

## Features

- Ultra High Efficiency (Up to 94%)
- Constant Current Output
- 0-10V Dimmable and Dim-to-Off
- Standby Power  $\leq 1.5$  W
- Input surge protection: 4kV line-line, 6kV line-earth
- All-Around Protection: OVP, SCP, OTP
- Waterproof (IP67) and UL Dry / Damp / Wet Location
- SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location



## Description

The EUC-320SxxxDT(ST) series is a 320W, constant-current LED driver that operates from 90-305 Vac input with excellent power factor. Created for high bay, high mast, arena and roadway lights, it provides a dim-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

Output Current	Input Voltage Range(1)	Output Voltage Range	Max. Output Power	Typical Efficiency (2)	Power Factor		Model Number
					120Vac	220Vac	
1050 mA	90 ~ 305 Vac 127~300 Vdc	152~304Vdc	320 W	94.0%	0.99	0.96	EUC-320S105DT(ST)
1400 mA	90 ~ 305 Vac 127~300 Vdc	114~228Vdc	320 W	94.0%	0.99	0.96	EUC-320S140DT(ST)
2100 mA	90 ~ 305 Vac 127~300 Vdc	76~152 Vdc	320 W	94.0%	0.99	0.96	EUC-320S210DT(ST)
2800 mA	90 ~ 305 Vac 127~300 Vdc	57~114 Vdc	320 W	93.0%	0.99	0.96	EUC-320S280DT(ST)
4900 mA	90 ~ 305 Vac 127~300 Vdc	33 ~65 Vdc	320 W	93.0%	0.99	0.96	EUC-320S490DT(ST) <sup>(3)</sup>
6200 mA	90 ~ 305 Vac 127~300 Vdc	26 ~52 Vdc	320 W	93.0%	0.99	0.96	EUC-320S620DT(ST) <sup>(3)</sup>

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

(2) Measured at full load and 220 Vac input.

(3) SELV 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, grounding effectively
	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz, grounding effectively

## Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Input AC Current	-	-	4.0 A	Measured at full load and 100Vac input.
	-	-	2.0 A	Measured at full load and 220Vac input.
Inrush Current( $I^2t$ )	-	-	3.5 A <sup>2</sup> s	At 220Vac input 25°C cold start, duration= 4mS, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-277Vac, 75%load-100%load (240-320W)
THD	-	-	20%	

## Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Io	-	5%Io	At full load condition
Total Output Current Ripple (pk-pk)	-	5%Io	10%Io	At full load condition. 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%Io	-	At full load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%Io	At full load condition.
No load Output Voltage Io = 1050 mA Io = 1400 mA Io = 2100 mA Io = 2800 mA Io = 4900 mA Io = 6200 mA	- - - - - -	- - - - - -	334 V 255 V 169 V 128 V 74 V 58 V	
Line Regulation	-	-	±0.5%	Measured at full load
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	0.5 s	1.0 s	Measured at 120V and 220Vac input.
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	-	200 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 = 1050 mA Io = 1400 mA Io = 2100 mA Io = 2800 mA Io = 4900 mA Io = 6200 mA	90.0% 90.0% 89.5% 89.0% 88.5% 88.5%	92.0% 92.0% 91.5% 91.0% 90.5% 90.5%	- - - - - -	Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)

## General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 220 Vac input: I <sub>o</sub> = 1050 mA I <sub>o</sub> = 1400 mA I <sub>o</sub> = 2100 mA I <sub>o</sub> = 2800 mA I <sub>o</sub> = 4900 mA I <sub>o</sub> = 6200 mA	92.0% 92.0% 92.0% 91.0% 91.0% 91.0%	94.0% 94.0% 94.0% 93.0% 93.0% 93.0%	- - - - - -	Measured at full 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: I <sub>o</sub> = 1050 mA I <sub>o</sub> = 1400 mA I <sub>o</sub> = 2100 mA I <sub>o</sub> = 2800 mA I <sub>o</sub> = 4900 mA I <sub>o</sub> = 6200 mA	92.0% 92.0% 92.0% 92.0% 91.5% 91.5%	94.0% 94.0% 94.0% 94.0% 93.5% 93.5%	- - - - - -	Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Standby power	-	-	1.5 W	Measured at 230Vac/50Hz; Dimming off
MTBF	-	202,000 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 60°C case temperature; See lifetime vs. Tc curve for the details
Operating Case Temperature for Safety Tc <sub>s</sub>	-40°C	-	+88°C	
Operating Case Temperature for Warranty Tc <sub>w</sub>	-40°C	-	+70°C	
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 100%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	8.82 × 3.86 × 1.75 224 × 98 × 44.5			With mounting ear 9.88 × 3.86 × 1.75 251 × 98 × 44.5
Net Weight	-	1600 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 uA	140 uA	180 uA	
Dimming Output Range	10%I <sub>o</sub>	-	100%I <sub>o</sub>	
Recommended Dimming Input Range	0 V	-	10 V	
Dim off Voltage	0.2 V	0.4 V	0.6 V	
Dim on Voltage	0.4 V	0.6 V	0.8 V	
Hysteresis	-	0.2 V	-	

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

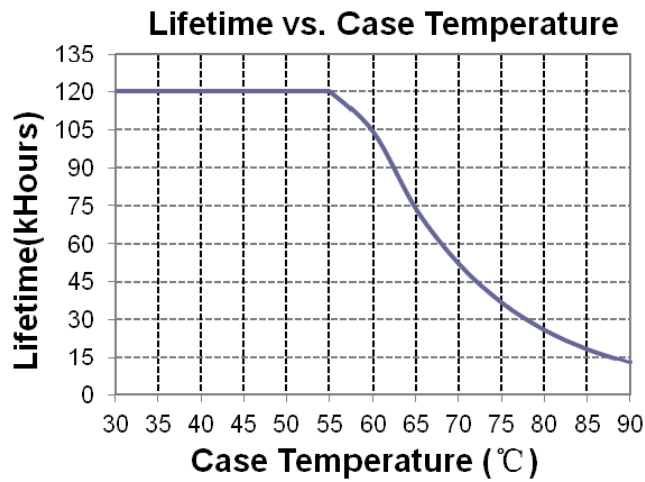
## Safety & EMC Compliance

Safety Category	Standard
UL/CUL	UL8750, CAN/CSA-C22.2 No. 250.13
CE	EN 61347-1, EN61347-2-13
EMI Standards	Notes
EN 55015 <sup>(1)</sup>	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
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: line to line 4 kV, line to earth 6 kV <sup>(2)</sup>
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

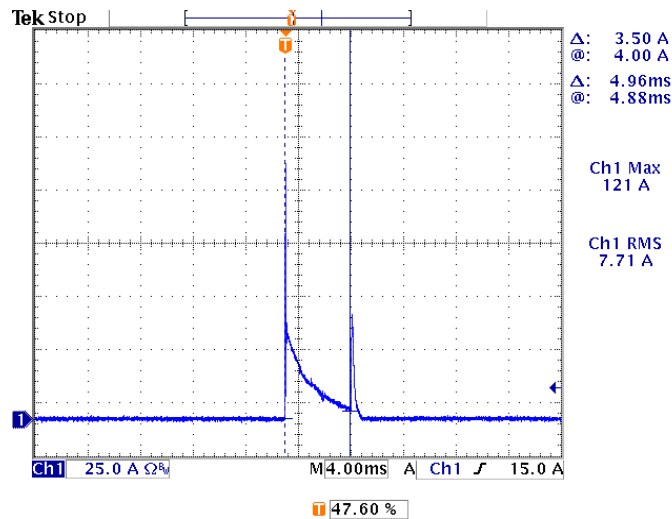
**Note:** (1) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

(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.

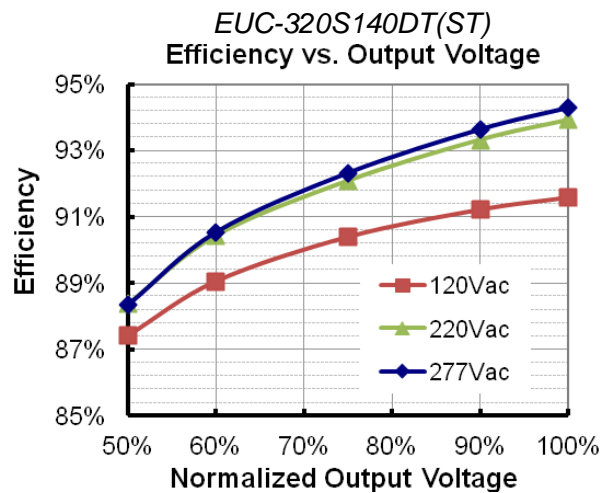
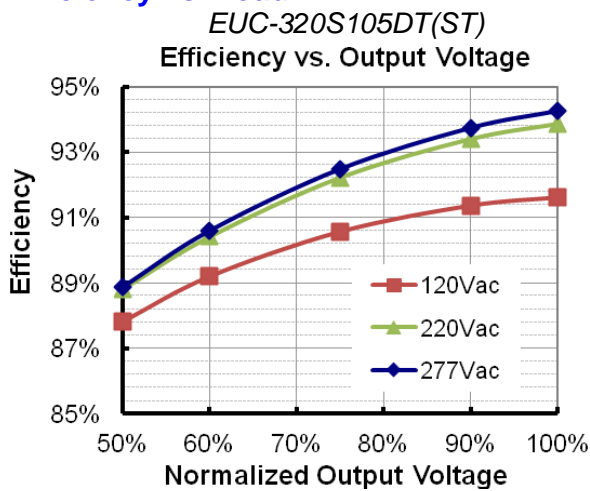
## Lifetime vs. Case Temperature

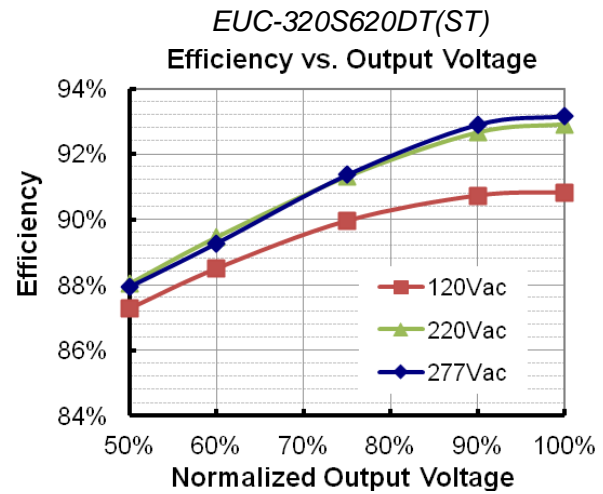
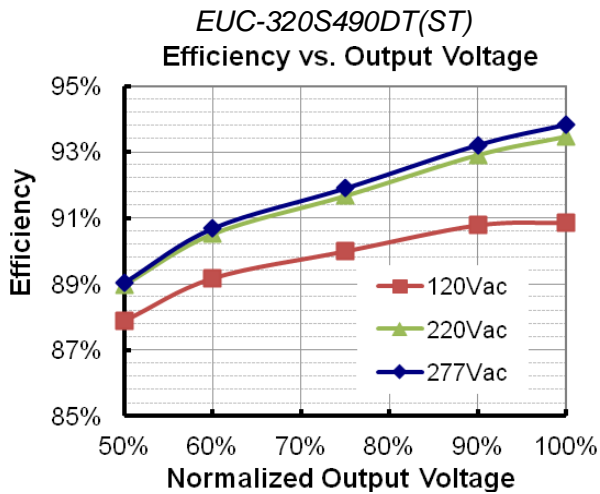
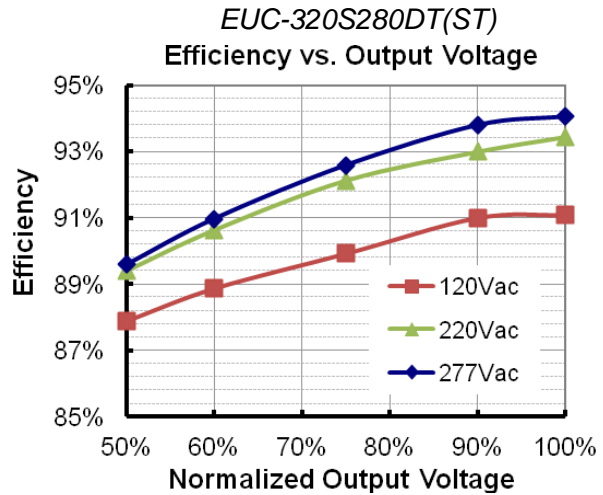
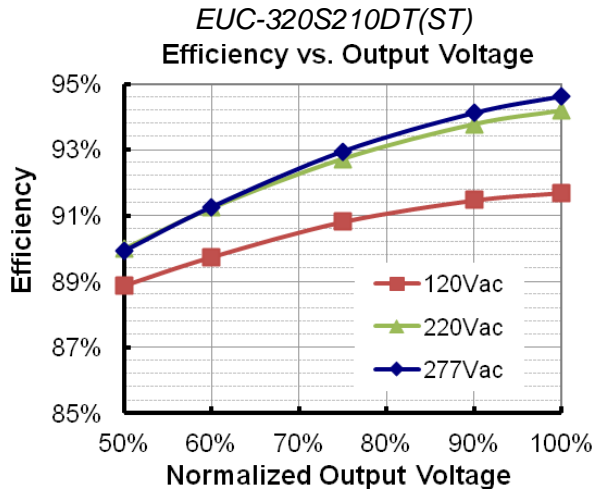


## Inrush Current Waveform

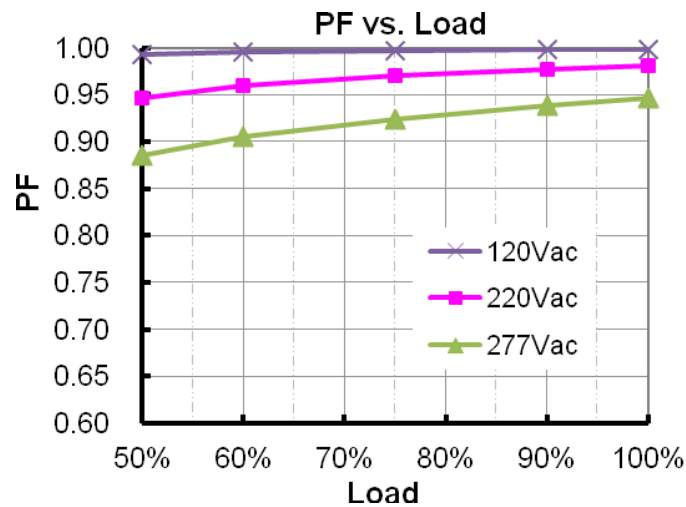


## Efficiency vs. Load

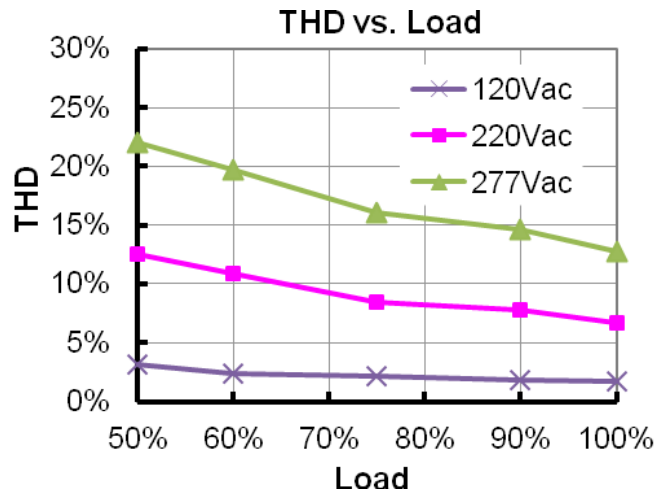




## Power Factor



## Total Harmonic Distortion



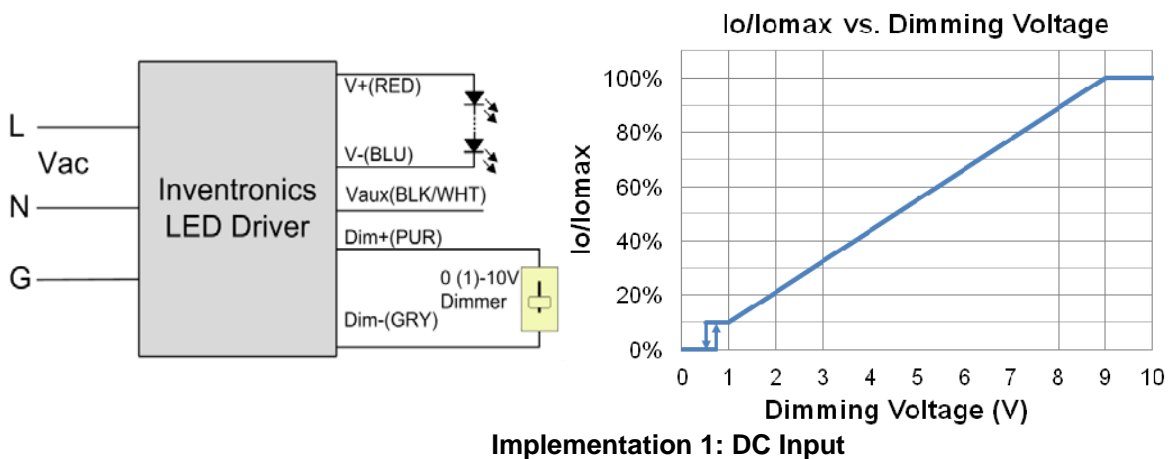
## Protection Functions

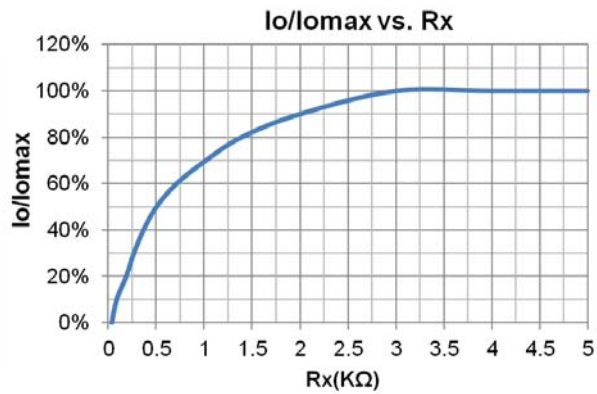
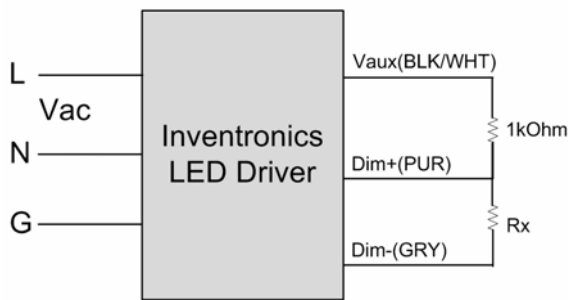
Parameter	Notes
Over Temperature Protection	Decreases output current, returning to normal after over temperature is removed.
Short Circuit Protection	Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.
Over Voltage Protection	Limits output voltage at no load and in case the normal voltage limit fails.

## Dimming

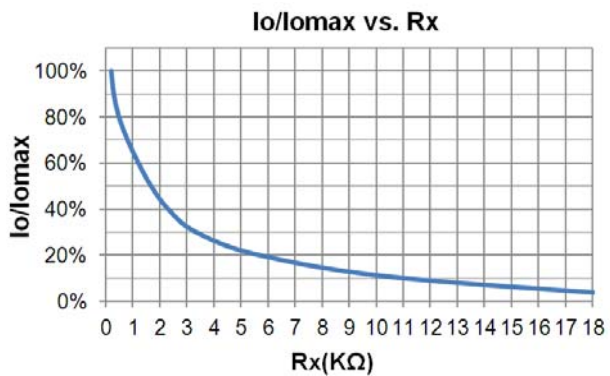
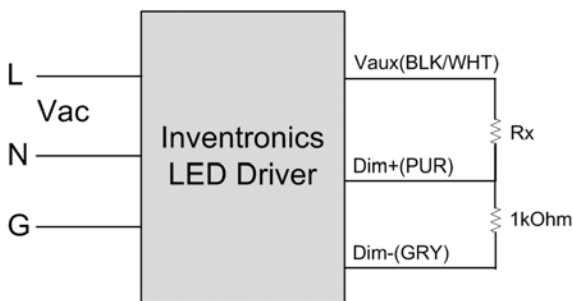
### ● 0-10V Dimming

Recommended implementations of the dimming control are provided below.





**Implementation 2: External Resistor**



**Implementation 3: External Resistor**

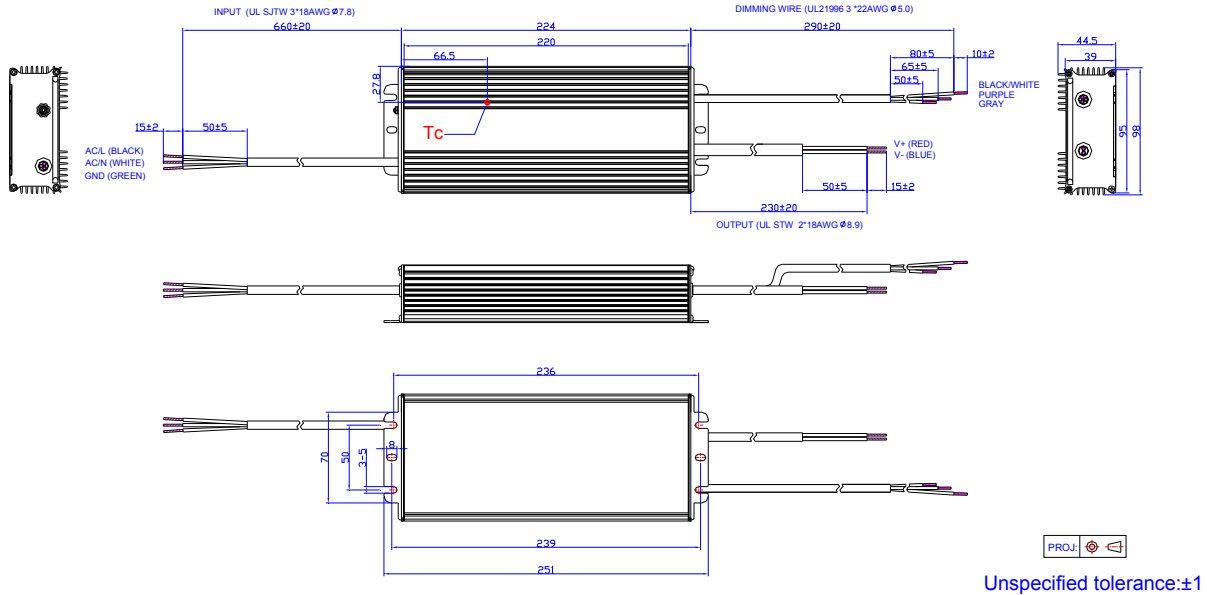
**Notes:**

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.

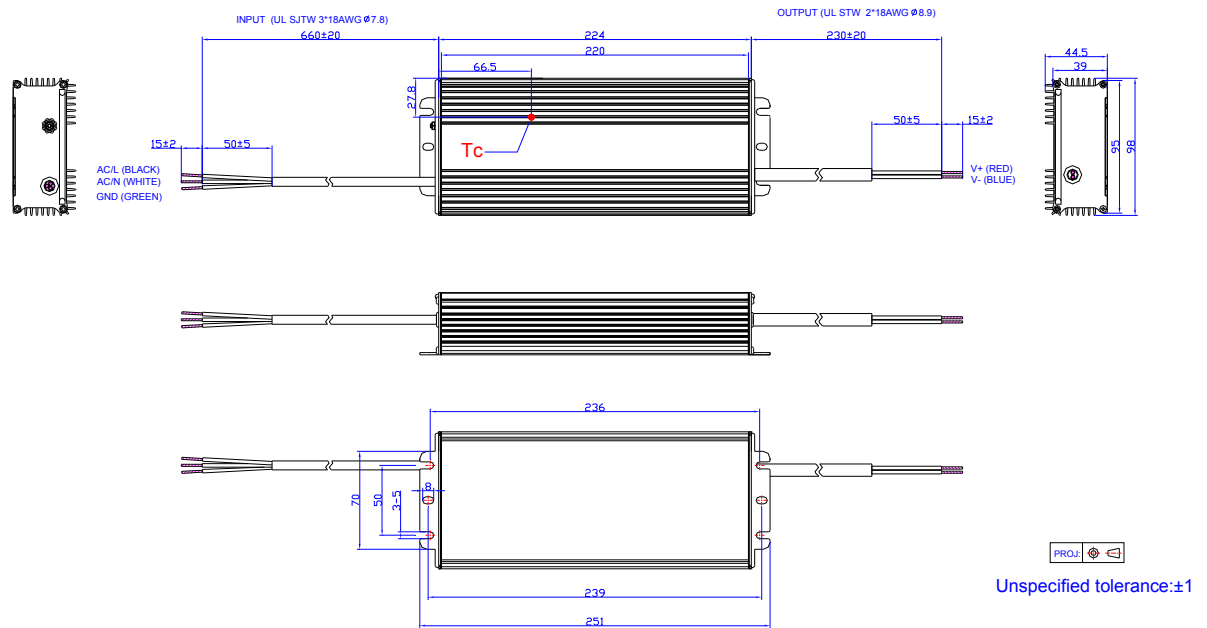


## Mechanical Outline

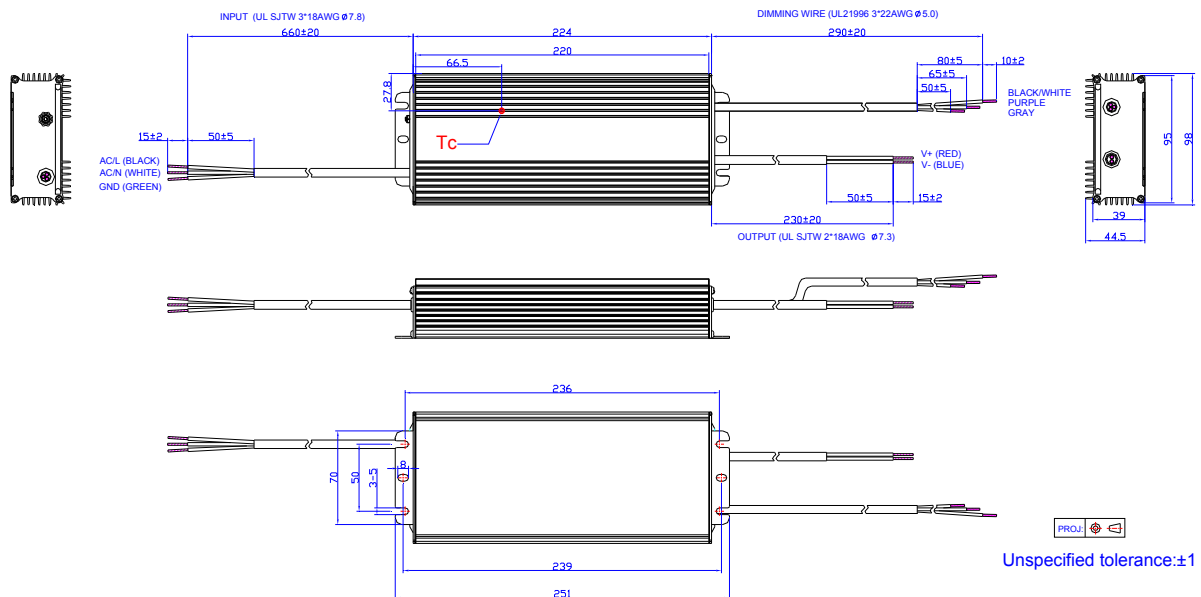
### EUC-320S105DT



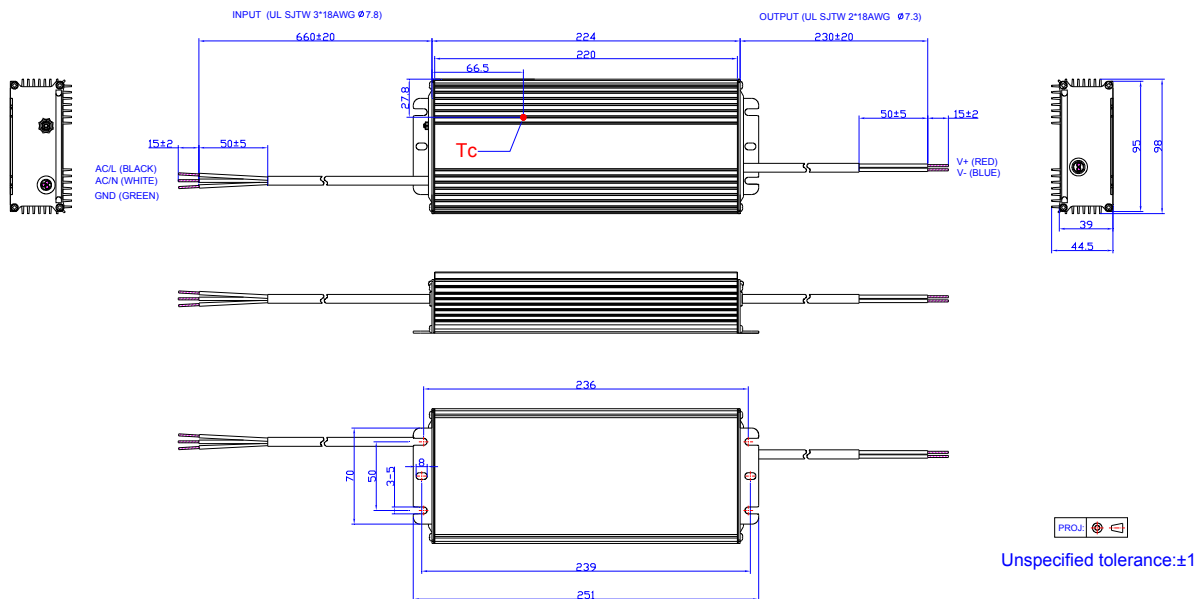
### EUC-320S105ST



EUC-320SxxxDT(except EUC-320S105DT)



EUC-320SxxxST(except EUC-320S105ST)



## 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
2014-08-06	A	Datasheets Release	/	/
2015-03-09	B	Features	Input Surge Protection: 4kV line-line, 6kV line-earth	Added
		Output Current Ripple(pk-pk)	Output Current Ripple(pk-pk)	Total Output Current Ripple (pk-pk)
		Output Current Ripple at < 200 Hz (pk-pk)	/	Added
		Case Temperature	Case Temperature	Operating Case Temperature for Safety Tc <sub>s</sub>
		Case Temperature	90°C	88°C
		Operating Case Temperature for Warranty Tc <sub>v</sub>	/	Added
		General Specifications	Storage Temperature	Added
		Environmental Specifications	/	Deleted
		Safety & EMC Compliance	EN 55015 EN 61000-3-2 EN 61000-3-3	Deleted
Derating	/	Deleted		
2015-11-30	C	CE	/	Added
		External Grounding Screw Solution	/	/
		Safety & EMC Compliance	/	Updated
		Mechanical Outline	/	Updated
2017-06-19	D	Temperature Coefficient of I <sub>oset</sub>	/	Updated
		General Specifications	With mounting ear	Added
		Safety & EMC Compliance	/	Updated
		Mechanical Outline	/	Updated