

Features

- Ultra High Efficiency (Up to 91%)
- Ultra High Input Voltage (249~528Vac)
- Constant Voltage Output
- Input Surge Protection: DM 4kV, CM 6kV
- All-Around Protection: SCP, OTP, OVP and Open Lamp
- IP67 and UL Dry / Damp / Wet Location
- SELV output
- TYPE HL, for use in a Class I, Division 2 hazardous (classified) location



Description

The *ESV-300SxxxST* series is a 300W, constant-voltage IP67 LED driver that operates from 249~528 Vac input with excellent power factor. It is created for many lighting applications including high bay, high mast, horticultural and roadway, etc. 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 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 (2)
					277Vac	480Vac	
24 Vdc	249~ 528 Vac	0 ~ 12.5 A	300 W	89%	0.95	0.90	ESV-300S024ST
28 Vdc	249~ 528 Vac	0 ~ 10.7 A	300 W	90%	0.95	0.90	ESV-300S028ST
36 Vdc	249~ 528 Vac	0 ~ 8.33 A	300 W	90%	0.95	0.90	ESV-300S036ST
42 Vdc	249~ 528 Vac	0 ~ 7.14 A	300 W	90%	0.95	0.90	ESV-300S042ST
48 Vdc	249~ 528 Vac	0 ~ 6.25 A	300 W	90%	0.95	0.90	ESV-300S048ST

Notes: (1) Measured at 25 °C, 100% load and 480 Vac input.
 (2) SELV output.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	249 V	-	528 V	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 mA	At 480Vac 60Hz input
Input AC Current	-	-	1.4 A	Measured at 100% load and 277 Vac input.
	-	-	0.8 A	Measured at 100% load and 480 Vac input.

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Inrush Current	-	-	135 A	At 480Vac input 25°C Cold start, Duration= 1.2 ms, 10%Ipk-10%Ipk
Inrush Current(I ² t)	-	-	9 A ² s	
PF	0.90	-	-	Measured at 100% load and 277~480 Vac input.

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Voltage Tolerance	-2.5%	-	2.5%	ESV-300S042ST
	-3%	-	3%	Other models except ESV-300S042ST
Output Voltage Ripple (pk-pk)	-	-	2% V _o	At 100% load condition
Output Voltage Overshoot / Undershoot	-	-	2% V _o	ESV-300S042ST
	-	-	5% V _o	Other models except ESV-300S042ST
Line Regulation	-	-	±1.0%	When power on and off
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	1.0 s	3.0 s	Measured at 100% load, 277Vac input
	-	1.0 s	3.0 s	Measured at 100% load, 480Vac input
Temperature Coefficient	-	0.03%/°C	-	Case temperature = 0°C ~T _c max

Protection Functions

Parameter	Min.	Typ.	Max.	Notes
Over Current Protection	110% I _o	145% I _o	180%I _o	Hiccup mode. The power supply shall be self-recovery when the fault condition is removed.
Over Temperature Protection	-	110°C	-	Auto Recovery, returning to normal after over temperature 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	V _o = 24 V	89.0%	90.0%	-	Measured at 100% load, 277Vac input, 25°C ambient temperature, after the unit is thermally stabilized.
	V _o = 28 V	90.0%	90.5%	-	
	V _o = 36 V	90.0%	91.0%	-	
	V _o = 42 V	90.0%	91.0%	-	
	V _o = 48 V	90.0%	91.0%	-	

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes	
Efficiency $V_o = 24\text{ V}$ $V_o = 28\text{ V}$ $V_o = 36\text{ V}$ $V_o = 42\text{ V}$ $V_o = 48\text{ V}$	88.0% 89.0% 89.0% 89.0% 89.0%	89.0% 90.0% 90.0% 90.0% 90.0%	- - - - -	Measured at 100% load, 480Vac input, 25°C ambient temperature, after the unit is thermally stabilized.	
No Load Power Dissipation	-	-	3 W		
MTBF	-	201,000 Hours	-	ESV-300S042ST	Measured at 480Vac input, 80%Load and <25°C ambient temperature (MIL-HDBK-217F)
	-	250,000 Hours	-	Other models except ESV-300S042ST	
Lifetime	-	79,000 Hours	-	Measured at 480Vac input, 80%load; Case temperature=70°C @ Tc point. See life time vs. Tc curve for the details	
Operating Case Temperature for Safety Tc_s	-40°C	-	+83°C		
Operating Case Temperature for Warranty Tc_w	-40°C	-	+75°C		
Storage Temperature	-40 °C	-	+85 °C	Humidity: 5% RH to 100% RH	
Dimensions Inches (L x W x H) Millimeters (L x W x H)	8.82 x 3.70 x 1.71 224 x 93.9 x 43.5			With mounting ear 9.88 x3.70x1.71 251x93.9x43.5	
Net Weight	-	1710 g	-		

Safety & EMC Compliance

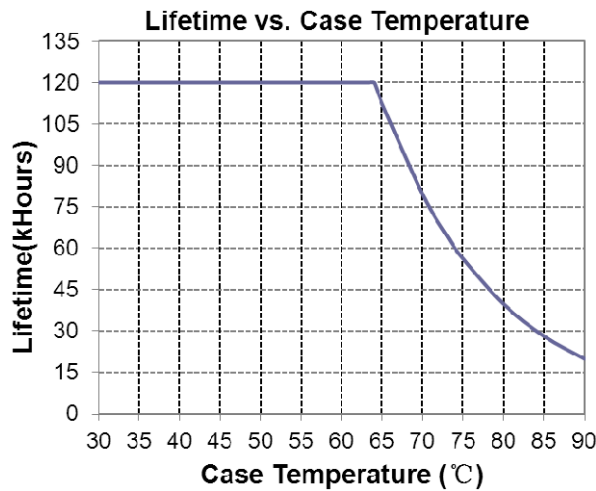
Safety Category	Standard
UL/CUL	UL 8750, CAN/CSA-C22.2 No. 250.13
CE	EN 61347-1,EN 61347-2-13
EMI Standards	Notes
EN 55015 ⁽¹⁾	Conducted emission Test &Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
FCC Part15 ⁽¹⁾	ANSI C63.4 Class B
	This device 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

Safety & EMC Compliance (Continued)

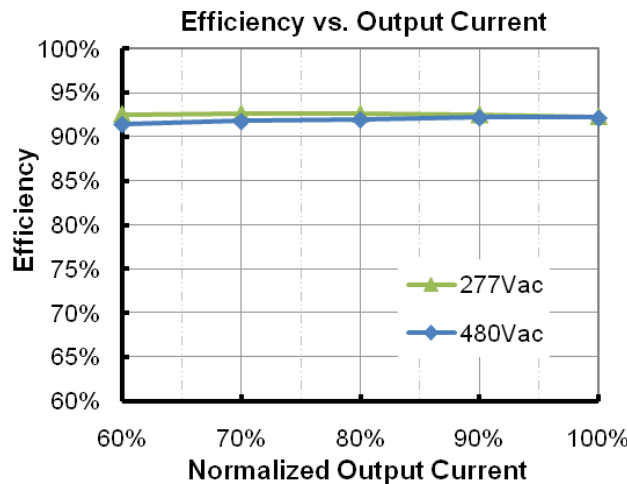
EMS Standards	Notes
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: Differential Mode 4 kV, Common Mode 6 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	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.

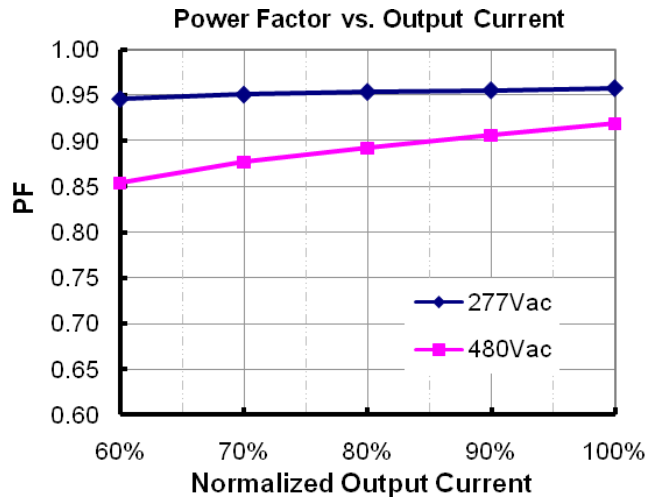
Lifetime vs. Case Temperature Curve



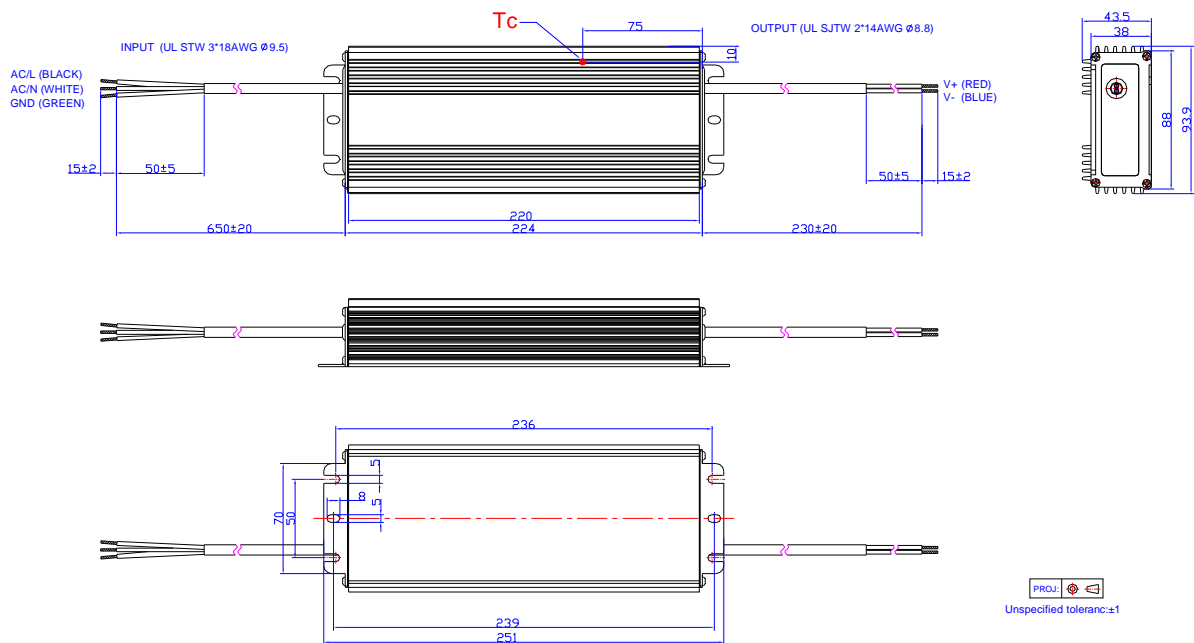
Efficiency vs. Load (24V Model)



Power Factor Characteristics



Mechanical Outline



RoHS Compliance

Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU, 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	Datasheet Released		
2011-08-05	B	Output Specifications-Turn-on Delay Time	2 s	3 s
2011-09-22	C	UL,CE,FCC	/	Added
2011-10-12	D	PF,EFF Curve	/	Added
2012-06-06	E	Life Time Curve	/	Added
		Notes of life time	/	Updated
		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	Safety Details	/	Updated
		Inrush Current	60 A	135 A
2012-09-28	H	Inrush Current(I2t)	/	Added
		Min PF	/	Added
		Temperature coefficient	/	Added
		MTBF & Life time Typical	/	Added
		Life time curve	/	Added
2012-12-27	I	Mechanical Outline	/	Updated
		Dimensions-height	44.5mm	43.5mm
2013-03-25	J	Efficiency	/	1% lower
		Output Voltage Overshoot/ Undershoot	2%Vo	5%Vo
		Mechanical Outline	/	Updated
2013-05-31	K	OTP	Latch mode	Auto recovery mode
2016-01-25	L	Format	/	Updated
		Features	/	Updated
		Description	/	Added
		Models	ESV-300S042ST	Added
		Output Specifications	Output Voltage Tolerance	Updated
		Output Specifications	Output Voltage Overshoot / Undershoot	Updated
		General Specifications	MTBF	Updated

Revision History (Continued)

Change Date	Rev.	Description of Change		
		Item	From	To
2016-01-25	L	General Specifications	Lifetime	Updated
		General Specifications	Net Weight	Updated
		Lifetime vs. Case Temperature Curve	/	Updated
		Mechanical Outline	/	Updated
2017-06-08	M	Features	/	Updated
		Description	/	Updated
		Models	SELV output	Added
		Temperature Coefficient	/	Updated
		General specifications	Storage Temperature	Added
		General specifications	With mounting ear	Added
		Environmental Specifications	/	Deleted
		Safety & EMC Compliance	/	Updated
2019-01-04	N	Description	/	Updated
		General Specifications	Net Weight	Updated
2020-01-06	O	Features	4kV line-line, 6kV line-earth	DM 4kV, CM 6kV
		Features	Waterproof (IP67)	IP67
		Safety & EMC Compliance	EN 61000-4-5	Updated
		Derating Curve	/	Deleted
		RoHS Compliance	/	Updated
		Format	Page footer	Updated