

Features

- Ultra High Efficiency (Up to 91%)
- High Power Factor (0.99 Typical)
- Constant Current Output
- Lightning Protection
- Dimming Function
- All-Round Protection: OVP, SCP, OTP
- Waterproof (IP67)
- Comply With UL8750 & EN61347 Safety Regulations
- Suitable For Dry, Damp and Wet location
- Comply With FCC Part15 Class B



Description

The EUC-096SxxxDT(ST) series operate from a 90 ~ 305 Vac input range. These units will provide up to a 4 A of output current and a maximum output voltage of 274 V for 96 W maximum output power. They are designed to be highly efficient and highly reliable. Features include dimming function, lightning protection, over voltage protection, short circuit protection, and over temperature protection.

Models

Output Current	Input Voltage	Output Voltage Range	Max. Output Power	Typical Efficiency (1)	Power Factor		Model Number
					110Vac	220Vac	
350 mA	90 ~ 305 Vac	137-274 Vdc	96 W	91.0%	0.99	0.96	EUC-096S035DT(ST)(7)
450 mA	90 ~ 305 Vac	106-213 Vdc	96 W	91.0%	0.99	0.96	EUC-096S045DT(ST)(7)
700 mA	90 ~ 305 Vac	68-137Vdc	96 W	90.0%	0.99	0.96	EUC-096S070DT(ST)(7)
1050 mA	90 ~ 305 Vac	46-92.0 Vdc	96 W	90.0%	0.99	0.96	EUC-096S105DT(ST)(7)
1400 mA	90 ~ 305 Vac	35-69.0 Vdc	96 W	89.0%	0.99	0.96	EUC-096S140DT(ST)(7)
1750 mA	90 ~ 305 Vac	27-54.8 Vdc	96 W	89.0%	0.99	0.96	EUC-096S175DT(ST)(4)
2100 mA	90 ~ 305 Vac	22-45.7 Vdc	96 W	88.0%	0.99	0.96	EUC-096S210DT(ST)(4)
2450 mA	90 ~ 305 Vac	19-39.1 Vdc	96 W	88.0%	0.99	0.96	EUC-096S245DT(ST)(3,6)
2800 mA	90 ~ 305 Vac	17-34.2 Vdc	96 W	88.0%	0.99	0.96	EUC-096S280DT(ST)(3,6)
3150 mA	90 ~ 305 Vac	15-30.4 Vdc	96 W	87.0%	0.99	0.96	EUC-096S315DT(ST)(3,6)
3500 mA	90 ~ 305 Vac	13-27.4 Vdc	96 W	87.0%	0.99	0.96	EUC-096S350DT(ST)(3,6)
4000 mA	90 ~ 305 Vac	12-24.0 Vdc	96 W	87.0%	0.99	0.96	EUC-096S400DT(ST)(3,5)

- 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.
 - (3) Class 2 output (USR & CNR) for dry and damp location.
 - (4) Class 2 output (USR), Non-Class 2 output (CNR) for dry and damp location.
 - (5) Class 2 output (USR & CNR) for wet location.
 - (6) Class 2 output (CNR only) only for wet location.
 - (7) Non-Class 2 output (USR & CNR).

Specifications are subject to changes without notice.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 V	-	305 V	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	1 mA	At 277Vac 60Hz input
Input AC Current	-	-	1.3 A	Measured at full load and 100 Vac input.
	-	-	0.6 A	Measured at full load and 220 Vac input.
Inrush current	-	-	69 A	At 230Vac input. T(@ 50% of I peak) =140 μ s

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range				
$I_o = 350$ mA	332 mA	350 mA	368 mA	
$I_o = 450$ mA	427 mA	450 mA	473 mA	
$I_o = 700$ mA	665 mA	700 mA	735 mA	
$I_o = 1050$ mA	997 mA	1050 mA	1102 mA	
$I_o = 1400$ mA	1330 mA	1400 mA	1470 mA	
$I_o = 1750$ mA	1662 mA	1750 mA	1837 mA	
$I_o = 2100$ mA	1995 mA	2100 mA	2205 mA	
$I_o = 2450$ mA	2327 mA	2450 mA	2572 mA	
$I_o = 2800$ mA	2660 mA	2800 mA	2940 mA	
$I_o = 3150$ mA	2992 mA	3150 mA	3307 mA	
$I_o = 3500$ mA	3320 mA	3500 mA	3680 mA	
$I_o = 4000$ mA	3800 mA	4000 mA	4200 mA	
No Load Output Voltage				
$I_o = 350$ mA	-	279 V	-	
$I_o = 450$ mA	-	219 V	-	
$I_o = 700$ mA	-	141 V	-	
$I_o = 1050$ mA	-	94.0 V	-	
$I_o = 1400$ mA	-	71.0 V	-	
$I_o = 1750$ mA	-	56.5 V	-	
$I_o = 2100$ mA	-	47.5 V	-	
$I_o = 2450$ mA	-	40.5 V	-	
$I_o = 2800$ mA	-	35.5 V	-	
$I_o = 3150$ mA	-	31.5 V	-	
$I_o = 3500$ mA	-	28.5 V	-	
$I_o = 4000$ mA	-	25.0 V	-	
Ripple and Noise (pk-pk)	-	-	30% I_o	Measured by 20 MHz bandwidth oscilloscope and the output paralleled a 0.1 μ F ceramic capacitor and a 10 μ F electrolytic capacitor
Line Regulation	-	-	1%	
Load Regulation	-	-	3%	
Turn-on Delay Time		1.0 s	3 s	Measured at 110Vac input.
		0.8 s	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	-	110 °C	-	Maximum temperature of components inside the case. The power supply shall be self-recovery when the fault condition is removed.
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.			

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency $I_o = 350 \text{ mA}$ $I_o = 450 \text{ mA}$ $I_o = 700 \text{ mA}$ $I_o = 1050 \text{ mA}$ $I_o = 1400 \text{ mA}$ $I_o = 1750 \text{ mA}$ $I_o = 2100 \text{ mA}$ $I_o = 2450 \text{ mA}$ $I_o = 2800 \text{ mA}$ $I_o = 3150 \text{ mA}$ $I_o = 3500 \text{ mA}$ $I_o = 4000 \text{ mA}$	88.0% 88.0% 87.0% 87.0% 86.0% 86.0% 85.0% 85.0% 85.0% 84.0% 84.0% 84.0%	89.0% 89.0% 88.0% 88.0% 87.0% 87.0% 86.0% 86.0% 86.0% 85.0% 85.0% 85.0%	- - - - - - - - - - - -	Measured at full load, 110Vac input, 25°C ambient temperature, after the unit is thermally stabilized. It will be about 2.5% lower, if measured immediately after startup.
Efficiency $I_o = 350 \text{ mA}$ $I_o = 450 \text{ mA}$ $I_o = 700 \text{ mA}$ $I_o = 1050 \text{ mA}$ $I_o = 1400 \text{ mA}$ $I_o = 1750 \text{ mA}$ $I_o = 2100 \text{ mA}$ $I_o = 2450 \text{ mA}$ $I_o = 2800 \text{ mA}$ $I_o = 3150 \text{ mA}$ $I_o = 3500 \text{ mA}$ $I_o = 4000 \text{ mA}$	90.0% 90.0% 89.0% 89.0% 88.0% 88.0% 87.0% 87.0% 87.0% 86.0% 86.0% 86.0%	91.0% 91.0% 90.0% 90.0% 89.0% 89.0% 88.0% 88.0% 88.0% 87.0% 87.0% 87.0%	- - - - - - - - - - - -	Measured at full load, 220Vac input, 25°C ambient temperature, after the unit is thermally stabilized. It will be about 2.5% lower, if measured immediately after startup.
MTBF	400,000 Hours			Measured at 110Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Life Time	50,000 Hours			For 60°C max. case temperature
Dimensions Inches (L × W × H) Millimeters (L × W × H)	6.85 × 2.66 × 1.44 174 × 67.5 × 36.5			
Net Weight	-	850 g	-	

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

Environmental Specifications

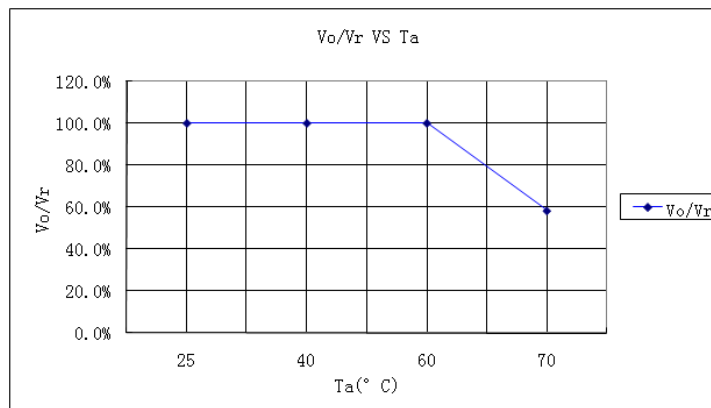
Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-35 °C	-	+70 °C	Humidity: 10% RH to 100% RH
Storage Temperature	-40 °C	-	+85 °C	Humidity: 5% RH to 100% RH

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Safety & EMC Compliance

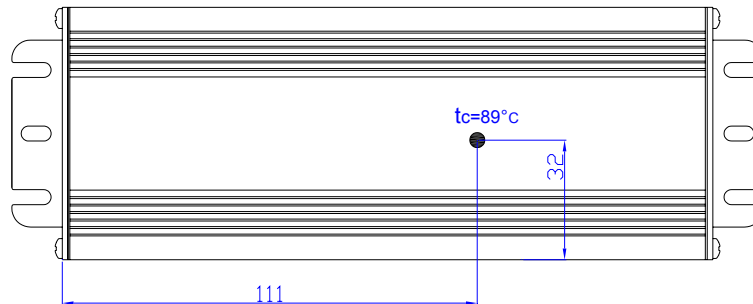
Safety Category	Standard
CUL	UL8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products
	UL1310 - Class 2 Power Units
	UL1012 - Power Units Other Than Class 2
	CSA C22.2 No. 223-M91- Extra-Low-Voltage Class 2 Outputs
	CSA-C22.2 No. 107.1 - General Use Power Supplies
CE	EN 61347-1 – Lamp control gear Part 1: General and safety requirements
	EN61347-2-13 – Lamp control gear Part 2-13: Particular requirements for d.c. or a.c. supplied electronic control gear for LED modules
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
FCC Part 15 Class B	ANSI C63.4: 2009
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 15 kV air discharge, 8 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 2 kV, line to earth 4 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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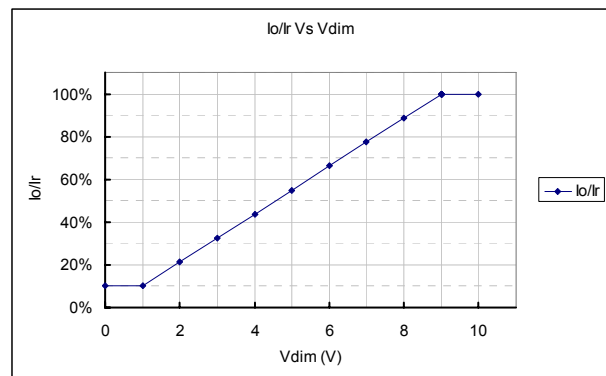
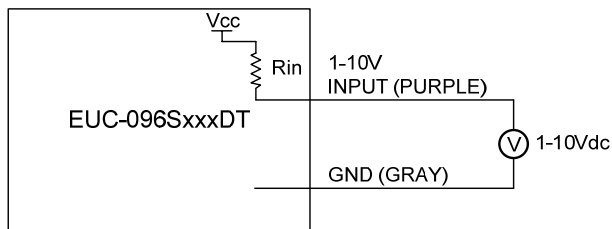
Max. Case Temperature



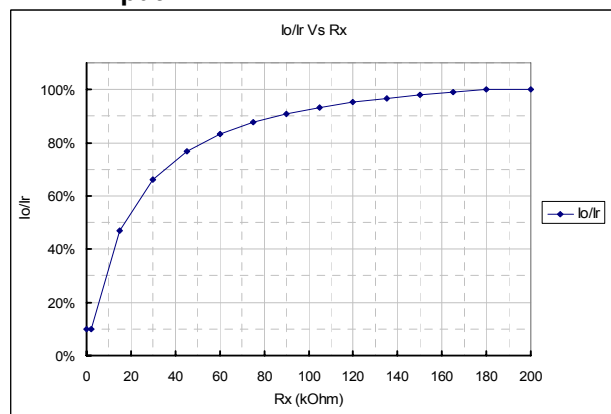
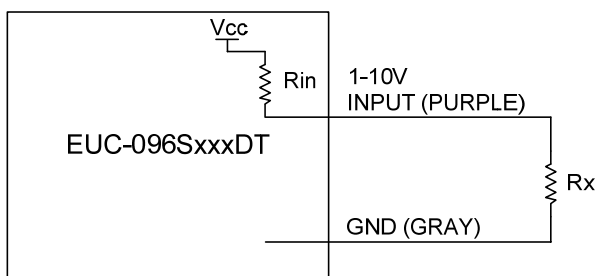
Dimming Control (On secondary side)

Parameter	Min.	Typ.	Max.	Notes
10V output voltage	9.8 V	10 V	10.2 V	
Absolute maximum voltage on the 1~10V input pin	0 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 Vcc output pin)	19.8 K	20 K	20.2 K	

The dimmer control is operated from an input signal of 1 – 10 Vdc. Recommended implementations are provided below.



Implementation 1: DC input



Implementation 2: External resistor

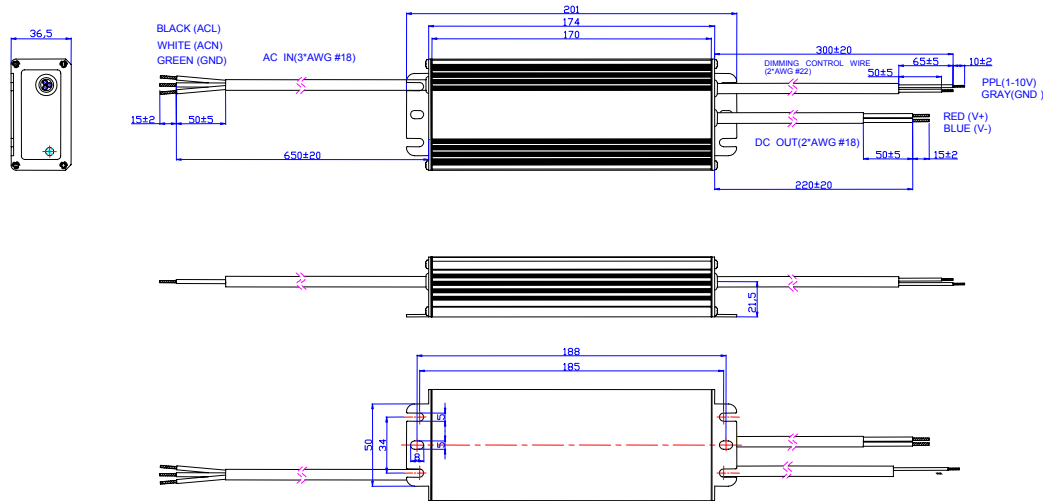
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Notes:

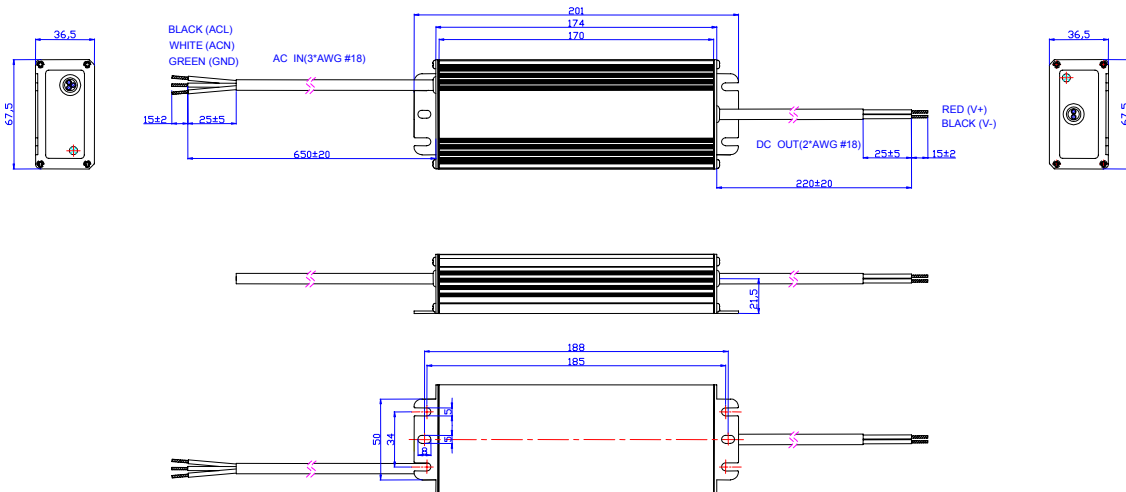
1. I_o is actual output current and I_r is rated current without dimming control.
2. For the driver to operate properly, the load voltage must be maintained above the minimum voltage threshold (approx. 50% of the max. output voltage for any given model).
3. If the output voltage is maintained above 50% of the maximum output voltage, the dimming control may be operated over the entire 1-10V range with output current varying from 10% to 100% of I_r .
4. The dimming signal is allowed to be less than 1V, however, when it is 0-1V, the output current is 10% I_o .
5. Do not connect the GND of dimming to the output cable; otherwise, the LED driver can not work normally.

Mechanical Outline

EUC-096SxxxDT



EUC-096SxxxST



RoHS Compliance

Our products comply with the European Directive 2002/95/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	
2010-06-02	V1.0	Preliminary Datasheets First Release				
2010-06-04	V2.0	Change the life test condition from 220Vac to 110Vac.				
2010-08-10	V3.0	Change the Mechanical Outline of dimming control series.				
2010-12-21	A	Change PF at 220Vac	0.95		0.96	
		Change the notes for models	/		/	
		Delete Derating Curve	/		/	
		Add Max. Case Temperature	/		tc: 89 °C	
		Add another dimming version with pull-down resistor	/		/	
		Update safety standards	/		/	
		Add FCC Part15 Class B	/		FCC Part 15 Class B, ANSI C63.4: 2009.	
Update mechanical Outline	/		/			
2011-07-08	B	Features	Up to 92%		Up to 91%	
		Models-Typical Efficiency	92%, 92%...		91%, 91%...	
		Input Specifications-Input AC Current	1.2A		1.3A	
		Input Specifications-Inrush Current	50A		69A	
2011-07-08	B	Output Specifications-No Load Output Voltage	278V,216V,140V,95V,72V,57V,48V,42V,37V,32V,29V,26V		279V,219V,141V,94V,71V,56.5V,47.5V,40.5V,35.5V,31.5V,28.5V,25V	
		Output Specifications-Ripple and Noise	3%Vo		Io x 30%	
		Output Specifications-Turn-on Delay Time	0.8S	1S	1S	3S
			0.8S	1S	0.8S	2S
		Protection Functions-OVP	/		Delay	
		General Specifications-Tpy	/		All minus 1%	
General Specifications-Notes	1%		2%-3%			
2012-01-31	C	Photo	/		Changed	

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