

Features

- Ultra High Efficiency (Up to 93.5%)
- Full Power at Wide Output Current Range (Constant Power)
- Thermal Sensing and Protection for LED Module
- 0-10V/PWM/Timer Dimmable (3 Timer Modes)
- Dim-to-Off with Standby Power ≤ 0.5 W
- Output Lumen Compensation
- Input Surge Protection: 10kV line-line
- All-Around Protection: OVP, SCP, OTP
- Waterproof (IP67)
- SELV Output
- Class II, Double Insulation
- Suitable for Built-in Use



Description

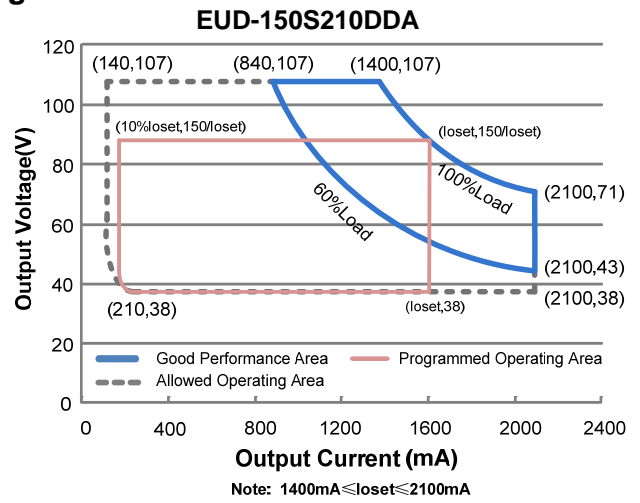
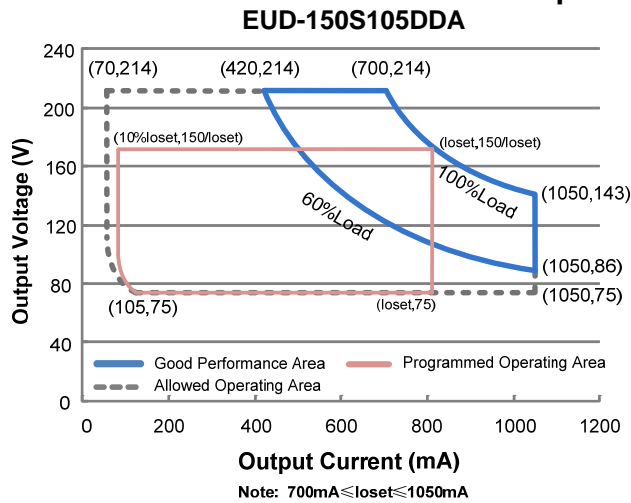
The EUD-150SxxxDDA series is a 150W, constant-current, programmable LED driver that operates from 90-305 Vac input with excellent power factor. Created for high bay, tunnel and roadway lights, it provides a dim-to-off mode with low standby power. The high efficiency of these drivers and compact metal 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
							120Vac	220Vac	
70-1050mA	700-1050mA	700 mA	90~305Vac 127~250Vdc	75~214Vdc	150 W	93.5%	0.99	0.96	EUD-150S105DDA
140-2100mA	1400-2100mA	1400 mA	90~305Vac 127~250Vdc	38~107Vdc	150 W	93.0%	0.99	0.96	EUD-150S210DDA ⁽⁴⁾

- Notes:** (1) Output current range with constant power at 150W
 (2) Certified input voltage range: 100-240Vac or 127-250Vdc
 (3) Measured at full load and 220Vac input (see below "General Specifications" for details).
 (4) SELV Output

I-V Operating Area



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
Input AC Current	-	-	1.96 A	Measured at full load and 100 Vac input.
	-	-	0.85 A	Measured at full load and 220 Vac input.
Inrush Current(I ² t)	-	-	1.90 A ² s	At 220Vac input, 25°C cold start, duration=872 μs, 10%I _{pk} -10%I _{pk} . See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-240Vac, 50-60Hz, 60%-100% Load (90-150W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100%load (112.5-150W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%I _{aset}	-	5%I _{aset}	At full load condition
Output Current Setting(I _{aset}) Range	EUD-150S105DDA	70 mA	-	1050mA
	EUD-150S210DDA	140 mA	-	2100mA
Output Current Setting Range with Constant Power	EUD-150S105DDA	700 mA	-	1050mA
	EUD-150S210DDA	1400 mA	-	2100mA
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)	-	2%I _{omax}	-	At full load condition. Only this component of ripple is associated with visible flicker.

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Startup Overshoot Current	-	-	10%Iomax	At full load condition
No Load Output Voltage				
EUD-150S105DDA	-	-	240 V	
EUD-150S210DDA	-	-	120 V	
Line Regulation	-	-	±0.5%	Measured at full load
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-"

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

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input:				
EUD-150S105DDA				Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Io= 700mA	89.0%	91.0%	-	
Io=1050mA	88.0%	90.0%	-	
EUD-150S210DDA				
Io=1400mA	88.5%	90.5%	-	
Io=2100mA	87.5%	89.5%	-	
Efficiency at 220 Vac input:				
EUD-150S105DDA				Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Io= 700mA	91.5%	93.5%	-	
Io=1050mA	90.5%	92.5%	-	
EUD-150S210DDA				
Io=1400mA	91.0%	93.0%	-	
Io=2100mA	90.0%	92.0%	-	
Efficiency at 277 Vac input:				
EUD-150S105DDA				Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Io= 700mA	91.5%	93.5%	-	
Io=1050mA	91.0%	93.0%	-	
EUD-150S210DDA				
Io=1400mA	91.0%	93.0%	-	
Io=2100mA	90.5%	92.5%	-	
Standby power	-	-	0.5 W	Measured at 230Vac/50Hz; Dimming off
MTBF	-	270,000 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 70°C case temperature; See lifetime vs. Tc curve for the details

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Operating Case Temperature for Safety Tc_s	-40°C	-	+90°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+80°C	
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 100%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	8.03 × 2.66 × 1.56 204 × 67.5 × 39.7			Withing mounting ear 8.86 × 2.66 × 1.56 225 × 67.5 × 39.7
Net Weight	-	1340 g	-	

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

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	EUD-150S105DDA EUD-150S210DDA	10%loset	-	loset	700mA ≤ loset ≤ 1050mA 1400mA ≤ loset ≤ 2100mA
	EUD-150S105DDA EUD-150S210DDA	70mA 140mA	-	loset	70mA ≤ loset < 700mA 140mA ≤ loset < 14000mA
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)	2%	5%	8%		
PWM Dimming on (Positive Logic)	4%	7%	10%		
PWM Dimming off (Negative Logic)	92%	95%	98%		
PWM Dimming on (Negative Logic)	90%	93%	96%		
Hysteresis	-	2%	-		

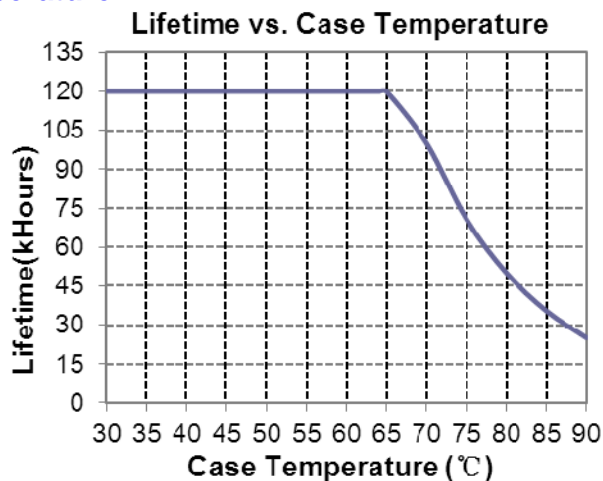
Note: All specifications are typical at 25 °C unless stated otherwise.

Safety & EMC Compliance

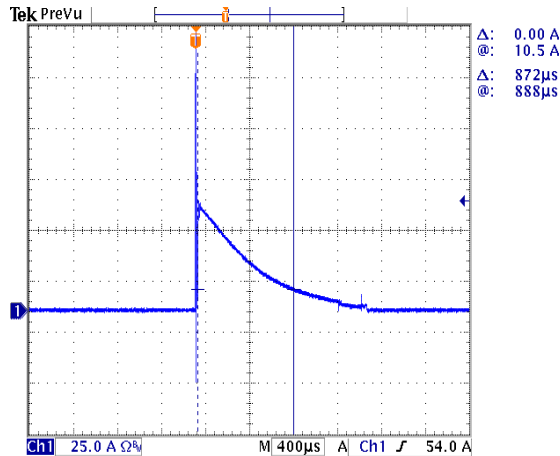
Safety Category	Standard
CE	EN 61347-1 ⁽¹⁾ , EN61347-2-13
KS	KS C 7655
EMI Standards	Notes
EN 55015 ⁽²⁾	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 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 10 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) 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.
 (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.

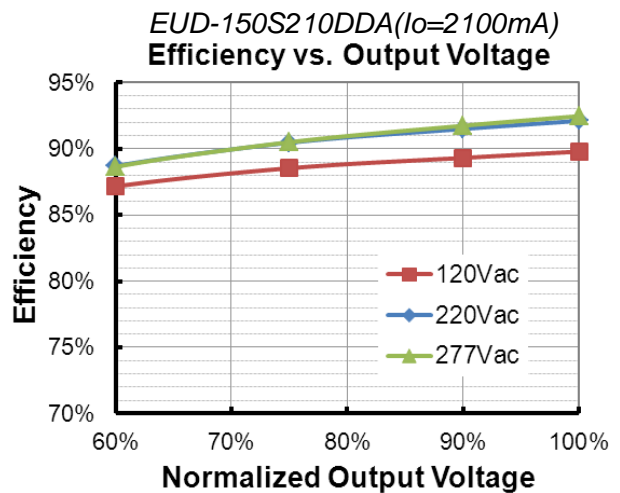
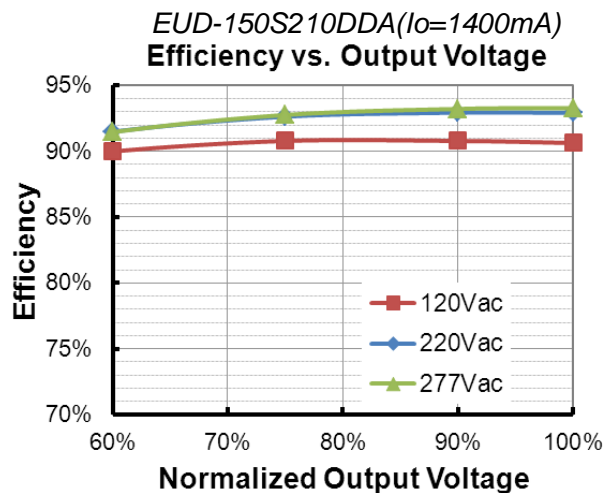
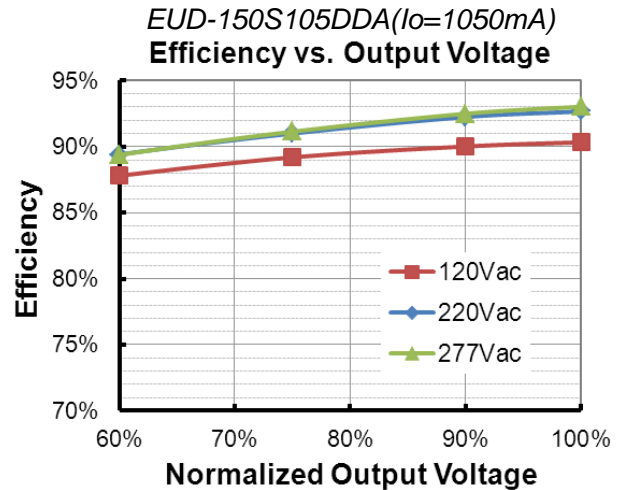
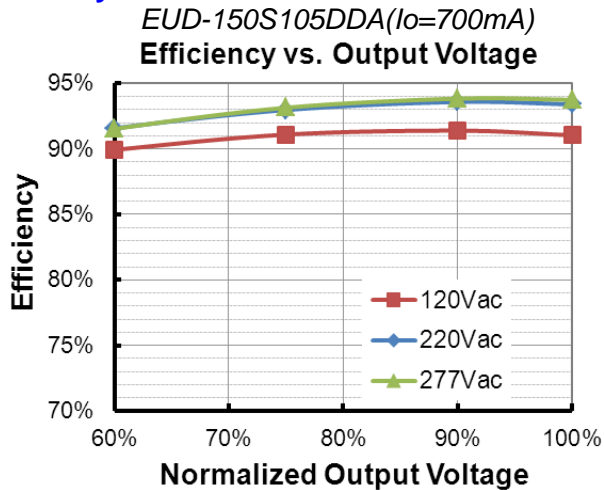
Lifetime vs. Case Temperature



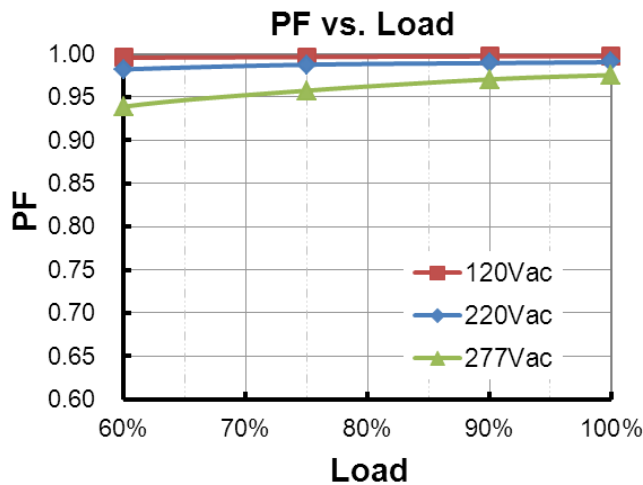
Inrush Current Waveform



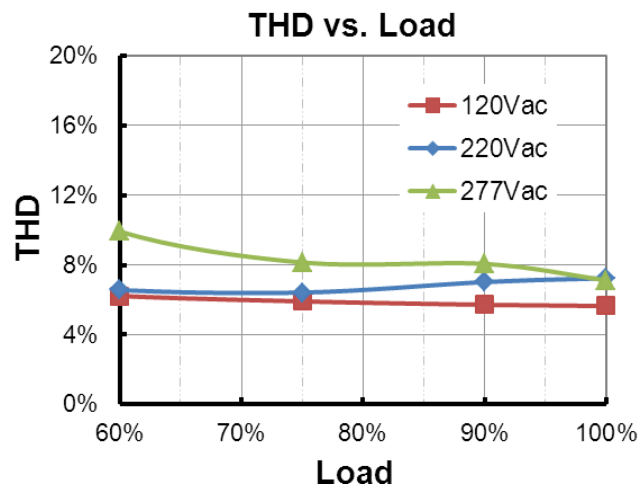
Efficiency vs. Load



Power Factor



Total Harmonic Distortion



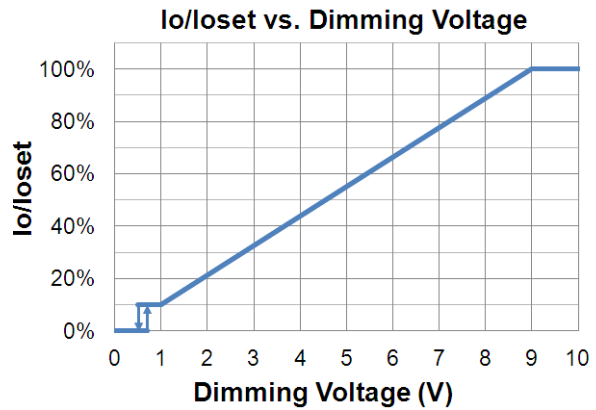
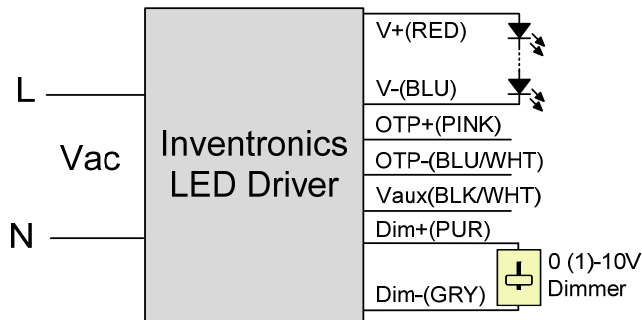
Protection Functions

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%loset	60%loset	100%loset	10%loset > lomin (default setting is 60%)
		lomin	60%loset	100%loset	10%loset ≤ lomin (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.

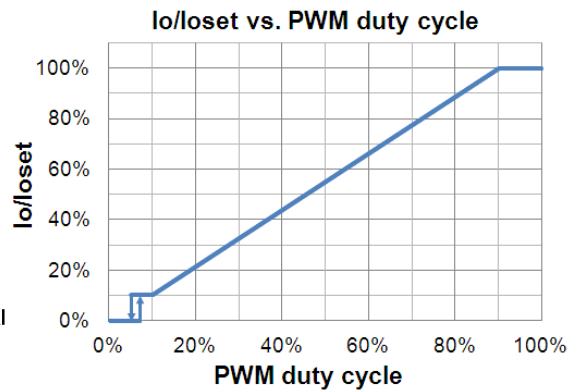
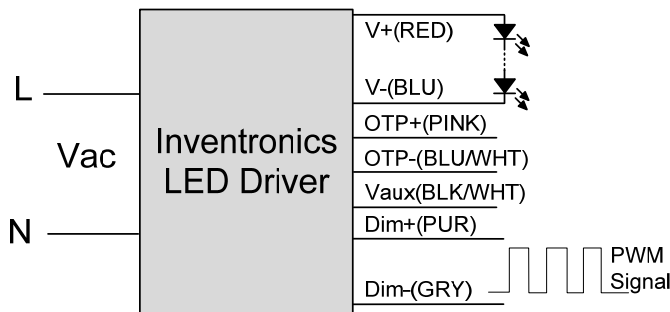


Implementation 1: DC Input

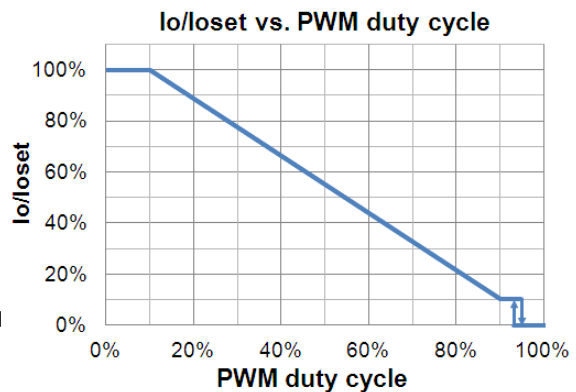
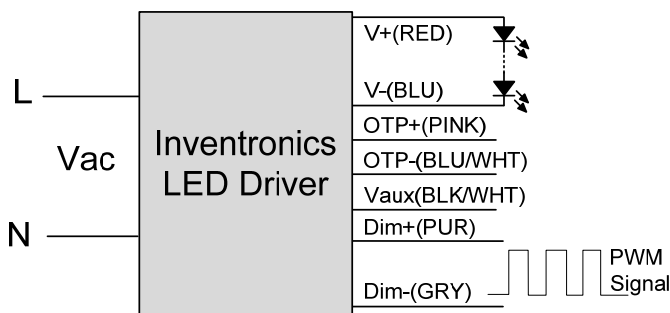
Notes:

1. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like resistors and zener.
2. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
3. If 0-10V dimming is not used, Dim + should be open.

● PWM Dimming



Implementation 2: Positive logic



Implementation 3: Negative logic

● Time Dimming

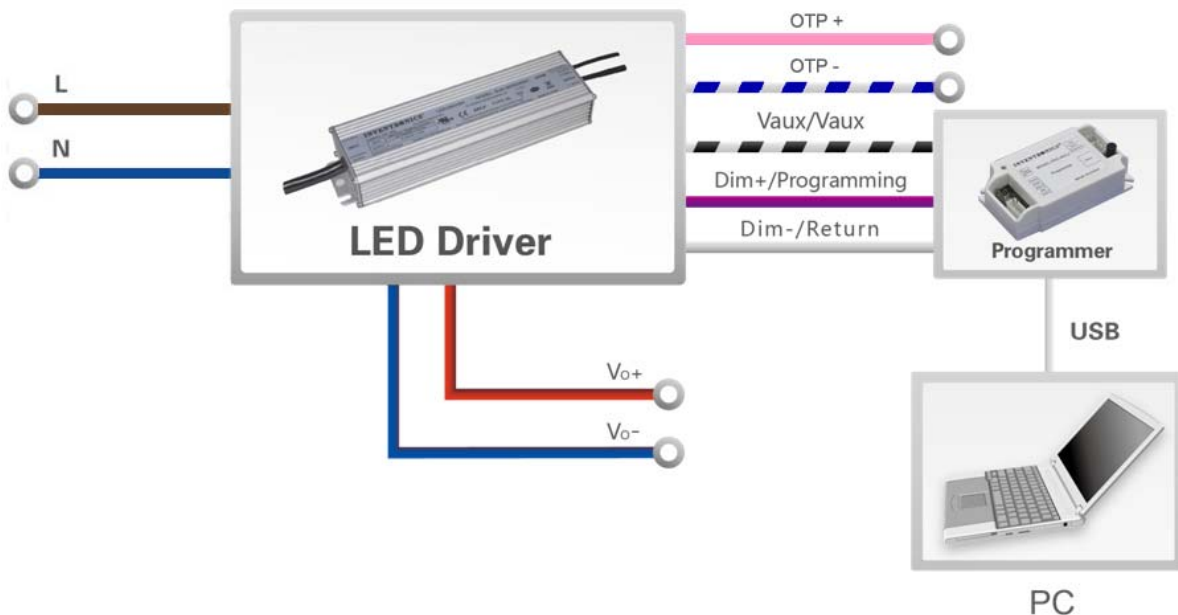
Time dimming control includes 3 kinds of modes, they are Self Adapting-Midnight, Self Adapting-Percentage and Traditional Timer.

- **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.

● 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.

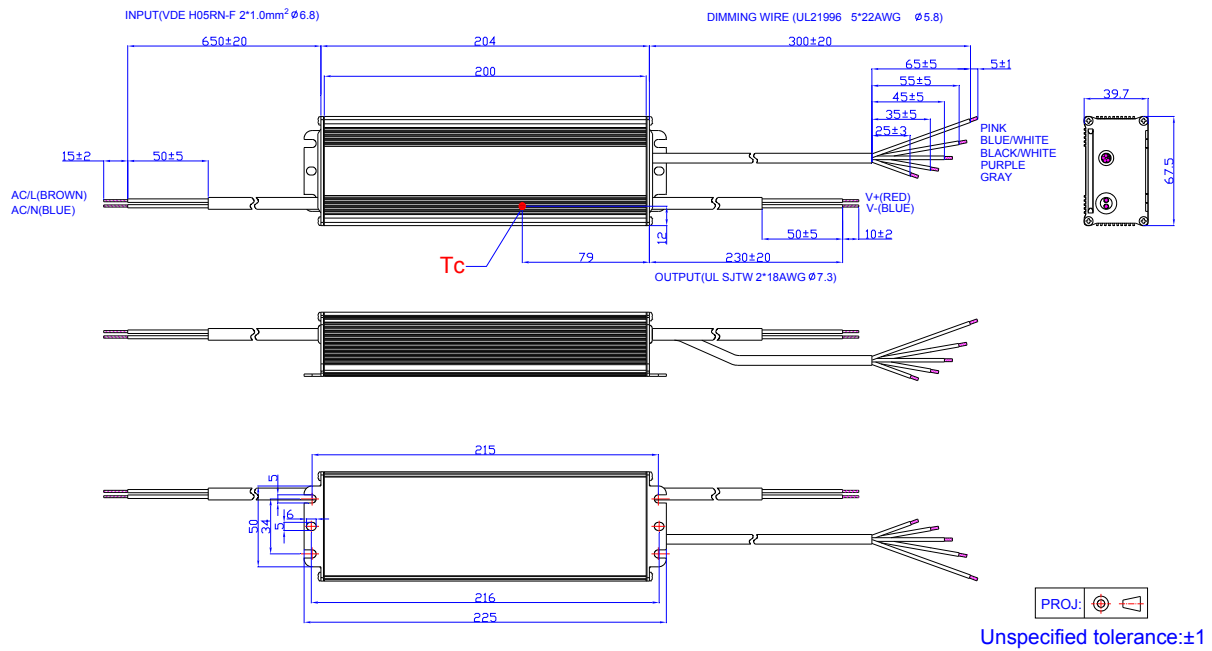
Programming Connection Diagram



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 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
2015-06-05	A	Datasheets Release	/	/
2015-09-21	B	External Thermal Protection NTC	/	Added
2017-07-21	C	KS	/	Added
		Features	/	Added
		Models	Notes	Updated
		Input Specifications	PF/THD	Updated
		Output Specifications	Temperature Coefficient of loset	Updated
		General Specifications	Dimensions	Updated
		General Specifications	Net Weight	Updated
		Safety &EMC Compliance	/	Updated
Mechanical Outline	/	Updated		