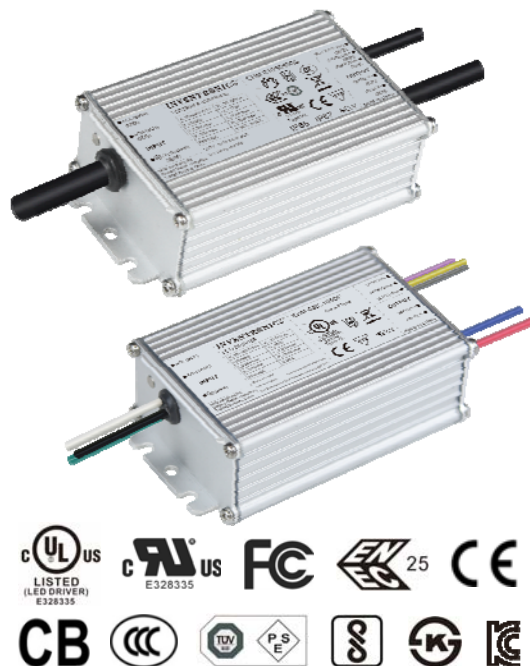


## Features

- 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 4kV, CM 6kV
- All-Around Protection: OVP, SCP, OTP
- IP66 / IP67 and UL Dry / Damp / Wet Location  
Only IP66 and UL Dry / Damp Location (DF models)
- Class 2 & SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location
- Suitable for Luminaires with Protection Class I
- 5 Years Warranty



## Description

The *EUM-030SxxxDx* series is a 30W, constant-current, programmable and IP66/IP67 rated LED driver that operates from 90-305Vac input with excellent power factor. It is created for many lighting applications including low bay, tunnel and street, 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)	Typical Power Factor		Model Number (6)
							120Vac	220Vac	
30-500mA	300-500mA	350 mA	90~305 Vac/ 127~300 Vdc	30~100 Vdc	30W	88.0%	0.99	0.96	EUM-030S050Dx <sup>(4)</sup>
55-1050mA	550-1050mA	700 mA	90~305 Vac/ 127~300 Vdc	17~54 Vdc	30W	87.0%	0.99	0.96	EUM-030S105Dx <sup>(5)</sup>

**Notes:** (1) Output current range with constant power at 30W

(2) Certified input voltage range: UL, FCC 100-277Vac; otherwise 100-240Vac.

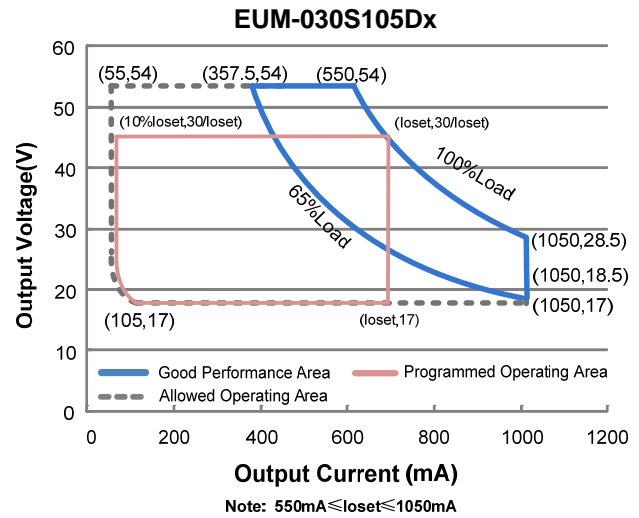
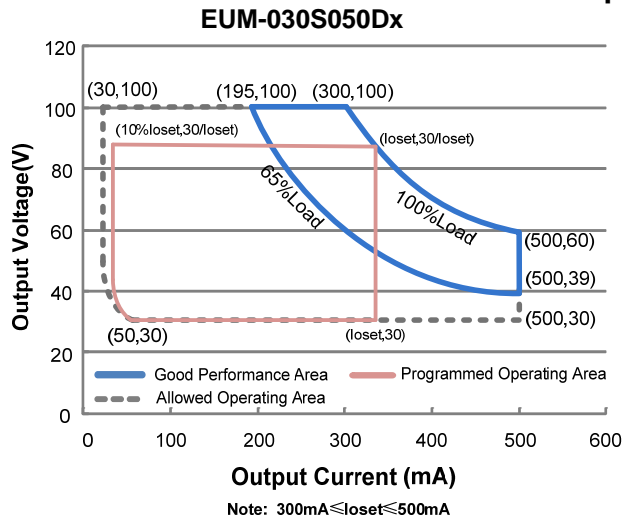
(3) Measured at 100% load and 220Vac input (see below "General Specifications" for details).

(4) SELV output.

(5) Class 2 & SELV output.

(6) x = G are UL Recognized, ENEC and CCC, etc. models; x = T are UL Class P models; x = B are BIS models; x = F are UL Class P models with flying leads. See drawings for cable information.

## I-V Operation Area



## Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input AC Voltage	90 Vac	-	305 Vac	
Input DC Voltage	127 Vdc	-	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	-	-	0.33 A	Measured at 100% load and 120 Vac input.
	-	-	0.18 A	Measured at 100% load and 220 Vac input.
Inrush Current( $I^2t$ )	-	-	0.46 A <sup>2</sup> s	At 220Vac input, 25°C cold start, duration=280 $\mu$ s, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.9	-	-	At 100-277Vac, 50-60Hz, 65%-100% load (19.5-30W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 60%-100% load (18-30W)

## Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%loset	-	5%loset	At 100% load condition
Output Current Setting(loset) Range				
EUM-030S050Dx	30 mA	-	500 mA	
EUM-030S105Dx	55 mA	-	1050 mA	
Output Current Setting Range with Constant Power				
EUM-030S050Dx	300 mA	-	500 mA	
EUM-030S105Dx	550 mA	-	1050 mA	

## Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Total Output Current Ripple (pk-pk)	-	5%I <sub>omax</sub>	10%I <sub>omax</sub>	At 100% load condition. 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%I <sub>omax</sub>	-	At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%I <sub>omax</sub>	At 100% load condition
No Load Output Voltage				
EUM-030S050Dx	-	-	120 V	
EUM-030S105Dx	-	-	60V	
Line Regulation	-	-	±1%	Measured at 100% load
Load Regulation	-	-	±5%	
Turn-on Delay Time	-	-	0.5 s	Measured at 120-277Vac input, 60%-100% load
Temperature Coefficient of I <sub>o</sub> set	-	0.06%/°C	-	Case temperature = 0°C ~T <sub>c</sub> max

## General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input:				
EUM-030S050Dx				
I <sub>o</sub> = 300 mA	83.0%	85.0%	-	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 <sub>o</sub> = 500 mA	84.5%	86.5%	-	
EUM-030S105Dx				
I <sub>o</sub> = 550 mA	82.5%	84.5%	-	
I <sub>o</sub> = 1050 mA	83.5%	85.5%	-	
Efficiency at 220 Vac input:				
EUM-030S050Dx				
I <sub>o</sub> = 300 mA	84.5%	86.5%	-	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
I <sub>o</sub> = 500 mA	86.0%	88.0%	-	
EUM-030S105Dx				
I <sub>o</sub> = 550 mA	84.0%	86.0%	-	
I <sub>o</sub> = 1050 mA	85.0%	87.0%	-	
Efficiency at 277 Vac input:				
EUM-030S050Dx				
I <sub>o</sub> = 300 mA	84.5%	86.5%	-	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
I <sub>o</sub> = 500 mA	86.0%	88.0%	-	
EUM-030S105Dx				
I <sub>o</sub> = 550 mA	84.0%	86.0%	-	
I <sub>o</sub> = 1050 mA	85.0%	87.0%	-	
MTBF	-	725,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	120,000 Hours	-	Measured at 220Vac input, 80%Load and 70°C case temperature; See lifetime vs. T <sub>c</sub> curve for the details
Operating Case Temperature for Safety T <sub>c_s</sub>	-40°C	-	+90°C	
Operating Case Temperature for Warranty T <sub>c_w</sub>	-40°C	-	+80°C	Case temperature for 5 years warrant Humidity: 10% RH to 95% RH;
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 95%RH

## General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Dimensions Inches (L × W × H) Millimeters (L × W × H)	3.75 × 2.52 × 1.44 95 × 64 × 36.5			With mounting ear 4.41 × 2.52 × 1.44 112 × 64 × 36.5
Net Weight	-	490 g	-	

## 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	EUM-030S050Dx EUM-030S105Dx	10%loset	-	loset	300 mA ≤ loset ≤ 500 mA 550 mA ≤ loset ≤ 1050 mA
	EUM-030S050Dx EUM-030S105Dx	30 mA 55 mA	-	loset	30 mA ≤ loset < 300 mA 55 mA ≤ loset < 550 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

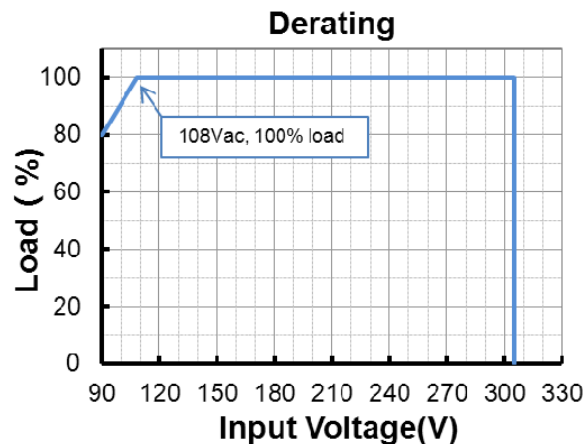
Safety Category	Standard
UL/CUL	UL8750, UL 1310, CAN/CSA-C22.2 No. 250.13, CAN/CSA-C22.2 No. 223-M91
ENEC & CE	EN 61347-1, EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
CCC	GB 19510.1, GB 19510.14
PSE	J 61347-1, J 61347-2-13
KS	KS C 7655
BIS	IS 15885(Part2/Sec13)
EMI Standards	Notes
EN 55015/GB 17743/KN 15 <sup>(1)</sup>	Conducted emission Test & Radiated emission Test
EN 61000-3-2/GB 17625.1	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker

## Safety & EMC Compliance (Continued)

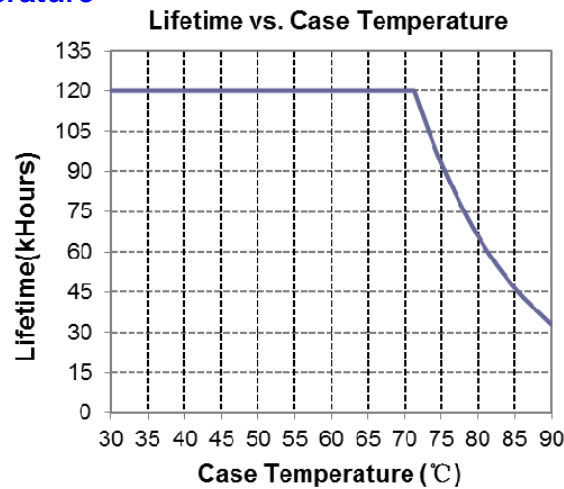
EMI Standards	Notes
FCC Part 15 <sup>(1)</sup>	ANSI C63.4 Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference 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: Differential Mode 4 kV, Common Mode 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.

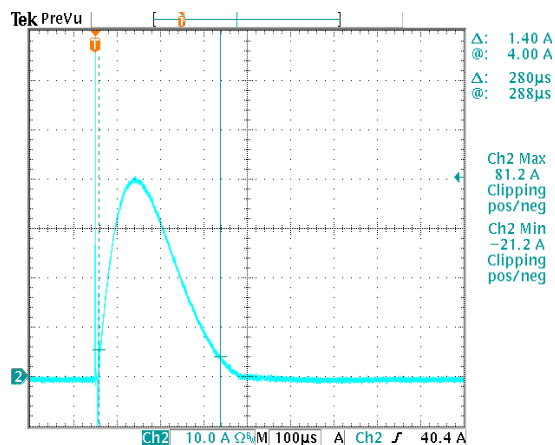
## Derating



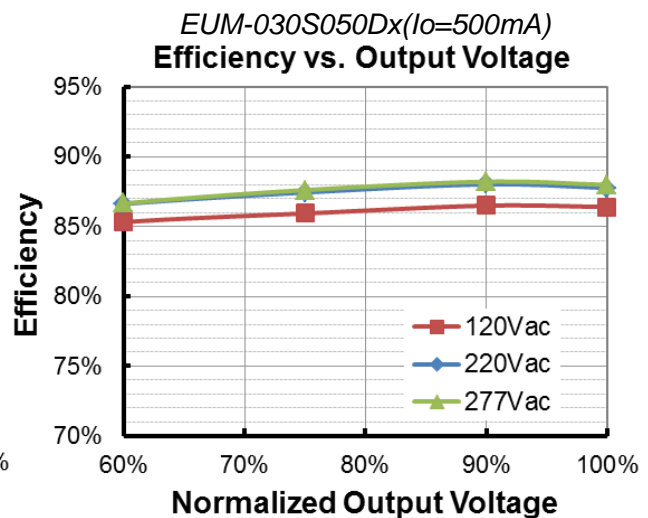
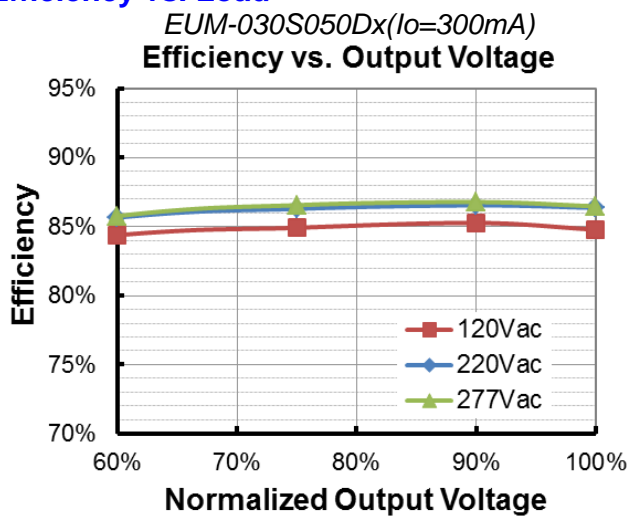
## Lifetime vs. Case Temperature

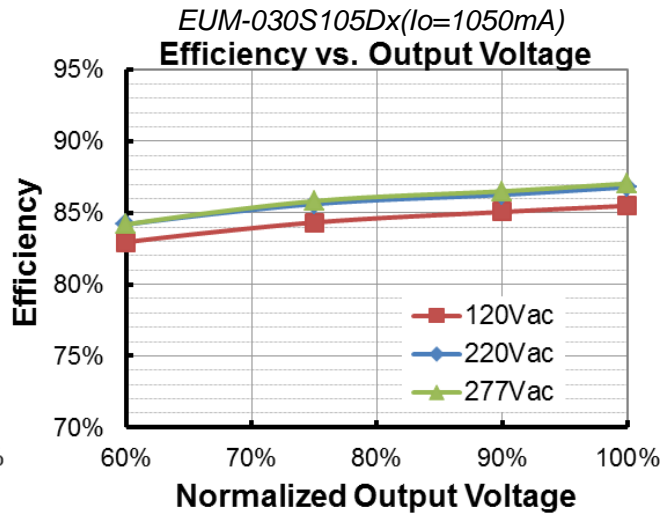
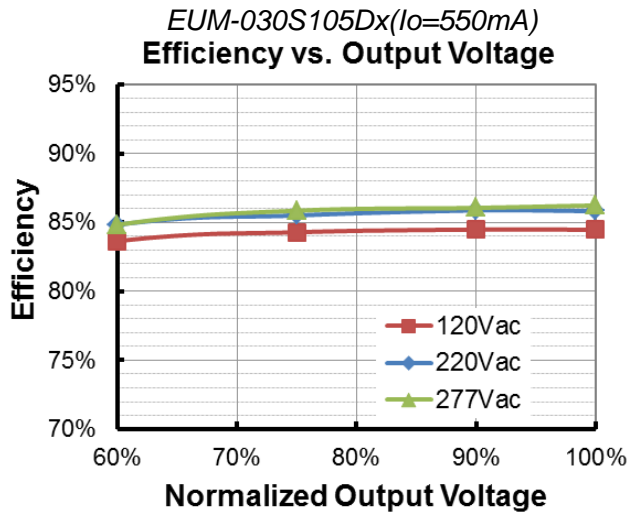


## Inrush Current Waveform

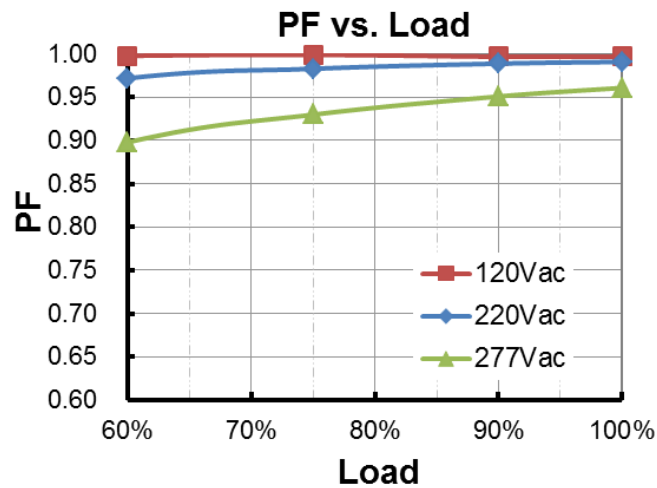


## Efficiency vs. Load

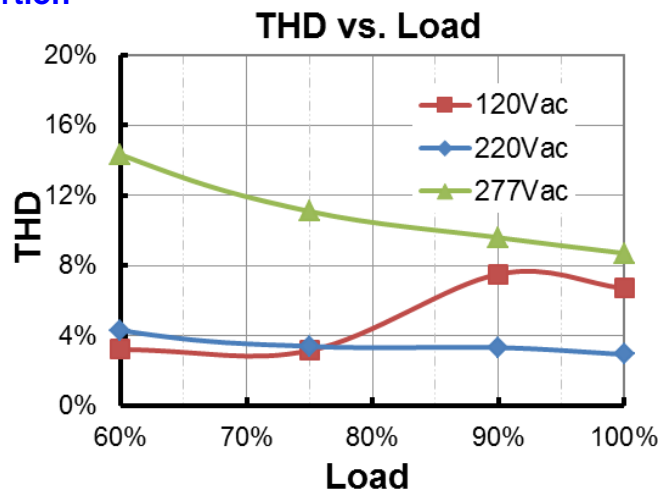




## Power Factor



## Total Harmonic Distortion





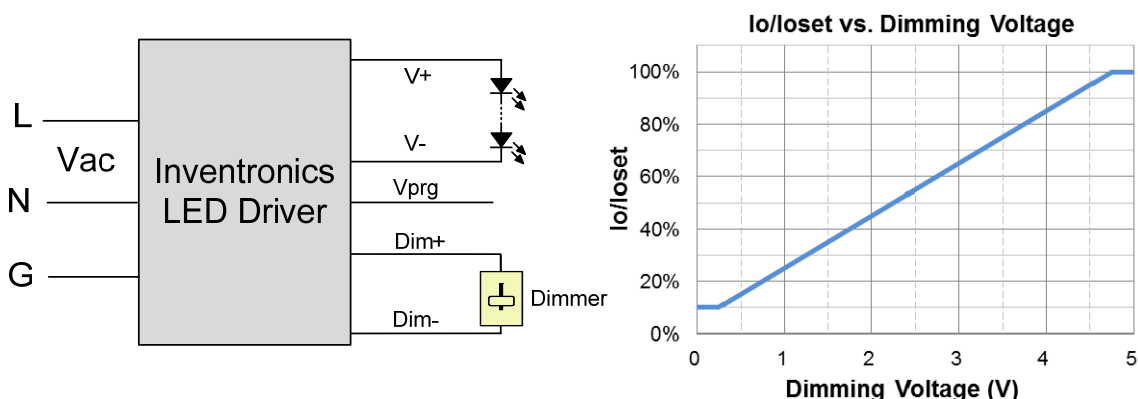
## Protection Functions

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.

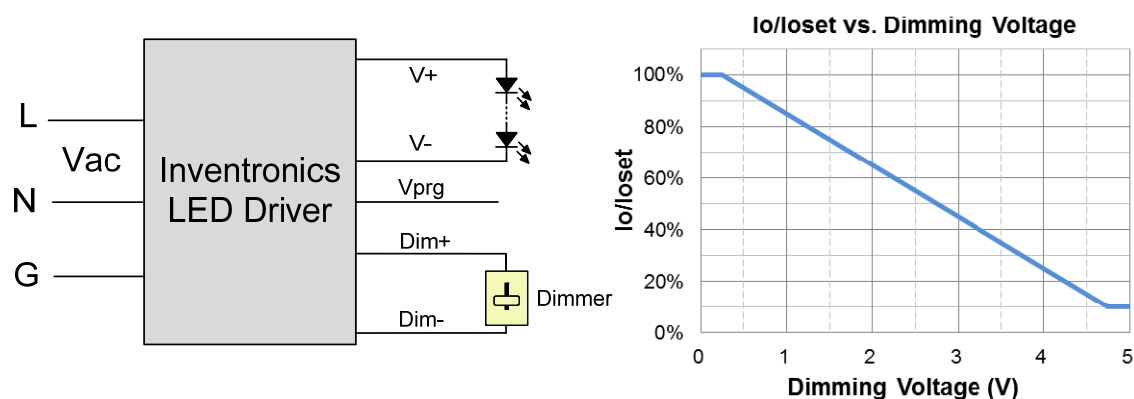
## Dimming

### ● 1-5V Dimming

The recommended implementation of the dimming control is provided below.



Implementation 1: Positive logic



Implementation 2: Negative logic

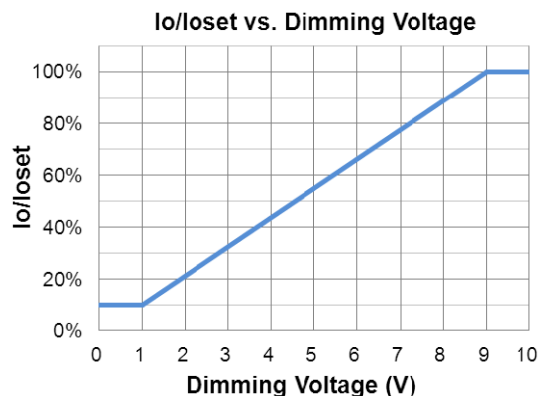
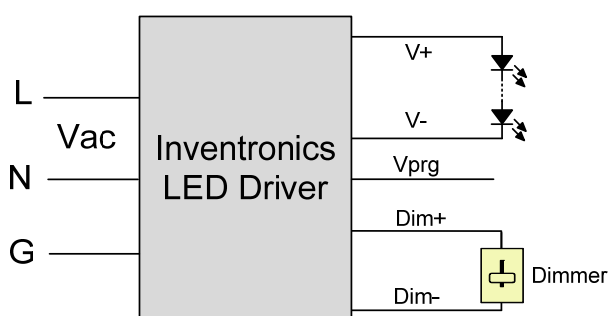
### Notes:

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

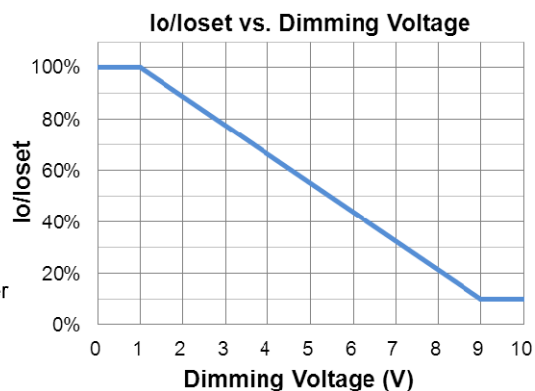
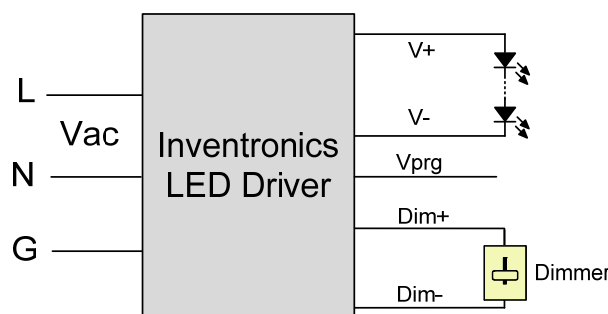
### ● 1-10V Dimming

The recommended implementation of the dimming control is provided below.





**Implementation 3: Positive logic**



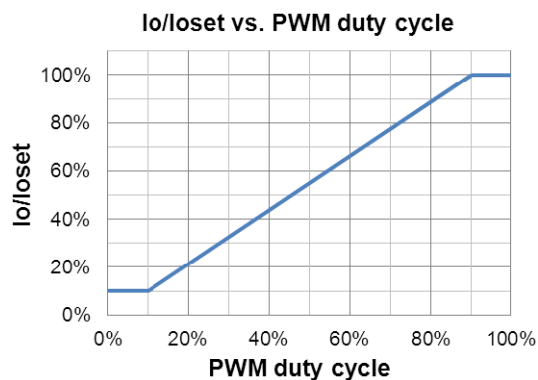
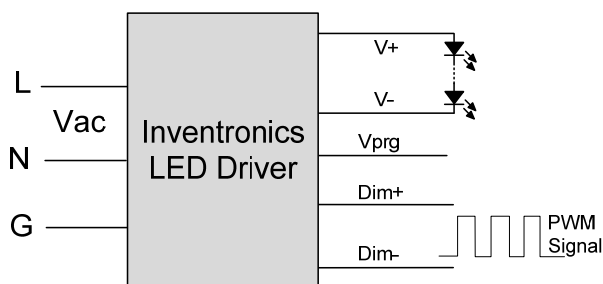
**Implementation 4: Negative logic**

**Notes:**

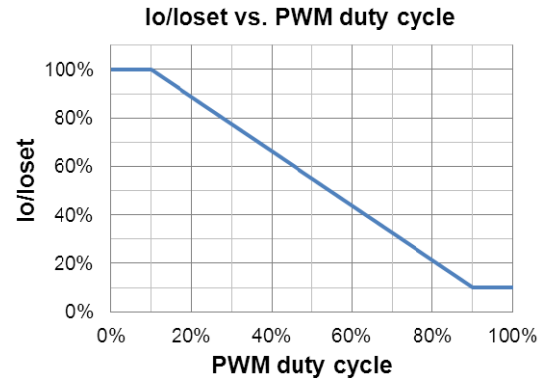
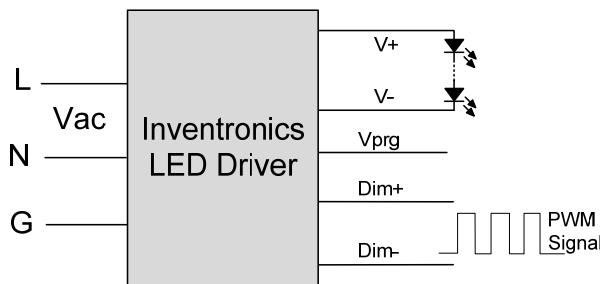
1. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
2. The dimmer can also be replaced by an active 1-10V voltage source signal or passive components like zener.
3. When 1-10V negative logic dimming mode and Dim+ is open, the driver will output minimum current.

● **10V PWM Dimming**

The recommended implementation of the dimming control is provided below.



**Implementation 5: Positive logic**



## Implementation 6: Negative logic

### Notes:

1. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
2. When 10V 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.

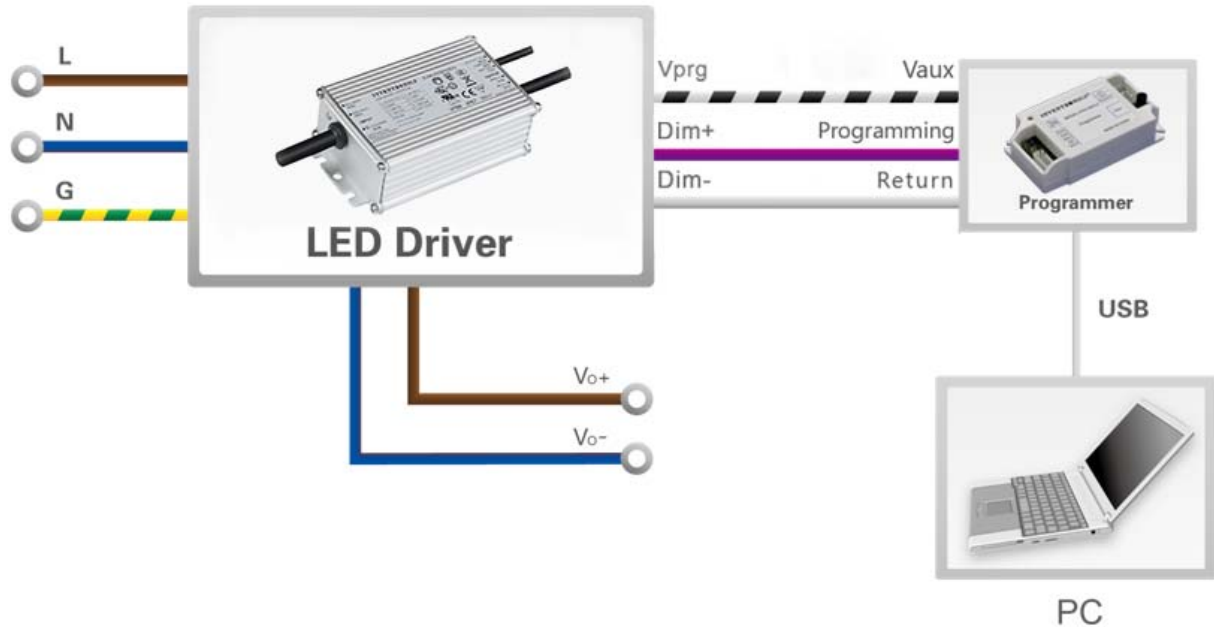
- **Self Adapting-Midnight:** Automatically adjusts the dimming curve based on the on-time of past two days (if difference <15 minutes), assuming that the center point of the dimming curve is midnight local time.
- **Self Adapting-Percentage:** Automatically adjusts the on-time of each step by a constant 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

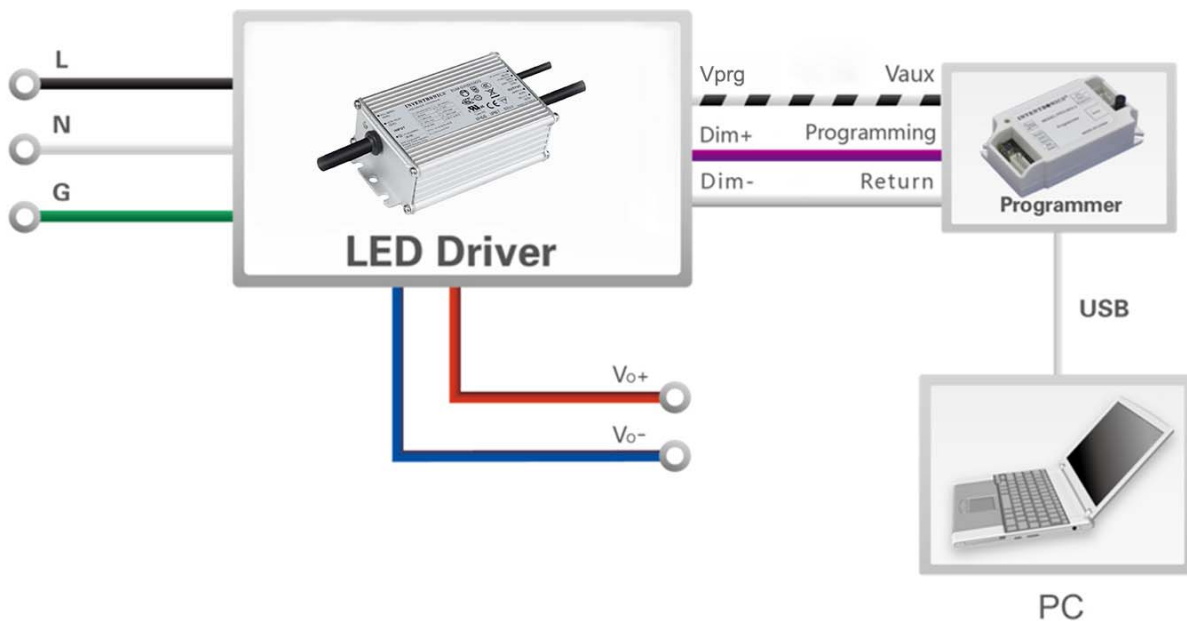
Output Lumen Compensation (OLC) may be used to maintain constant light output over the life of the LEDs by driving them at a reduced current when new, then gradually increasing the drive current over time to counteract LED lumen degradation.

## Programming Connection Diagram

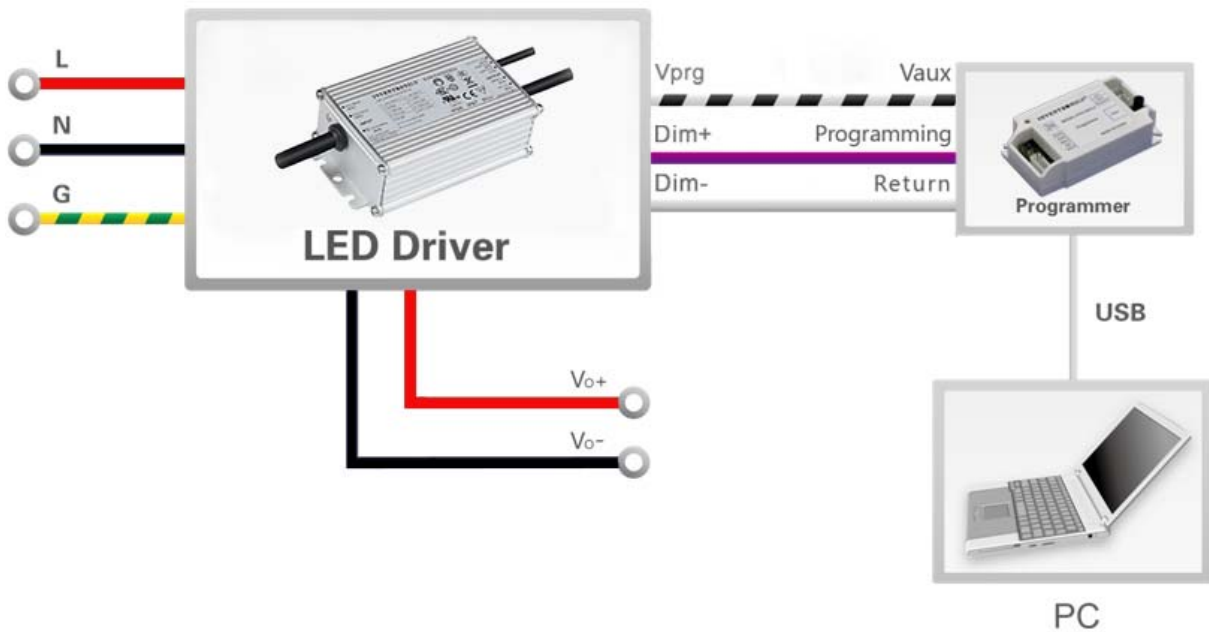
*EUM-030SxxxDG*



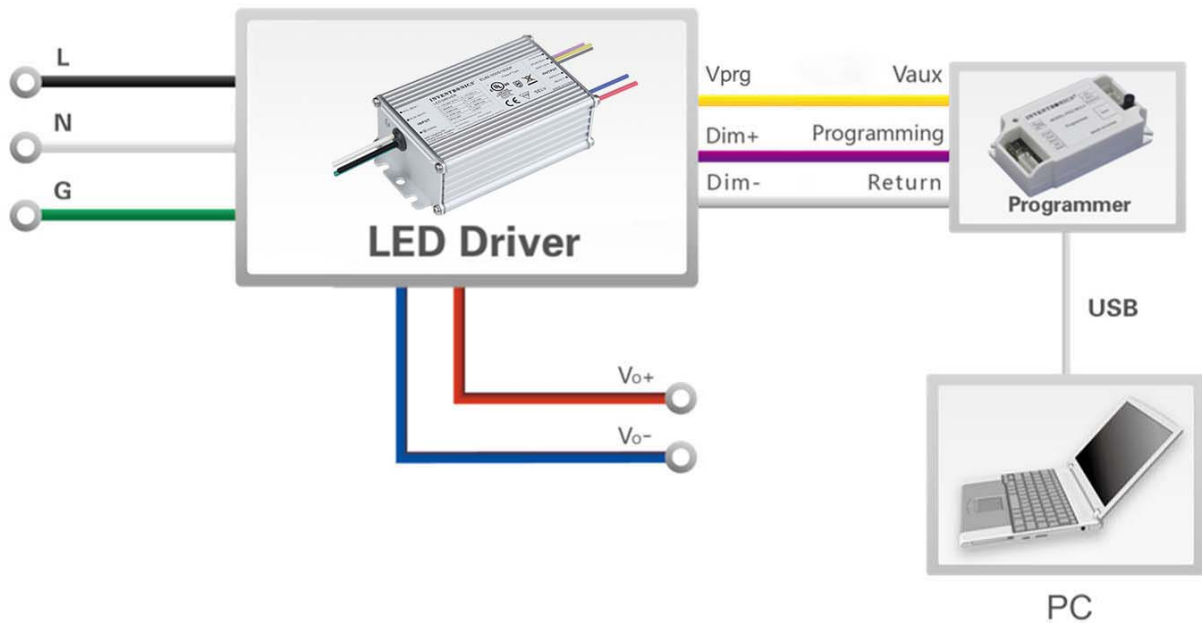
*EUM-030SxxxDT*



## EUM-030SxxxDB



## EUM-030SxxxDF

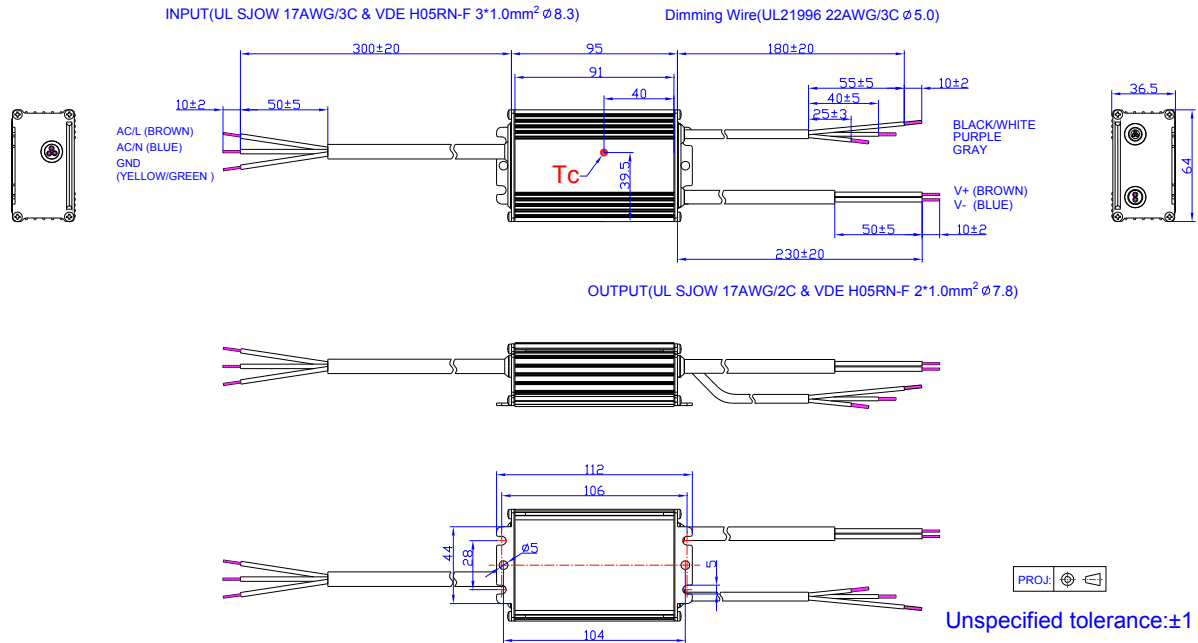


**Note:** The driver does not need to be powered on during the programming process.

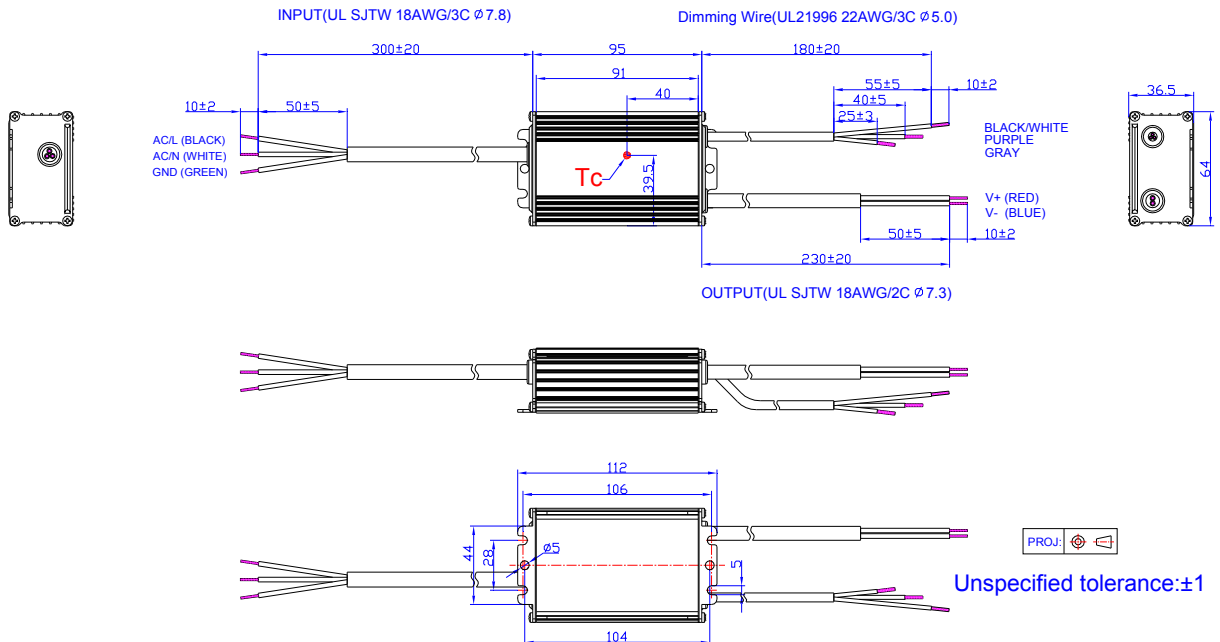
- Please refer to [PRG-MUL2](#) (Programmer) datasheet for details.

## Mechanical Outline

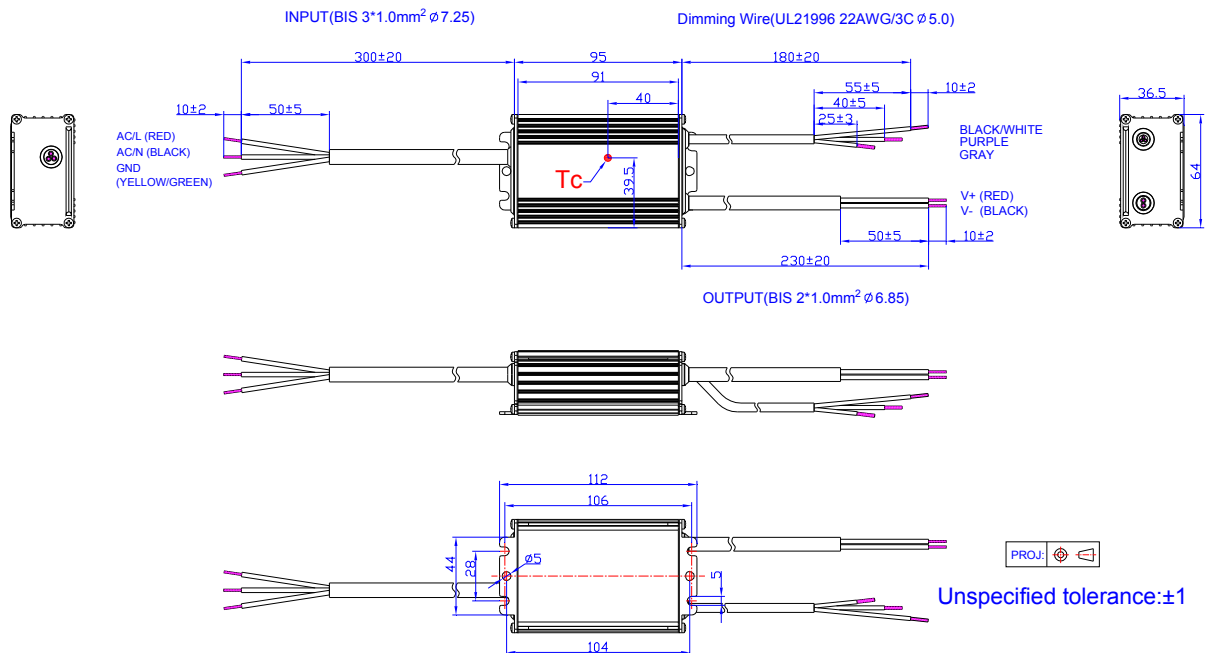
### EUM-030SxxxDG



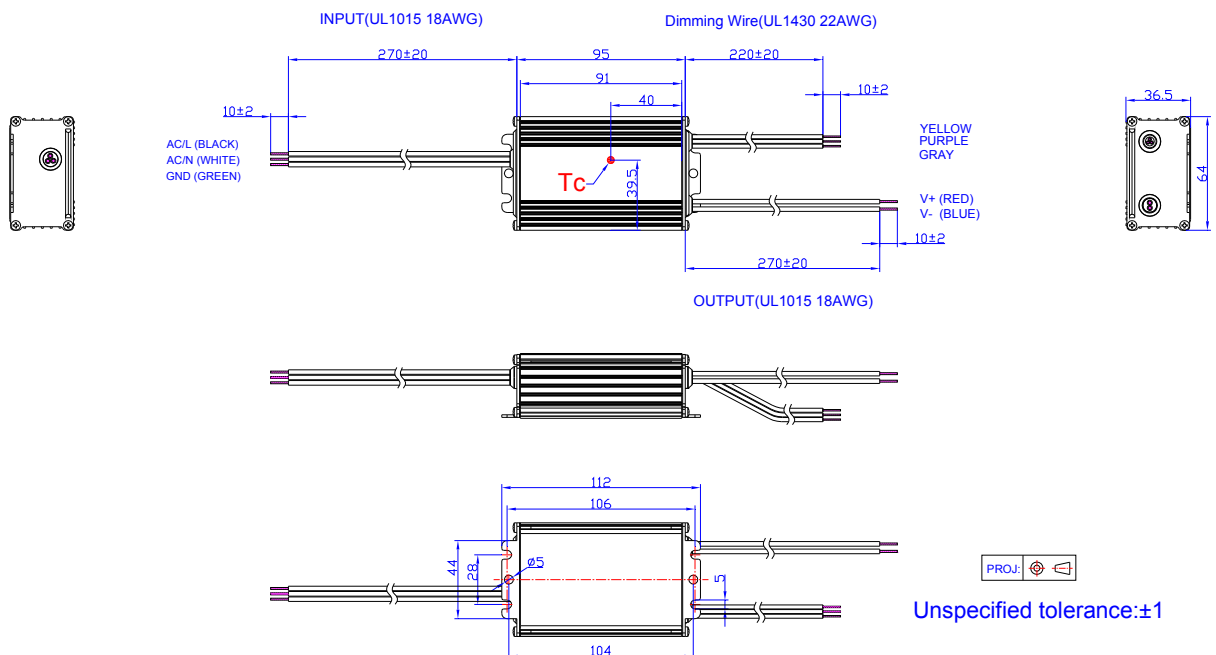
### EUM-030SxxxDT



## EUM-030SxxxDB



## EUM-030SxxxDF



## 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
2021-03-12	A	Datasheets Release	/	/