Features

- Compact Metal Case with Excellent Thermal Performance
- Full Power at Wide Output Current Range (Constant Power)
- Adjustable Output Current (AOC) with Programmability
- Isolated 1-5V/1-10V/10V PWM/3-Timer-Modes Dimmable
- Output Lumen Compensation
- Input Surge Protection: DM 6kV, CM 10kV
- All-Around Protection: OVP, SCP, OTP
- IP66 / IP67 and UL Dry / Damp / Wet Location
- SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location
- 5 Years Warranty

Description

The *EUM-200SxxxDG* series is a 200W, constant-current, programmable IP67 LED driver that operates from 90-305Vac input with excellent power factor. It is created for many lighting applications including high bay, high mast 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.

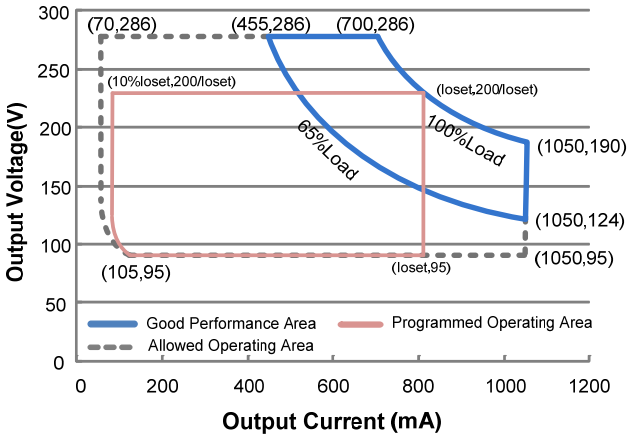
Models

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 (5) (6)
							120Vac	220Vac	
70-1050mA	700-1050mA	700 mA	90~305 Vac/ 127~300 Vdc	95~286 Vdc	200 W	93.5%	0.99	0.96	EUM-200S105DG
105-1500mA	1050-1500mA	1050 mA	90~305 Vac/ 127~300 Vdc	67~190 Vdc	200 W	93.0%	0.99	0.96	EUM-200S150DG
180-2800mA	1800-2800mA	2100 mA	90~305 Vac/ 127~300 Vdc	36~111 Vdc	200 W	92.5%	0.99	0.96	EUM-200S280DG(4)
350-5600mA	3500-5600mA	4200 mA	90~305 Vac/ 127~300 Vdc	18 ~ 57 Vdc	200 W	92.0%	0.99	0.96	EUM-200S560DG(4)

Notes: (1) Output current range with constant power at 200W
(2) Certified input voltage range: UL, FCC 100-277Vac; otherwise 100-240Vac.
(3) Measured at 100% load and 220Vac input (see below "General Specifications" for details).
(4) SELV output.
(5) To order BIS approved model, please use suffix "DB" in place of "DG" (ex: EUM-200S105DB).
(6) All the models are certificated to KS, except EUM-200S105DG.

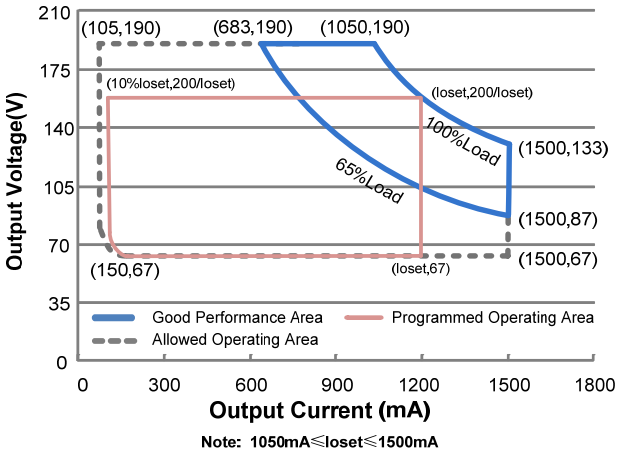
I-V Operation Area

EUM-200S105DG



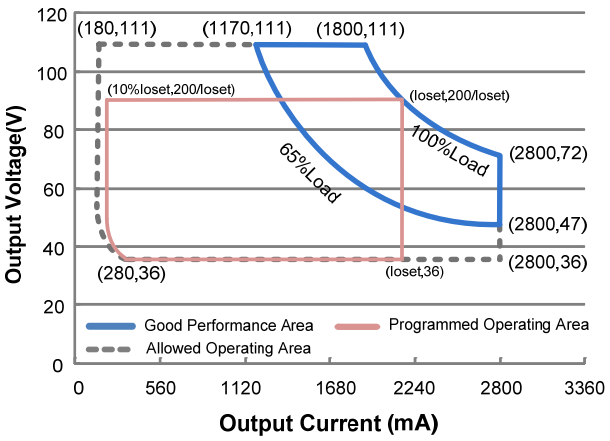
Note: 700mA≤Ioset≤1050mA

EUM-200S150DG



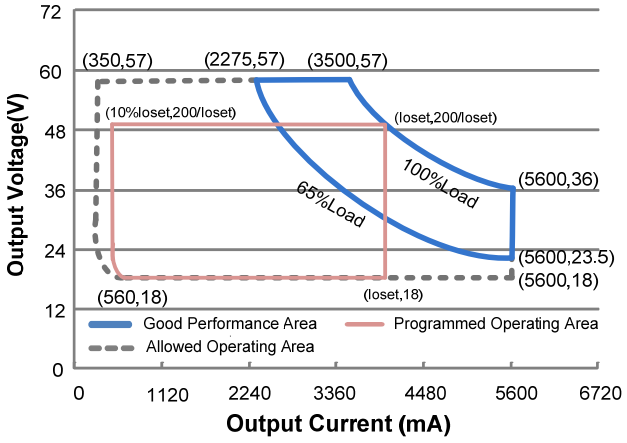
Note: 1050mA≤Ioset≤1500mA

EUM-200S280DG



Note: 1800mA≤Ioset≤2800mA

EUM-200S560DG



Note: 3500mA≤Ioset≤5600mA

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
	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz,
Input AC Current	-	-	2.00 A	Measured at 100% load and 120 Vac input.
	-	-	1.05 A	Measured at 100% load and 220 Vac input.
Inrush Current(I^2t)	-	-	4.20 A^2s	At 220Vac input, 25°C cold start, duration=848 μs, 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, 65%-100% Load (130-200W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100% Load (150-200W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At 100% load condition
Output Current Setting(Ioset) Range EUM-200S105DG EUM-200S150DG EUM-200S280DG EUM-200S560DG	 70 mA 105 mA 180 mA 350 mA	 - - - -	 1050 mA 1500 mA 2800 mA 5600 mA	
Output Current Setting Range with Constant Power EUM-200S105DG EUM-200S150DG EUM-200S280DG EUM-200S560DG	 700 mA 1050 mA 1800 mA 3500 mA	 - - - -	 1050 mA 1500 mA 2800 mA 5600 mA	
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	At 100% load condition. 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%Iomax	-	At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%Iomax	At 100% load condition
No Load Output Voltage EUM-200S105DG EUM-200S150DG EUM-200S280DG EUM-200S560DG	 - - - -	 - - - -	 320 V 210 V 120 V 65 V	
Line Regulation	-	-	±0.5%	Measured at 100% load
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	-	0.5 s	Measured at 120-277Vac input, 65%-100% Load
Temperature Coefficient of Ioset	-	0.03%/°C	-	Case temperature = 0°C ~Tc max

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

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input: EUM-200S105DG Io= 700 mA Io=1050 mA EUM-200S150DG Io=1050 mA Io=1500 mA EUM-200S280DG Io=1800 mA Io=2800 mA EUM-200S560DG Io=3500 mA Io=5600 mA	 88.5% 89.0% 88.5% 88.5% 87.0% 87.0% 87.5% 87.0%	 90.5% 91.0% 90.5% 90.5% 89.0% 89.0% 89.5% 89.0%	 - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 220 Vac input: EUM-200S105DG Io= 700 mA Io=1050 mA EUM-200S150DG Io=1050 mA Io=1500 mA EUM-200S280DG Io=1800 mA Io=2800 mA EUM-200S560DG Io=3500 mA Io=5600 mA	 91.5% 91.5% 91.0% 91.0% 90.5% 90.0% 90.0% 89.5%	 93.5% 93.5% 93.0% 93.0% 92.5% 92.0% 92.0% 91.5%	 - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 277 Vac input: EUM-200S105DG Io= 700 mA Io=1050 mA EUM-200S150DG Io=1050 mA Io=1500 mA EUM-200S280DG Io=1800 mA Io=2800 mA EUM-200S560DG Io=3500 mA Io=5600 mA	 92.0% 92.0% 91.5% 91.5% 91.0% 90.5% 90.5% 90.0%	 94.0% 94.0% 93.5% 93.5% 93.0% 92.5% 92.5% 92.0%	 - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
MTBF	-	267,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	100,000 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	-	+90°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+80°C	Case temperature for 5 years warranty
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 100%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	6.73 × 2.36 × 1.44 171 × 60 × 36.5			With mounting ear 7.40 × 2.36 × 1.44 188 × 60 × 36.5
Net Weight	-	750 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 μA	300 μA	450 μA	Vdim(+) = 0 V
Dimming Output Range	EUM-200S105DG EUM-200S150DG EUM-200S280DG EUM-200S560DG	10%Ioset	-	Ioset	700 mA ≤ Ioset ≤ 1050 mA 1050 mA ≤ Ioset ≤ 1500 mA 1800 mA ≤ Ioset ≤ 2800 mA 3500 mA ≤ Ioset ≤ 5600 mA
	EUM-200S105DG EUM-200S150DG EUM-200S280DG EUM-200S560DG	70 mA 105 mA 180 mA 350 mA	-	Ioset	70 mA ≤ Ioset < 700 mA 105 mA ≤ Ioset < 1050 mA 180 mA ≤ Ioset < 1800 mA 350 mA ≤ Ioset < 3500 mA
Recommended Dimming Range for 1-5V		0.25 V	-	4.75 V	Dimming mode set to 1-5V in PC interface.
Recommended Dimming Range for 1-10V		1 V	-	9 V	Default 1-10V dimming mode with positive logic.
PWM_in High Level		-	10V	-	
PWM_in Low Level		-	0V	-	
PWM_in Frequency Range		200 Hz	-	2 KHz	
PWM_in Duty Cycle		0%	-	100%	

Safety &EMC Compliance

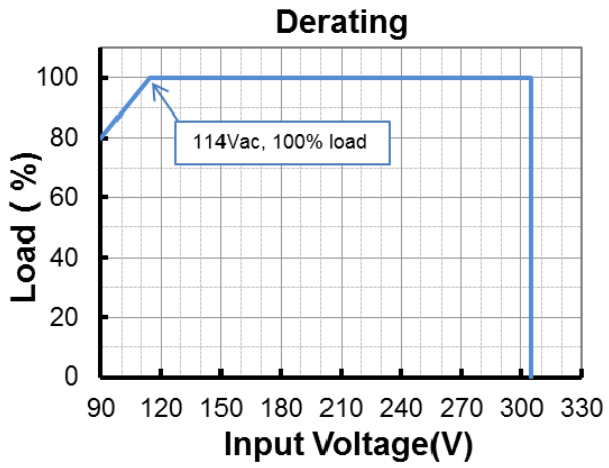
Safety Category	Standard
UL/CUL	UL8750,CAN/CSA-C22.2 No. 250.13
ENEC & CE	EN 61347-1, EN61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
CCC	GB 19510.1, GB 19510.14
PSE	J 61347-1, J 61347-2-13
KS	KS C 7655
BIS	IS 15885(Part2/Sec13)
EAC	ГОСТ Р МЭК 61347-1, ГОСТ IEC 61347-2-13
EMI Standards	**Notes**
EN 55015/GB 17743/KN 15(1)	Conducted emission Test &Radiated emission Test
EN 61000-3-2/GB 17625.1	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)

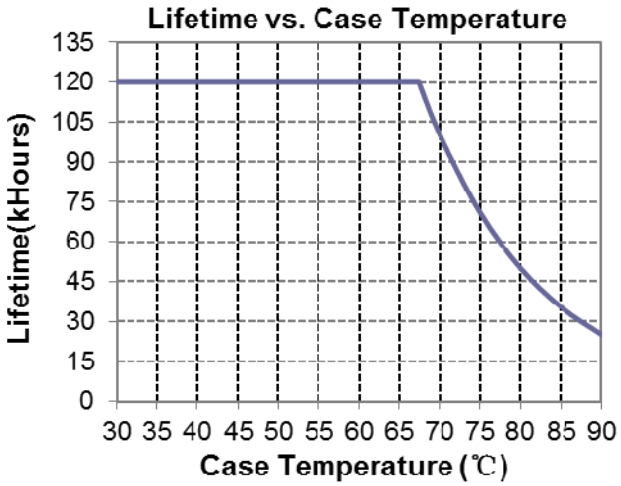
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: Differential Mode 6 kV, Common Mode 10 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.

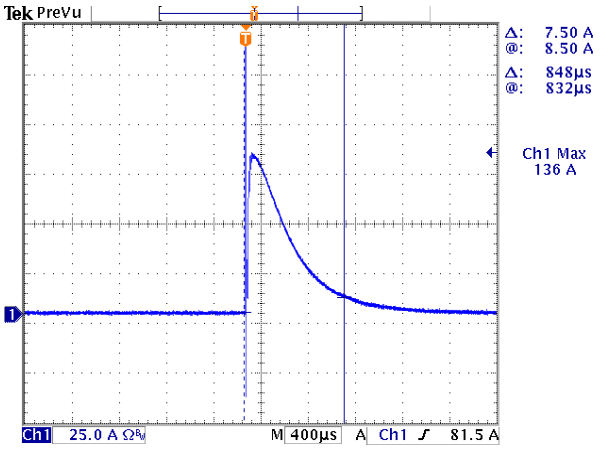
Derating



Lifetime vs. Case Temperature

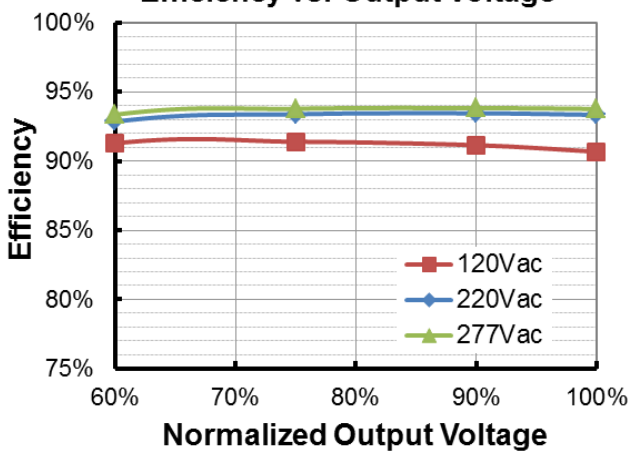


Inrush Current Waveform

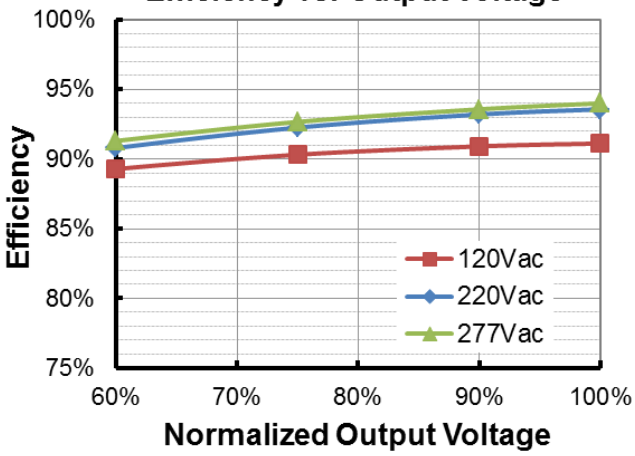


Efficiency vs. Load

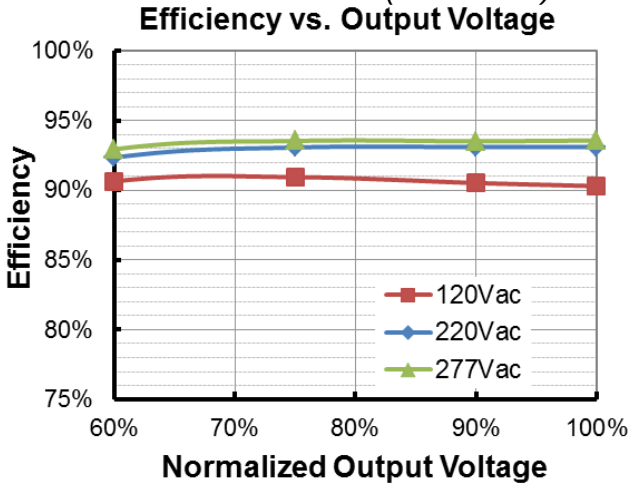
EUM-200S105DG(Io=700mA)



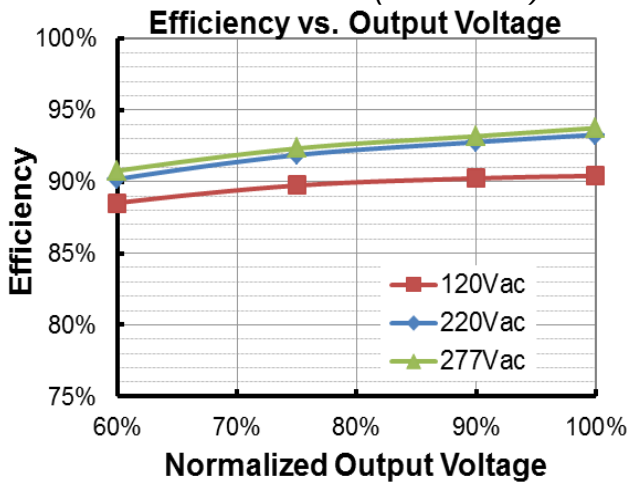
EUM-200S105DG(Io=1050mA)



EUM-200S150DG(Io=1050mA)



EUM-200S150DG(Io=1500mA)



Specifications are subject to changes without notice.

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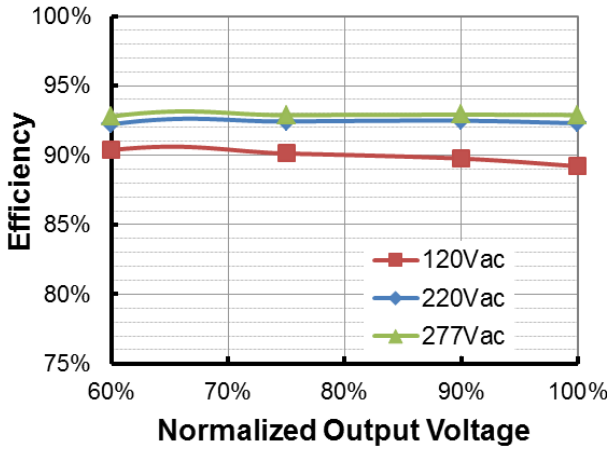
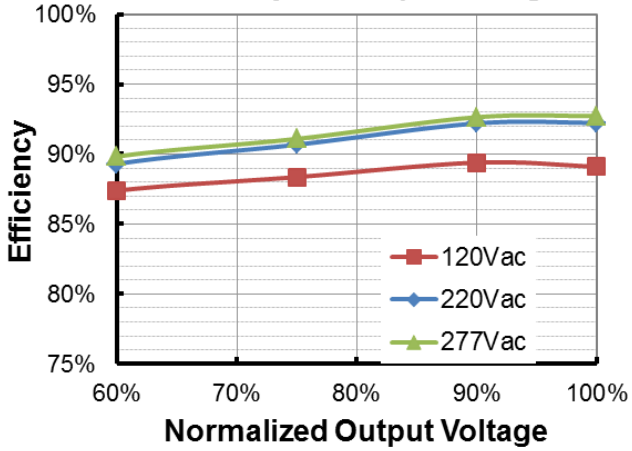
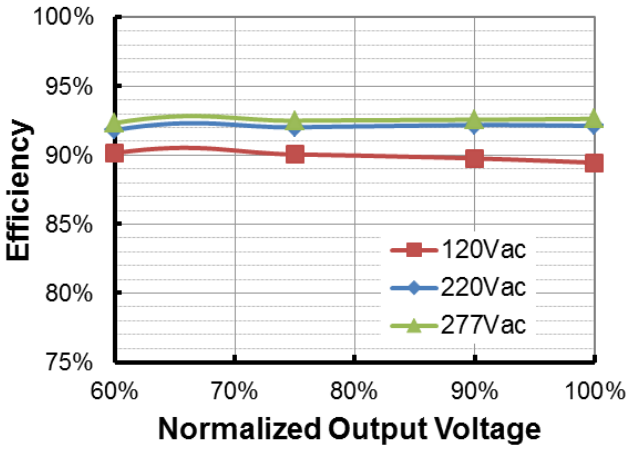
EUM-200S280DG(Io=1800mA)



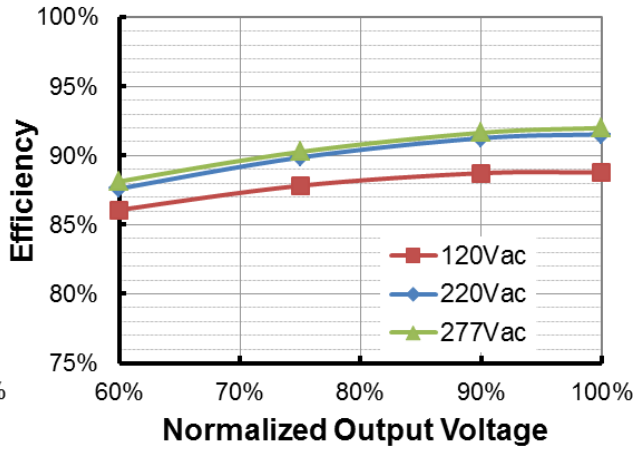
EUM-200S280DG(Io=2800mA)



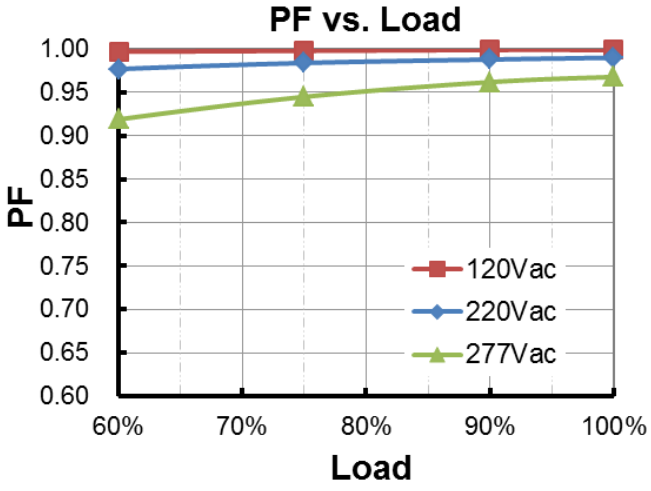
EUM-200S560DG(Io=3500mA)



EUM-200S560DG(Io=5600mA)



Power Factor



Specifications are subject to changes without notice.

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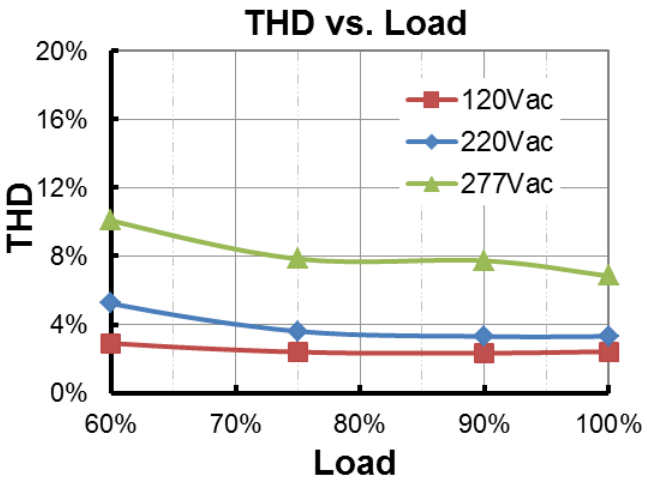
Total Harmonic Distortion



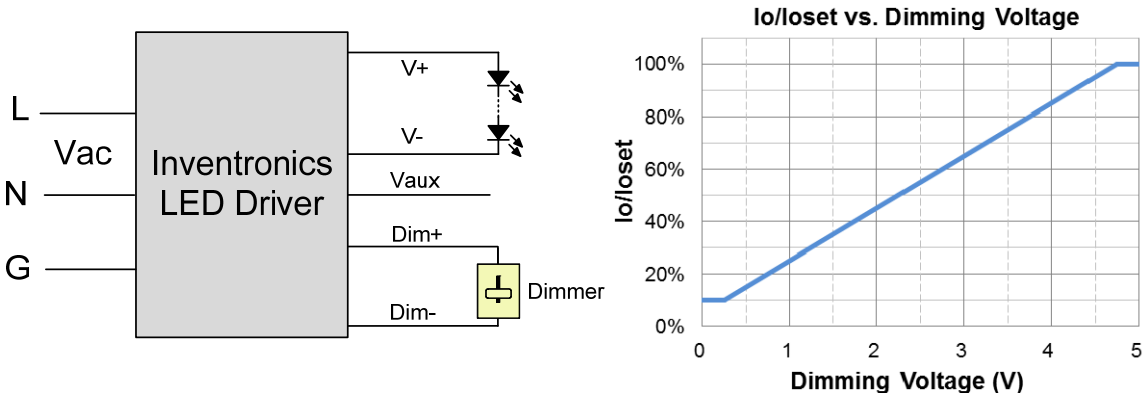
Protection Functions

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

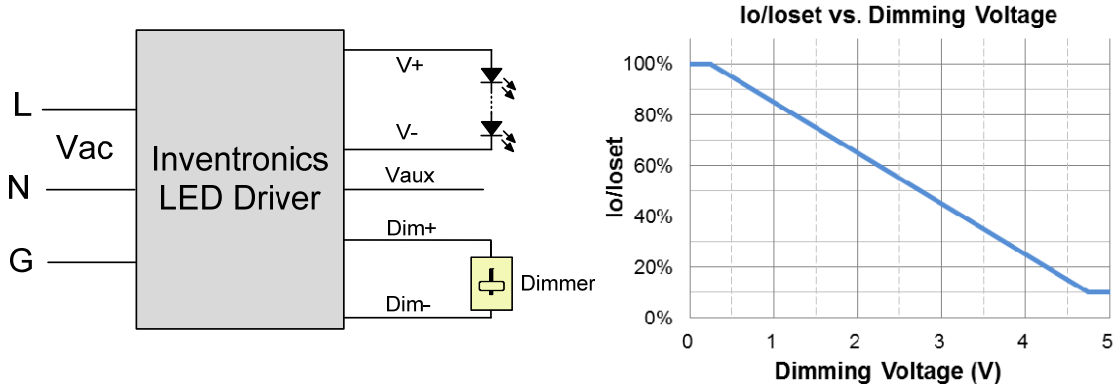
- **1-5V Dimming**

The recommended implementation of the dimming control is provided below.



Implementation 1: Positive logic

Specifications are subject to changes without notice.



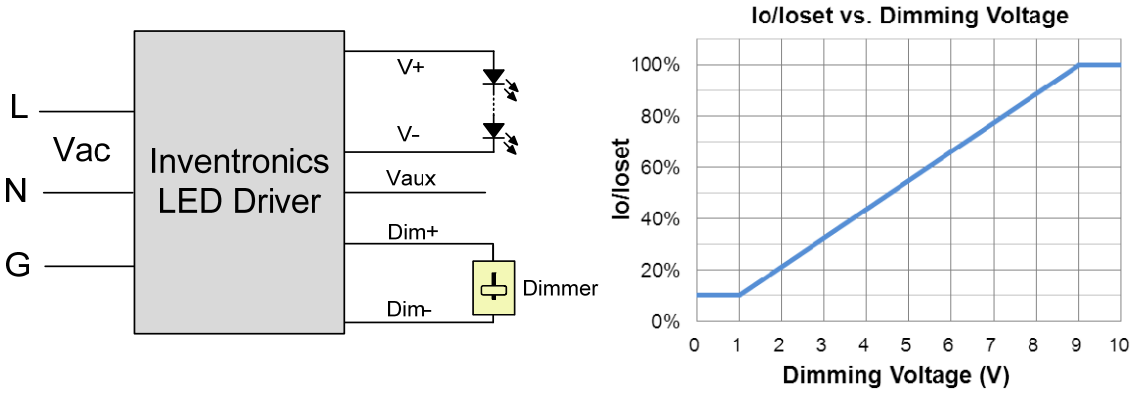
Implementation 2: Negative logic

Notes:

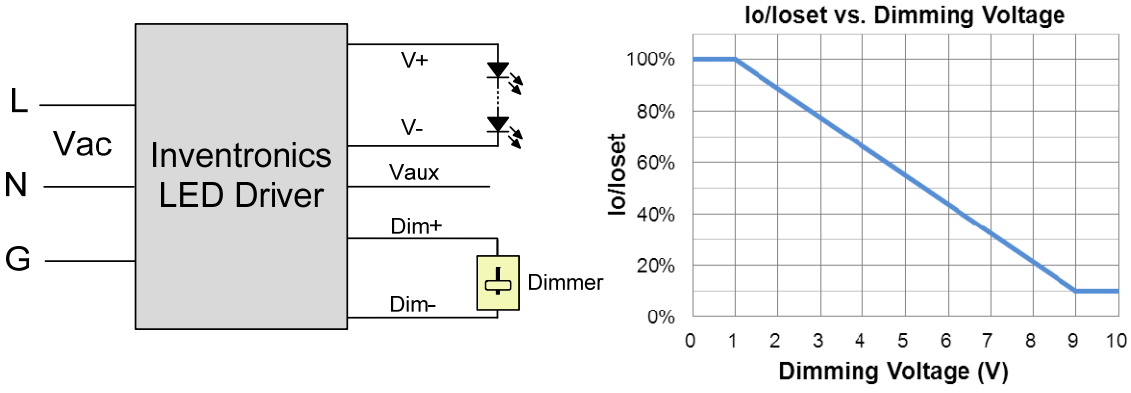
1. The dimmer can also be replaced by an active 1-5V voltage source signal or passive components like resistors and zener.
2. If 1-5V dimming is not used, Dim + should be open.
3. When 1-5V negative logic dimming mode and Dim+ is open, the driver will output maximum current.

- **1-10V Dimming**

The recommended implementation of the dimming control is provided below.



Implementation 3: Positive logic



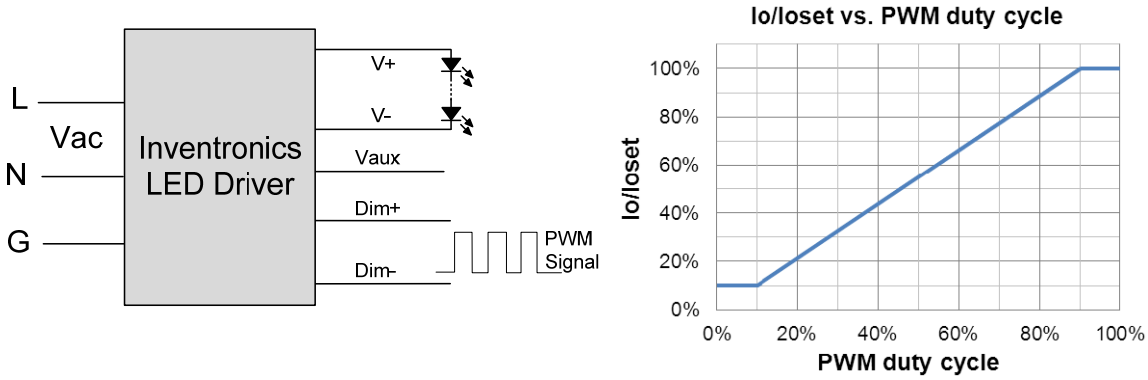
Implementation 4: Negative logic

Notes:

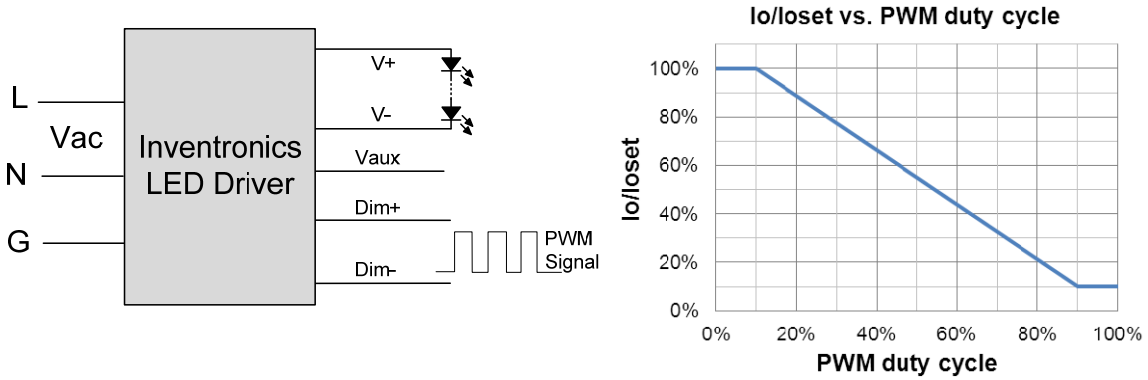
1. The dimmer can also be replaced by an active 1-10V voltage source signal or passive components like resistors and zener.
2. If 1-10V dimming is not used, Dim + should be open.
3. When 1-10V negative logic dimming mode and Dim+ is open, the driver will output minimum current.

● 10V PWM Dimming

The recommended implementation of the dimming control is provided below.



Implementation 5: Positive logic



Implementation 6: Negative logic

Notes:

1. If PWM dimming is not used, Dim + should be open.
2. When PWM negative logic dimming mode and Dim+ is open, the driver will output minimum current.

● Time Dimming

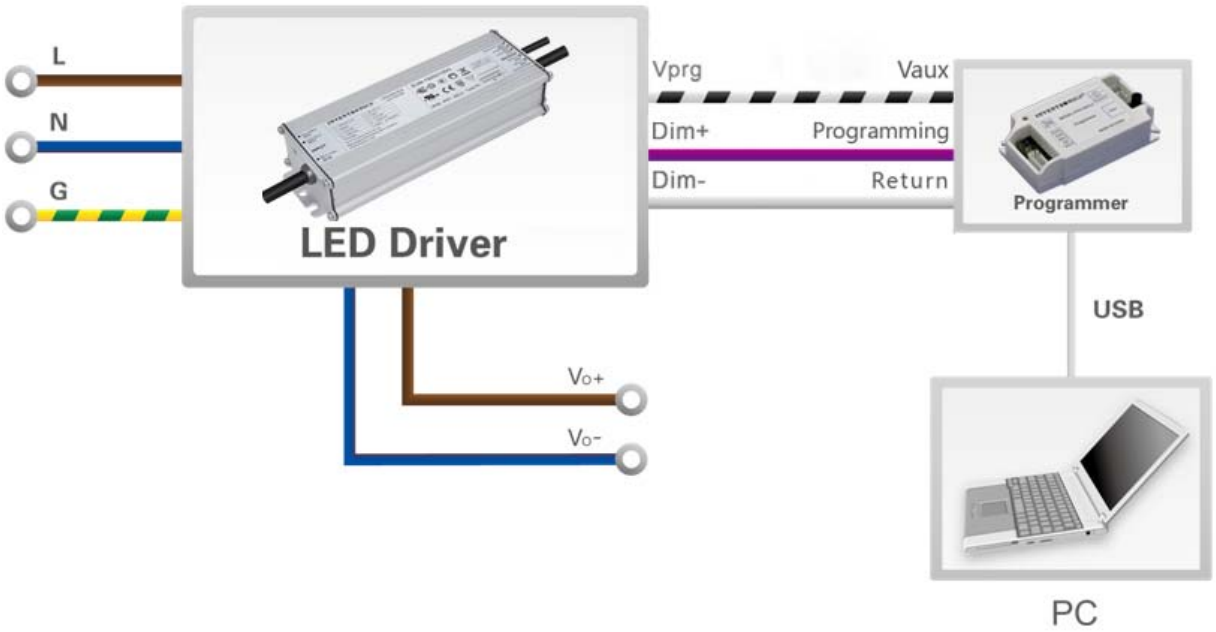
Time dimming control includes 3 kinds of modes, they are Self Adapting-Midnight, Self Adapting-Percentage and Traditional Timer.

- **Self Adapting-Midnight**: Automatically adjusts the dimming curve based on the on-time of past two days (if difference <15 minutes), assuming that the center point of the dimming curve is midnight local time.
- **Self Adapting-Percentage**: Automatically adjusts the on-time of each step by a constant percentage = (actual on-time for the past 2 days if difference <15 min) / (programmed on-time from the dimming curve).
- **Traditional Timer**: Follows the programmed timing curve after power on with no changes.

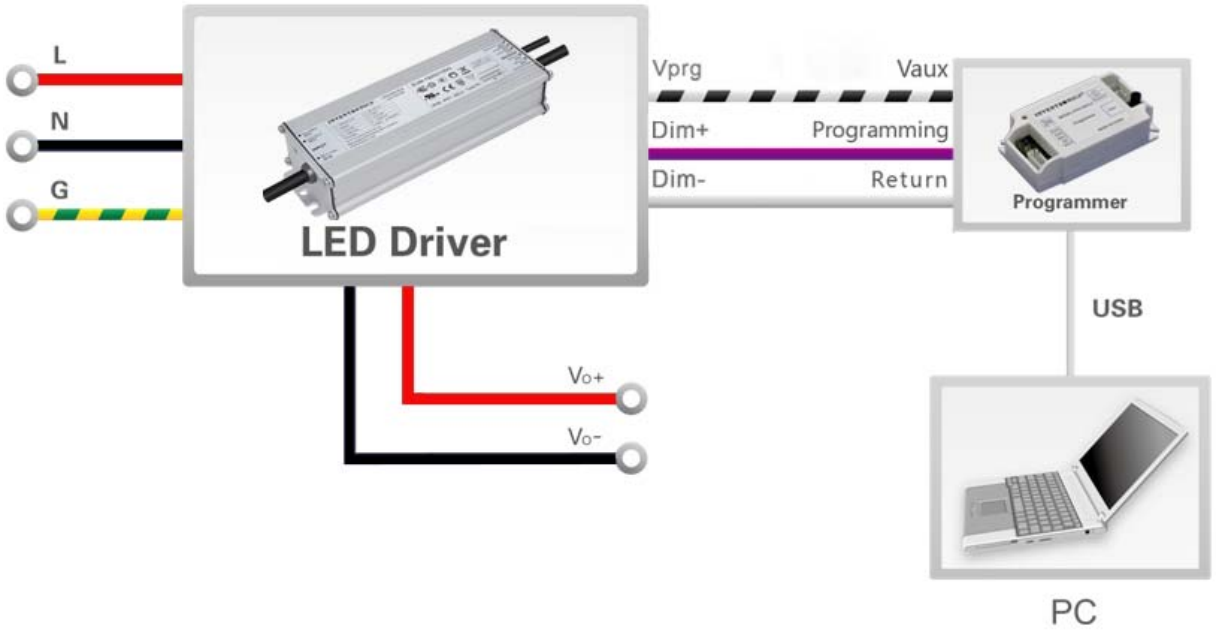
- **Output Lumen Compensation**
  Output Lumen Compensation (OLC) may be used to maintain constant light output over the life of the LEDs by driving them at a reduced current when new, then gradually increasing the drive current over time to counteract LED lumen degradation.

Programming Connection Diagram

EUM-200SxxxDG



EUM-200SxxxDB

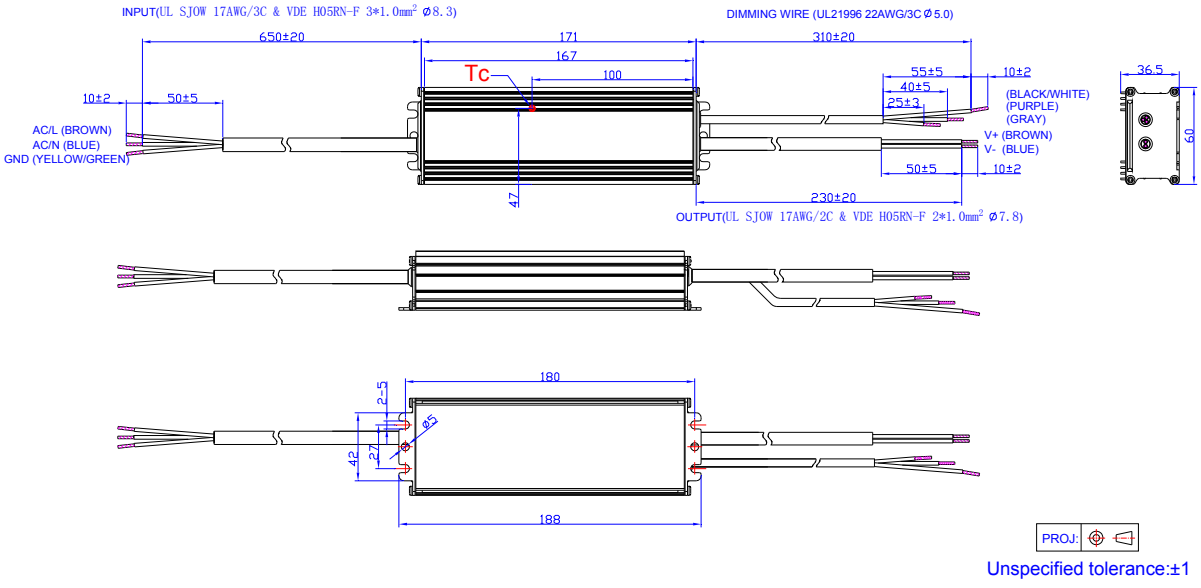


Note: The driver does not need to be powered on during the programming process.

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

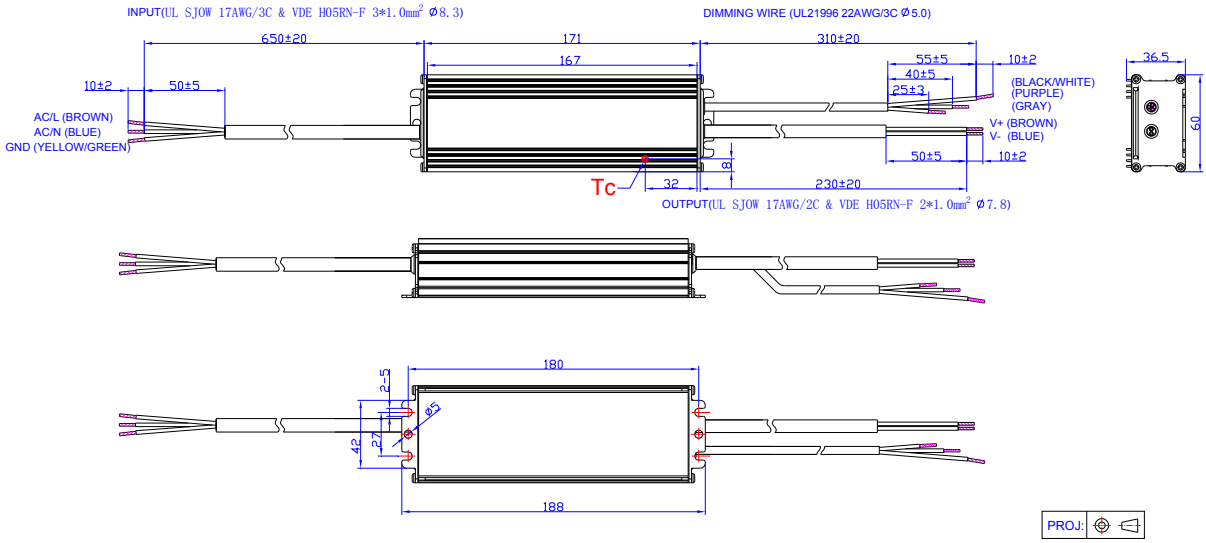
Mechanical Outline

EUM-200S105DG/ EUM-200S150DG



Unspecified tolerance:±1

EUM-200S280DG/ EUM-200S560DG



Unspecified tolerance:±1

Specifications are subject to changes without notice.

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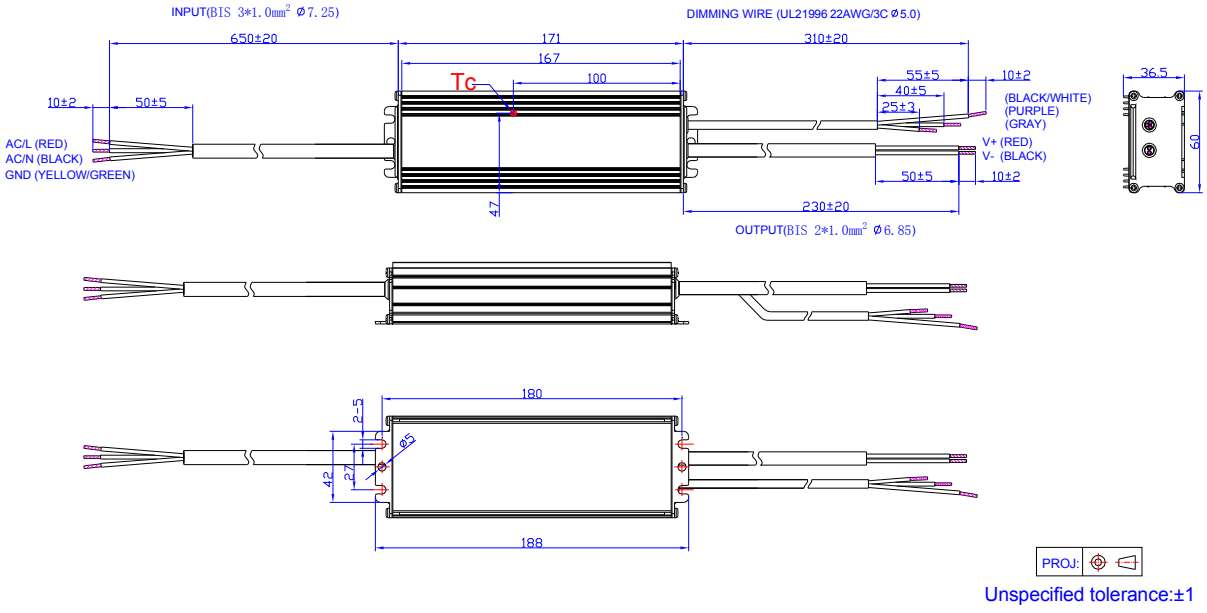
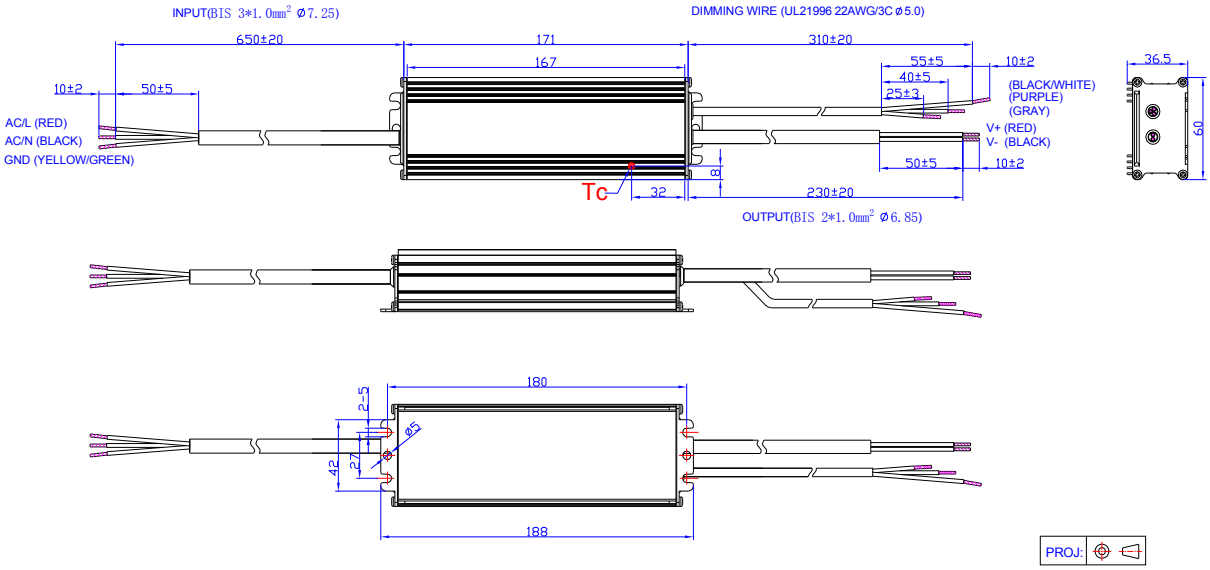
EUM-200S105DB/ EUM-200S150DB



Unspecified tolerance:±1

EUM-200S280DB/ EUM-200S560DB



Unspecified tolerance:±1

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
2019-08-08	A	Datasheets Release	/	/
2019-09-05	B	Features	/	Updated
		Dimming Specifications(Notes)	/	Updated
		Programming Connection Diagram	EUM-200SxxxDB	Added
		Mechanical Outline	EUM-200S105DB/ EUM-200S150DB EUM-200S280DB/ EUM-200S560DB	Added
2019-10-31	C	EAC Logo	/	Added
		Models	Notes(6)	Added
		Safety &EMC Compliance	EAC	Added