

## Features

- Ultra High Efficiency (Up to 94.5%)
- Constant Voltage Output
- Input surge protection: DM 4kV, CM 6kV
- All-Around Protection: SCP, OTP, OVP, OCP
- IP67
- SELV Output



## Description

The EBV-500SxxxSV series is a 500W, constant-voltage IP67 LED driver that operates from 176-305 Vac input with excellent power factor. It is created for many lighting applications including high bay, high mast, arena 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(1)	Output Current Range	Max. Output Power	Typical Efficiency (2)	Typical Power Factor		Model Number (3)
					220Vac	277Vac	
24 Vdc	176 ~ 305 Vac	0~20.83 A	500 W	93.5%	0.99	0.96	EBV-500S024SV
28 Vdc	176 ~ 305 Vac	0~17.85 A	500 W	93.5%	0.99	0.96	EBV-500S028SV
36 Vdc	176 ~ 305 Vac	0~13.88 A	500 W	94.0%	0.99	0.96	EBV-500S036SV
42 Vdc	176 ~ 305 Vac	0~11.90 A	500 W	94.5%	0.99	0.96	EBV-500S042SV
48 Vdc	176 ~ 305 Vac	0~10.41 A	500 W	94.5%	0.99	0.96	EBV-500S048SV

**Notes:** (1) Certified input voltage range: 200-240Vac.

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

(3) SELV output

## Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input AC Voltage	176 Vac	-	305 Vac	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.70 mA	IEC 60598-1; 240Vac/ 60Hz
Input AC Current	-	-	2.75 A	Measured at 100% load and 220 Vac input.
Inrush Current(I <sub>2t</sub> )	-	-	1.6 A <sup>2</sup> s	At 220Vac input 25°C Cold start, Duration= 3.26 ms, 10%I <sub>pk</sub> -10%I <sub>pk</sub> . See Inrush Current Waveform for the details.
PF	0.90	-	-	At 220-240Vac, 75%-100% Load (375-500W)
THD	-	-	20%	

## Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Voltage Tolerance	-5%Vo	-	5%Vo	At 100% load condition
Output Voltage Ripple(pk-pk)	-	-	2%Vo	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	-	-	2.0 s	Measured at 220Vac and 277Vac input.
Temperature Coefficient of Vo	-	-	0.03%/°C	Case temperature = 0°C ~Tc max

## General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 220 Vac input: EBV-500S024SV EBV-500S028SV EBV-500S036SV EBV-500S042SV EBV-500S048SV	91.5% 91.5% 92.0% 92.5% 92.5%	93.5% 93.5% 94.0% 94.5% 94.5%	- - - - -	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 277 Vac input: EBV-500S024SV EBV-500S028SV EBV-500S036SV EBV-500S042SV EBV-500S048SV	92.0% 92.0% 92.5% 93.0% 93.0%	94.0% 94.0% 94.5% 95.0% 95.0%	- - - - -	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	-	232,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	117,000 Hours	-	Measured at 220Vac input, 80%Load and 60°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		+70°C	Humidity: 10% RH to 95% RH
Storage Temperature	-40°C	-	+85°C	Humidity: 5% RH to 95% RH
Dimensions Inches (L × W × H) Millimeters (L × W ×H)	10.4 × 4.25 × 1.8 264 × 108 × 45.5			With mounting ear 11.5 × 4.25 × 1.8 291 × 108 × 45.5
Net Weight	-	2500 g	-	

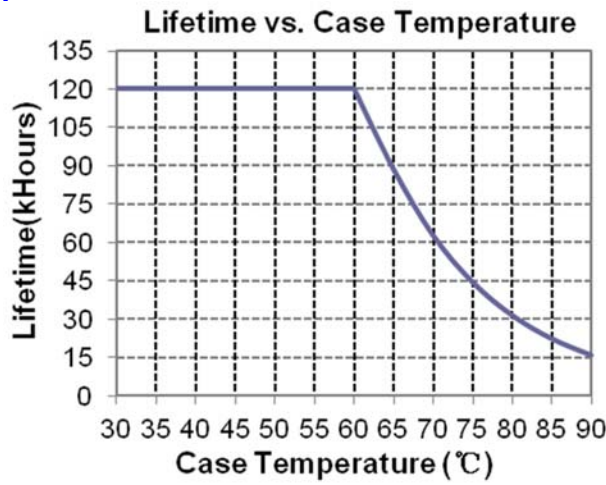
## Safety & EMC Compliance

Safety Category	Standard
TUV & CE	EN 61347-1, EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
CCC	GB 19510.1, GB 19510.14
global-mark	AS/NZS 61347.1, AS/NZS 61347.2.13
EMI Standards	Notes
EN 55015/GB/T 17743 <sup>(1)</sup>	Conducted emission Test & Radiated emission Test
EN 61000-3-2/GB 17625.1	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
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: Differential Mode 4 kV, Common Mode 6 kV <sup>(2)</sup>
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

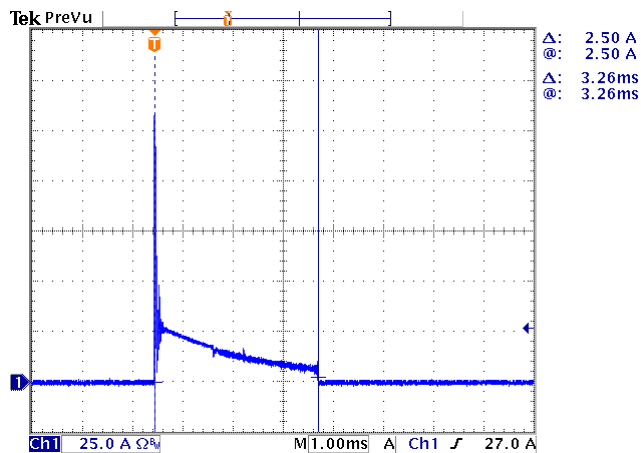
**Note:** (1) This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

(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 complete, these items must be reinstalled to restore line-to-earth surge protection and secure the end cap.

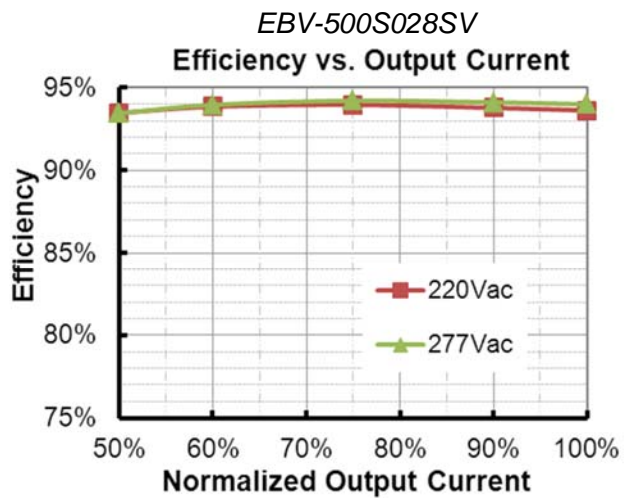
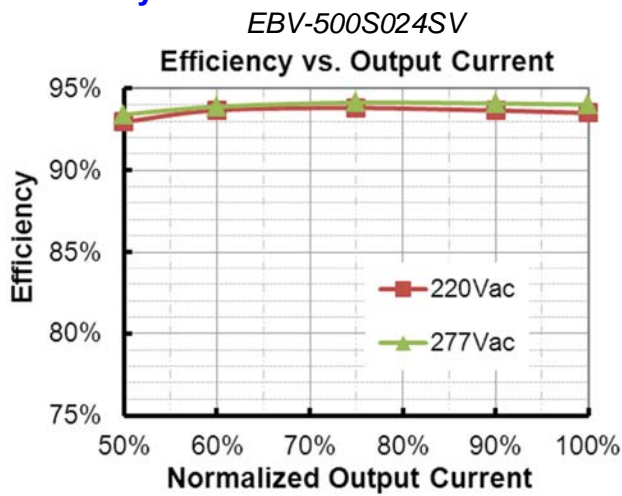
## Lifetime vs. Case Temperature

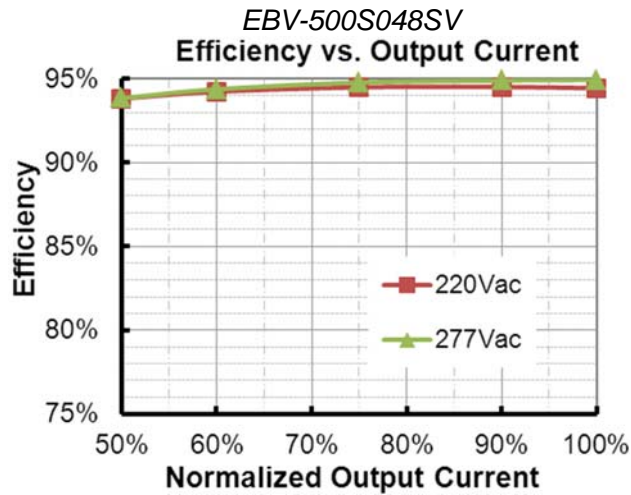
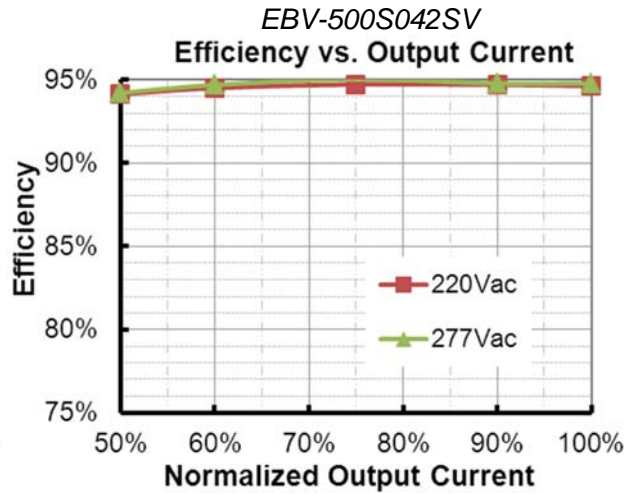
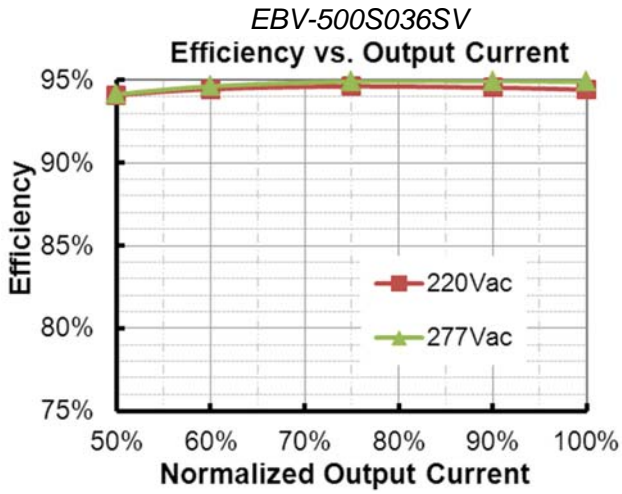


## Inrush Current Waveform

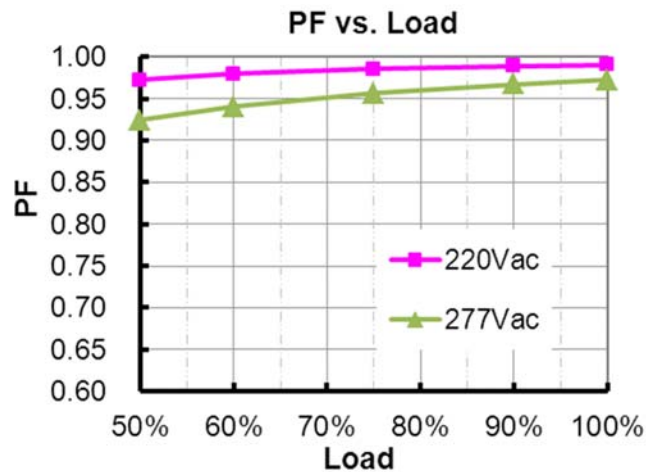


## Efficiency vs. Load

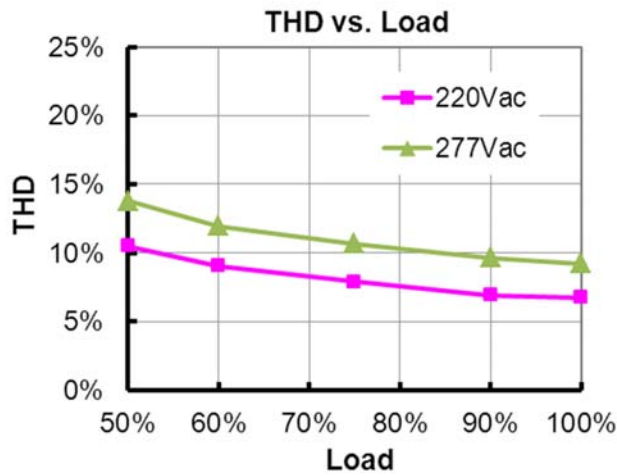




## Power Factor



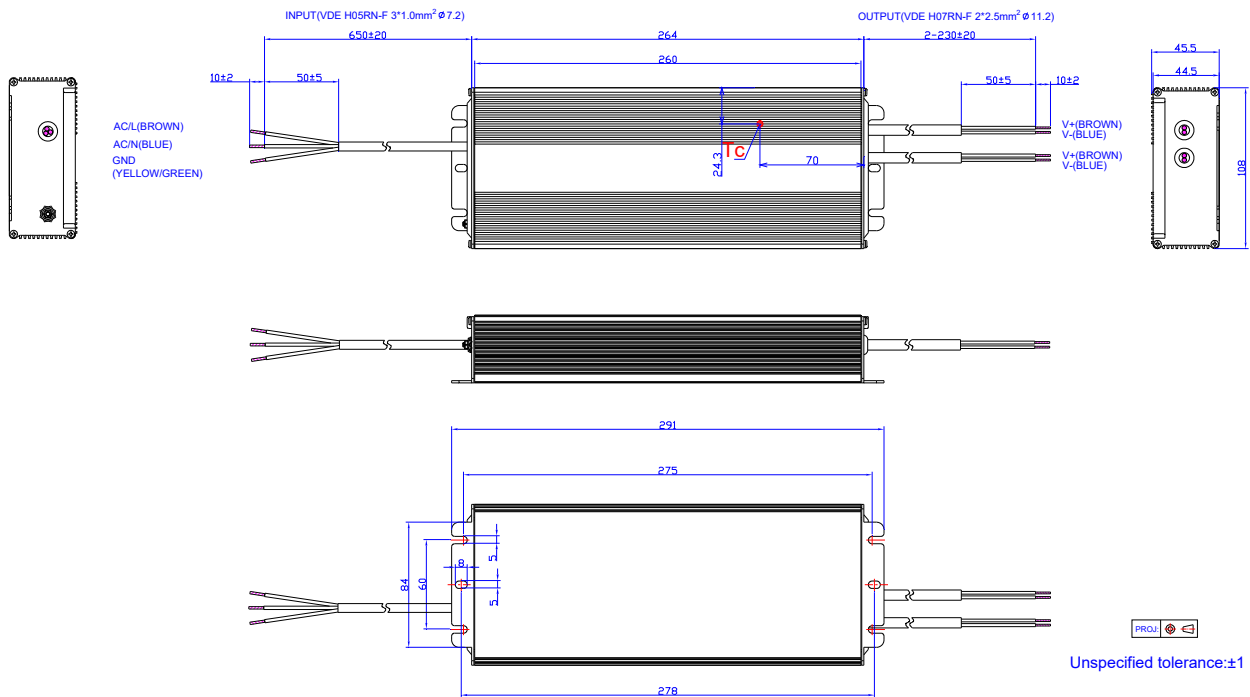
## Total Harmonic Distortion



## Protection Functions

Parameter	Min.	Typ.	Max.	Notes
Over Current Protection	110% I <sub>o</sub>	145% I <sub>o</sub>	180% I <sub>o</sub>	Hiccup mode. The power supply shall be self-recovery when the fault condition is removed.
Over Temperature Protection	Auto recovery. The power supply shall be self-recovery after the case temperature becomes normal.			
Short Circuit Protection	Hiccup mode. The power supply shall be self-recovery when the fault condition is removed.			
Over Voltage Protection	Latch mode. The power supply shall return to normal operation only after the power is turn-on again			

## 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
2015-06-01	A	Datasheets Release	/	/
2022-05-13	B	Product Photograph	/	Updated
		TUV/CCC/global-mark/Independent logo	/	Added
		Features	/	Updated
		Models	Notes	Updated
		General Specifications	Humidity	Updated
		Safety & EMC Compliance	/	Updated
		Mechanical Outline	/	Updated
RoHS Compliance	/	Updated		