Features

- Ultra High Efficiency (Up to 91%)
- High Power Factor (0.99 Typical)
- Constant Current Output
- 0-10V Dimming Control
- Input surge protection: 4kV line-line, 6kV line-earth
- All-Around Protection: OVP, SCP, OTP
- Waterproof (IP67)
- SELV

Description

The *EUC-096SxxxDV(SV)* series is a 96W, constant-current LED driver that operates from 90-305 Vac input with excellent power factor. It is created for low bay, tunnel and street lights. 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	Output Voltage Range	Max. Output Power	Typical Efficiency (1)	Power Factor		Model Number (2,3)
					120Vac	220Vac	
350 mA	90 ~ 305 Vac	137-274 Vdc	96 W	91.0%	0.99	0.96	EUC-096S035DV(SV)
450 mA	90 ~ 305 Vac	106-213 Vdc	96 W	91.0%	0.99	0.96	EUC-096S045DV(SV)
700 mA	90 ~ 305 Vac	68-137 Vdc	96 W	90.0%	0.99	0.96	EUC-096S070DV(SV)
1050 mA	90 ~ 305 Vac	46-92.0 Vdc	96 W	90.0%	0.99	0.96	EUC-096S105DV(SV)(4)
1400 mA	90 ~ 305 Vac	35-69.0 Vdc	96 W	89.0%	0.99	0.96	EUC-096S140DV(SV)(4)
1750 mA	90 ~ 305 Vac	27-54.8 Vdc	96 W	89.0%	0.99	0.96	EUC-096S175DV(SV)(4)
2100 mA	90 ~ 305 Vac	22-45.7 Vdc	96 W	88.0%	0.99	0.96	EUC-096S210DV(SV)(4)
2450 mA	90 ~ 305 Vac	19-39.1 Vdc	96 W	88.0%	0.99	0.96	EUC-096S245DV(SV)(4)
2800 mA	90 ~ 305 Vac	17-34.2 Vdc	96 W	88.0%	0.99	0.96	EUC-096S280DV(SV)(4)
3150 mA	90 ~ 305 Vac	15-30.4 Vdc	96 W	87.0%	0.99	0.96	EUC-096S315DV(SV)(4)
3500 mA	90 ~ 305 Vac	13-27.4 Vdc	96 W	87.0%	0.99	0.96	EUC-096S350DV(SV)(4)
4000 mA	90 ~ 305 Vac	12-24.0 Vdc	96 W	87.0%	0.99	0.96	EUC-096S400DV(SV)(4)

Notes: (1) Measured at 25°C, full load and 220 Vac input.
(2) All the models are certificated to KS, except EUC-096S035DV(SV)
(3) The DV suffix may be changed to SV to omit the dimming function and remove the three wires associated with that function.
(4) SELV Output

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage Range	90 Vac	-	305 Vac	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	1 mA	At 277Vac 60Hz input
Input AC Current	-	-	1.2 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 220Vac input, 25°C Cold Start, Duration=2 mS, 10%Ipk-10%Ipk
Inrush Current(I^2t)	-	-	2.8 A^2s	
Power Factor	0.90	-	-	At 100Vac-277Vac, 75% Load-100% Load
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range	-5%	-	5%	
Ripple and Noise (pk-pk)	-	-	30% Io	Measured by 20 MHz bandwidth oscilloscope and the output paralleled a 0.1 uF ceramic capacitor and a 10 uF electrolytic capacitor
Output Current Ripple at < 200 Hz (pk-pk)	-	1%Io	-	At full load condition. Only this component of ripple is associated with visible flicker.
No Load Output Voltage I_O = 350 mA I_O = 450 mA I_O = 700 mA I_O = 1050 mA I_O = 1400 mA I_O = 1750 mA I_O = 2100 mA I_O = 2450 mA I_O = 2800 mA I_O = 3150 mA I_O = 3500 mA I_O = 4000 mA	- - - - - - - - - - - -	279 V 219 V 141 V 94.0 V 71.0 V 56.5 V 47.5 V 40.5 V 35.5 V 31.5 V 28.5 V 25.0 V	- - - - - - - - - - - -	
Line Regulation	-	-	±1%	
Load Regulation	-	-	±3%	
Turn-on Delay Time	-	1.0 s	2.0 s	Measured at 120Vac input.
	-	1.0 s	2.0 s	Measured at 220Vac input.
Temperature coefficient	-	-	0.03%/°C	Case temperature = 0°C ~Tc max

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

Protection Functions

Parameter	Min.	Typ.	Max.	Notes
Over Temperature Protection-Tc	-	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				Measured at full load, 120Vac input, 25℃ ambient temperature, after the unit is thermally stabilized. It will be about 2.5% lower, if measured immediately after startup.
I_O = 350 mA	87.0%	89.0%	-	
I_O = 450 mA	87.0%	89.0%	-	
I_O = 700 mA	86.0%	88.0%	-	
I_O = 1050 mA	86.0%	88.0%	-	
I_O = 1400 mA	85.0%	87.0%	-	
I_O = 1750 mA	85.0%	87.0%	-	
I_O = 2100 mA	84.0%	86.0%	-	
I_O = 2450 mA	84.0%	86.0%	-	
I_O = 2800 mA	84.0%	86.0%	-	
I_O = 3150 mA	83.0%	85.0%	-	
I_O = 3500 mA	83.0%	85.0%	-	
I_O = 4000 mA	83.0%	85.0%	-	
Efficiency				Measured at full load, 220Vac input, 25℃ ambient temperature, after the unit is thermally stabilized. It will be about 2.5% lower, if measured immediately after startup.
I_O = 350 mA	89.0%	91.0%	-	
I_O = 450 mA	89.0%	91.0%	-	
I_O = 700 mA	88.0%	90.0%	-	
I_O = 1050 mA	88.0%	90.0%	-	
I_O = 1400 mA	87.0%	89.0%	-	
I_O = 1750 mA	87.0%	89.0%	-	
I_O = 2100 mA	86.0%	88.0%	-	
I_O = 2450 mA	86.0%	88.0%	-	
I_O = 2800 mA	86.0%	88.0%	-	
I_O = 3150 mA	85.0%	87.0%	-	
I_O = 3500 mA	85.0%	87.0%	-	
I_O = 4000 mA	85.0%	87.0%	-	
MTBF	-	202,000 Hours	-	Measured at 120Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	64,000 Hours	-	Measured at 120Vac input, 80%load; Case temperature=70℃ @ Tc point. See life time 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	-	+75 °C	
Storage Temperature	-40 °C	-	+85 °C	Humidity: 5% RH to 100% RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	6.85 × 2.66 × 1.44 174 × 67.5 × 36.5			With mounting ear 7.91 × 2.66 × 1.44 201 × 67.5 × 36.5
Net Weight	-	925 g	-	

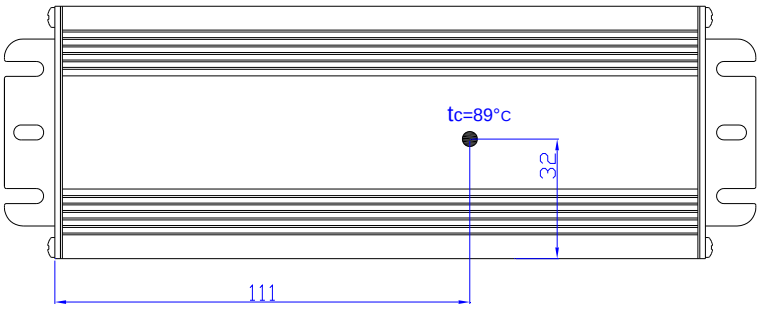
Note: All specifications are typical at 25 °C unless stated otherwise.

Safety & EMC Compliance

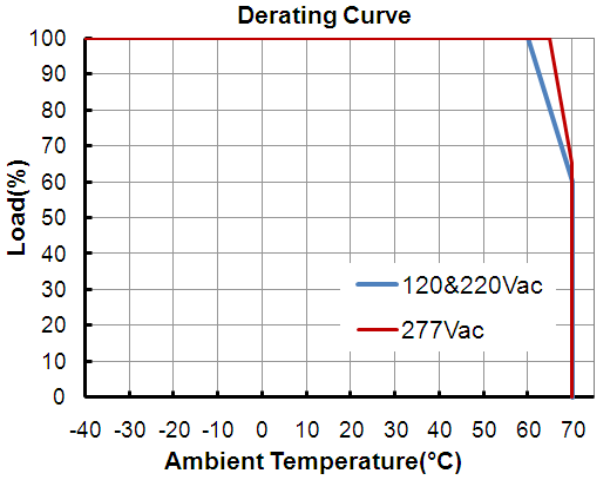
Safety Category	Standard
CE	EN 61347-1, EN61347-2-13
KS	KS C 7655 : 2011
EMI Standards	**Notes**
EN 55015(1)	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EMS Standards	**Notes**
EN 61000-4-2	Electrostatic Discharge (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 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

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.

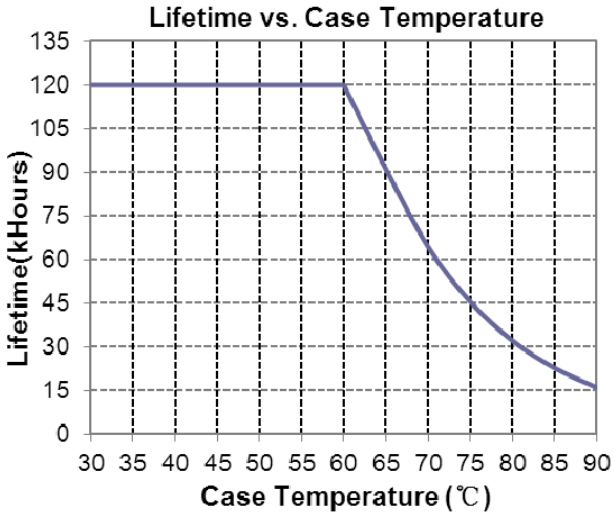
Max. Case Temperature



Derating Curve



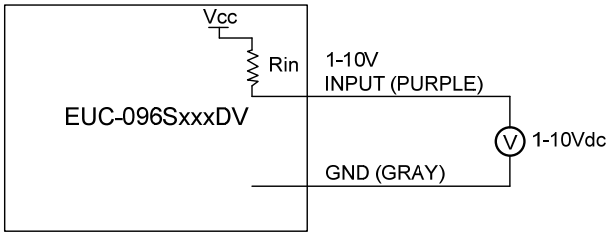
Lifetime vs. Case Temperature Curve

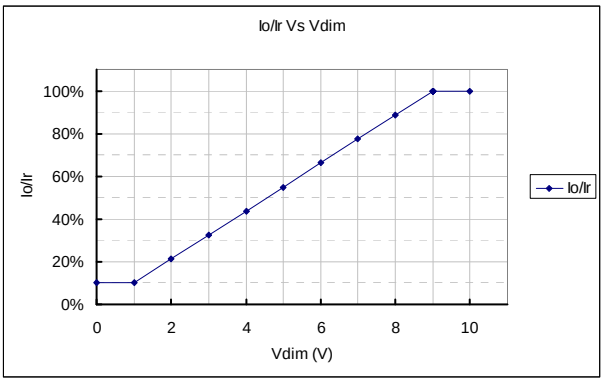


Dimming Control

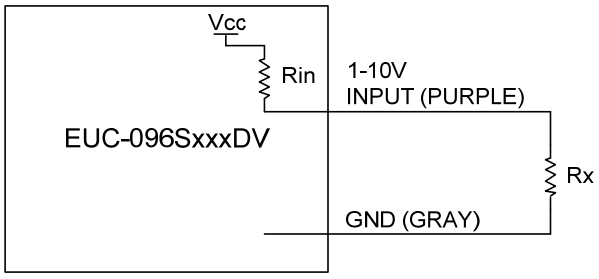
Parameter	Min.	Typ.	Max.	Notes
Absolute maximum voltage on the 1~10V input pin	0 V	-	12 V	
Source current on 1~10V input pin	0 mA	-	0.5 mA	
Value of Rin (the resistor inside the LED driver which locate between the 1-10V input and Vcc output pin)	19.8 K	20 K	20.2 K	

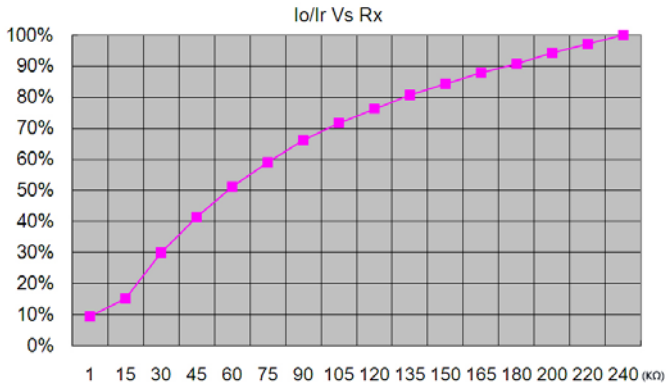
The dimmer control is operated from an input signal of 1 – 10 Vdc. Recommended implementations are provided below.





Implementation 1: DC input





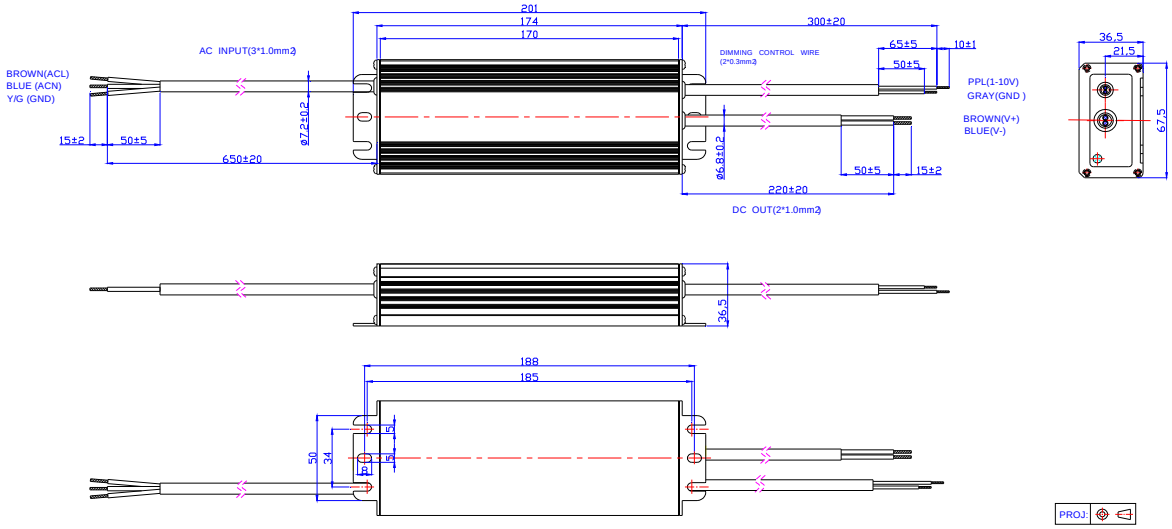
Implementation 2: External resistor

Notes:

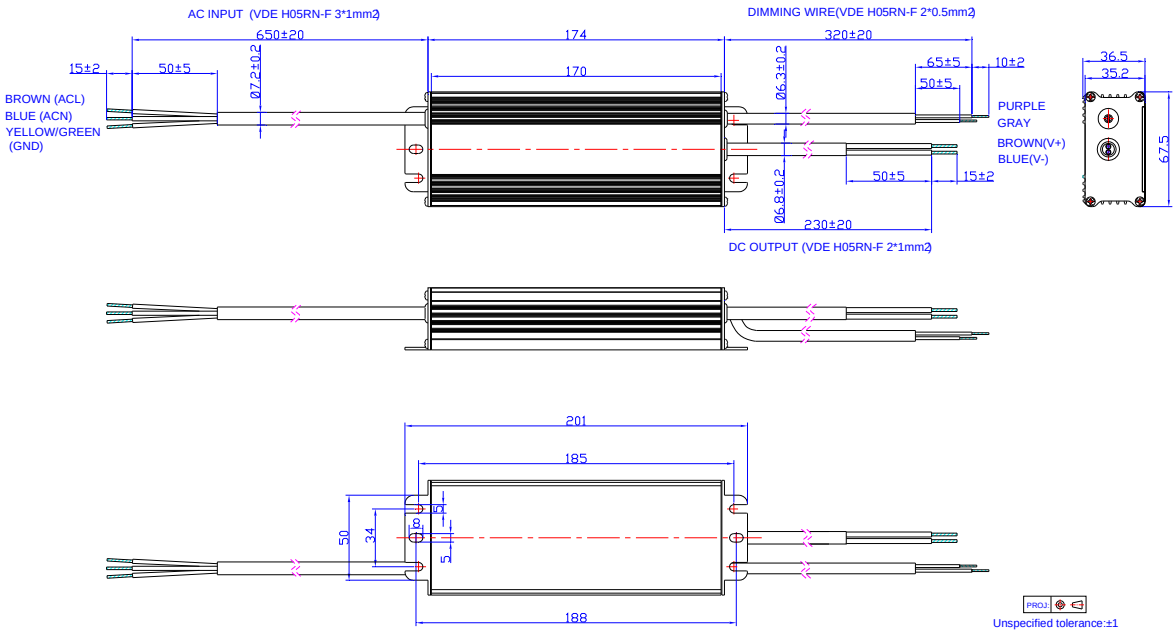
1. Io is actual output current and Ir is rated current without dimming control.
2. For the driver to operate properly, the load voltage must be maintained above the minimum voltage threshold (approx. 50% of the max. output voltage for any given model).
3. If the output voltage is maintained above 50%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

Mechanical Outline

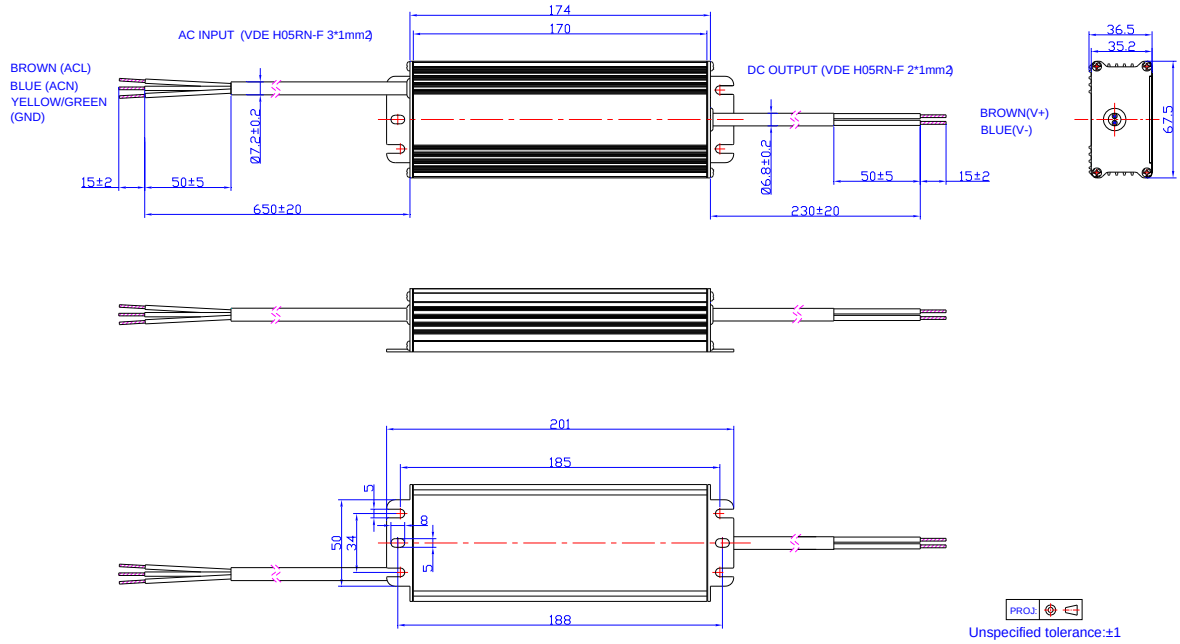
EUC-096SxxxDV (Old Product)



EUC-096SxxxDV (New Product)



EUC-096SxxxSV



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.

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
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 ℃
		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 0.8S 1S	1S 3S 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
2012-05-17	D	All Models-Min Efficiency	/	1% Lower
2012-5-25	E	Input Current @100V	1.3A	1.2A
2012-06-08	F	Life Time Curve	/	Added
2012-07-05	G	Io/Ir Vs Rx Curve	/	Updated
2012-07-17	H	Max Case Temperature	/	Updated
		EN61000-4-5	line to line 2 kV, line to earth 4 kV	line to line 4 kV, line to earth 6 kV
2012-08-03	I	Operating Temperature/ Derating Curve	-35°C	-40°C
		Class 2 Details	/	Updated
		Turn-on delay time	1s 3s 0.8s 2s	1s 2s 1s 2s
2012-9-19	J	MTBF & Life time Typical	/	Added
		Life time Curve	/	Updated
		Min PF, Max THD, Temperature Coefficient	/	Added
2015-11-20	K	Lifetime	/	Updated

		Lifetime vs. Case Temperature Curve	/	Updated
2016-04-20	L	ENEC, KS	/	Added
		Features	/	Updated
		Description	/	Updated
		Models	/	Updated
		Output Specifications	Output Current Ripple at < 200 Hz (pk-pk)	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
		General Specifications	With mounting ear	Added
		General Specifications	Net Weight	Updated
		Environmental Specifications	/	Delete
		Safety & EMC Compliance	/	Updated
		Mechanical Outline	/	Updated