protection Functions

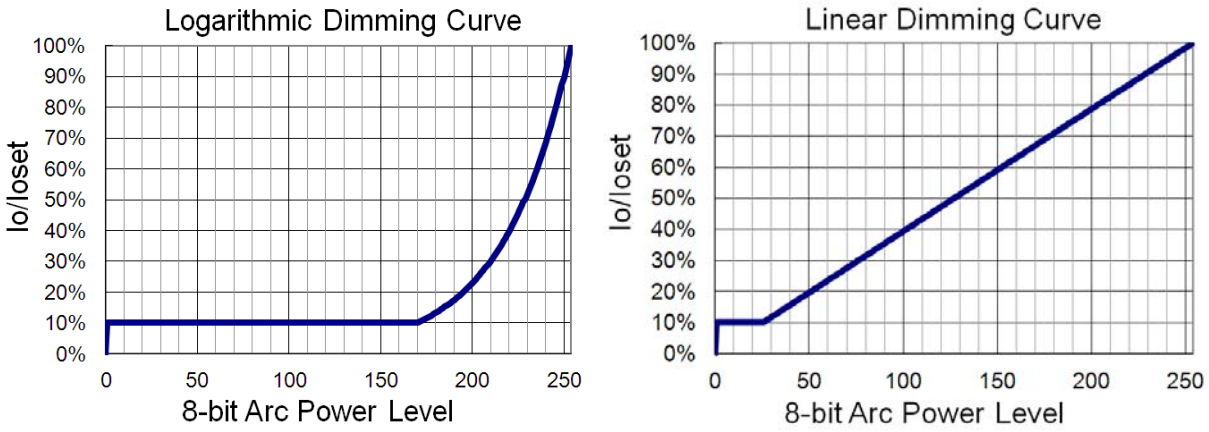
Parameter		Min.	Typ.	Max.	Notes
External Thermal Protection NTC	R1	-	7.81 kOhm	-	When R_NTC falls below R1, External Thermal Protection is triggered, reducing output current until R2 is reached.
	R2	-	4.16 kOhm	-	When R_NTC is less than R2, output current is reduced to the programmed “Protection Current Floor.”
	Protection Current Floor	10%Ioset	60%Ioset	100%Ioset	10%Ioset > Iomin (default setting is 60%)
		Iomin	60%Ioset	100%Ioset	10%Ioset ≤Iomin (default setting is 60%)
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.



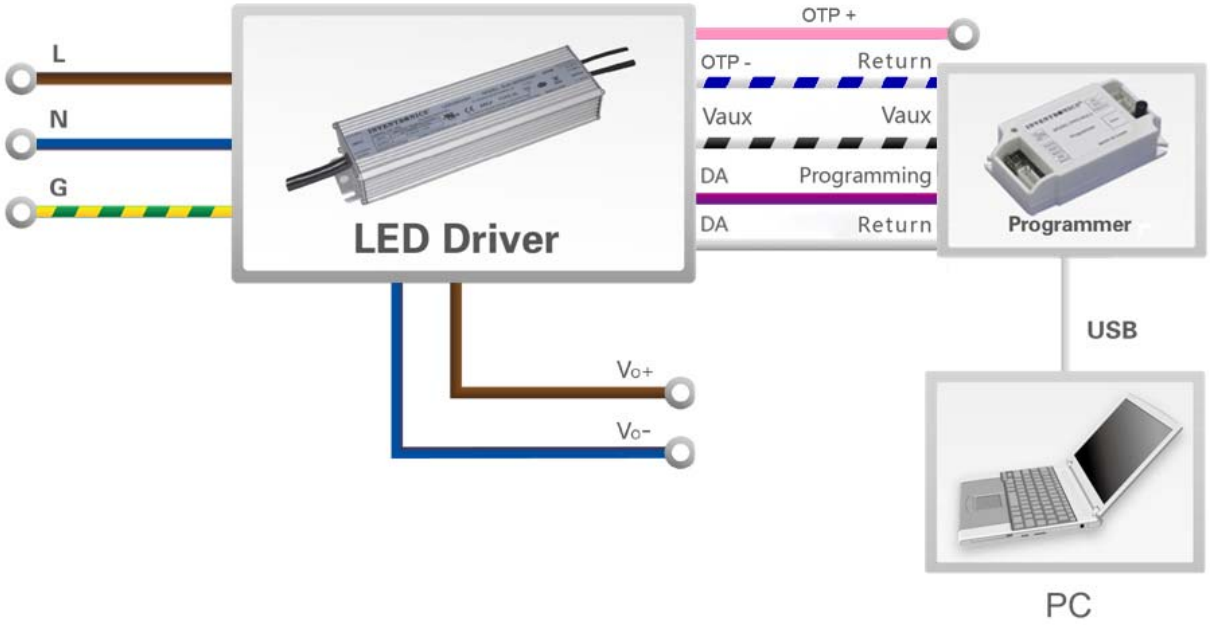


Implementation: DALI Dimming

- **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

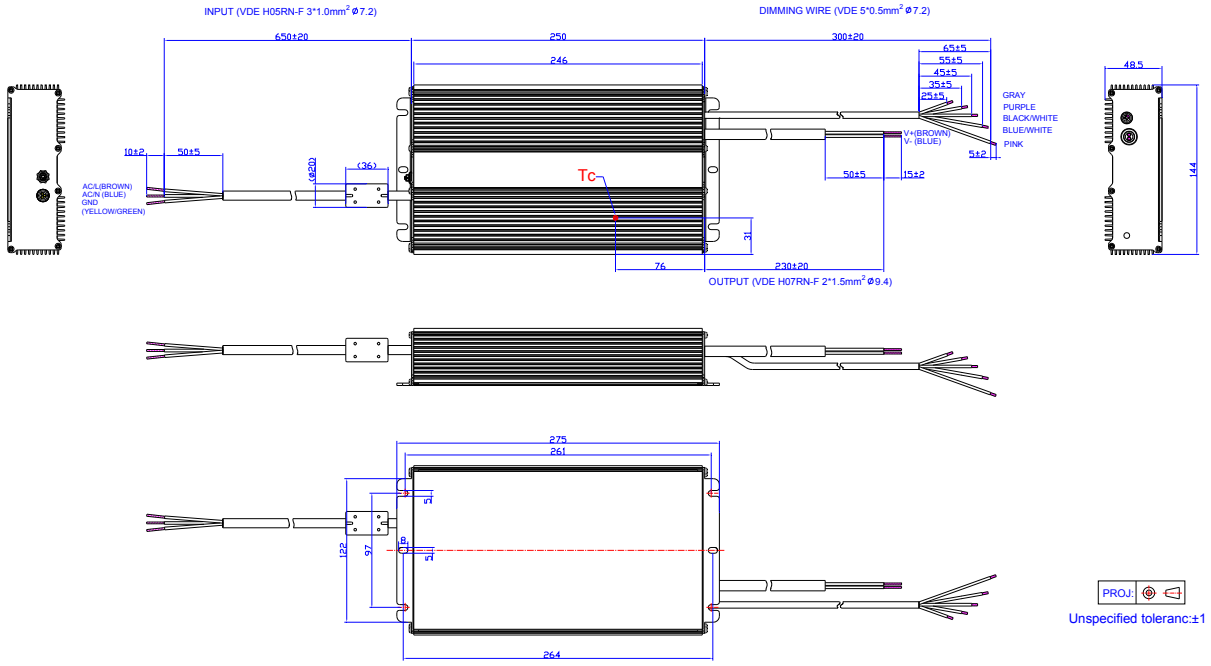


Note: (1) The driver does not need to be powered on during the programming process.

(2) Both “OTP-” and “DA” (gray) should be connected to “Return” of the programmer when programming.

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

Mechanical Outline



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
2017-05-15	A	Datasheets Release	/	/
2017-10-25	B	Features	7 Years Warranty	Added
		Input Specifications	PF/THD	Updated
		General Specifications	Operating Case Temperature for Warranty Tc_w	Updated
2018-01-17	C	Output Specifications	No Load Output Voltage	Updated
		General Specifications	Lifetime	Updated
		Operating Case Temperature for Warranty Tc_w	+70°C	+75°C
		Lifetime vs. Case Temperature	/	Updated