

55 Watt — LX55W Series A0 T5 Ballast Series, Programmable, Flicker-Free, Deep Dimming.

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

US & CN, LED Driver Class 2, UL Type TL

LX55W 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 LX55W 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. RSET interface for programmable output current using an external resistor. Flexibility & SKU reduction for OEM.

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 / Step Dimming.
- Step Dimming: 40% or 100% via AC Line input#1 and #2.
- Output Power: 55 Watt Max.
- 0-10V 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. 2-wire Analog.
- Output Voltage: 12Vdc to 55 Vdc. (Auto set with resistor value)
- Output Current: 100mA to 1500 mA. (Set by resistor value or GUI)
- Efficiency: Up to 85%.
- Warranty: 5 years.

Special Features

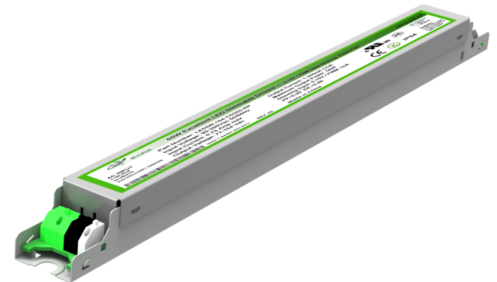
- Continuous, flicker-free dimming from 0% to 100%.
- Output current can be controlled by an external NTC.
- Output current can be set by an external resistor or GUI.
- Safety isolation between primary and secondary.
- A rated lifetime of 50,000 hours @ Tc = 75 °C.
- Safety: UL8750, UL1310 Class 2, CSA22.2.
- EMC: FCC 47CFR Part 15 Class A.
- Inrush Current Limiting Circuitry: AC Power Line: line to line 2 kV, line to earth 4 kV, eliminates circuit breaker tripping, switch arcing and relay failure.
- 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.

55W Constant Current Part List

| No. | Part Number | Input Voltage Vac | US, CN LED Driver Class 2 | Step Dimming | Output Voltage Range | Programmable Output Current | Current Accuracy | Power ⁽¹⁾ Factor | Output Power | Max. ⁽²⁾ Eff. |
|-----|------------------|-------------------|---------------------------|--------------|----------------------|-----------------------------|------------------|-----------------------------|--------------|--------------------------|
| 1 | LX55W-55-C1500-S | 120-277 | Yes | 40% or 100% | 12~55Vdc | 100-1500mA | ±5% | 0.90 | 55W | 85% |



Enclosure



Notice of use:

1. The DIM+ line can't touch the LED+ line and AC line.
2. LED- cannot be shorted with the DIM-.

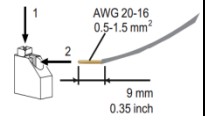
| Unit | Inch | Millimeter |
|-----------------|--|------------|
| Case Length | 14.17 | 360.00 |
| Case Width | 1.20 | 30.00 |
| Case Height | 1.02 | 26.00 |
| Mounting Length | 13.93 | 354.00 |
| Connectors | UL, KF250-3.5, WAGO 250-402 Push Pin or equivalent | |

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



55W 0-10V Dimming Part List

| No. | Part Number | Input Voltage Vac | US, CN LED Driver Class 2 | Step Dimming | Output Voltage Range | Programmable Output Current | 0-10V Dimming | Current Accuracy | Power ⁽¹⁾ Factor | Output Power | Max. ⁽²⁾ Eff. |
|-----|--------------------|-------------------|---------------------------|--------------|----------------------|-----------------------------|---------------|------------------|-----------------------------|--------------|--------------------------|
| 1 | LX55W-55-C1500-SRP | 120-277 | Yes | 40% or 100% | 12~55Vdc | 100-1500mA | 0-100%PC | ±5% | 0.90 | 55W | 88% |

Programmable Parameters

| Programmable Parameter | Programmable Minimum Value | Programmable Maximum Value | Factory Default | GUI (NTC) Programmable | RSET Programmable | |
|--------------------------------|----------------------------|----------------------------|-----------------|------------------------|-------------------|-----|
| Output Constant Current (Iout) | 100mA | 1500mA | 1000mA | YES | YES | |
| 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 |
| NTC Minimum Ohms | 1KΩ | 10KΩ | 2KΩ | YES | N/A | |
| NTC Minimum %out | ~0% | 100% | ~10% | YES | N/A | |
| NTC Maximum Ohms | 2KΩ | 10KΩ | 6.3KΩ | YES | N/A | |

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 | --- | --- | 0.58 A | Measured at 120 Vac / 60Hz Input, Output Full Load |
| | --- | --- | 0.32 A | Measured at 230 Vac / 50Hz Input, Output Full Load |
| | --- | --- | 0.28 A | Measured at 277 Vac / 60Hz Input, Output Full Load |
| Inrush Current (Peak) | --- | 30 A / 2.2uS | 35 A / 3uS | Measured at 120 Vac / 60Hz Input, Output Full Load. |
| | --- | 65 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 ≥ 50% Load |
| Power Factor (PF) | 0.90 | --- | --- | Measured at 120, 230, 277 Vac Input, Output ≥ 50% Load |

Output Specifications

| Parameter | Min. | Typ. | Max. | Notes / Conditions |
|---------------------------|-----------|-----------|-----------|---|
| DC Output Voltage | Per Table | --- | Per Table | Per Tables on Page 1 |
| DC Output Current (POC) | -5% | Per Table | +5% | Programmable Output Current (POC), Rset resistor is Per Table on Page 5 |
| Output Power | --- | --- | 55W | Voltage Foldback |
| Flickering Index (Vpk-pk) | --- | --- | 4% Vo | 20MHz BW, Full load output in parallel with 0.1uF & 10uF CAP. |
| Flickering Index (Ipk-pk) | --- | --- | 4% Io | 20MHz BW, Full load output in parallel with 0.1uF & 10uF CAP. |
| 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 | 1000ms | Measured at 120 Vac / 60Hz Input, Output Full Load |
| | --- | 300ms | --- | 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 |
| 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. 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. |



Dimming Specifications

| Items | Parameter | Min. | Typ. | Max. | Notes / Conditions |
|----------------------|---|--------|--------|--------|---|
| 12V Auxiliary Output | Output Voltage | | NC | | Yellow Wire |
| | Output Current | | NC | | Yellow Wire |
| 0-10V Dimming | Input Absolute Voltage | -2.0 V | 10 V | 15 V | Purple Wire |
| | Output Source Current | 0.1 mA | 1.0 mA | 1.5 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 | 1.0 mA | 1.5 mA | |
| | 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 | | | Measured at 120 Vac input, 100%Load and Tc=70° 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 | --- | +60 °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 | UL8750, CSA-C22.2 No. 250.13, US & CN LED Driver Class 2, UL Type TL. |
| Withstand Voltage | Input to Output: 2000 Vac |
| Isolation Resistance | Input to Output: >10MΩ, 500Vdc @ 25°C, 70% RH |
| Dimming & Aux Circuit | +12V (Yellow), Dim (Purple), GND (Grey) are considered part of the secondary circuit. |
| FG | The metal case of the driver must be connected to earth ground (FG) in the end-use application. |

EMC Compliance

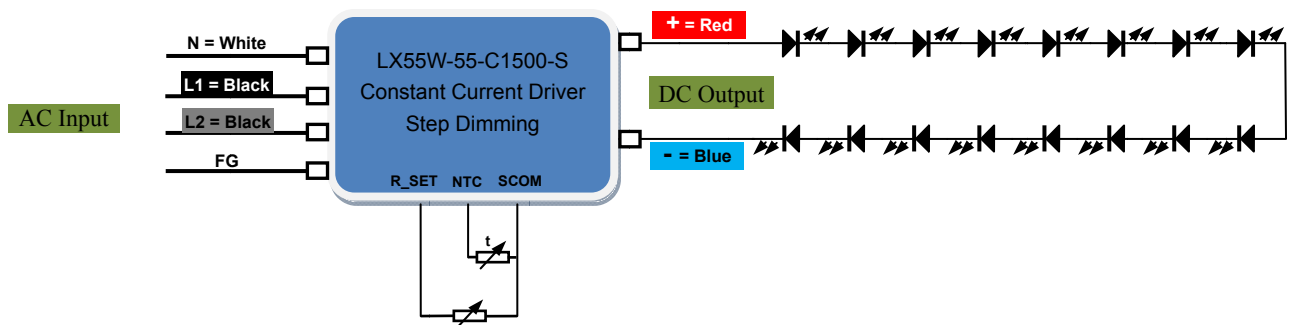
| EMI Category | Standards |
|--------------|--|
| FCC | FCC 47CFR Part 15 Class A, ANSI C63.4: 2009 |
| Energy Star | Energy Star transient protection: Ballast or driver shall comply with ANSI/IEEE C62.41.1-2002 and ANSI/IEEE C62.41.2-2002, Category A operation. The line transient shall consist of seven 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): 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: No Flicker/2KV |
| EN 61000-4-5 | Surge Immunity Test: AC Power Line: line to line 2 kV, line to earth 4 kV |
| EN 61000-4-6 | Conducted Radio Frequency Disturbances Test-CS |
| EN 61547 | Electromagnetic Immunity Requirements Applies To Lighting Equipment |

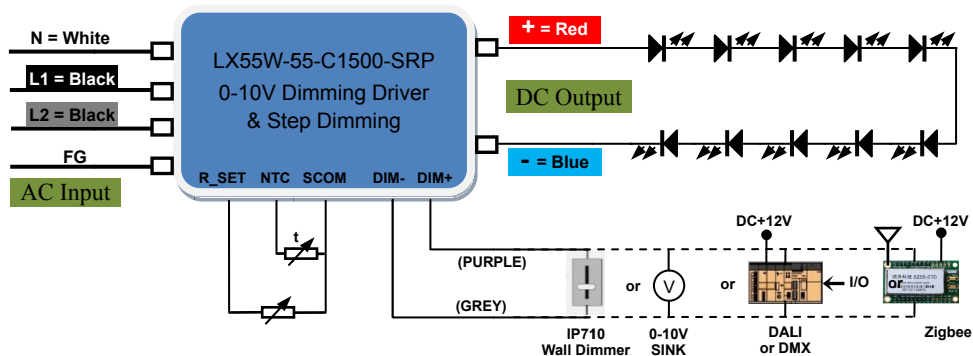
Note: the above test data are in the condition of 25 C ambient temperature, except for the marked temperature.

Typical Applications:

- Constant Current Driver with programmable & NTC control.

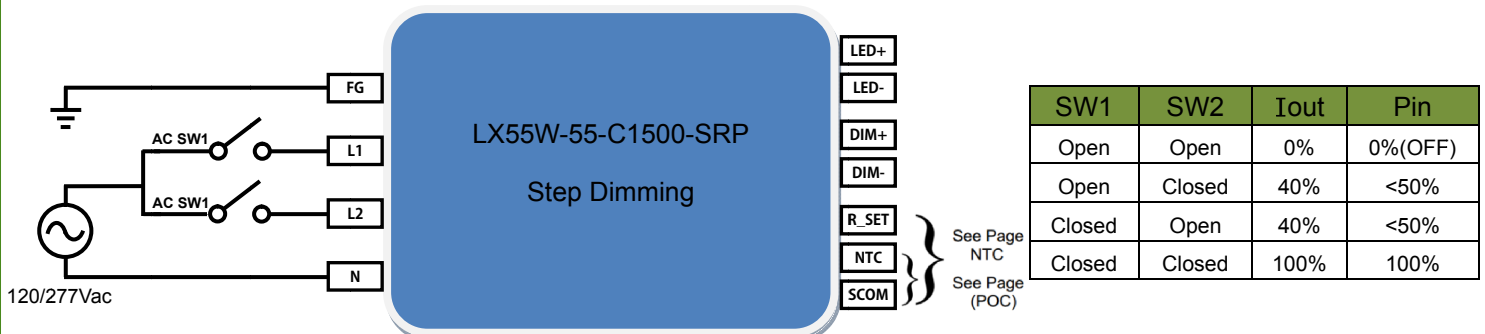


- 0-10V Dimming Driver with programmable & NTC control.



- Step Dimming: AC Switch Selectable Step Dimming.

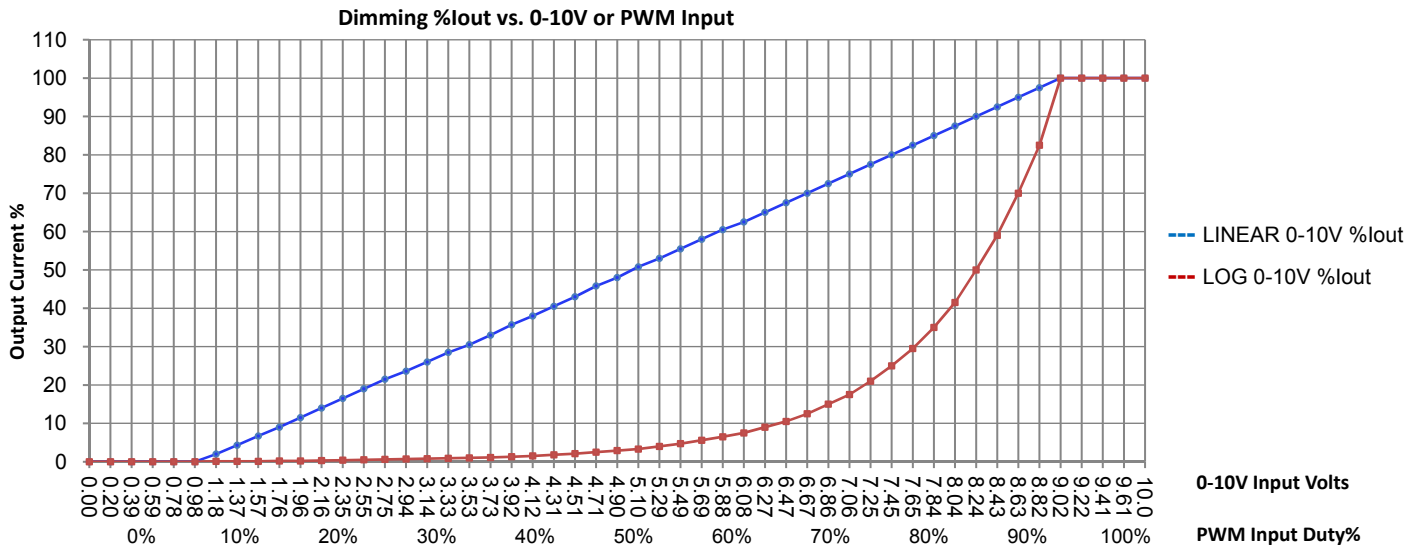
Minimum level is 300mA or 40% of Programmed I_{out}.



Note:

1. Keep POC (Programmable Output Current) set to >700mA for proper Step Dimming Operation. Refer to Power Operating Window graph.
2. Keep POC within 55W Power Operating Window. Refer to Power Operating Window graph. Part will fold back output voltage to maintain power limits.

■ 0-10V Dimming Curve.



POC (Programmable Output Current)

Set by Resistor Value "RSET" or using YG Programmer USB interface & YG PC based GUI Software.

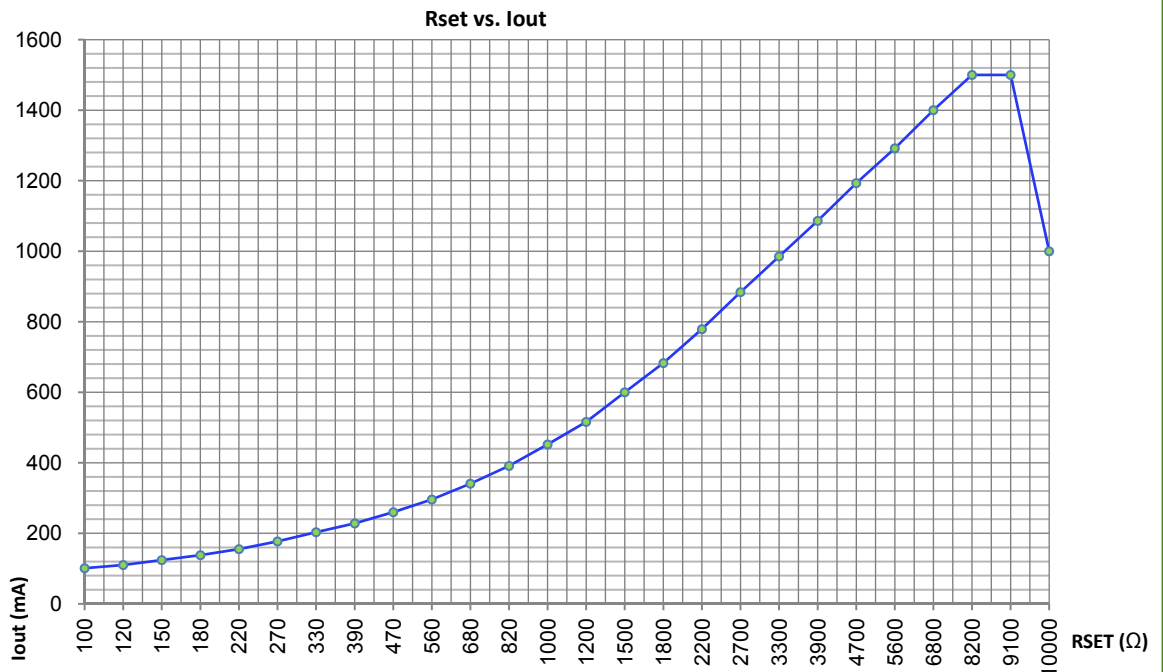
Programmable Output Current: 100 – 1500mA. Power limited to 55W maximum by Voltage fold-back.

When RSET is open (no resistor present) then GUI controls programmed output current.

Factory Default: GUI set to 1000mA with RSET Open.

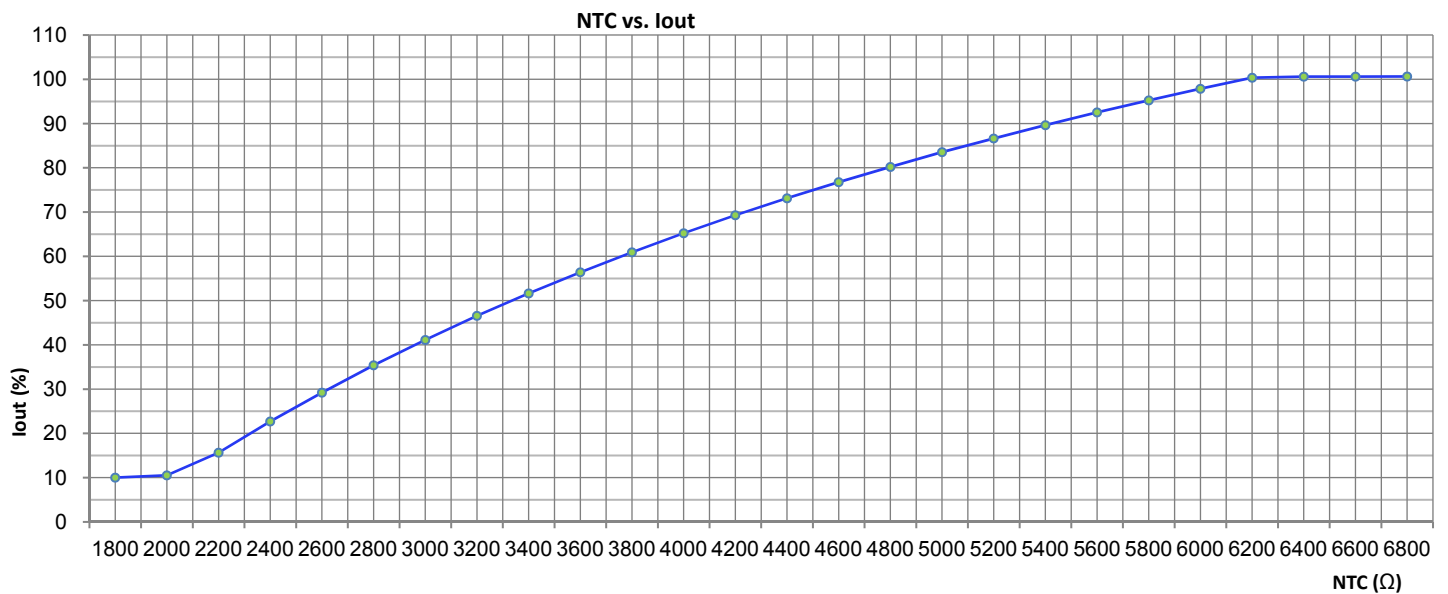
Output Current vs. RSET value is within +/-5%, RSET can be any >=1/4W, +/-1%, >=20V rated resistor.

| RSET(Ω) | Iout (mA) |
|---------|-----------|
| 100 | 101 |
| 120 | 110 |
| 150 | 124 |
| 180 | 138 |
| 220 | 155 |
| 270 | 177 |
| 330 | 203 |
| 390 | 228 |
| 470 | 260 |
| 560 | 296 |
| 680 | 341 |
| 820 | 391 |
| 1000 | 452 |
| 1200 | 516 |
| 1500 | 603 |
| 1800 | 683 |
| 2200 | 779 |
| 2700 | 884 |
| 3300 | 993 |
| 3900 | 1086 |
| 4700 | 1193 |
| 5600 | 1292 |
| 6800 | 1400 |
| 8200 | 1500 |
| 9100 | 1500 |
| ≥10K | GUI set |



Note: The value of NTC is above 6.2K, NTC does not control the output current.
RSET > 8300 Ohms will default Iout to GUI setting.

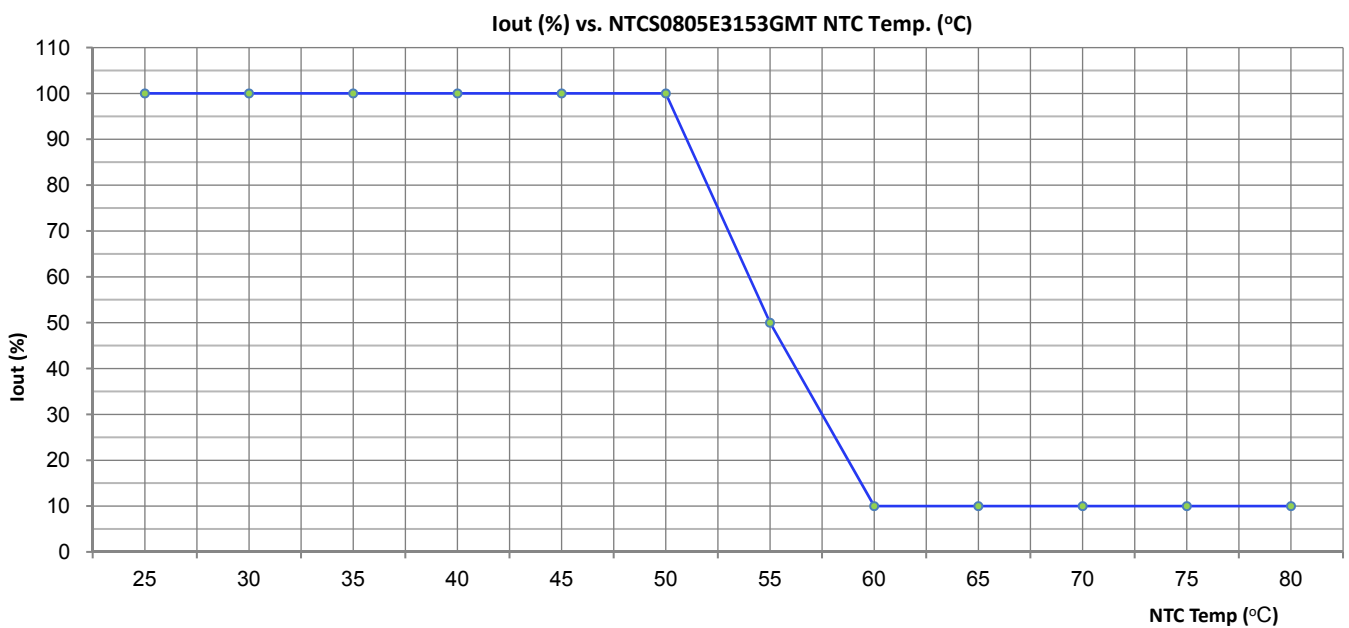
NTC Current Control



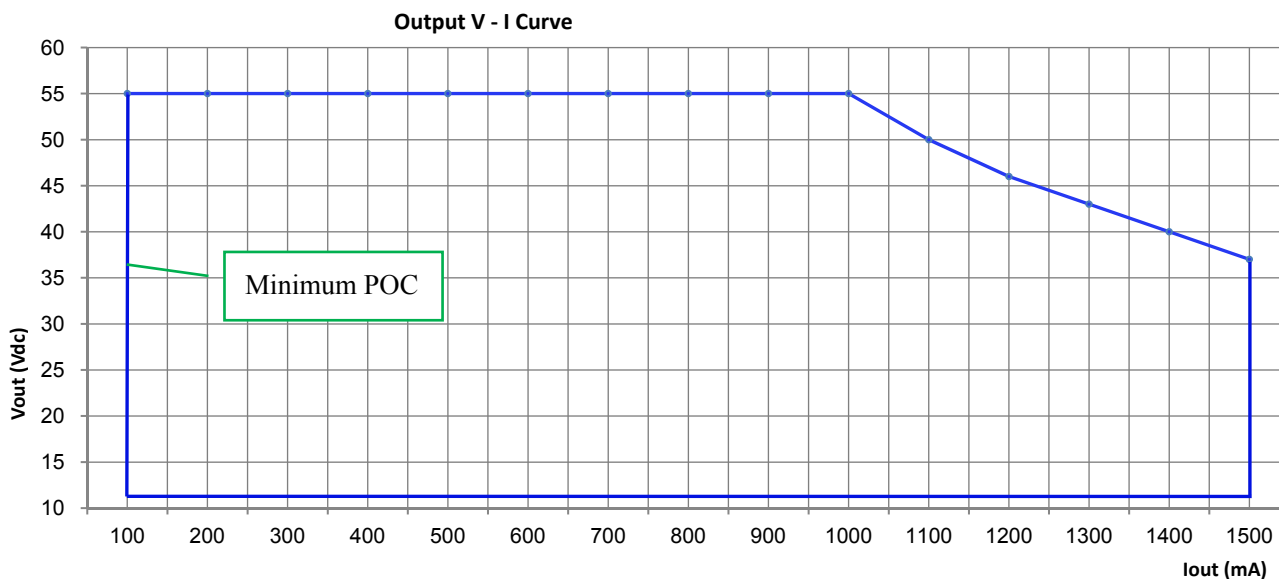
Note: Maximum dimming current is limited by NTC.
 NTC values, NTC High, NTC Low and NTC Minimum Iout can be programmed.
 Using YG Programmer USB interface & YG PC based GUI Software.
 Default: NTC Low = 2.0K ~ 10% Iout, NTC High = 6.3K, 100% Iout.

Module Temperature Protection Example

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



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 100mA to 1500mA.

Programmable NTC Values:

Default: 2.0K \approx 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.

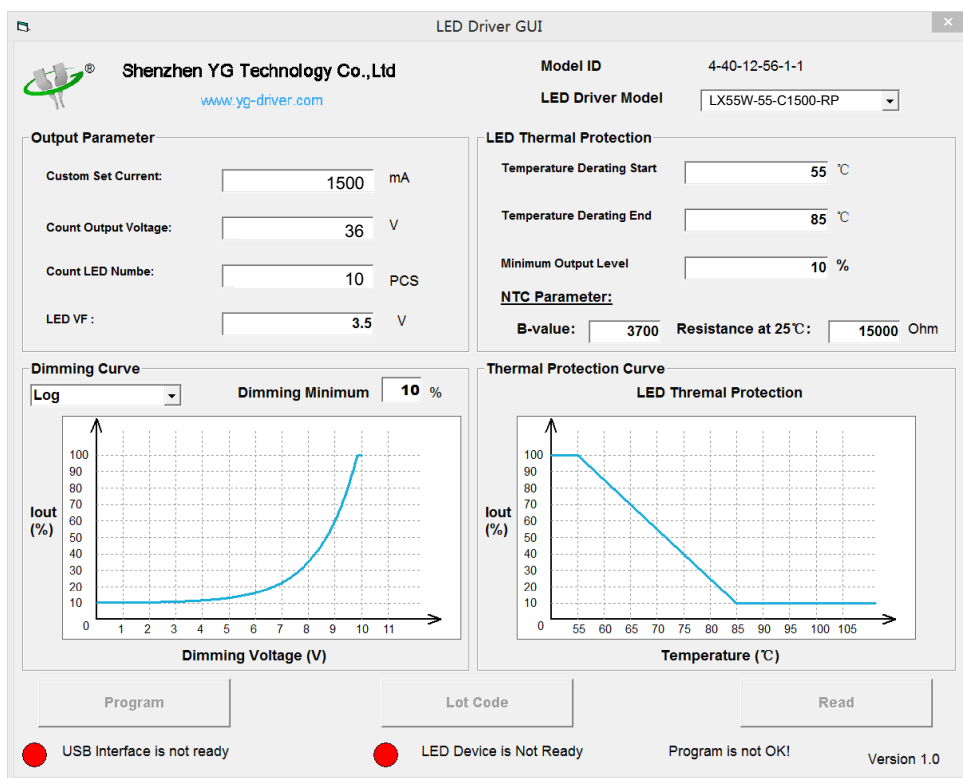
YG Programmer Software:

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 barcode 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



LED Driver GUI

Shenzhen YG Technology Co., Ltd
www.yg-driver.com

Model ID: 4-40-12-56-1-1
LED Driver Model: LX55W-55-C1500-RP

Output Parameter

- Custom Set Current: 1500 mA
- Count Output Voltage: 36 V
- Count LED Numbe: 10 PCS
- LED VF: 3.5 V

LED Thermal Protection

- Temperature Derating Start: 55 °C
- Temperature Derating End: 85 °C
- Minimum Output Level: 10 %

NTC Parameter:

- B-value: 3700
- Resistance at 25 °C: 15000 Ohm

Dimming Curve

Log [v] Dimming Minimum: 10 %

Thermal Protection Curve

LED Thermal Protection

Buttons: Program, Lot Code, Read

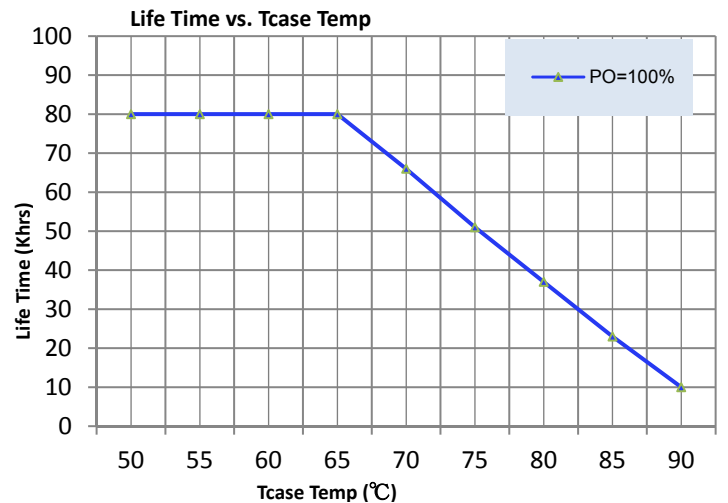
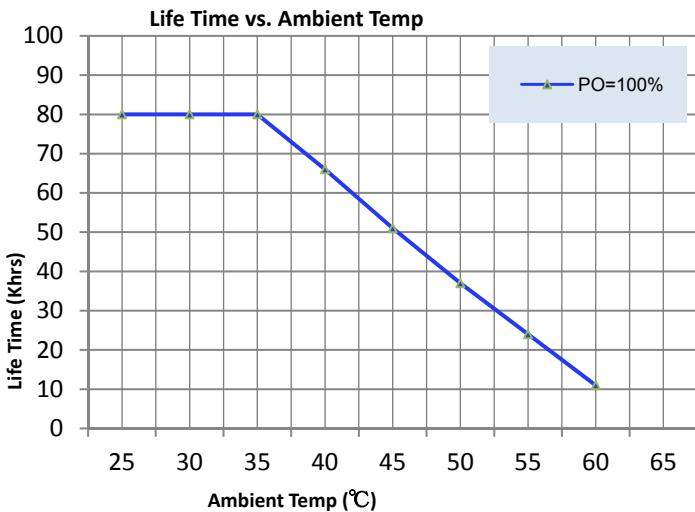
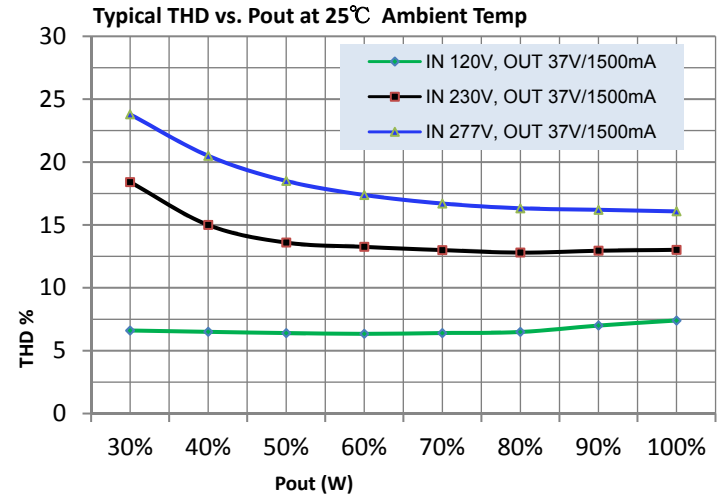
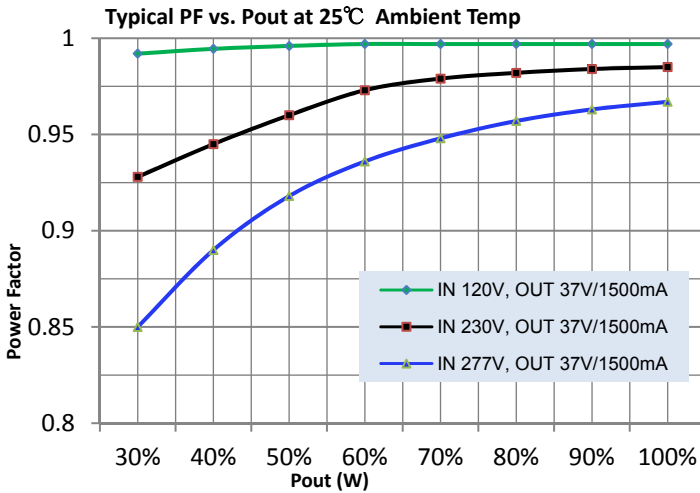
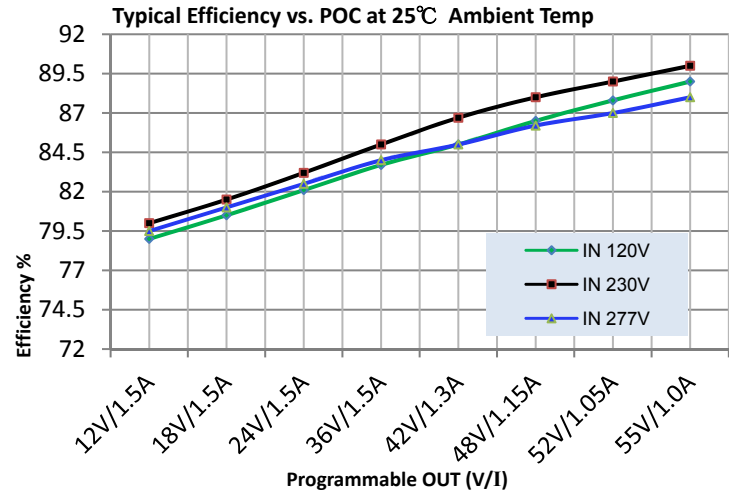
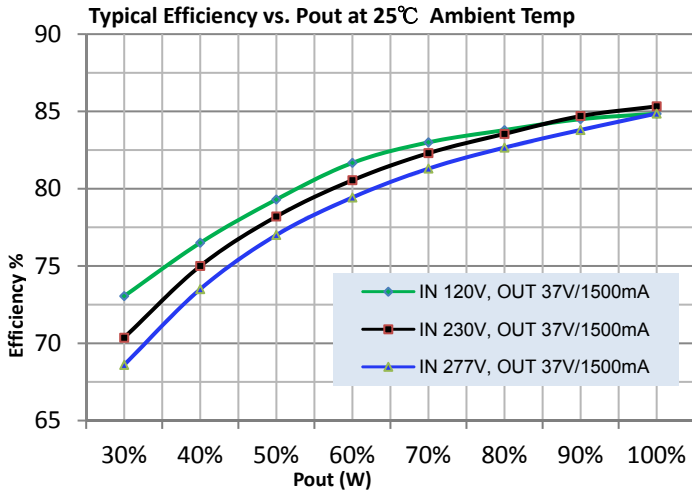
Status: USB Interface is not ready, LED Device is Not Ready, Program is not OK! Version 1.0

Custom designs available.

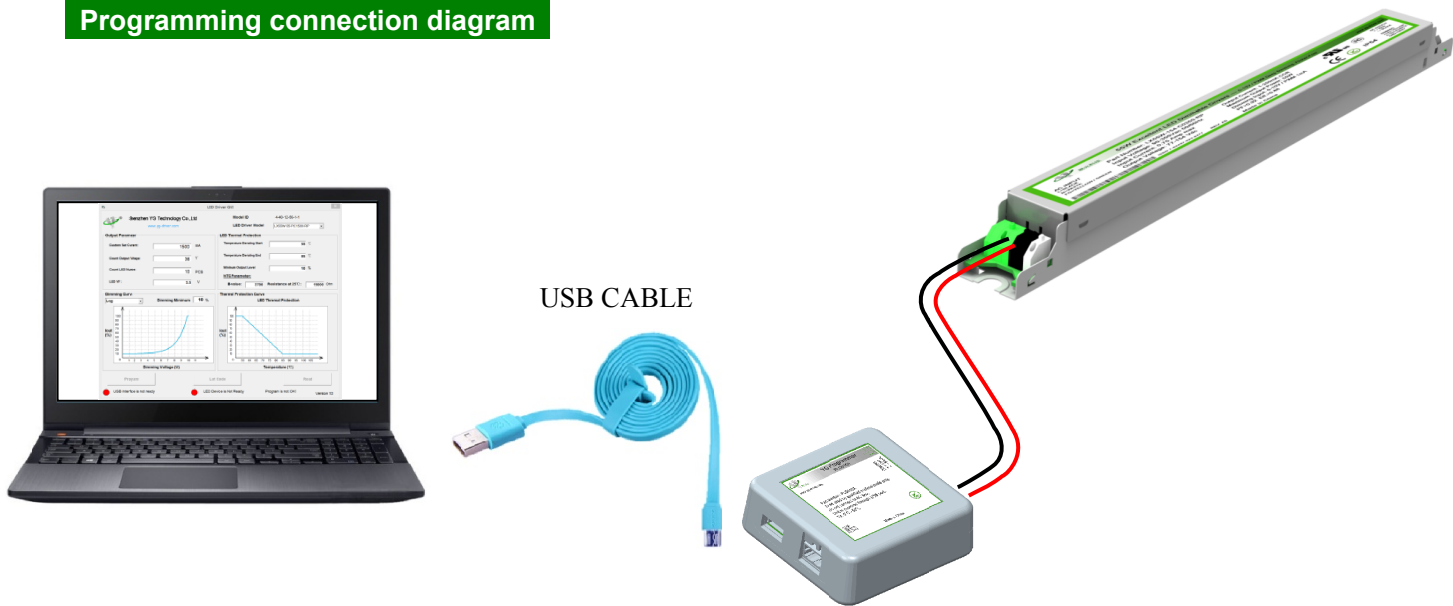
Please consult with the factory.

Specifications subject to change without notice.

Characteristic Curve



Programming connection diagram



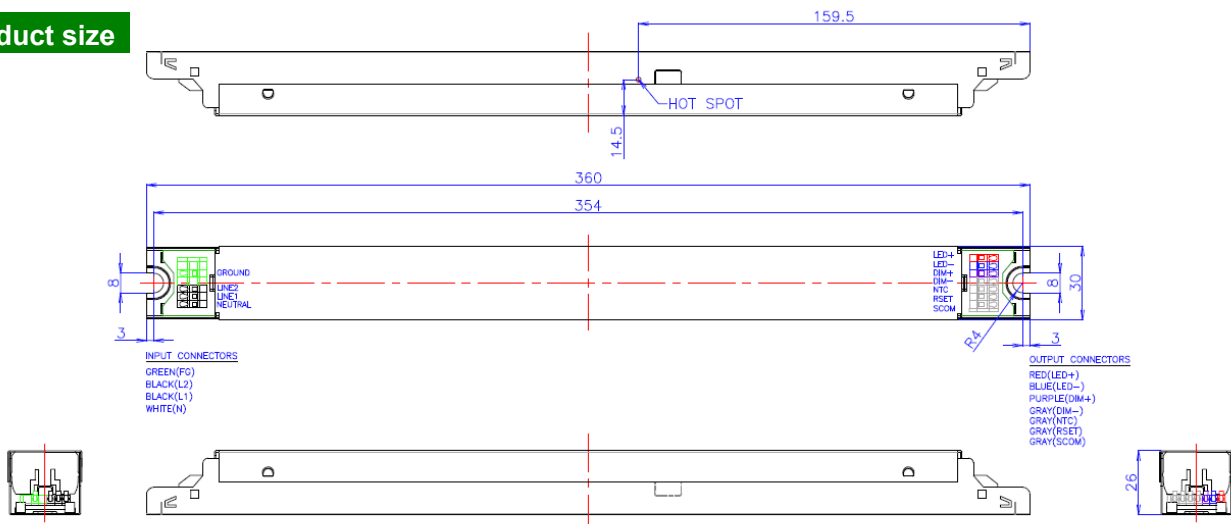
Installation

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 $\Phi 8.0\text{mm}$ mounting holes.

Order ID, Product mark

P/N: LX55W-55-C1500-SRP
Description: 55W, 55Vdc voltage (max.), current 1500mA (max.), 0-10V dimming mode. step dimming (AC switch selectable).

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.