Features

- Ultra High Efficiency (Up to 94%)
- Full Power at Wide Output Current Range (Constant Power)
- Thermal Sensing and Protection for LED Module
- 0-10V/PWM/3-Timer-Modes Dimmable
- Dim-to-Off with Standby Power ≤ 0.5 W
- Always-on Auxiliary Power: 12Vdc, 200mA
- Output Lumen Compensation
- Input Surge Protection: DM 6kV, CM 10kV
- All-Around Protection: OVP, SCP, OTP
- IP67
- SELV Output
- 7 Years Warranty

Description

The *EUD-320SxxxDV* series is a 320W, constant-current, programmable LED driver that operates from 90-305 Vac input with excellent power factor. Created for many lighting applications including high bay, high mast, aquaculture and sports, etc, 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.

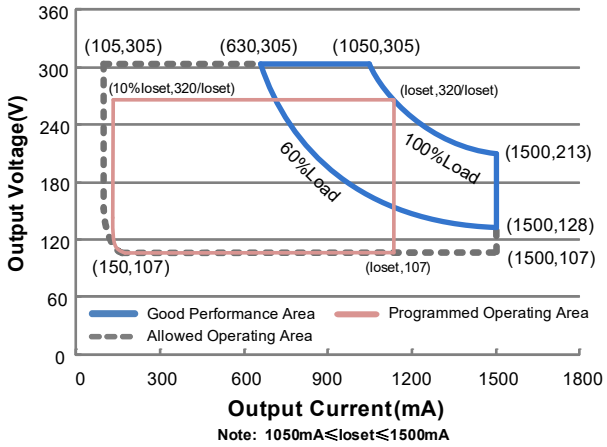
Models

Adjustable Output Current Range(mA)	Full-Power Current Range(mA)(1)	Default Output Current(mA)	Output Voltage Range(Vdc)	Max. Output Power(W)	Typical Efficiency (2)	Typical Power Factor		Model Number(3)
						120Vac	220Vac	
105-1500	1050-1500	1400	107-305	320	94.0%	0.99	0.96	EUD-320S150DV(4)
154-2200	1540-2200	2100	73-208	320	93.5%	0.99	0.96	EUD-320S220DV(4)
224-3200	2240-3200	2800	50-143	320	93.5%	0.99	0.96	EUD-320S320DV(4)
322-4600	3220-4600	4200	35-100	320	93.5%	0.99	0.96	EUD-320S460DV(5)(6)
469-6700	4690-6700	6700	24-68	320	93.5%	0.99	0.96	EUD-320S670DV(5)(6)

Notes: (1) Output current range with constant power at 320W
(2) Measured at 100% load and 220Vac input (see below “General Specifications” for details).
(3) Certified Voltage range 100-240Vac or 127-250Vdc (except CCC, PSE, KC and KCC)
(4) The models are certificated to CCC.
(5) SELV output
(6) The models are certificated to global-mark.

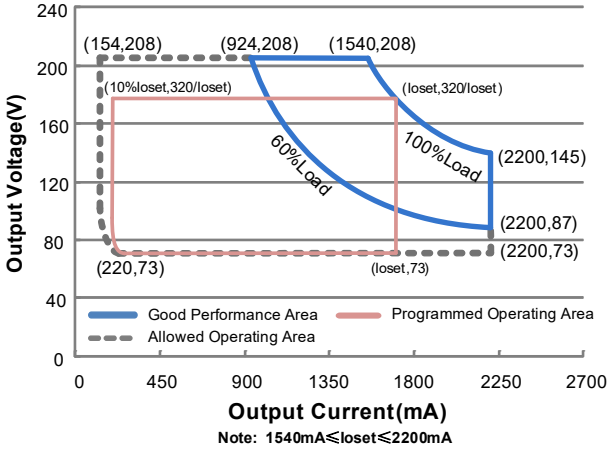
I-V Operating Area

EUD-320S150DV



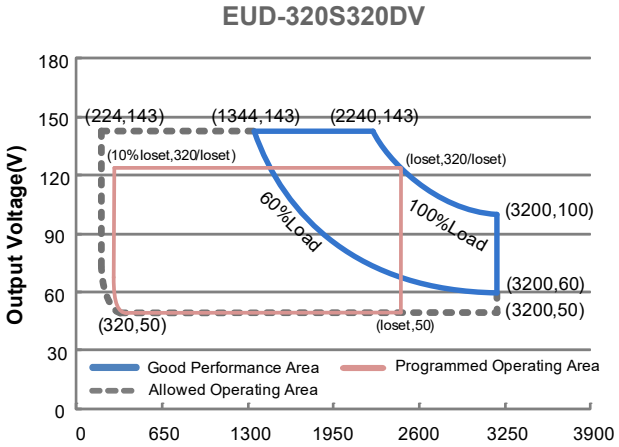
Note: 1050mA≤Ioset≤1500mA

EUD-320S220DV



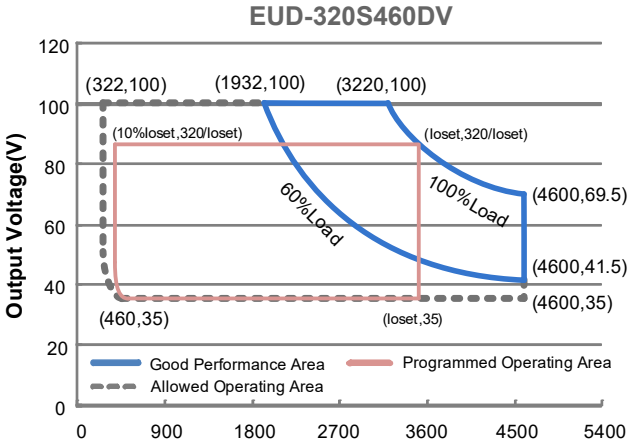
Note: 1540mA≤Ioset≤2200mA

EUD-320S320DV



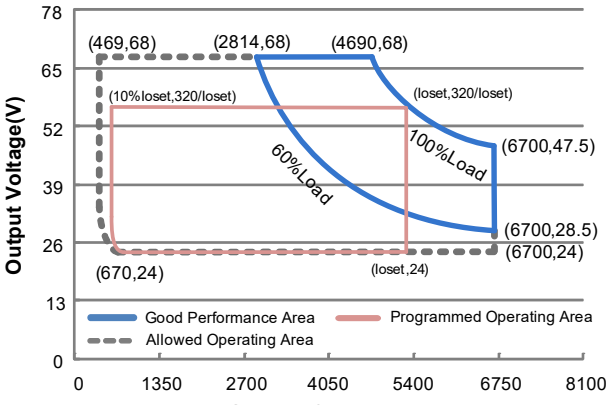
Note: 2240mA≤Ioset≤3200mA

EUD-320S460DV



Note: 3220mA≤Ioset≤4600mA

EUD-320S670DV



Note: 4690mA≤Ioset≤6700mA

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input AC Voltage	90 Vac	-	305 Vac	
Input DC Voltage	127 Vdc	-	250 Vdc	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.70 mA	IEC 60598-1; 240Vac/ 60Hz, grounding effectively
Input AC Current	-	-	3.30 A	Measured at 100% load and 120 Vac input.
	-	-	1.80 A	Measured at 100% load and 220 Vac input.
Inrush Current(I^2t)	-	-	1.90 A^2s	At 220Vac input, 25℃ cold start, duration=3.52 ms, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-240Vac, 50-60Hz, 60%-100% Load (192-320W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100% Load (240-320W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At 100% load condition
Output Current Setting(Ioset) Range				
EUD-320S150DV	105 mA	-	1500 mA	
EUD-320S220DV	154 mA	-	2200 mA	
EUD-320S320DV	224 mA	-	3200 mA	
EUD-320S460DV	322 mA	-	4600 mA	
EUD-320S670DV	469 mA	-	6700 mA	
Output Current Setting Range with Constant Power				
EUD-320S150DV	1050 mA	-	1500 mA	
EUD-320S220DV	1540 mA	-	2200 mA	
EUD-320S320DV	2240 mA	-	3200 mA	
EUD-320S460DV	3220 mA	-	4600 mA	
EUD-320S670DV	4690 mA	-	6700 mA	
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	At 100% load condition, 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%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-320S150DV	-	-	350 V	
EUD-320S220DV	-	-	240 V	
EUD-320S320DV	-	-	160 V	
EUD-320S460DV	-	-	115 V	
EUD-320S670DV	-	-	78 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	-	-	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 "Dim−"

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input:				Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
EUD-320S150DV				
Io=1050mA	89.5%	91.5%	-	
Io=1500mA	88.0%	90.0%	-	
EUD-320S220DV				
Io=1540mA	89.5%	91.5%	-	
Io=2200mA	88.5%	90.5%	-	
EUD-320S320DV				
Io=2240mA	89.5%	91.5%	-	
Io=3200mA	87.5%	89.5%	-	
EUD-320S460DV				
Io=3220mA	89.0%	91.0%	-	
Io=4600mA	87.5%	89.5%	-	
EUD-320S670DV				
Io=4690mA	89.0%	91.0%	-	
Io=6700mA	87.5%	89.5%	-	
Efficiency at 220 Vac input:				Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
EUD-320S150DV				
Io=1050mA	92.0%	94.0%	-	
Io=1500mA	90.5%	92.5%	-	
EUD-320S220DV				
Io=1540mA	91.5%	93.5%	-	
Io=2200mA	90.5%	92.5%	-	
EUD-320S320DV				
Io=2240mA	91.5%	93.5%	-	
Io=3200mA	90.0%	92.0%	-	
EUD-320S460DV				
Io=3220mA	91.5%	93.5%	-	
Io=4600mA	90.0%	92.0%	-	
EUD-320S670DV				
Io=4690mA	91.5%	93.5%	-	
Io=6700mA	89.5%	91.5%	-	

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 277 Vac input: EUD-320S150DV Io=1050mA Io=1500mA EUD-320S220DV Io=1540mA Io=2200mA EUD-320S320DV Io=2240mA Io=3200mA EUD-320S460DV Io=3220mA Io=4600mA EUD-320S670DV Io=4690mA Io=6700mA	 92.0% 91.0% 92.0% 90.5% 92.0% 90.0% 91.5% 90.5% 91.5% 90.0%	 94.0% 93.0% 94.0% 92.5% 94.0% 92.0% 93.5% 92.5% 93.5% 92.0%	 - - - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Standby power	-	-	0.5 W	Measured at 230Vac/50Hz; Dimming off
MTBF	-	237,000 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 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)	8.86 × 3.86 × 1.75 225 × 98 × 44.8			With mounting ear 9.88 × 3.86 × 1.75 251 × 98 × 44.8
Net Weight	-	1875 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	EUD-320S150DV EUD-320S220DV EUD-320S320DV EUD-320S460DV EUD-320S670DV	10%Ioset	-	Ioset	1050 mA ⩽ Ioset ⩽ 1500 mA 1540 mA ⩽ Ioset ⩽ 2200 mA 2240 mA ⩽ Ioset ⩽ 3200 mA 3220 mA ⩽ Ioset ⩽ 4600 mA 4690 mA ⩽ Ioset ⩽ 6700 mA
	EUD-320S150DV EUD-320S220DV EUD-320S320DV EUD-320S460DV EUD-320S670DV	105 mA 154 mA 224 mA 322 mA 469 mA	-	Ioset	105 mA ⩽ Ioset < 1050 mA 154 mA ⩽ Ioset < 1540 mA 224 mA ⩽ Ioset < 2240 mA 322 mA ⩽ Ioset < 3220 mA 469 mA ⩽ Ioset < 4690 mA

Dimming Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
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 Inventronics Programing Software.
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

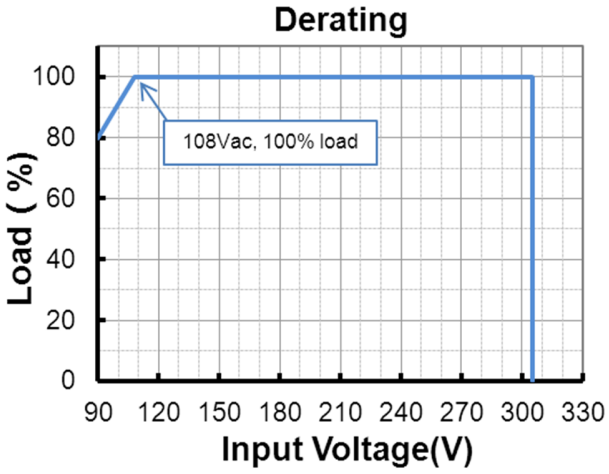
Safety Category	Standard
ENEC & CE	EN 61347-1, EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
CCC	GB 19510.1, GB 19510.14
PSE	J 61347-1, J 61347-2-13
KC	KC 61347-1, KC 61347-2-13
global-mark	AS/NZS 61347.1, AS/NZS 61347.2.13
Performance	**Standard**
ENEC	EN IEC 62384
EMI Standards	**Notes**
EN IEC 55015/GB/T 17743/KS C 9815(1)	Conducted emission Test & Radiated emission Test
EN IEC 61000-3-2/GB 17625.1	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker

Safety &EMC Compliance (Continued)

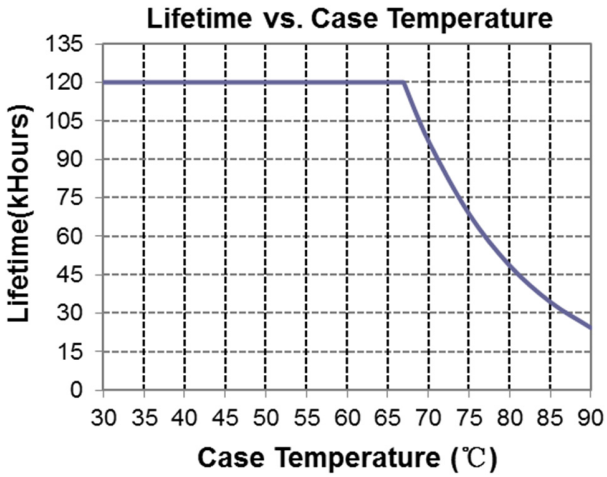
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: Differential Mode 6 kV, Common Mode 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/KS C 9547	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.
(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.

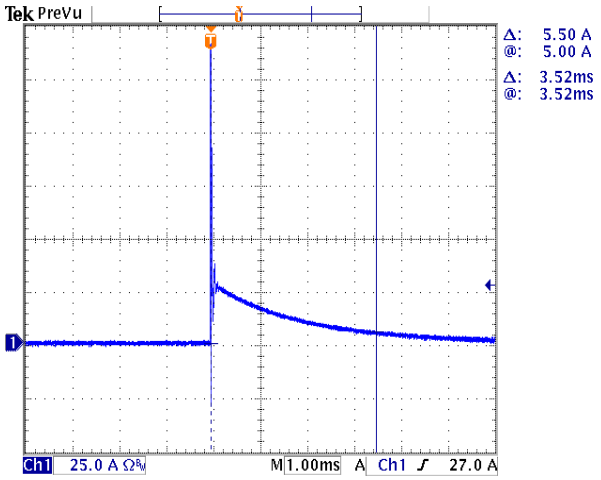
Derating



Lifetime vs. Case Temperature

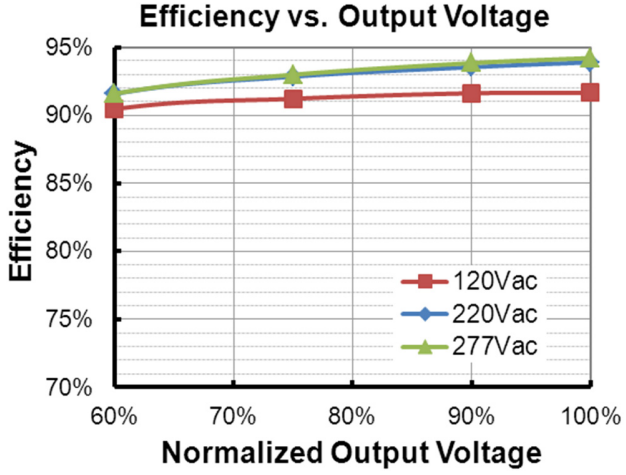


Inrush Current Waveform

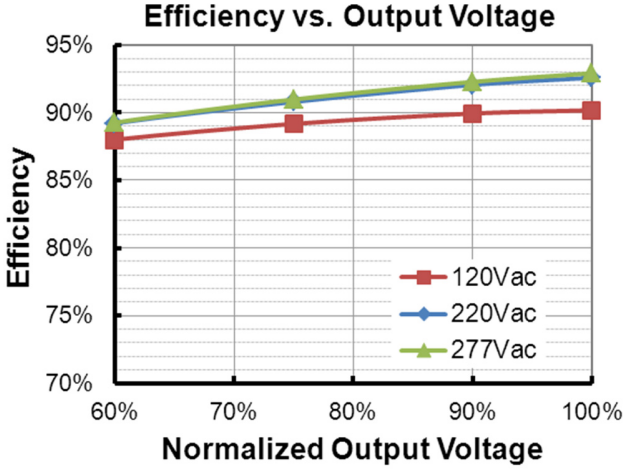


Efficiency vs. Load

EUD-320S150DV(Io=1050mA)

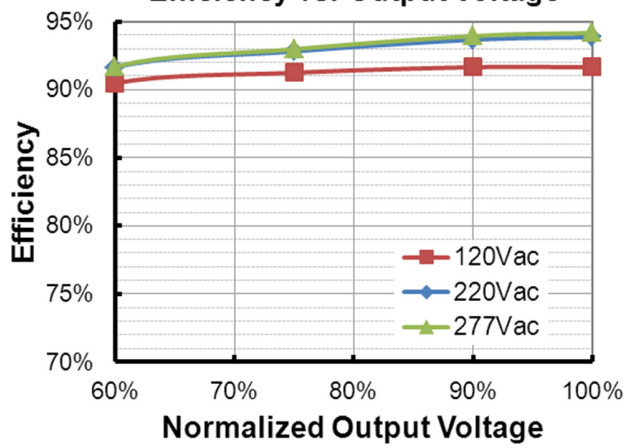


EUD-320S150DV(Io=1500mA)

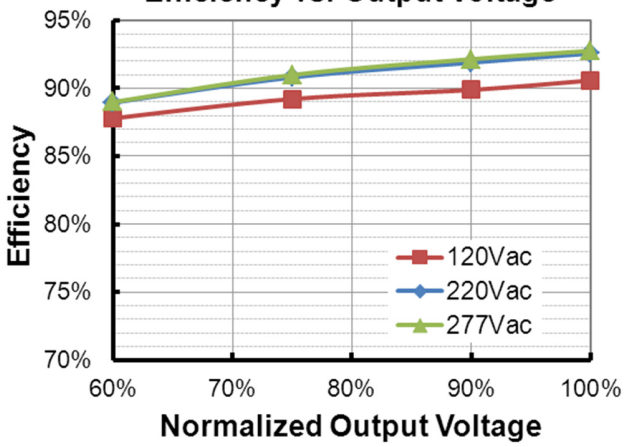


www.inventronics-co.com Tel: 86-571-56565800 Fax: 86-571-86601139 sales@inventronics-co.com

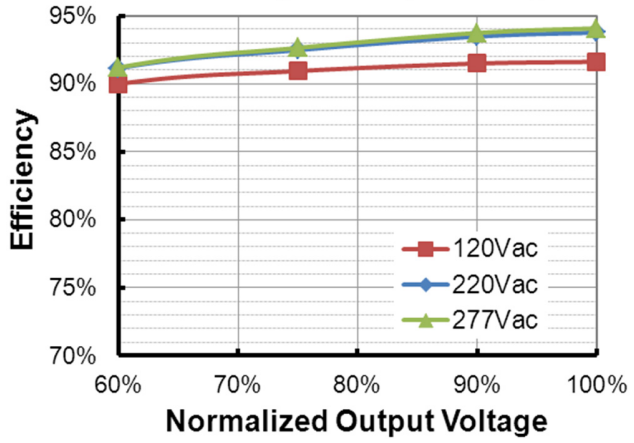
EUD-320S220DV(Io=1540mA)



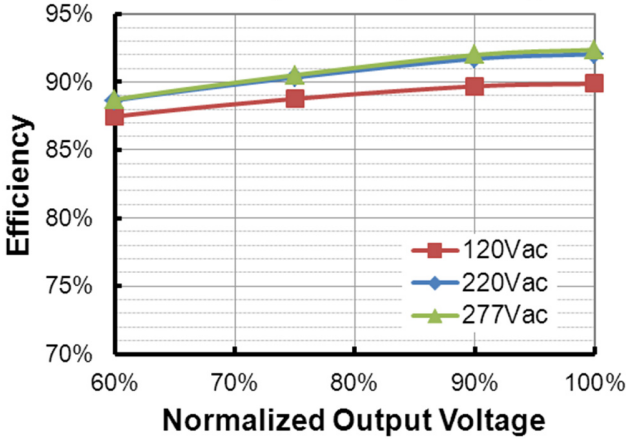
EUD-320S220DV(Io=2200mA)



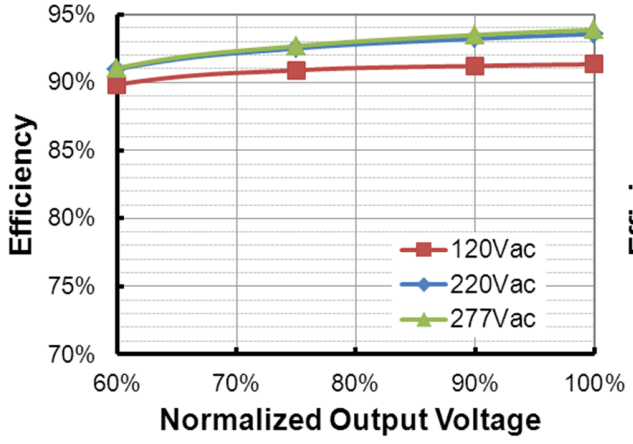
EUD-320S320DV(Io=2240mA)



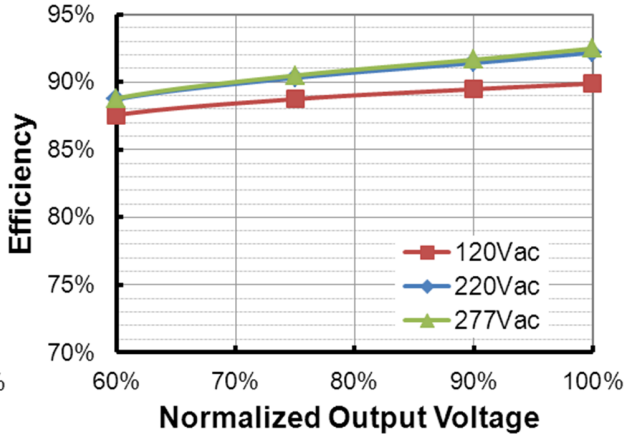
EUD-320S320DV(Io=3200mA)



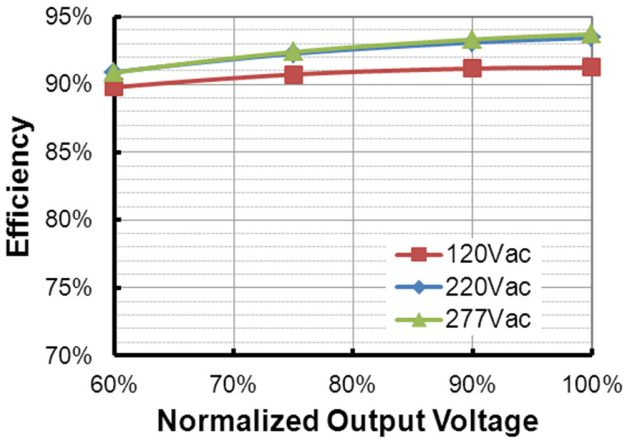
EUD-320S460DV(Io=3220mA)



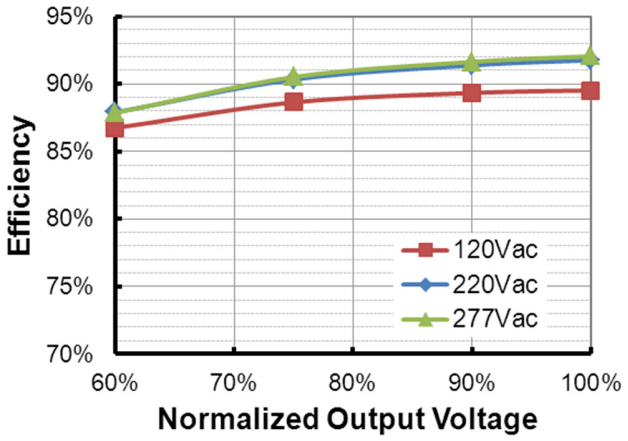
EUD-320S460DV(Io=4600mA)



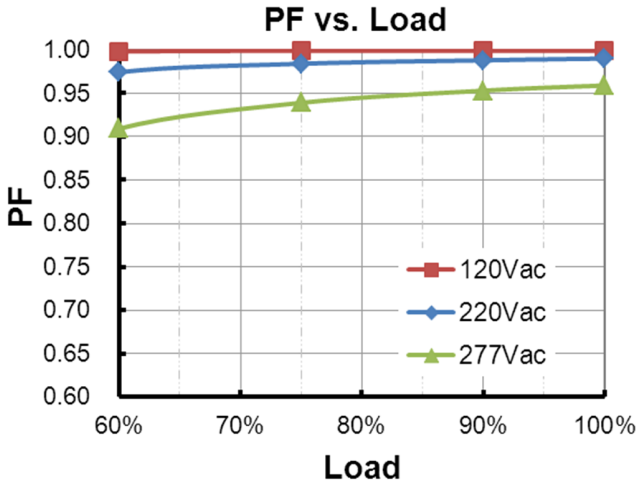
EUD-320S670DV(Io=4690mA)



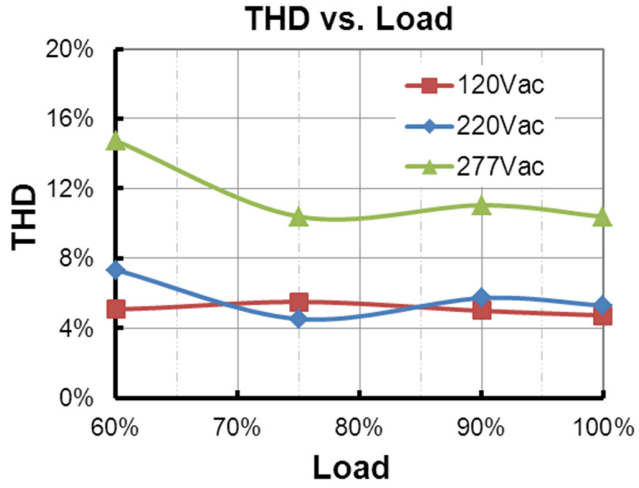
EUD-320S670DV(Io=6700mA)



Power Factor



Total Harmonic Distortion



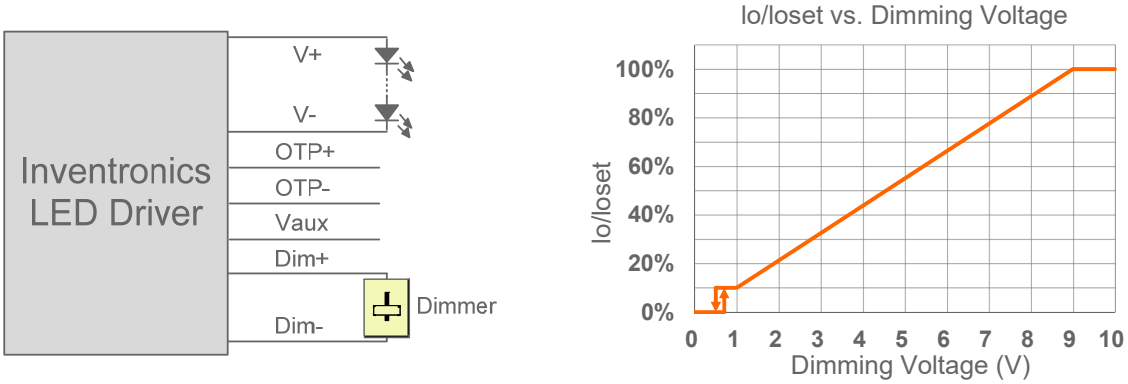
Protection Functions

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

0-10V Dimming

The recommended implementation of the dimming control is provided below.

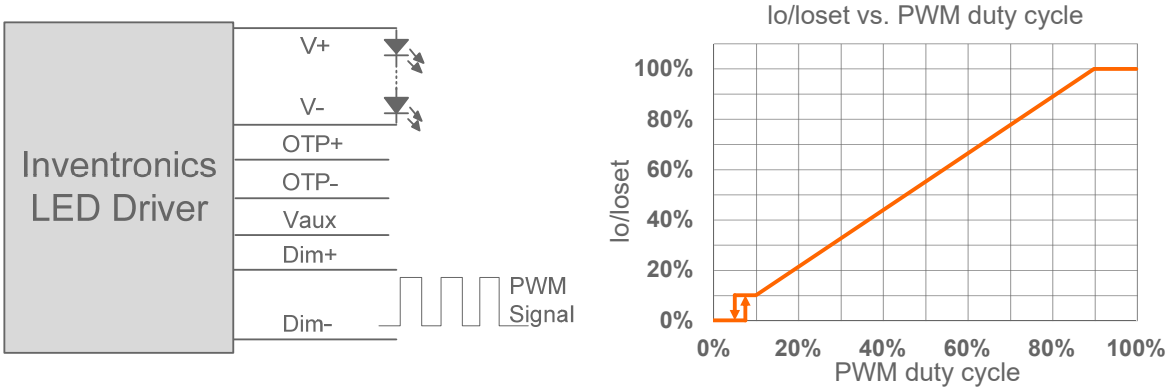


Implementation 1: DC Input

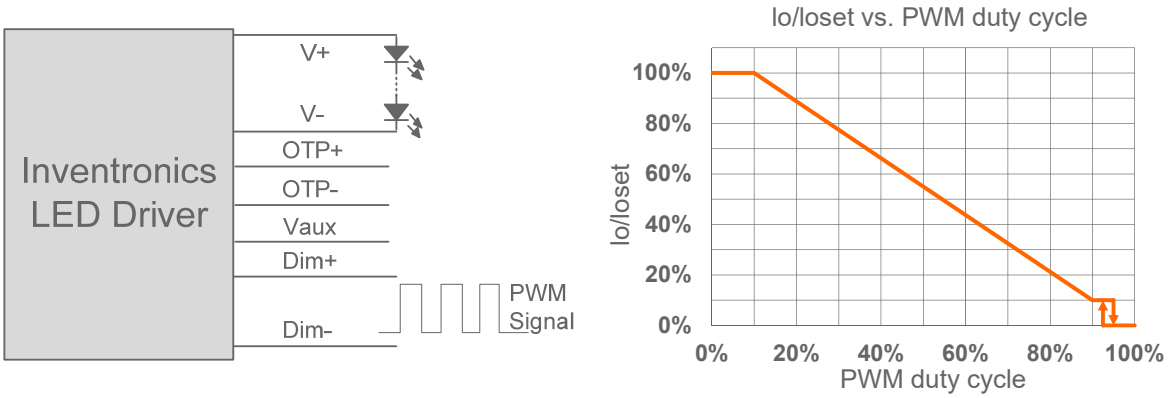
Notes:

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 dim to off and be standby.

Time Dimming

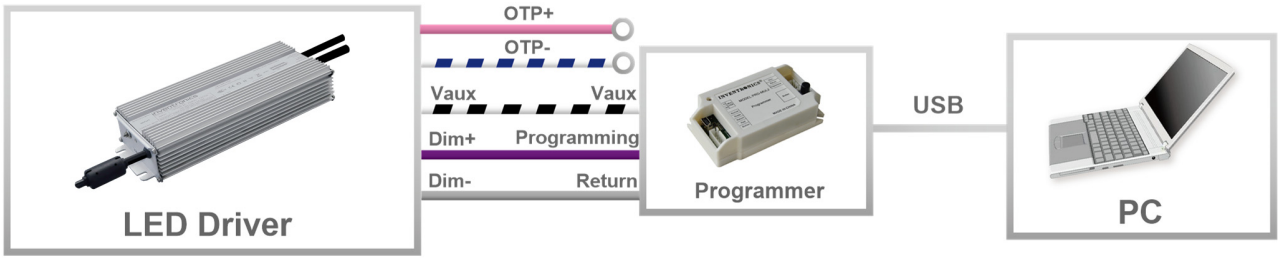
Time dimming control includes 3 kinds of modes, they are Self Adapting-Midnight, Self Adapting-Percentage and Traditional Timer.

- **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.

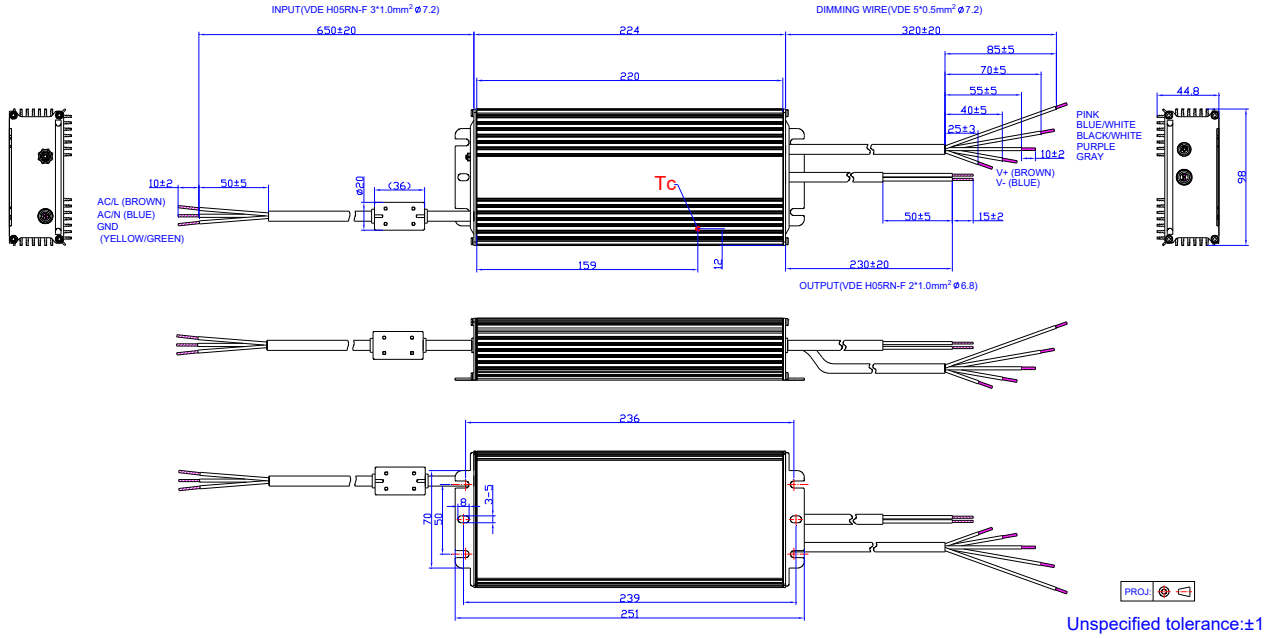
Programming Connection Diagram



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



Unspecified tolerance:±1

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
2016-03-28	A	Datasheets Release	/	/
2017-07-26	B	KC	/	Added
		Models	Notes	Updated
		Input Specifications	PF/THD	Updated
		Output Specifications	Temperature Coefficient of Ioset	Updated
		General Specifications	Dimensions	Updated
		Mechanical Outline	/	Updated
2017-10-25	C	Features	Always-on Auxiliary Power	Added
		Features	7 Years Warranty	Added
		General Specifications	Operating Case Temperature for Warranty Tc_w	Updated
2018-01-22	D	Description	/	Updated
		General Specifications	Lifetime	Updated
		Operating Case Temperature for Warranty Tc_w	+70°C	+75°C
		Lifetime vs. Case Temperature	/	Updated
2019-10-16	E	CCC Logo	/	Updated
		Global Mark Logo	/	Added
		Independent Logo	/	Added
		Features	Timer Dimmable (3 Timer Modes)	3-Timer-Modes Dimmable
		Features	6kV line-line, 10kV line-earth	DM 6kV, CM 10kV
		Features	Waterproof (IP67)	IP67
		Features	Suitable for Independent Use	Deleted
		Safety &EMC Compliance	ENEC	Added
		Safety &EMC Compliance	TUV	Added
		Safety &EMC Compliance	CB	Added
		Safety &EMC Compliance	CCC	Added
		Safety &EMC Compliance	PSE	Added
		Safety &EMC Compliance	KC	Added
		Safety &EMC Compliance	Global Mark	Added

Revision History (Continued)

Change Date	Rev.	Description of Change		
		Item	From	To
2019-10-16	E	Safety &EMC Compliance	EN 55015	EN 55015/GB 17743/KN 15(1)
		Safety &EMC Compliance	EN 61000-3-2	EN 61000-3-2/GB 17625.1
		Safety &EMC Compliance	EN 61000-4-5	Updated
		Mechanical Outline	/	Updated
		RoHS Compliance	/	Updated
2024-05-17	F	Product Photograph	/	Updated
		TUV logo	/	Deleted
		global-mark logo	/	Updated
		Models	Notes(5)	Added
		Safety &EMC Compliance	/	Updated
		Programming Connection Diagram	/	Updated
2024-09-09	G	Format	/	Updated
		Models	Notes(4)	Added

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