

Features

- Ultra High Efficiency (Up to 95.0%)
- Constant Voltage Output
- Input surge protection: DM 4kV, CM 6kV
- All-Around Protection: SCP, OTP, OVP, OCP
- IP67 and UL Dry / Damp / Wet Location
- SELV Output
- TYPE HL, for use in a Class I, Division 2 hazardous (Classified) location
- 5 Years Warranty



Description

The EBV-500SxxxST 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, 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 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	94.0%	0.99	0.96	EBV-500S024ST
28 Vdc	176 ~ 305 Vac	0~17.85 A	500 W	94.0%	0.99	0.96	EBV-500S028ST
36 Vdc	176 ~ 305 Vac	0~13.88 A	500 W	94.5%	0.99	0.96	EBV-500S036ST
42 Vdc	176 ~ 305 Vac	0~11.90 A	500 W	95.0%	0.99	0.96	EBV-500S042ST
48 Vdc	176 ~ 305 Vac	0~10.41 A	500 W	95.0%	0.99	0.96	EBV-500S048ST

Notes: (1) UL, FCC certified input voltage range: 200-277Vac; other certified input voltage range except UL & FCC:200-240Vac

(2) Measured at 100% load and 277 Vac input.

(3) SELV output

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	176 Vac	-	305 Vac	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL8750; 277Vac/ 60Hz, grounding effectively
	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz, grounding effectively
Input AC Current	-	-	2.75 A	Measured at 100% load and 220 Vac input.

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Inrush Current(I ² t)	-	-	1.6 A ² s	At 220Vac input 25°C Cold start, Duration= 3.26 ms, 10%I _{pk} -10%I _{pk} . See Inrush Current Waveform for the details.
PF	0.90	-	-	At 200-277Vac, 50-60Hz, 75%-100% Load
THD	-	-	20%	(375-500W)

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 ~T _c max

General Specifications

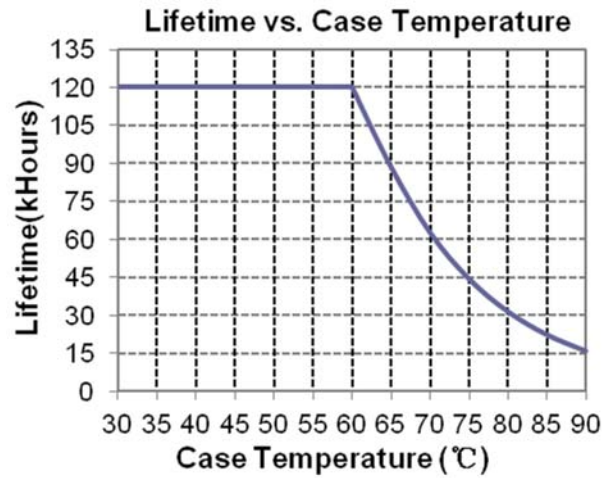
Parameter	Min.	Typ.	Max.	Notes
Efficiency at 220 Vac input: V _o = 24 V V _o = 28 V V _o = 36 V V _o = 42 V V _o = 48 V	91.5% 91.5% 92.0% 92.5% 92.5%	93.5% 93.5% 94.0% 94.5% 94.5%	- - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 277 Vac input: V _o = 24 V V _o = 28 V V _o = 36 V V _o = 42 V V _o = 48 V	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. T _c curve for the details
Operating Case Temperature for Safety T _{c_s}	-40°C	-	+90°C	
Operating Case Temperature for Warranty T _{c_w}	-40°C		+70°C	Case temperature for 5 years warranty 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

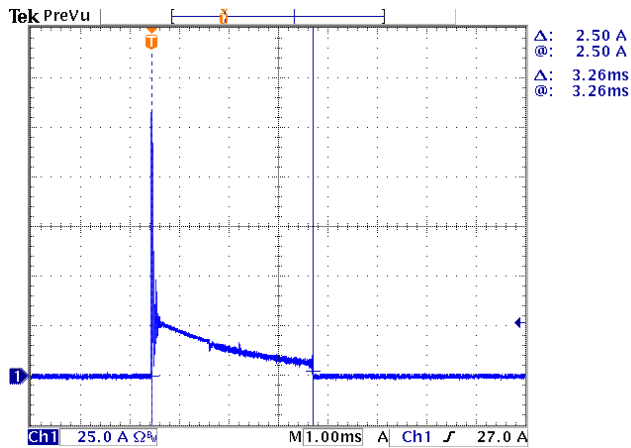
Safety Category	Standard
UL/CUL	UL 8750, CAN/CSA-C22.2 No. 250.13-12
CE	EN 61347-1, EN 61347-2-13
EMI Standards	Notes
EN 55015 ⁽¹⁾	Conducted emission Test & Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
FCC Part15	ANSI C63.4:2009 Class B
	This 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: Differential Mode 4 kV, Common Mode 6 kV ⁽²⁾
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 completed, these items must be reinstalled to restore line-to-earth surge protection and secure the end cap.

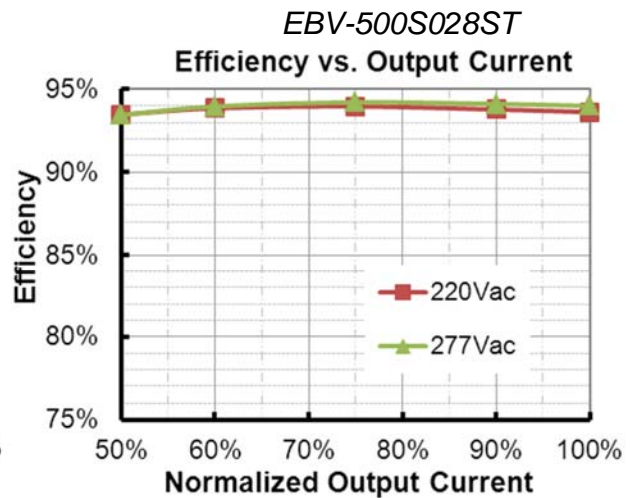
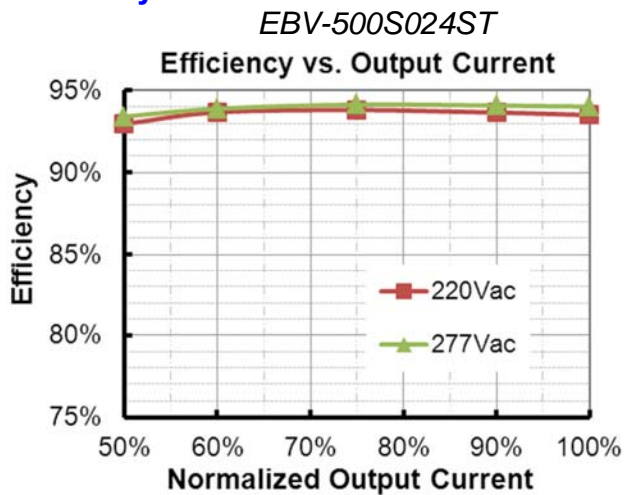
Lifetime vs. Case Temperature

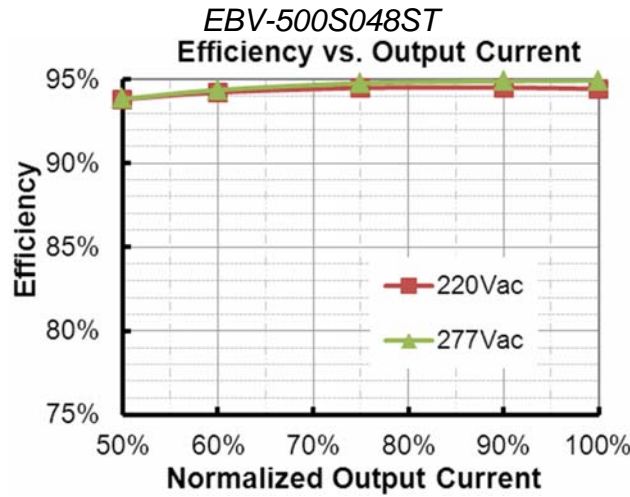
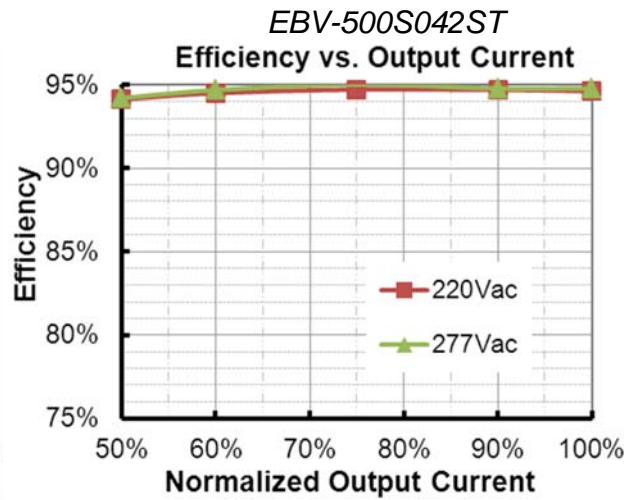
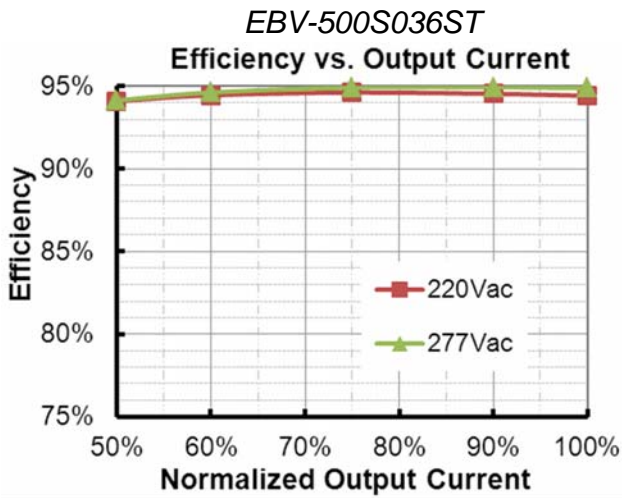


Inrush Current Waveform

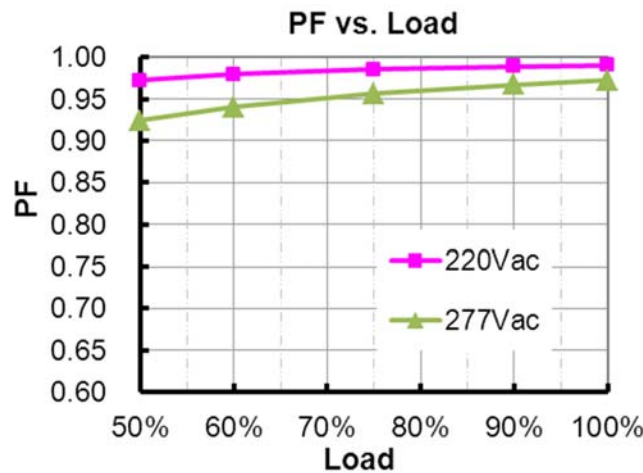


Efficiency vs. Load

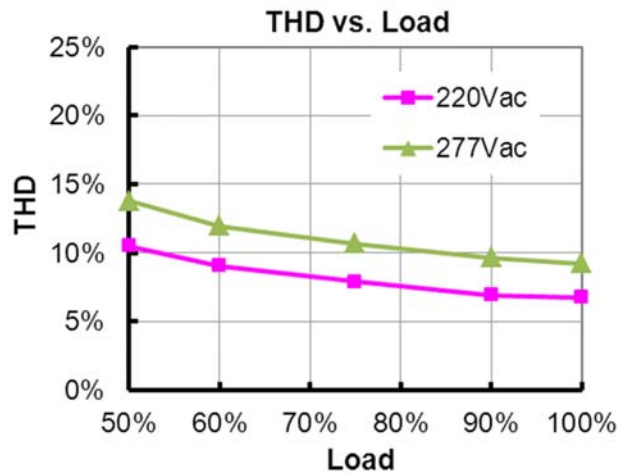




Power Factor



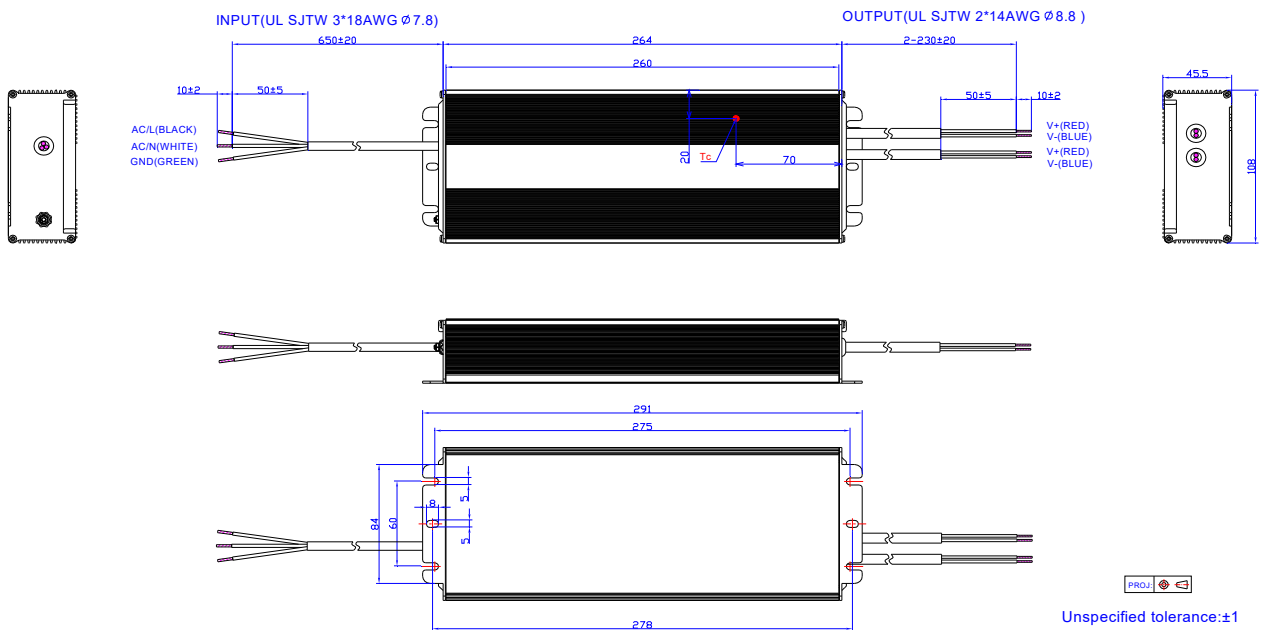
Total Harmonic Distortion



Protection Functions

Parameter	Min.	Typ.	Max.	Notes
Over Current Protection	110% I _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	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
2014-09-30	A	Datasheets Release	/	/
2015-5-28	B	Features	/	Updated
		Description	/	Updated
		Models	/	Updated
		Input Specifications	Leakage Current	Updated
		General Specifications	Case Temperature	Operating Case Temperature for Safety Tc_s
		General Specifications	Operating Case Temperature for Warranty Tc_w	Added
		General Specifications	Storage Temperature	Added
		Environmental Specifications	/	Deleted
		Derating	/	Deleted
Safety & EMC Compliance	UL/CUL	Updated		
2015-11-27	C	CE	/	Added
		External Grounding Screw Solution	/	/
		Safety & EMC Compliance	/	Updated
		Mechanical Outline	/	Updated
2021-08-13	D	Features	/	Updated
		Description	/	Updated
		Input Specifications	/	Updated
		General Specifications	Operating Case Temperature for Warranty Tc_w	Updated
		General Specifications	Storage Temperature	Updated
		General Specifications	Dimensions Inches (L × W × H) Millimeters (L × W ×H)	Updated
		Safety & EMC Compliance	Note(1)	Added
		Mechanical Outline	/	Updated