

Features

- Ultra High Efficiency (Up to 94.5%)
- Constant Voltage Output
- Input surge protection: 4kV line-line, 6kV line-earth
- All-Around Protection: SCP, OTP, OVP, OCP
- Suitable for UL Dry / Damp / Wet Location
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location



Description

The *ESV-150SxxxST* series is a 150W, constant-voltage outdoor LED driver that operates from 249-528 Vac input with excellent power factor. It is created for high bay, area and roadway lights. The high efficiency of these drivers enables them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against input surge, output short circuit, over temperature, over voltage, and over current.

Models

| Output Voltage | Input Voltage Range | Output Current Range | Max. Output Power | Typical Efficiency (1) | Power Factor | | Model Number |
|----------------|---------------------|----------------------|-------------------|------------------------|--------------|--------|---------------|
| | | | | | 277Vac | 480Vac | |
| 12 Vdc | 249~ 528 Vac | 0~10 A | 120 W | 91.5% | 0.96 | 0.95 | ESV-150S012ST |
| 24 Vdc | 249~ 528 Vac | 0~6.25 A | 150 W | 93.0% | 0.96 | 0.95 | ESV-150S024ST |
| 36 Vdc | 249~ 528 Vac | 0~4.17 A | 150 W | 94.5% | 0.96 | 0.95 | ESV-150S036ST |
| 42 Vdc | 249~ 528 Vac | 0~3.57 A | 150 W | 93.5% | 0.96 | 0.95 | ESV-150S042ST |
| 48 Vdc | 249~ 528 Vac | 0~3.13 A | 150 W | 94.0% | 0.96 | 0.95 | ESV-150S048ST |

Notes: (1) Measured at full load and 480 Vac input.

Input Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|----------------------------------|---------|------|----------------------|--|
| Input Voltage | 249 Vac | - | 528 Vac | |
| Input Frequency | 47 Hz | - | 63 Hz | |
| Leakage Current | - | - | 0.75 MIU | UL8750; 277Vac/ 60Hz |
| Input AC Current | - | - | 0.7 A | Measured at full load and 277Vac input. |
| | - | - | 0.4 A | Measured at full load and 480Vac input. |
| Inrush Current(I ² t) | - | - | 3.1 A ² s | At 480Vac input 25°C cold start, duration=260μs, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details. |
| PF | 0.90 | - | - | At 277-480Vac, 60%-100% Load |
| THD | - | - | 20% | |

Output Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|-------------------------------|---------|-------|----------|--|
| Output Voltage Tolerance | -2.5%Vo | - | 2.5%Vo | At full load condition |
| Output Voltage Ripple (pk-pk) | - | - | 2% Vo | At full load condition, 20 MHz BW |
| Startup Overshoot Voltage | - | - | 5% Vo | At full load condition |
| Line Regulation | - | - | ±0.5% | Measured at full load |
| Load Regulation | - | - | ±1.0% | |
| Turn-on Delay Time | - | 0.5 s | 1.0 s | Measured at full load, 277Vac and 480Vac input |
| Temperature Coefficient | - | - | 0.03%/°C | Case temperature = 0°C ~Tc max |

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

General Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|---|---|---|-----------------------|--|
| Efficiency at 277 Vac input: ESV-150S012ST ESV-150S024ST ESV-150S036ST ESV-150S042ST ESV-150S048ST | 89.0% 90.5% 91.5% 90.5% 91.0% | 91.0% 92.5% 93.5% 92.5% 93.0% | - - - - - | Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.) |
| Efficiency at 347 Vac input: ESV-150S012ST ESV-150S024ST ESV-150S036ST ESV-150S042ST ESV-150S048ST | 89.0% 91.0% 92.0% 91.0% 91.5% | 91.0% 93.0% 94.0% 93.0% 93.5% | - - - - - | Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.) |
| Efficiency at 480 Vac input: ESV-150S012ST ESV-150S024ST ESV-150S036ST ESV-150S042ST ESV-150S048ST | 89.5% 91.0% 92.5% 91.5% 92.0% | 91.5% 93.0% 94.5% 93.5% 94.0% | - - - - - | Measured at full load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.) |
| MTBF | - | 375,000 Hours | - | Measured at 480Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F) |
| Lifetime | - | 104,000 Hours | - | Measured at 480Vac 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 | - | +90°C | |
| Operating Case Temperature for Warranty Tc_w | -40°C | - | +80°C | |
| Storage Temperature | -40°C | - | +85°C | Humidity: 5%RH to 100%RH |
| Dimensions Inches (L × W × H) Millimeters (L × W × H) | 8.70 × 2.66 × 1.56 221 × 67.5 × 39.5 | | | |

General Specifications (Continued)

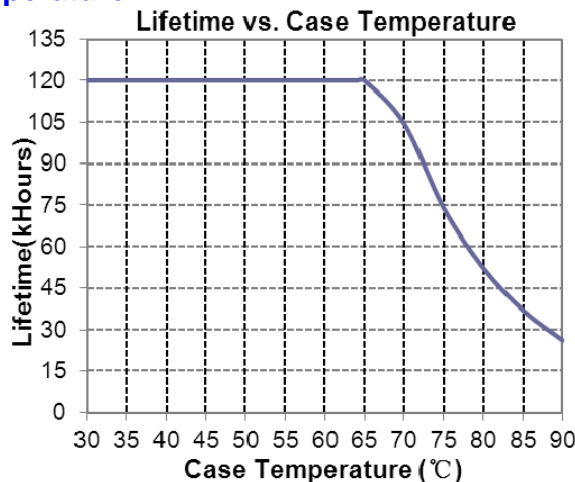
| Parameter | Min. | Typ. | Max. | Notes |
|------------|------|--------|------|-------|
| Net Weight | - | 1160 g | - | |

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

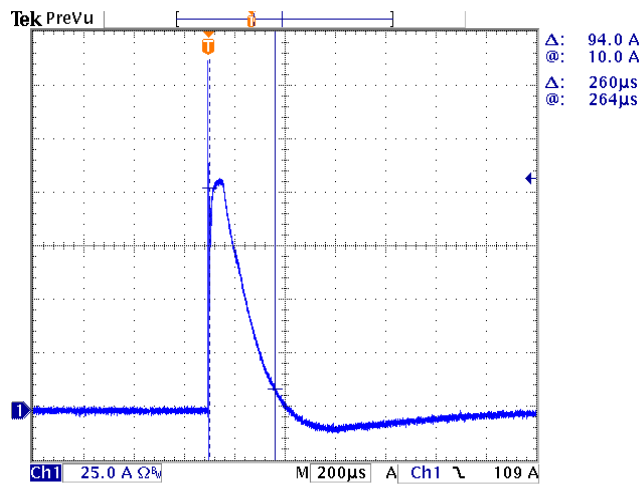
Safety & EMC Compliance

| Safety Category | Standard |
|-----------------|--|
| UL/CUL | UL8750, CAN/CSA-C22.2 No. 250.13-12 |
| EMI Standards | Notes |
| FCC Part15 | ANSI C63.4:2009 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 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 |

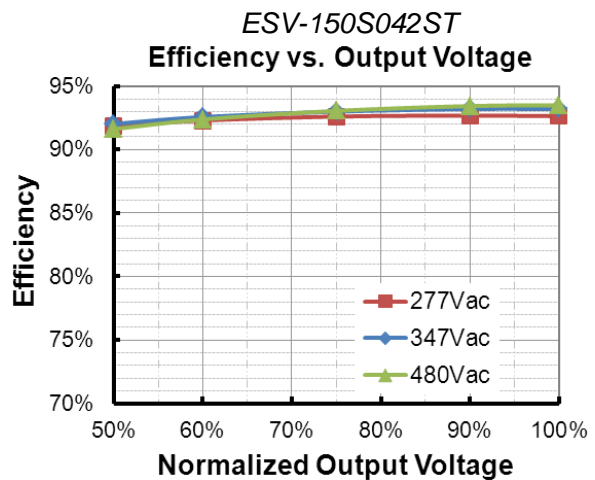
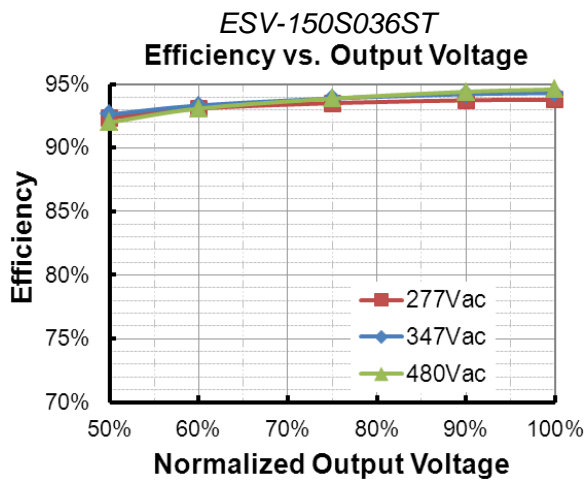
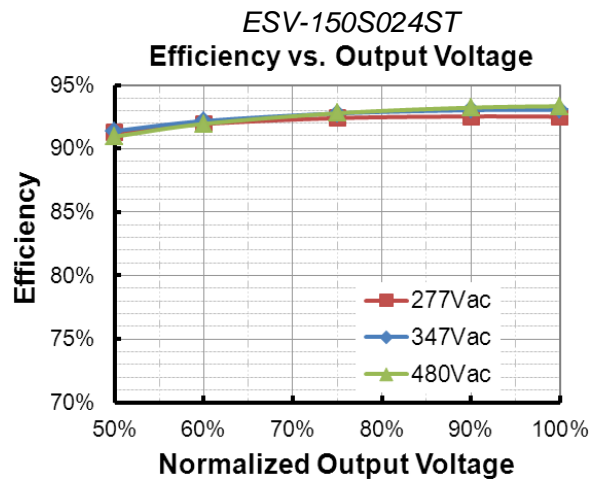
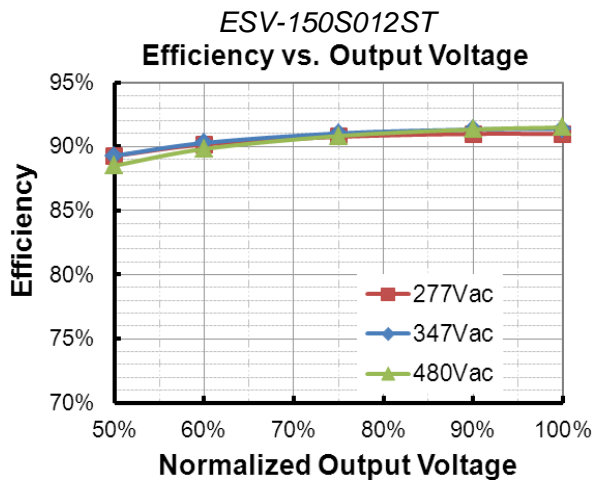
Lifetime vs. Case Temperature

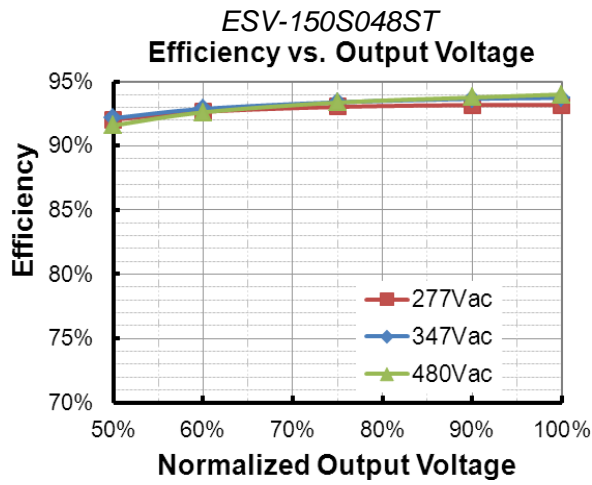


Inrush Current Waveform

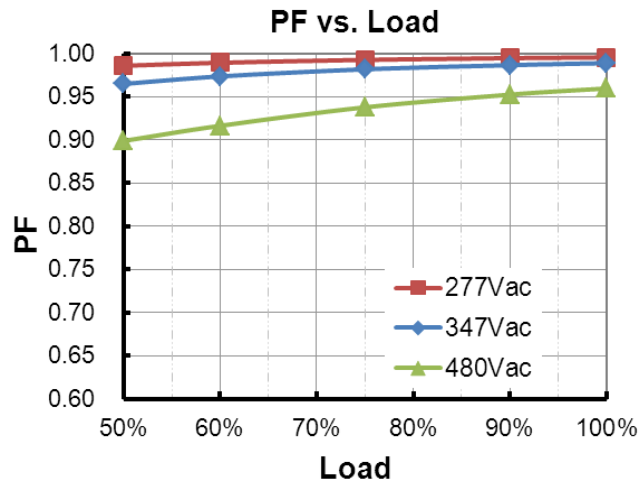


Efficiency vs. Load

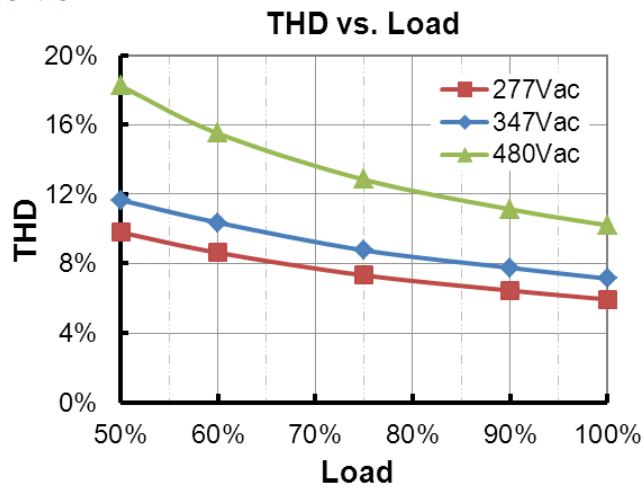




Power Factor



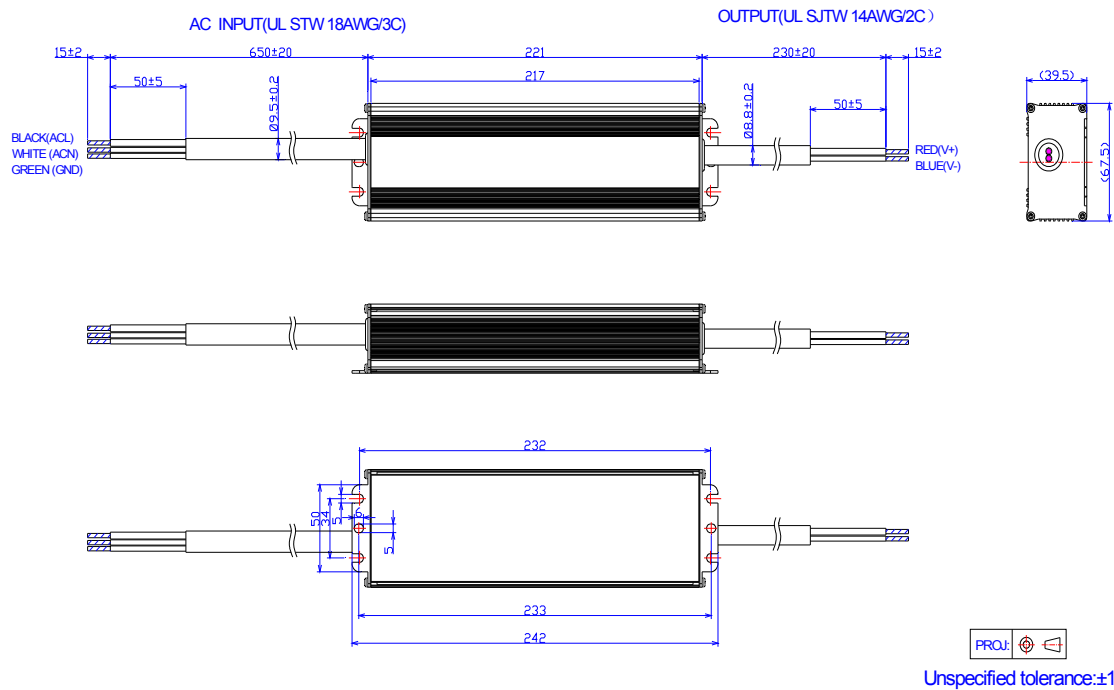
Total Harmonic Distortion



Protection Functions

| Parameter | Min. | Typ. | Max. | Notes |
|-----------------------------|--|--------------------|--------------------|--|
| Over Current Protection | 110%I _O | 150%I _O | 200%I _O | Auto Recovery. The power supply shall be self-recovered within 60 ± 5s after the fault condition is removed. |
| Over Temperature Protection | Auto recovery. The power supply shall be self-recovery within 60 ± 5s after the case temperature becomes normal. | | | |
| Short Circuit Protection | Auto Recovery. The power supply shall be self-recovered within 60 ± 5s after the fault condition is removed. | | | |
| Over Voltage Protection | Auto Recovery. The power supply shall be self-recovered within 60 ± 5s after the fault condition is removed. | | | |

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 |
| 2015-03-10 | A | Datasheets Release | / | / |
| 2015-10-29 | B | Lifetime | / | Update |