

## Features

- Ultra High Efficiency (Up to 91%)
- Active Power Factor Correction (0.99 Typical)
- Constant Current Output
- Lightning Protection
- All-Around Protection: SCP, OTP, OVP
- Waterproof (IP67) and Damp & Wet Location



## Description

The EUC-120SxxxDT(ST) Series operate from a 90 ~ 305 Vac input range. They are designed to be highly efficient and highly reliable. The standard features include dimming control, lightning protection, over voltage protection, short circuit protection, and over temperature protection.

## Models

Output Current	Input Voltage Range	Output Voltage Range	Max. Output Power	Typical Efficiency (1)	Power Factor		Model Number (2)
					120Vac	220Vac	
350 mA	90 ~ 305 Vac	206~343Vdc	120 W	91.0%	0.99	0.96	EUC-120S035DT(ST)
450 mA	90 ~ 305 Vac	160~266Vdc	120 W	91.0%	0.99	0.96	EUC-120S045DT(ST)
700 mA	90 ~ 305 Vac	103~171Vdc	120 W	91.0%	0.99	0.96	EUC-120S070DT(ST)
1050 mA	90 ~ 305 Vac	68~114Vdc	120 W	90.5%	0.99	0.96	EUC-120S105DT(ST)
1400 mA	90 ~ 305 Vac	52~86 Vdc	120 W	90.5%	0.99	0.96	EUC-120S140DT(ST)
1750 mA	90 ~ 305 Vac	41~68 Vdc	120 W	90.5%	0.99	0.96	EUC-120S175DT(ST)
2100 mA	90 ~ 305 Vac	34~57 Vdc	120 W	90.5%	0.99	0.96	EUC-120S210DT(ST)
2450 mA	90 ~ 305 Vac	29~49 Vdc	120 W	90.5%	0.99	0.96	EUC-120S245DT(ST)
2800 mA	90 ~ 305 Vac	26~43 Vdc	120 W	90.5%	0.99	0.96	EUC-120S280DT(ST)
3150 mA	90 ~ 305 Vac	23~38 Vdc	120 W	90.0%	0.99	0.96	EUC-120S315DT(ST)
3500 mA	90 ~ 305 Vac	20~34 Vdc	120 W	90.0%	0.99	0.96	EUC-120S350DT(ST)
4200 mA	90 ~ 305 Vac	17~28 Vdc	120 W	90.0%	0.99	0.96	EUC-120S420DT(ST)
4900 mA	90 ~ 305 Vac	14~24 Vdc	120 W	89.0%	0.99	0.96	EUC-120S490DT(ST)

**Notes:** (1) Measured at full load and 220 Vac input.

(2) A suffix -xxxx may be added to denote variations or modifications to the base product, where x can be any alphanumeric character or blank.

## Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 V	-	305 V	
Input Frequency	47 Hz	-	63 Hz	

Specifications are subject to changes without notice.

## Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Leakage Current	-	-	1 mA	At 277Vac 60Hz input
Input AC Current	-	-	1.5 A	Measured at full load and 100 Vac input.
	-	-	0.75 A	Measured at full load and 220 Vac input.
Inrush current	-	-	65 A	At 220Vac input, 25°C cold start, duration=1 ms, 10%Ipk-10%Ipk.
Inrush Current(I <sup>2</sup> t)	-	-	1 A <sup>2</sup> s	
Power Factor	0.90	-	-	At 100Vac-220Vac, 75%load-100%load
THD	-	-	20%	At 100Vac-277Vac, 75%load-100%load

## Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range				V dim=10 V
I <sub>o</sub> = 350 mA	332 mA	350 mA	368 mA	
I <sub>o</sub> = 450 mA	427 mA	450 mA	473 mA	
I <sub>o</sub> = 700 mA	665 mA	700 mA	735 mA	
I <sub>o</sub> = 1050 mA	997 mA	1050 mA	1102 mA	
I <sub>o</sub> = 1400 mA	1330 mA	1400 mA	1470 mA	
I <sub>o</sub> = 1750 mA	1662 mA	1750 mA	1837 mA	
I <sub>o</sub> = 2100 mA	1995 mA	2100 mA	2205 mA	
I <sub>o</sub> = 2450 mA	2327 mA	2450 mA	2572 mA	
I <sub>o</sub> = 2800 mA	2660 mA	2800 mA	2940 mA	
I <sub>o</sub> = 3150 mA	2992 mA	3150 mA	3307 mA	
I <sub>o</sub> = 3500 mA	3325 mA	3500 mA	3675 mA	
I <sub>o</sub> = 4200 mA	3990 mA	4200 mA	4410 mA	
I <sub>o</sub> = 4900 mA	4655 mA	4900 mA	5145 mA	
Ripple and Noise (pk-pk)	-	-	3% V <sub>O</sub>	Measured by 20 MHz bandwidth oscilloscope and the output paralleled a 0.1 uF ceramic capacitor and a 10 uF electrolytic capacitor.
Line Regulation	-	-	±1%	
Load Regulation	-	-	±3%	
Turn-on Delay Time	-	1.2 s	2.0 s	Measured at 120Vac input.
	-	0.6 s	1.2 s	Measured at 220Vac input.

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

## Protection Functions

Parameter	Min.	Typ.	Max.	Notes
Over Temperature Protection	-	100 °C	-	Case temperature
Short Circuit Protection	No damage shall occur when any output operating in a short circuit condition. The power supply shall be self-recovery when the fault condition is removed.			

## Protection Functions (Continued)

Parameter	Min.	Typ.	Max.	Notes
Over Voltage Protection				Latch mode. The power supply shall return to normal operation only after the power is turn-on again.
I <sub>o</sub> = 350 mA	411 V	446 V	480 V	
I <sub>o</sub> = 450 mA	319 V	346 V	373 V	
I <sub>o</sub> = 700 mA	205 V	222 V	240 V	
I <sub>o</sub> = 1050 mA	136 V	148 V	160 V	
I <sub>o</sub> = 1400 mA	103 V	112 V	121 V	
I <sub>o</sub> = 1750 mA	81 V	88 V	96 V	
I <sub>o</sub> = 2100 mA	68 V	74 V	80 V	
I <sub>o</sub> = 2450 mA	58 V	64 V	69 V	
I <sub>o</sub> = 2800 mA	51 V	56 V	61 V	
I <sub>o</sub> = 3150 mA	45 V	49 V	54 V	
I <sub>o</sub> = 3500 mA	40 V	44 V	48 V	
I <sub>o</sub> = 4200 mA	33 V	36 V	40 V	
I <sub>o</sub> = 4900 mA	28 V	31 V	34 V	

## General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency				Measured at full load, 120Vac input, 25°C ambient temperature, after the unit is thermally stabilized.  It will be lower about 1%, if measured immediately after startup.
I <sub>o</sub> = 350 mA	88.0%	89.0%	-	
I <sub>o</sub> = 450 mA	88.0%	89.0%	-	
I <sub>o</sub> = 700 mA	88.0%	89.0%	-	
I <sub>o</sub> = 1050 mA	87.5%	88.5%	-	
I <sub>o</sub> = 1400 mA	87.5%	88.5%	-	
I <sub>o</sub> = 1750 mA	87.5%	88.5%	-	
I <sub>o</sub> = 2100 mA	87.5%	88.5%	-	
I <sub>o</sub> = 2450 mA	87.5%	88.5%	-	
I <sub>o</sub> = 2800 mA	87.5%	88.5%	-	
I <sub>o</sub> = 3150 mA	87.0%	88.0%	-	
I <sub>o</sub> = 3500 mA	87.0%	88.0%	-	
I <sub>o</sub> = 4200 mA	87.0%	88.0%	-	
I <sub>o</sub> = 4900 mA	86.0%	87.0%	-	
Efficiency				Measured at full load, 220Vac input, 25°C ambient temperature, after the unit is thermally stabilized.  It will be lower about 1%, if measured immediately after startup.
I <sub>o</sub> = 350 mA	90.0%	91.0%	-	
I <sub>o</sub> = 450 mA	90.0%	91.0%	-	
I <sub>o</sub> = 700 mA	90.0%	91.0%	-	
I <sub>o</sub> = 1050 mA	89.5%	90.5%	-	
I <sub>o</sub> = 1400 mA	89.5%	90.5%	-	
I <sub>o</sub> = 1750 mA	89.5%	90.5%	-	
I <sub>o</sub> = 2100 mA	89.5%	90.5%	-	
I <sub>o</sub> = 2450 mA	89.5%	90.5%	-	
I <sub>o</sub> = 2800 mA	89.5%	90.5%	-	
I <sub>o</sub> = 3150 mA	89.0%	90.0%	-	
I <sub>o</sub> = 3500 mA	89.0%	90.0%	-	
I <sub>o</sub> = 4200 mA	89.0%	90.0%	-	
I <sub>o</sub> = 4900 mA	88.0%	89.0%	-	
MTBF	-	250,000 hours	-	Measured at 120Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Life Time	-	67,200 hours	-	Measured at 220Vac input, 80%Load, Case temperature=60°C @ T <sub>c</sub> point. See life time vs. T <sub>c</sub> curve for the details
Case Temperature	-	-	90°C (DT Series)	ST Series: 350 mA:88.2°C; Others: 89.5°C
Dimensions				
Inches (L × W × H)	7.64 × 2.66 × 1.44			
Millimeters (L × W × H)	194 × 67.5 × 36.5			
Net Weight	-	1000 g	-	

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

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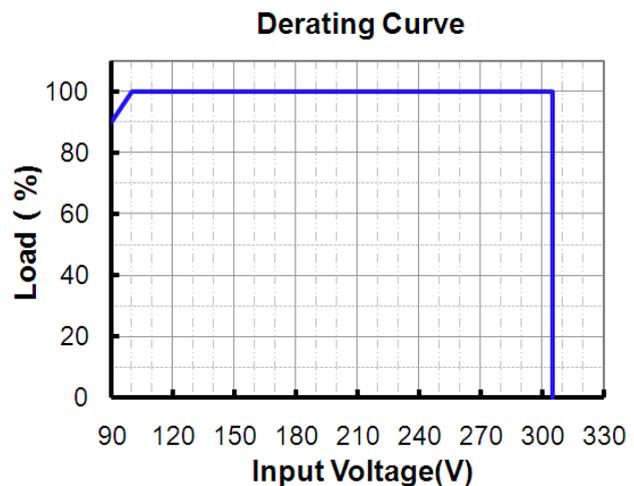
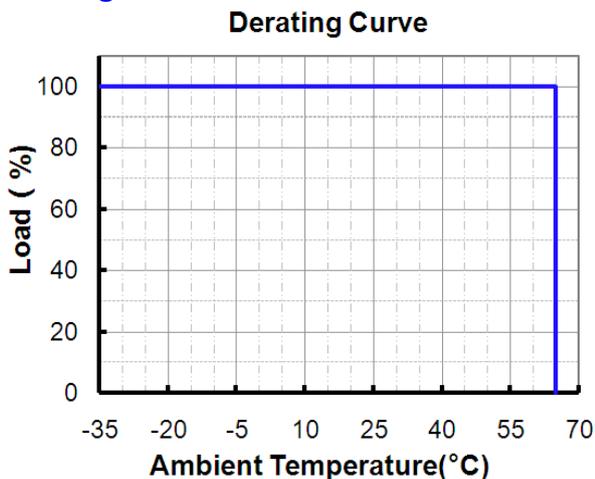
## Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-35 °C	-	+65 °C	Humidity: 10% RH to 100% RH See Derating Curve for more details
Storage Temperature	-40 °C	-	+85 °C	Humidity: 5% RH to 100% RH

## Safety & EMC Compliance

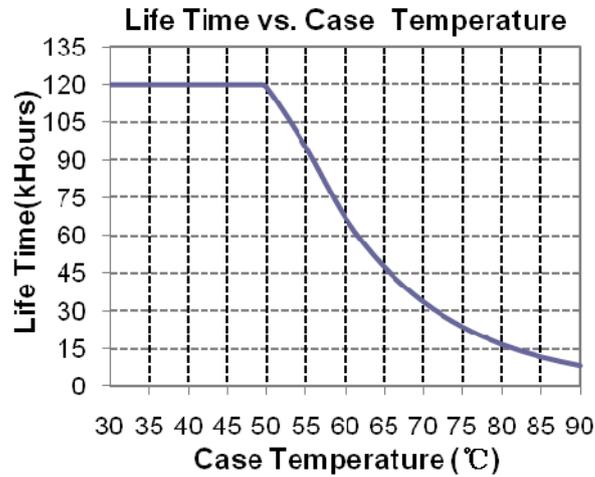
Safety Category	Standard
UL/CUL	UL8750, UL1012, CSA-C22.2 No. 107.1
CE	EN 61347-1, EN61347-2-13
EMI Standards	Notes
EN 55015	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EMS Standards	Notes
EN 61000-4-2	Electrostatic 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 4 kV, line to earth 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

## Derating Curve

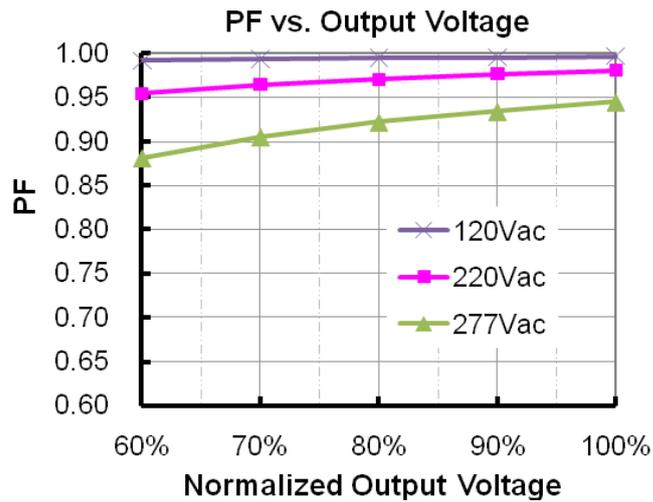


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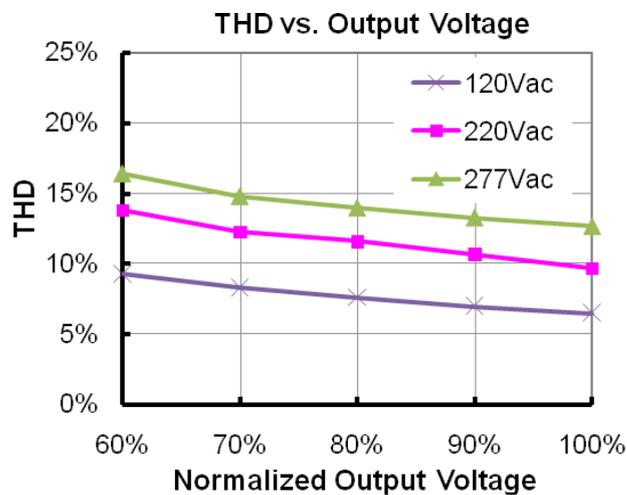
## Life Time vs. Case Temperature Curve



## Power Factor Characteristics



## Total Harmonic Distortion



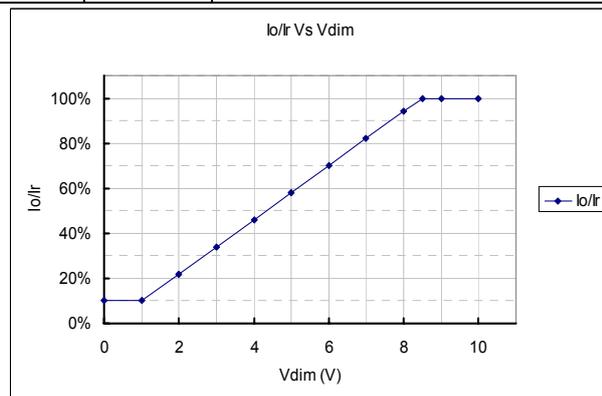
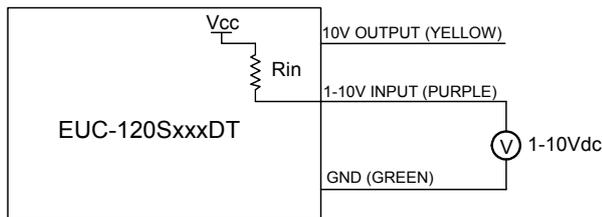
Specifications are subject to changes without notice.

## Dimming Control (On the secondary Side)

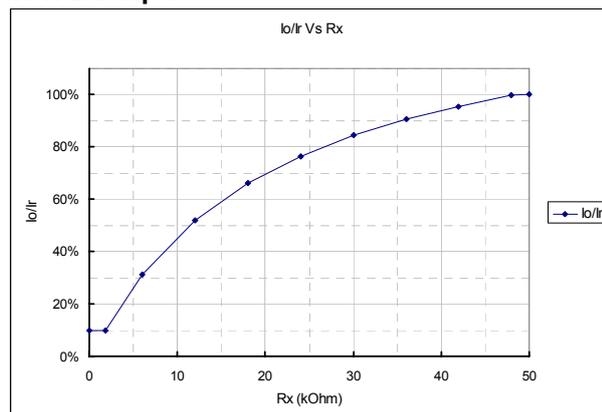
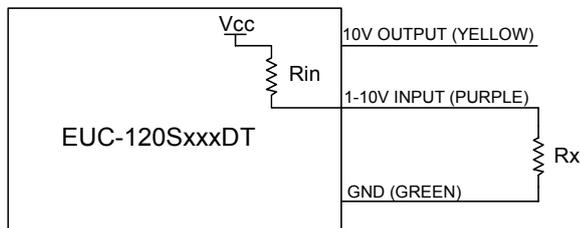
The function has two versions. One is with internal pull-up resistor; the output is full load when the dimming leads are floated. Another is with internal pull-down resistor; the output is 10% full load when the dimming leads are floated.

1. With pull-up resistor (Default, without suffix):

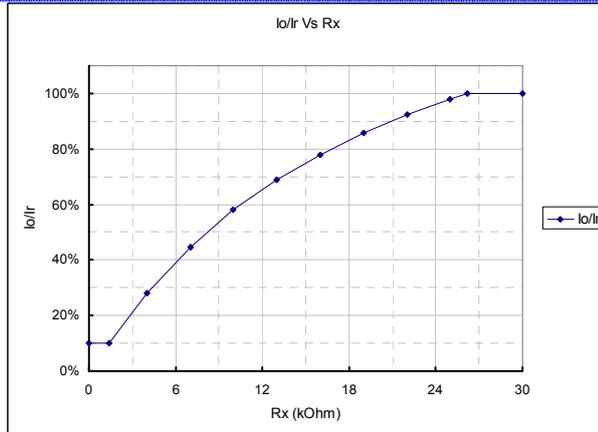
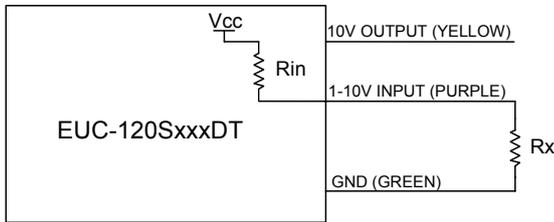
Parameter	Min.	Typ.	Max.	Notes
Vcc	9.5 V	10 V	10.5 V	
10V output source current	0 mA	-	10 mA	
Absolute maximum voltage on the 1~10V input pin	-2 V	-	12 V	
Source current on 1~10V input pin	0 mA	-	0.5 mA	
Value of Rin ( the resistor inside the LED driver which locate between the 1-10V input and 10V output pin)	19.8 K	20 K	20.2 K	



### Implementation 1: DC input



### Implementation 2: External resistor (Vcc=12V) 【EUC-120S490DT】



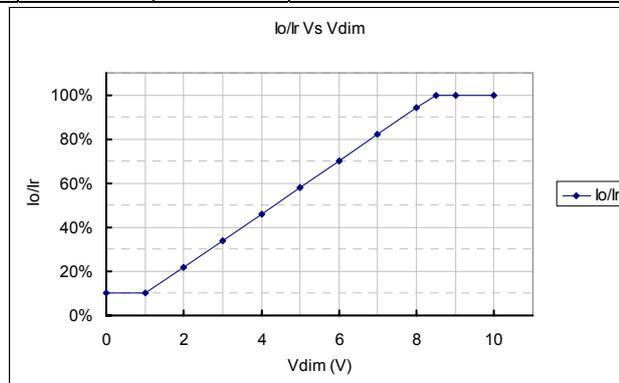
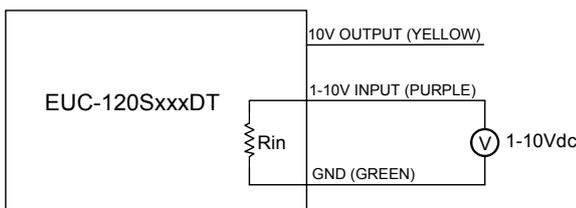
**Implementation 3: External resistor (Vcc=15V) 【Other Models】**

**Notes:**

1. If the dimming function is not used, please let the dimming leads floated.
2.  $I_o$  is actual output current and  $I_r$  is rated current without dimming control.
3. For the driver to operate properly, the load voltage must be maintained above the minimum voltage threshold (approx. 60% of the max. output voltage for any given model).
4. If the output voltage is maintained above 60% of the maximum output voltage, the dimming control may be operated over the entire 1-10V range with output current varying from 100% down to practically 10%.
5. The dimming signal is allowed to be less than 1V, however, when it for 0-1V, the output current can maintain about 10% $I_r$ . When it for 8.5-10V, the output current can maintain about 100% $I_r$ .
6. Do not connect the GND of dimming to the output; otherwise, the LED driver can not work normally.

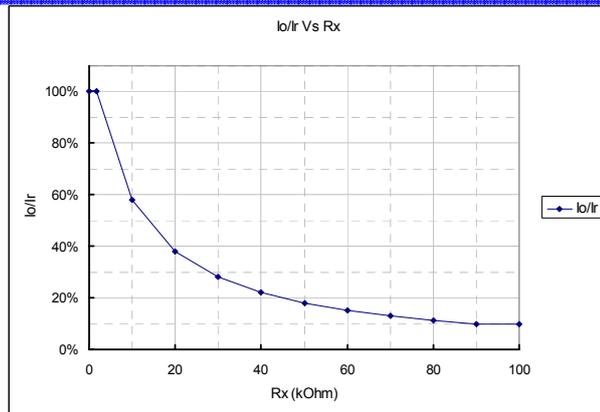
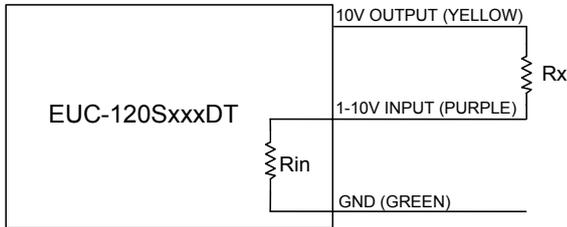
2. With pull-down resistor: (The model number has a suffix -0040)

Parameter	Min.	Typ.	Max.	Notes
10V output voltage	9.5 V	10 V	10.5 V	
10V output source current	0 mA	-	10 mA	
Absolute maximum voltage on the 1~10V input pin	-2 V	-	12 V	
Sink current on 1~10V input pin	0 mA	-	1 mA	
Value of Rin ( the resistor inside the LED driver which locate between the 1-10V input and GND)	9.9 K	10 K	10.1 K	

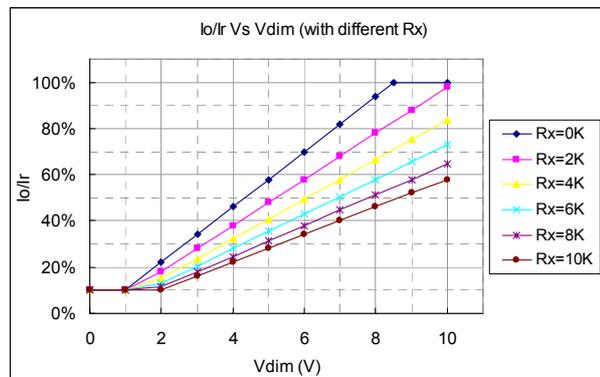
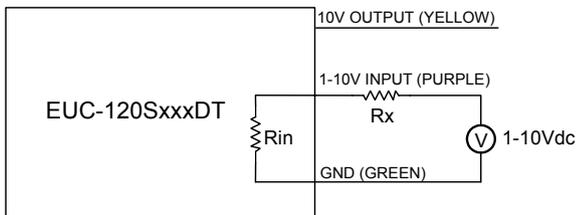


**Implementation 1: DC input**

Specifications are subject to changes without notice.



### Implementation 2: External resistor



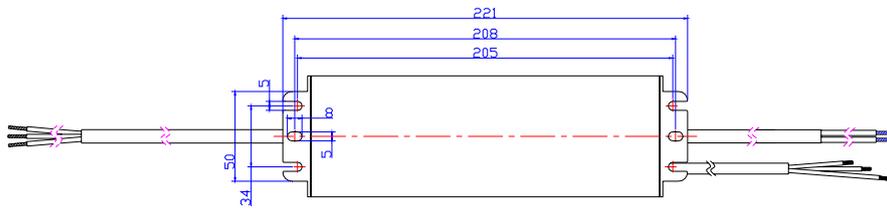
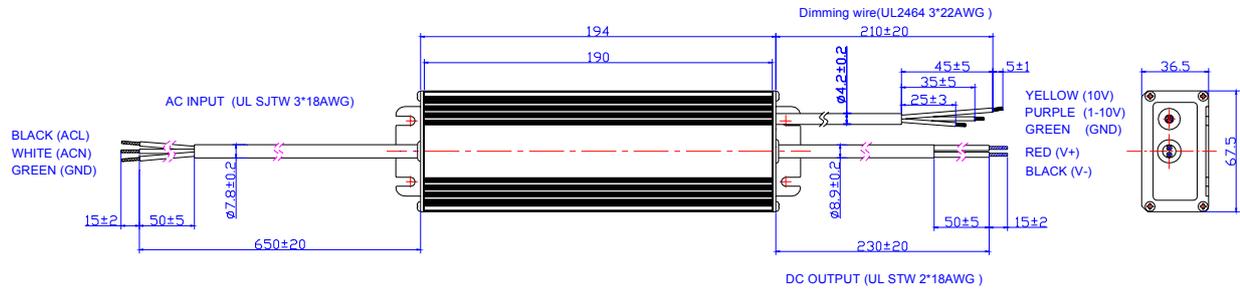
### Implementation 3: External resistor and 1-10V DC Input

**Notes:**

1. If the dimming function is not used, please short 10V output pin (yellow) and 1-10 input pin (purple).
2.  $I_o$  is actual output current and  $I_r$  is rated current without dimming control.
3. For the driver to operate properly, the load voltage must be maintained above the minimum voltage threshold (approx. 60% of the max. output voltage for any given model).
4. If the output voltage is maintained above 60% of the maximum output voltage, the dimming control may be operated over the entire 1-10V range with output current varying from 100% down to practically 10%.
5. The dimming signal is allowed to be less than 1V, however, when it for 0-1V, the output current can maintain about 10% $I_r$ . When it for 8.5-10V, the output current can maintain about 100% $I_r$ .
6. Do not connect the GND of dimming to the output; otherwise, the LED driver can not work normally.

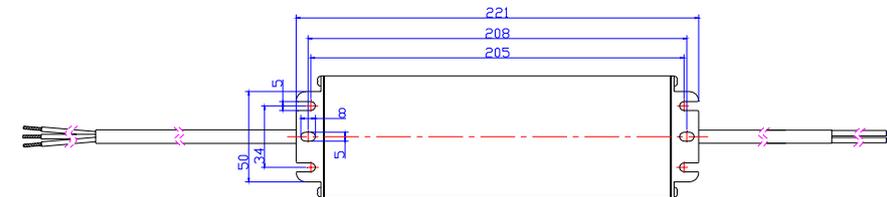
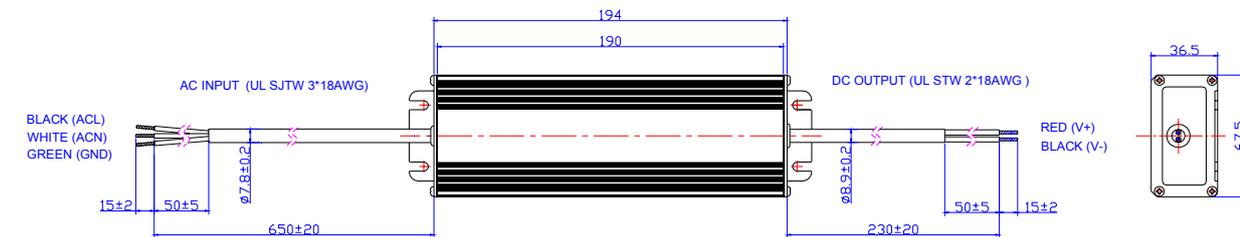
## Mechanical Outline

### EUC-120SxxxDT



PROJ   
 Unspecified tolerance:±1

### EUC-120SxxxST



PROJ   
 Unspecified tolerance:±1

## 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.

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## Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2010-03-23	A	Add Leakage Current in Input Specifications	/	Max. 1 mA At 277Vac 50Hz input
		Change the Max. value of Operating Temperature	+70 °C	+65 °C
		Change the Max. Ambient Temperature in Derating Curve	+70 °C	+65 °C
		Change the MTBF data and testing condition	460,000 hours / Measured at EUC-120S140DT(ST)	320,000 hours / Measured at EUC-120S280DT(ST)
		Change the Life Time testing condition	Measured at EUC-120S140DT(ST)	Measured at EUC-120S280DT(ST)
		Add one note in Dimming Control	/	7. Do not connect the GND of dimming to the output; otherwise, the LED driver can not work normally.
		Change the dimming control line in Mechanical Outline	/	/
2010-10-22	B	Update the part of dimming control	/	/
2010-10-18	C	Add another dimming version with pull-down resistor	/	/
2011-01-14	D	Update MTBF & Life Time Date	For One Model	For Two Models
2011-09-07	E	Dimming Control	/	/
2012-06-11	F	Mechanical Outline	/	Updated
		Life time curve	/	Added
2012-7-17	G	Max Case Temperature	/	Updated
		Surge Immunity Test: AC Power Line	line to line 2 kV, line to earth 4 kV	line to line 4 kV, line to earth 6 kV
2012-7-24	H	External resistor in pull-up resistor	/	Updated
2012-9-21	I	Inrush Current(I <sup>2</sup> t)	/	Added
		MTBF, Life time	/	Typical Value added
		Life time Curve	/	Updated
		Min PF, THD Max	/	Added
2013-03-25	J	Efficiency of Model 4900mA	/	1% lower
		Turn-on delay time @120Vac	Typ 0.6s; Max1.5s	Typ 1.2s; Max2.0s
		Turn-on delay time @220Vac	Typ 0.6s; Max1.0s	Typ 0.6s; Max1.2s
		Max Case temperature	/	Corrected
		PF Curve	/	Added
		THD Curve	/	Added
		OTP	/	Updated
		Mechanical Outline	/	Updated

Specifications are subject to changes without notice.

# INVENTRONICS

**EUC-120SxxxDT(ST)**

**Rev. J**

**Driving the Lighting Revolution**

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*Specifications are subject to changes without notice.*

[www.inventronics-co.com](http://www.inventronics-co.com)

Tel: 86-571-56565800

Fax: 86-571-86601139

[sales@inventronics-co.com](mailto:sales@inventronics-co.com)