50 Watt — LX50W Series A0 T5 Ballast Series, Programmable, Flicker-Free, Deep Dimming.

FLICKER FREE PROGRAMMABLE CONSTANT CURRENT LED DRIVER WITH 0-10V DIMMING

US & CN, LED Driver Class 2, UL CLASS P

LX50W driver is a high-performance LED driver that provides smooth, continuous <1% 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.

Module Temperature Protection (MTP) supports thermal feedback and robust thermal manage. LED module working temperature can automatically be reduced by the LX50W driver, setting by software of the output current decrease depending on the measured NTC value to avoid decreased lifetime of the LED module.

LED codes configure dimming curve, LED current and more. Programmable solution that offer ultimate design flexibility. GUI interface for programmable output current using. Flexibility & SKU reduction for OEM.

Enclosure

Notice of use:

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

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

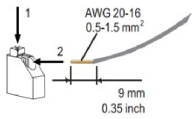
Size \ Unit	Inch	Millimeter
Case Length	11.02	280.00
Case Width	1.20	30.00
Case Height	1.02	26.00
Mounting Length	10.63	270.00
Connectors	UL, KF250-3.5, WAGO 250-402 Push Pin or equivalent	

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

KF250-3.5 CONNECTORS



Key Features

- Drive Mode: Flicker-Free Programmable Constant Current.
- Technology: Active PFC 2-Stage Switch Mode.
- Input Voltage: 120 to 277 Vac, 50/60Hz at 0-10V Dimming.
- Output Power: 50 Watt Max.
- 0-10V Dimming: Smooth & Continuous Deep Dimming from 100% to 0%.
  LEDs turn on to any dimmed level without going to full brightness.
  Constant Current Reduction (CCR) dimming methods.
  2-wire Analog (Optional: Aux 12Vdc/40mA output).
- Output Voltage: 12Vdc to 55 Vdc. (Auto set with GUI).
- Output Current: 400mA to 1400 mA. (Set by 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 (pending): Output Current Soft-Start, Constant Lumen Output, End-of-life Indicator.
- Output current can be controlled by an external NTC, Protection temperature programmable.
- Output current can be set by GUI.
- A rated lifetime of 50,000 hours @ Tc = 78 °C.
- Safety: UL8750, UL1310 Class 2, CSA22.2. Safety isolation between primary and secondary.
- EMC: FCC 47CFR Part 15 Class A.
- Surge: NEMA SSL1 – 2010 Non-Roadway,100KHz ring wave, 2.5KV, common and differential mode.
- T5 Ballast style metal case. Meet the RoHs directive.
- Damp & Dust resistant design IP20, NEMA1 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.

50W 0-10V Dimming Part List

No.	Part Number	Input Voltage	US, CN Class 2	Output Voltage Range	Programmable Output Current	0-10V Dimming	Current Accuracy	Power Factor	Output Power	Efficiency Max.
1	LX50W-55-C1400-RP	120-277Vac	Yes	12~55Vdc	400-1400mA	0-100%	±5%	0.90	50W	86%

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Product Release Date: 2017.03
Product Updates Date: 2018.08.02

Programmable Parameters

Programmable Parameter		Programmable Minimum Value	Programmable Maximum Value	Factory Default	GUI (NTC) Programmable	Notes / Conditions
Output Constant Current (Iout)		400mA	1400mA	1050mA	YES	
Disable Dimming		NO	YES	NO	YES	
Dimming Curve	LINEAR	0%	N/A Fixed 100%	0%	YES	
	LOG	0%	N/A Fixed 100%	0%	YES	
NTC Minimum Ohms		1KΩ	10KΩ	2KΩ	YES	
NTC Minimum %out		~0%	100%	~10%	YES	
NTC Maximum Ohms		2KΩ	10KΩ	6.3KΩ	YES	
Output Current Soft-Start		N/A	N/A	OFF	YES	
Constant Lumen Output		N/A	N/A	OFF	YES	
End-of-life Indicator		N/A	N/A	OFF	YES	

Input Specifications

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	---	---	0.52 A	Measured at 120 Vac / 60Hz Input, Output Full Load.
	---	---	0.30 A	Measured at 230 Vac / 50Hz Input, Output Full Load.
	---	---	0.25 A	Measured at 277 Vac / 60Hz Input, Output Full Load.
Inrush Current (Peak)	---	28 A / 2.2uS	35 A / 3uS	Measured at 120 Vac / 60Hz Input, Output Full Load.
	---	62 A / 2.2uS	70 A / 3uS	Measured at 277 Vac / 60Hz Input, Output Full Load.
Leakage Current	---	---	300 μA	Measured at 120 Vac / 60Hz Input, Output Full Load.
	---	---	750 μA	Measured at 277 Vac / 60Hz Input, Output Full Load.
THD	---	---	20%	Measured at 120, 230, 277 Vac Input, Output ≥ 30% Load. The working window that meets the DLC standard sees the curve on page 6.
Power Factor (PF)	0.90	---	---	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
DC Output Current (POC)	-5%	Per Table	+5%	Programmable Output Current (POC)
Output Voltage (max.)	---	---	59V	Measured at 120-277 Vac / 60Hz Input, Output no Load
Output Power	---	---	50W	Voltage Foldback, Power operation window see the curve on page 6
Flickering Index (Vpk-pk)	---	---	4% Vo	Output Full Load. 20MHz BW, Full load output in parallel with 0.1uF & 10uF CAP. Flickering Index is defined as [(Ymax-Ymin)/(Ymax+Ymin)] * 100%. Y may be V or I
Flickering Index (Ipk-pk)	---	---	4% Io	
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	---	500ms	750ms	Measured at 120 Vac / 60Hz Input, Output Full Load
	---	400ms	750ms	Measured at 277 Vac / 60Hz Input, Output Full Load
Output Overshoot	-3%	---	+5%	Measured at 120, 230, 277 Vac Input, When power on or off

Protection Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Output Short Circuit (SCP)	---	---	---	No Damage. Auto recovery after short is removed.
Output Over Current (OCP)	---	---	+10% Io	Constant Current Limiting circuit.
Output Over Voltage (OVP)	---	---	110% Vo	No Damage. Auto recovery after the abnormal disappearance.
Over Temperature Protection (OTP)	90°C	100 °C	110 °C	Internal OTP. The temperature is reduced to 105C and the output is automatically restored.

Dimming Specifications

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	20 mA	40 mA	Yellow Wire
0-10V Dimming	Input Absolute Voltage	-2.0 V	10 V	15 V	Purple Wire
	Output Source Current	10 uA	100 uA	200 uA	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	10 uA	100 uA	200 uA	
	PWM Frequency	200 Hz	---	2 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.				

General Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Cooling	Convection			
MTBF	352,000 hours			For 12V output model, measured at 120 Vac input, 100% Load and Tc=75° C (MIL-HDBK-217F).
Life Time	50,000 hours			

Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Case Temperature (Tc)	-40 °C	---	+90 °C	Measured at location specified on case.
Operating Temperature (Ta)	-40 °C	---	+50 °C	This is a reference range. Tc controls temperature range.
Storage Temperature (Ts)	-40 °C		+85 °C	Non operating temperature range.
Operating Humidity	---	---	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 Listed, UL Class P	UL8750, CAN/CSA C22.2 No. 250.13, US & CN LED Driver Class 2, UL Class P.
Withstand Voltage	Input to Output: 2000 Vac. Output to Dim: 2000Vac
Isolation Resistance	Input to Output: >10MΩ, 500Vdc @ 25°C, 70% RH
Aux Circuit	+12V (Yellow) is considered part of the secondary circuit.
0-10V Class 2 Isolated Dimming	DIM+ (Purple)/DIM- (Grey) are Class 2 Isolated from AC Input and DC Output.
FG	The metal case of the driver must be connected to earth ground (FG) in the end-use application.

EMC Compliance

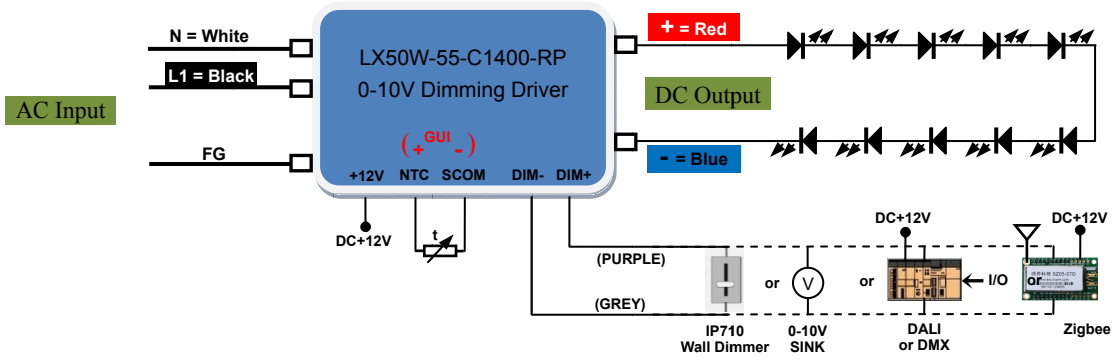
EMI Category	Standards
FCC	FCC 47CFR Part 15 Class A, ANSI C63.4: 2009
Energy Star	Surge Immunity Test: NEMA SSL1 – 2010 Non-Roadway,100KHz ring wave, 2.5KV, common and differential mode.

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: NEMA SSL1 – 2010 Non-Roadway,100KHz ring wave, 2.5KV, common and differential mode.
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

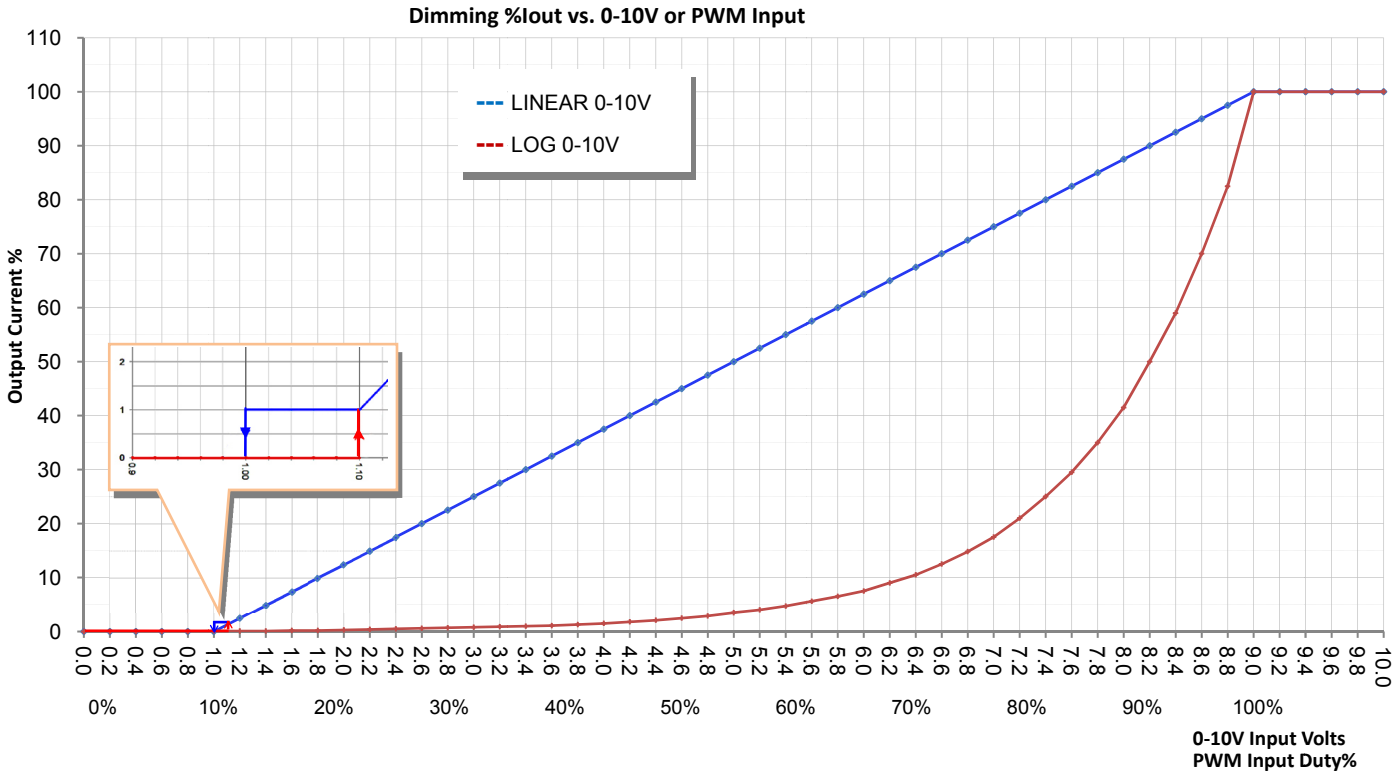
Note: the above test data are in the condition of 25 C ambient temperature, except for the marked temperature.

Typical Applications:

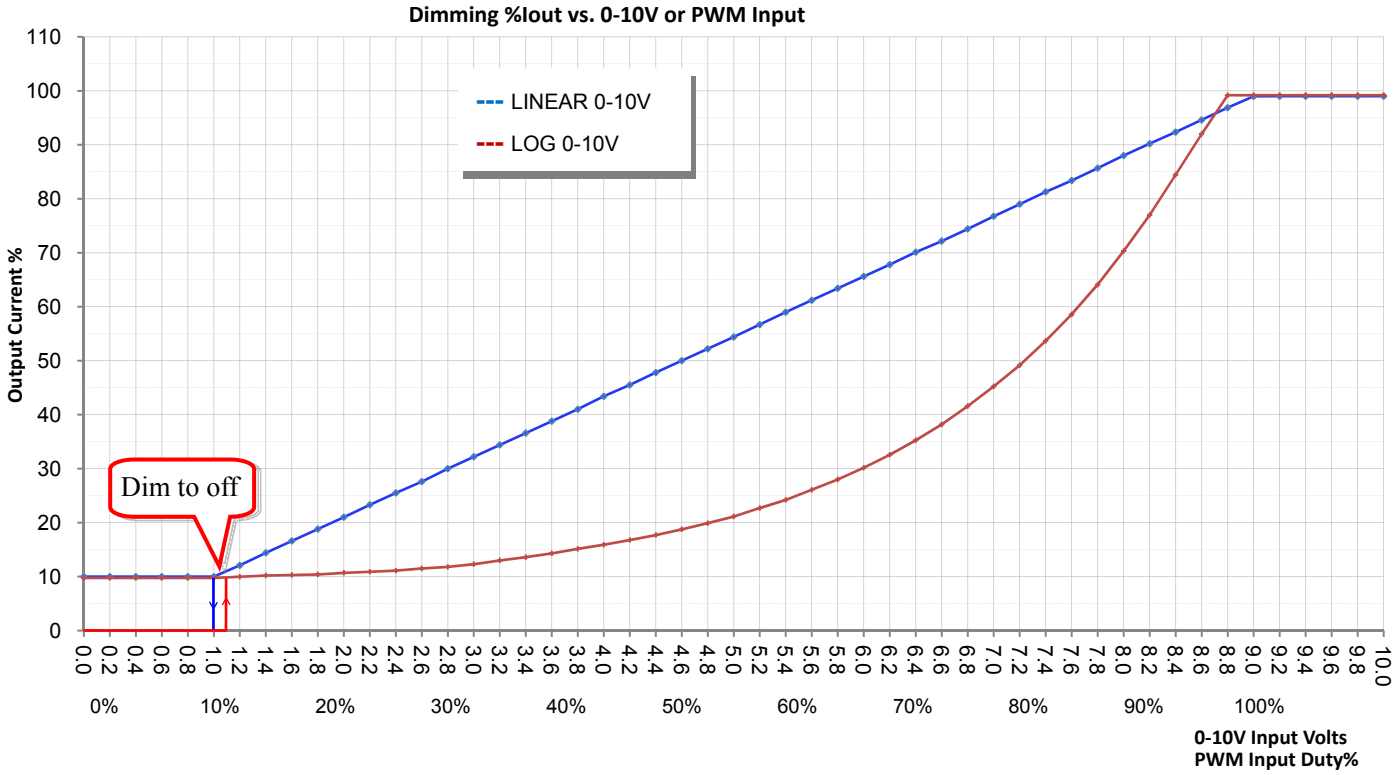
0-10V Dimming Driver with programmable & NTC control.



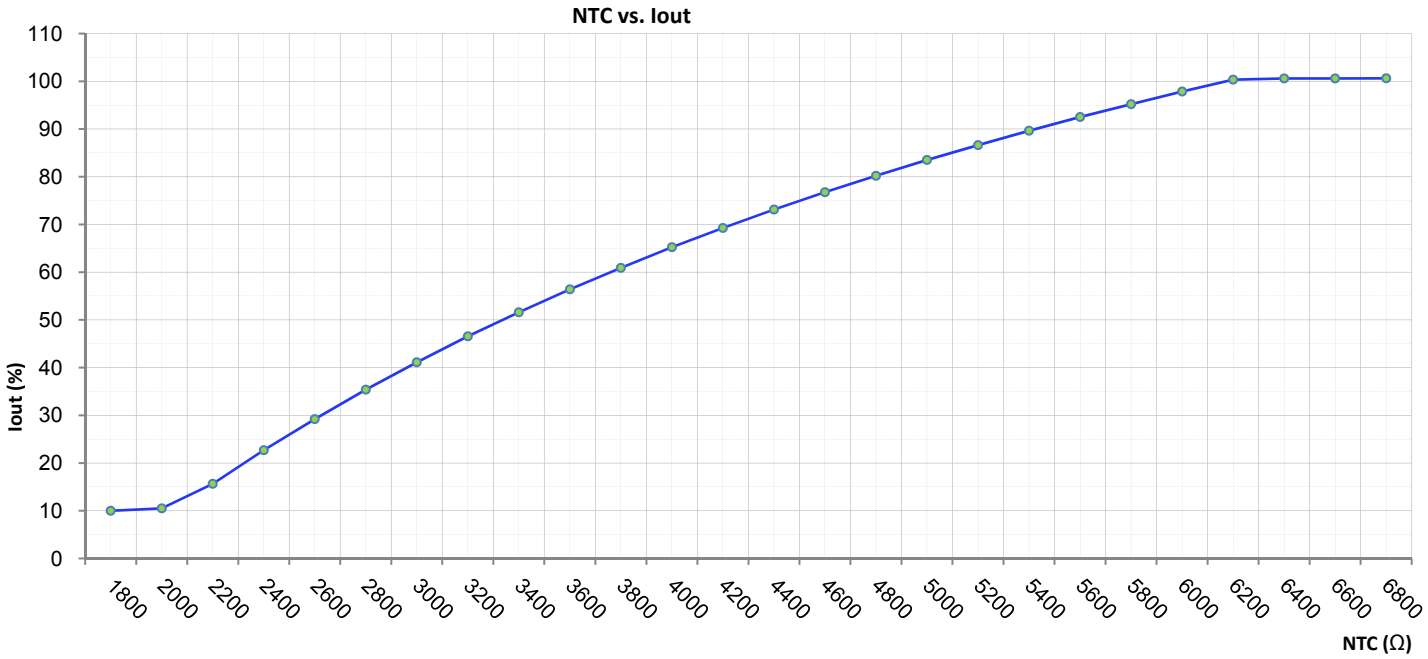
0-10V Dimming Curve @ Minimum dimming set to 0



0-10V Dimming Curve @ Minimum dimming set to 10% and dim to off



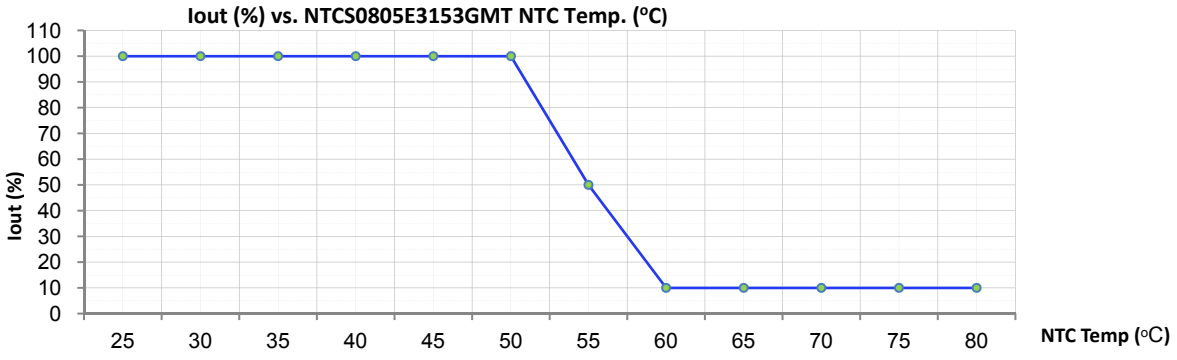
NTC Current Control



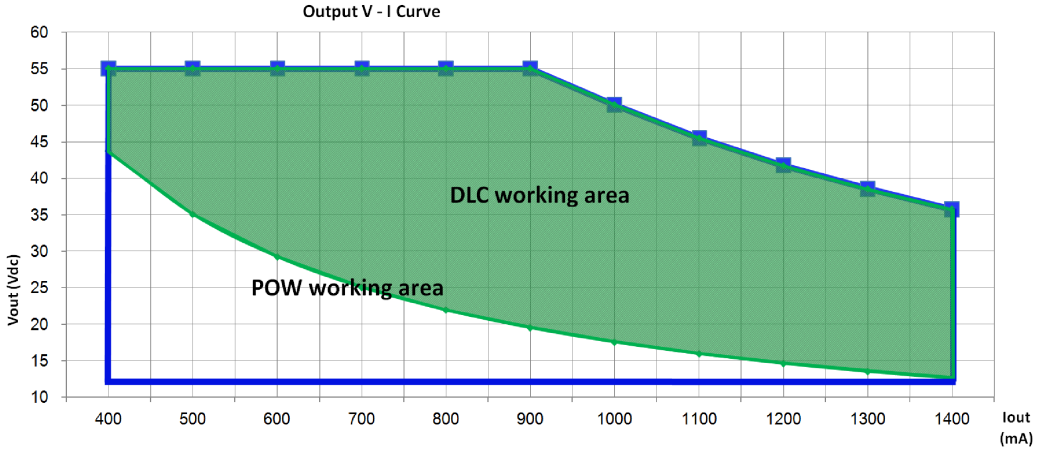
Note: Maximum dimming current is limited by NTC.
NTC values, NTC High, NTC Low and NTC Minimum Iout can be programmed.
Using YG Programmer USB interface & YG PC based GUI Software.
Default: NTC Low = 2.0K ~ 10% Iout, NTC High = 6.3K, 100% Iout.

Module Temperature Protection Example

NTC = 0805SMD, R_{25C} = 15K Ohms±2%, R_{64C} = 3700, Vishay Part#: NTCS0805E3153GMT



Power Operating Window & DLC Window

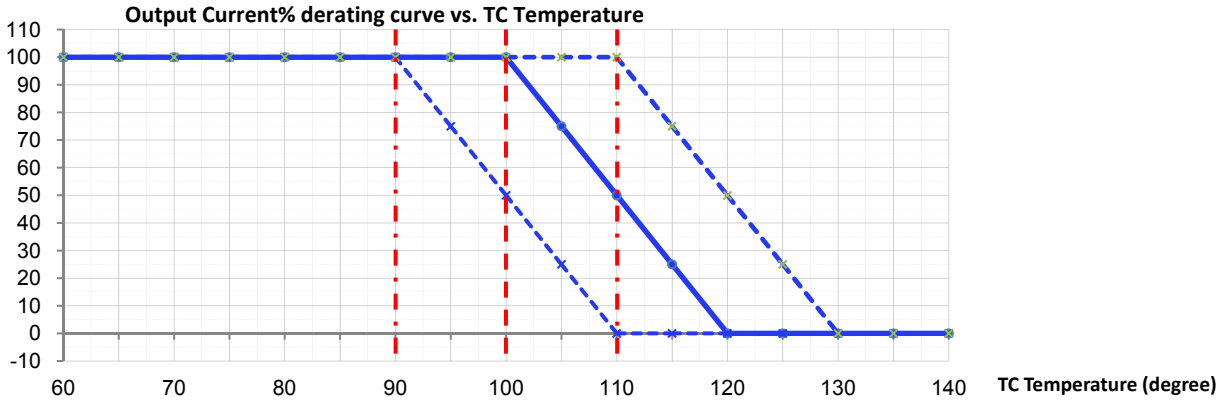


PF>0.9 and THD<20%, Window that meet DLC standards at input 120-277V range.

Power Operating Window.

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

Output Current derating vs. TC Temperature Curve



Note:

- The temperature control curve is the test result of the technical sample, and the product is not tested.
- Affected by the internal temperature distribution of the shell, the test temperature has a large error corresponding to the TC temperature.

YG Programmer PC Based Software, USB Interface

Programmable Output Current (POC): Programmable Iout from 400mA to 1400mA.
Programmable NTC Values:
Default: 2.0K ≈ 10% Iout, 6.3K = 100% Iout
Programmable settings: NTC Minimum Level (%), NTC Minimum Ohms, NTC Maximum Ohms.
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”, “NTC Thermal Protection”, “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.

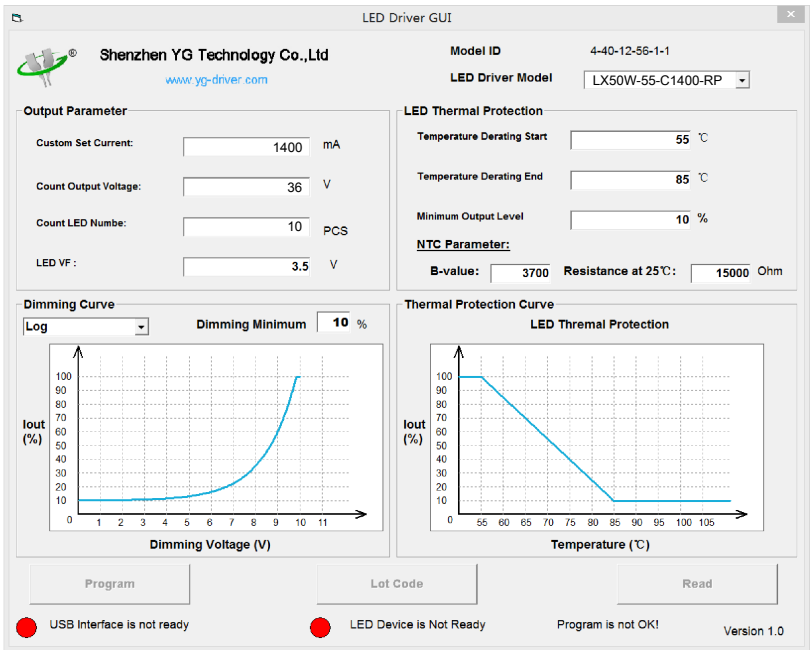
YG Programmer Software:

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.

GUI page

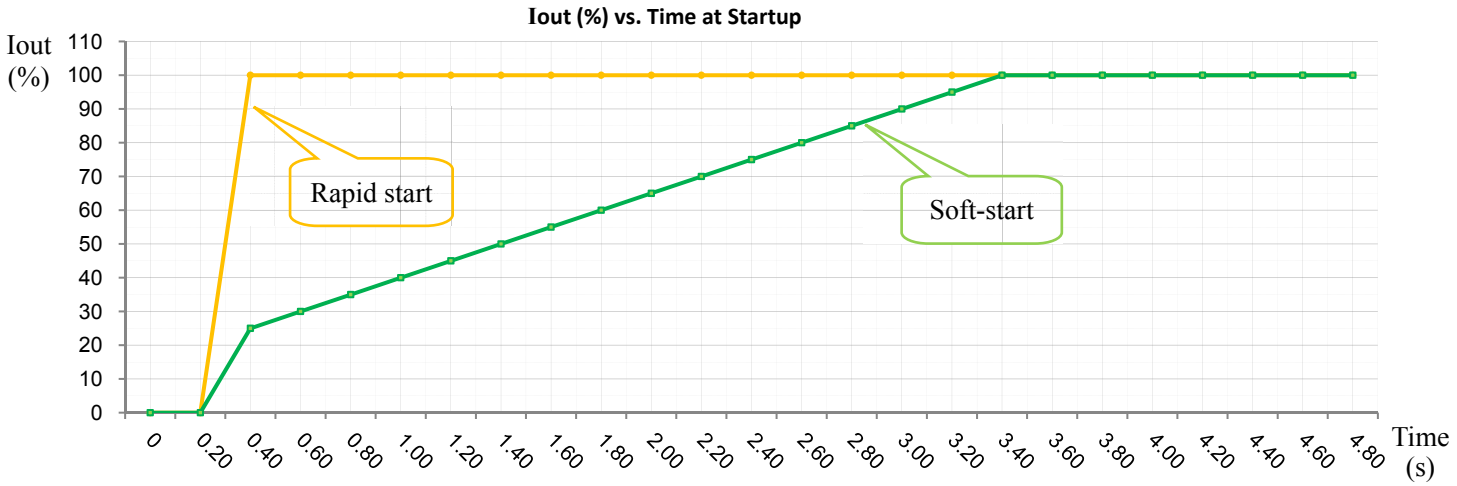


Note:

- **Custom designs available.**
- **Please consult with the factory.**
- **Specifications subject to change without notice.**

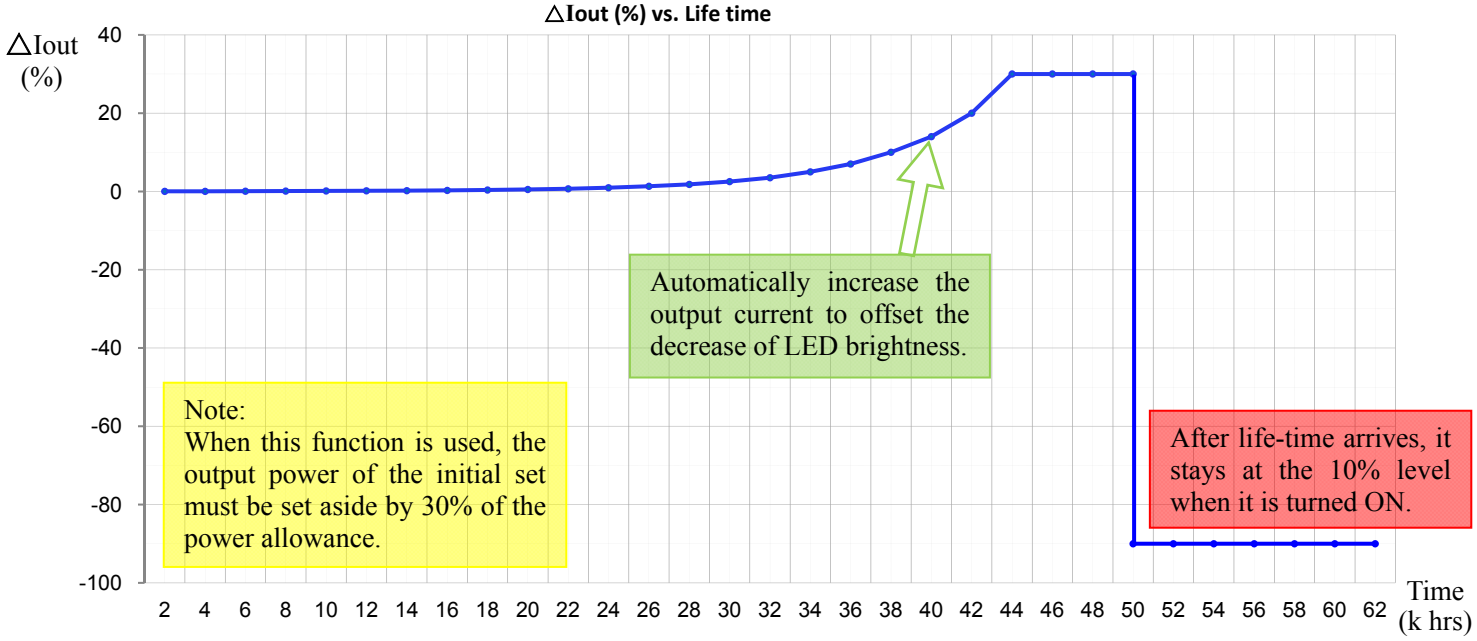
Output Current Soft-start

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 LX50W 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 in order 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.



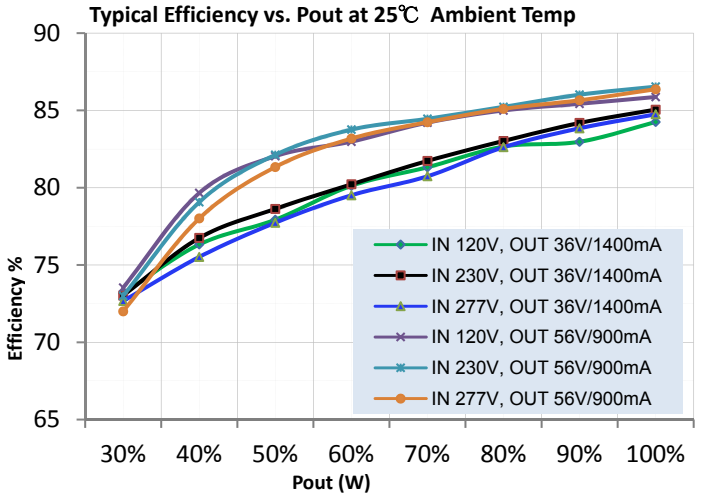
Note: A detailed step-by-step instructions are outlined in the Help section of the YG Programmer software.

End-of-Life Indicator

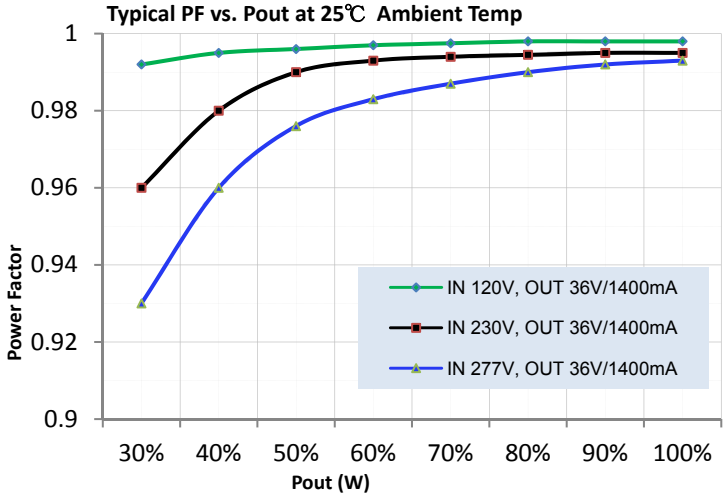
The End-of-Life indicator helps the end user to receive a signal from the fixture indicating that it has reached its programmed life-time. After the LED driver reaches the programmed life-time, whenever it is turned ON, it stays at 'Dim' level (10%).

Characteristic Curve

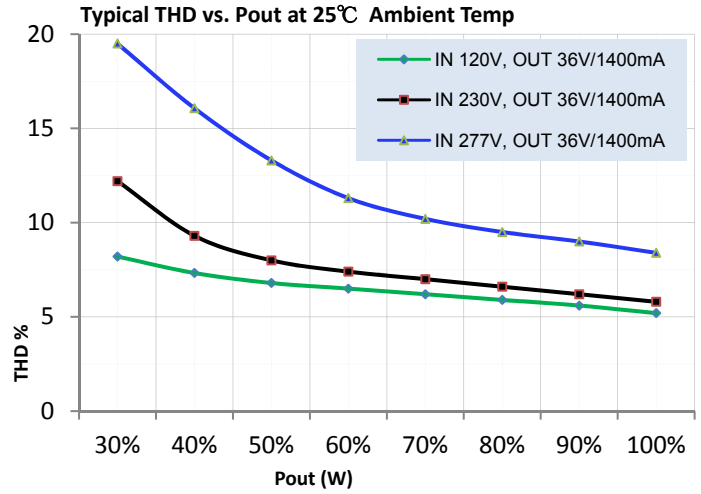
Typical Efficiency vs. Pout at 25℃ Ambient Temp



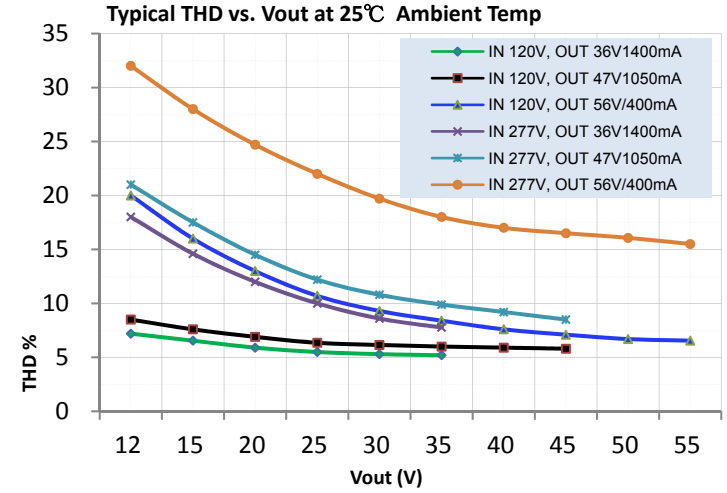
Typical PF vs. Pout at 25℃ Ambient Temp



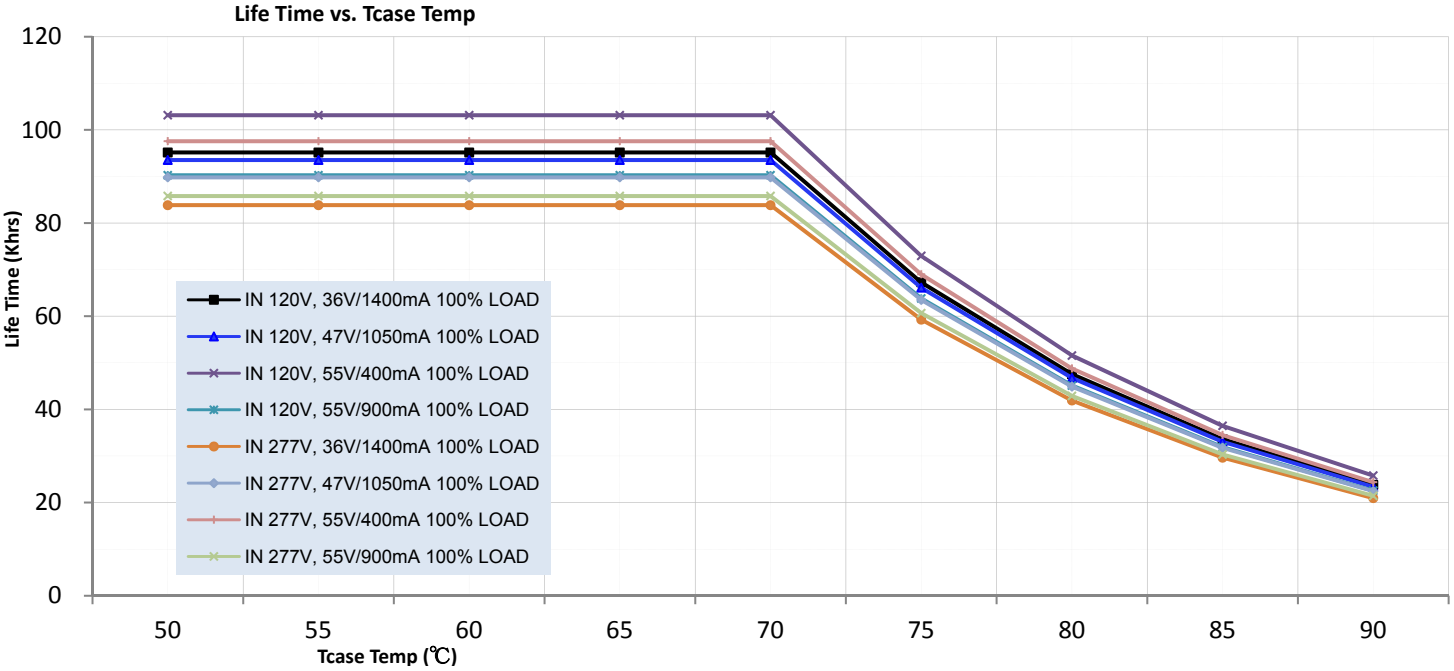
Typical THD vs. Pout at 25℃ Ambient Temp



Typical THD vs. Vout at 25℃ Ambient Temp



Life Time vs. Tcase Temp



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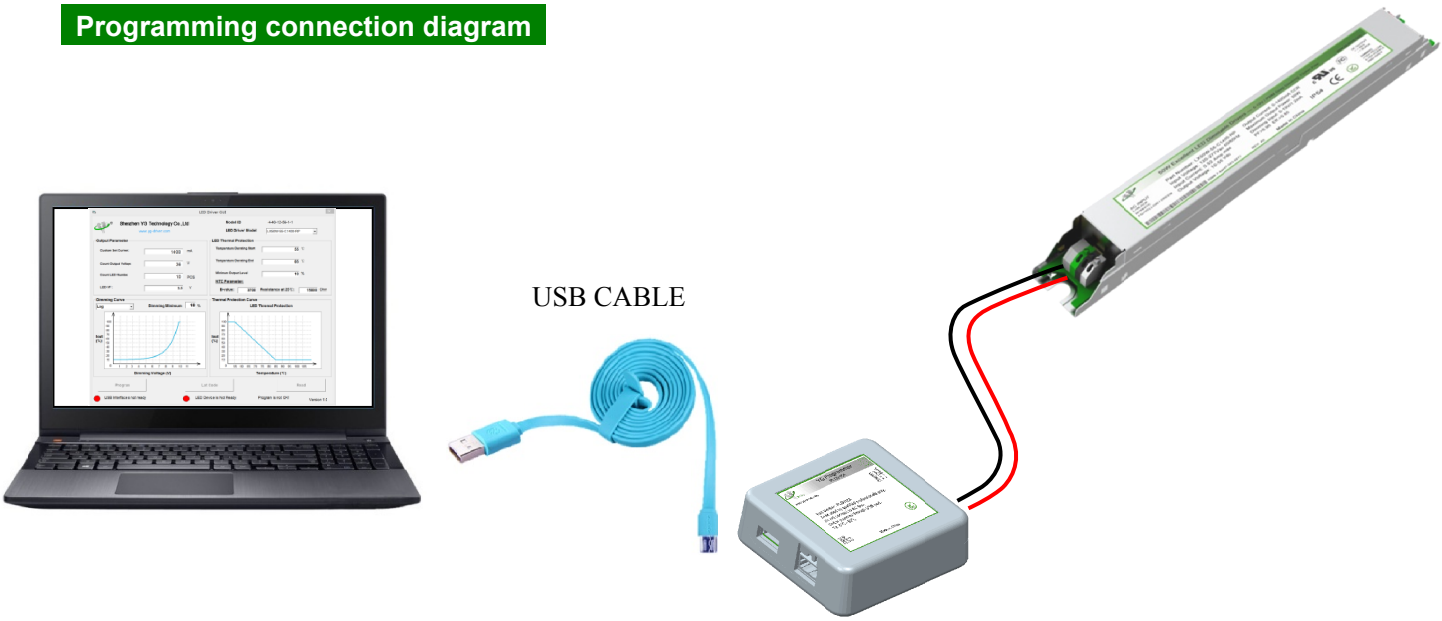
Product Release Date: 2017.03
Product Updates Date: 2018.08.02

Programming connection diagram



Installation

Metal shell;

AC input for connection the three KF250-3.5 connectors;

DC output for connection the four KFR250-3.5 connectors;

0-10V dimming input for the two KFR250-3.5 connectors;

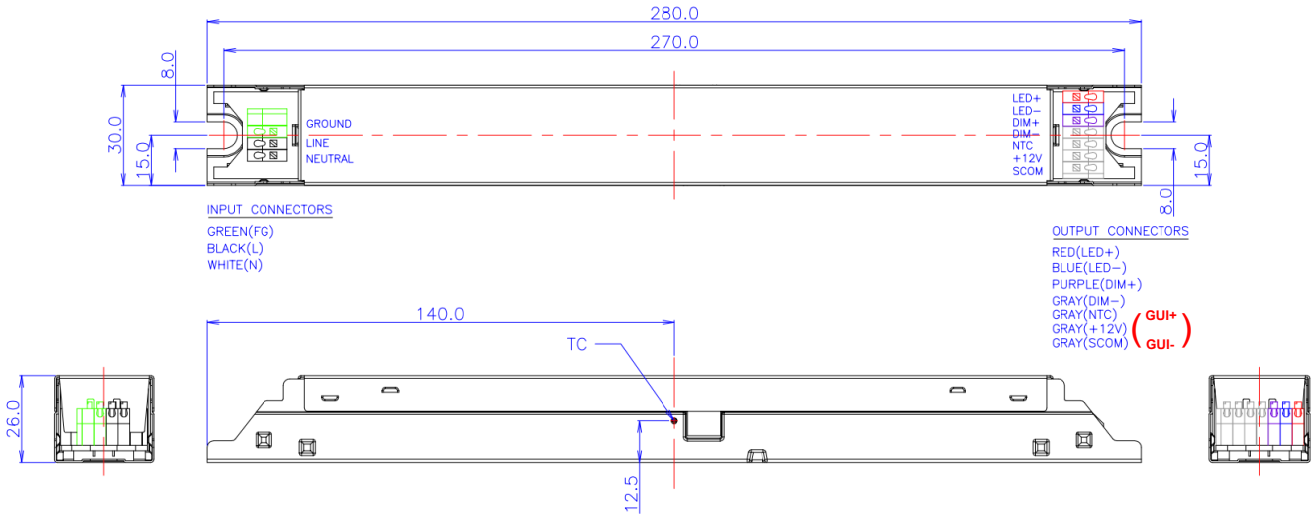
This product has two Φ8.0mm mounting holes.

Order ID

P/N: LX50W-55-C1400-RP

Description: 50W, 55Vdc voltage (max.), current 1400mA (max.), 0-10V dimming mode, with aux+12v.

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.

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Product Release Date: 2017.03
Product Updates Date: 2018.08.02