

Features

- Ultra High Efficiency (Up to 93.5%)
- Programmable Constant-Current Output
- 0-10V/PWM/Timer Dimmable
- Dim-to-Off with Standby Power ≤ 1 W
- Input Surge Protection: DM 4kV, CM 6kV
- All-Around Protection: OVP,SCP, OTP
- IP67
- SELV Output



Description

The EUD-200SxxxDV 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, arena 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

Max. Output Current	Input Voltage Range(1)	Output Voltage Range	Max. Output Power	Typical Efficiency (2)	Typical Power Factor		Model Number (3)
					120Vac	220Vac	
700 mA	90 ~ 305 Vac 127~250 Vdc	143~286Vdc	200 W	93.5%	0.99	0.96	EUD-200S070DV
1050 mA	90 ~ 305 Vac 127~250 Vdc	95~190Vdc	200 W	93.5%	0.99	0.96	EUD-200S105DV
1400 mA	90 ~ 305 Vac 127~250 Vdc	71~142Vdc	200 W	93.0%	0.99	0.96	EUD-200S140DV
2100 mA	90 ~ 305 Vac 127~250 Vdc	47~ 95 Vdc	200 W	93.0%	0.99	0.96	EUD-200S210DV ⁽⁴⁾
2450 mA	90 ~ 305 Vac 127~250 Vdc	41~ 82 Vdc	200 W	93.5%	0.99	0.96	EUD-200S245DV ⁽⁴⁾
2800 mA	90 ~ 305 Vac 127~250 Vdc	35~ 71 Vdc	200 W	92.5%	0.99	0.96	EUD-200S280DV ⁽⁴⁾
4200 mA	90 ~ 305 Vac 127~250 Vdc	24~ 48 Vdc	200 W	93.0%	0.99	0.96	EUD-200S420DV ⁽⁴⁾
4900 mA	90 ~ 305 Vac 127~250 Vdc	21~ 41 Vdc	200 W	92.0%	0.99	0.96	EUD-200S490DV ⁽⁴⁾

- Notes:** (1) Certified input voltage range: 100-240Vac or 127-250Vdc
 (2) Measured at 100% load and 220 Vac input.
 (3) All the models are certificated to KS, except EUD-200S070DV
 (4) SELV Output

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	-	-	0.7 mA	IEC60598-1; 240Vac/ 60Hz, grounding effectively
Input AC Current	-	-	2.4 A	Measured at 100% load and 100 Vac input.
	-	-	1.2 A	Measured at 100% load and 220 Vac input.
Inrush Current(I ² t)	-	-	3.2 A ² s	At 220Vac input, 25°C cold start, duration=1.7 ms,10%I _{pk} -10%I _{pk} . See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-277Vac, 50-60Hz,75%-100%Load (150-200W)
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%I _{omax}	-	5%I _{omax}	At 100% load condition
Output Current Setting(I _o set) Range	10%I _{omax}	-	100%I _{omax}	
Total Output Current Ripple (pk-pk)	-	5%I _{omax}	10%I _{omax}	At 100% load condition, 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%I _{omax}	-	At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%I _{omax}	At 100% load condition
No Load Output Voltage				
EUD-200S070DV	-	-	305V	
EUD-200S105DV	-	-	205V	
EUD-200S140DV	-	-	155V	
EUD-200S210DV	-	-	110V	
EUD-200S245DV	-	-	95V	
EUD-200S280DV	-	-	80V	
EUD-200S420DV	-	-	55V	
EUD-200S490DV	-	-	48V	
Line Regulation	-	-	±0.5%	Measured at 100% load
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	0.8 s	1.5 s	Measured at 120Vac and 220Vac input.
Temperature Coefficient of I _{omax}	-	0.03%/°C	-	Case temperature = 0°C ~T _c 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-200S070DV EUD-200S105DV EUD-200S140DV EUD-200S210DV EUD-200S245DV EUD-200S280DV EUD-200S420DV EUD-200S490DV	88.0% 88.0% 87.0% 87.0% 88.0% 86.0% 87.5% 87.0%	91.0% 91.0% 90.0% 90.0% 91.0% 89.0% 90.5% 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-200S070DV EUD-200S105DV EUD-200S140DV EUD-200S210DV EUD-200S245DV EUD-200S280DV EUD-200S420DV EUD-200S490DV	91.5% 91.5% 91.0% 91.0% 91.5% 90.5% 91.0% 90.0%	93.5% 93.5% 93.0% 93.0% 93.5% 92.5% 93.0% 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.)
Efficiency at 277 Vac input: EUD-200S070DV EUD-200S105DV EUD-200S140DV EUD-200S210DV EUD-200S245DV EUD-200S280DV EUD-200S420DV EUD-200S490DV	92.0% 91.5% 91.0% 91.0% 91.5% 91.0% 91.5% 90.5%	94.0% 93.5% 93.0% 93.0% 93.5% 93.0% 93.5% 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.)
Standby power	-	-	1 W	Measured at 230Vac/50Hz; Dimming off
MTBF	-	341,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	120,000 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	Humidity: 10%RH to 95%RH
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 uA	300 uA	450 uA	Vdim(+) = 0 V
Dimming Output Range	10%Iomax	-	100%Ioset	10%Iomax ≤ Ioset ≤ 100%Iomax

Dimming Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Recommended Dimming Input Range	0 V	-	10 V	Default 0-10V dimming mode.
Dim off Voltage	0.3 V	0.5 V	0.7 V	
Dim on Voltage	0.5 V	0.7 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

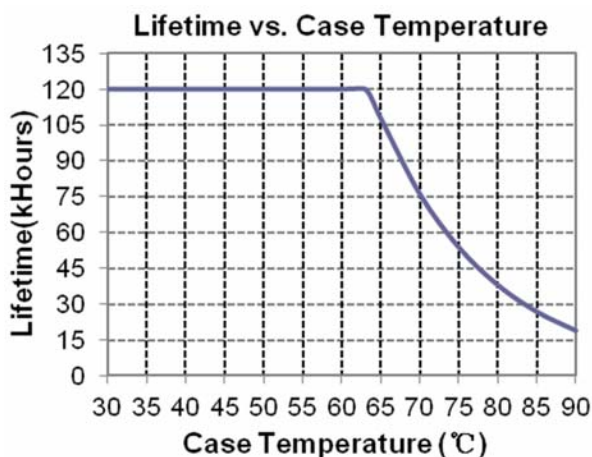
Safety Category	Standard
ENEC & CE ⁽¹⁾	EN 61347-1, EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
KS	KS C 7655
EMI standards	Notes
EN 55015 ⁽²⁾	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EMS standards	Notes
EN 61000-4-2	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: Differential Mode 4 kV, Common Mode 6 kV ⁽³⁾
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test

Safety & EMC Compliance(Continued)

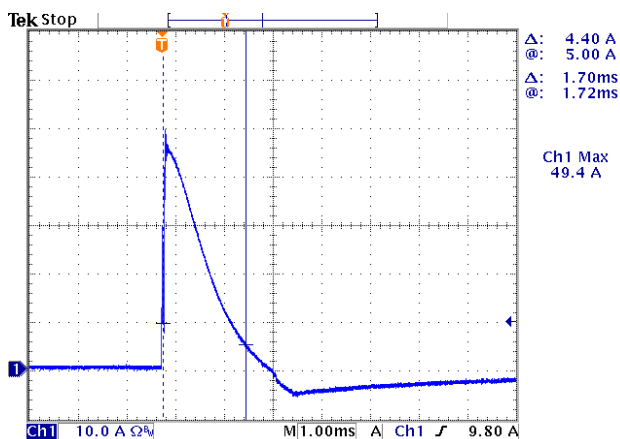
EMS standards	Notes
EN 61000-4-11	Voltage Dips
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

- 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 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.
- (3) 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.

Lifetime vs. Case Temperature



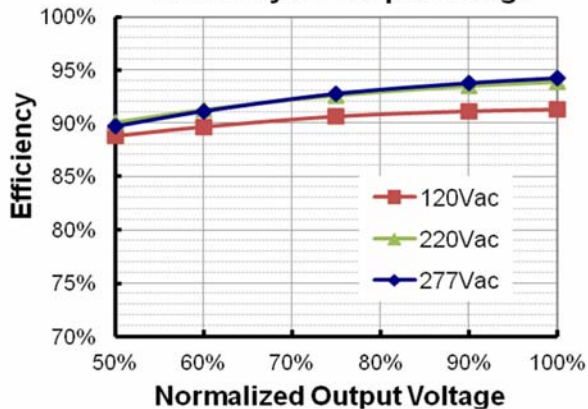
Inrush Current Waveform



Efficiency vs. Load

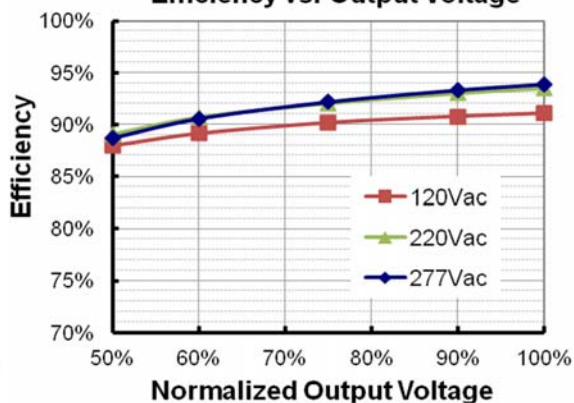
EUD-200S070DV

Efficiency vs. Output Voltage



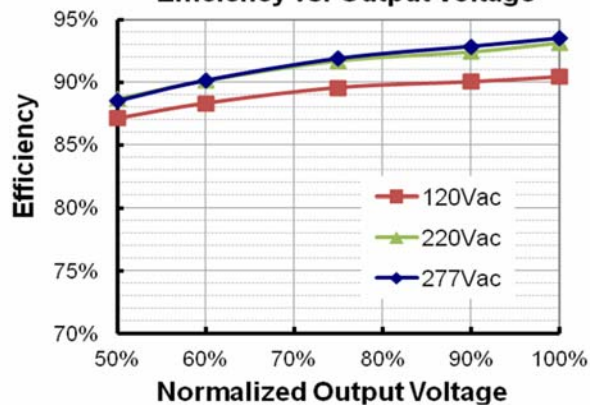
EUD-200S105DV

Efficiency vs. Output Voltage



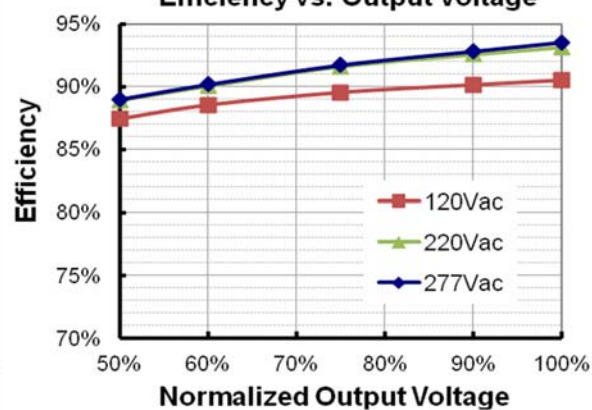
EUD-200S140DV

Efficiency vs. Output Voltage



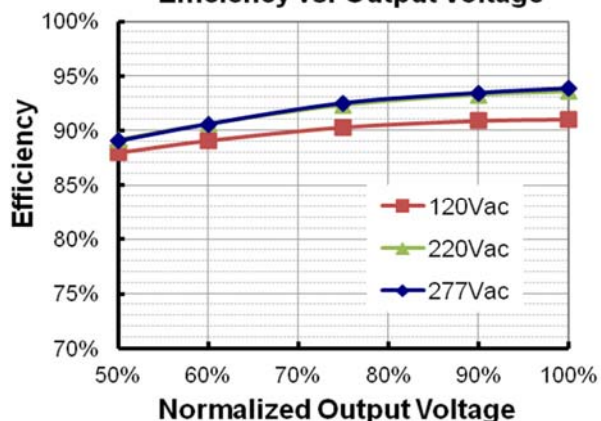
EUD-200S210DV

Efficiency vs. Output Voltage



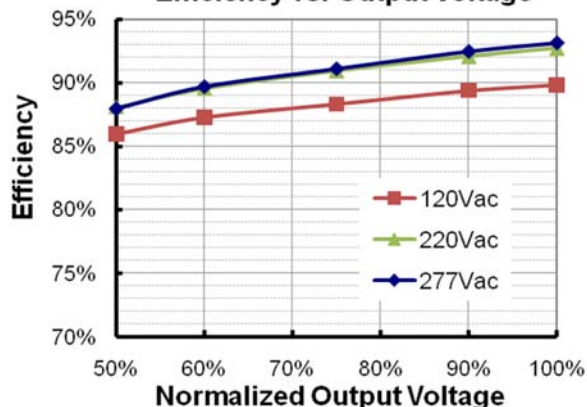
EUD-200S245DV

Efficiency vs. Output Voltage



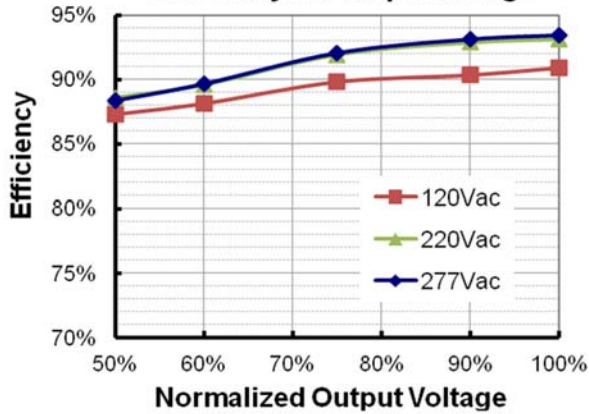
EUD-200S280DV

Efficiency vs. Output Voltage



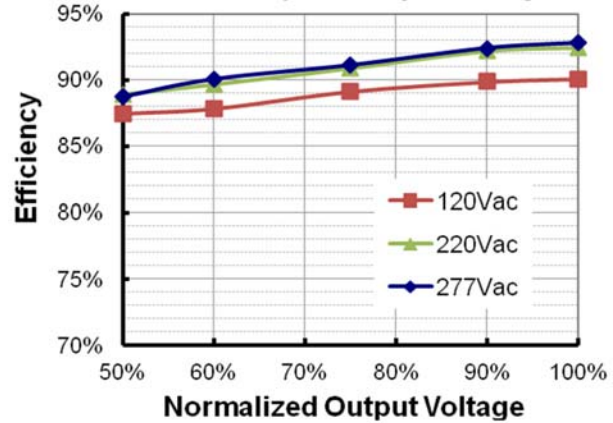
EUD-200S420DV

Efficiency vs. Output Voltage

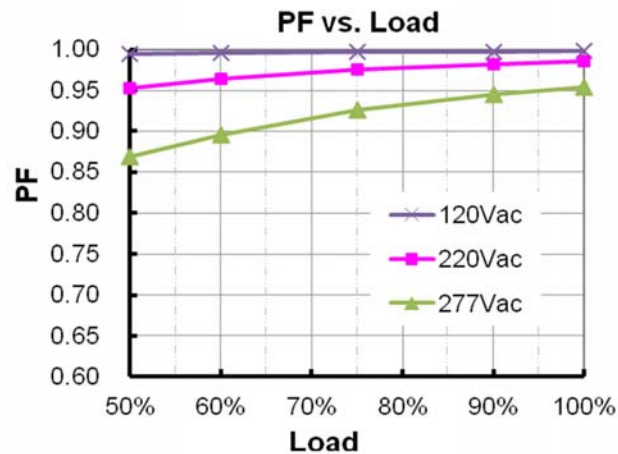


EUD-200S490DV

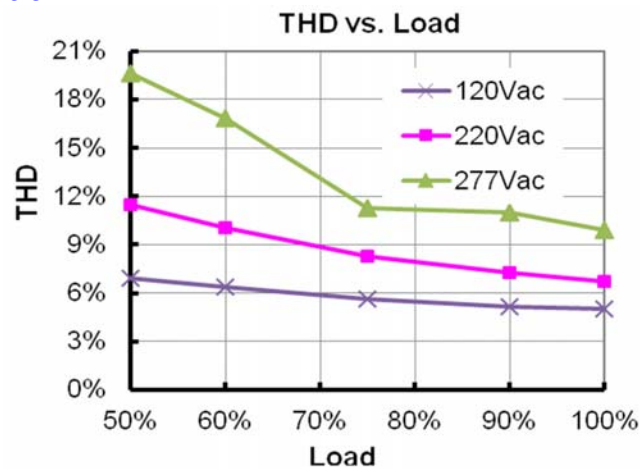
Efficiency vs. Output Voltage



Power Factor



Total Harmonic Distortion



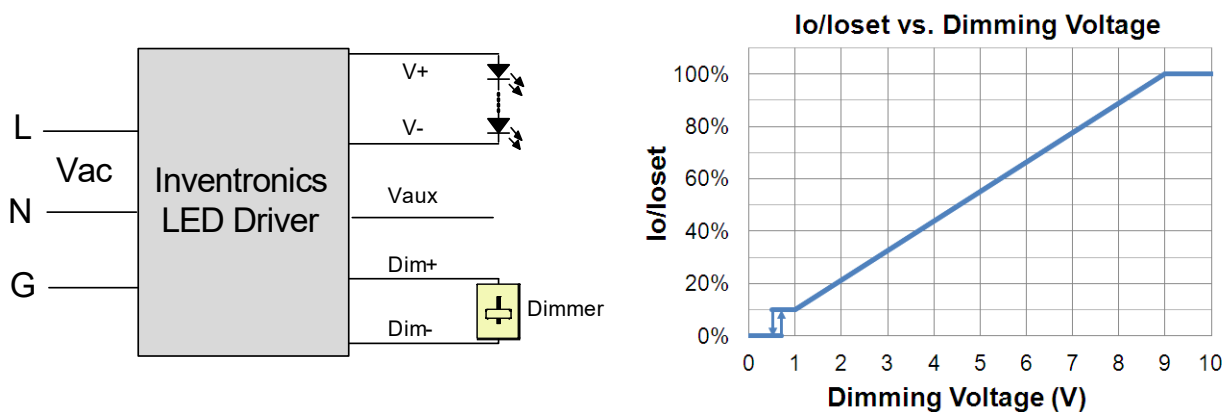
Protection Functions

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

● 0-10V Dimming

The recommended implementation of the dimming control is provided below.



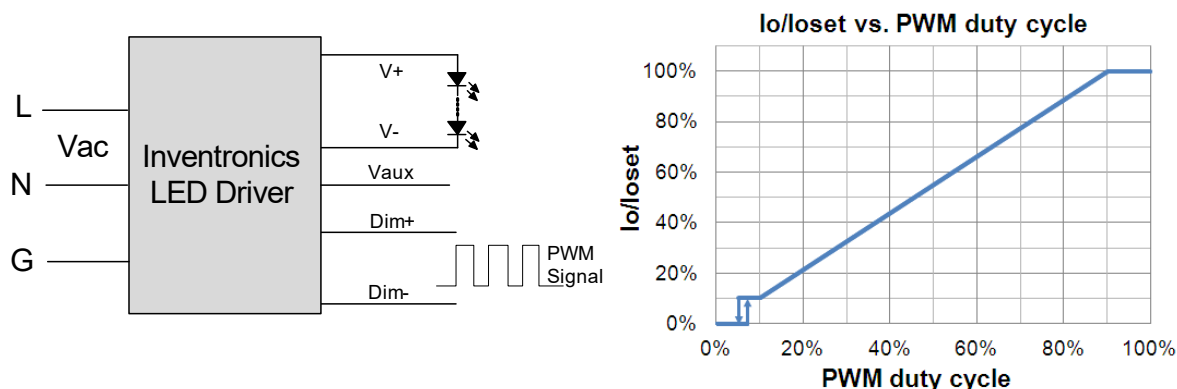
Implementation 1: DC Input

Notes:

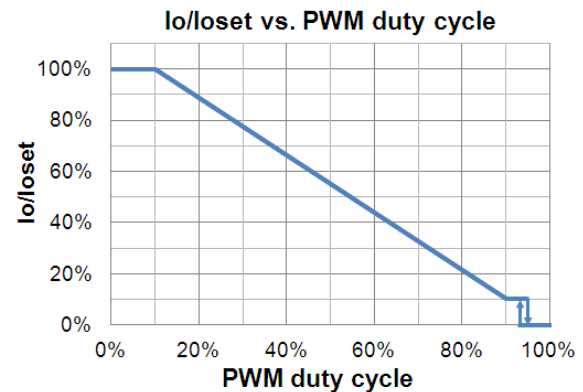
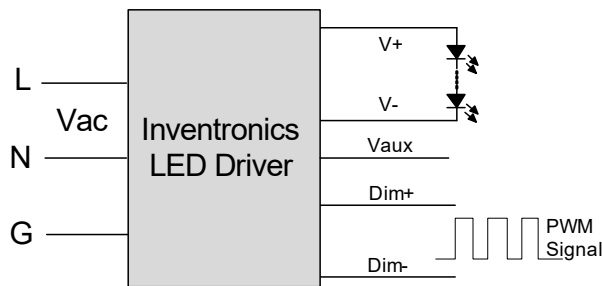
1. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
2. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like zener.

● PWM Dimming

The recommended implementation of the dimming control is provided below.



Implementation 2: Positive logic

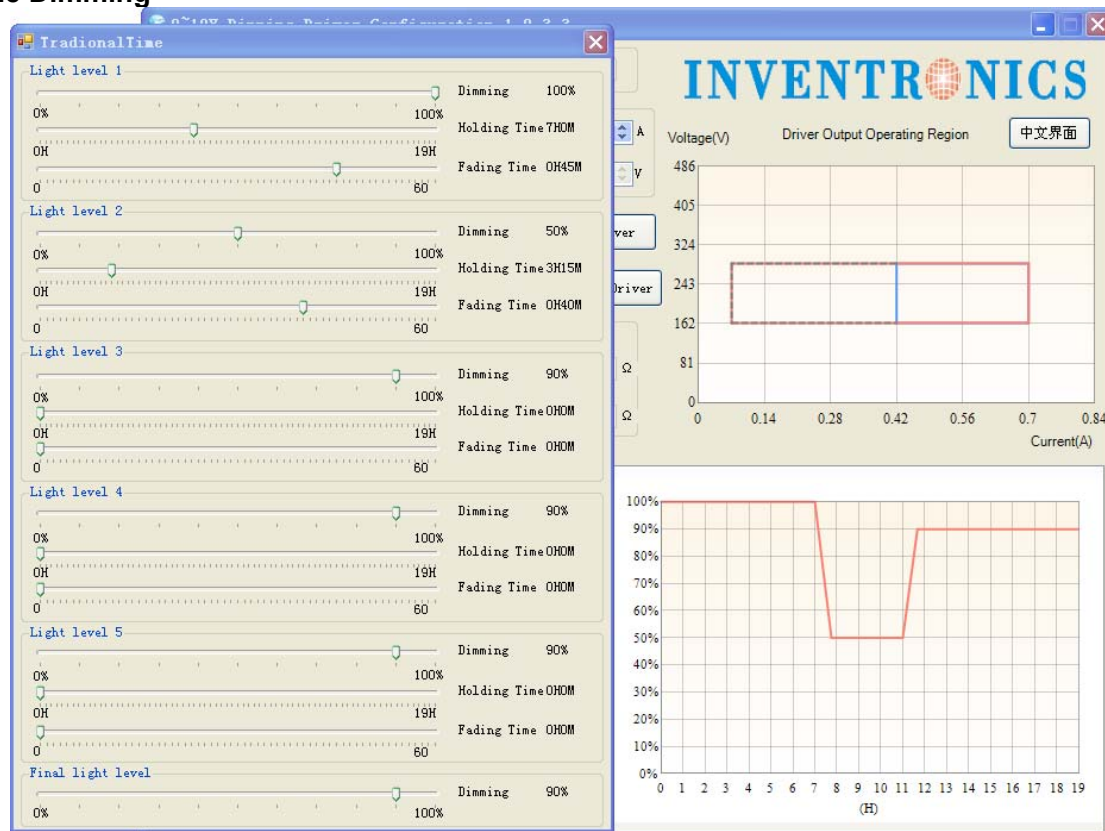


Implementation 3: Negative logic

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 output minimum current.

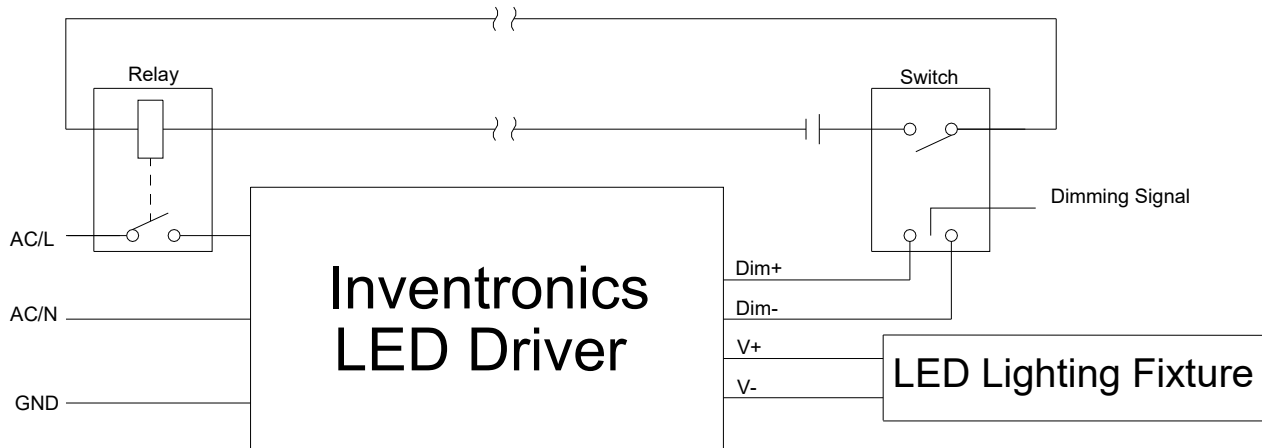
● Time Dimming



Set the timing curve by pulling the sliders.

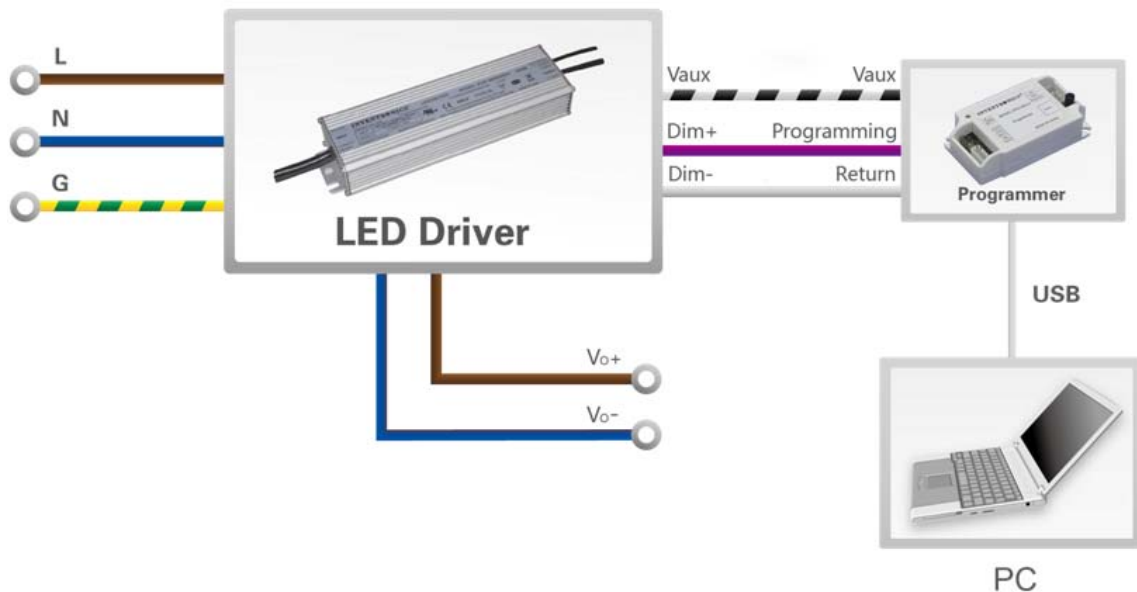
● 0% Light Brightness

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

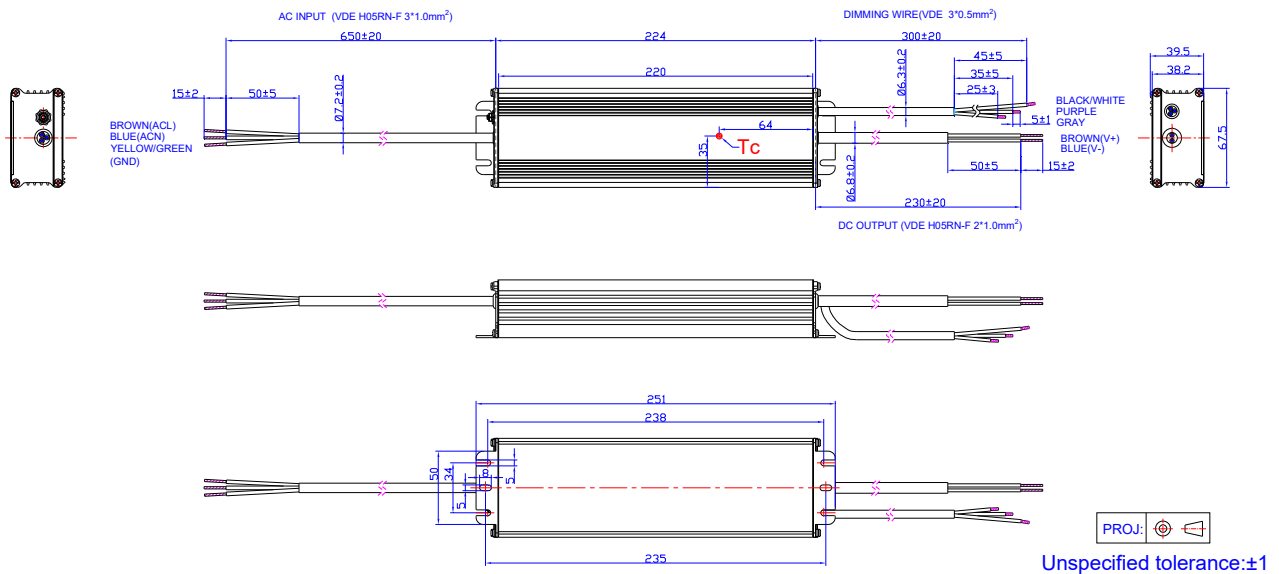
Programming Connection Diagram



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
2015-03-13	A	Datasheets Release	/	/
2015-06-01	B	Description	/	Updated
		Models	/	Updated
		Mechanical Outline	/	Updated
2016-03-31	C	KS	/	Added
		General Specifications	With mounting ear	Updated
		Safety &EMC Compliance	/	Updated
2017-03-01	D	Leakage Current	/	Updated
		Inrush Current(I ² t)	/	Updated
		Mechanical Outline	/	Updated
2019-08-15	E	Global Mark Logo	/	Added
		ENEC Logo	/	Updated
		CCC Logo	/	Deleted
		PSE Logo	/	Deleted
		Features	Input surge protection	Updated
		Features	Suitable for Independent Use	Independent Logo
		Description	/	Updated
		Input Specifications(PF/THD)	50-60Hz	Added
		Safety &EMC Compliance	ENEC	Added
		Safety &EMC Compliance	CB	Added
		Safety &EMC Compliance	KS	Updated
		Safety &EMC Compliance	Global Mark	Added
		Safety &EMC Compliance	EN 61000-4-5	Updated
2021-12-02	F	RoHS Compliance	/	Updated
		Global Mark logo	/	Deleted
		Features	/	Updated
		Safety &EMC Compliance	Global Mark	Deleted
		Safety &EMC Compliance	Note (1)	Added
		0% Light Brightness	/	Added