

## Features

- High Efficiency (Up to 90.0%)
- Two Channels Output
- Constant Current Output
- 0-10V Dimming Control
- Input Surge Protection: DM 4kV, CM 6kV
- All-Around Protection: OVP, SCP, OTP
- Suitable for UL Dry / Damp / Wet Location
- Class 2 Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location



## Description

The *EUC-120D210DT(ST)* series is a 120W, two-channel, constant-current outdoor LED driver that operates from 90-305 Vac input with excellent power factor. It is created for many lighting applications including flood, tunnel and street, etc. 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

Output Current	Input Voltage Range(1)	Output Voltage Range	Max. Output Power	Typical Efficiency (2)	Power Factor		Model Number (3)
					120Vac	220Vac	
2100 mA	90 ~ 305 Vac 127 ~ 300 Vdc	14~28.5Vdc	120 W	90.0%	0.99	0.96	EUC-120D210DT(ST)

**Notes:** (1) UL, FCC certified input voltage range: 100-277Vac or 127-300Vdc; otherwise: 100-240Vac or 127-250Vdc (except KS)

(2) Measured at 100% load and 220 Vac input.

(3) Class 2 Output.

## Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	-	305 Vac	127~300 Vdc
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL8750; 277Vac/ 60Hz
Input AC Current	-	-	1.76 A	Measured at 100% load and 100Vac input.
	-	-	0.8 A	Measured at 100% load and 220Vac input.
Inrush Current( $I^2t$ )	-	-	2.5 A <sup>2</sup> s	At 220Vac input 25°C cold start, duration= 984 $\mu$ s, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-277Vac, 50-60Hz, 75%load-100% Load (90-120W)
THD	-	-	20%	

## Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Channel	-	2	-	
Output Current Tolerance	-5%Io	-	5%Io	At 100% load condition
Total Output Current Ripple (pk-pk)	-	5%Io	10%Io	At 100% load condition, 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%Io	-	At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%Io	At 100% load condition.
No load Output Voltage	-	-	40 V	
Line Regulation	-	-	±0.5%	Measured at 100% load
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	1.0 s	2.0 s	Measured at 120V and 220Vac input, 75%-100% Load
Temperature Coefficient of Io	-	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	-	20 mA	Return terminal is "Dim-"

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

## General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input: Io = 2100 mA	85.5%	88.5%	-	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 220 Vac input: Io = 2100 mA	88.0%	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 277 Vac input: Io = 2100 mA	88.5%	90.5%	-	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
MTBF	-	292,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	103,000 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	-	+80°C	
Storage Temperature	-40°C	-	+85°C	Humidity: 5% RH to 100% RH

## General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Dimensions Inches (L × W × H) Millimeters (L × W × H)		7.40 × 3.46 × 1.50 188 × 88 × 38		With mounting ear 8.35 × 3.46 × 1.50 212 × 88 × 38
Net Weight	-	1180 g	-	

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

## Dimming Specifications

Parameter	Min.	Typ.	Max.	Notes
Absolute Maximum Voltage on the Vdim (+) Pin	-20 V	-	20 V	
Source Current on Vdim (+)Pin	100 µA	140 µA	180 µA	
Dimming Output Range	10%I <sub>O</sub>	-	100%I <sub>O</sub>	
Recommended Dimming Input Range	0 V	-	10 V	

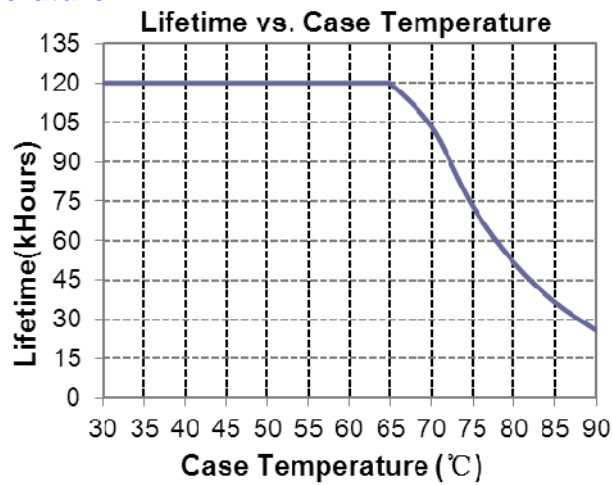
**Note:** All specifications are typical at 25 °C unless stated otherwise.

## Safety & EMC Compliance

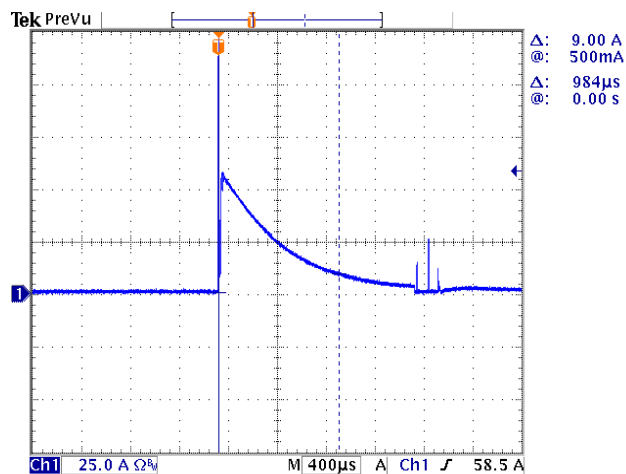
Safety Category	Standard
UL/CUL	UL 8750, UL 1310, CAN/CSA-C22.2 No. 250.13, CAN/CSA-C22.2 No. 223-M91
KS	KS C 7655
EMI Standards	Notes
FCC Part 15 <sup>(1)</sup>	ANSI C63.4 Class B This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired Operation.
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
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 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.

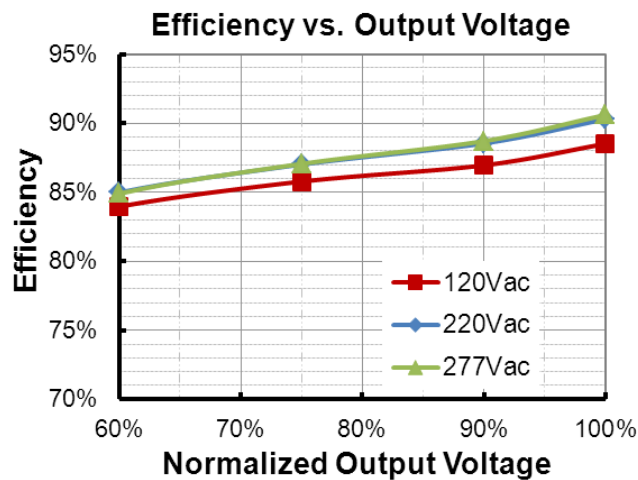
## Lifetime vs. Case Temperature



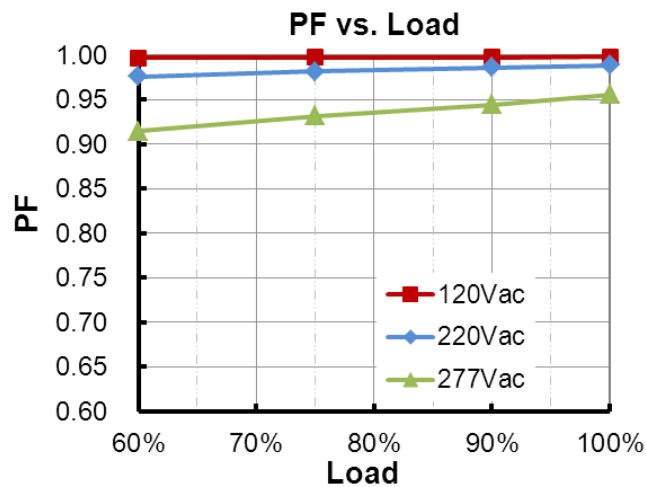
## Inrush Current Waveform



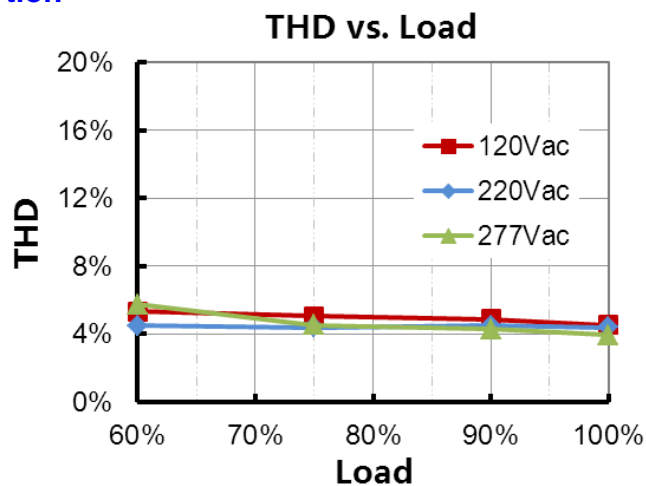
## Efficiency vs. Load



## Power Factor



## Total Harmonic Distortion



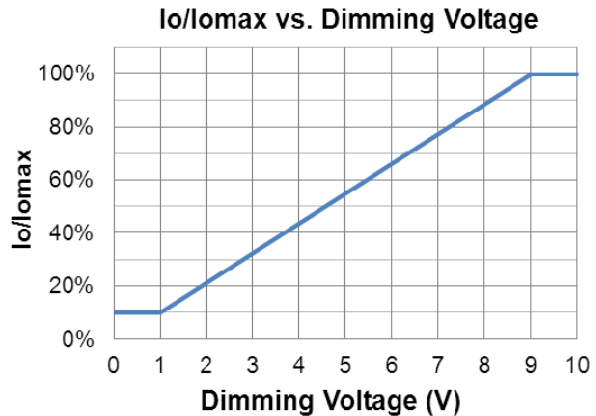
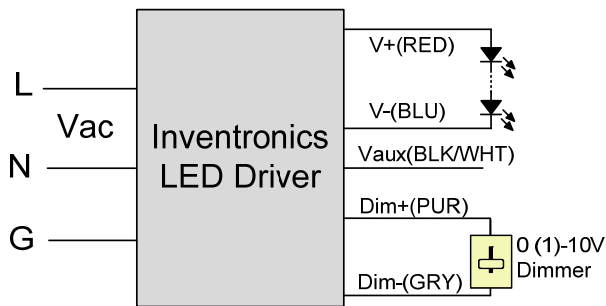
## Protection Functions

Parameter	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.

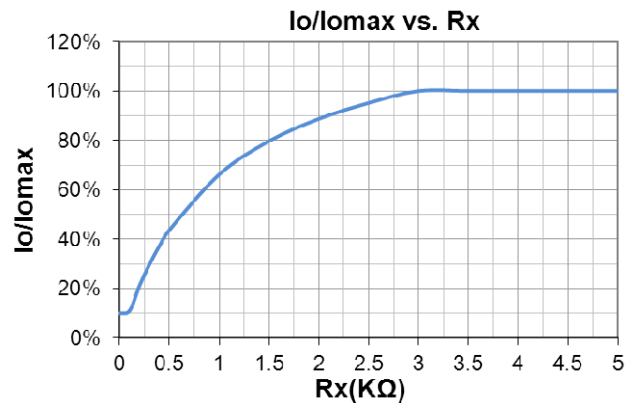
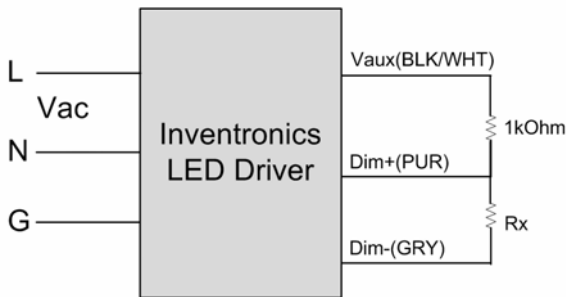
## Dimming

### ● 0-10V Dimming

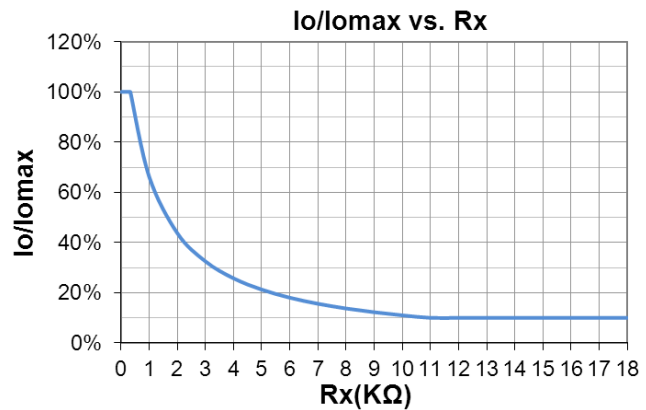
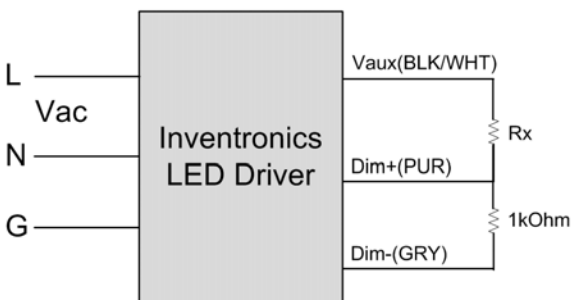
Recommended implementations of the dimming control are provided below.



**Implementation 1: DC Input**



**Implementation 2: External Resistor**



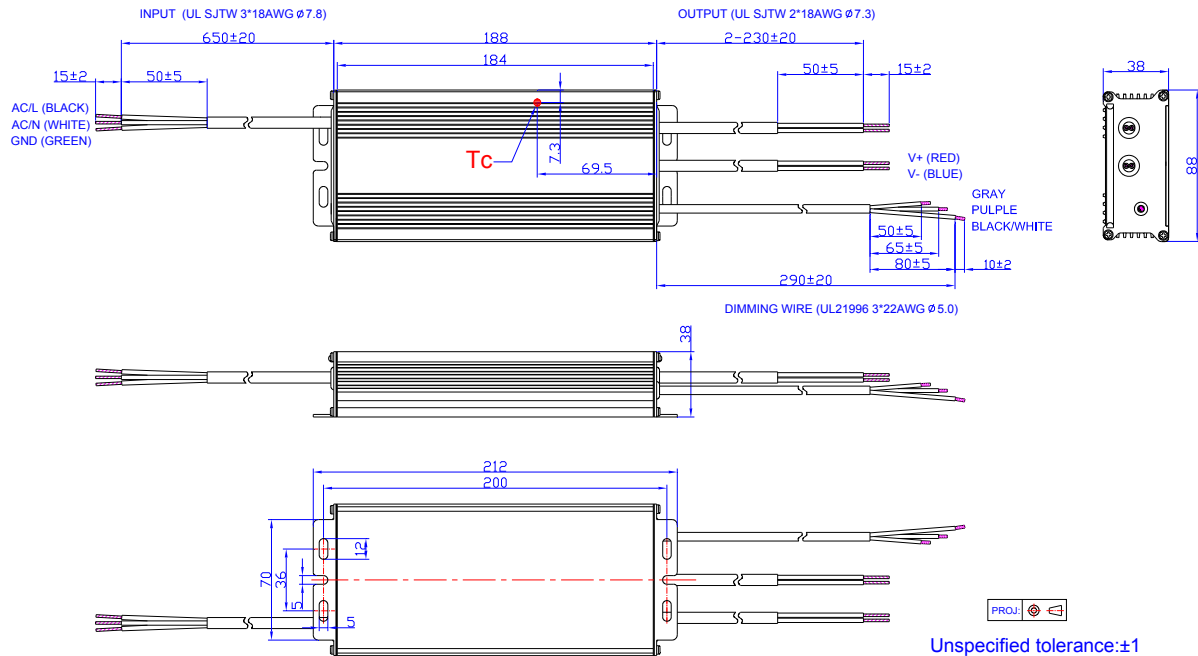
**Implementation 3: External Resistor**

**Notes:**

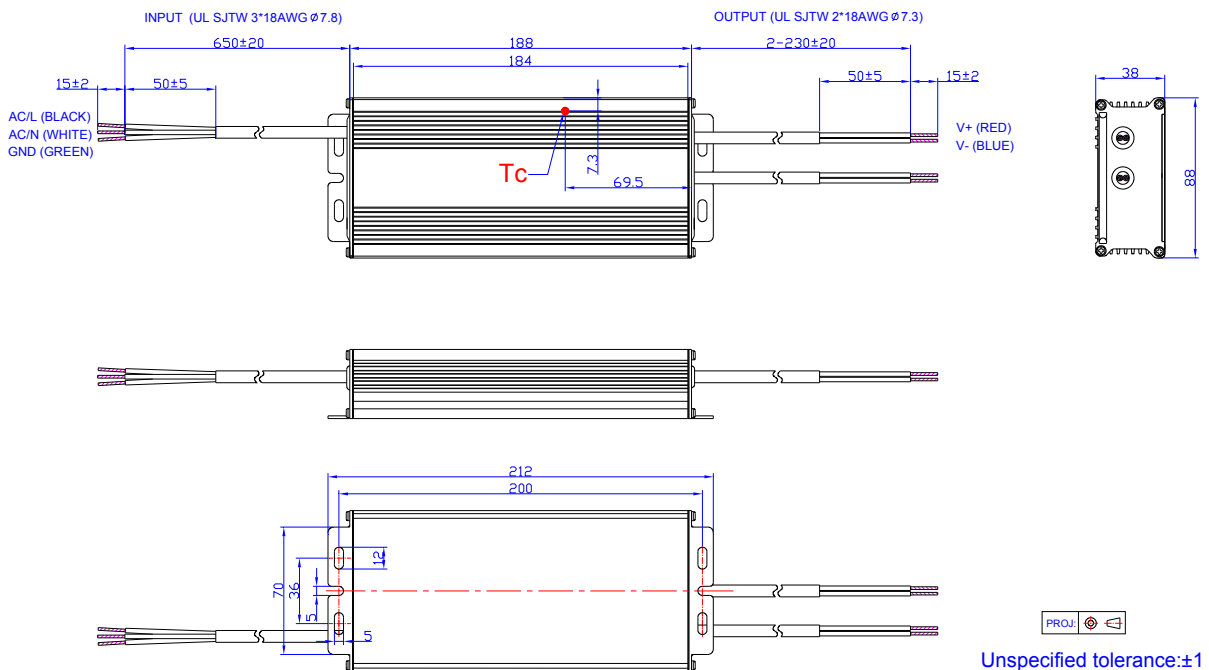
1. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like resistors and zener.
2. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
3. If 0-10V dimming is not used, Dim + can be either open or connected to Vaux.

## Mechanical Outline

*EUC-120D210DT*



*EUC-120D210ST*



## 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
2015-07-08	A	Datasheets Release	/	/
2015-08-19	B	Lifetime	/	Update
2017-11-03	C	KS	/	Added
		Features	/	Updated
		Input Specifications	PF/THD	Updated
		Output Specifications	Turn-on Delay Time	Updated
		Output Specifications	Temperature Coefficient	Updated
		General Specifications	With mounting ear	Added
		Safety & EMC Compliance	/	Updated
		Mechanical Outline	/	Updated
2019-09-09	D	Features	4kV line-line, 6kV line-earth	DM 4kV, CM 6kV
		Description	Application environment	Updated
		Safety & EMC Compliance	KS	Added
		Safety & EMC Compliance	EN 61000-4-5	Updated
		Safety & EMC Compliance	Note	Added
		RoHS Compliance	/	Updated