

Features

- Ultra High Efficiency (Up to 93%)
- Constant Current Output
- 0-10V Dimming Control
- Input Surge Protection: DM 4kV, CM 6kV
- All-Around Protection: OVP, SCP, OTP
- IP67 and UL Dry / Damp / Wet Location
DT models in Wet Locations must be Built-In
- SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location



Description

The EUC-200SxxxDT(ST) series is a 200W, constant-current LED driver that operates from 90-305 Vac input with excellent power factor. It is created for many lighting applications including high bay, high mast, arena and roadway, 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	
450 mA	90 ~ 305 Vac	267~445Vdc	200 W	93.0%	0.99	0.96	EUC-200S045ST
450 mA	90 ~ 305 Vac	223~445Vdc	200 W	93.0%	0.99	0.96	EUC-200S045DT
700 mA	90 ~ 305 Vac	171~285Vdc	200 W	93.0%	0.99	0.96	EUC-200S070ST
700 mA	90 ~ 305 Vac	143~285Vdc	200 W	93.0%	0.99	0.96	EUC-200S070DT
1050 mA	90 ~ 305 Vac	114~190Vdc	200 W	92.5%	0.99	0.96	EUC-200S105ST
1050 mA	90 ~ 305 Vac	95~190Vdc	200 W	92.5%	0.99	0.96	EUC-200S105DT
1400 mA	90 ~ 305 Vac	85~142Vdc	200 W	92.0%	0.99	0.96	EUC-200S140ST
1400 mA	90 ~ 305 Vac	71~142Vdc	200 W	92.0%	0.99	0.96	EUC-200S140DT
1750 mA	90 ~ 305 Vac	68~114Vdc	200 W	92.0%	0.99	0.96	EUC-200S175ST
2100 mA	90 ~ 305 Vac	57~95 Vdc	200 W	92.0%	0.99	0.96	EUC-200S210ST ⁽⁴⁾
2450 mA	90 ~ 305 Vac	48~81 Vdc	200 W	91.5%	0.99	0.96	EUC-200S245ST ⁽⁴⁾
2800 mA	90 ~ 305 Vac	42~71 Vdc	200 W	91.5%	0.99	0.96	EUC-200S280ST ⁽⁴⁾
3150 mA	90 ~ 305 Vac	38~63 Vdc	200 W	91.5%	0.99	0.96	EUC-200S315ST ⁽⁴⁾
3500 mA	90 ~ 305 Vac	34~57 Vdc	200 W	91.5%	0.99	0.96	EUC-200S350ST ⁽⁴⁾
4200 mA	90 ~ 305 Vac	28~47 Vdc	200 W	91.5%	0.99	0.96	EUC-200S420ST ⁽⁴⁾

Models (Continued)

Output Current	Input Voltage Range(1)	Output Voltage Range	Max. Output Power	Typical Efficiency (2)	Power Factor		Model Number
					120Vac	220Vac	
4900 mA	90 ~ 305 Vac	24~40 Vdc	200 W	91.5%	0.99	0.96	EUC-200S490ST ⁽⁴⁾
5600 mA	90 ~ 305 Vac	21~35 Vdc	200 W	91.5%	0.99	0.96	EUC-200S560ST ⁽⁴⁾
6300 mA	90 ~ 305 Vac	19~32 Vdc	200 W	90.5%	0.99	0.96	EUC-200S630ST ⁽⁴⁾

Notes: (1) UL, FCC certified input voltage range: 100-277Vac; other certified input voltage range except UL & FCC: 100-240Vac.

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

(3) All the models are certificated to KS, except EUC-200S045DT/ST and EUC-200S070DT/ST.

(4) SELV output.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	-	305 Vac	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	1.05 MIU	At 277Vac/60Hz input , grounding effectively
	-	-	0.75 mA	At 240Vac/60Hz input , grounding effectively
Input AC Current	-	-	2.64 A	Measured at 100%load and 100 Vac input.
	-	-	1.3 A	Measured at 100%load and 220 Vac input.
Inrush Current(I ² t)	-	-	7.5 A ² s	At 220Vac input, 25°C cold start, duration= 2.5 ms, 10%I _{pk} -10%I _{pk} .
PF	0.90	-	-	At 100-277 Vac, 100% Load
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range	-5%lo	-	5%lo	At 100%load condition.
Total Output Current Ripple (pk-pk)	-	10%lo	15%lo	At 100%load condition, 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%lo	-	At 100%load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%lo	At 100%load condition.

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
No load Output Voltage				
I _o = 450 mA	-	-	486 V	
I _o = 700 mA	-	-	313 V	
I _o = 1050 mA	-	-	206 V	
I _o = 1400 mA	-	-	155 V	
I _o = 1750 mA	-	-	124 V	
I _o = 2100 mA	-	-	104 V	
I _o = 2450 mA	-	-	89 V	
I _o = 2800 mA	-	-	78 V	
I _o = 3150 mA	-	-	69 V	
I _o = 3500 mA	-	-	63 V	
I _o = 4200 mA	-	-	52 V	
I _o = 4900 mA	-	-	44 V	
I _o = 5600 mA	-	-	39 V	
I _o = 6300 mA	-	-	35 V	
Line Regulation	-	-	±1%	At 100%load condition.
Load Regulation	-	-	±3%	
Turn-on Delay Time*	-	1.5 s	3.0 s	Measured at 120Vac input.
	-	1.0 s	2.0 s	Measured at 220Vac input.
Temperature Coefficient	-	0.03%/°C	-	Case temperature = 0°C ~T _c max

Note:*To insure turn on delay meets specification there must be a minimum period of six seconds between power-on cycles.

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input:				
I _o = 450 mA	90.0%	91.0%	-	Measured at 100%load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
I _o = 700 mA	90.0%	91.0%	-	
I _o = 1050 mA	89.5%	90.5%	-	
I _o = 1400 mA	89.0%	90.0%	-	
I _o = 1750 mA	87.5%	89.5%	-	
I _o = 2100 mA	87.5%	89.5%	-	
I _o = 2450 mA	87.5%	89.5%	-	
I _o = 2800 mA	87.5%	89.5%	-	
I _o = 3150 mA	87.0%	89.0%	-	
I _o = 3500 mA	87.0%	89.0%	-	
I _o = 4200 mA	87.0%	89.0%	-	
I _o = 4900 mA	87.0%	89.0%	-	
I _o = 5600 mA	86.5%	88.5%	-	
I _o = 6300 mA	86.5%	88.5%	-	
Efficiency at 220 Vac input:				
I _o = 450 mA	92.0%	93.0%	-	Measured at 100%load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
I _o = 700 mA	92.0%	93.0%	-	
I _o = 1050 mA	91.5%	92.5%	-	
I _o = 1400 mA	91.0%	92.0%	-	
I _o = 1750 mA	90.0%	92.0%	-	
I _o = 2100 mA	90.0%	92.0%	-	
I _o = 2450 mA	89.5%	91.5%	-	
I _o = 2800 mA	89.5%	91.5%	-	
I _o = 3150 mA	89.5%	91.5%	-	
I _o = 3500 mA	89.5%	91.5%	-	
I _o = 4200 mA	89.5%	91.5%	-	
I _o = 4900 mA	89.5%	91.5%	-	
I _o = 5600 mA	89.5%	91.5%	-	
I _o = 6300 mA	88.5%	90.5%	-	

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 277 Vac input: $I_o = 450 \text{ mA}$ $I_o = 700 \text{ mA}$ $I_o = 1050 \text{ mA}$ $I_o = 1400 \text{ mA}$ $I_o = 1750 \text{ mA}$ $I_o = 2100 \text{ mA}$ $I_o = 2450 \text{ mA}$ $I_o = 2800 \text{ mA}$ $I_o = 3150 \text{ mA}$ $I_o = 3500 \text{ mA}$ $I_o = 4200 \text{ mA}$ $I_o = 4900 \text{ mA}$ $I_o = 5600 \text{ mA}$ $I_o = 6300 \text{ mA}$	92.0% 92.0% 91.5% 91.0% 90.0% 90.0% 89.5% 89.5% 89.5% 89.5% 89.5% 89.5% 89.5% 89.5% 89.5% 88.5%	93.0% 93.0% 92.5% 92.0% 92.0% 92.0% 91.5% 91.5% 91.5% 91.5% 91.5% 91.5% 91.5% 91.5% 91.5% 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	-	236,000 Hours	-	Measured at 120Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	68,000 Hours	-	Measured at 220Vac input, 80%Load and 60°C case temperature; See life time vs. Tc curve for the details
Operating Case Temperature for Safety T_{c_s}	-35 °C	-	+90 °C	
Operating Case Temperature for Warranty T_{c_w}	-35 °C	-	+65 °C	
Storage Temperature	-40 °C	-	+85 °C	Humidity: 5% RH to 100% RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	9.41 × 3.13 × 1.81 239 × 79.5 × 46			With mounting ear 10.47 × 3.13 × 1.81 266 × 79.5 × 46
Net Weight	-	1500 g	-	

Safety & EMC Compliance

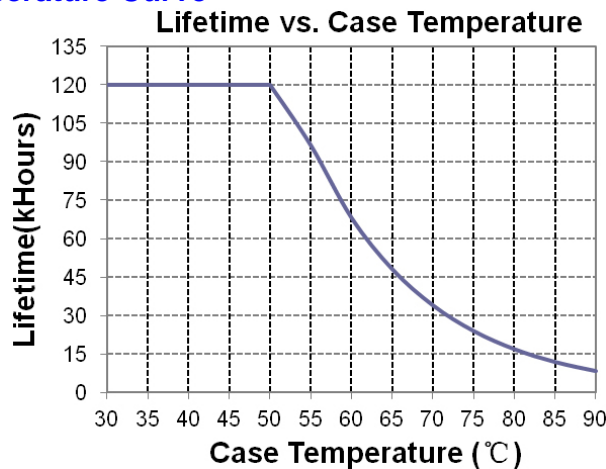
Safety Category	Standard
UL/CUL	UL 8750, CAN/CSA-C22.2 No. 250.13
CE	EN 61347-1, EN 61347-2-13
KS	KS C 7655
EAC	ГОСТ Р МЭК 61347-1, ГОСТ IEC 61347-2-13
EMI Standards	Notes
EN 55015 ⁽¹⁾	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
FCC Part 15 ⁽¹⁾	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.

Safety & EMC Compliance (Continued)

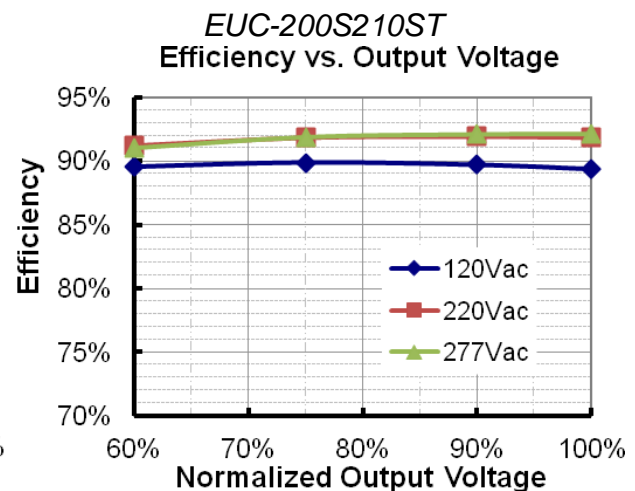
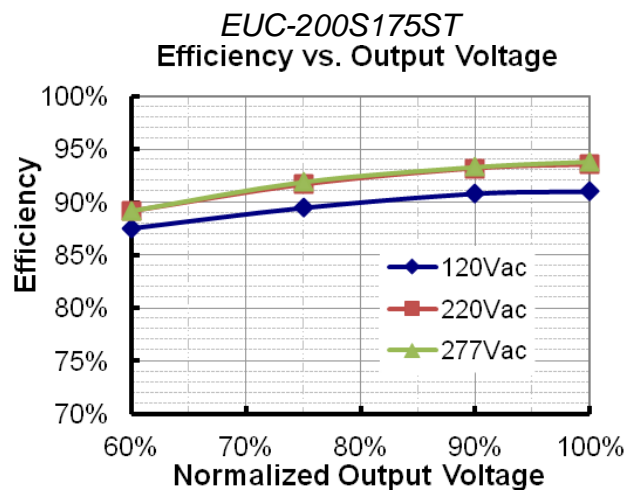
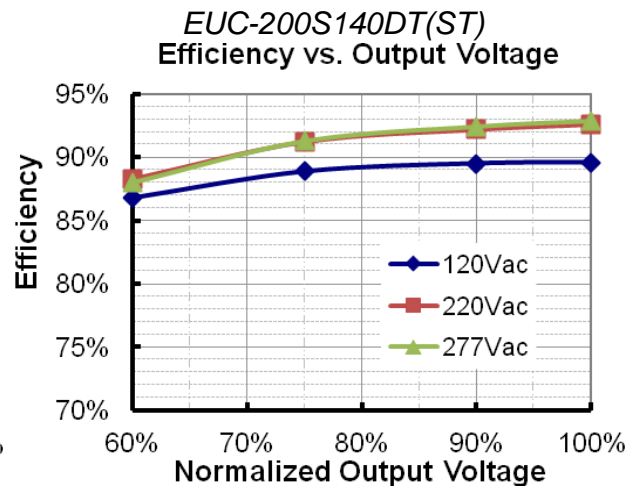
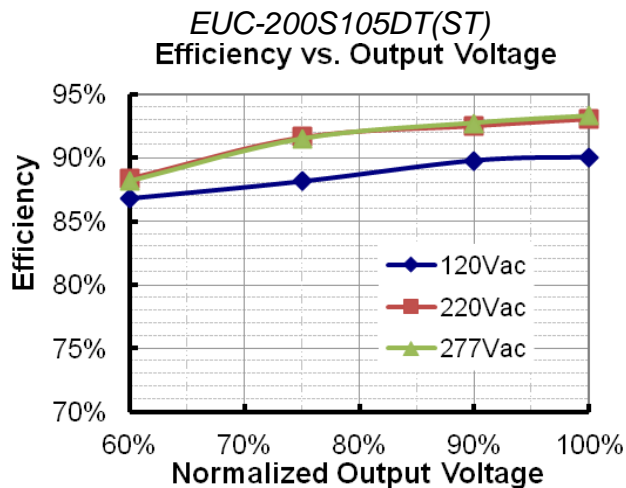
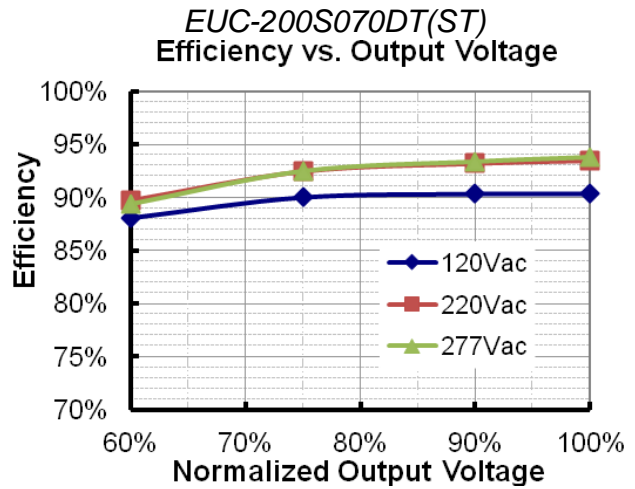
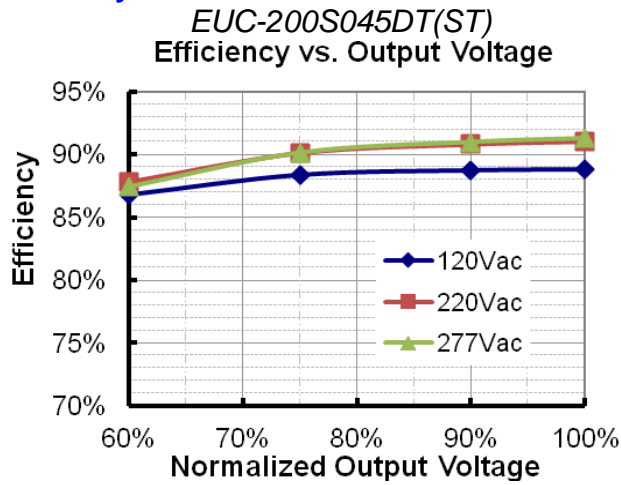
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: Differential Mode 4 kV, Common Mode 6 kV ⁽²⁾
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

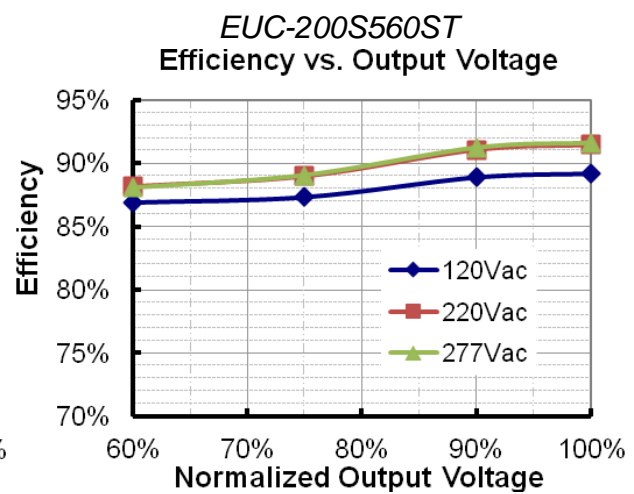
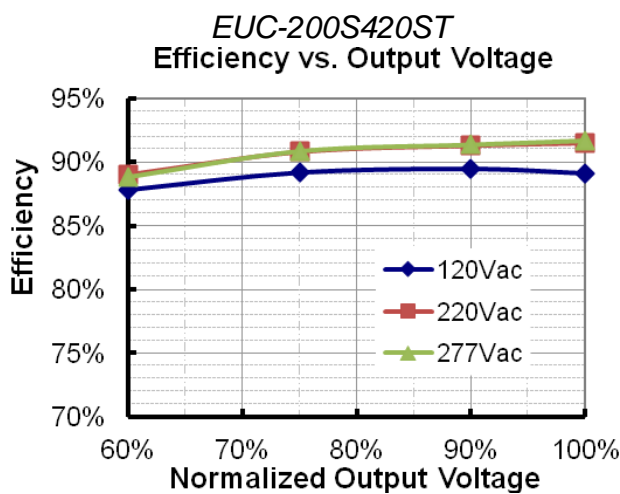
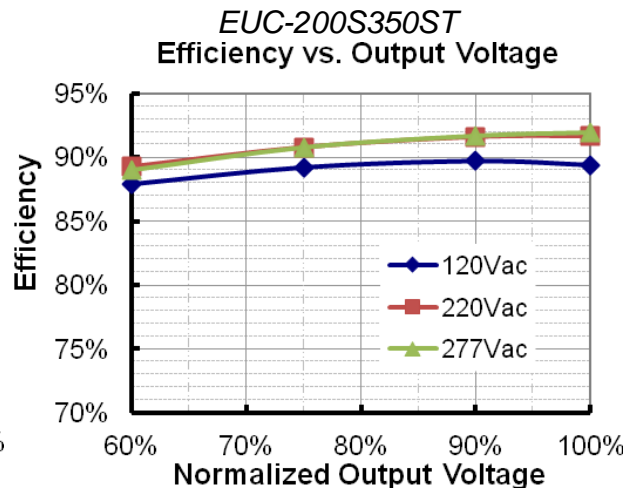
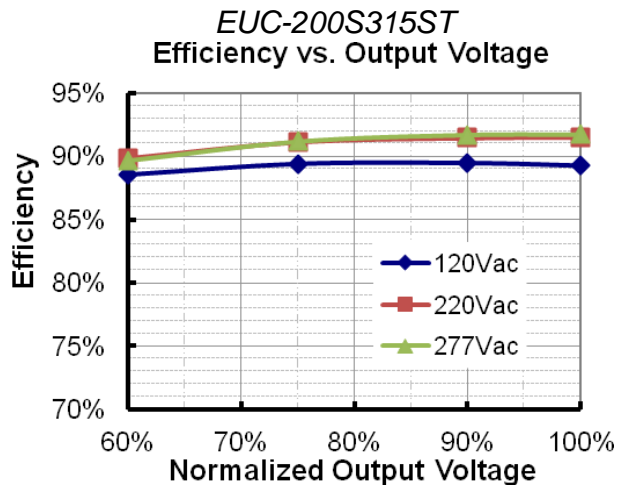
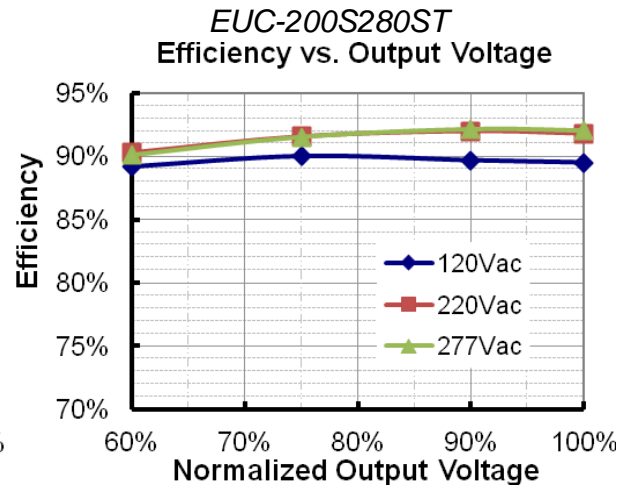
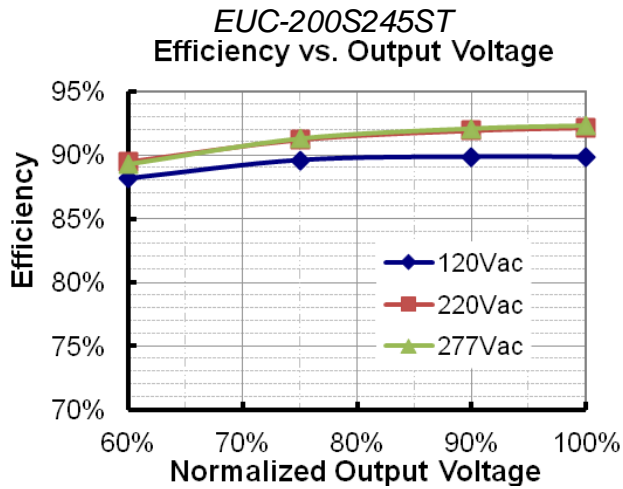
- Note:** (1) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.
- (2) To perform electric strength (hi-pot) testing, the "GDT ground disconnect" (nut and metal lock 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 Curve

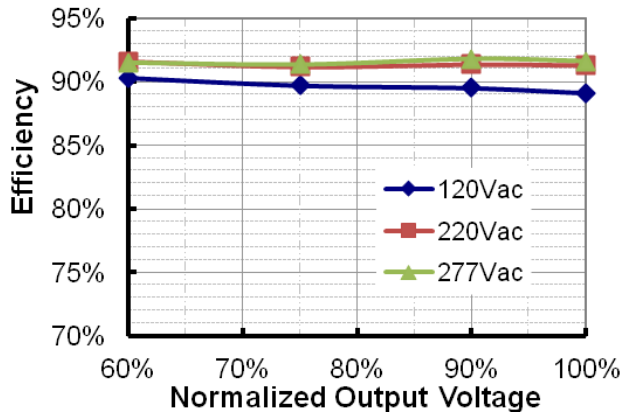


Efficiency vs. Load



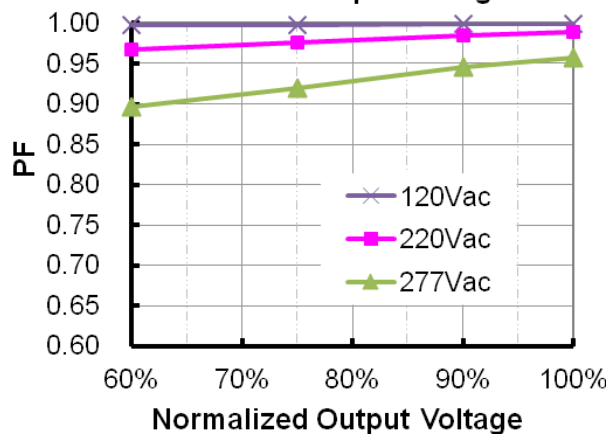


EUC-200S630ST
Efficiency vs. Output Voltage



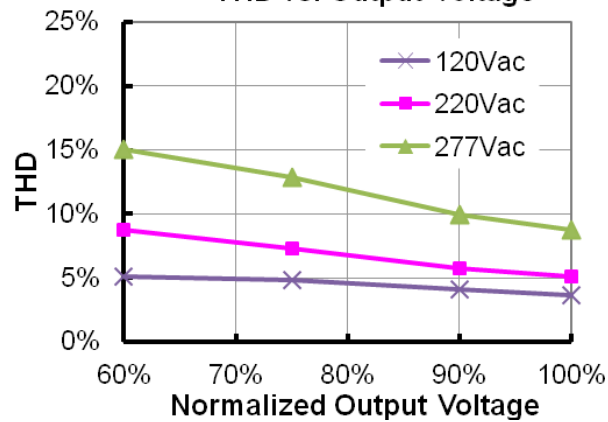
Power Factor Characteristics

PF vs. Output Voltage



Total Harmonic Distortion

THD vs. Output Voltage



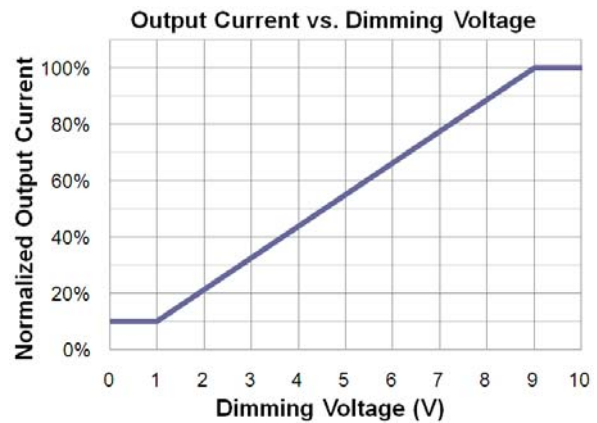
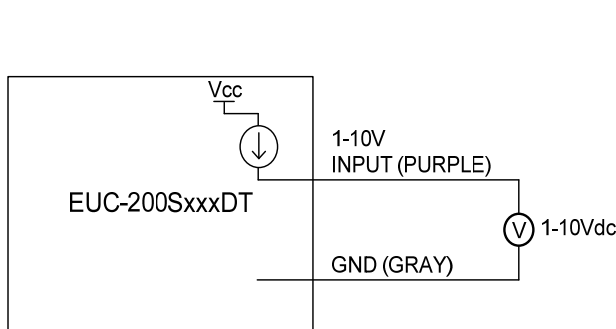
Protection Functions

Parameter	Notes
Over Temperature Protection	Auto Recovery, returning to normal after over temperature 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.
Over Voltage Protection	Limits output voltage at no load and in case the normal voltage limit fails.

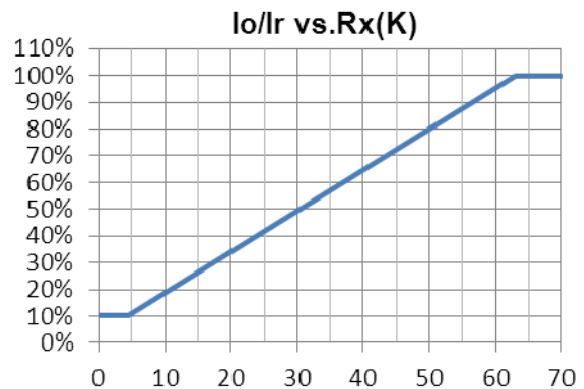
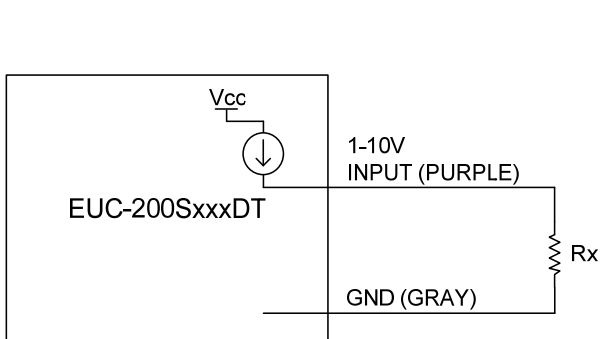
Dimming Control (On secondary side)

Parameter	Min.	Typ.	Max.	Notes
Absolute maximum voltage on the 1~10V input pin	-2 V	-	12 V	
Sink current on 1~10V input pin	140 uA	-	220 uA	

The dimmer control may be operated from either a potentiometer or from an input signal of 1 – 10 Vdc. Two recommended implementations are provided below.



Implementation 1: DC input



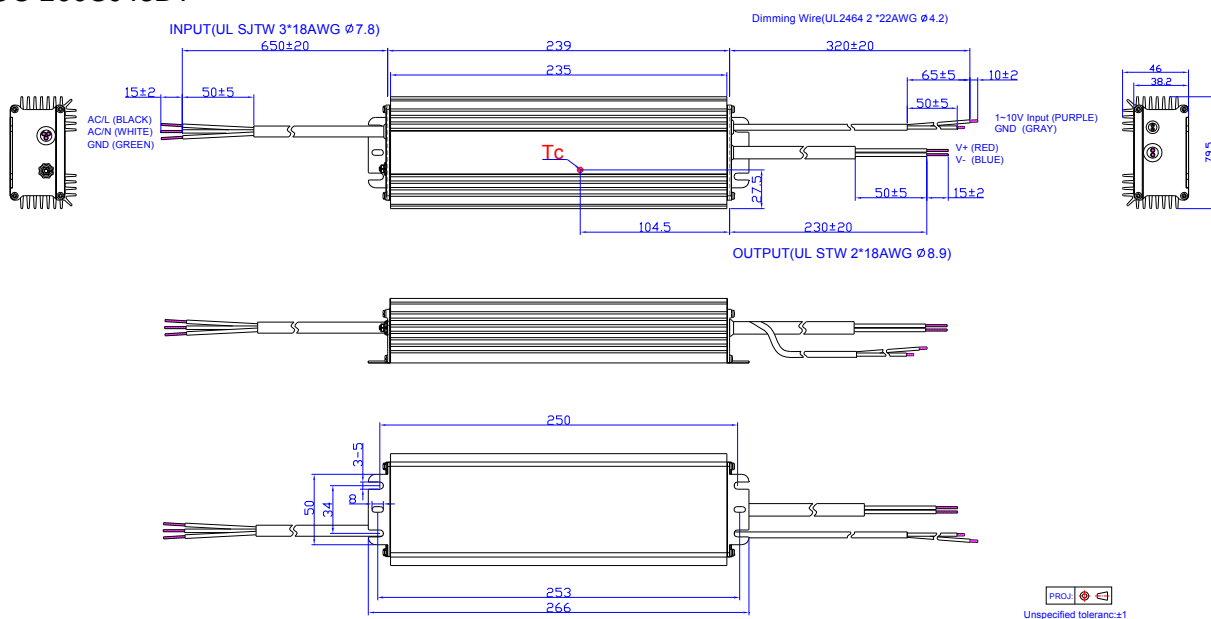
Implementation 2: External resistor

Notes:

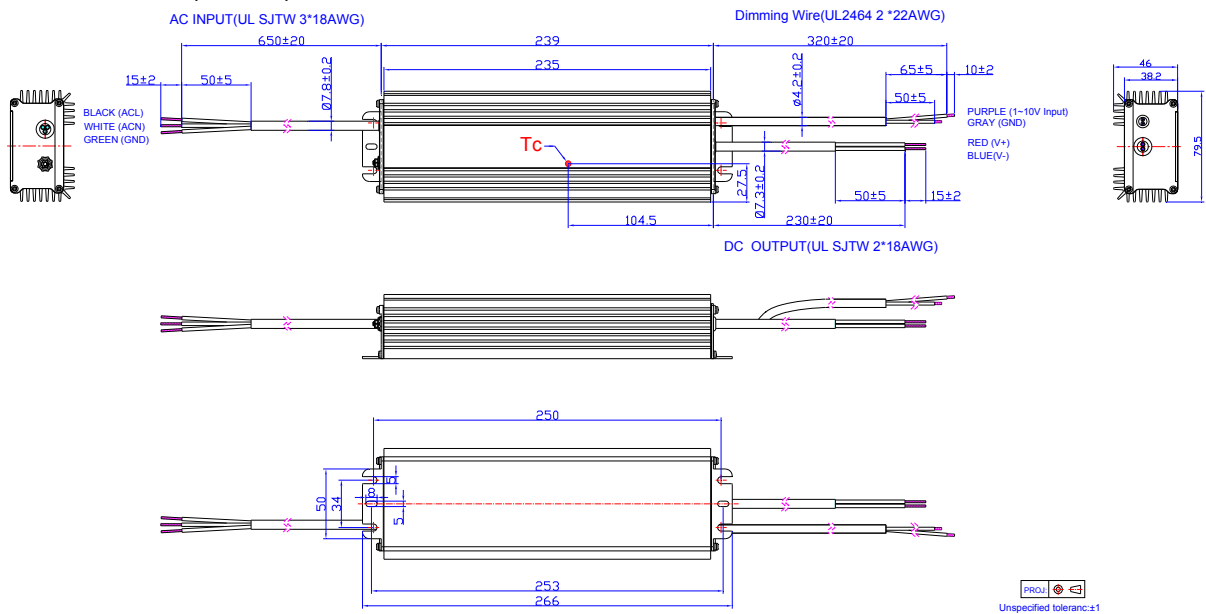
1. I_o is actual output current and I_r is rated current without dimming control.
2. For the driver to operate properly, the load voltage must be maintained above the minimum voltage threshold (approx. 50% of the max. output voltage for any given model).
3. If the output voltage is maintained above 50%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

Mechanical Outline

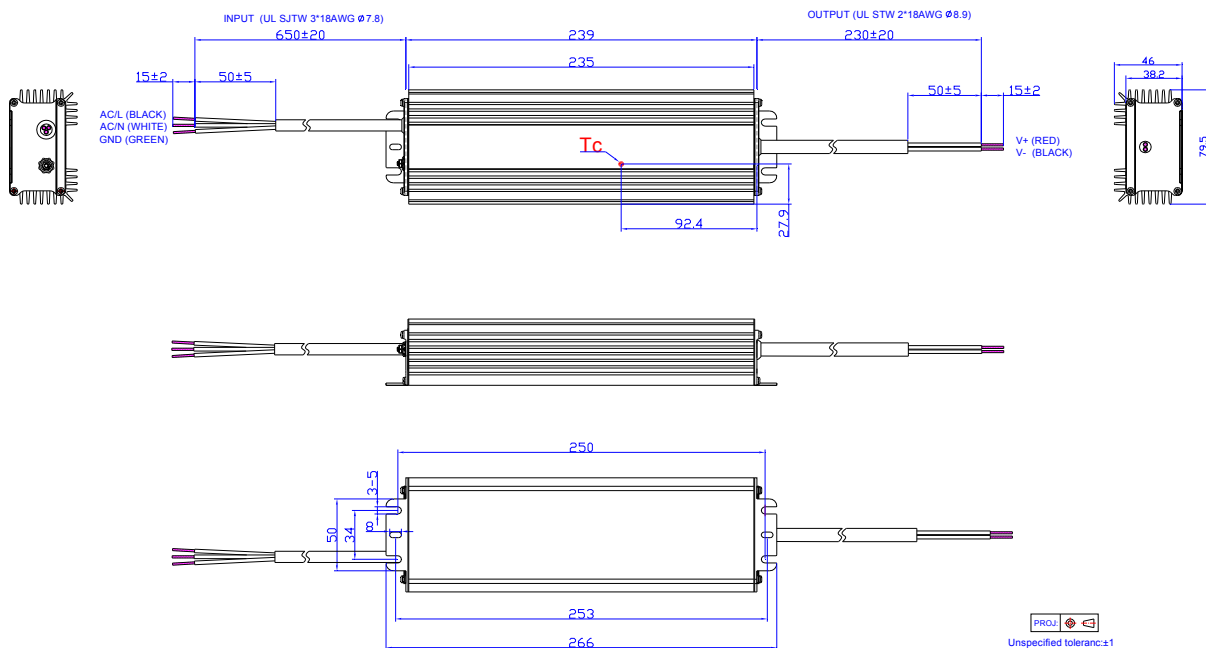
EUC-200S045DT



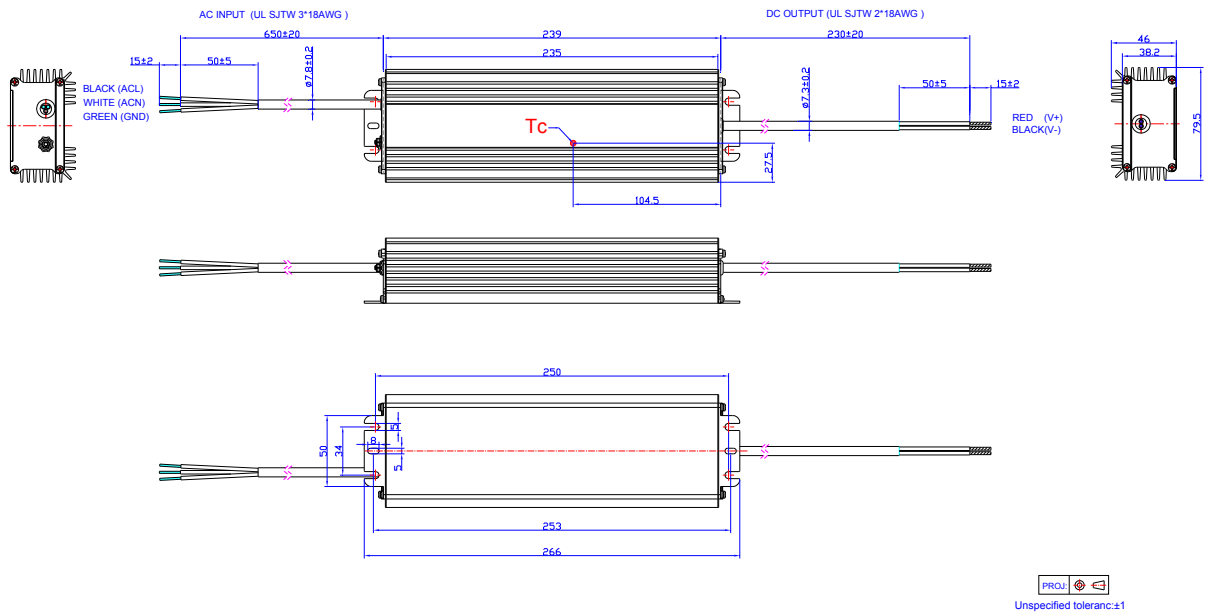
EUC-200SxxxDT (Others)



EUC-200S045ST



EUC-200SxxxST (Others)



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
2013-11-22	A	Datasheets Release	/	/
2015-09-10	B	Format	/	Updated
		External Grounding Screw Solution	/	/
		Features	/	Updated
		Description		Updated
		Models	Notes	Updated
		Output Specifications	Output Current Ripple at < 200 Hz (pk-pk)	Added
		Output Specifications	Startup Overshoot Current	Added
		Output Specifications	No load Output Voltage	Added
		General Specifications	Case Temperature	Operating Case Temperature for Safety Tc_s
		General Specifications	Operating Case Temperature for Warranty Tc_w	Added
		General Specifications	Storage Temperature	Added
		Environmental Specifications	/	Delete
		Safety & EMC Compliance		Updated
		Protection Functions		Updated
Dimming Control		Updated		
Mechanical Outline		Updated		
2016-04-07	C	KS	/	Added
		Models	/	Updated
		General Specifications	With mounting ear	Added
		Safety & EMC Compliance	/	Updated
2016-08-24	D	Turn-on Delay Time	/	Updated
		Mechanical Outline	/	Updated
2019-08-20	E	General Specifications (Notes)	1.0%	2.0%
		Safety & EMC Compliance	UL/CUL	Updated
		Safety & EMC Compliance	KS	Updated
		Safety & EMC Compliance	FCC	Updated
		Mechanical Outline	EUC-200S045DT/ST	Updated

Revision History (Continued)

Change Date	Rev.	Description of Change		
		Item	From	To
2020-01-19	F	Features	4kV line-line, 6kV line-earth	DM 4kV, CM 6kV
		Features	Waterproof (IP67)	IP67
		Description	Application environment	Updated
		Safety &EMC Compliance	EAC	Added
		Safety &EMC Compliance	EN 61000-4-5	Updated
		Derating Curve	/	Deleted
		RoHS Compliance	/	Updated
		Format	Page footer	Updated