40 Watt — PF40W-56-C1500-RP REV 1.2

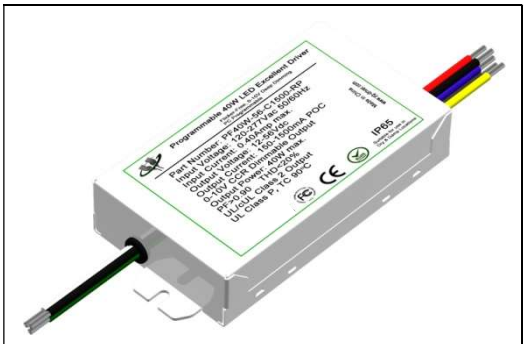
Flicker-Free, Deep Dimming, PC Programmable.

Constant Current LED Driver with 0-10V & PWM Dimming, with Auxiliary Output 12V/200mA

Class 2 Isolated Dimming US & CN, LED Driver Class 2 UL Class P

PF driver is a high-performance LED driver that provides smooth, continuous <1% dimming (until off) 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. Flexibility & SKU reduction for OEM.



Notice of use:

1. The DIM+ line can't touch the LED+ line and AC line.

2. LED- cannot be shorted with the DIM-.

Size \ Unit	Inch	Millimeter
Case Length	4.96	126.00
Case Width	2.41	61.20
Case Height	0.95	24.00
Mounting Length	4.22	107.20
Connectors	Wire	

LED wiring distance

Recommended maximum wiring distance at full load.

AWG	#20	#19	#18	#17	#16
Distance (m)	14	18	22	28	36
Distance (ft)	45.9	59	72.2	91.9	118.1

Key Features

- Drive Mode: Flicker-Free Programmable Constant Current.
- Technology: Active PFC 2-Stage Switch Mode.
- Input Voltage: 120 to 277 Vac, 50/60Hz.
- Output Power: 40 Watt Max.
- Dimming: Smooth & Continuous Deep Dimming from 0% to 100%.
  LEDs turn on to any dimmed level without going to full brightness.
  Constant Current Reduction (CCR) dimming methods.

0-10V / PWM: 2-wire Analog / Digital Control Dimming (Isolated, Class 2).

- Output Voltage: 12Vdc to 56Vdc.
- Output Current: 150mA to 1500mA (Set by an GUI).
- Efficiency: Up to 86%.
- Warranty: 5 years.

Special Features

- Continuous, flicker-free dimming from 100% to 1%, dim-to-off programmable, Minimum dimming programmable, Dimming curve programmable (Optional: linear, log).
- Dimming control is isolated for AC input and DC output.
- Programmable options: Output Current Soft-Start, Constant Lumen Output, End-of-life Indicator.
- Output current can be set by an GUI.
- Safety isolation between primary and secondary.
- A rated lifetime of 70,000 hours @ Tc = 80 °C.
- Safety: UL8750, UL1310 Class 2, CSA22.2.
- EMC: FCC 47CFR Part 15 Class A.
- Inrush Current Limiting Circuitry: AC Power Line: line to line 4 Kv/2KA 8/20μs, line to earth 6 Kv/0.5KA 8/20μs.
- Metal case. Used with silicone 100% potting. Meet the RoHs directive.
- IP65, NEMA4 compliant for Dry & Damp Locations.
- 100% performance tested with CHROMA 8000 system at YG factory.
- 100% burned in with program-control test system at YG factory, at 50 degrees ambient temperature.

Main Electrical Specification

Output Power (W)	Output Voltage (V)	Output Current (mA)	Efficiency @ Max Load			Case Temp. Max ℃	Input Current (A)			Max. Input Power	THD (%) @ Max Load	Weight (Kgs)	Envir. Protection Rating
			@120V	@230V	@277V		@120V	@230V	@277V				
40	12 - 56	150 - 1500	85	86	84	90	0.44	0.25	0.22	47	20	0.42	UL Dry & Damp Location

Address: No. 575, 9F Gushu Road, Bao'an District, Shenzhen, Guangdong Province, China
Phone: +86 755 27850656, +86 13501598118 Mr. Wu Fax: +85 755 23289631
+86 755 27850525, +86 13602603460 Miss joy
Email: wgm@yg-driver.com Skype: yg-wgm Web: www.yg-driver.com

Product Release Date: 2017.03
Product Updates Date: 2020.06.03

Programmable Parameters

Programmable Parameter		Programmable Minimum Value	Programmable Maximum Value	Factory Default	GUI Programmable	Notes / Conditions
Output Constant Current (Iout)		150 mA	1500 mA	1500 mA	YES	N/A
Disable Dimming		NO	YES	NO	YES	N/A
Dimming Curve	LINEAR	0%	N/A Fixed 100%	0%	YES	N/A
	LOG	0%	N/A Fixed 100%	0%	YES	N/A
Output Current Soft-Start		N/A	N/A	OFF	YES	N/A
Constant Lumen Output		N/A	N/A	OFF	YES	N/A
End-of-life Indicator		N/A	N/A	OFF	YES	N/A

Input Spsecifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Input Voltage	108 Vac	---	305 Vac	120, 230, 240, 277 Vac Nominal Values
Input Frequency	47 Hz	50/60 Hz	63 Hz	50/60 Hz Nominal
Input AC Current	---	---	0.44 A	Measured at 120 Vac / 60Hz Input, Output Full Load
	---	---	0.25 A	Measured at 230 Vac / 50Hz Input, Output Full Load
	---	---	0.22 A	Measured at 277 Vac / 60Hz Input, Output Full Load
Inrush Current (Peak)	---	38 A / 2uS	43 A / 3 uS	Measured at 120 Vac / 60Hz Input, Output Full Load
	---	57 A / 2uS	62 A / 3 uS	Measured at 277 Vac / 60Hz Input, Output Full Load
Leakage Current	---	300 μA	350 μA	Measured at 120 Vac / 60Hz Input, Output Full Load
	---	700 μA	750 μA	Measured at 277 Vac / 60Hz Input, Output Full Load
THD	---	---	20%	Measured at 120, 230, 277 Vac Input, Output ≥ **33% Load**
Power Factor (PF)	0.90	---	---	The working window that meets the DLC standard sees the curve on page 5.

Output Spsecifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
DC Output Voltage	12V		56V	The maximum output current is 1500 mA, the output voltage at 27 V.
Output Voltage (max.)	---	---	59V	Measured at 120-277 Vac / 60Hz Input, Output no Load.
Output Constant Current	150 mA		1500 mA	The maximum output voltage is 56V, output current in 700 mA.
Output Power	4 W	---	40 W	Voltage Foldback, Power operation window see the curve on page 5.
Flickering Index (Vpk-pk)	---	---	3% Vo	Full load. 20MHz BW, Full load output in parallel with 0.1uF & 10uF CAP.
Flickering Index (Ipk-pk)	---	---	5% Io	Flickering Index is defined as [(Ymax-Ymin)/(Ymax+Ymin)] * 100%. Y may be V or I
Line Regulation	-3%	---	+3%	Measured at 120-277 Vac / 60Hz Input, Output Full Load
Load Regulation	-4%	---	+4%	Measured at 120, 230, 277 Vac / 60Hz Input
Start-up Time	---	300 ms	500 ms	Measured at 120 Vac / 60Hz Input, Output Full Load
	---	200 ms	400 ms	Measured at 277 Vac / 60Hz Input, Output Full Load
Output Overshoot	-2%	---	+5%	Measured at 120, 230, 277 Vac Input, When power on or off
Hold-up Time	---	10 ms	---	Typical @ 277 Vac Input, Output Full Load

Protection Spsecifications

Parameter	Min.	Typ.	Max.	Notes / Conditions

Output Short Circuit (SCP)	---	---	---	No Damage. Auto recovery after short is removed.
Output Over Current (OCP)	---	---	+8% Io	Constant Current Limiting circuit.
Output Over Voltage (OVP)	---	---	120% Vo	No Damage. Auto recovery after short is removed.
Output Power Limit (OPL)	---	---	40 W	Voltage Foldback.
Temperature Protection (OTP)	95 °C		110 °C	At Tc from 95 to 110, the output current decreases linearly from maximum to zero.

Dimming Spsecifications

Items	Parameter	Min.	Typ.	Max.	Notes / Conditions
12V Auxiliary Output	Output Voltage	10.8 V	12.0 V	13.2 V	Yellow Wire
	Output Current	0 mA	100 mA	200 mA	Yellow Wire
0-10V Dimming	Input Absolute Voltage	-2.0 V	10 V	15 V	Purple Wire
	Output Source Current	0.1 mA	1.2 mA	2.0 mA	Purple Wire
	Output Current Range in 0-10V Dimming	0%	---	100%	CCR output
	Output Current in 0-10V Pin Open	---	Normal	---	It's a constant current output with active PFC.
	Output Current in 0-10V Pin Short Circuit	---	0	---	CCR output
PWM Dimming	Input Absolute Voltage	-2.0 V	10 V	15 V	
	Input Current on PWM pin	0.1 mA	1.2 mA	2.0 mA	
	PWM Frequency	200 Hz	---	3 KHz	
	PWM Duty	0 %	---	100%	
	Output Current Range in PWM Dimming	0%	---	100%	CCR output
	Output Current in PWM Pin Open	---	Normal	---	It's a constant current output with active PFC.
	Output Current in PWM Pin Short Circuit	---	0	---	CCR output
0-10V & PWM Dimming	Compatible dimming function: 0-10V and PWM dimming.				

Programmable Spsecifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Port				PC_SET
Setting Output Current	150 mA	1500 mA	1500 mA	The output voltage is automatically limited.
PC_SET Max.	1500 mA			Setting Output Current Value, dimming range is min to 1500 mA.
PC_SET Min.	150mA			Setting Output Current Value, it is min.
PC_SET Voltage	0		5V	

General Spsecifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Cooling	Convection			
MTBF	395,000 hours			For 12V output model, measured at 120 Vac input, 100% Load and Tc=80° C (MIL-HDBK-217F).
Lifetime	70,000 hours			

Environmental Spsecifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Case Temperature (Tc)	-30 °C	---	+90 °C	Measured at location specified on case.
Operating Temperature (Ta)	-30 °C	---	+55 °C	This is a reference range. Tc controls temperature range.
Storage Temperature (Ts)	-40 °C		+100 °C	Non-operating temperature range.
Operating Humidity	---	---	90% 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, CSA C22.2 NO.250.13, **US & CN LED Driver Class 2 , UL CLASS P**
Withstand Voltage	Input to Output: 2KV
Output / Dim	2.5KV
Enclosure / Ground - Input & output / NTC & Dim	2.0KV
Isolation Resistance	Input to Output: >10MΩ, 500Vdc @ 25°C, 70% RH
Aux Circuit	Aux is Isolated from AC Input and DC Output.
0-10V Class 2 Isolated Dimming	DIM+ (Purple) / DIM- (Grey) are Class 2 Isolated from AC Input and DC Output.
FG	Input ground. It is a safety ground.

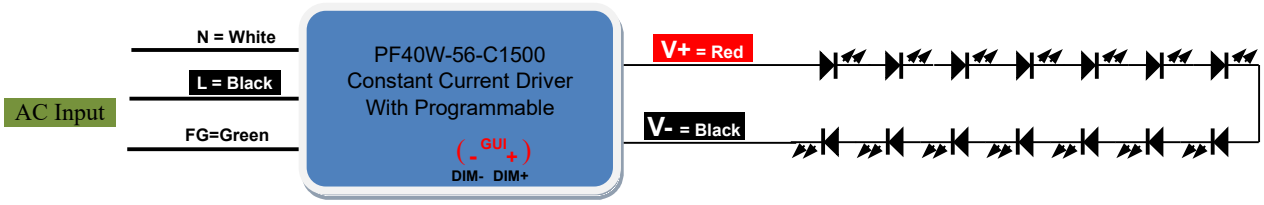
EMC Compliance

EMI Category	Standards
FCC	FCC 47CFR Part 15 Class A, ANSI C63.4: 2009
Energy Star	Energy Star transient protection: Driver shall comply with ANSI/IEEE C62.41.1-2002 and ANSI/IEEE C62.41.2-2002 0.5 μs 100 kHz Ring, 6kV/0.2kA, L-N, L-G, LN-G (10 strikes)
EMS Category	**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: ANSI/IEEE C62.41.2-2002 1.2/50μs and 8/20μs Combination, 4kV/2kA, L-N (10 strikes). 1.2/50μs and 8/20μs Combination, 6kV/0.5kA, L-G, LN-G (10 strikes).
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61547	Electromagnetic Immunity Requirements Applies to Lighting Equipment

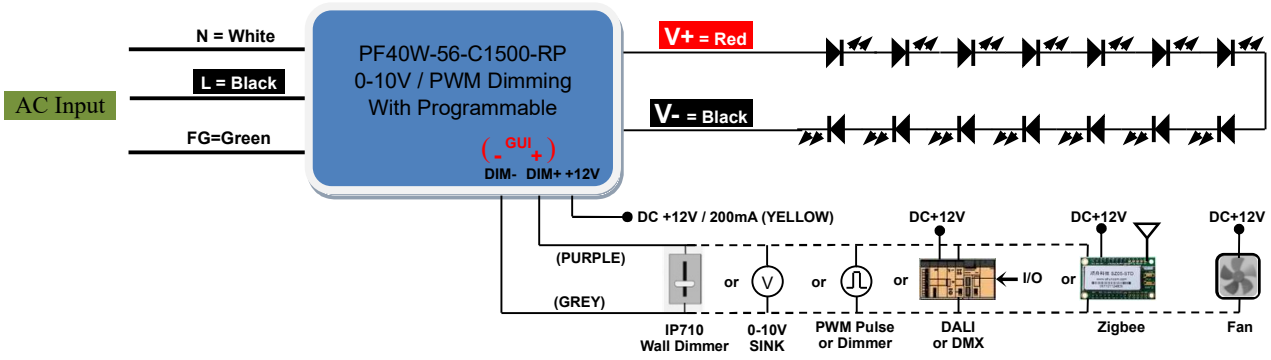
Note: the above test data are in the condition of 25 C ambient temperature, except for the marked temperature.

Typical Applications

■. Constant Current Driver with programmable.



■. 0-10V or PWM Dimming Driver with programmable.



Address: No. 575, 9F Gushu Road, Bao'an District, Shenzhen, Guangdong Province, China
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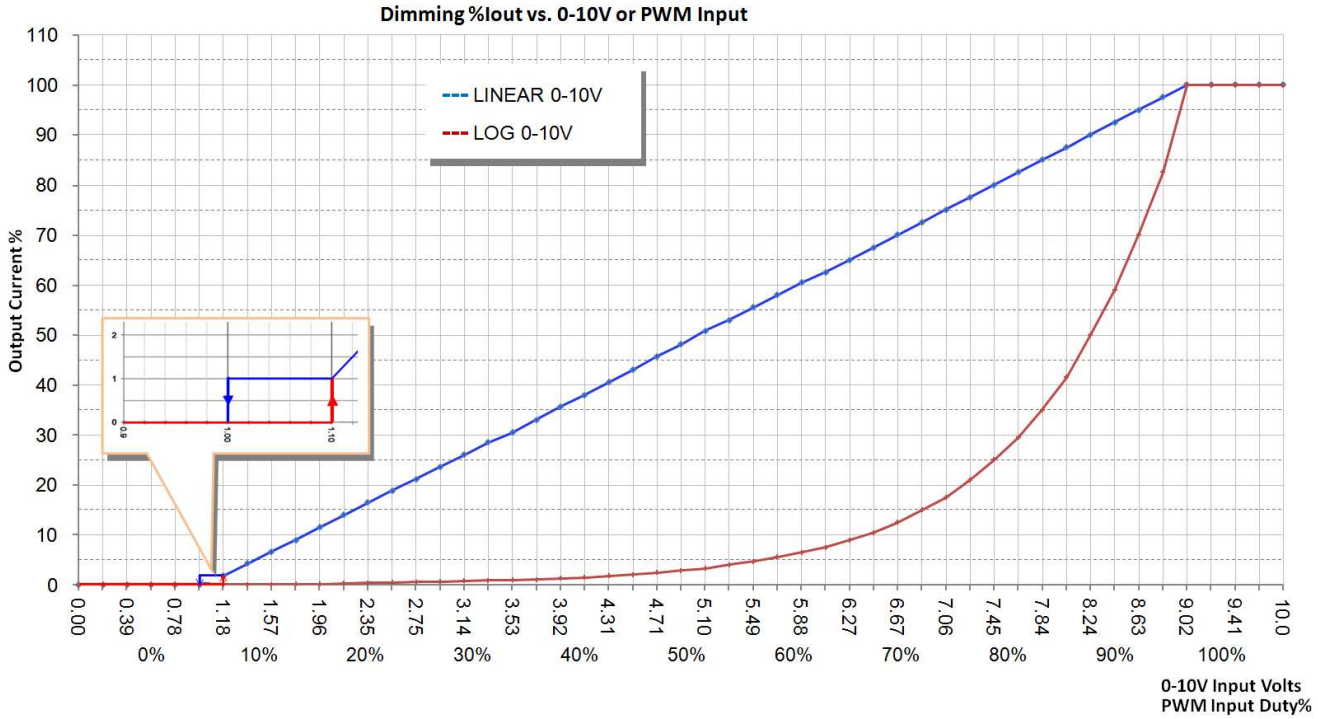
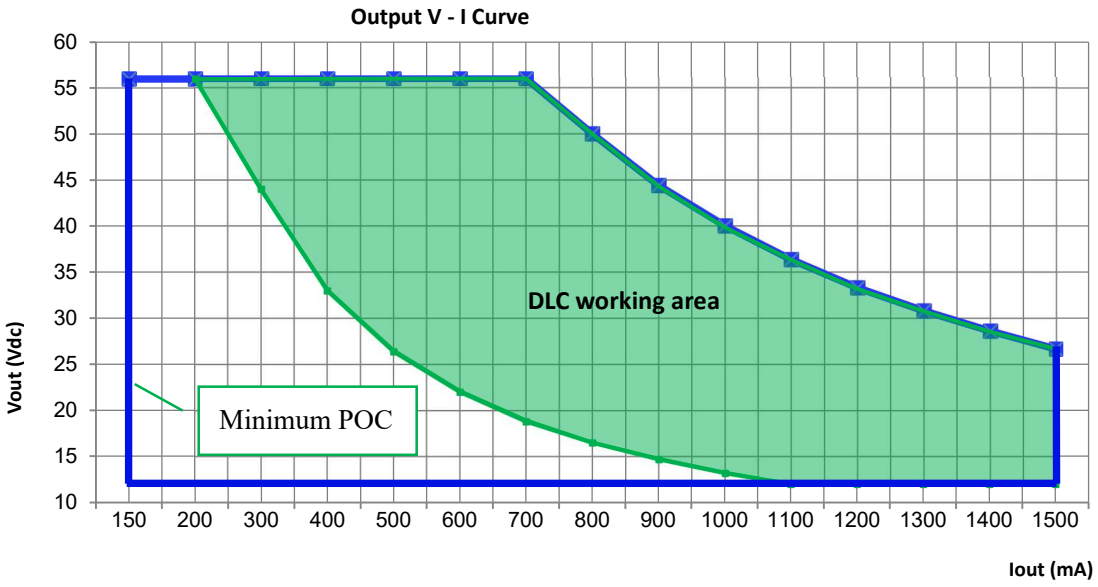
Dimming Curve



Power Operating Window



Note: When the output current is set, the output voltage is automatically limited within the curves.

YG Programmer PC Based Software, USB Interface

Programmable Output Current (POC): Programmable Iout from 150 mA to 1500 mA.
Programmable Minimum Dim Level: 0% (OFF) to 100% Iout programmed value.

Programming Tool:

The YG Programmer is a programming and configuration tool for YG intelligent programmable LED drivers. It consists of the YG programmer which is connected between the USB port of a computer and the LED driver being programmed, and the YG programmer software. The YG programmer software is a PC based graphical user interface that allows the user to program and configure the operating parameters of an YG Programmable LED Driver. This interface allows the operator to set the LED drivers output current within its specified range. In the increments specified. It also provides the ability to enable/disable and control features like “Dimming”, “Auxiliary Output”, “Constant Lumen Module” & “End-of-life indicator” when available in the YG intelligent LED driver being programmed.

YG Programmer:

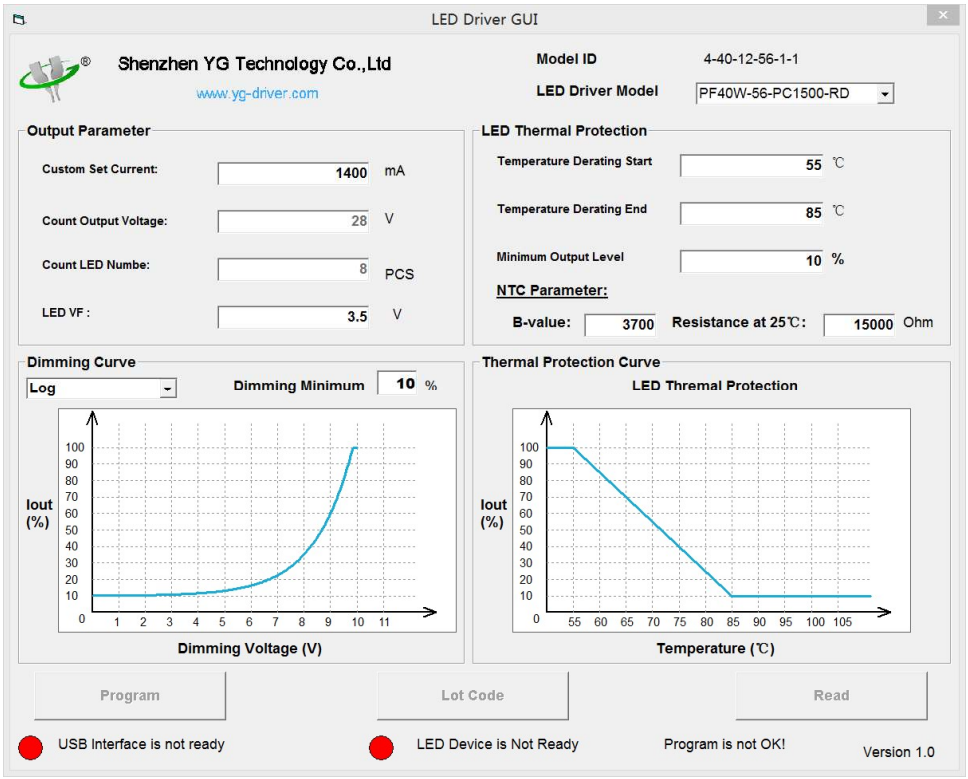
Is the physical USB unit connected between the USB port of a computer and the LED driver being programmed? This unit also provides all power required to the LED driver being programmed. No connection to an AC power source is required for programming the LED driver.

YG Programmer Software:

The YG Programmer software is the windows based GUI that allows the user to assign custom part number(s) to the LED driver being programmed. The user can then save the profile to a computer disk and recall as need. The user can then use the “Auto Program” feature to quickly program as many LED drivers with the saved profile as is required. Each driver programming simply requires a click of the mouse to program in a single step.

The YG Programmer software supports bar code scanners. The barcode scanner can be used to automate the programming of the attached LED driver. The barcodes scanner interface also provides an option to either enable or disable logging of the parameters to an excel file.

Note: The programming of the LED driver does not require the input be connected to an AC power connection. The YG Programmer and the required LED driver circuitry will be powered from the YG Programmer module via the USB connection to a computer.



Custom designs available.

Please consult with the factory.

Specifications subject to change without notice.

Address: No. 575, 9F Gushu Road, Bao'an District, Shenzhen, Guangdong Province, China
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+86 755 27850525, +86 13602603460 Miss joy
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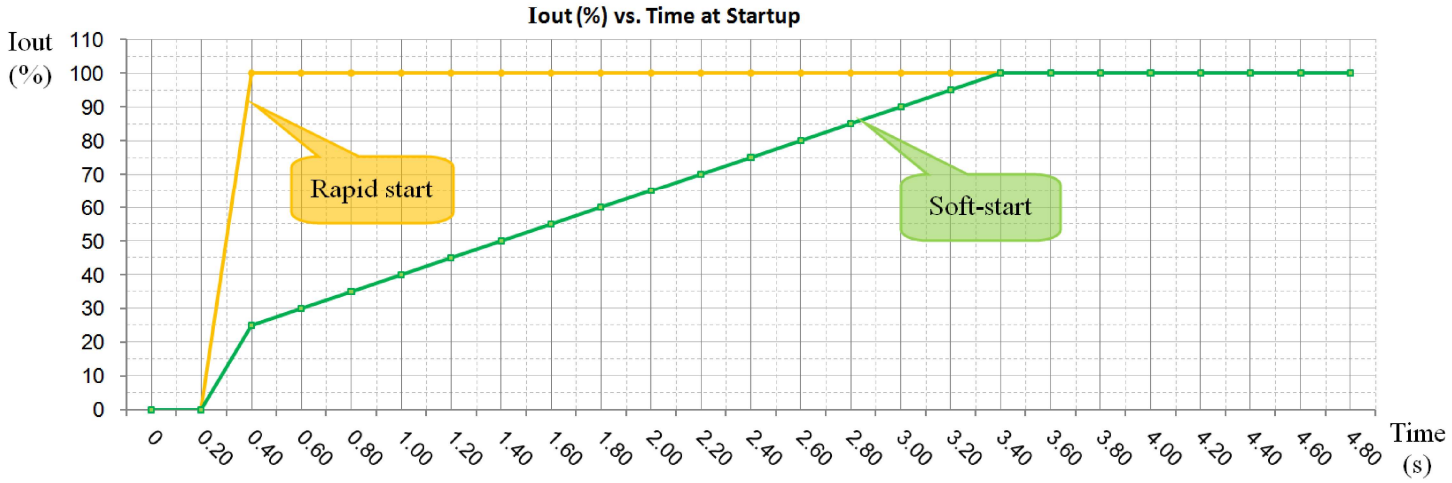
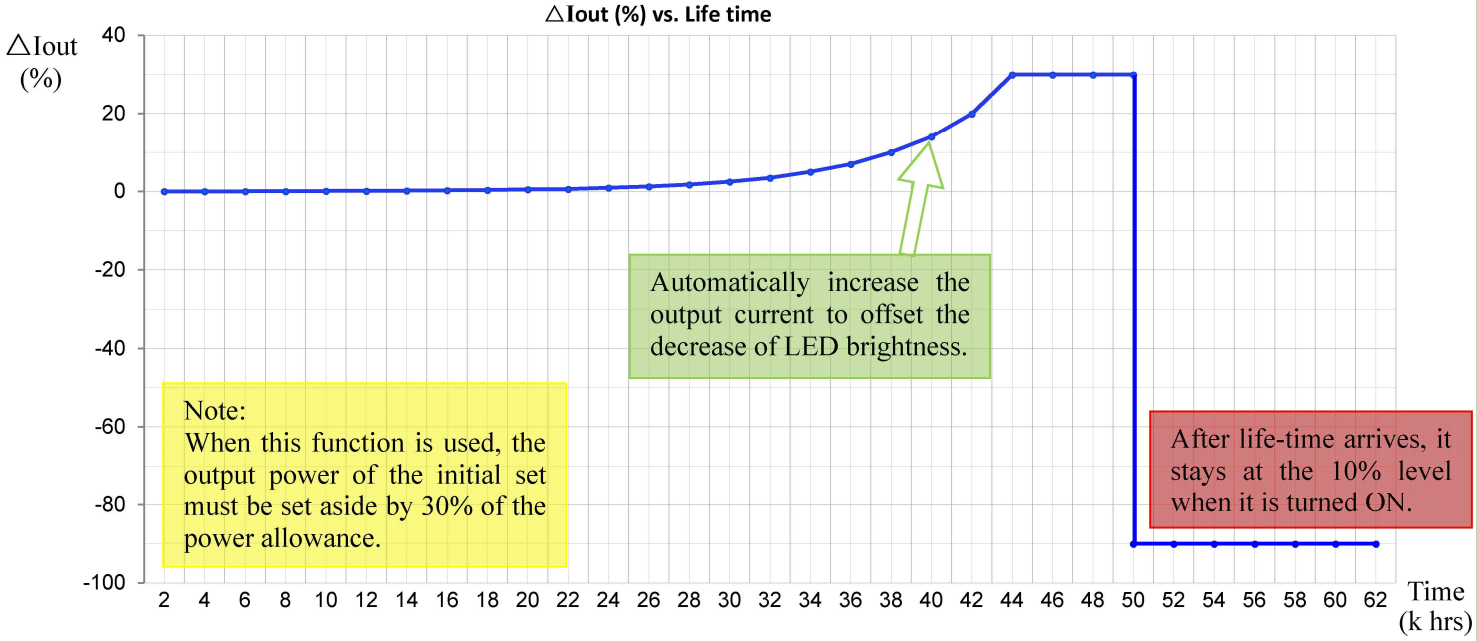
Output Current Soft-start

Output current soft-start are programmable (enable/disable) features. The default mode for features is disabled for out-of-the-box products. If these features are required, they must be checked ON in the programming software.



Constant Lumen Module

The Constant Lumen Module feature of the PF40W helps to maintain the required lumen output of the fixture at a constant level throughout its lifetime. In general LED's lumen output will depreciate over time and to maintain sufficient light level towards the end of lifetime, the LED's are driven at high current initially and will result in more energy consumption. The constant lumen module will give the flexibility to drive the LEDs at optimal driving current throughout its lifetime. This helps in energy savings, constant light output and enhanced reliability of the system.

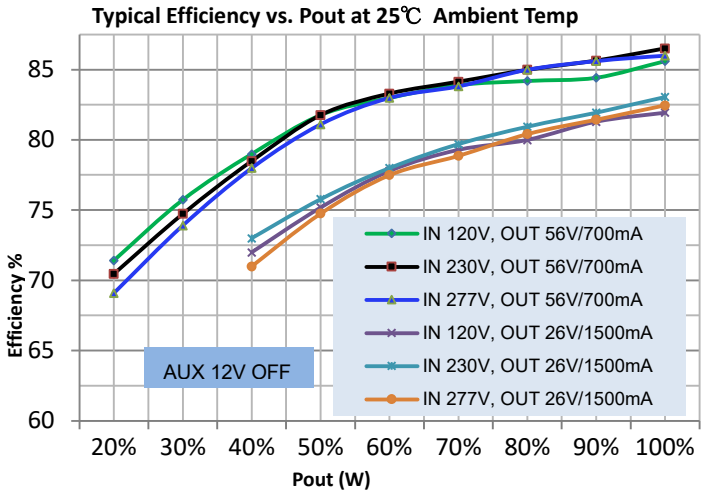


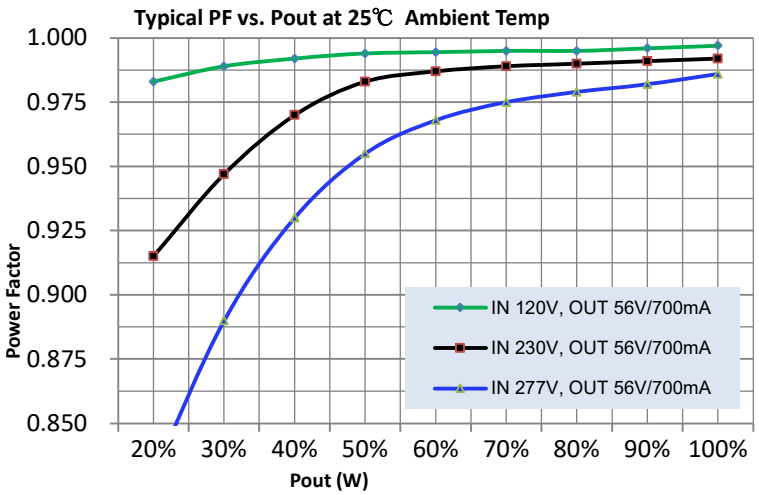
Note: A detailed step-by-step instructions are outlined in the Help section of the YG Programmer software.

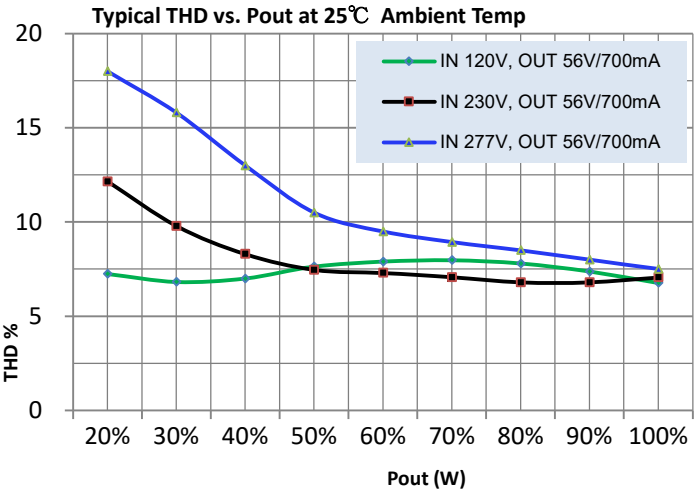
End-of-Life Indicator

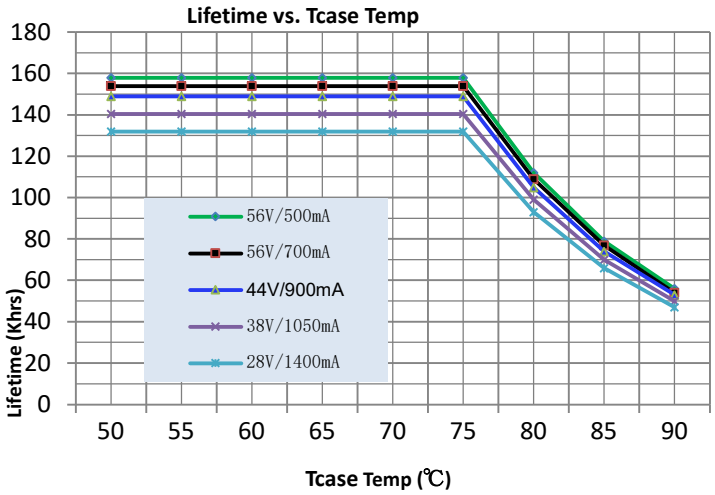
The End-of-Life indicator helps the end user to receive a signal from the fixture indicating that it has reached its programmed life-time. After the LED driver reaches the programmed life-time, whenever it is turned ON, it stays at 'Dim' level (10%).

Characteristic Curve









Programming Connection Diagram

Note the connection when programming

GUI+ (red) → DIM+ (purple)

GUI− (black) → DIM- (grey)

Address: No. 575, 9F Gushu Road, Bao'an District, Shenzhen, Guangdong Province, China
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Installation

Metal shell Used with silicone 100% potting.

AC input for connection the three core ANSI/UL1015/AWG18 temperature 105 °C core copper wire connection.
Cable Length: 150 mm, stripping on the tin: 10 mm.
Where: L — Black wire, N — White wire, FG — Green wire.

DC output for connection the two core ANSI/UL1569/AWG18 temperature 105 °C core copper wire.
Cable Length: 150 mm, stripping on the tin: 10 mm.
Where: LED+ — Red, LED- — Black.

The dimmer control input (or Programming wire) is the two copper wires, ANSI/UL1569/AWG22 & temperature 105 °C.
Cable Length: 150 mm, stripping on the tin: 10 mm.
Where: DIM+ (GUI+) input — Purple wire, DIM- (GUI-) — Grey wire.

The Auxiliary 12V output is the two copper wires, ANSI/UL1569/AWG22 & temperature 105 °C.
Cable Length: 150 mm, stripping on the tin: 10 mm.
Where: 12V output — Yellow wire, GND — Grey wire.

This product has two Φ5.0 mm mounting holes.

Order ID

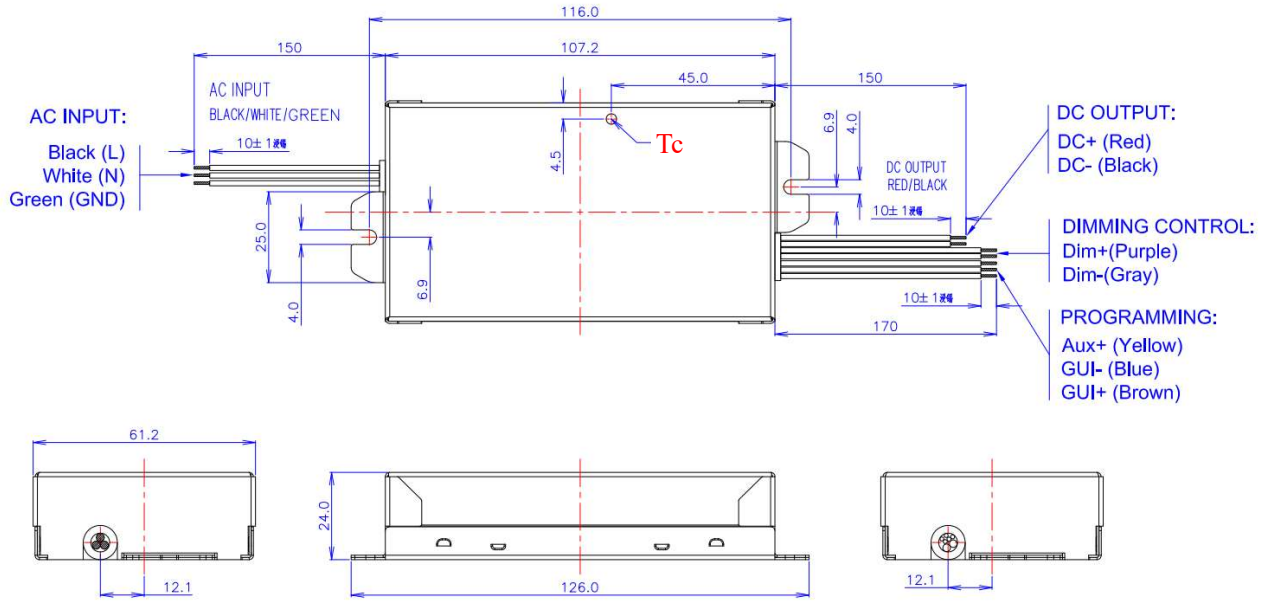
P/N 1: PF40W-56-C1500

Description: 40W, 56Vdc voltage max, constant current 1500 mA max, constant current mode.

P/N 2: PF40W-56-C1500-RP

Description: 40W, 56Vdc voltage max, constant current 1500 mA max, 0-10V or PWM dimming mode.

Product Size



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 lamp.
- 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.