Feature

- Ultra High Efficiency (Up to 94%)
- Full Power at Wide Output Current Range (Constant Power)
- 0-5V/0-10V/PWM/Timer Dimmable
- Input Surge Protection: 6 kV line-line, 10 kV 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-240SxxxDT* series is a 240W, constant-current, programmable 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, 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.

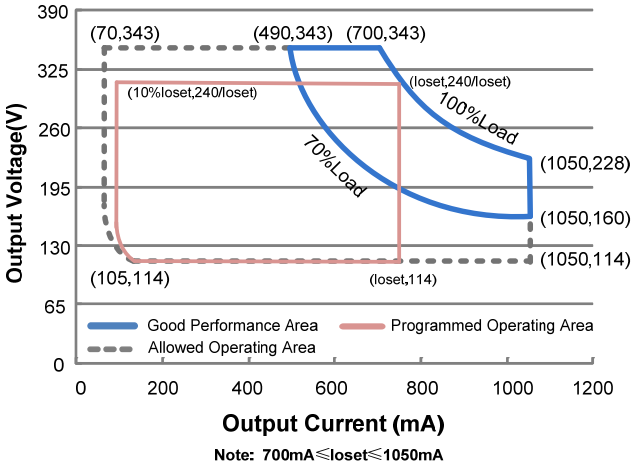
Models

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	
70-1050mA	700-1050mA	700 mA	90~305 Vac/ 127~300 Vdc	114~343Vdc	240W	94.0%	0.99	0.96	EUG-240S105DT
140-2100mA	1400-2100mA	1400 mA	90~305 Vac/ 127~300 Vdc	57~171Vdc	240W	93.0%	0.99	0.96	EUG-240S210DT
280-4200mA	2800-4200mA	4200 mA	90~305 Vac/ 127~300 Vdc	29 ~ 86Vdc	240W	93.0%	0.99	0.96	EUG-240S420DT(5)
445-6700mA	4450-6700mA	6700 mA	90~305 Vac/ 127~300 Vdc	18 ~ 54Vdc	240W	93.0%	0.99	0.96	EUG-240S670DT(5)

Notes: (1) Output current range with constant power at 240W
(2) Certified voltage range: UL, FCC 100-277Vac or 127-300Vdc; otherwise 100-240Vac or 127-250Vdc (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-240S105DT
(5) SELV Output.

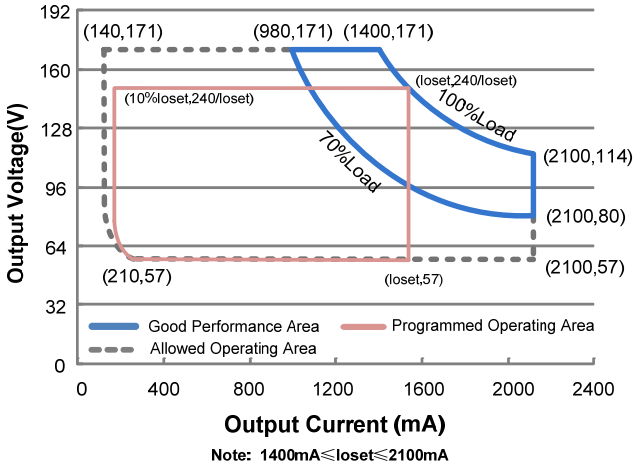
I-V Operating Area

EUG-240S105DT



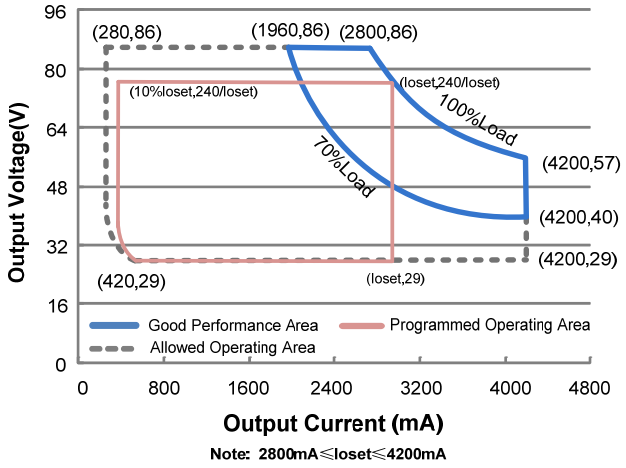
Note: 700mA≤loset≤1050mA

EUG-240S210DT



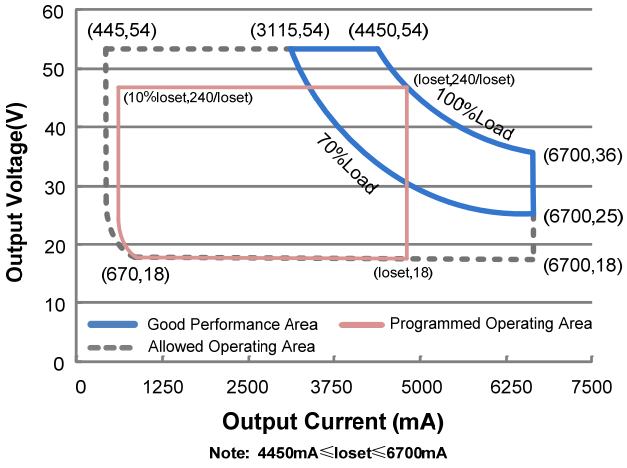
Note: 1400mA≤loset≤2100mA

EUG-240S420DT



Note: 2800mA≤loset≤4200mA

EUG-240S670DT



Note: 4450mA≤loset≤6700mA

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	-	305 Vac	127~300 Vdc
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL8750; 277Vac/ 60Hz, grounding effectively
	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz, grounding effectively
Input AC Current	-	-	3.10 A	Measured at full load and 100 Vac input.
	-	-	1.40 A	Measured at full load and 220 Vac input.
Inrush Current(I^2t)	-	-	3.75 A^2s	At 220Vac input, 25°C cold start, duration=1.26 ms, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
PF	0.9	-	-	At 100-277Vac, 50-60Hz, 70%-100% Load (168-240W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100% Load (180-240W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At full load condition
Output Current Setting(Ioset) Range EUG-240S105DT EUG-240S210DT EUG-240S420DT EUG-240S670DT	 70 mA 140 mA 280 mA 445 mA	 - - - -	 1050 mA 2100 mA 4200 mA 6700 mA	
Output Current Setting Range with Constant Power EUG-240S105DT EUG-240S210DT EUG-240S420DT EUG-240S670DT	 700 mA 1400 mA 2800 mA 4450 mA	 - - - -	 1050 mA 2100 mA 4200 mA 6700 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-240S105DT EUG-240S210DT EUG-240S420DT EUG-240S670DT	 - - - -	 - - - -	 356 V 187 V 96 V 60 V	
Line Regulation	-	-	±0.5%	Measured at full load
Load Regulation	-	-	±1.5%	
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-240S105DT Io= 700 mA Io=1050 mA EUG-240S210DT Io=1400 mA Io=2100 mA EUG-240S420DT Io=2800 mA Io=4200 mA EUG-240S670DT Io=4450 mA Io=6700 mA	 90.0% 88.5% 88.5% 88.0% 89.0% 87.0% 88.5% 87.0%	 92.0% 90.5% 90.5% 90.0% 91.0% 89.0% 90.5% 89.0%	 - - - - - - - -	Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 220 Vac input: EUG-240S105DT Io= 700 mA Io=1050 mA EUG-240S210DT Io=1400 mA Io=2100 mA EUG-240S420DT Io=2800 mA Io=4200 mA EUG-240S670DT Io=4450 mA Io=6700 mA	 92.0% 90.5% 91.0% 89.5% 91.0% 89.5% 91.0% 89.5%	 94.0% 92.5% 93.0% 91.5% 93.0% 91.5% 93.0% 91.5%	 - - - - - - - -	Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 277 Vac input: EUG-240S105DT Io= 700 mA Io=1050 mA EUG-240S210DT Io=1400 mA Io=2100 mA EUG-240S420DT Io=2800 mA Io=4200 mA EUG-240S670DT Io=4450 mA Io=6700 mA	 92.5% 91.0% 92.0% 89.5% 91.5% 90.0% 91.5% 89.5%	 94.5% 93.0% 94.0% 91.5% 93.5% 92.0% 93.5% 91.5%	 - - - - - - - -	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	-	218,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	109,000 Hours	-	Measured at 220Vac 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	-	+88°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+75°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	-	+88°C	
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 100%RH

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Dimensions Inches (L × W × H) Millimeters (L × W × H)		8.35 × 2.66 × 1.56 212 × 67.5 × 39.7		With mounting ear 9.17 × 2.66 × 1.56 233 × 67.5 × 39.7
Net Weight	-	1200 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 Output Range	EUG-240S105DT EUG-240S210DT EUG-240S420DT EUG-240S670DT	10%Ioset	-	Ioset	700 mA ≤ Ioset ≤ 1050 mA 1400 mA ≤ Ioset ≤ 2100 mA 2800 mA ≤ Ioset ≤ 4200 mA 4450 mA ≤ Ioset ≤ 6700 mA
	EUG-240S105DT EUG-240S210DT EUG-240S420DT EUG-240S670DT	70 mA 140 mA 280 mA 445 mA	-	Ioset	70 mA ≤ Ioset < 700 mA 140 mA ≤ Ioset <1400 mA 280 mA ≤ Ioset <2800 mA 445 mA ≤ Ioset <4450 mA
Recommended Dimming Range for 0-5V		0 V	-	5 V	Dimming mode set to 0-5V in PC interface.
Recommended Dimming Range for 0-10V		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%	

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

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

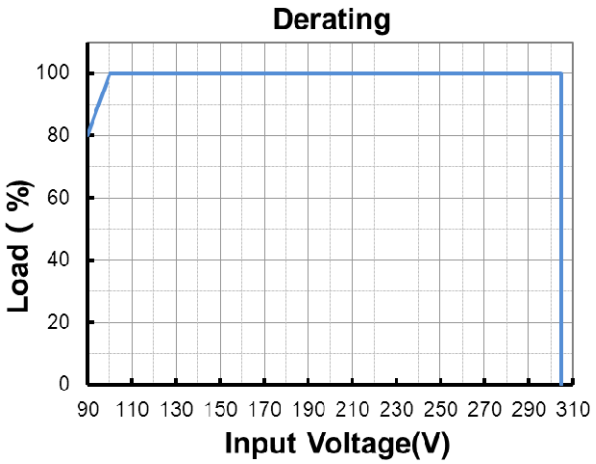
Safety &EMC Compliance (Continued)

EMI Standards	Notes
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
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.

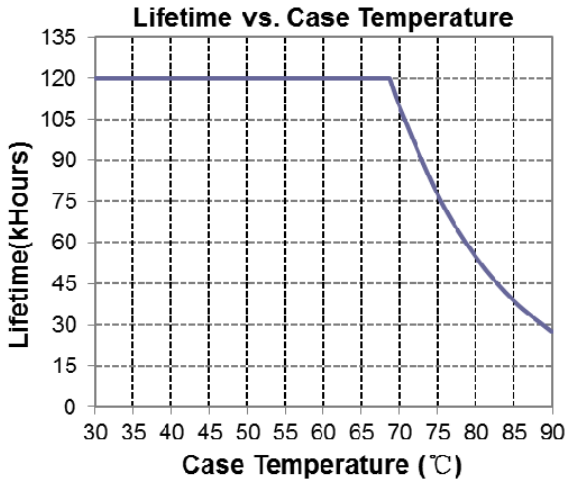
(2) To perform electric strength (hi-pot) testing, the “GDT ground disconnect” (nut and metal lock sheet) on the driver end-cap should be removed temporarily to prevent the internal gas discharge tube from conducting (as allowed by IEC 60598-1 Clause 10.2). After testing is completed, these items must be reinstalled to restore line-to-earth surge protection and secure the end cap.

Derating

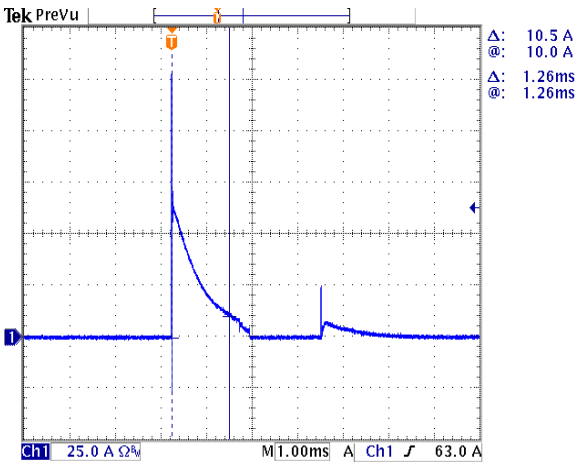


Specifications are subject to changes without notice.

Lifetime vs. Case Temperature

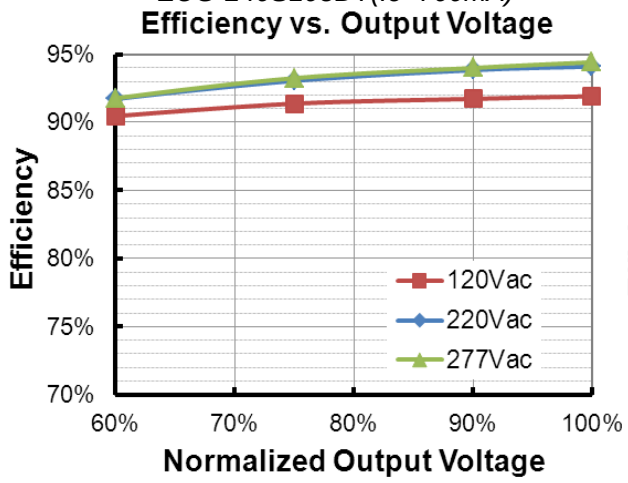


Inrush Current Waveform

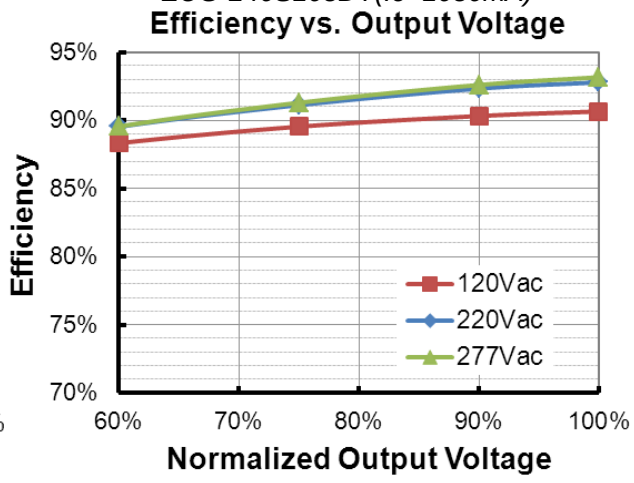


Efficiency vs. Load

EUG-240S105DT(Io=700mA)

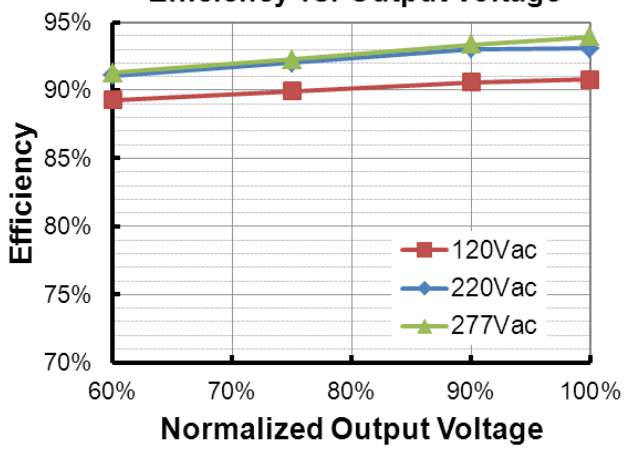


EUG-240S105DT(Io=1050mA)

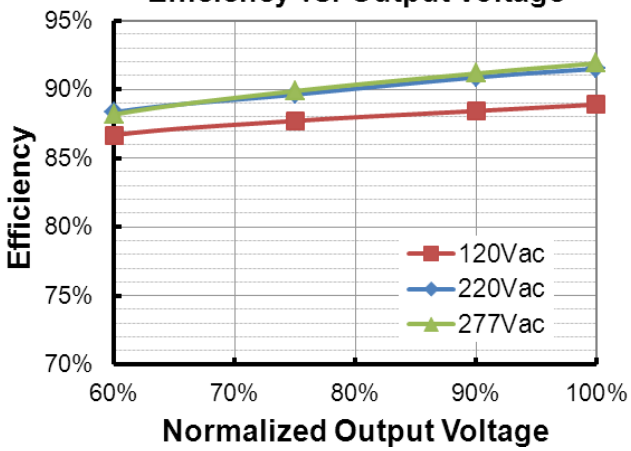


Specifications are subject to changes without notice.

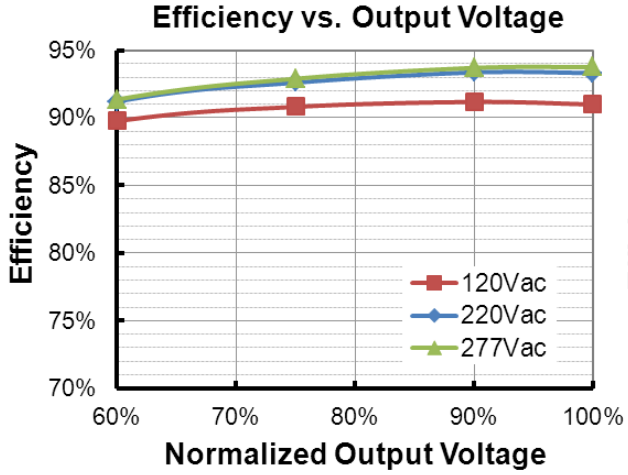
EUG-240S210DT(Io=1400mA)



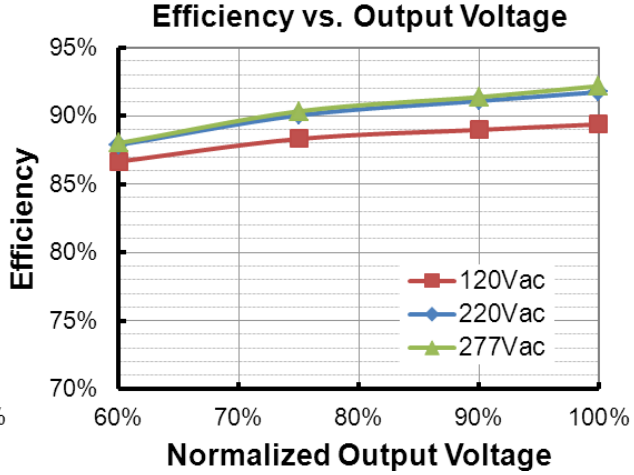
EUG-240S210DT(Io=2100mA)



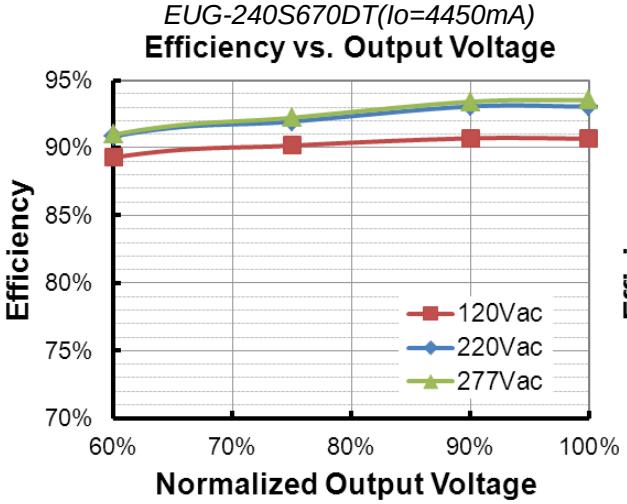
EUG-240S420DT(Io=2800mA)



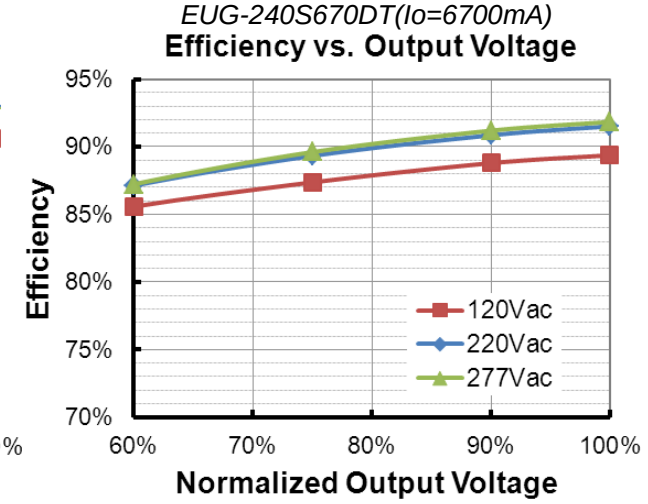
EUG-240S420DT(Io=4200mA)



EUG-240S670DT(Io=4450mA)

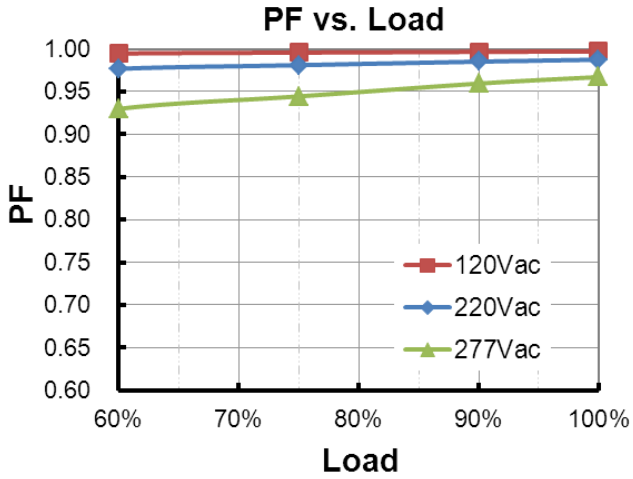


EUG-240S670DT(Io=6700mA)

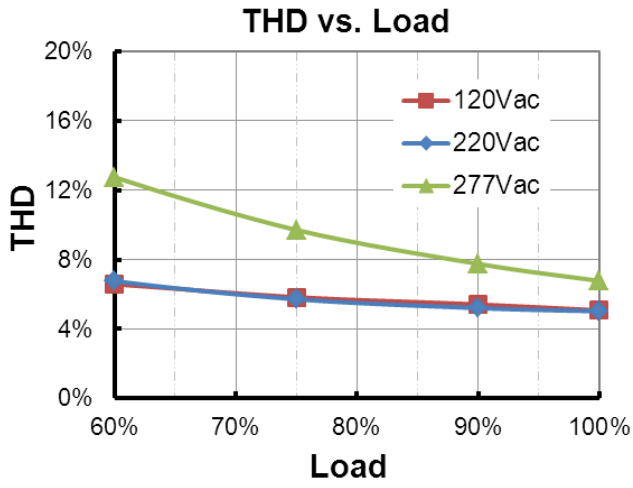


Specifications are subject to changes without notice.

Power Factor



Total Harmonic Distortion



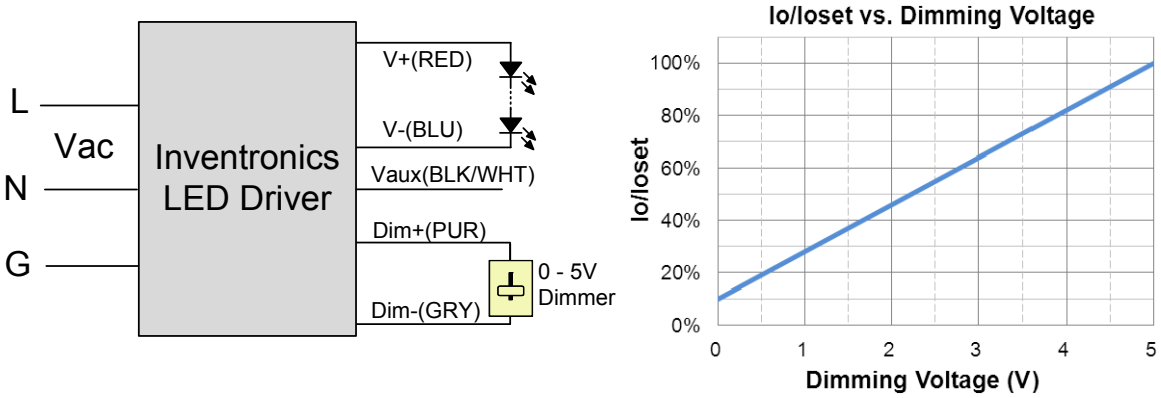
Protection Functions

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.

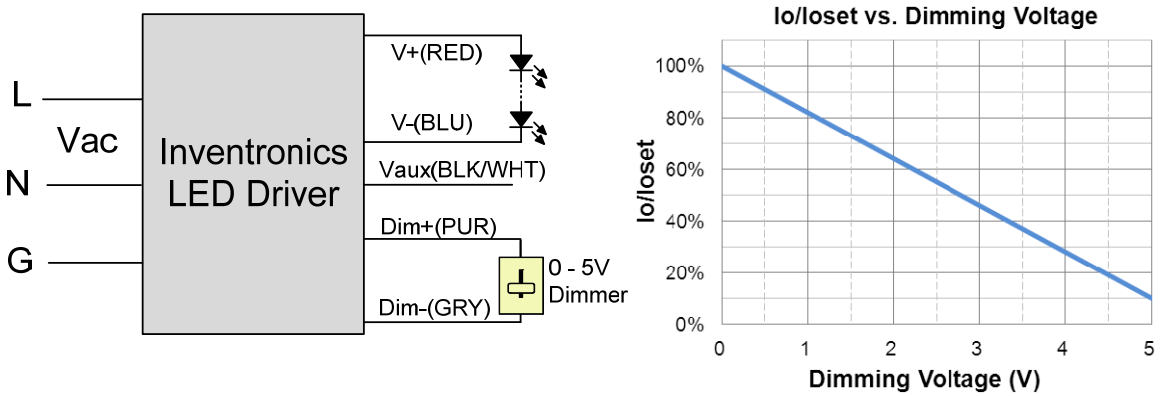
Dimming

- **0-5V Dimming**

The recommended implementation of the dimming control is provided below.



Implementation 1: Positive logic



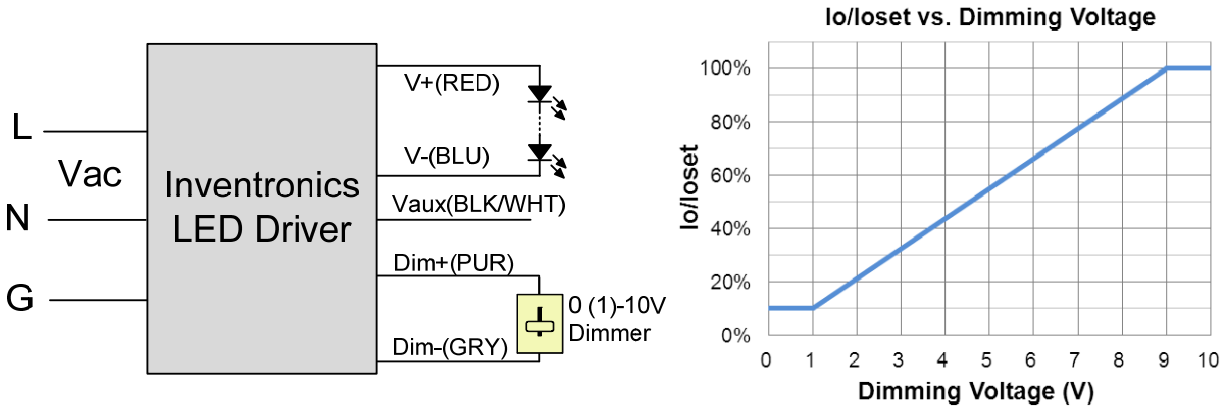
Implementation 2: Negative logic

Notes:

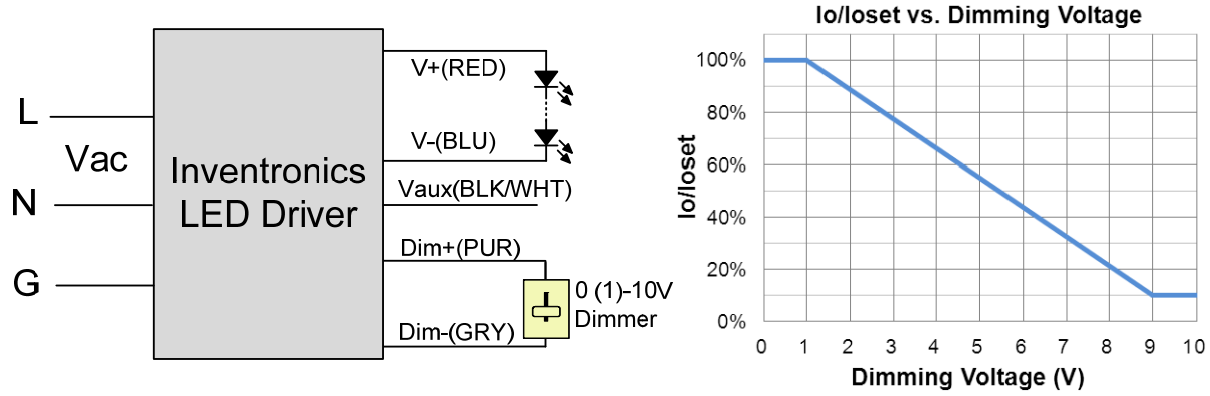
1. The dimmer can also be replaced by an active 0-5V voltage source signal or passive components like resistors and zener.
2. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
3. If 0-5V dimming is not used, Dim + should be open.
4. When 0-5V negative logic dimming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



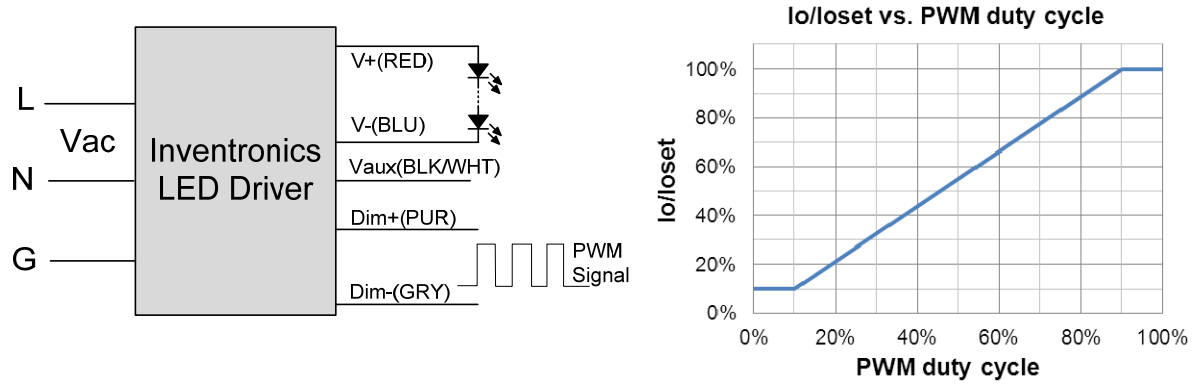
Implementation 4: Negative logic

Notes:

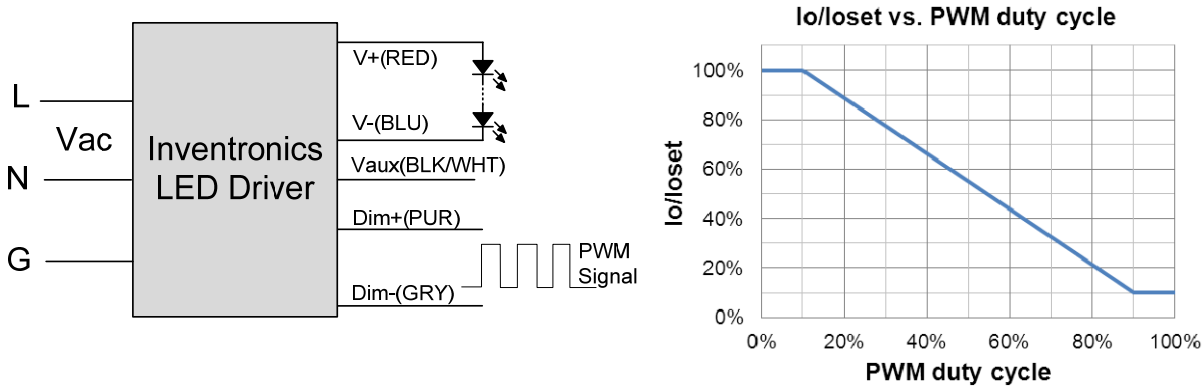
1. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like resistors and zener.
2. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
3. If 0-10V dimming is not used, Dim + should be open.
4. When 0-10V negative logic dimming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

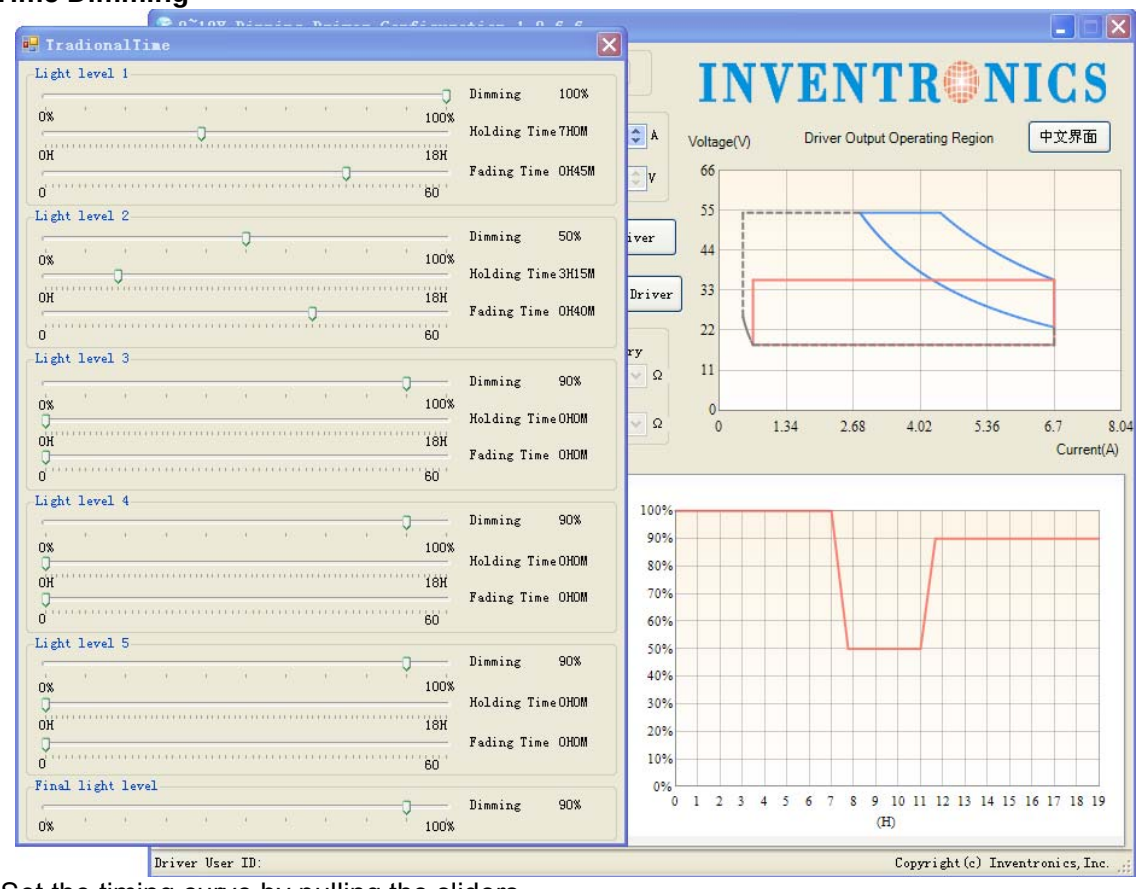


Implementation 6: Negative logic

Notes:

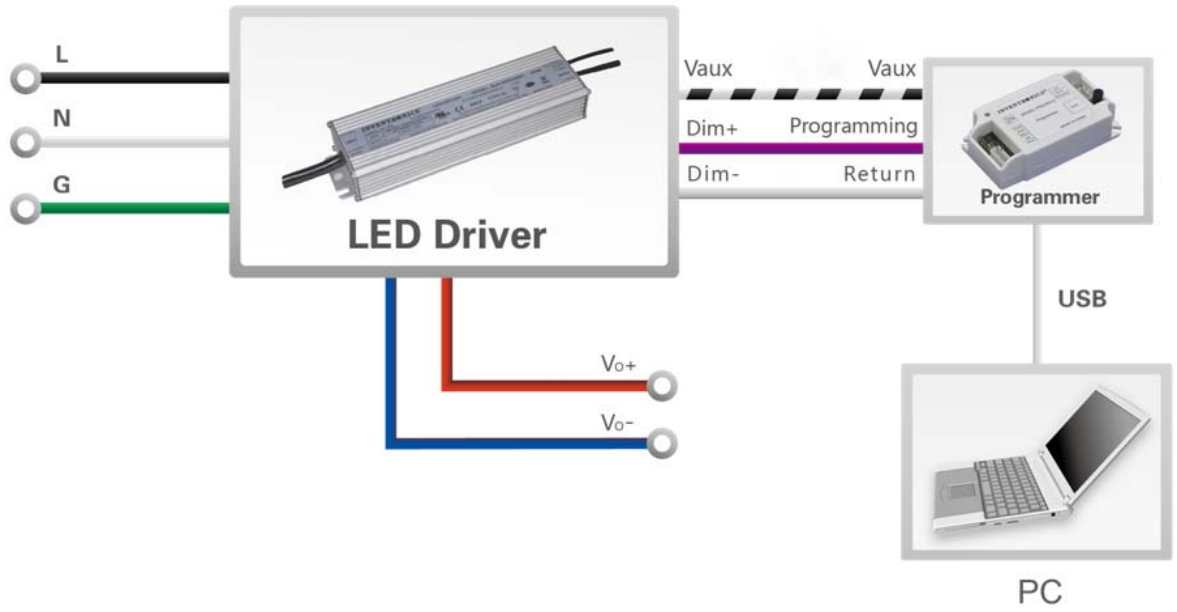
1. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
2. If PWM dimming is not used, Dim + should be open.
3. When PWM negative logic dimming mode and Dim+ is open, the driver will output minimum current.

- **Time Dimming**



Set the timing curve by pulling the sliders.

Programming Connection Diagram

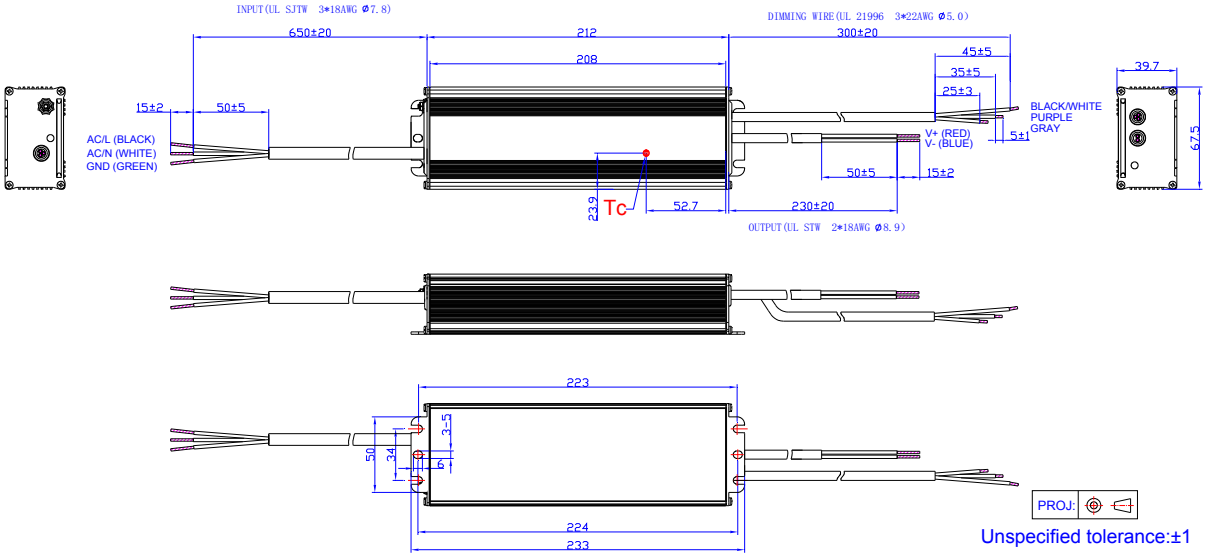


Note: The driver does not need to be powered on during the programming process.

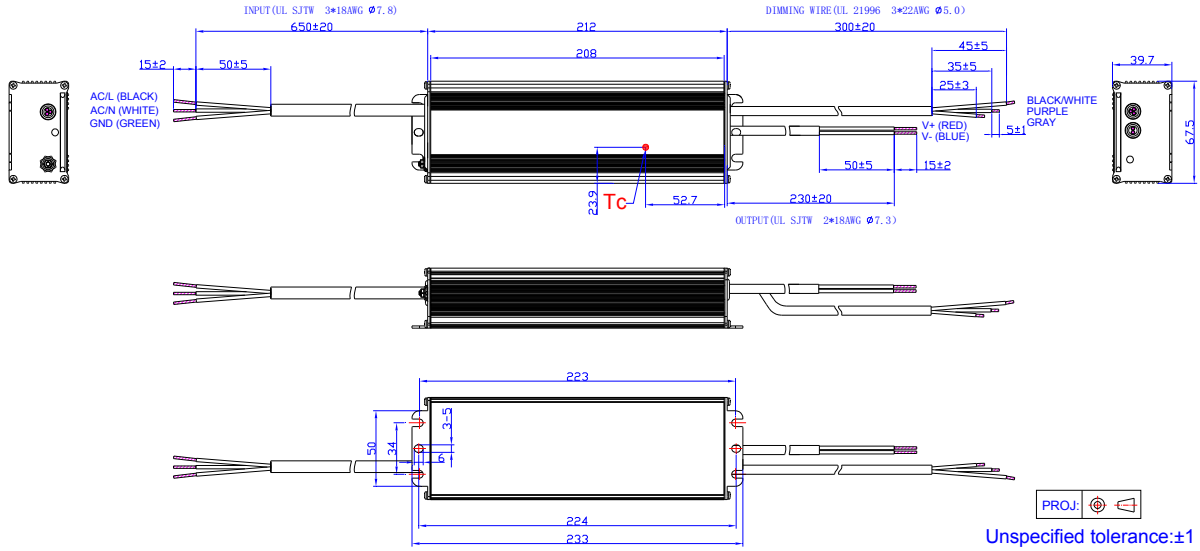
- **Please refer to PRG-MUL2 (Programmer) datasheet for details**

Mechanical Outline

EUG-240S105DT



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
2016-02-29	A	Datasheets Release	/	/
2016-04-08	B	Feature	/	Updated
		General Specifications	Operating Case Temperature for Type TL Tc_TL	Added
		General Specifications	With mounting ear	Updated
		Safety &EMC Compliance	/	Updated
		Mechanical Outline	/	Updated
2017-07-04	C	Feature	/	Updated
		Models	/	Updated
		Temperature Coefficient of Ioset	/	Updated
		Dimensions	/	Updated
		Safety &EMC Compliance	/	Updated
		Mechanical Outline	/	Updated
2017-10-26	D	Features	7 Years Warranty	Added
		Operating Case Temperature for Warranty Tc_w	/	Updated
2018-01-31	E	Description	/	Updated
		General Specifications	Lifetime	Updated
		General Specifications	Operating Case Temperature for Warranty Tc_w	Updated
		Lifetime vs. Case Temperature	/	Updated