Features

- Ultra High Efficiency (Up to 93.5%)
- Full Power at Wide Output Current Range (Constant Power)
- 0-5V/0-10V/PWM/Timer Dimmable
- Input Surge Protection: 6kV line-line, 10kV 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
- UL Type TL (Temperature Limited)
- 7 Years Warranty

Description

The *EUG-150SxxxDT* series is a 150W, constant-current, programmable LED driver that operates from 90-305 Vac input with excellent power factor. It is created for high bay, tunnel and roadway 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.

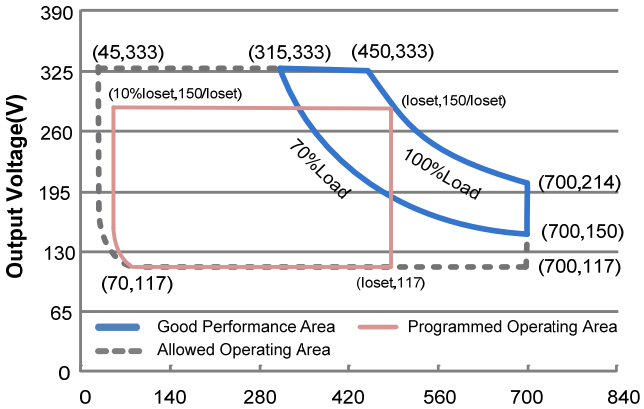
Models

Adjustable Output Current Range	Full-Power Current Range(1)	Default Output Current	Input Voltage Range(2)	Output Voltage Range	Max. Output Power	Typical Efficiency (3)	Power Factor		Model Number (4)
							120Vac	220Vac	
45-700mA	450-700mA	530 mA	90~305 Vac 100~300 Vdc	117~333Vdc	150 W	93.5%	0.99	0.96	EUG-150S070DT
70-1050mA	700-1050mA	700 mA	90~305 Vac 100~300 Vdc	75~214Vdc	150 W	93.5%	0.99	0.96	EUG-150S105DT
140-2100mA	1400-2100mA	1400 mA	90~305 Vac 100~300 Vdc	38~107Vdc	150 W	92.5%	0.99	0.96	EUG-150S210DT(5)
245-3500mA	2450-3500mA	3150 mA	90~305 Vac 100~300 Vdc	22 ~ 61Vdc	150 W	92.0%	0.99	0.96	EUG-150S350DT(5)
385-5600mA	3850-5600mA	4200 mA	90~305 Vac 100~300 Vdc	14 ~ 39Vdc	150 W	92.0%	0.99	0.96	EUG-150S560DT(5)

Notes: (1) Output current range with constant power at 150W
(2) Certified input voltage range: UL, FCC 100-277Vac or 100-300Vdc; otherwise 100-240Vac or 100-250Vdc (except KS)
(3) Measured at full load and 220Vac input (see below "General Specifications" for details).
(4) All the models are certificated to KS, except EUG-150S070DT
(5) SELV Output.

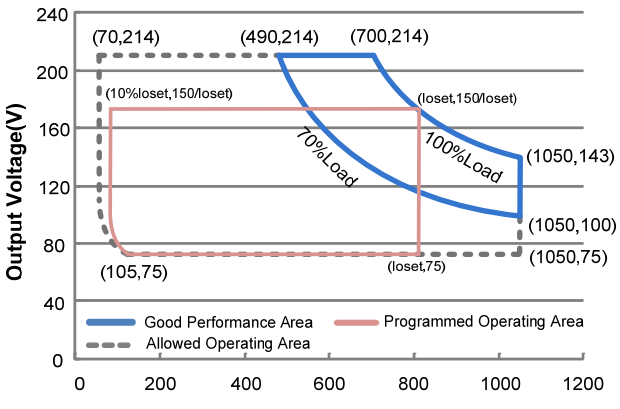
I-V Operation Area

EUG-150S070DT



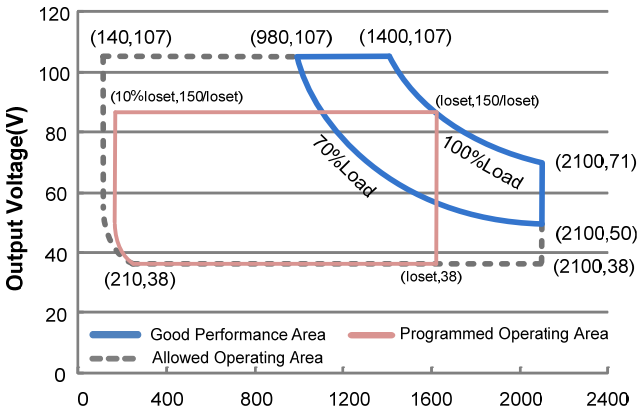
Note: 450mA≤Ioset≤700mA

EUG-150S105DT



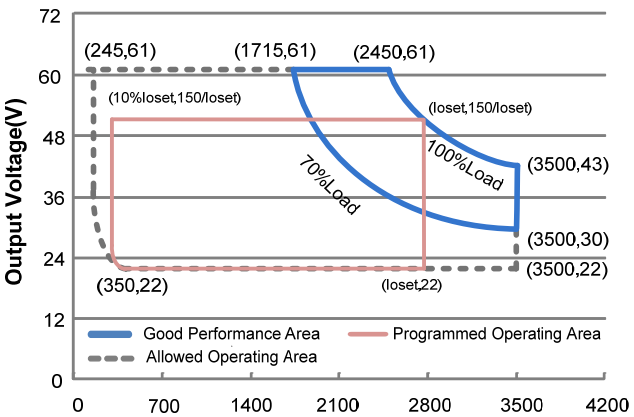
Note: 700mA≤Ioset≤1050mA

EUG-150S210DT



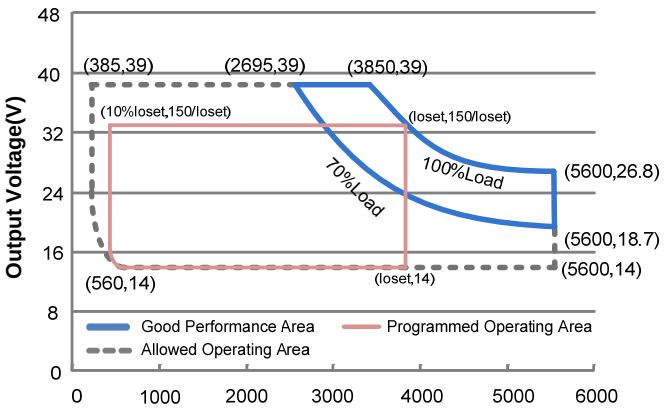
Note: 1400mA≤Ioset≤2100mA

EUG-150S350DT



Note: 2450mA≤Ioset≤3500mA

EUG-150S560DT



Note: 3850mA≤Ioset≤5600mA

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Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	-	305 Vac	100-300Vdc
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL8750; 277Vac/ 60 Hz
	-	-	0.70 mA	IEC60598-1; 240Vac/ 60 Hz
Input AC Current	-	-	1.87 A	Measured at full load and 100 Vac input.
	-	-	0.81 A	Measured at full load and 220 Vac input.
Inrush Current(I^2t)	-	-	1.98 A^2s	At 220Vac input, 25℃ cold start, duration=712 μs, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.9	-	-	At 100-277Vac, 50-60Hz, 70%-100% Load (105-150 W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100% Load (112.5-150 W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At full load condition
Output Current Setting(Ioset) Range				
EUG-150S070DT	45 mA	-	700 mA	
EUG-150S105DT	70 mA	-	1050 mA	
EUG-150S210DT	140 mA	-	2100 mA	
EUG-150S350DT	245 mA	-	3500 mA	
EUG-150S560DT	385 mA	-	5600 mA	
Output Current Setting Range with Constant Power				
EUG-150S070DT	450 mA	-	700 mA	
EUG-150S105DT	700 mA	-	1050 mA	
EUG-150S210DT	1400 mA	-	2100 mA	
EUG-150S350DT	2450 mA	-	3500 mA	
EUG-150S560DT	3850 mA	-	5600 mA	
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	At full load condition, 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%Iomax	-	At full load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%Iomax	At full load condition
No Load Output Voltage				
EUG-150S070DT	-	-	370 V	
EUG-150S105DT	-	-	235 V	
EUG-150S210DT	-	-	120 V	
EUG-150S350DT	-	-	75 V	
EUG-150S560DT	-	-	48 V	
Line Regulation	-	-	±0.5%	Measured at full load
Load Regulation	-	-	±1.5%	

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Turn-on Delay Time	-	-	1.0 s	Measured at 120Vac input, 70%-100% Load
	-	-	0.5 s	Measured at 220Vac input, 70%-100% Load
Temperature Coefficient of Ioset	-	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	-	20 mA	Return terminal is "Dim−"

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

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input:				
EUG-150S070DT				
Io= 450 mA	87.5%	90.5%	-	
Io= 700 mA	87.0%	90.0%	-	
EUG-150S105DT				
Io= 700 mA	88.0%	91.0%	-	
Io=1050 mA	87.0%	90.0%	-	Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
EUG-150S210DT				
Io=1400 mA	87.0%	90.0%	-	
Io=2100 mA	87.0%	90.0%	-	
EUG-150S350DT				
Io=2450 mA	87.0%	90.0%	-	
Io=3500 mA	86.5%	89.5%	-	
EUG-150S560DT				
Io=3850 mA	86.5%	89.5%	-	
Io=5600 mA	85.0%	88.0%	-	
Efficiency at 220 Vac input:				
EUG-150S070DT				
Io= 450 mA	91.5%	93.5%	-	
Io= 700 mA	90.5%	92.5%	-	
EUG-150S105DT				
Io= 700 mA	91.5%	93.5%	-	
Io=1050 mA	90.5%	92.5%	-	Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
EUG-150S210DT				
Io=1400 mA	90.5%	92.5%	-	
Io=2100 mA	90.0%	92.0%	-	
EUG-150S350DT				
Io=2450 mA	90.0%	92.0%	-	
Io=3500 mA	90.0%	92.0%	-	
EUG-150S560DT				
Io=3850 mA	90.0%	92.0%	-	
Io=5600 mA	88.5%	90.5%	-	

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 277 Vac input: EUG-150S070DT Io= 450 mA Io= 700 mA EUG-150S105DT Io= 700 mA Io=1050 mA EUG-150S210DT Io=1400 mA Io=2100 mA EUG-150S350DT Io=2450 mA Io=3500 mA EUG-150S560DT Io=3850 mA Io=5600 mA	 92.0% 91.0% 91.5% 91.0% 91.0% 90.0% 90.5% 90.5% 90.0% 88.5%	 94.0% 93.0% 93.5% 93.0% 93.0% 92.0% 92.5% 92.5% 92.0% 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.)
MTBF	-	271,000 Hours	-	Measured at 220 Vac input, 80%Load and 25 °C ambient temperature (MIL-HDBK-217F)
Lifetime	-	78,000 Hours	-	Measured at 220 Vac input, 80%Load and 70 °C case temperature; See lifetime vs. Tc curve for the details
Operating Case Temperature for Safety Tc_s	-40°C	-	+90°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+70°C	Case temperature for 7 years warranty. *Please see Inventronics Warranty Statement for complete details.*
Operating Case Temperature for Type TL Tc_TL	-40°C	-	+78°C	
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 100%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	 7.40 × 2.66 × 1.56 188 × 67.5 × 39.7			With mounting ear 8.23 × 2.66 × 1.56 209 × 67.5 × 39.7
Net Weight	-	1100 g	-	

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

Dimming Specifications

Parameter	Min.	Typ.	Max.	Notes
Absolute Maximum Voltage on the Vdim (+) Pin	-20 V	-	20 V	
Source Current on Vdim (+)Pin	200 uA	300 uA	450 uA	Vdim(+) = 0 V

Dimming Specifications (Continued)

Parameter		Min.	Typ.	Max.	Notes
Dimming Output Range	EUG-150S070DT EUG-150S105DT EUG-150S210DT EUG-150S350DT EUG-150S560DT	10%Ioset	-	Ioset	450 mA ≤ Ioset ≤ 700 mA 700 mA ≤ Ioset ≤ 1050 mA 1400 mA ≤ Ioset ≤ 2100 mA 2450 mA ≤ Ioset ≤ 3500 mA 3850 mA ≤ Ioset ≤ 5600 mA
	EUG-150S070DT EUG-150S105DT EUG-150S210DT EUG-150S350DT EUG-150S560DT	45 mA 70 mA 140 mA 245 mA 385 mA	-	Ioset	45 mA ≤ Ioset < 450 mA 70 mA ≤ Ioset < 700 mA 140 mA ≤ Ioset < 1400 mA 245 mA ≤ Ioset < 2450 mA 385 mA ≤ Ioset < 3850 mA
Recommended Dimming Range for 0-5 V		0 V	-	5 V	Dimming mode set to 0-5V in PC interface.
Recommended Dimming Range for 0-10 V		0 V	-	10 V	Default 0-10V dimming mode with positive logic.
PWM_in High Level		3 V	-	10 V	Dimming mode set to PWM in PC interface.
PWM_in Low Level		-0.3 V	-	0.6 V	
PWM_in Frequency Range		200 Hz	-	2 KHz	
PWM_in Duty Cycle		1%	-	99%	

Safety &EMC Compliance

Safety Category	Standard
UL/CUL	UL8750,CAN/CSA-C22.2 No. 250.13
CE	EN 61347-1, EN61347-2-13
KS	KS C 7655
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.
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

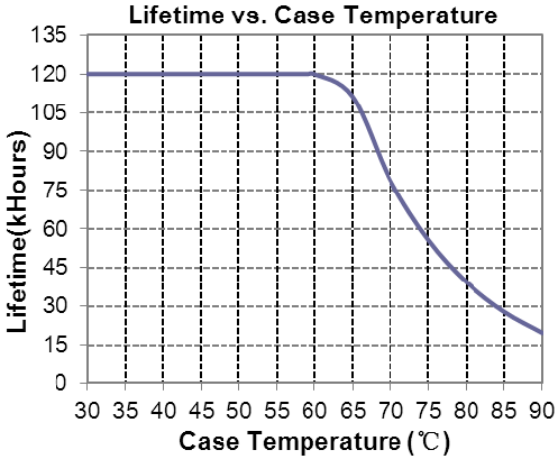
Safety &EMC Compliance (Continued)

EMS Standards	Notes
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 6 kV, line to earth 10 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

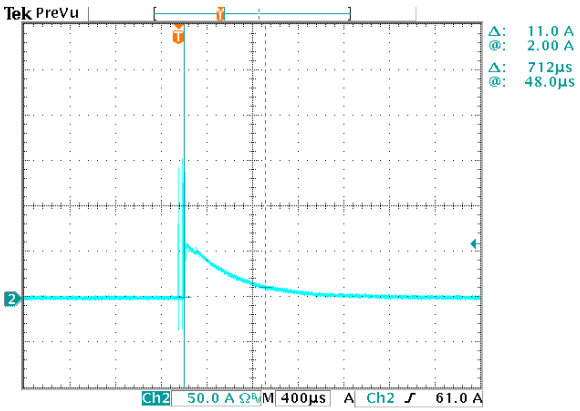
Note: (1) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

(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



Inrush Current Waveform



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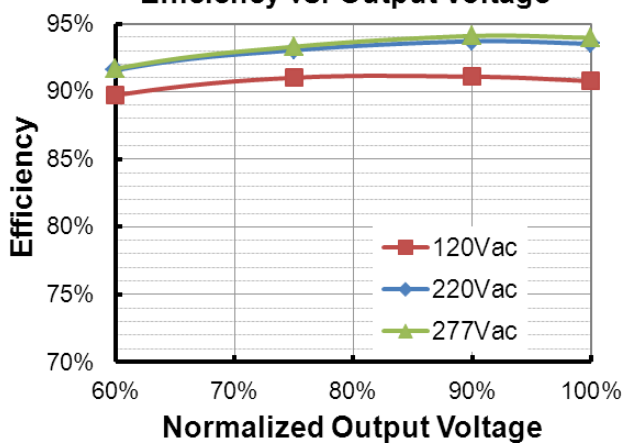
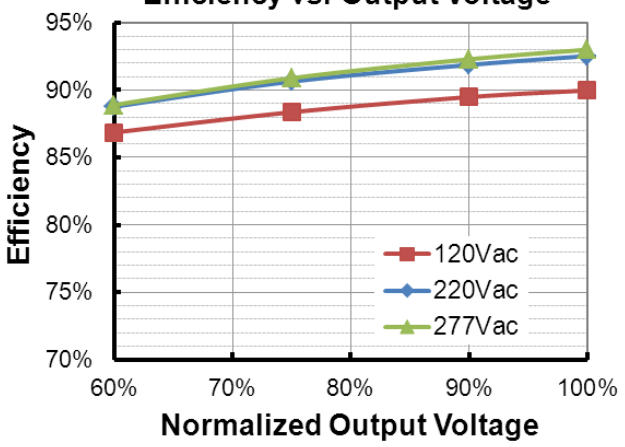
Efficiency vs. Load

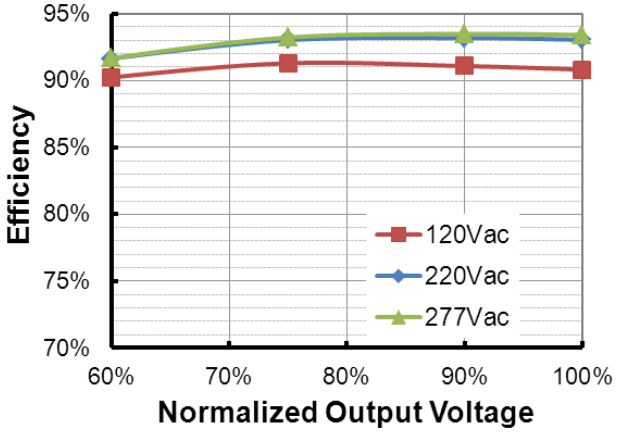
EUG-150S070DT(Io=450mA)



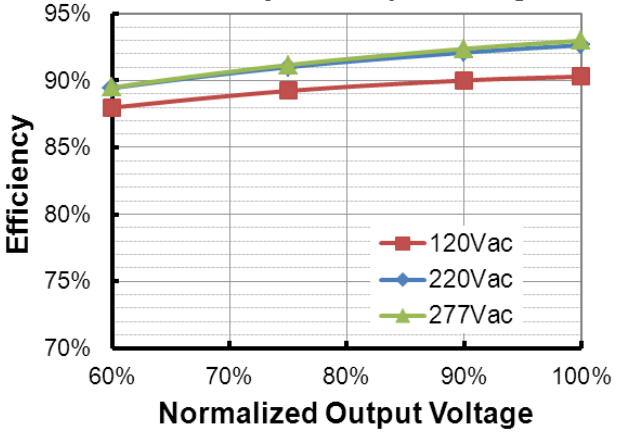
EUG-150S070DT(Io=700mA)



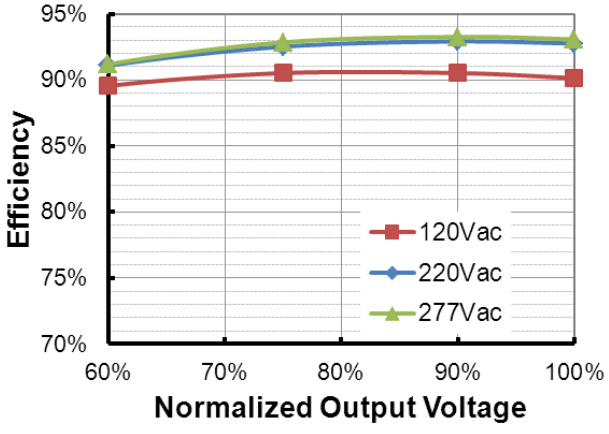
EUG-150S105DT(Io=700mA)



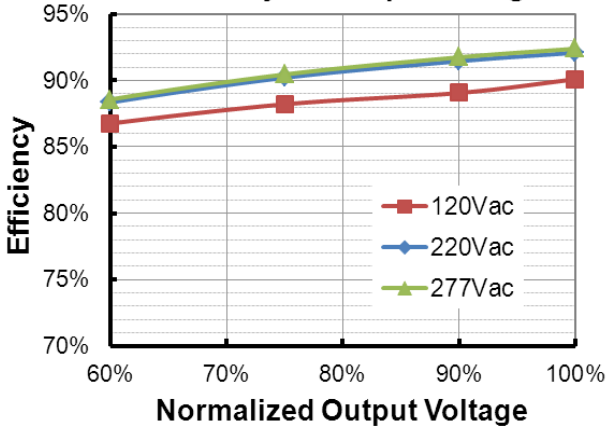
EUG-150S105DT(Io=1050mA)



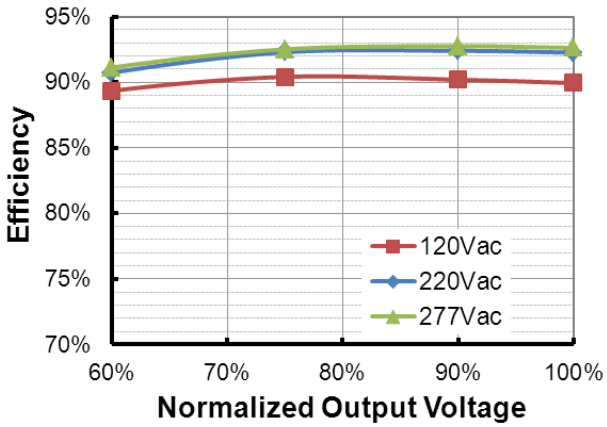
EUG-150S210DT(Io=1400mA)



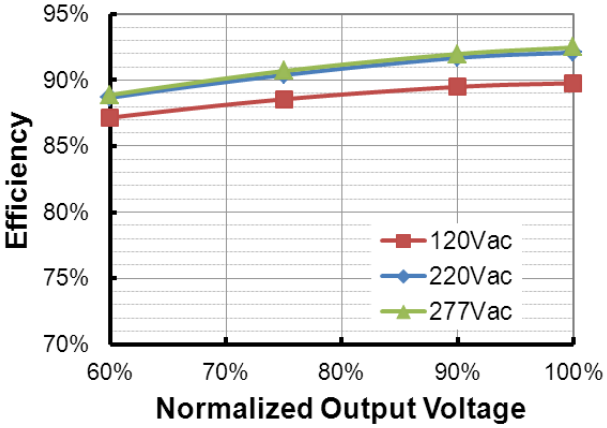
EUG-150S210DT(Io=2100mA)



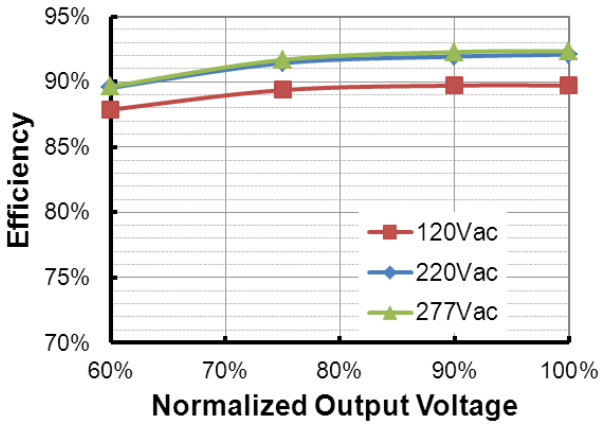
EUG-150S350DT(Io=2450mA)



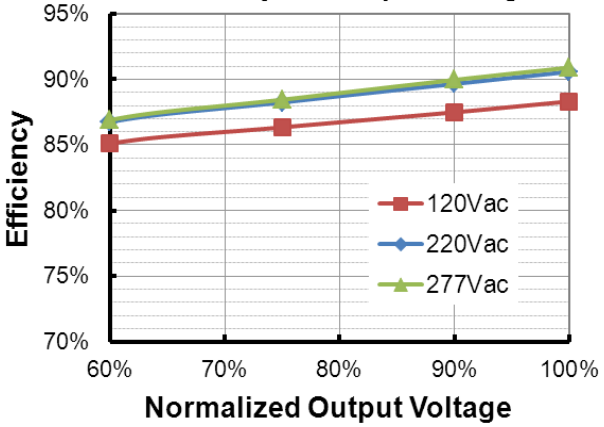
EUG-150S350DT(Io=3500mA)



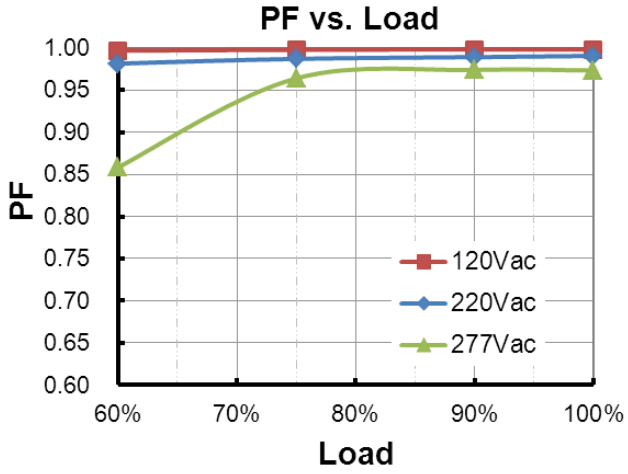
EUG-150S560DT(Io=3850mA)



EUG-150S560DT(Io=5600mA)



Power Factor



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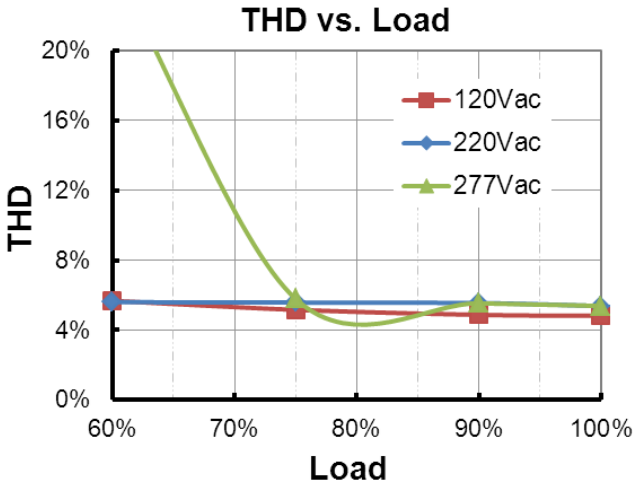
Total Harmonic Distortion



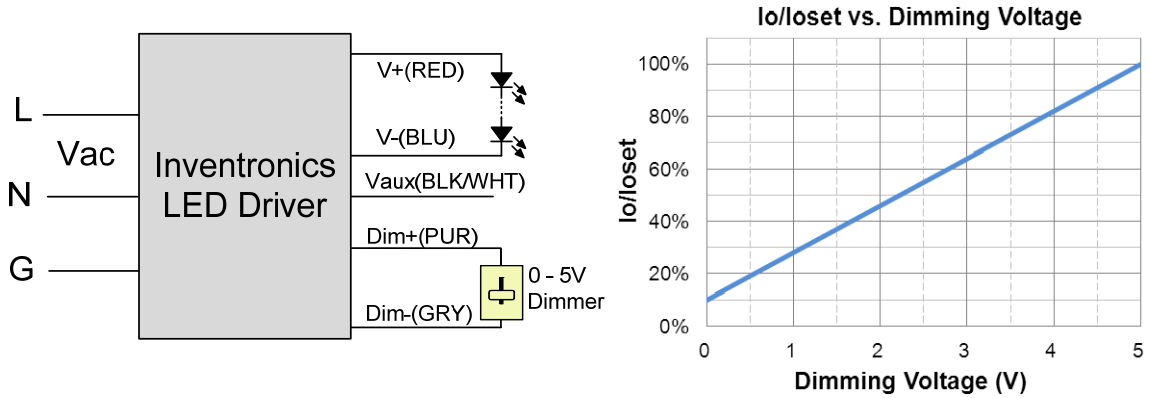
Protection Functions

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.

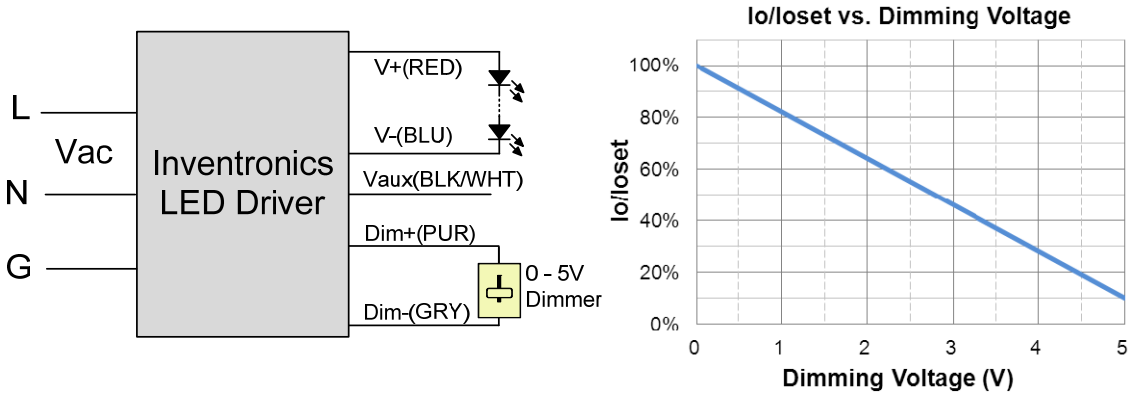
Dimming

- **0-5V Dimming**

The recommended implementation of the dimming control is provided below.



Implementation 1: Positive logic



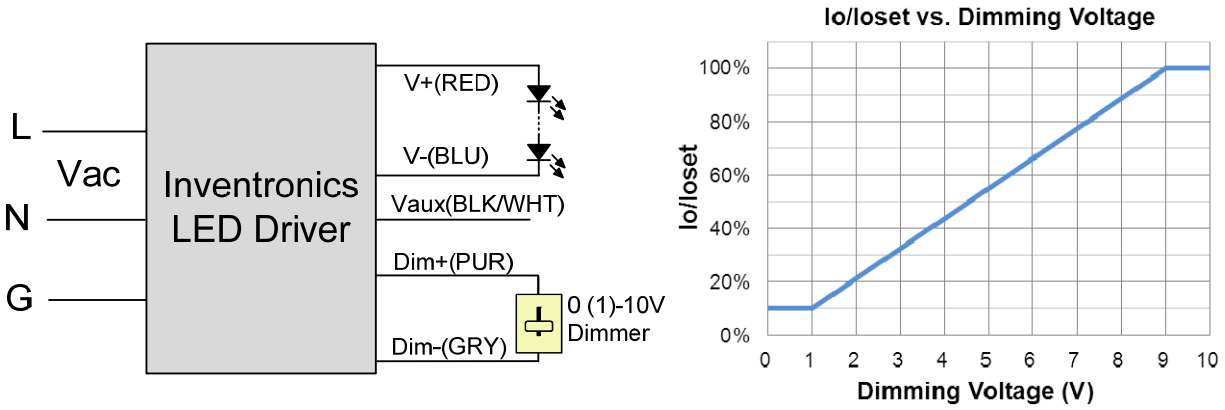
Implementation 2: Negative logic

Notes:

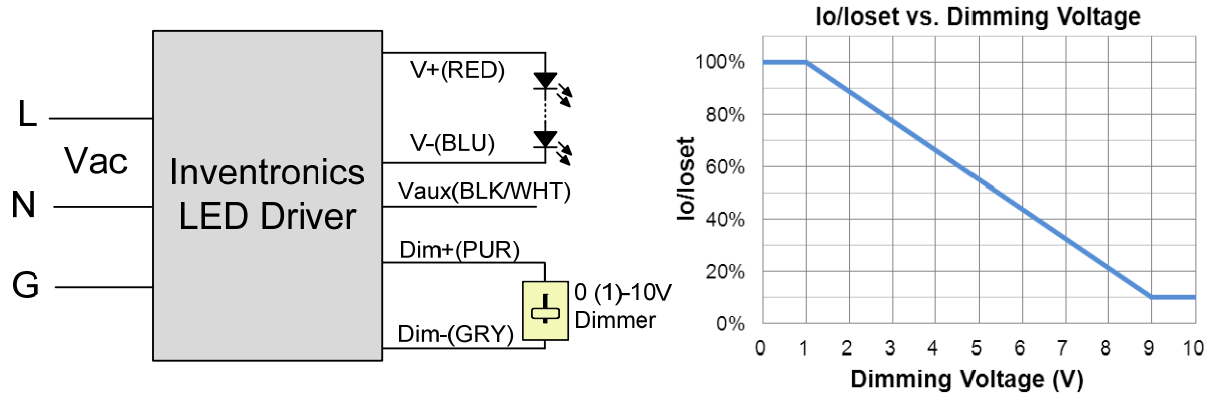
1. The dimmer can also be replaced by an active 0-5V voltage source signal or passive components like resistors and zener.
2. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
3. If 0-5V dimming is not used, Dim + should be open.
4. When 0-5V negative logic dimming mode and Dim+ is open, the driver will output maximum current.

- **0-10V Dimming**

The recommended implementation of the dimming control is provided below.



Implementation 3: Positive logic



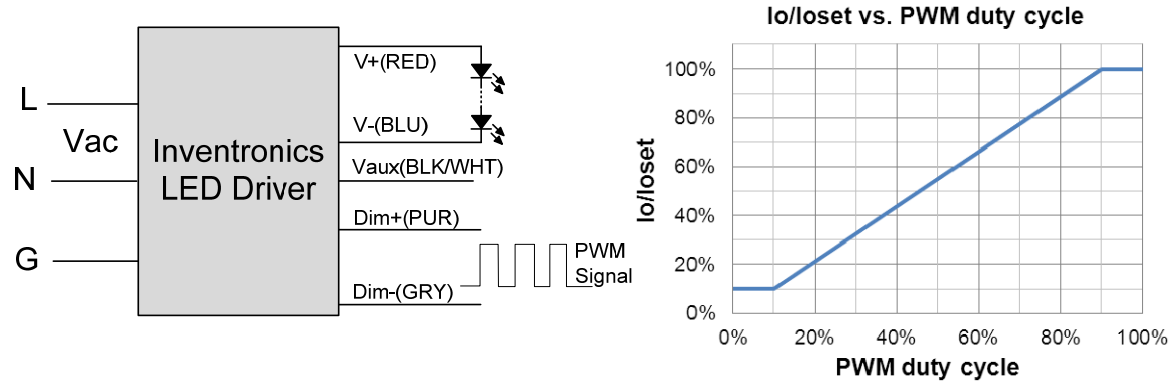
Implementation 4: Negative logic

Notes:

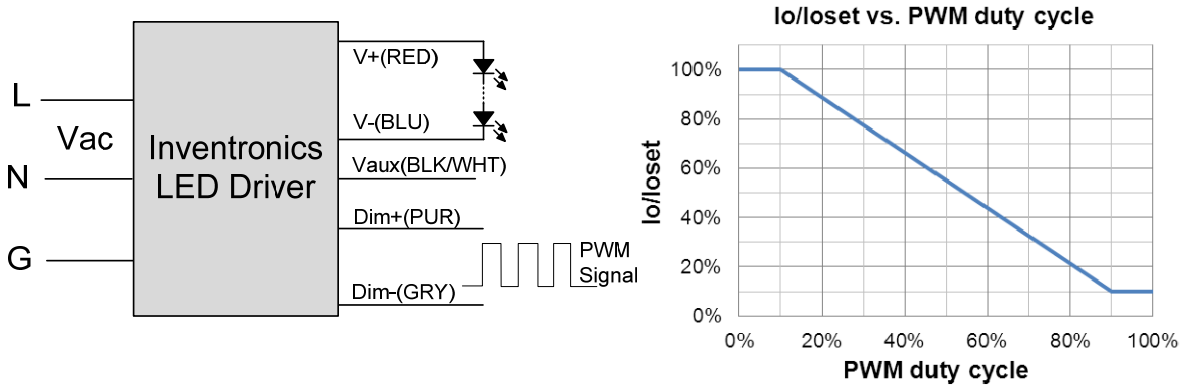
1. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like resistors and zener.
2. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
3. If 0-10V dimming is not used, Dim + should be open.
4. When 0-10V negative logic dimming mode and Dim+ is open, the driver will output minimum current.

● PWM Dimming

The recommended implementation of the dimming control is provided below.



Implementation 5: Positive logic

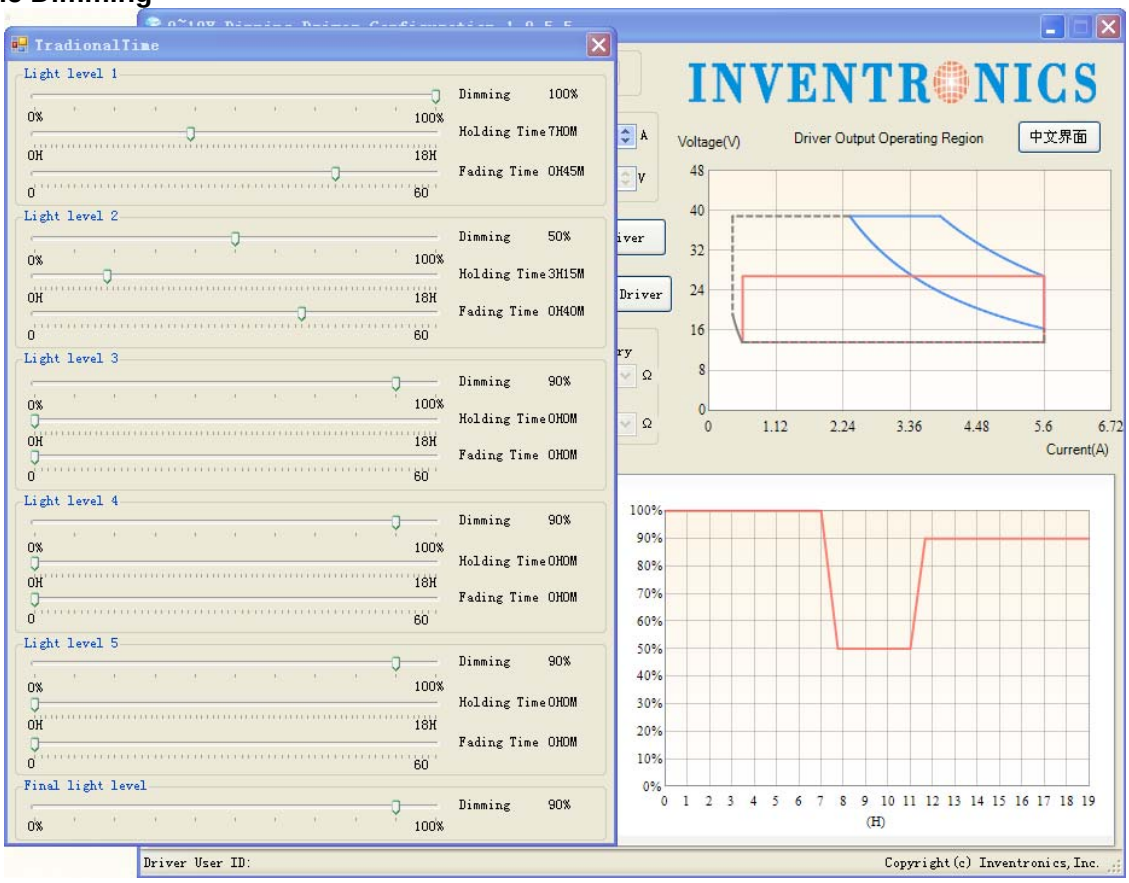


Implementation 6: Negative logic

Notes:

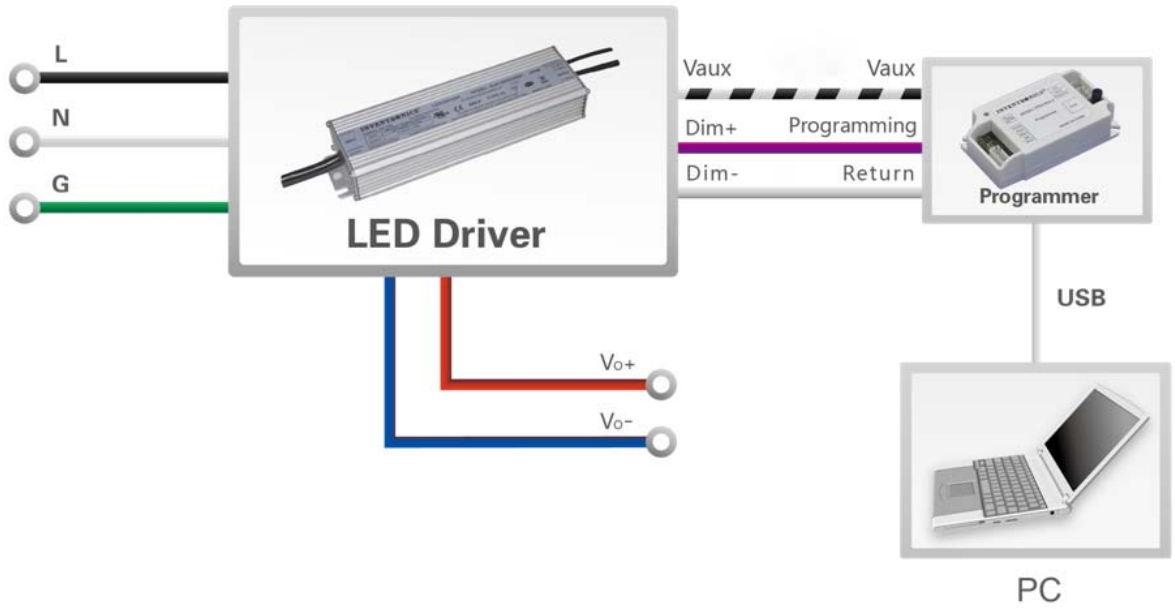
1. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
2. If PWM dimming is not used, Dim + should be open.
3. When PWM negative logic dimming mode and Dim+ is open, the driver will output minimum current.

- **Time Dimming**



Set the timing curve by pulling the sliders.

Programming Connection Diagram

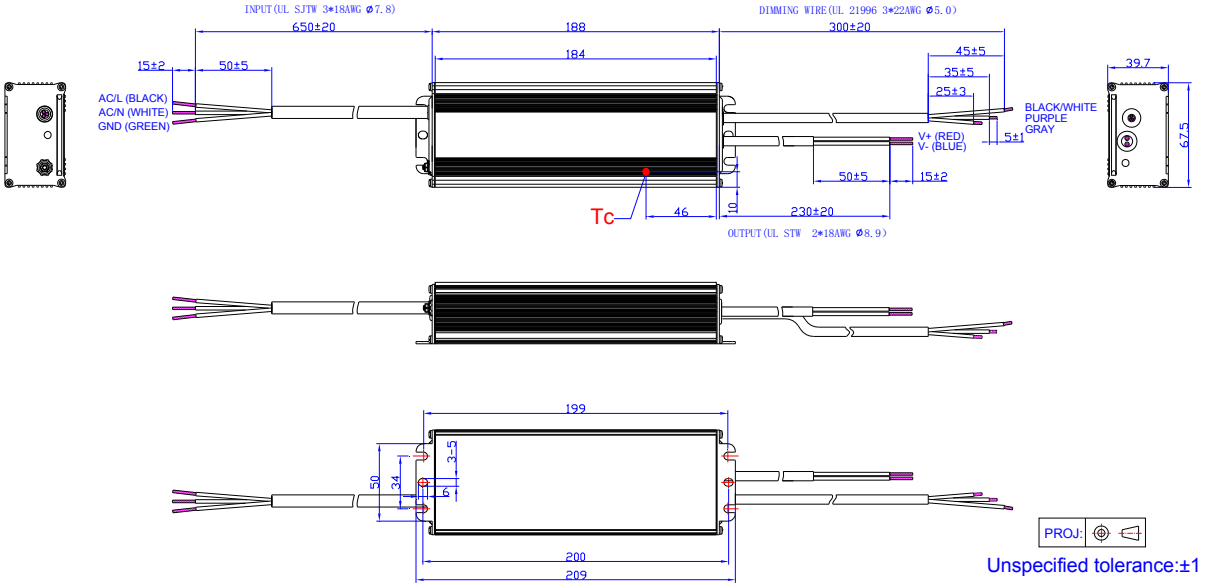


Note: The driver does not need to be powered on during the programming process.

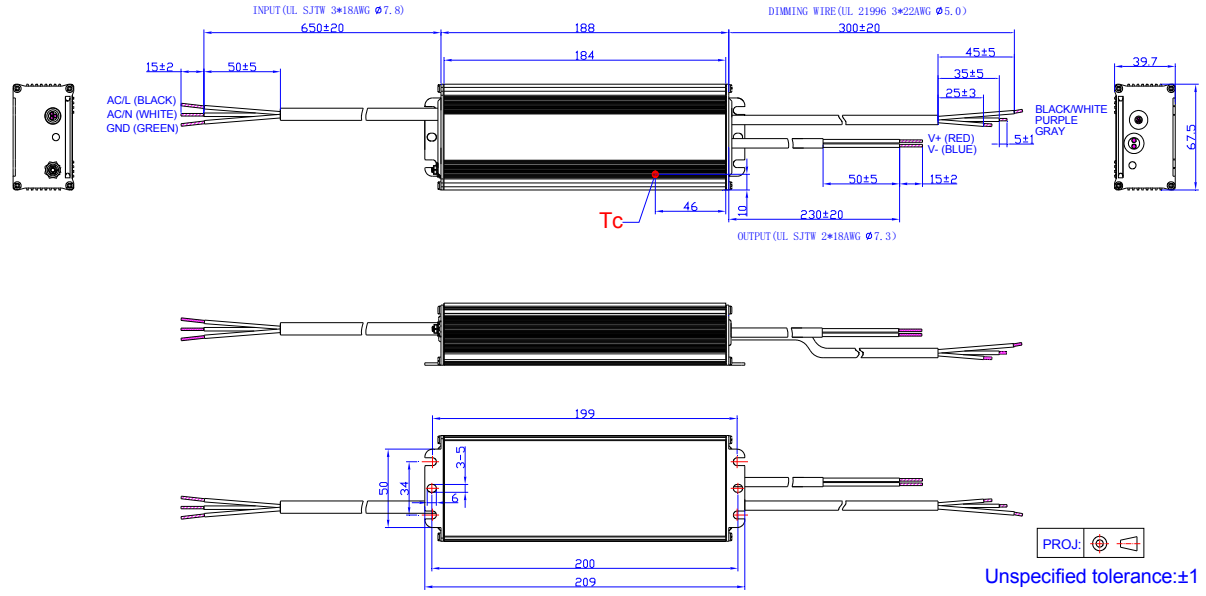
- **Please refer to PRG-MUL2 (Programmer) datasheet for details.**

Mechanical Outline

EUG-150S070DT



Others



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
2015-08-07	A	Datasheets Release	/	/
2016-01-12	B	KS	/	Added
		EUG-150S070DT	/	Added
		Mechanical Outline	/	Updated
2016-04-07	C	Features	/	Updated
		Input Specifications	Input AC Current	Updated
		General Specifications	Operating Case Temperature for Type TL Tc_TL	Added
		General Specifications	With mounting ear	Added
		General Specifications	Net Weight	Added
		Safety &EMC Compliance	/	Updated
		Mechanical Outline	/	Updated
2017-07-04	D	Features	/	Updated
		Models	/	Updated
		Temperature Coefficient of Ioset	/	Updated
		Dimensions	/	Updated
		Safety &EMC Compliance	/	Updated
		Mechanical Outline	/	Updated
2017-10-26	E	Features	7 Years Warranty	Added
		Input Specifications	PF/THD	Updated
		Operating Case Temperature for Warranty Tc_w	/	Updated