## Features

- High Efficiency (Up to 87%)
- Active Power Factor Correction (0.95 Typical)
- Constant Current Output
- 0-10V Dimming Control
- Input Surge Protection: 4kV line-line, 6kV line-earth
- All-Around Protection: SCP, OTP, OVP and Open Lamp
- Waterproof (IP67) and UL Dry / Damp / Wet Location
- Class 2 & SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location



## Description

The *ESC-075SxxxDT(ST)* series is a 75W, constant-current LED driver that operates from 249-528 Vac input with excellent power factor. It is created for low bay, area and street lights. 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

| Output Current (1) | Input Voltage Range | Output Voltage Range | Max. Output Power | Efficiency (2) | Power Factor | | Model Number |
|---|---|---|---|---|---|---|---|
| | | | | | 277Vac | 480Vac | |
| 350 mA | 249 ~ 528 Vac | 107~214Vdc | 75 W | 87.0% | 0.95 | 0.90 | ESC-075S035DT(ST) |
| 700 mA | 249 ~ 528 Vac | 53~107 Vdc | 75 W | 86.0% | 0.95 | 0.90 | ESC-075S070DT(ST) |
| 1050 mA | 249 ~ 528 Vac | 36 ~ 72 Vdc | 75 W | 87.0% | 0.95 | 0.90 | ESC-075S105DT(ST) |
| 1400 mA | 249 ~ 528 Vac | 26 ~ 53 Vdc | 75 W | 87.0% | 0.95 | 0.90 | ESC-075S140DT(ST)(3) |
| 2100 mA | 249 ~ 528 Vac | 18 ~ 36 Vdc | 75 W | 86.0% | 0.95 | 0.90 | ESC-075S210DT(ST)(3) |
| 3150 mA | 249 ~ 528 Vac | 12 ~ 24 Vdc | 75 W | 85.0% | 0.95 | 0.90 | ESC-075S315DT(ST)(3)(4)(5) |

**Notes:** (1) The output current is adjustable at factory from 50% to 100%.
(2) Measured at 25℃, full load and 480 Vac input.
(3) UL Class 2 Output (USR) for dry and damp location.
(4) CUL Class 2 Output (CNR) for dry and damp location.
(5) CUL Class 2 Output (CNR) for wet location

## Input Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|---|---|
| Input Voltage | 249 V | - | 528 V | |
| Input Frequency | 47 Hz | - | 63 Hz | |
| Leakage Current | - | - | 0.7 mA | At 480Vac 60Hz input |

## Input Specifications (Continued)

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|---|---|
| Input AC Current | - | - | 0.34 A | Measured at full load and 277 Vac input. |
| | - | - | 0.21 A | Measured at full load and 480 Vac input. |
| Inrush current | - | - | 135 A | At 480Vac input 25℃ Cold start, Duration= 1.2mS, 10%Ipk-10%Ipk |
| Power Factor | 0.90 | - | - | At 277Vac-480Vac, 100% load |

## Output Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|---|---|
| Output Current Tolerance | -5% | - | 5% | |
| No-load Output Voltage | 104% Vomax | 112% Vomax | 120% Vomax | 1400mA: 59.9V (max) |
| Output Current Ripple | - | 20%Io | 30%Io | Measured at full load, 25℃ ambient temperature, |
| Line Regulation | - | - | ±1% | |
| Load Regulation | - | - | ±3% | |
| Turn-on Delay Time | - | 1.0 s | 3.0 s | Measured at full load, 277Vac input. |
| | - | 1 .0 s | 3.0 s | Measured at full load, 480Vac input. |

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

## Protection Functions

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|---|---|
| Over Temperature Protection---Tc | - | 110 °C | - | Auto recovery mode. The power supply shall return to normal operation after the fault condition is removed. |
| Short Circuit Protection | Hiccup and no damage shall occur when any output operating in a short circuit condition. | | | |

## General Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|---|---|
| Efficiency | | | | Measured at full load, 277Vac input, 25℃ ambient temperature, after the unit is thermally stabilized. It will be 1% lower, if measured immediately after startup. |
| $I_O$ = 350 mA | 87 % | 88 % | - | |
| $I_O$ = 700 mA | 86 % | 87 % | - | |
| $I_O$ = 1050 mA | 87 % | 88 % | - | |
| $I_O$ = 1400 mA | 87 % | 88 % | - | |
| $I_O$ = 2100 mA | 86 % | 87 % | - | |
| $I_O$ = 3150 mA | 85 % | 86 % | - | |
| Efficiency | | | | Measured at full load, 480Vac input, 25℃ ambient temperature, after the unit is thermally stabilized. It will be 1% lower, if measured immediately after startup. |
| $I_O$ = 350 mA | 86 % | 87 % | - | |
| $I_O$ = 700 mA | 85 % | 86 % | - | |
| $I_O$ = 1050 mA | 86 % | 87 % | - | |
| $I_O$ = 1400 mA | 86 % | 87 % | - | |
| $I_O$ = 2100 mA | 85 % | 86 % | - | |
| $I_O$ = 3150 mA | 84 % | 85 % | - | |

## General Specifications (Continued)

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|---|---|
| MTBF | - | 250,000 Hours | - | Measured at 480Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F) |
| Lifetime | - | 112,000 Hours | - | Measured at 480Vac input, 80%load; Case temperature=60℃ @ Tc point. See life time vs. Tc curve for the details |
| Operating Case Temperature for Safety Tc_s | -40°C | - | +90°C | |
| Operating Case Temperature for Warranty Tc_w | -40°C | - | +70°C | |
| Dimensions<br>Inches (L × W × H)<br>Millimeters (L × W × H) | 7.41 × 3.47 × 1.50<br>188 × 88 × 38 | | | With mounting ear<br>8.74 ×3.47 × 1.50<br>222 × 88 × 38 |
| Net Weight | - | 1250 g | - | |

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

## Environmental Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|---|---|
| Operating Temperature | -40 ℃ | - | +70 ℃ | Humidity: 10% RH to 100% RH<br>See Derating Curve for more details |
| Storage Temperature | -40 ℃ | - | +85 ℃ | Humidity: 5% RH to 100% RH |

## Safety & EMC Compliance

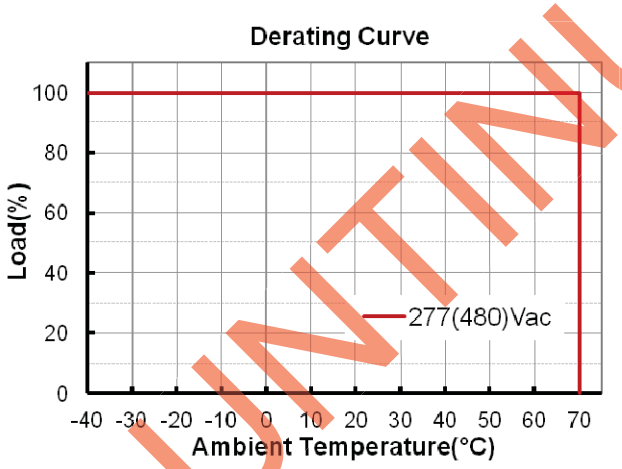
| Safety Category | Standard |
|---|---|
| UL/CUL | UL8750, UL1310, UL1012, CAN/CSA-C22.2 No. 250.13, CAN/CSA-C22.2 No. 223-M91 |
| CE | EN61347-1,EN61347-2-13 |
| **EMI Standards** | **Notes** |
| EN 55015[(1)] | Conducted emission Test & Radiated emission Test |
| EN 61000-3-2 | Harmonic current emissions |
| EN 61000-3-3 | Voltage fluctuations & flicker |
| FCC Part15[(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 |

## Safety & EMC Compliance (Continued)

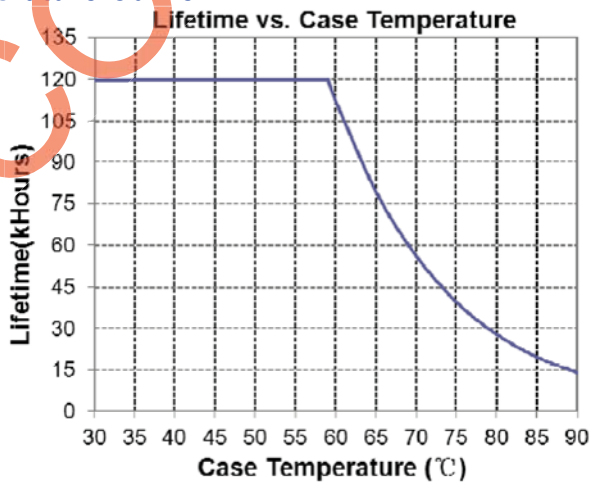
| EMS Standards | Notes |
|---|---|
| EN 61000-4-5 | Surge Immunity Test: AC Power Line: line to line 4 kV, line to earth 6 kV |
| EN 61000-4-6 | Conducted Radio Frequency Disturbances Test-CS |
| EN 61000-4-8 | Power Frequency Magnetic Field Test |
| EN 61000-4-11 | Voltage Dips |
| EN 61547 | Electromagnetic Immunity Requirements Applies To Lighting Equipment |

**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.

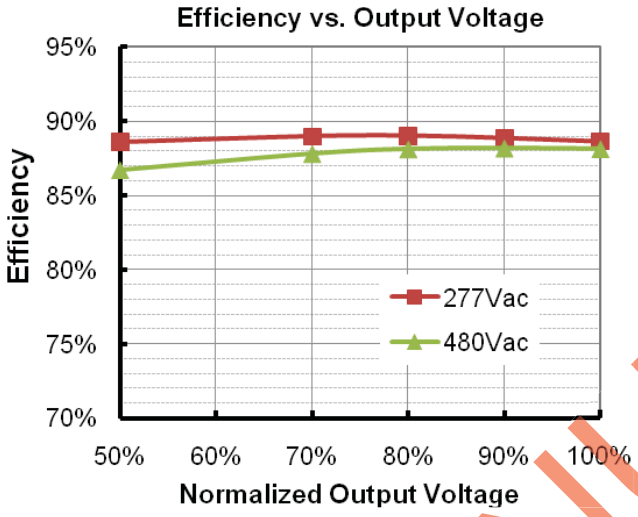
## Derating Curve



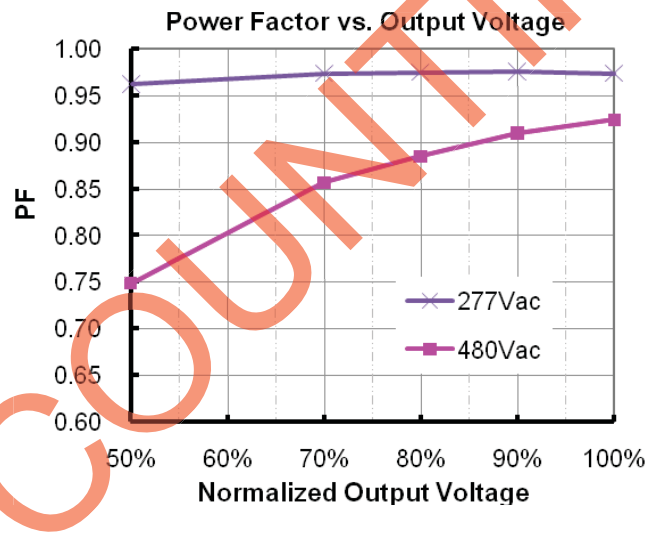

## Lifetime vs. Case Temperature Curve



## Efficiency vs Load (350mA Model)



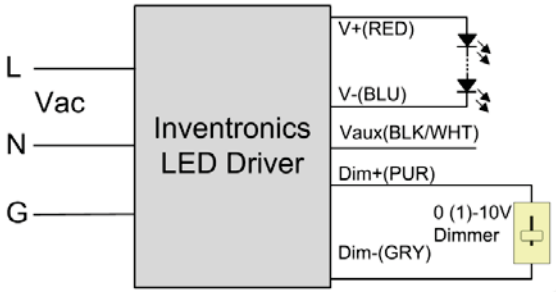

## Power Factor Characteristics

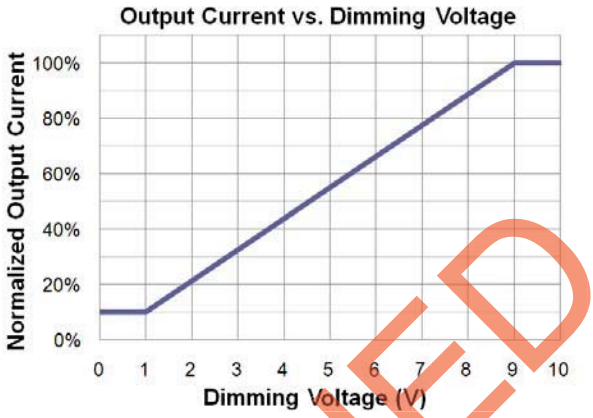



## Dimming Control

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|---|---|
| 12V output voltage (Vaux) | 10.8 V | 12 V | 13.2 V | |
| Vaux source current | 10 mA | 15 mA | 20 mA | |
| Absolute maximum voltage on the 0~10V input pin | -2 V | - | 15 V | |
| Source current on 0~10V input pin | 150 uA | 200 uA | 250 uA | |

The dimmer control is operated from an input signal of 1 – 10 Vdc. Recommended implementations are provided below.



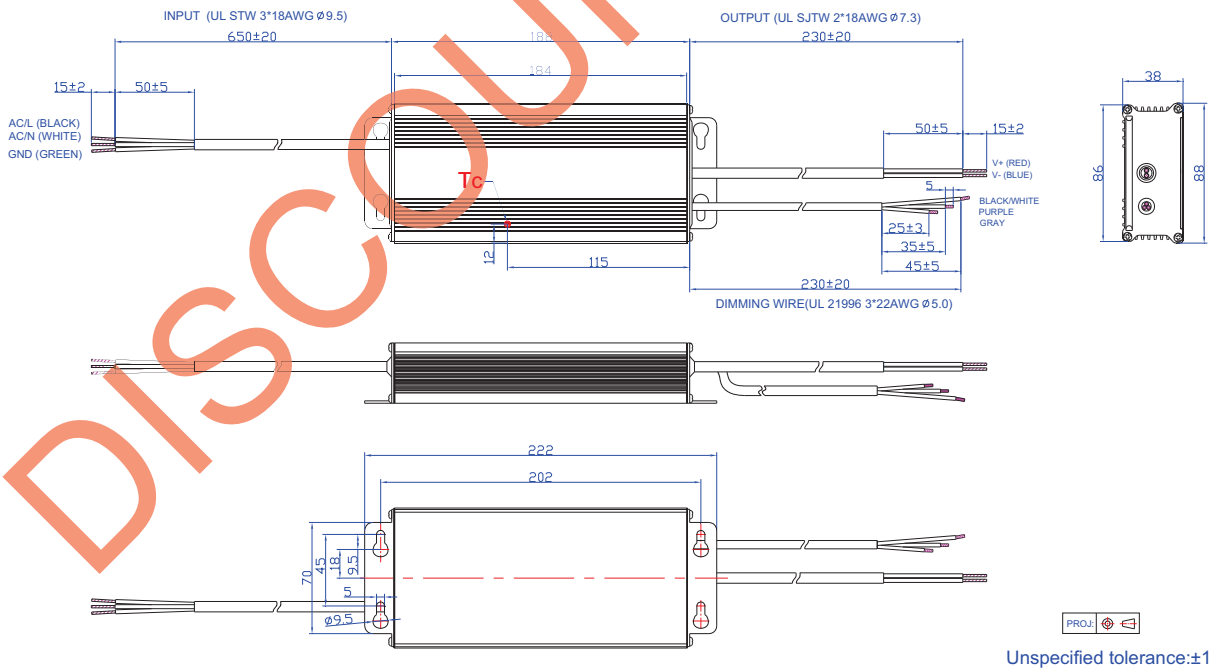

**Implementation**

**Notes:**

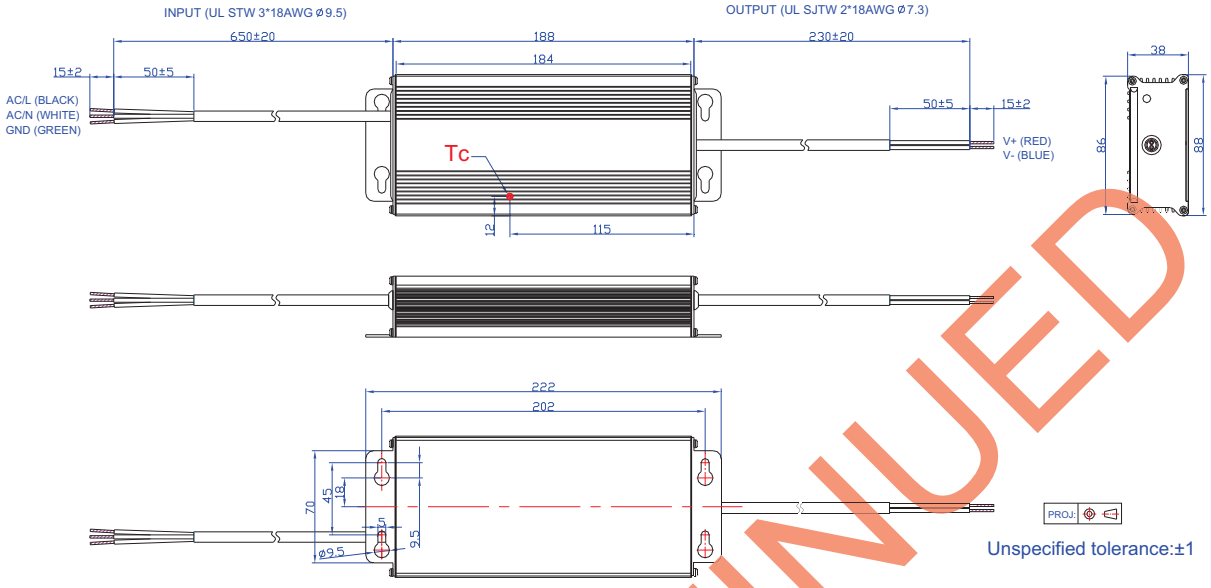
1. The dimmer can also be replaced by an active 0-10V voltage source signal or passive components like resistors and zener.
2. The dimming signal is allowed to be less than 1V, when it is between 0 and 1 V, the output level is 10%.
3. Do NOT connect the Gray Wire (Dim-) to Blue Wire (V-) together.
4. The dimming section is not isolated with output.
5. If 0-10V dimming is not used, Dim + can be either open or connected to Vaux.

## Mechanical Outline

*ESC-075SxxxDT*



*ESC-075SxxxST*




## 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 |
| 2011-06-22 | A | First Release | / | / |
| 2011-08-03 | B | Output Specifications-<br>Turn-on Delay Time | 2 s | 3 s |
| 2011-09-22 | C | CE,FCC | / | Added |
| 2012-02-13 | D | OTP | Latch Mode | Auto Recovery Mode |
| 2012-06-05 | E | Notes of Life time | / | Updated |
| | | Life time curve | / | Added |
| | | EN61000-4-5 | line to line 2 kV, line to earth 4 kV | line to line 4 kV, line to earth 6 kV |
| 2012-07-17 | F | Max Case Temperature | / | Updated |
| 2012-08-02 | G | Class 2 of models | / | Updated |
| | | Inrush Current | 60 A | 135 A |
| 2012-09-26 | H | Min PF | / | Added |
| | | EFF Curve, PF Curve | / | Added |
| | | Typical MTBF & Life time | / | Added |
| | | Life time Curve | / | Added |
| 2013-08-06 | I | 1400mA to be class 2 model | / | / |
| 2014-04-09 | J | Operating Temperature | -35 ℃ | -40 ℃ |
| | | Derating curve | / | Updated |
| 2017-06-05 | K | Format | / | Updated |
| | | Features | / | Updated |
| | | Description | / | Updated |
| | | General Specifications | Lifetime | Updated |
| | | General Specifications | Case Temperature | Operating Case Temperature for Safety Tc_s |
| | | General Specifications | Operating Case Temperature for Warranty Tc_w | Updated |
| | | General Specifications | With mounting ear | Added |
| | | General Specifications | Net Weight | Updated |
| | | Safety & EMC Compliance | / | Updated |
| | | Lifetime vs. Case Temperature Curve | / | Updated |
| | | Mechanical Outline | / | Updated |