

Features

- Ultra High Efficiency (Up to 94%)
- Full Power at Wide Output Current Range (Constant Power)
- Thermal Sensing and Protection for LED Module
- 0-10V/PWM/Timer Dimmable (3 Timer Modes) (DTA models)
DALI Dimming Control (BTA models)
- Dim-to-Off with Standby Power ≤ 0.5 W
- Always-on Auxiliary Power: 12Vdc, 200mA (Transient Peak Current up to 400mA)
- Output Lumen Compensation (DTA models)
- Input Surge Protection: 6kV line-line, 10kV line-earth
- All-Around Protection: OVP, SCP, OTP
- Waterproof (IP67) and UL Dry / Damp / Wet Location
- SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location
- 7 Years Warranty



Description

The EUD-150SxxxDTA(BTA) series is a 150W, constant-current, programmable LED driver that operates from 90-305 Vac input with excellent power factor. Created for many lighting applications including high bay, tunnel and roadway, it provides a dim-to-off mode with low standby power. 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) | Power Factor | | Model Number |
|---------------------------------|------------------------------|------------------------|-------------------------------|----------------------|-------------------|------------------------|--------------|--------|------------------------------------|
| | | | | | | | 120Vac | 220Vac | |
| 70-1050mA | 700-1050mA | 700 mA | 90 ~ 305 Vac 100 ~ 300 Vdc | 75~214Vdc | 150 W | 94.0% | 0.99 | 0.96 | EUD-150S105DTA(BTA) |
| 140-2100mA | 1400-2100mA | 1400 mA | 90 ~ 305 Vac 100 ~ 300 Vdc | 38~107Vdc | 150 W | 94.0% | 0.99 | 0.96 | EUD-150S210DTA(BTA) ⁽⁴⁾ |
| 245-3500mA | 2450-3500mA | 3150 mA | 90 ~ 305 Vac 100 ~ 300 Vdc | 22 ~ 61Vdc | 150 W | 93.5% | 0.99 | 0.96 | EUD-150S350DTA(BTA) ⁽⁴⁾ |
| 385-5600mA | 3850-5600mA | 4200 mA | 90 ~ 305 Vac 100 ~ 300 Vdc | 14 ~ 39Vdc | 150 W | 92.5% | 0.99 | 0.96 | EUD-150S560DTA(BTA) ⁽⁴⁾ |

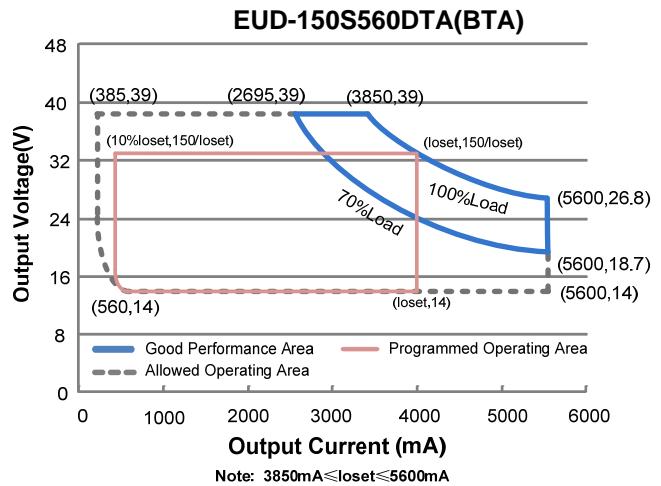
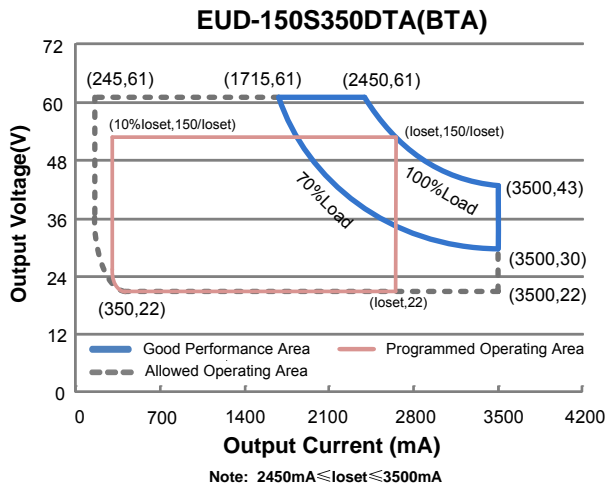
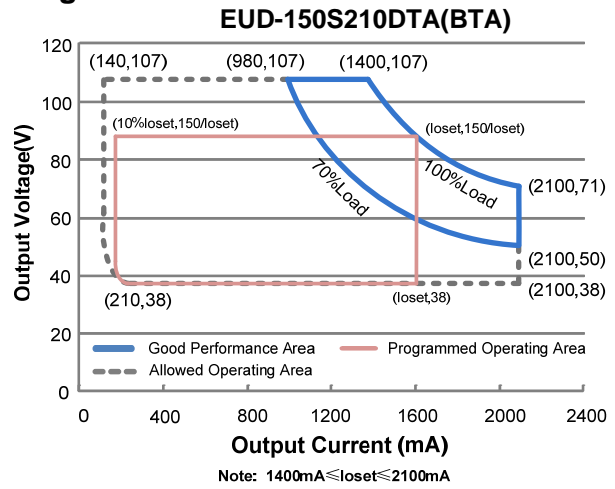
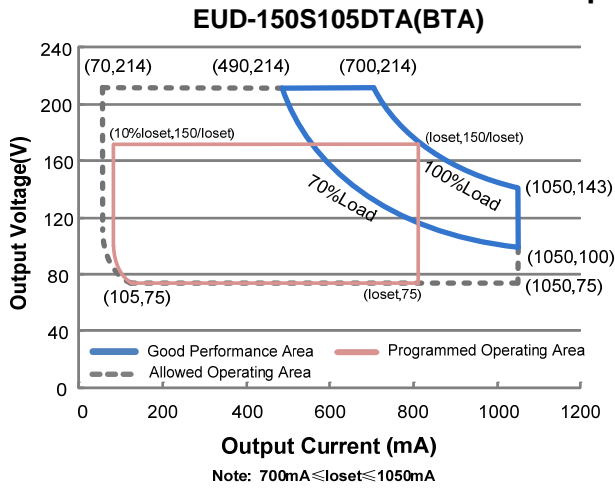
Notes: (1) Output current range with constant power at 150W

(2) Certified voltage range: UL, FCC 100-277Vac or 100-300Vdc; otherwise 100-240Vac or 100-250Vdc (except KS)

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

(4) SELV Output

I-V Operating Area



Input Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|----------------------------------|--------|------|-----------------------|---|
| Input Voltage | 90 Vac | - | 305 Vac | 100-300Vdc |
| Input Frequency | 47 Hz | - | 63 Hz | |
| Leakage Current | - | - | 0.75 MIU | UL8750; 277Vac/ 60Hz, grounding effectively |
| | - | - | 0.70 mA | IEC60598-1; 240Vac/ 60Hz, grounding effectively |
| Input AC Current | - | - | 1.87 A | Measured at 100%load and 100 Vac input. |
| | - | - | 0.85 A | Measured at 100%load and 220 Vac input. |
| Inrush Current(I ² t) | - | - | 1.90 A ² s | At 220Vac input, 25°C cold start, duration=872μs, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details. |

Input Specifications (Continued)

| Parameter | Min. | Typ. | Max. | Notes |
|-----------|------|------|------|--|
| PF | 0.90 | - | - | At 100-277Vac, 50-60Hz, 70%-100% Load (105-150W) |
| THD | - | - | 20% | |
| THD | - | - | 10% | At 220-240Vac, 50-60Hz, 75%-100% Load (112.5-150W) |

Output Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|--|----------|----------|----------|--|
| Output Current Tolerance | -5%loset | - | 5%loset | 100%load |
| Output Current Setting(loset) Range | | | | |
| EUD-150S105DTA(BTA) | 70 mA | - | 1050 mA | |
| EUD-150S210DTA(BTA) | 140 mA | - | 2100 mA | |
| EUD-150S350DTA(BTA) | 245 mA | - | 3500 mA | |
| EUD-150S560DTA(BTA) | 385 mA | - | 5600 mA | |
| Output Current Setting Range with Constant Power | | | | |
| EUD-150S105DTA(BTA) | 700 mA | - | 1050 mA | |
| EUD-150S210DTA(BTA) | 1400 mA | - | 2100 mA | |
| EUD-150S350DTA(BTA) | 2450 mA | - | 3500 mA | |
| EUD-150S560DTA(BTA) | 3850 mA | - | 5600 mA | |
| Total Output Current Ripple (pk-pk) | - | 5%lomax | 10%lomax | 100%load, 20 MHz BW |
| Output Current Ripple at < 200 Hz (pk-pk) | - | 2%lomax | - | 100%load. |
| Startup Overshoot Current | - | - | 10%lomax | 100%load |
| No Load Output Voltage | | | | |
| EUD-150S105DTA(BTA) | - | - | 240 V | |
| EUD-150S210DTA(BTA) | - | - | 120 V | |
| EUD-150S350DTA(BTA) | - | - | 80 V | |
| EUD-150S560DTA(BTA) | - | - | 50 V | |
| Line Regulation | - | - | ±0.5% | Measured at 100%load |
| Load Regulation | - | - | ±1.5% | |
| Turn-on Delay Time | - | - | 1.0 s | Measured at 120Vac input, 70%-100% Load |
| | - | - | 0.5 s | Measured at 220Vac input, 70%-100% Load |
| Temperature Coefficient of loset | - | 0.03%/°C | - | Case temperature = 0°C ~Tc max |
| 12V Auxiliary Output Voltage | 10.8 V | 12 V | 13.2 V | |
| 12V Auxiliary Output Source Current | 0 mA | - | 200 mA | Return terminal is "Dim-"(DTA models) Return terminal is "OTP-"(BTA models) |
| 12V Auxiliary Output Transient Peak Current | - | - | 400 mA | 400mA peak for a maximum duration of 300ms in a 2s period during which time the average should not exceed 200mA. |

Note: All specifications are typical at 25°C unless otherwise stated.

General Specifications

| Parameter | Min. | Typ. | Max. | Notes | |
|--|--|--|--------------------------------------|---|---|
| Efficiency at 120 Vac input: EUD-150S105DTA(BTA) I _o = 700mA I _o =1050mA EUD-150S210DTA(BTA) I _o =1400mA I _o =2100mA EUD-150S350DTA(BTA) I _o =2450mA I _o =3500mA EUD-150S560DTA(BTA) I _o =3850mA I _o =5600mA | 89.5% 88.0% 89.5% 87.5% 88.5% 87.5% 88.0% 86.0% | 91.5% 90.0% 91.5% 89.5% 90.5% 89.5% 90.0% 88.0% | - - - - - - - - | Measured at 100%load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.) | |
| Efficiency at 220 Vac input: EUD-150S105DTA(BTA) I _o = 700mA I _o =1050mA EUD-150S210DTA(BTA) I _o =1400mA I _o =2100mA EUD-150S350DTA(BTA) I _o =2450mA I _o =3500mA EUD-150S560DTA(BTA) I _o =3850mA I _o =5600mA | 92.0% 90.5% 92.0% 89.5% 91.5% 89.0% 90.5% 88.5% | 94.0% 92.5% 94.0% 91.5% 93.5% 91.0% 92.5% 90.5% | - - - - - - - - | | |
| Efficiency at 277 Vac input: EUD-150S105DTA(BTA) I _o = 700mA I _o =1050mA EUD-150S210DTA(BTA) I _o =1400mA I _o =2100mA EUD-150S350DTA(BTA) I _o =2450mA I _o =3500mA EUD-150S560DTA(BTA) I _o =3850mA I _o =5600mA | 92.0% 90.5% 92.5% 90.0% 91.5% 89.0% 90.5% 89.0% | 94.0% 92.5% 94.5% 92.0% 93.5% 91.0% 92.5% 91.0% | - - - - - - - - | | |
| Standby power | - | - | 0.5 W | | Measured at 230Vac/50Hz; Dimming off |
| MTBF | - | 228,000 Hours | - | | Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F) |
| Lifetime | - | 100,000 Hours | - | | Measured at 220Vac input, 80%Load and 70°C case temperature; See lifetime vs. Tc curve for the details |
| Operating Case Temperature for Safety Tc _s | -40°C | - | +89°C | | |
| Operating Case Temperature for Warranty Tc _w | -40°C | - | +75°C | | Case temperature for 7 years warranty. Please see Inventronics Warranty Statement for complete details. |
| Storage Temperature | -40°C | - | +85°C | | Humidity: 5%RH to 100%RH |
| Dimensions Inches (L × W × H) Millimeters (L × W × H) | 8.03 × 2.66 × 1.56 204 × 67.5 × 39.7 | | | | With mounting ear 8.86 × 2.66 × 1.56 225 × 67.5 × 39.7 |

General Specifications (Continued)

| Parameter | Min. | Typ. | Max. | Notes |
|------------|------|--------|------|-------|
| Net Weight | - | 1150 g | - | |

Note: All specifications are typical at 25°C unless otherwise stated.

Dimming Specifications

| Parameter | Min. | Typ. | Max. | Notes | |
|------------|--------------------------------------|-------------|-------------|-------------|--|
| DTA Models | Absolute Maximum Voltage on the Vdim | -20 V | - | 20 V | |
| | Source Current on Vdim (+)Pin | 200 μ A | 300 μ A | 450 μ A | Vdim(+) = 0 V |
| | Recommended Dimming Input Range | 0 V | - | 10 V | Default 0-10V dimming mode. |
| | Dim off Voltage | 0.35 V | 0.5 V | 0.65 V | |
| | Dim on Voltage | 0.55 V | 0.7 V | 0.85 V | |
| | Hysteresis | - | 0.2 V | - | |
| | Recommended Dimming Input Range | 0 V | - | 10 V | |
| | Dim off Voltage | 0.35 V | 0.5 V | 0.65 V | Dimming mode set to PWM in PC interface. |
| | Dim on Voltage | 0.55 V | 0.7 V | 0.85 V | |
| | Hysteresis | - | 0.2 V | - | |
| | PWM_in High Level | 3 V | - | 10 V | |
| | PWM_in Low Level | -0.3 V | - | 0.6 V | |
| | PWM_in Frequency Range | 200 Hz | - | 3 KHz | |
| | PWM_in Duty Cycle | 1% | - | 99% | |
| | PWM Dimming off (Positive Logic) | 2% | 5% | 8% | |
| | PWM Dimming on (Positive Logic) | 4% | 7% | 10% | |
| | PWM Dimming off (Negative Logic) | 92% | 95% | 98% | |
| | PWM Dimming on (Negative Logic) | 90% | 93% | 96% | |
| | Hysteresis | - | 2% | - | |
| BTA Models | DA, DA High Level | 9.5V | 16V | 22.5V | |
| | DA, DA Low Level | -6.5V | 0V | 6.5V | |
| | DA, DA Current | 0mA | - | 2mA | |

Dimming Specifications (Continued)

| Parameter | | Min. | Typ. | Max. | Notes |
|----------------------|--|---------------------------------|------|-------|---|
| Dimming Output Range | EUD-150S105DTA(BTA) EUD-150S210DTA(BTA) EUD-150S350DTA(BTA) EUD-150S560DTA(BTA) | 10%loset | - | loset | 700mA ≤ loset ≤ 1050mA 1400mA ≤ loset ≤ 2100mA 2450mA ≤ loset ≤ 3500mA 3850mA ≤ loset ≤ 5600mA |
| | | 70mA 140mA 245mA 385mA | - | loset | 70mA ≤ loset < 700mA 140mA ≤ loset < 1400mA 245mA ≤ loset < 2450mA 385mA ≤ loset < 3850mA |

Note: All specifications are typical at 25 °C unless stated otherwise.

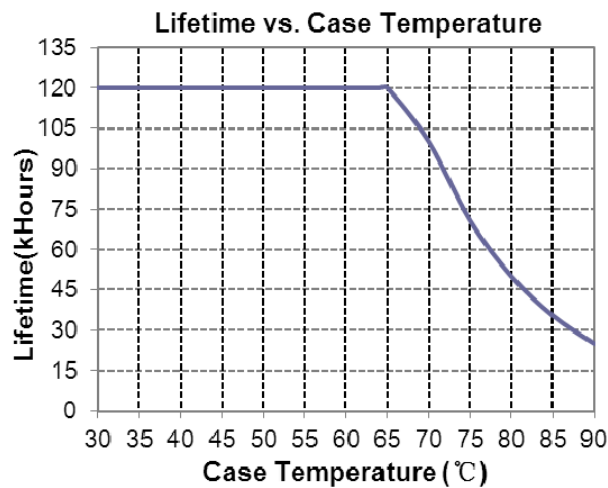
Safety & EMC Compliance

| Safety Category | Standard |
|----------------------------|---|
| UL/CUL | UL8750,CAN/CSA-C22.2 No. 250.13 |
| CE | EN 61347-1, EN61347-2-13 |
| KS | KS C 7655 |
| EMI Standards | Notes |
| EN 55015 ⁽¹⁾ | Conducted emission Test & Radiated emission Test |
| EN 61000-3-2 | Harmonic current emissions |
| EN 61000-3-3 | Voltage fluctuations & flicker |
| FCC Part 15 ⁽¹⁾ | 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: line to line 6 kV, line to earth 10 kV ⁽²⁾ |
| 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 |
| DALI Standards | Notes |
| DALI | IEC62386-101,102 & part of 207 ⁽³⁾ |

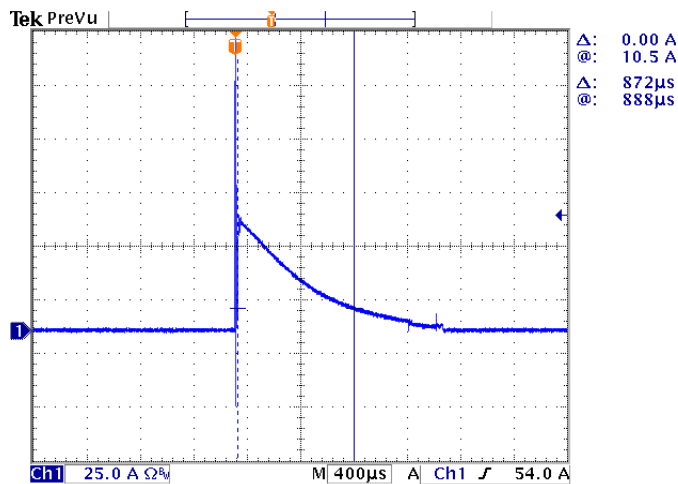
Note: (1) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

- (2) To perform electric strength (hi-pot) testing, the “GDT ground disconnect” (nut and metal lock sheet) on the driver end-cap should be removed temporarily to prevent the internal gas discharge tube from conducting (as allowed by IEC 60598-1 Clause 10.2). After testing is completed, these items must be reinstalled to restore line-to-earth surge protection and secure the end cap.
- (3) Optional Commands Implemented: 242 (query short circuit), 243 (query open circuit)

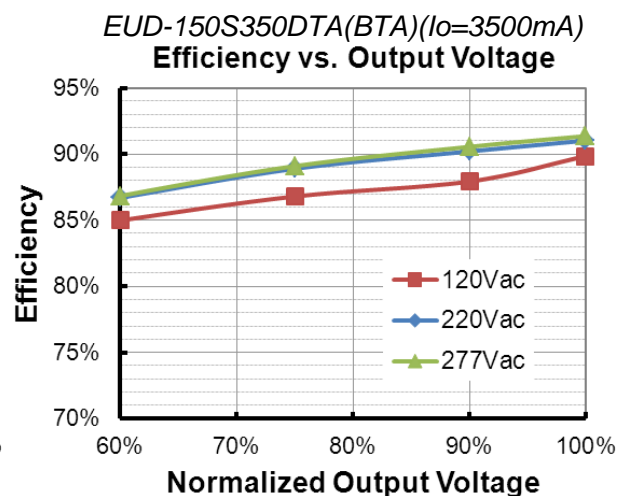
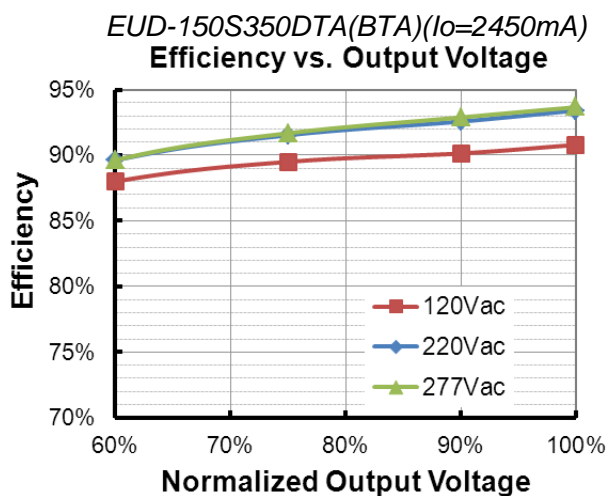
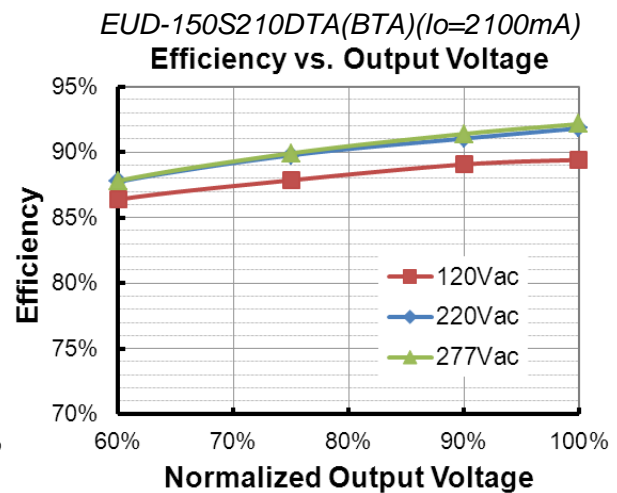
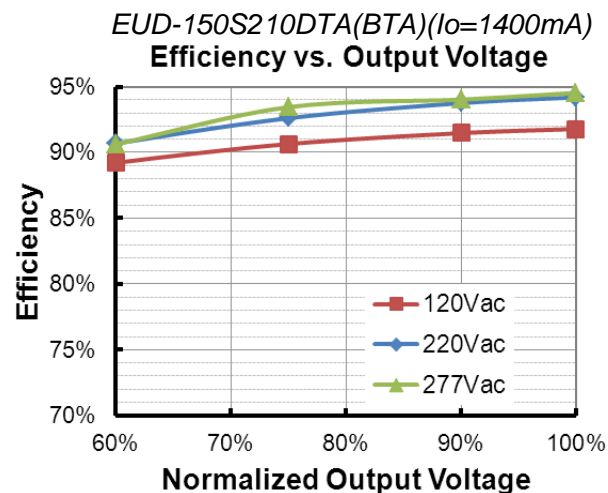
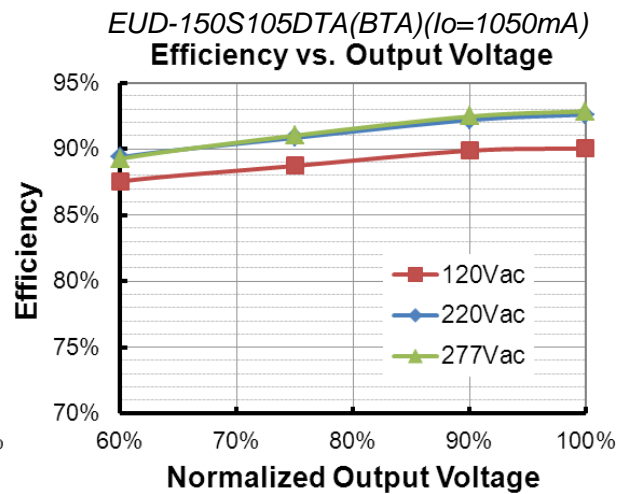
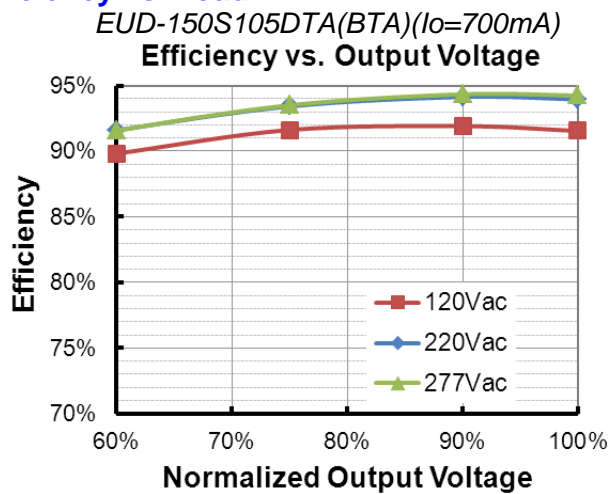
Lifetime vs. Case Temperature

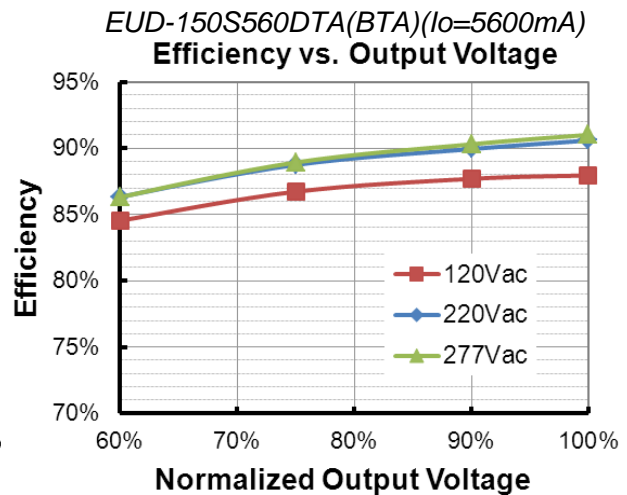
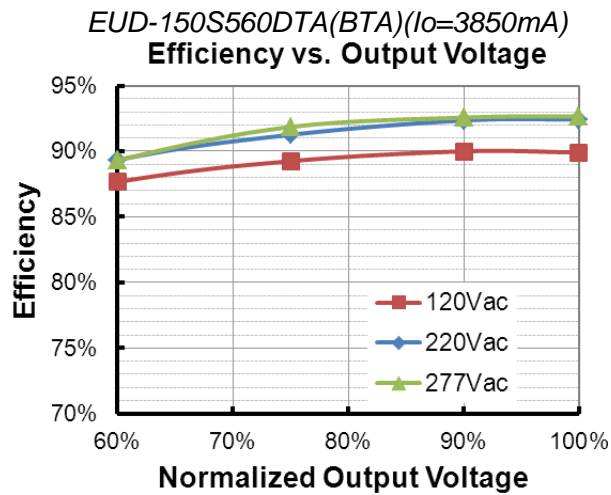


Inrush Current Waveform

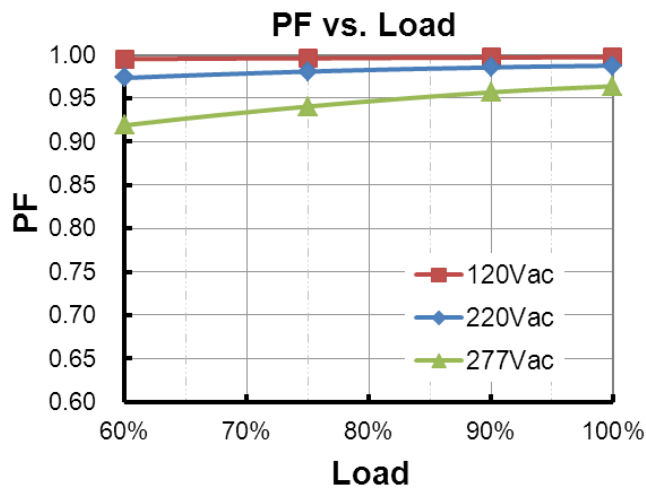


Efficiency vs. Load

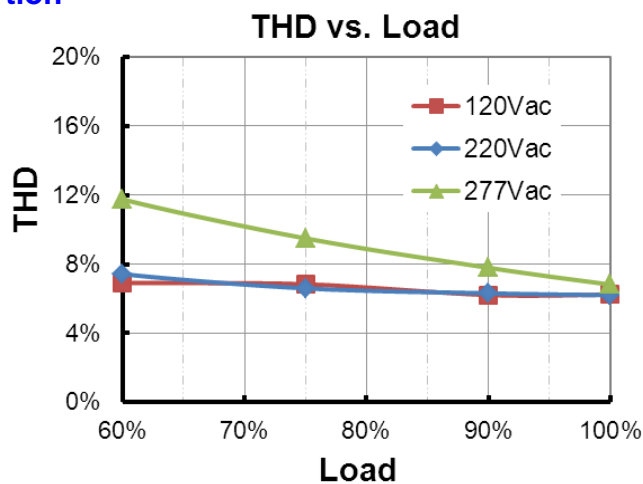




Power Factor



Total Harmonic Distortion



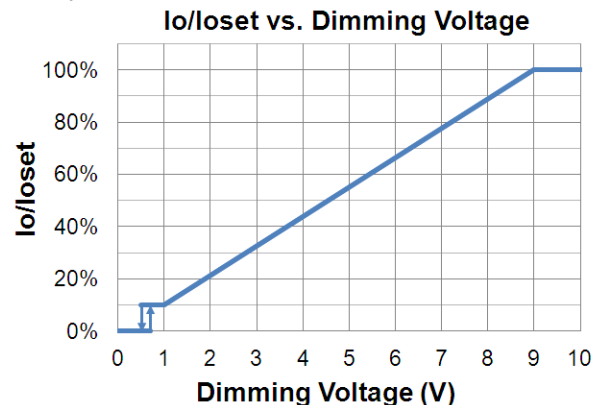
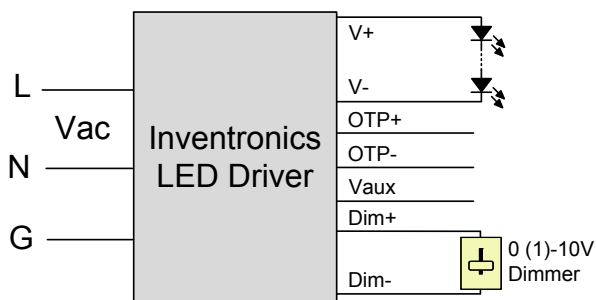
Protection Functions

| Parameter | | Min. | Typ. | Max. | Notes |
|---------------------------------|--------------------------|--|-----------|-----------|---|
| External Thermal Protection NTC | R1 | - | 7.81 kOhm | - | When R_NTC falls below R1, External Thermal Protection is triggered, reducing output current until R2 is reached. |
| | R2 | - | 4.16 kOhm | - | When R_NTC is less than R2, output current is reduced to the programmed "Protection Current Floor." |
| | Protection Current Floor | 10%loset | 60%loset | 100%loset | 10%loset > Iomin (default setting is 60%) |
| | | Iomin | 60%loset | 100%loset | 10%loset ≤ Iomin (default setting is 60%) |
| 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

● 0-10V Dimming (Only DTA models)

The recommended implementation of the dimming control is provided below.



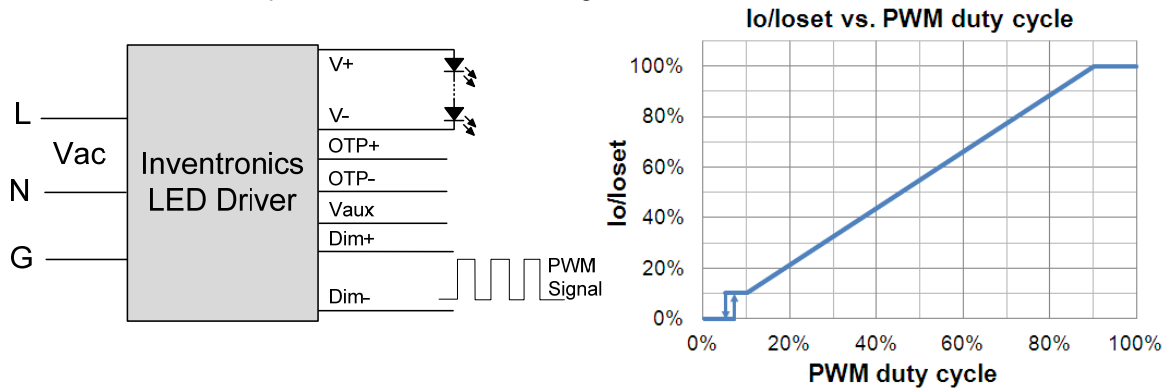
Implementation 1: DC Input

Notes:

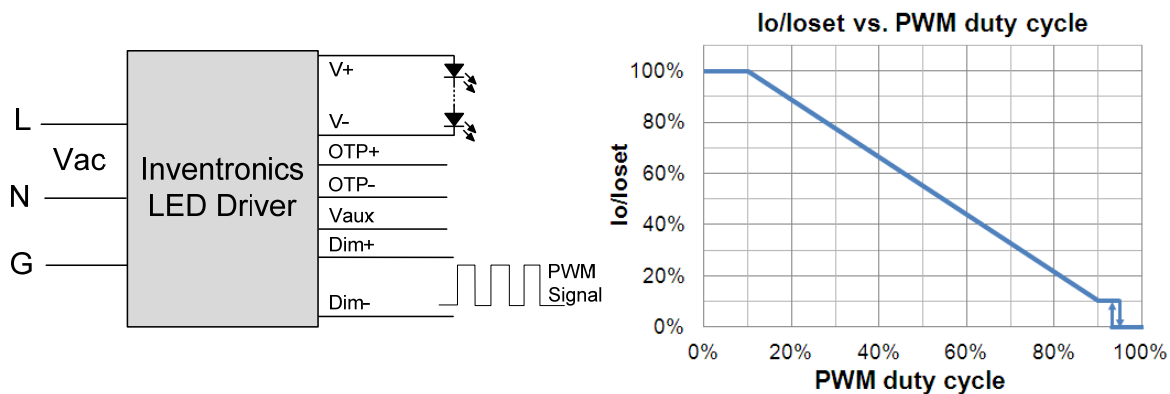
1. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like resistors and zener.
2. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
3. If 0-10V dimming is not used, Dim + should be open.

● PWM Dimming (Only DTA models)

The recommended implementation of the dimming control is provided below.



Implementation 2: Positive logic



Implementation 3: Negative logic

Notes:

1. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like resistors and zener.
2. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.
3. If 0-10V dimming is not used, Dim + should be open.

● Time Dimming (Only DTA models)

Time dimming control includes 3 kinds of modes, they are Self Adapting-Midnight, Self Adapting-Percentage and Traditional Timer.

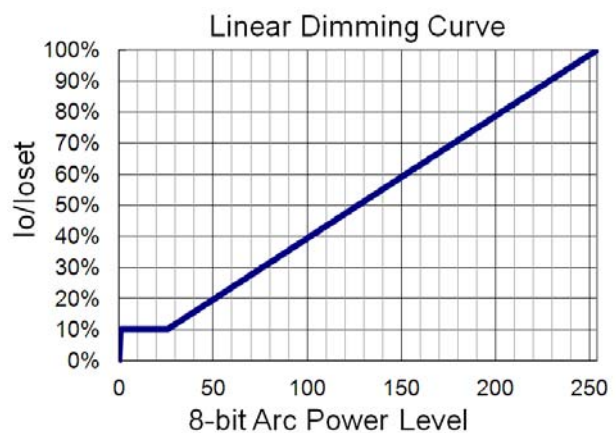
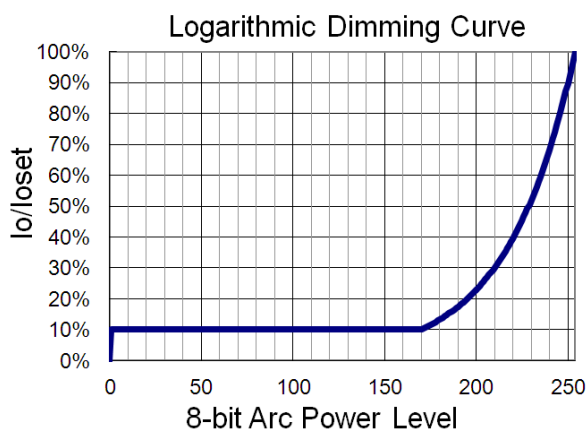
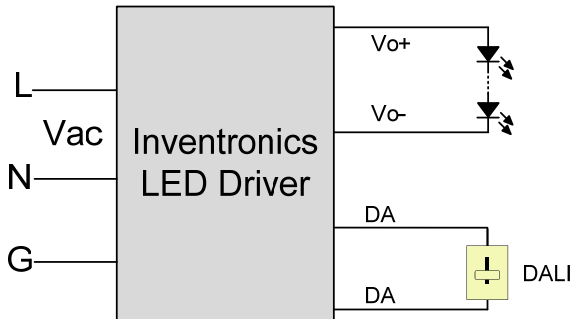
- **Self Adapting-Midnight:** Automatically adjusts the dimming curve based on the on-time of past two days (if difference <15 minutes), assuming that the center point of the dimming curve is midnight local time.
- **Self Adapting-Percentage:** Automatically adjusts the on-time of each step by a constant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

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.

● **DALI Dimming (Only BTA models)**

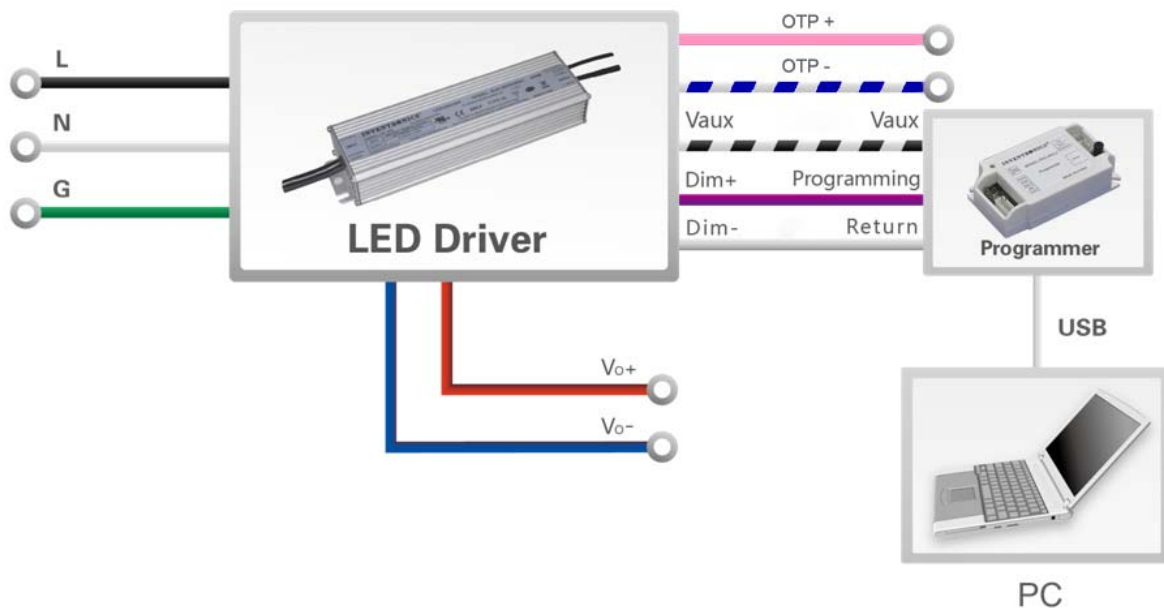
The recommended implementation of the dimming control is provided below.



Implementation 4: DALI Dimming

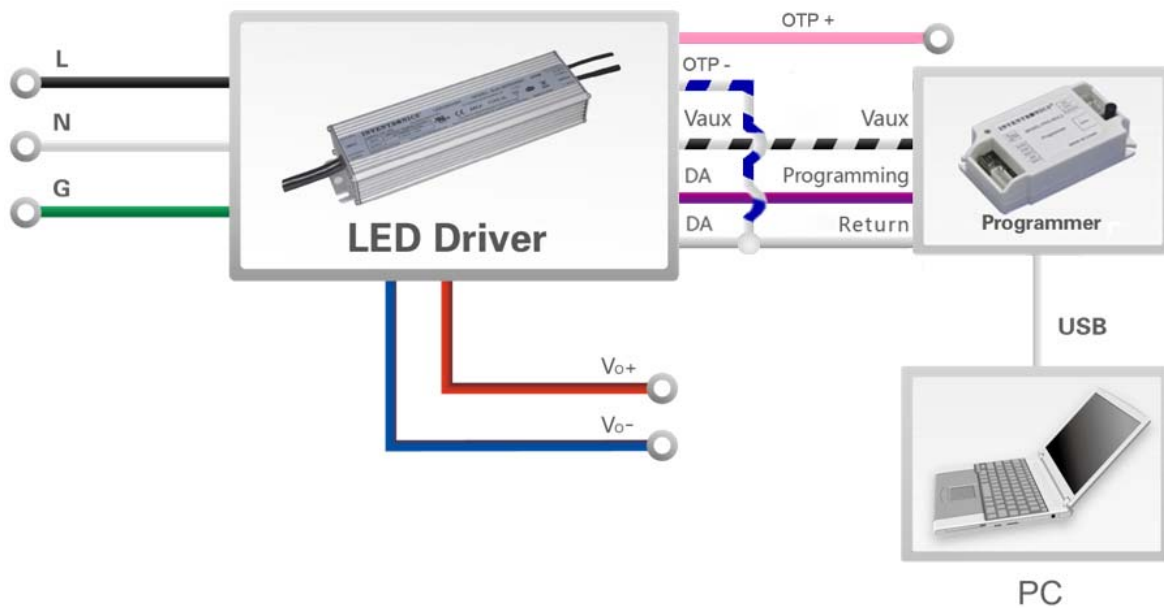
Programming Connection Diagram

EUD-150SxxxDTA



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

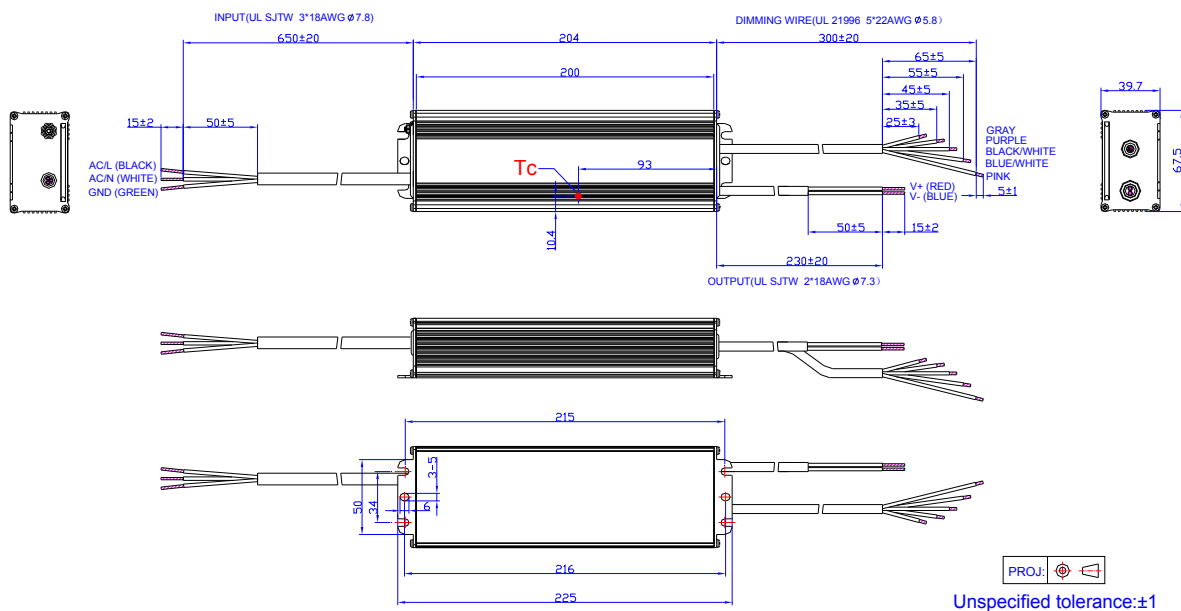
EUD-150SxxxBTA



Note: (1) The driver does not need to be powered on during the programming process.
 (2) Both "OTP-" and "DA" (gray) should be connected to "Return" of the programmer when programming.

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

Mechanical Outline



RoHS Compliance

Our products comply with the European Directive 2011/65/EC, calling for the elimination of lead and other hazardous substances from electronic products.

Revision History

| Change Date | Rev. | Description of Change | | |
|-------------|------|-------------------------------------|----------------|---------|
| | | Item | From | To |
| 2018-09-26 | A | Datasheets Release | / | / |
| 2018-11-13 | B | 12V Auxiliary Output Source Current | Notes | Updated |
| | | Programming Connection Diagram | EUD-150SxxxBTA | Updated |