Features

- Ultra High Efficiency (Up to 93.0%)
- Full Power at Wide Output Current Range (Constant Power)
- 0-10V/PWM/3-Timer-Modes Dimmable
- Dim-to-Off with Standby Power ≤1 W
- Output Lumen Compensation
- Input Surge Protection: DM 6kV
- All-Around Protection: OVP, SCP, OTP
- IP67
- Class II, Double Insulation
- Suitable for Built-in Use
- 5 Years Warranty

Description

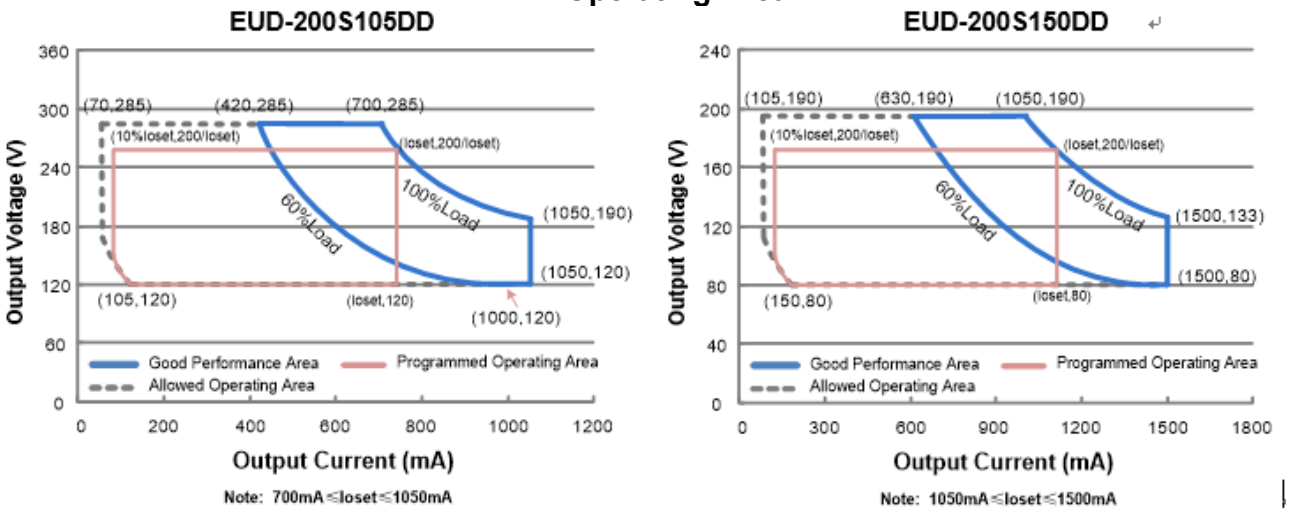
The *EUD-200SxxxDD* series is a 200W, constant-current, programmable LED driver that operates from 90-305 Vac input with excellent power factor. Created for many lighting applications including high bay, high mast and roadway, etc, it provides a dim-to-off mode with low standby power. The high efficiency 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	Full-Power Current Range (1)	Default Output Current	Input Voltage Range(2)	Output Voltage Range	Max. Output Power	Typical Efficiency (3)	Typial Power Factor		Model Number (4)
							120Vac	220Vac	
70-1050mA	700-1050mA	700 mA	90~305 Vac 127~250 Vdc	120~285Vdc	200 W	93.0%	0.99	0.96	EUD-200S105DD
105-1500mA	1050-1500mA	1400 mA	90~305 Vac 127~250 Vdc	80~190Vdc	200 W	93.0%	0.99	0.96	EUD-200S150DD

Notes: (1) Output current range with constant power at 200W
(2) Certified input voltage range: 100-240Vac or 127-250Vdc (except KS)
(3) Measured at 100% load and 220Vac input (see below “General Specifications” for details).
(4) All the models are certificated to KS, except EUD-200S105DD

I-V Operating Area



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	IEC60598-1; 240Vac/ 60Hz
Input AC Current	-	-	2.0A	Measured at 100% load and 120 Vac input.
	-	-	1.0 A	Measured at 100% load and 220 Vac input.
Inrush Current(I^2t)	-	-	5.97 A^2s	At 220Vac input, 25°C cold start, duration=1.36 ms, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-240Vac, 50-60Hz, 60%-100% Load (120-200W)
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	100% load
Output Current Setting(Ioset) Range EUD-200S105DD EUD-200S150DD	 70 mA 105 mA	 - -	 1050 mA 1500 mA	
Output Current Setting Range with Constant Power EUD-200S105DD EUD-200S150DD	 700 mA 1050 mA	 - -	 1050 mA 1500 mA	
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	100% load, 20 MHz BW

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Output Current Ripple at < 200 Hz (pk-pk)	-	2%Iomax	-	100% load
Startup Overshoot Current	-	-	10%Iomax	100% load
No Load Output Voltage EUD-200S105DD EUD-200S150DD	 - -	 - -	 330 V 220 V	
Line Regulation	-	-	±0.5%	100% load
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	1.0 s	2.0 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-200S105DD Io=700 mA Io=1050 mA EUD-200S150DD Io=1050 mA Io=1500 mA	 88.0% 88.0% 89.0% 88.0%	 90.0% 90.0% 91.0% 90.0%	 - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 220 Vac input: EUD-200S105DD Io=700 mA Io=1050 mA EUD-200S150DD Io=1050 mA Io=1500 mA	 91.0% 91.0% 91.0% 90.5%	 93.0% 93.0% 93.0% 92.5%	 - - - -	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-200S105DD Io=700 mA Io=1050 mA EUD-200S150DD Io=1050 mA Io=1500 mA	 91.5% 91.0% 91.5% 91.0%	 93.5% 93.0% 93.5% 93.0%	 - - - -	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	-	1 W	-	Measured at 230Vac/50Hz; Dimming off
MTBF	-	288,000 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 60°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	-	+70°C	Case temperature for 5 years warranty Humidity: 5%RH to 95%RH

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 95%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	8.82 × 2.66 × 1.56 224 × 67.5 × 39.5			With mounting ear 9.88 × 2.66 × 1.56 251 × 67.5 × 39.5
Net Weight	-	1200 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-200S105DD EUD-200S150DD	10%Ioset	-	Ioset	700mA ⩽ Ioset ⩽ 1050mA 1050mA ⩽ Ioset ⩽ 1500mA
	EUD-200S105DD EUD-200S150DD	70mA 105mA	-	Ioset	70mA ⩽ Ioset ＜ 700mA 105mA ⩽ Ioset ＜ 1050mA
Recommended Dimming Input Range		0 V	-	10 V	Default 0-10V dimming mode.
Dim off Voltage		0.4 V	0.55V	0.7 V	
Dim on Voltage		0.6 V	0.75 V	0.9 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
ENEC & TUV & CE(1)	EN 61347-1(2), EN61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
KS	KS C 7655

Safety &EMC Compliance (Continued)

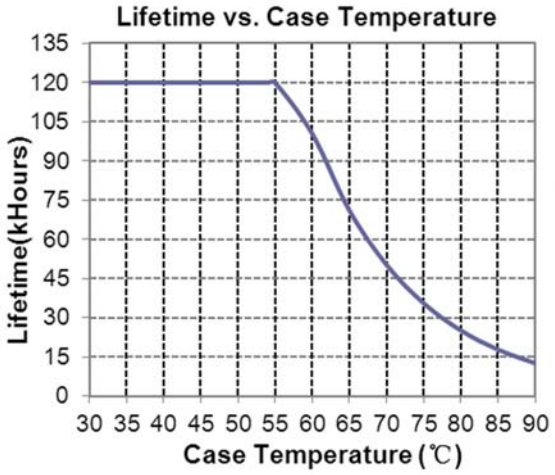
EMI Standards	Notes
EN 55015(3)	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EMS Standards	**Notes**
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: Differential Mode 6 kV
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).

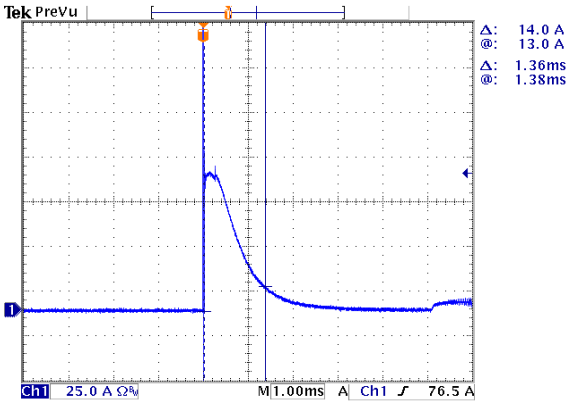
(2) This product meets all requirements for EN 61347-1, Annex O (Double insulation). However, the allowed leakage current could cause a mild shock if the case is touched while energized.

(3) 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.

Lifetime vs. Case Temperature

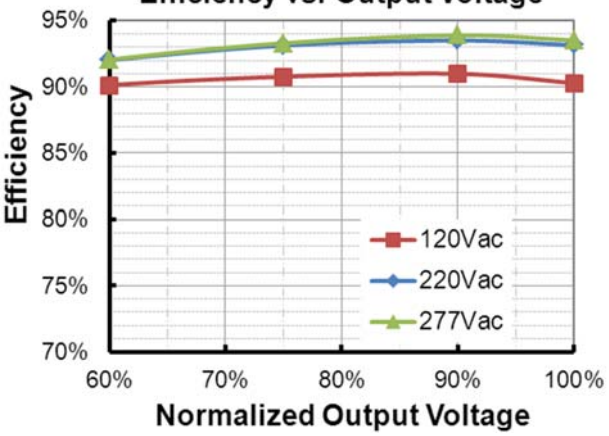


Inrush Current Waveform

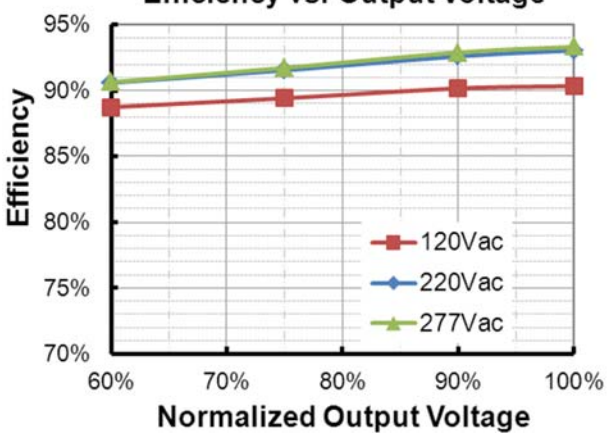


Efficiency vs. Load

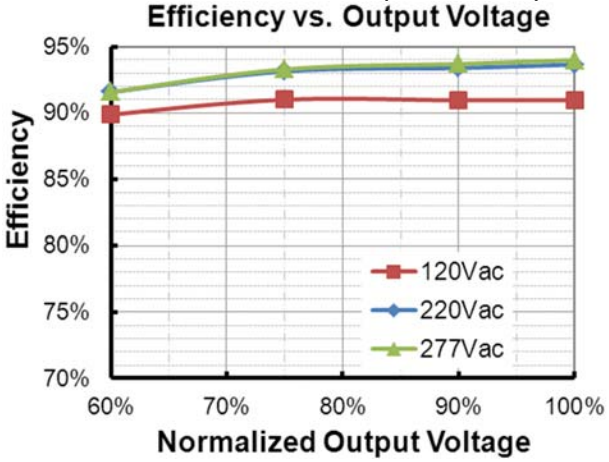
EUD-200S105DD(Io=700mA)



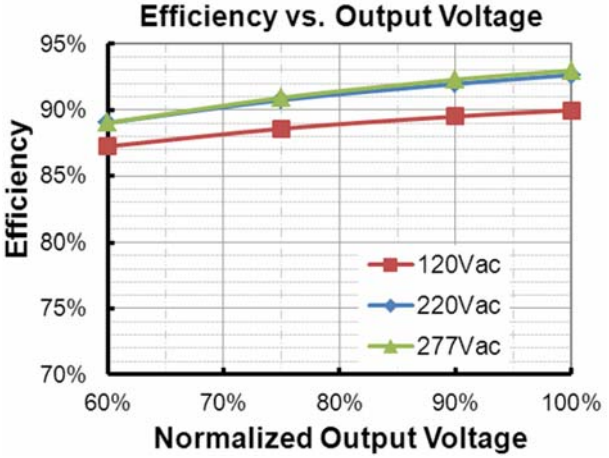
EUD-200S105DD(Io=1050mA)



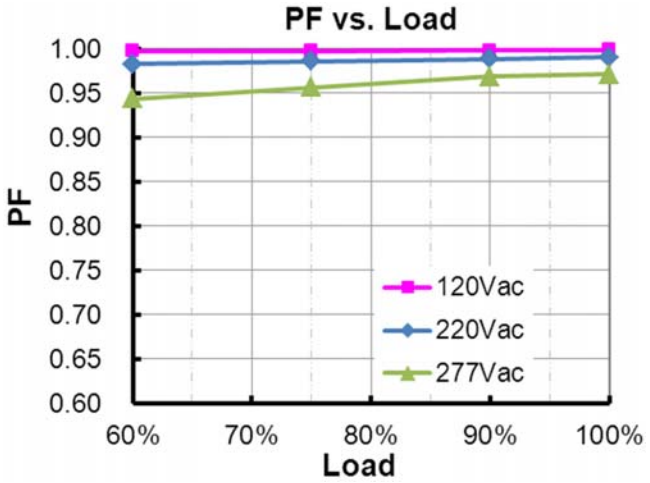
EUD-200S150DD(Io=1050mA)



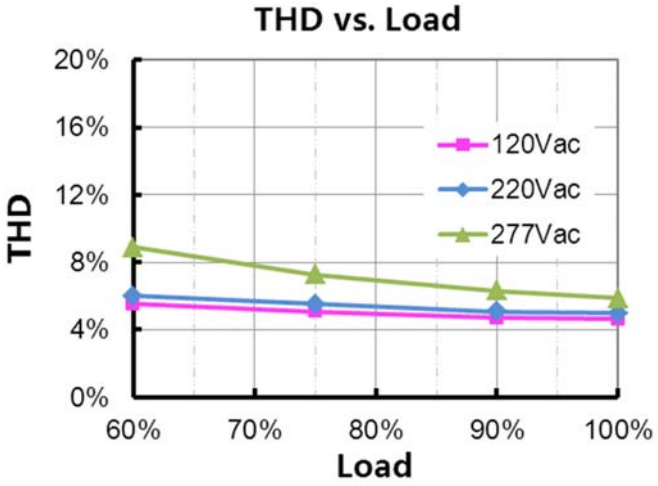
EUD-200S150DD(Io=1500mA)



Power Factor



Total Harmonic Distortion



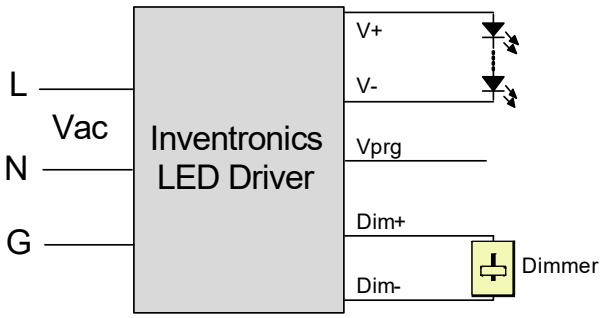
Protection Functions

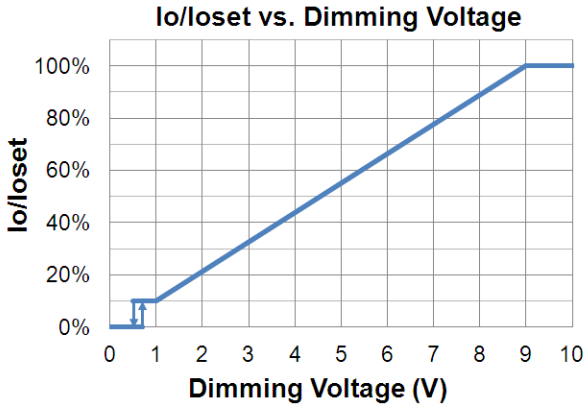
Parameter	Notes
Over Temperature Protection	Decreases output current, returning to normal after over temperature is removed.
Short Circuit Protection	Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.
Over Voltage 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.





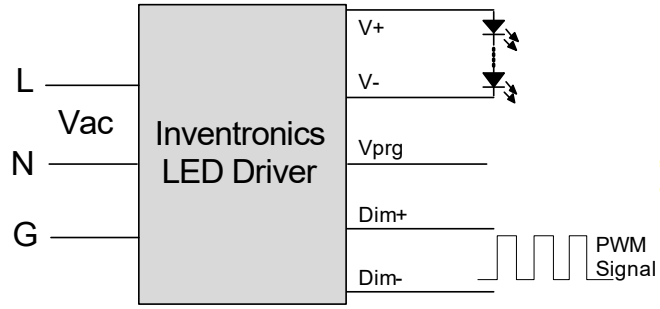
Implementation 1: DC Input

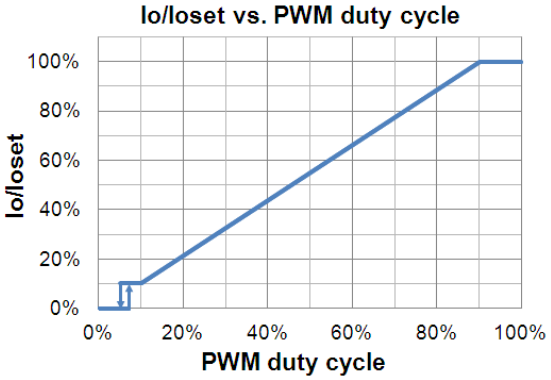
Notes:

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.

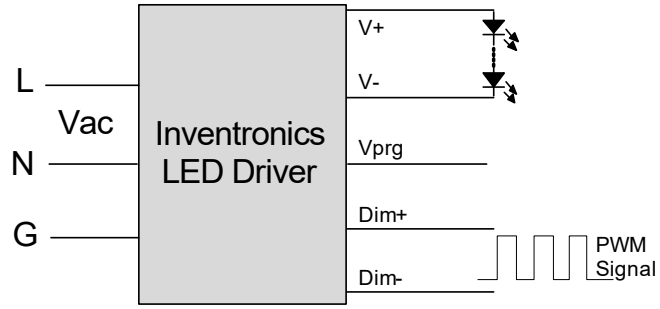
● PWM Dimming

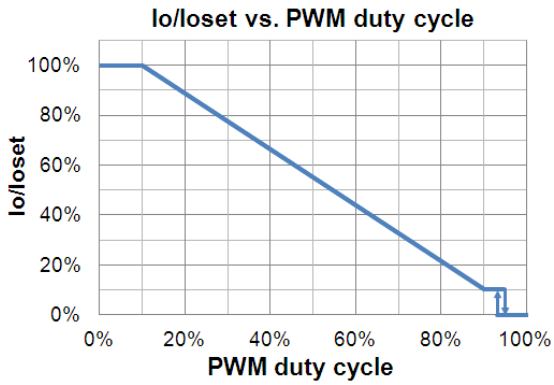
The recommended implementation of the dimming control is provided below.





Implementation 2: Positive logic





Implementation 3: Negative logic

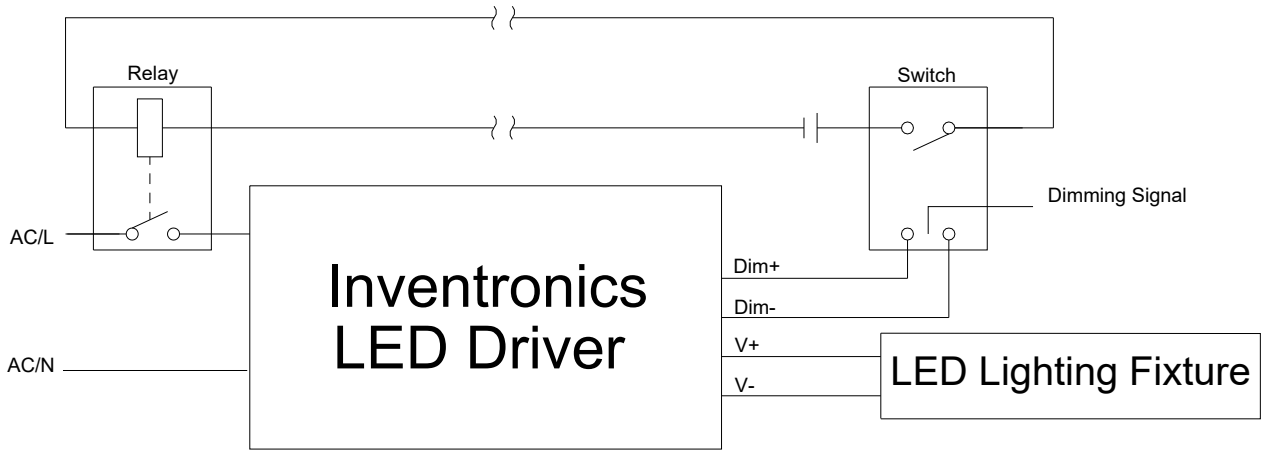
- **Time Dimming**

  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.

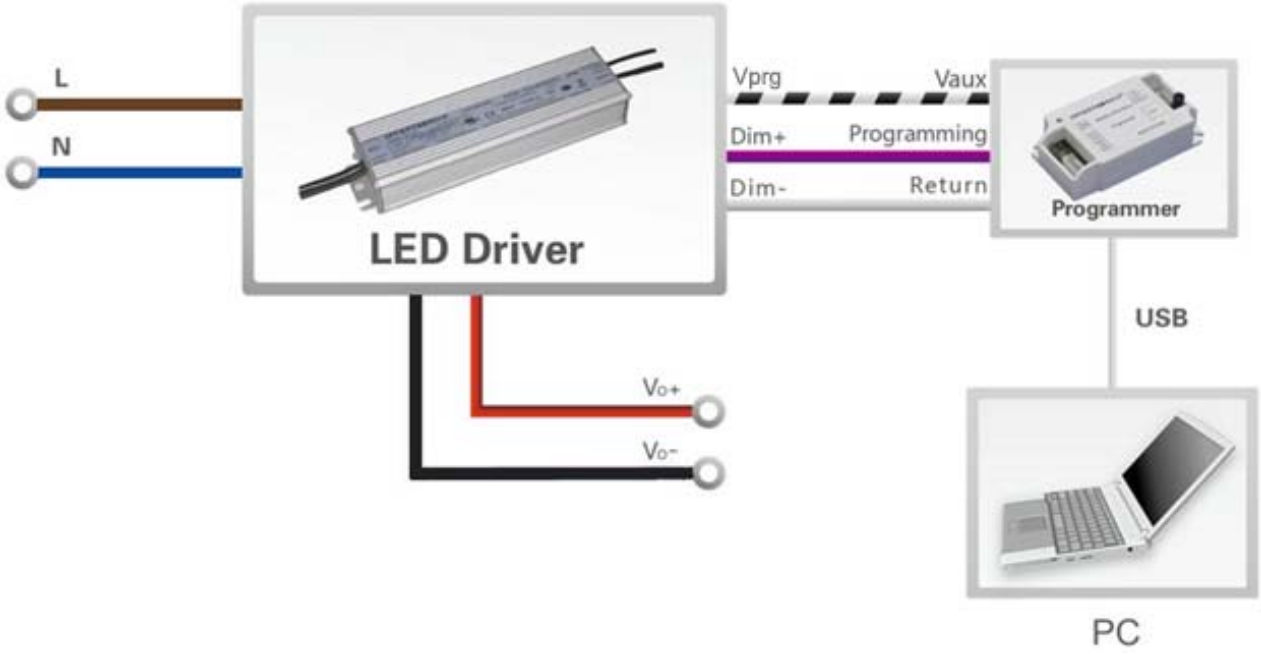


Implementation 4: 0% Light Brightness Wiring Method

- **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.

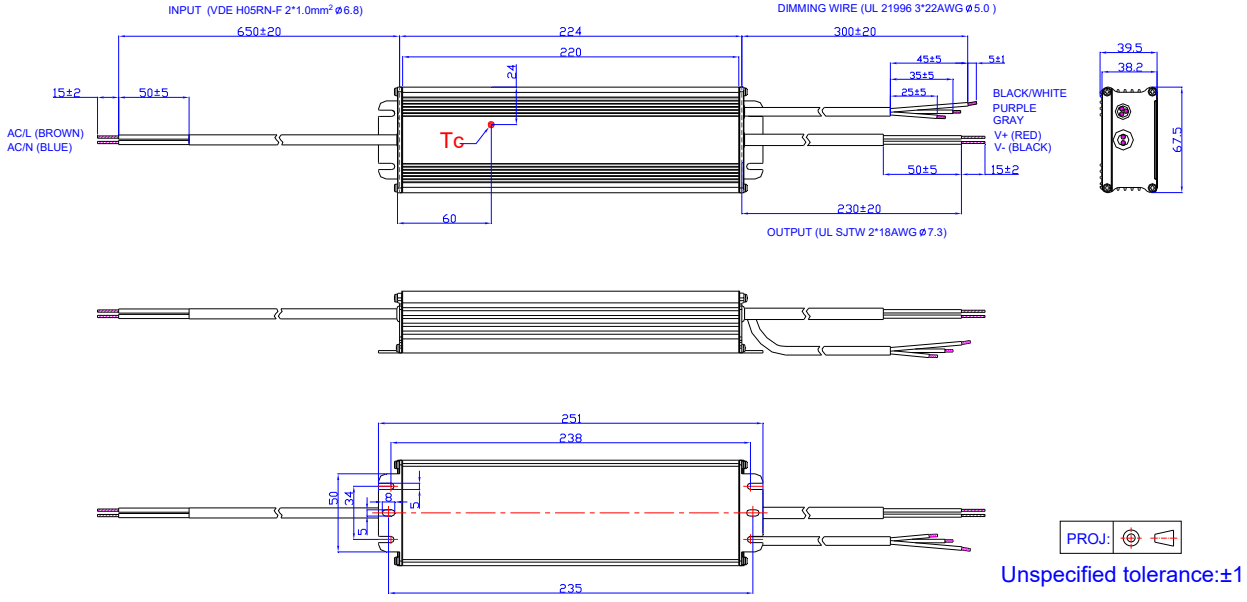
Programming Connection Diagram



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



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
2015-03-10	A	Datasheets Release	/	/
2018-04-03	B	Description	/	Updated
		Models	Output Current Range	Adjustable Output Current Range
		Input Specifications	PF/THD	Updated
		Output Specifications	Temperature Coefficient of Ioset	Updated
		General Specifications	Dimensions	Updated
		Safety &EMC Compliance	/	Updated
		Programming Connection Diagram	/	Updated
		Mechanical Outline	/	Updated
2018-06-14	C	Features	5 Years Warranty	Updated
		Output Specifications	No Load Output Voltage	Updated
		Input Specifications	Turn-on Delay Time	Updated
		Standby power	Max 1W	Typ 1W
		Operating Case Temperature for Warranty Tc_w	/	Updated
2019-09-20	D	KS Logo	/	Added
		Features	0-10V/PWM/Timer Dimmable (3 Timer Modes)	0-10V/PWM/3-Timer-Modes Dimmable
		Features	6kV line-line	DM 6kV
		Features	Waterproof (IP67)	IP67
		Models	Notes(4)	Added
		Safety &EMC Compliance	ENEC	Added
		Safety &EMC Compliance	TUV	Added
		Safety &EMC Compliance	CB	Added
		Safety &EMC Compliance	KS	Added
		Safety &EMC Compliance	EN 61000-4-5	Updated
		Mechanical Outline	/	Updated
		RoHS Compliance	/	Updated
2021-11-26	E	Safety &EMC Compliance	Note(1)	Updated
		0% Light Brightness	/	Updated