

# PRODUCT SPECIFICATION

Product Model: 150 Watt —PYG150W

Version Number: V3.0

Created	Validated	Approved
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Version	Description of change	Date
V2.0	1.Add the derating curve diagram. 2.Add PYG150W-214-C1000 operation window curve. 3. Uout max updated.	2023-05-23
V2.0	1. Efficiency @120V updated.	2023-07-27
V3.0	1.Safety Compliance.	2023-08-25

# 150 Watt — PYG150W Series Rev A V3.0

Flicker-Free

CONSTANT CURRENT & CONSTANT VOLTAGE LED DRIVER WITH 0-10V or PWM DIMMING

PYG Series Driver is a high-performance LED driver that provides smooth, continuous <10% dimming for virtually any LED fixture, whether it requires constant current or constant voltage. It is the most versatile LED driver offered today due to its compatibility with a wide variety of LED arrays, multiple form factors, and numerous control options.

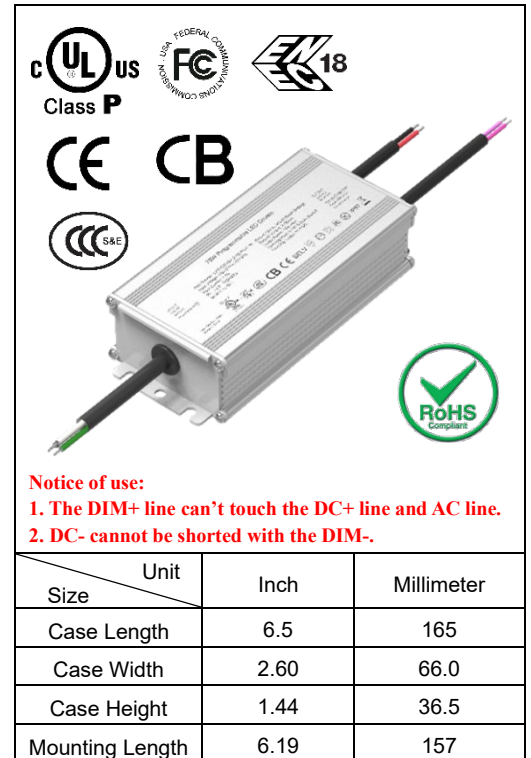
LED codes configure dimming curve, LED current and more. Programmable solution that offer ultimate design flexibility. GUI interface for programmable output current using. The driver has PC programmable function, it's designed to give OEMs ultimate flexibility. With wide operating windows and programmable function, the drivers make it easy for luminaire manufacturers to design luminaires of different sizes and lumen levels for outdoor applications.

## Key Features

- Drive Mode: Constant Current, Constant Voltage, Dimming
- Technology: Active PFC Corrected 2-Stage Switch Mode.
  
- Input Voltage: 100 to 277Vac (UL). 100 to 240 Vac (ENEC).
- Output Power: 150 Watt Max.
- Dimming: Smooth & Continuous Dimming from 10% to 100%.  
LEDs turn on to any dimmed level without going to full brightness.  
Constant Current Reduction (CCR) dimming methods.  
0-10V: 2-wire Analog / PWM Control Dimming.
- Output 1: 28 to 56Vdc / 700 to 4200mA (Set by PC programmer).
- Output 2: 56 to 107Vdc / 500 to 2100mA (Set by PC programmer).
- Output 3: 107 to 214Vdc / 350 to 1000mA (Set by PC programmer).
- Efficiency: Up to 92%.
- Warranty: 5 years.

## Special Features

- Continuous, dimming from 10% to 100%. Set maximum output current, Set minimum dim.
- The programming cable and the dimming cable are combined to simplify the user's operation.
- Three time controlled dimming modes.
- Safety isolation between primary and secondary. Dimming control is isolated from AC input and DC output.
- A rated lifetime of 50,000 hours @ Tc = 80°C.
- Safety: UL8750, UL1310 Class 2, CSA22.2, EN61347, GB19510.
- EMC: FCC 47CFR Part 15, Class B @120V & Class A @277V, EN55015, GB17625.
- Inrush Current Limiting Circuitry: AC Power Line: line to line 6KV, line to earth 10KV. eliminates circuit breaker tripping, switch arcing and relay failure.
- Metal shell, Used with silicone potting. Meet the RoHS directive.
- IP67, NEMA4 compliant for Dry, Damp, Wet Locations. Type HL.



## 150W 0-10V & PWM Dimming Part List

No.	Part Number	US & CN Class 2	Output Voltage Range (Vdc)	Programable Current Range (mA)	Programmable Current Range at Full Power Output (mA)	Output Power max (W)	Efficiency% @ Max Load				Uout max (V)
							Vout(V)	@120V	@230	@277	
1	PYG150W-56-C4200-RP-P-W	No	28~56	700 - 4200	2680 - 4200	150	36	88	90.8	91	59
2	PYG150W-107-C2100-RP-P-W	No	56~107	500 - 2100	1330 - 2100	150	72	89	90.8	91	115
3	PYG150W-214-C1000-RP-P-W	No	107~214	350 - 1000	700 - 1000	150	150	89.3	90.8	91	230
4	PYG150W-56-C4200-RP-P	No	28~56	700 - 4200	2680 - 4200	150	36	88	90.8	91	59
5	PYG150W-107-C2100-RP-P	No	56~107	500 - 2100	1330 - 2100	150	72	89	90.8	91	115
6	PYG150W-214-C1000-RP-P	No	107~214	350 - 1000	700 - 1000	150	150	89.3	90.8	91	230

### Note:

- ◆ Maximum efficiency measured at 230VAC input.
- ◆ Product may be suffixed by "-P", which means suitable for UL listed & class P models, without suffix "-P" are suitable UL component use only.
- ◆ Product may be suffixed by "-W", which means suitable for EU or UL wet location use models, without suffix "-W" are suitable dry/damp location use only.

## Input Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Input Voltage	90Vac	---	305Vac	
Input Frequency	47Hz	50/60Hz	63Hz	
Input AC Current	---	---	1.5A	Measured at 120 Vac / 60Hz Input, Output Full Load.
	---	---	0.8A	Measured at 230 Vac / 50Hz Input, Output Full Load.
	---	---	0.7A	Measured at 277 Vac / 60Hz Input, Output Full Load.
Inrush Current ( Peak )	---	50A / 3uS	60A / 5uS	Measured at 120 Vac / 60Hz Input, Output Full Load.
	---	110A / 3uS	120A / 5uS	Measured at 277 Vac / 60Hz Input, Output Full Load.
No-load power	---	---	5.0W	No-load
Leakage Current	---	---	0.5mA	Measured at 120 Vac / 60Hz Input, Output Full Load.
	---	---	0.7mA	Measured at 277 Vac / 60Hz Input, Output Full Load.
THD	---	---	20%	Measured at 120, 230, 277 Vac Input, 60%-100% Load ( 90W-150W ) .
Power Factor ( PF )	0.90	---	---	

## Output Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
DC Output Voltage	Per Table	Per Table	Per Table	Per Tables on Page 1,2,
Output Constant Current	-5%	Per Table	+5%	Per Tables on Page 1,2,
Output Power	---	---	Per Table	Per Tables on Page 1,2,
Output LF Current Ripple (<120Hz)	---	5%	10%	20MHz BW, Full load output . Ripple Index is defined as $[(Y_{max}-Y_{min})/(Y_{max}+Y_{min})] * 100\%$ . Y may be V or I
Line Regulation	-2%	---	+2%	Measured at 120, 230, 277 Vac / 60Hz Input, Output Full Load
Load Regulation	-5%	---	+5%	Measured at 120, 230, 277 Vac / 60Hz Input
Start-up Time	---	---	500ms	Measured at 120, 230 Vac / 60Hz Input, Output Full Load
	---	---	450ms	Measured at 277 Vac / 50Hz Input, Output Full Load
Output Overshoot	-2%	---	+10%	Measured at 120, 230, 277 Vac Input, When power on or off
Hold-up Time	---	10ms	---	Typical @ 277 Vac Input, Output Full Load

## Protection Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Output Short Circuit ( SCP )	---	---	---	No Damage.
Output Over Current ( OCP )	---	---	+10% Io	Constant Current Limiting circuit.
Output Over Voltage ( OVP )	---	---	120% Vo	No Damage.

## Dimming Specifications

Items	Parameter	Min.	Typ.	Max.	Notes / Conditions
0-10V Dimming	Input Absolute Voltage	-2.0V	10V	15V	Purple Wire
	Output Source Current	200uA	300uA	450uA	Purple Wire
	Output Current Range in 0-10V Dimming	10%	---	100%	CCR output
	Output Current in 0-10V Pin Open	---	Normal	15V	
	Output Current in 0-10V Pin Short Circuit	---	Min.	---	CCR output
PWM Dimming	Input Absolute Voltage	-2.0V	10V	15V	
	Input Current on PWM pin	200uA	300uA	450uA	
	PWM Frequency	200Hz	1KHz	1.5KHz	
	PWM Duty	0 %	---	100%	
	Output Current Range in PWM Dimming	10%	---	100%	CCR output
	Output Current in PWM Pin Open	---	Normal	15V	
	Output Current in PWM Pin Short Circuit	---	Min.	1000uA	
Dimming output range	PYG150W-56-C4200-P-W	10%loset		loset	2680 mA ≤ I <sub>o</sub> ≤ 4200 mA
	PYG150W-107-C2100-P-W				1330 mA ≤ I <sub>o</sub> ≤ 2100 mA
	PYG150W-214-C1000-P-W				700 mA ≤ I <sub>o</sub> ≤ 1000 mA
	PYG150W-56-C4200-P-W	268 mA	loset	700 mA ≤ I <sub>o</sub> ≤ 2680 mA	
	PYG150W-107-C2100-P-W	133 mA		500 mA ≤ I <sub>o</sub> ≤ 1330 mA	
	PYG150W-214-C1000-P-W	70 mA		350 mA ≤ I <sub>o</sub> ≤ 700 mA	

## General Specifications

Parameter	Typ.	Notes / Conditions
Cooling	Convection	
MTBF	480,000 hours	Measured at 230Vac input, 100% Load and T <sub>c</sub> =25°C (MIL-HDBK-217F).
Life Time	50,000 hours	@ T <sub>c</sub> = 80°C.

## Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Case Temperature ( T <sub>c</sub> )	-30 °C	---	+90 °C	Measured at location specified on case.
Operating Temperature ( T <sub>a</sub> )	-30 °C	---	+50 °C	This is a reference range. T <sub>c</sub> controls temperature range.
Storage Temperature ( T <sub>s</sub> )	-40 °C		+85 °C	Non operating temperature range.
Operating Humidity	5% RH	---	95% RH	Relative Humidity. Non-condensing.
Vibration	5 Hz	---	55 Hz	2G, 10 minutes / 1 cycle, period 30 minutes, each along X, Y, Z axis.

## Safety Compliance

Safety Category	Standards / Notes
UL / cUL	UL8750, UL1310 Class 2, UL1012 Non Class 2, CSA-C22.2 No. 107.1
CCC	GB19510.14-2009, GB19510.1-2009
ENEC & CE	EN 61347-1:2007+A1:2010+A2:2012, EN61347-2-13:2014
	EN 62493:15
Withstand Voltage	Input to Output: 2000 Vac (UL), 3750 Vac (CE, TUV, ENEC); PE to Input: 1500 Vac; Dim to Input: 2500Vac, Dim to Output: 2500Vac.
Isolation Resistance	Input to Output: >10MΩ, 500Vdc @ 25°C, 70% RH
Dimming	DIM+ (Purple) / DIM- (Pink) are Class 2 Isolated from AC Input and DC Output.

## EMC Compliance

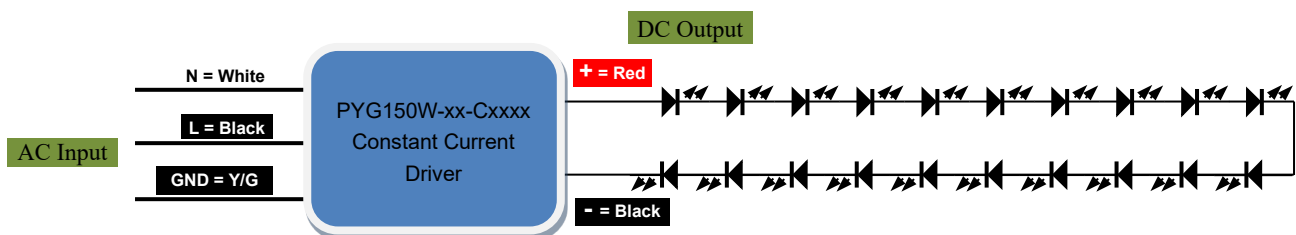
EMI Category	Standards
FCC	FCC 47CFR Part 15, ANSI C63.4: 2009
CCC	GB17743-2007, GB17625.1-2012
CE	EN55015:2013+A1:2015
	EN 61000-3-2:2014, EN 61000-3-3:2013
Energy Star	Energy Star transient protection: Ballast or driver shall comply with ANSI/IEEE C62.41.1-2002 and ANSI/IEEE C62.41.2-2002, Category A operation. The line transient shall consist of seven strikes of a 100KHZ ring wave, 2.5KV level, for both common mode and differential mode.
EMS Category	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8KV air discharge, 4KV 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 4KV, line to earth 6KV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

Note: The above test data are in the condition of 25°C ambient temperature, except for the marked temperature.

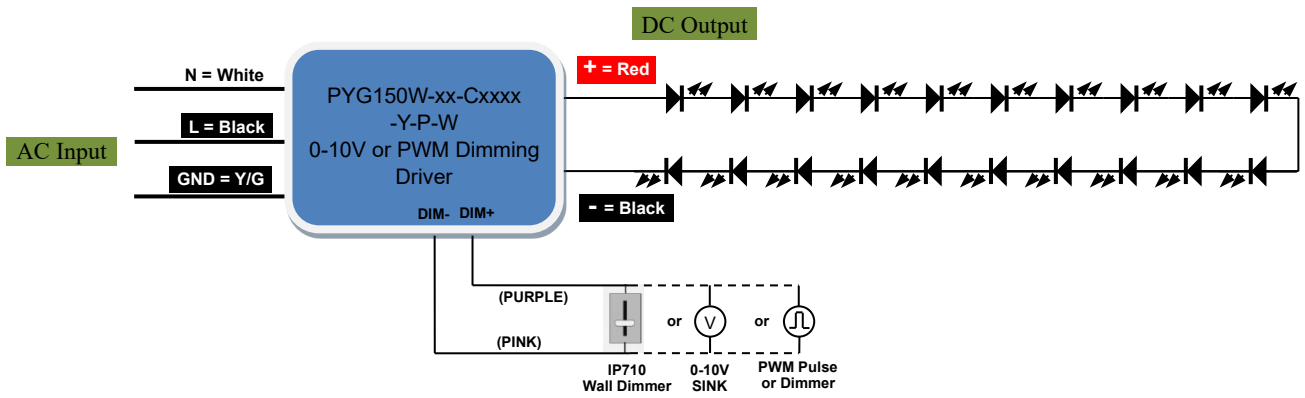
## Typical Applications

LED Forward voltage:  $V_F = 3.0V \sim 3.5V$

### ■ Constant Current Driver

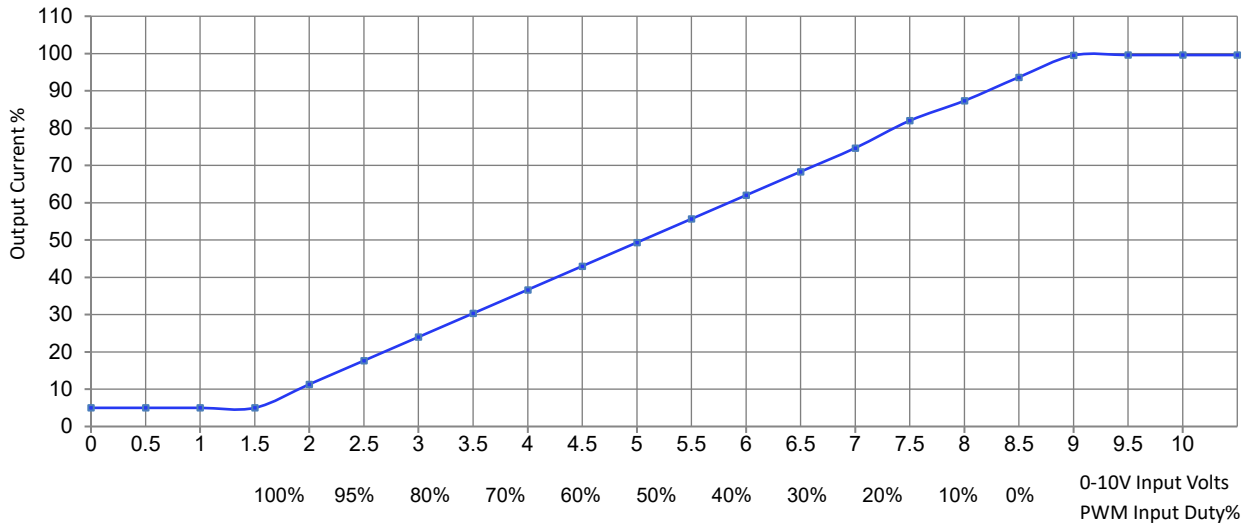


■ 0-10V or PWM Dimming Driver



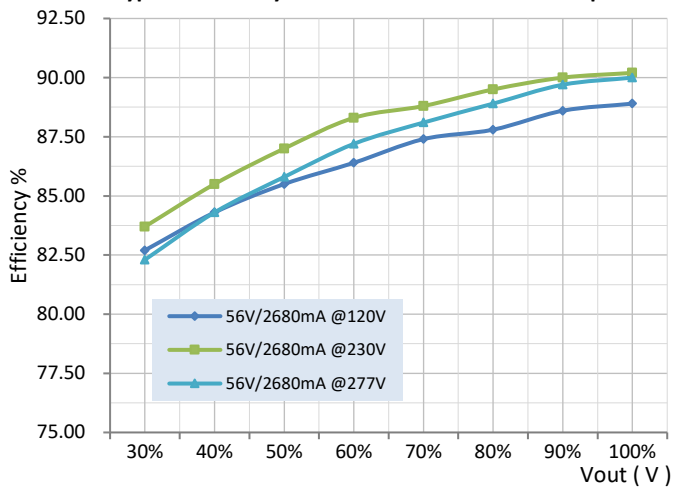
**Dimming Curve**

Typical Dimming vs. 0-10V or PWM Input at 25°C Ambient Temp

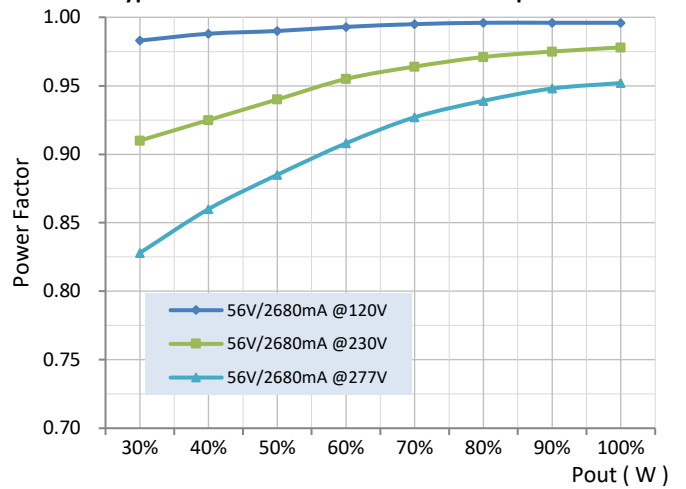


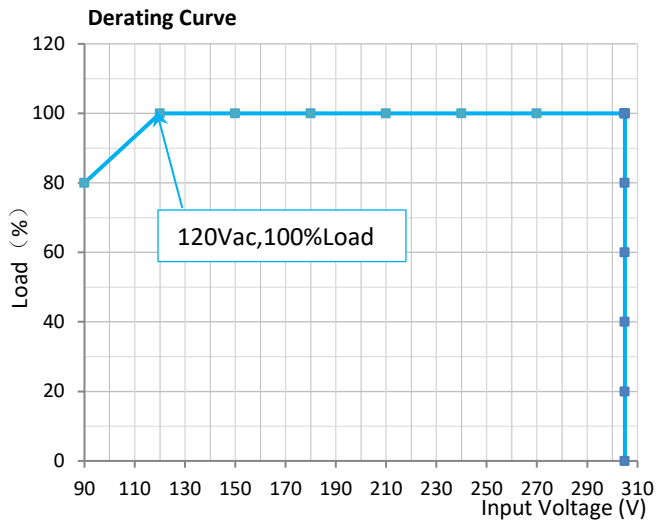
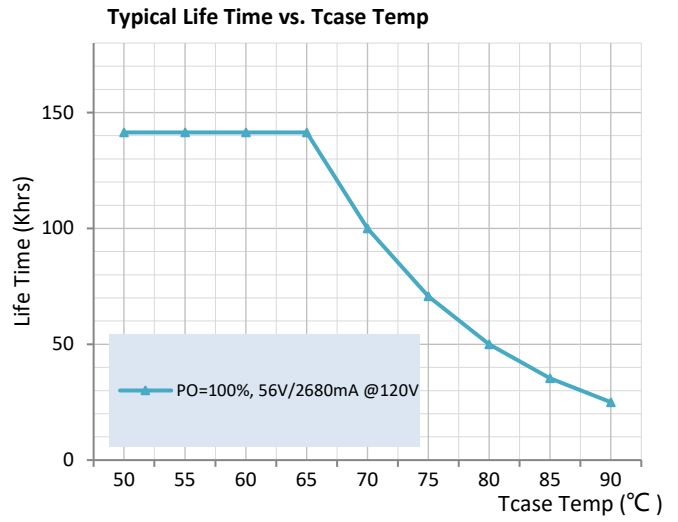
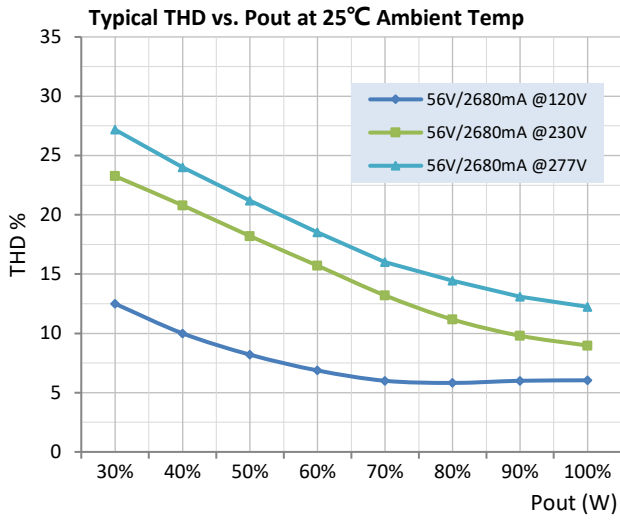
**Characteristic Curve**

Typical Efficiency vs. Vout at 25°C Ambient Temp

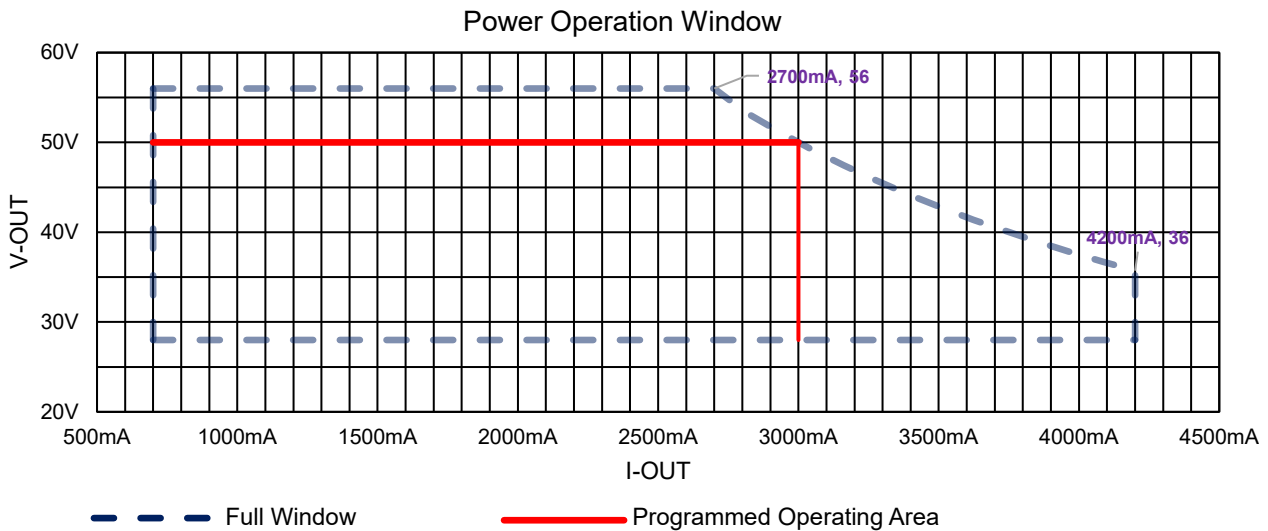


Typical PF vs. Pout at 25°C Ambient Temp

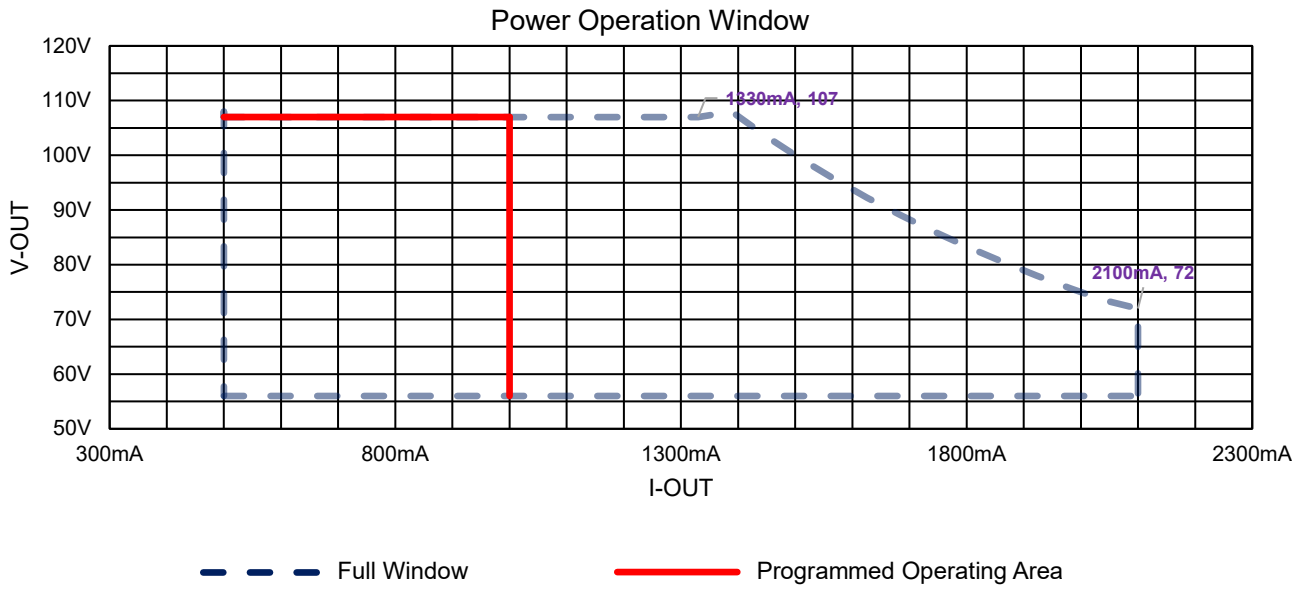




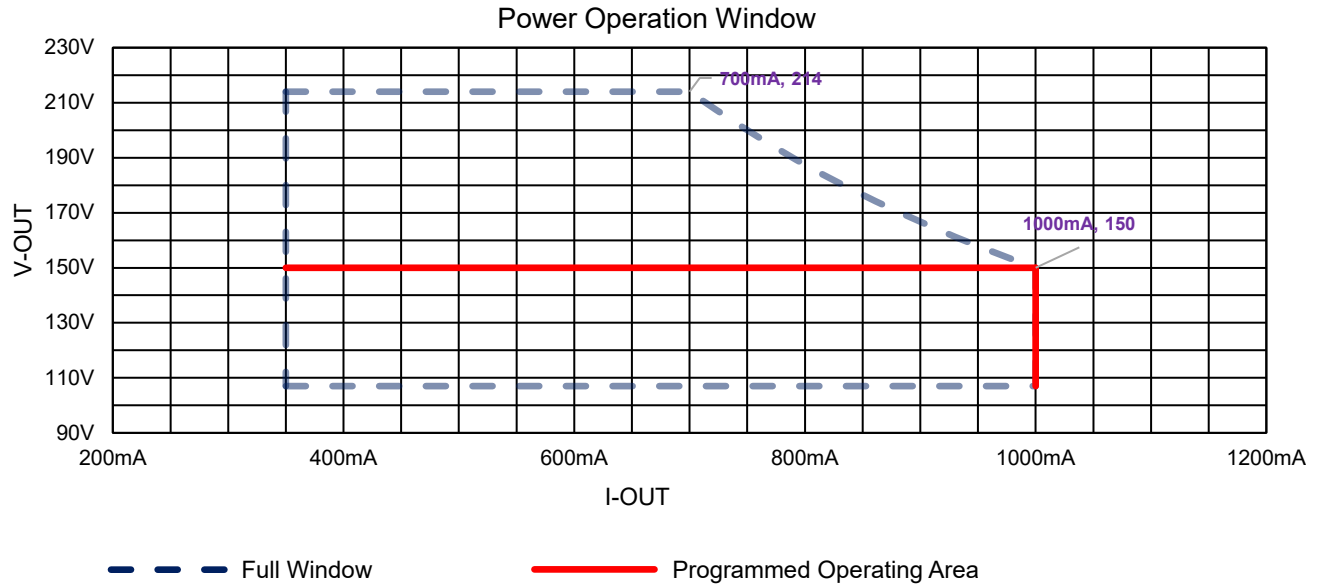
## Operating Window (PYG150W-56-C4200)



### Operating Window (PYG150W-107-C2100)



### Operating Window (PYG150W-214-C1000)





## Installation

### ■ UL Cable used in Dry & Damp Location:

AC input cable, the three cores, ANSI/UL2733 18AWG 3C -40°C ~105°C PVC 600V Black、White、Green\Yellow  
 Cable Length: 230mm, External stripping 57mm, Stripping on the tin: 10mm.  
 Where: L — Black wire, N — White wire, GND — Green\Yellow wire.

DC output cable, the two cores, ANSI/UL2733 18AWG 2C -40°C ~105°C PVC 600V Red、Blue  
 Cable Length: 230mm, External stripping 57mm, Stripping on the tin: 10mm.  
 Where: DC+ — Red wire, DC- — Blue wire.

Dimming control cable, the two cores, ANSI/UL2733 22AWG 2C -40°C ~105°C PVC 600V Purple、Pink  
 Cable Length: 310mm, External stripping 57mm, Stripping on the tin: 10mm.  
 Where: DIM+ (0-10V or PWM) input — Purple wire, DIM- — Pink wire

### ■ UL & CE, CCC, ENEC Standard used in Wet Location:

AC input for connection the three cores copper wire connection.

Outdoor Type : IEC 60245 /VDE 0282-4 / H05RN-F (SJOW) 17AWG 3x1.0mm<sup>2</sup> -40°C~105°C Rubber 300V Brown、Blue、Green\Yellow

Cable Length: 230mm, stripping on the tin: 10mm.

Where: L — Brown wire, N — Blue wire, GND — Yellow/Green wire.

DC output for connection the two core copper wire.

Outdoor Type : IEC 60245 /VDE 0282-4 / H05RN-F (SJOW) 17AWG 2x1.0mm<sup>2</sup> -40°C~105 °C Rubber 300V Brown、Blue

Cable Length: 230mm, stripping on the tin: 10mm.

Where: DC+ — Brown wire, DC- — Blue wire.

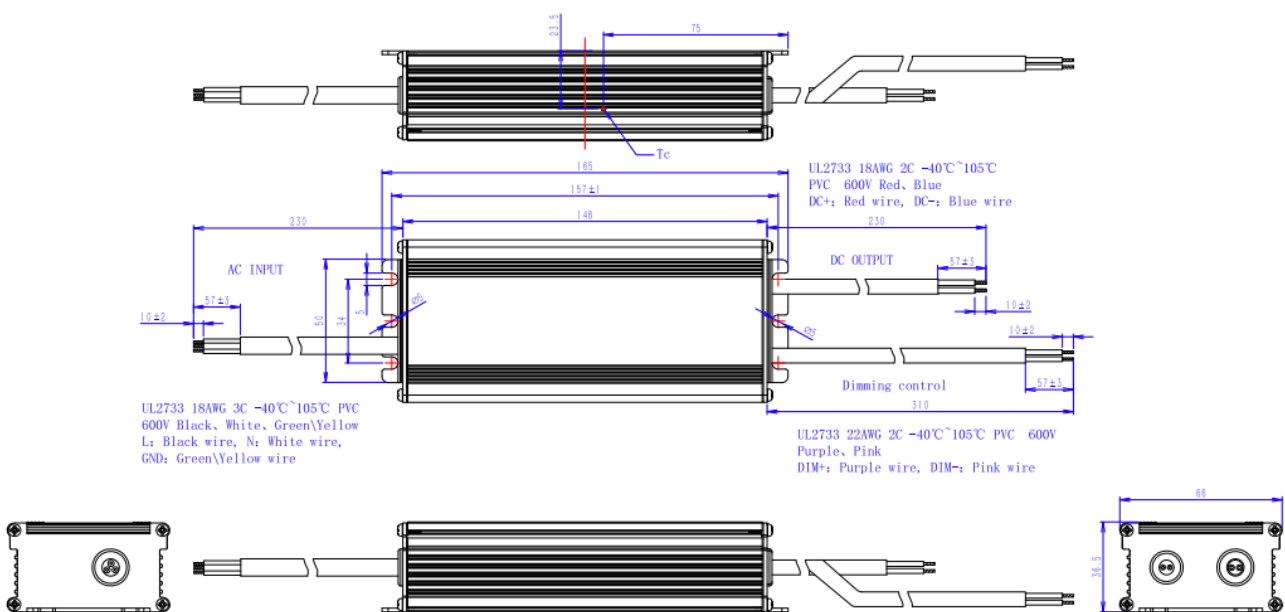
The dimmer control input is the two copper wires. ANSI/UL2196 22AWG 2C -40°C ~105°C PVC 300V Purple、Pink

Cable Length: 310mm, stripping on the tin: 10mm.

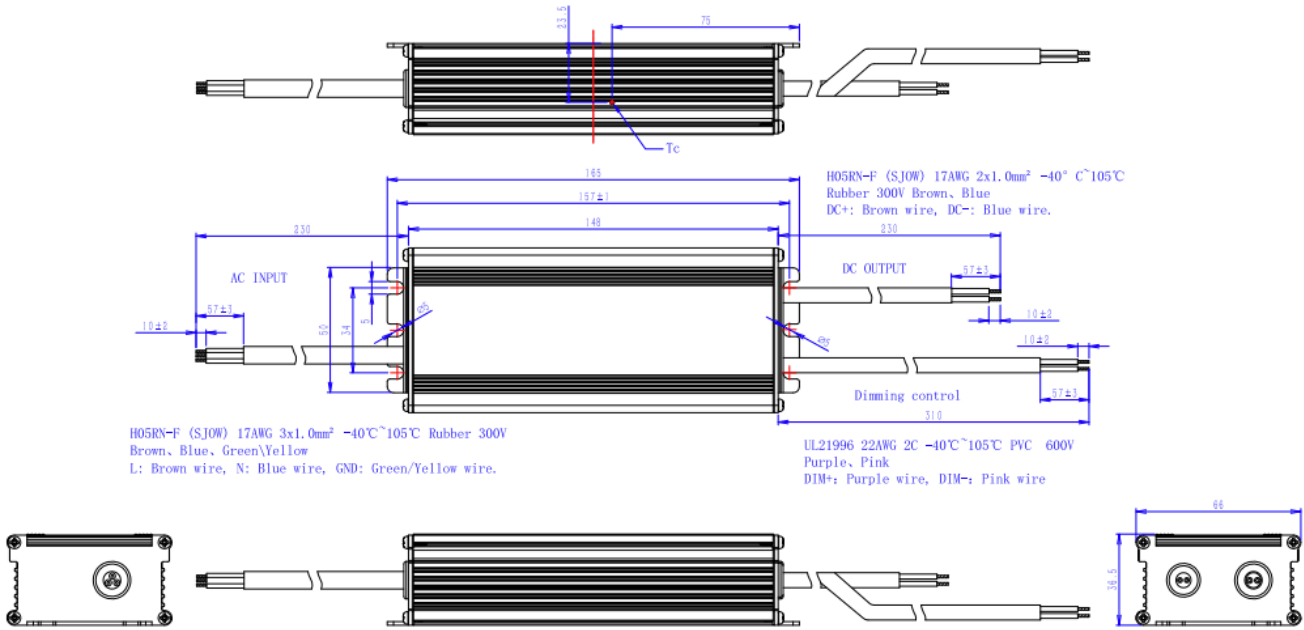
Where: DIM+ (0-10V or PWM) input — Purple wire, DIM- — Pink wire.

## Product size

Note: The following is the UL size drawing.



Note: The following is the EU size drawing.



Note:

- The independent LED drive conforms to the EMC standard. But it is not guaranteed to be qualified, when the drive is mounted in the LED fixture.
- Please forgive us for any discrepancy due to the update of the specifications or the upgrade of the product. If you need the latest information, please contact our marketing department.