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 LED driver that operates from 249-528 Vac input with excellent power factor. It is created for many lighting applications including high bay, area and roadway. 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

Note: Measured at 100% 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 100% load and 277Vac input.
	-	-	0.4 A	Measured at 100% load and 480Vac input.
Inrush Current(I^2t)	-	-	3.1 A^2s	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, 50-60Hz, 60%-100% Load
THD	-	-	20%	

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Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Voltage Tolerance	-2.5%Vo	-	2.5%Vo	At 100% load condition
Output Voltage Ripple (pk-pk)	-	-	2% V_O	At 100% load condition, 20 MHz BW
Startup Overshoot Voltage	-	-	5% Vo	At 100% load condition
Line Regulation	-	-	±0.5%	Measured at 100% load
Load Regulation	-	-	±1.0%	
Turn-on Delay Time	-	0.5 s	1.0 s	Measured at 100% 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 100% 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 100% 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 100% 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 × 39.7			With mounting ear 9.53 × 2.66 × 1.56 242 × 67.5 × 39.7
Net Weight	-	1270 g	-	

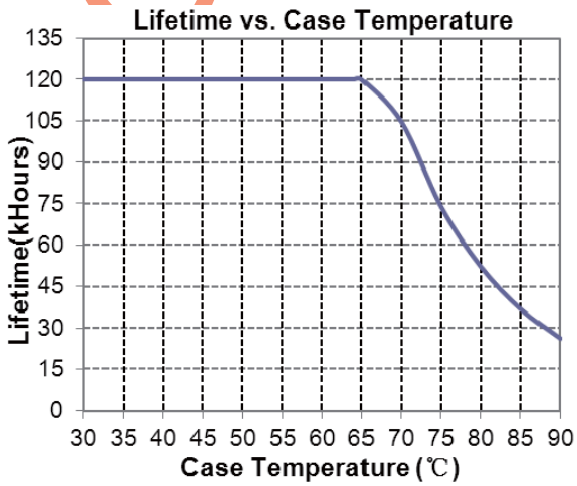
Note: All specifications are typical at 25 °C unless otherwise stated.

Safety & EMC Compliance

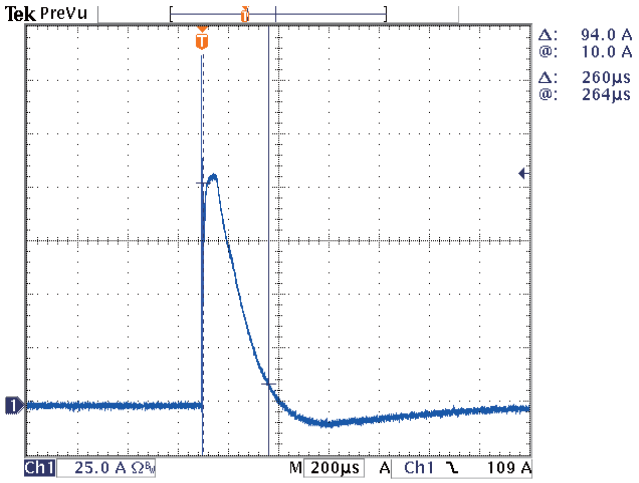
Safety Category	Standard
UL/CUL	UL8750, CAN/CSA-C22.2 No. 250.13
EMI Standards	**Notes**
FCC Part15(1)	ANSI C63.4:2009 Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device 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

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.

Lifetime vs. Case Temperature

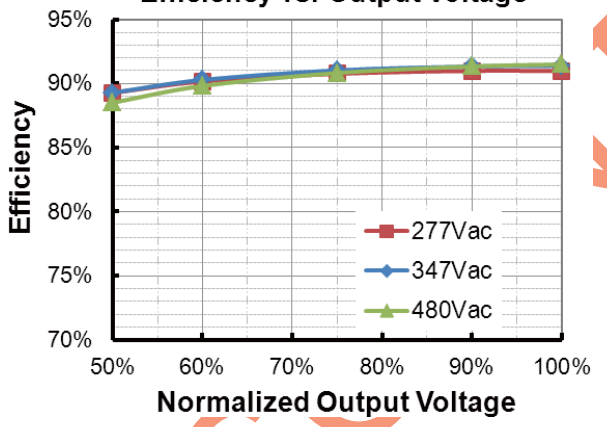


Inrush Current Waveform

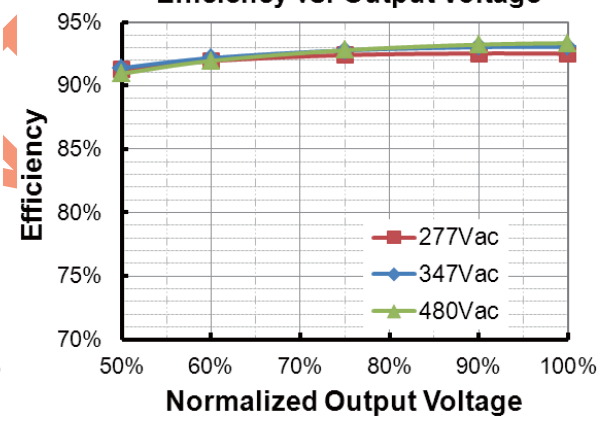


Efficiency vs. Load

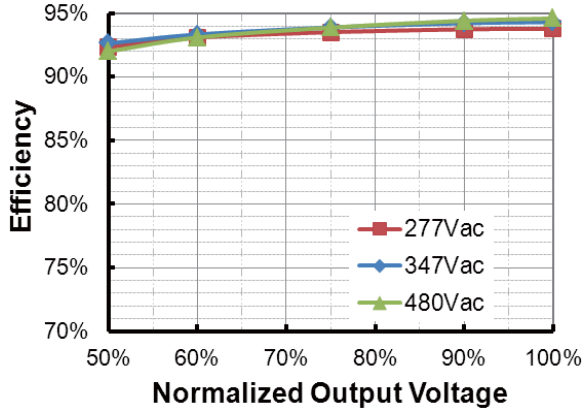
ESV-150S012ST



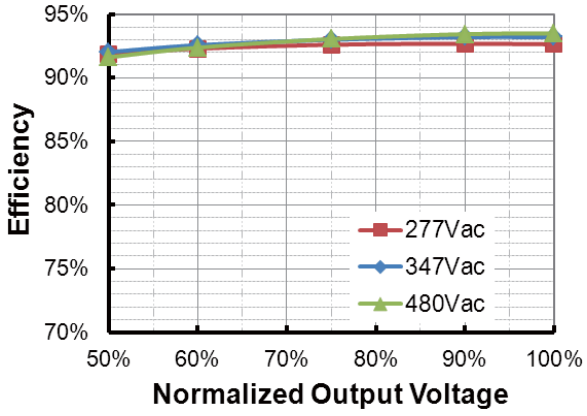
ESV-150S024ST



ESV-150S036ST



ESV-150S042ST



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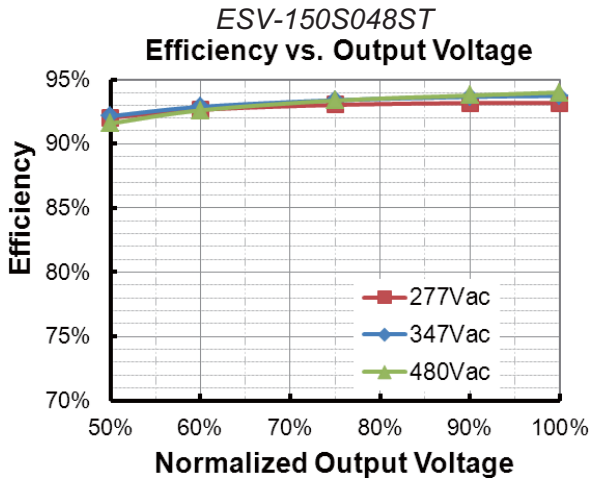
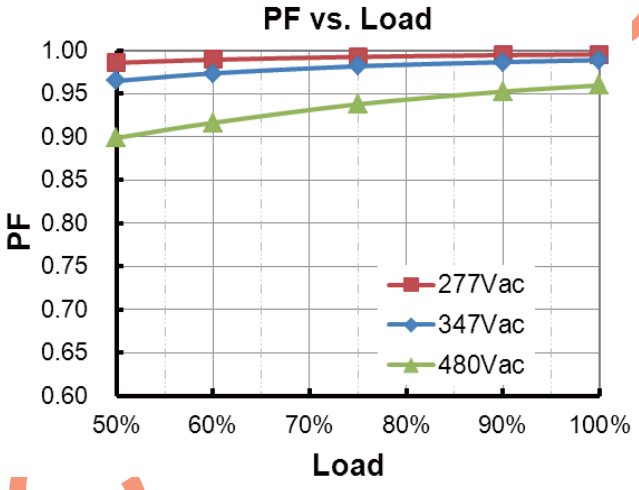
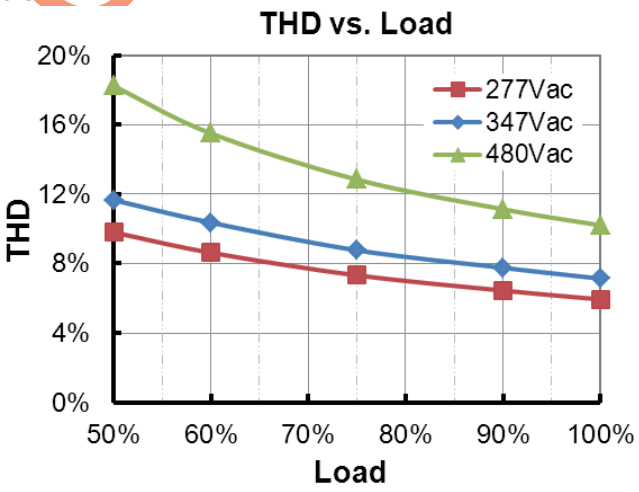


Power Factor



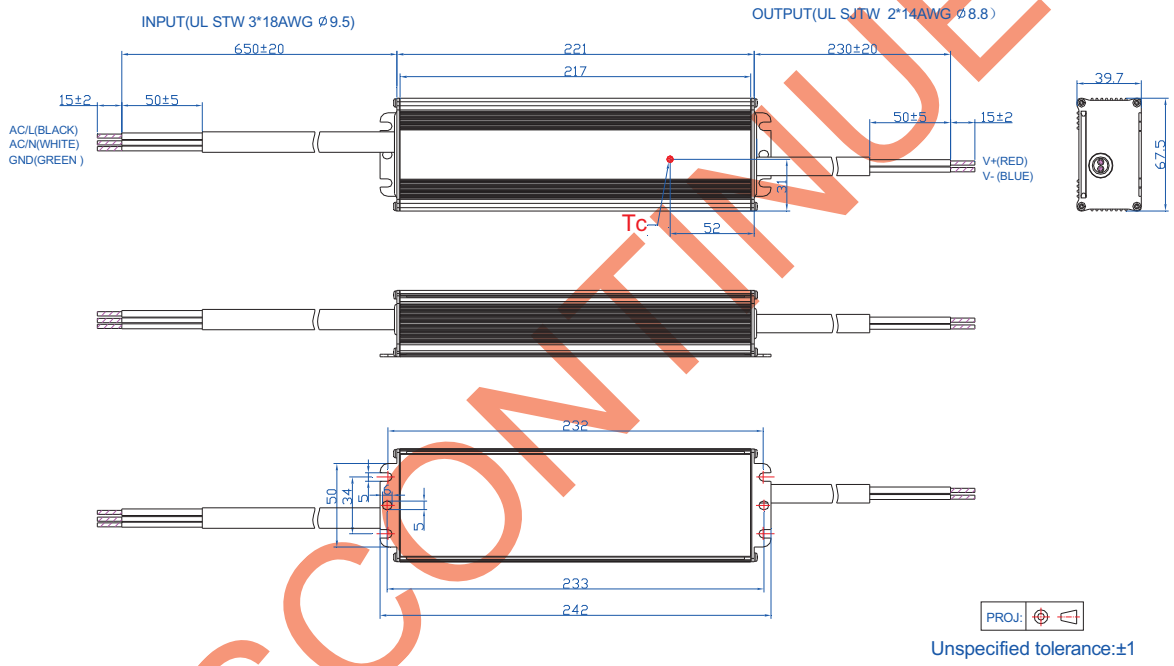
Total Harmonic Distortion



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



Unspecified tolerance:±1

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
2019-03-12	C	Header	outdoor	IP67
		Description	outdoor	Delete
		General Specifications	With mounting ear	Added
		Net Weight	1160g	1270g
		Safety & EMC Compliance	Note	Added
		Mechanical Outline	/	Update