

## Features

- High Efficiency (up to 93.5%)
- Constant Voltage Output
- Input Surge Protection: 4kV line-line, 6kV line-earth
- All-Around Protection: OCP, OVP, SCP, OTP
- Waterproof (IP67)
- SELV Output
- Independent Design
- 5 Years Warranty



## Description

The EBV-200SxxxSV series is a 200W, constant-voltage, the LED driver that operates from 176-305 Vac input with excellent power factor. It is created for architectural lighting, decorative lighting, signage lighting and similar applications requiring industry safety compliance, superior electrical performance and robust packaging for challenging environments. The high efficiency of the driver and compact metal case enables them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against input surge, over current, output over voltage, short circuit, and over temperature.

## Models

Output Voltage	Input Voltage Range(1)	Output Current Range	Max. Output Power(2)	Typical Efficiency (3)	Power Factor	Model Number(4)(5)
					220Vac	
12 V	176 ~ 305 Vac 190 ~ 250 Vdc	0 ~ 16.7 A	200 W	91.5%	0.96	EBV-200S012SV
24 V	176 ~ 305 Vac 190 ~ 250 Vdc	0 ~ 8.4 A	200 W	93.0%	0.96	EBV-200S024SV
36 V	176 ~ 305 Vac 190 ~ 250 Vdc	0 ~ 5.6 A	200 W	92.5%	0.96	EBV-200S036SV
48 V	176 ~ 305 Vac 190 ~ 250 Vdc	0 ~ 4.2 A	200 W	93.5%	0.96	EBV-200S048SV

**Notes:** (1) CCC certified input voltage range: 220/230/240 Vac; other certified input voltage range except CCC: 200-240 Vac or 190-250Vdc (except BIS, KCC and KS).

(2) Operating input voltage range: 90-305Vac, and 90-176Vac is for safety operation (see below “Derating” curve for details)

(3) Measured at 100% load and 220Vac input (see below “General Specifications” for details).

(4) SELV output.

(5) For BIS models add suffix -3000.

## Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	176 Vac	-	305 Vac	190-250 Vdc
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz
Input AC Current	-	-	1.1 A	Measured at 100% load and 220Vac input.

## Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Inrush Current(I <sup>2</sup> t)	-	-	2.22 A <sup>2</sup> s	At 220Vac input, 25°C cold start, duration=808 μs, 10%I <sub>pk</sub> -10%I <sub>pk</sub> . See Inrush Current Waveform for the details.
PF	0.9	-	-	At 220-240Vac, 50-60Hz, 60%-100%load(120-200W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100%load(150-200W)

## Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Voltage Tolerance	-2.5%Vo	-	2.5%Vo	At 100% load condition
Total Output Voltage Ripple (pk-pk)	-	-	2%Vo	Measured at 220-240VacVac input, 0% - 100% load condition. Measured by 20 MHz bandwidth oscilloscope and the output paralleled a 0.1 μF ceramic capacitor and a 10 μF electrolytic capacitor.
Startup Overshoot/ Undershoot	-	-	5%	At 100% load condition
Line Regulation	-	-	±0.5%	Measured at 100% load
Load Regulation	-	-	±1%	
Turn-on Delay Time	-	-	0.5 s	Measured at 220Vac input, 100% load
Load Dynamic Response	Output Deviation	-	5%Vo	R/S: 1 A/μs Load: 25% ~ 100% load.
	Settling Time	-	10 ms	
Temperature Coefficient of Vo	-	0.03%/°C	-	Case temperature = 0°C~T <sub>c</sub> max

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

## General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 220Vac input: EBV-200S012SV EBV-200S024SV EBV-200S036SV EBV-200S048SV	89.5% 91.0% 90.5% 91.5%	91.5% 93.0% 92.5% 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.)
MTBF	-	437,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	106,000 Hours	-	Measured at 220Vac input, 80%load and 70°C case temperature; See lifetime vs. T <sub>c</sub> curve for the details
Operating Case Temperature for Safety T <sub>c_s</sub>	-40°C	-	+90°C	

## General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Operating Case Temperature for Warranty Tc_w	-40°C	-	+75°C	Case temperature for 5 years warranty. Humidity: 10% RH to 100% RH.
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)	6.65 x 2.66 x 1.56 169 x 67.5 x 39.7			With mounting ear 7.48 x 2.66 x 1.56 190 x 67.5 x 39.7
Net Weight	-	900 g	-	

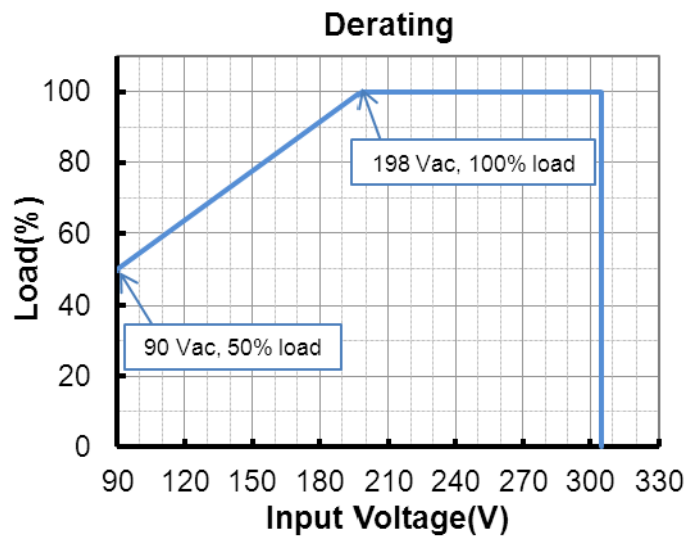
**Note:** All specifications are typical at 25°C unless otherwise stated.

## Safety & EMC Compliance

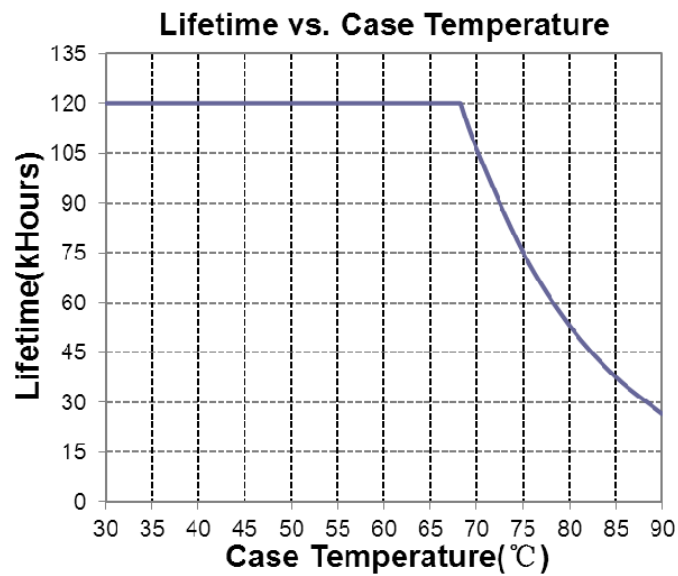
Safety Category	Standard
CE & ENEC	EN 61347-1, EN61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
CCC	GB 19510.1, GB 19510.14
BIS	IS 15885(PART2/SEC13)
KS	KS C 7655
EMI Standards	Notes
EN 55015/GB 17743/KN 15 <sup>(1)</sup>	Conducted emission Test & Radiated emission Test
EN 61000-3-2/GB 17625.1	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EMS Standards	Notes
EN 61000-4-2/KN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3/KN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4/KN 61000-4-4	Electrical Fast Transient / Burst-EFT
EN 61000-4-5/KN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 4 kV, line to earth 6 kV
EN 61000-4-6/KN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8/KN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11/KN 61000-4-11	Voltage Dips
EN 61547/KN 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.

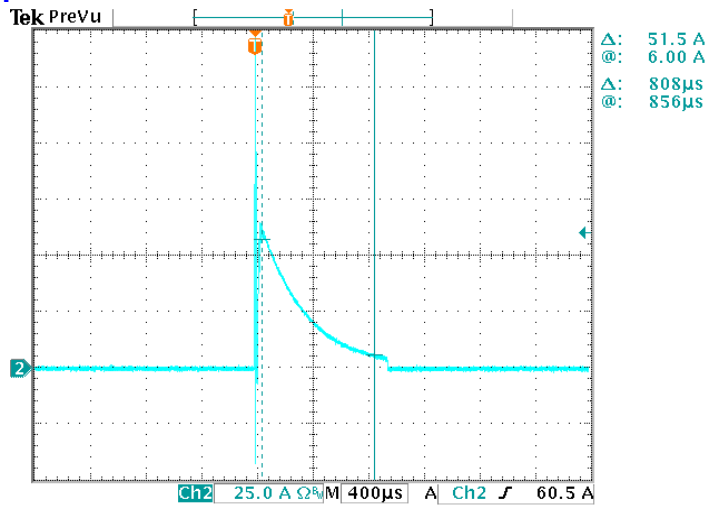
## Derating



## Lifetime vs. Case Temperature



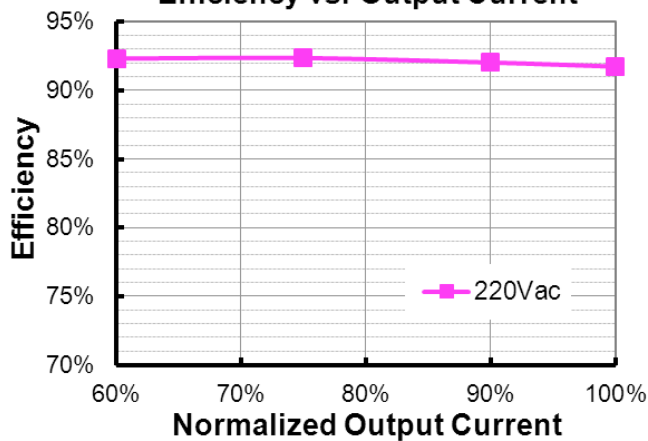
## Inrush Current Waveform



## Efficiency vs. Load

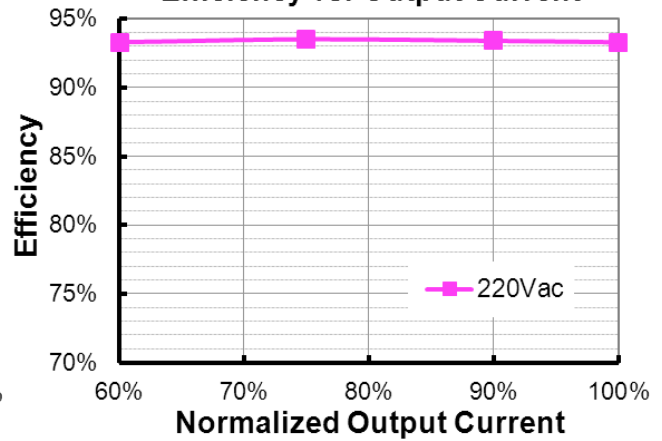
EBV-200S012SV

Efficiency vs. Output Current



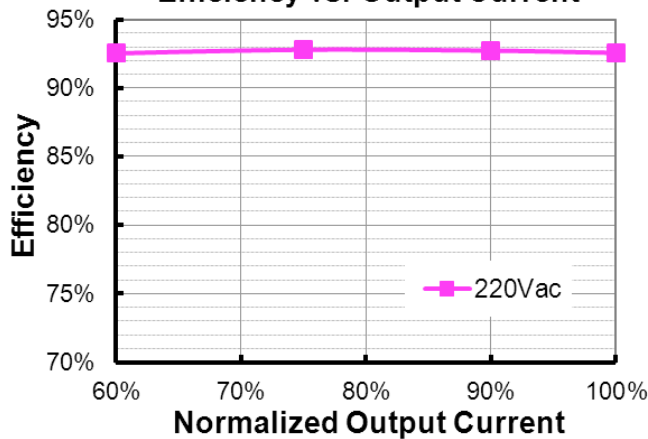
EBV-200S024SV

Efficiency vs. Output Current



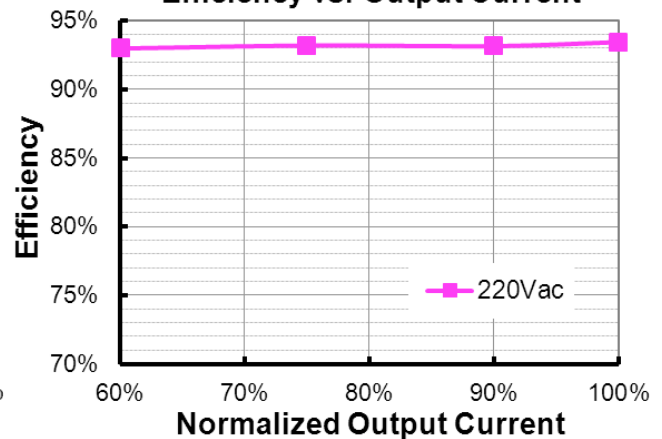
EBV-200S036SV

Efficiency vs. Output Current

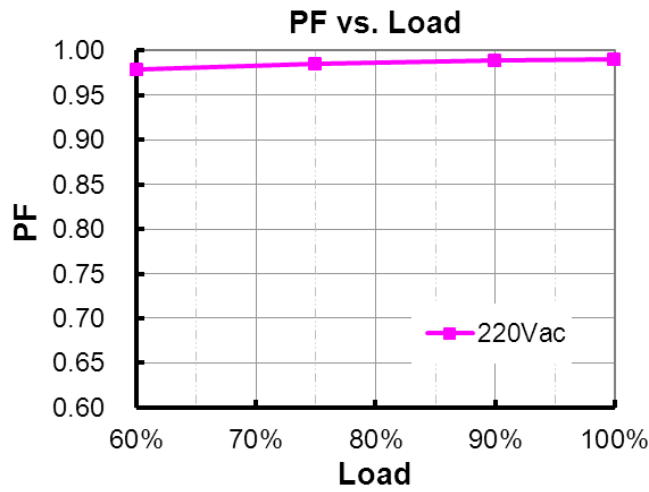


EBV-200S048SV

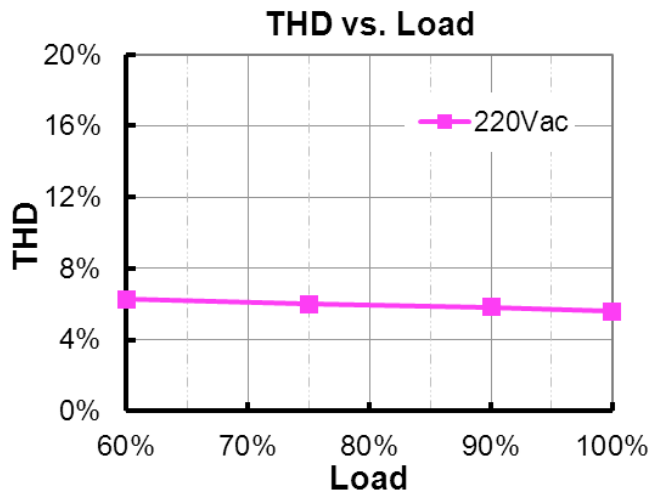
Efficiency vs. Output Current



## Power Factor



## Total Harmonic Distortion

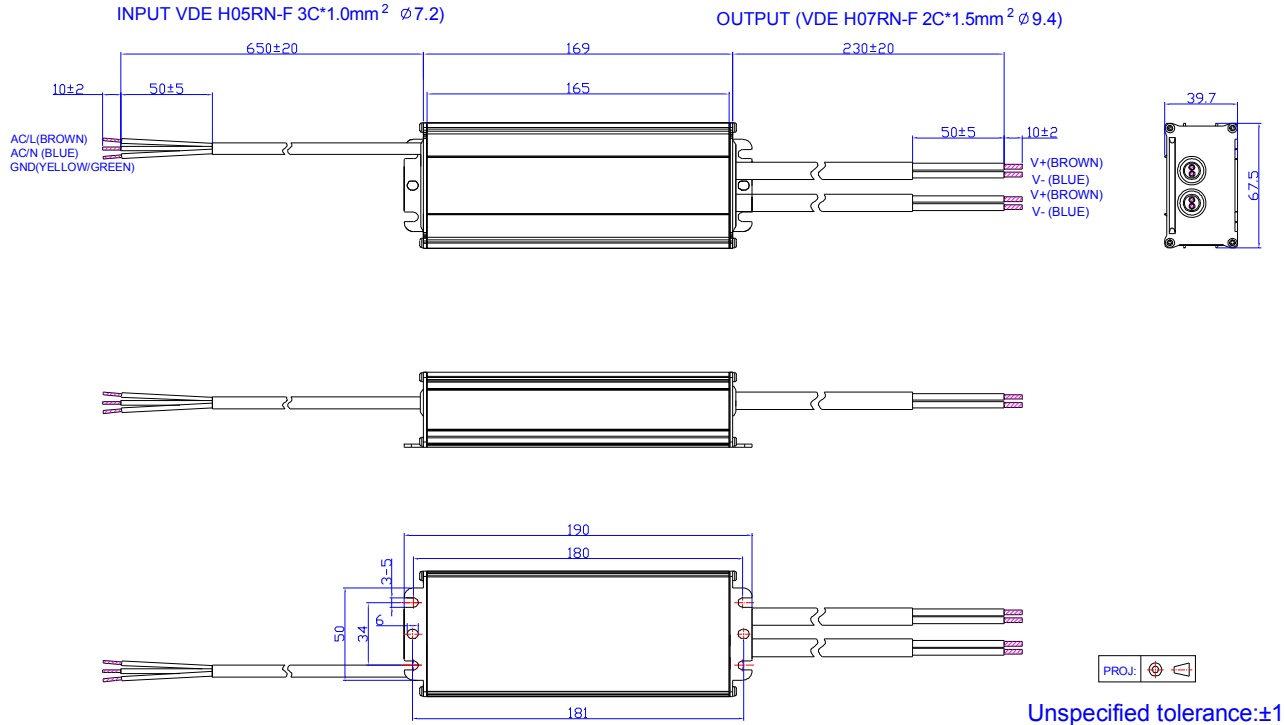


## Protection Functions

Parameter	Notes
Over Current Protection	Auto Recovery. The driver shall be self-recovery when the fault condition is removed.
Over Voltage Protection	Limits output voltage at no load and in case the normal voltage limit fails.
Short Circuit Protection	Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.
Over Temperature Protection	Auto Recovery. Returning to normal after over temperature is removed.

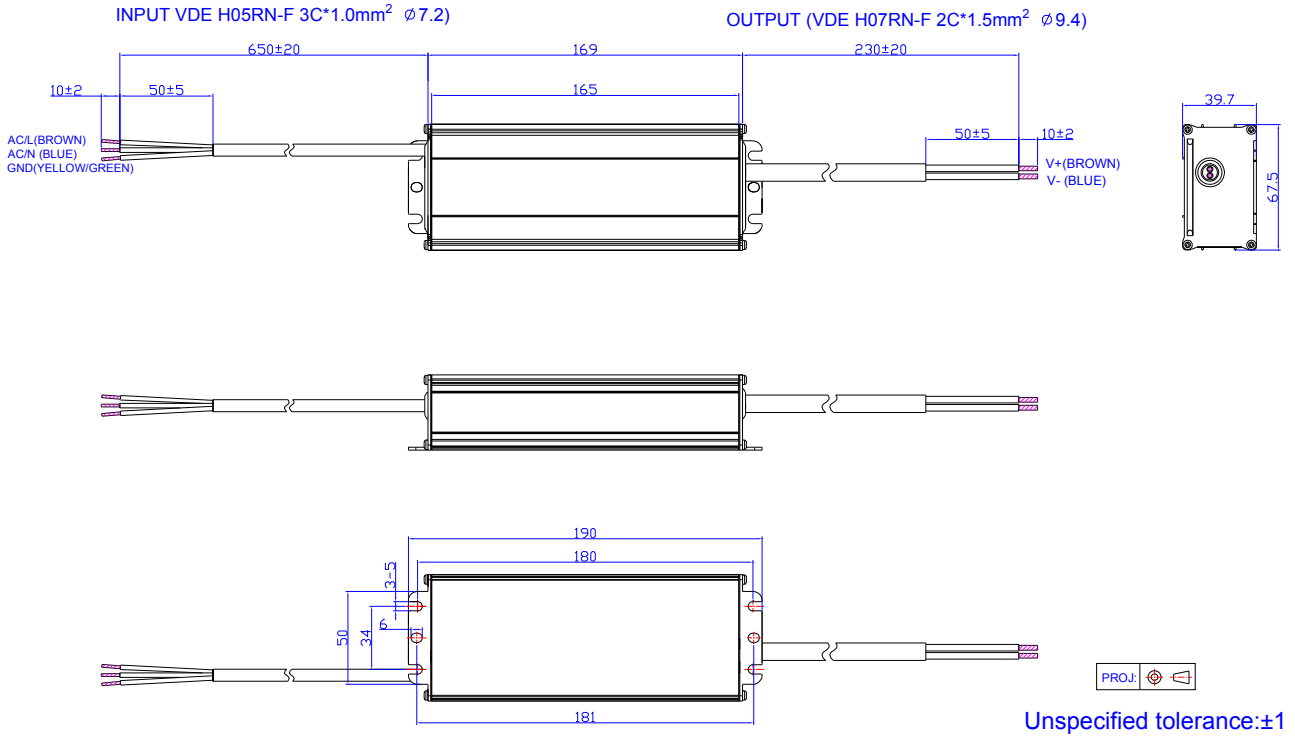
## Mechanical Outline

EBV-200S012SV

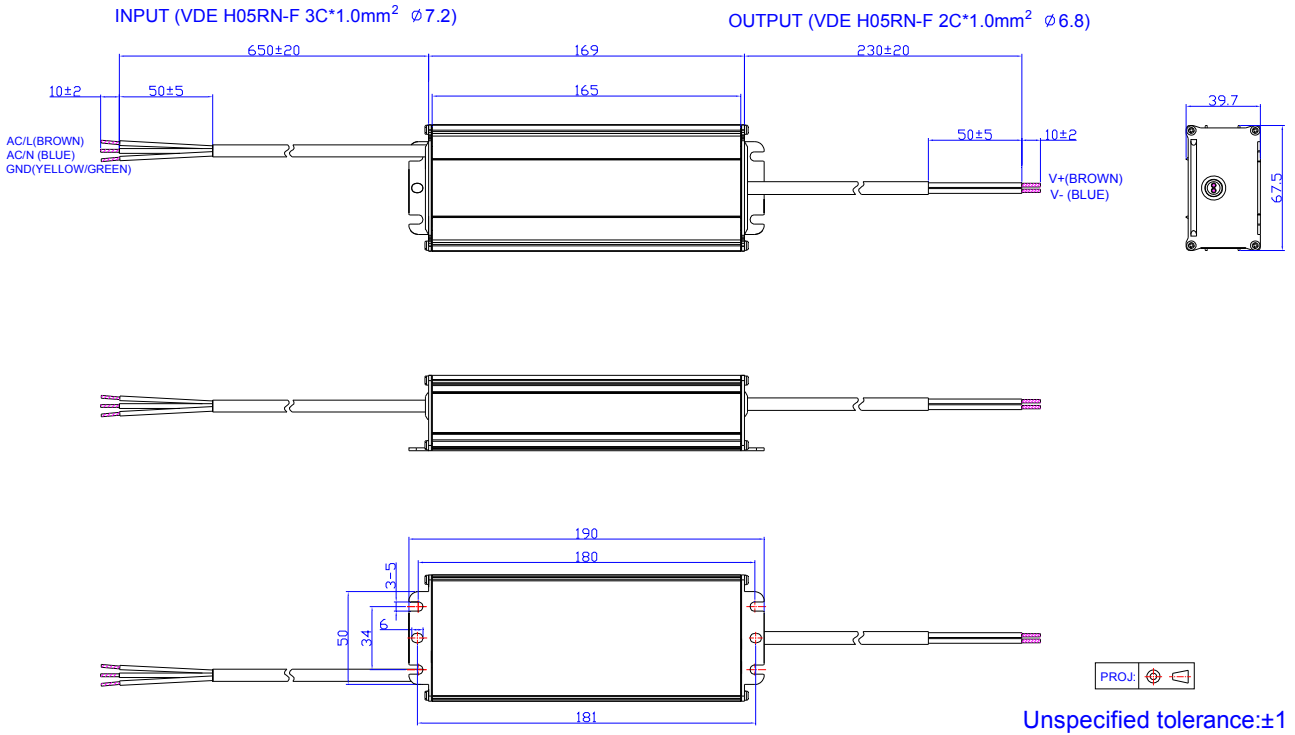


**Note:** The 2 DC output cables are connected in parallel internally because one 1.5mm<sup>2</sup> wire can only carry 14.5A. Please connect the 2 brown wires together and 2 blue wires together in application, or ensure each cable carries same current.

EBV-200S024SV



EBV-200S036/048SV





## RoHS Compliance

Our products comply with the European Directive 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	
2018-12-14	A	Datasheet Release	/	/	
2019-01-25	B	KCC certificate	/	Added	
		Notes of Models	(1) CCC certified input voltage range: 220/230/240 Vac; other certified input voltage range except CCC: 200-240 Vac or 190-250Vdc (except BIS and KS).	(1) CCC certified input voltage range: 220/230/240 Vac; other certified input voltage range except CCC: 200-240 Vac or 190-250Vdc (except BIS, KCC and KS).	
		Dimensions	Inches (L x W x H) Millimeters (L x W x H)	6.50 x 2.66 x 1.56 165 x 67.5 x 39.7	6.65 x 2.66 x 1.56 169 x 67.5 x 39.7
		Safety & EMC Compliance	/	Updated	