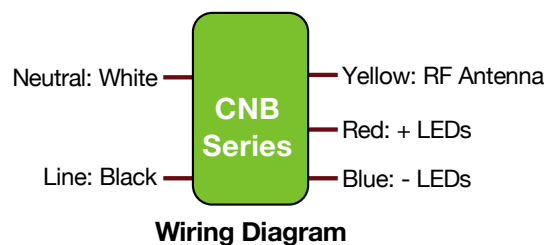
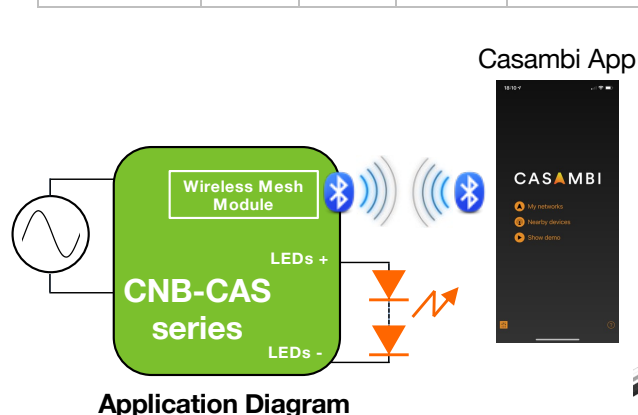


50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

Nominal Input Voltage	Max. Output Power	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 - 277 Vac	50 W	300 mA to 1200 mA	up to 90% typical	90°C (measured at the hot spot)	< 20% @ max load	> 0.9	Casambi wireless	1 - 100%	300 ms typical



FEATURES

- Casambi-ready product that can be integrated into Casambi ecosystem
- UL8750 Class P, Class 2 power supply
- Lifetime: 50,000 hours @ $T_c \leq 75^\circ\text{C}$
- 90°C maximum case hot spot temperature
- IP20-rated case with silicone-based potting
- Complies with DLC (DesignLight Consortium®) and CA Title 24 technical requirements

NFC PROGRAMMING

- Current: 100% to 50% in each voltage range
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

APPLICATIONS

- Commercial lighting
- Architectural lighting
- Indoor lighting

CASAMBI WIRELESS CONTROL

- Compatible with Casambi ecosystem
- Wireless lighting controls with simple set-up that anyone can use
- Pre-integrated Bluetooth mesh module enables brands to create multi-way controls and switching without additional wiring; no central gateway required
- Secure, reliable mobile app & software
- Dimming, grouping, many users, schedules, timers
- Virtually unlimited range with mesh



50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

1 - ORDERING INFORMATION

Part Number	Input Voltage (Vac)	Max Output Power (W)	Iout (mA) ⁽¹⁾	Default Programmed Current (mA) ⁽³⁾	Vout Min. (Vdc)	Vout Nom. (Vdc)	Vout Max. (Vdc) ⁽²⁾	Open Loop (No Load) Voltage (Vdc)	Comments
CNB30W									
CNB30W-0600-42-CAS	120 - 277	25.2	300 to 600	300	28	37.8	42	50	With Casambi wireless control, and with wire whip antenna
CNB50W									
CNB50W-1200-42-CAS	120 - 277	50.4	600 to 1200	600	28	37.8	42	50	With Casambi wireless control, and with wire whip antenna

Notes:

- (1) The ERP LED Driver Configuration Tool (ERP GUI) allows programming of the output current to values below the minimum limits specified in the table above. However, when the programmed output current is set below these minimum thresholds, the LED driver's Total Harmonic Distortion (THD) and Power Factor (PF) may not meet the values defined in the INPUT SPECIFICATION section of this datasheet.
- (2) The forward voltage (Vf) of the LED load should not exceed Vout Max. of the driver under worst case field operating conditions which are the Vf max. of the LED load under lowest temperature and highest forward current conditions. As a general design guideline, the nominal LED load Vf measured at the operating current and at room temperature should be \leq Vout Nom. of the driver.
- (3) For each model, the default output current setting is the MINIMUM current.
Example: the default output current setting for the CNB50W-1200-42-CAS is 600 mA.

ACCESSORIES

Notes:

Please order the programming wand using the part number NFC_WAND.

Programming Wand

Part number: NFC_WAND



50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

2 - INPUT SPECIFICATION (@25°C ambient temperature)

	Units	Minimum	Typical	Maximum	Notes
Input Voltage Range (Vin)	Vac	90	120, 277	305	<ul style="list-style-type: none"> The rated output current for each model is achieved at Vin ≥ 108 Vac & at Vin ≥ 198 Vac At nominal load
Input Frequency Range	Hz	47	60	63	
Input Current (Iin)	A			0.5 A @ 120 Vac 0.23 A @ 277 Vac	
Power Factor (PF)		0.9	> 0.9		<ul style="list-style-type: none"> At nominal input voltage and with nominal LED voltage and no dimmer From 100% to 50% of rated power
Inrush Current	A	Meets NEMA-410 requirements			At any point on the sine wave and 25°C
Leakage Current	mA			0.3 mA @ 120 Vac 0.7 mA @ 277 Vac	Measured per IEC60950-1
Input Harmonics	Complies with IEC61000-3-2 for Class C equipment				
Total Harmonics Distortion (THD)				20%	<ul style="list-style-type: none"> At nominal input voltage and nominal LED voltage From 100% to 50% of rated power Complies with DLC (Design Light Consortium) technical requirements
Efficiency	%	-	up to 90%	-	Measured with nominal input voltage, a full sinusoidal wave form and without dimmer attached.
Isolation	The AC input to the main DC output is isolated				

3 - MAIN OUTPUT SPECIFICATION (@25°C ambient temperature)

	Units	Minimum	Typical	Maximum	Notes
Output Voltage (Vout)	Vdc				See ordering information for details
Output Current (Iout)	mA				<ul style="list-style-type: none"> See ordering information for details The rated output current for each model is achieved at Vin ≥ 108 Vac & at Vin ≥ 198 Vac.
Output Current Regulation	%	-5	±2.5	5	<ul style="list-style-type: none"> At nominal AC line voltage Includes load and current set point variations
Output Current Overshoot	%	-	-	10	The driver does not operate outside of the regulation requirements for more than 500 ms during power on with nominal LED load and without dimmer.
Ripple Current	≤ 10% of rated output current for each model				<ul style="list-style-type: none"> Measured at nominal LED voltage and nominal input voltage without dimming Calculated in accordance with the IES Lighting Handbook, 9th edition
Dimming Range	%	1		100	<ul style="list-style-type: none"> Dimming is controlled by Bluetooth mesh from 1% to 100%. When testing, if light is measured, dimming range is based on light output. If no light is measured, dimming range is based on percentage of output current. Dimming performance is optimal when the driver is operated at its nominal output voltage matching the LED nominal Vf (forward voltage). Dimming performance may vary when the driver is operated near its minimum output voltage.
Start-up Time	ms		300	500	<ul style="list-style-type: none"> Without any dimmer attached, and at nominal input voltages and nominal load Measured from application of AC line voltage to 100% light output Complies with CA Title 24
Isolation	The main DC output is certified and tested per UL8750 Class 2 or LED Class 2				

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

4 - DIMMING CONTROL

Dimming is controlled by Casambi wireless control from 1% to 100%.

5 - ENVIRONMENTAL CONDITIONS

	Units	Minimum	Typical	Maximum	Notes
Operating Ambient Temperature (Ta)	°C	-20		50	50°C is the non-derated temperature (Refer to section 8 'Output power de-rating at elevated temperatures'.)
Maximum Case Temperature (Tc)	°C			+90	Case temperature measured at the hot spot •tc (see label on page 12)
Storage Temperature	°C	-40		+85	
Humidity	%	5	-	95	Non-condensing
Cooling	Convection cooled				
Acoustic Noise	dBA			24	Measured at a distance of 1 foot, without dimmer
Mechanical Shock Protection	per EN60068-2-27				
Vibration Protection	per EN60068-2-6 & EN60068-2-64				
MTBF	> 200,000 hours when operated at nominal input and output conditions, and at Tc ≤ 75°C				
Lifetime	50,000 hours at Tc ≤ 75°C maximum case hot spot temperature (see hot spot •tc on label on page 12)				

6 - EMC COMPLIANCE AND SAFETY APPROVALS

EMC Compliance			
Conducted and Radiated EMI	Compliant with FCC CFR Title 47 Part 15 Class B at 120 Vac & Class A at 277 Vac		
Harmonic Current Emissions	IEC61000-3-2	For Class C equipment	
Voltage Fluctuations & Flicker	IEC61000-3-3		
Immunity Compliance	ESD (Electrostatic Discharge)	IEC61000-4-2	6 kV contact discharge, 8 kV air discharge, level 3
	RF Electromagnetic Field Susceptibility	IEC61000-4-3	3 V/m, 80 - 1000 MHz, 80% modulated at a distance of 3 meters
	Electrical Fast Transient	IEC61000-4-4	± 2 kV on AC power port for 1 minute, ±1 kV on signal/control lines
	Surge	IEC61000-4-5	± 2 kV line to line (differential mode) / ± 2 kV line to common mode ground
		ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A, 2.5 kV ring wave	
	Conducted RF Disturbances	IEC61000-4-6	3V, 0.15-80 MHz, 80% modulated
	Voltage Dips	IEC61000-4-11	>95% dip, 0.5 period; 30% dip, 25 periods; 95% reduction, 250 periods

Safety Agency Approvals	
cUL	UL8750 listed Class 2

Safety					
	Units	Minimum	Typical	Maximum	Notes
Hi Pot (High Potential) or Dielectric voltage-withstand	Vdc	2500			<ul style="list-style-type: none"> Insulation between the input (AC line and Neutral) and the output Tested at the RMS voltage equivalent of 1768 Vac

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

■ 7 - PROTECTION FEATURES

Input Over Current Protection

The CNB series incorporates a primary AC line fuse for input over current protection to prevent damage to the LED driver and meet product safety requirements as outlined in Section 6.

Short Circuit and Over Current Protection

The CNB series is protected against short-circuit such that a short from any output to return shall not result in a fire hazard or shock hazard. The driver shall hiccup as a result of a short circuit or over current fault. Removal of the fault will return the driver to within normal operation. The driver shall recover, with no damage, from a short across the output for an indefinite period of time.

Internal Over temperature Protection

The CNB series is equipped with internal temperature sensor on the primary power train. Failure to stay within the convection power rating will result in the power supply reducing the available current (fold back) below the programmed amount. The main output current will be restored to the programmed value when the temperature of the built-in temperature sensor cools adequately.

Output Open Load Protection

When the LED load is removed, the output voltage of the CNB series is typically limited to 1.3 times the maximum output voltage of each model.

■ 8 - OUTPUT POWER DE-RATING AT ELEVATED TEMPERATURES

The CNB series can be operated with cooling air temperatures above 40°C by linearly de-rating the total maximum output power (or current) by 2.5%/°C typical until internal over temperature protection activates.

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

9 - PROGRAMMING

The CNB series can be programmed by placing the programming wand over the NFC receiver area of the driver and by plugging the USB other end of the wand into a computer. ***The driver should not be powered on during the programming process.***

When ordering the CNB series, please make sure you order a programming wand. The part number for the programming wand is "NFC_WAND".

Programming is done by using the ERP LED Driver Configuration Tool (also known as ERP GUI), downloadable through the ERP website (<https://www.erp-power.com/erp-light-engines/led-light-programming-software/>), which enables the user to adjust the output current.

Please note that, for each model, the **default output current setting is listed on page 2 of this datasheet.**

Furthermore, when programming the driver with a computer using the programming wand, you can access the driver's internal data log and read the following information: SKU, serial number, manufacturing lot code, hours of operation, firmware revision, and power cycles.

While programming drivers in a lot, the ERP GUI can interface with a label printer, which enables the user to add configuration labels to driver labels in order to highlight programmed output current. Listed below is the equipment needed to print labels.

Equipment	Part Number	Where to buy
Printer	TSC TC210	barcodefactory.com/tsc/printers/tc210/99-059a001-54lf
Ribbon	TSC Prem. Resin, 60mm x 110mm	barcodefactory.com/tsc/35-r060110-23cf
Labels	BAR-.81x.28-1-TT	barcodefactory.com/barcodefactory/labels/bar-.81x.28-1-tt

For more information, please refer to the ERP LED Driver Configuration Tool user's manual at: (<https://www.erp-power.com/erp-light-engines/led-light-programming-software/>).

Programming Wand

Part number: NFC_WAND



Figure 1

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

10 - PREDICTED LIFETIME VERSUS CASE AND AMBIENT TEMPERATURE

Lifetime is defined by the measurement of the temperatures of all the electrolytic capacitors whose failure would affect light output under the nominal LED load and worst case AC line voltage. The graphs in figures 2 and 3 are determined by the electrolytic capacitor with the shortest lifetime, among all electrolytic capacitors. It represents a worst case scenario in which the LED driver is powered 24 hours/day, 7 days/week. The lifetime of an electrolytic capacitor is measured when any of the following changes in performance are observed:

- 1) Capacitance changes more than 20% of initial value
- 3) Equivalent Series Resistance (ESR): 150% or less of initial specified value

- 2) Dissipation Factor ($\tan \delta$): 150% or less of initial specified value
- 4) Leakage current: less of initial specified value

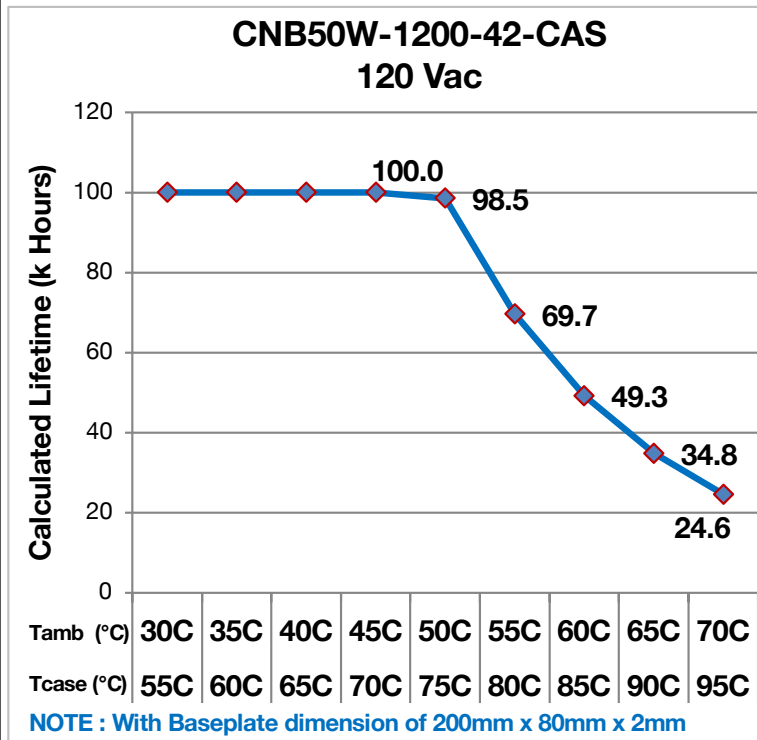


Figure 2

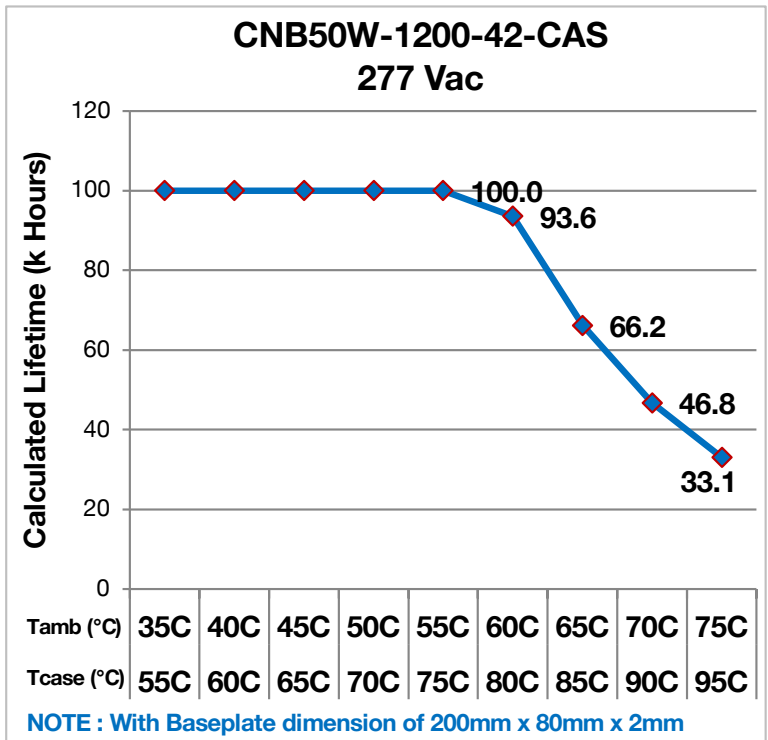


Figure 3

Notes:

- The ambient temperature $T_{ambient}$ and the differential between $T_{ambient}$ and T_{case} mentioned in the above graphs are relevant only as long as both the driver and the light fixture are exposed to the same ambient room temperature. If the LED driver is housed in an enclosure or covered by insulation material, then the ambient room temperature is no longer valid. In this situation, please refer only to the case temperature T_{case} .
- It should be noted the graph "Lifetime vs. Ambient Temperature" may have an error induced in the final application if the mounting has restricted convection flow around the case. For applications where this is evident, the actual case temperature measured at the Tc point in the application should be used for reliability calculations.

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

11 – EFFICIENCY VERSUS LOAD

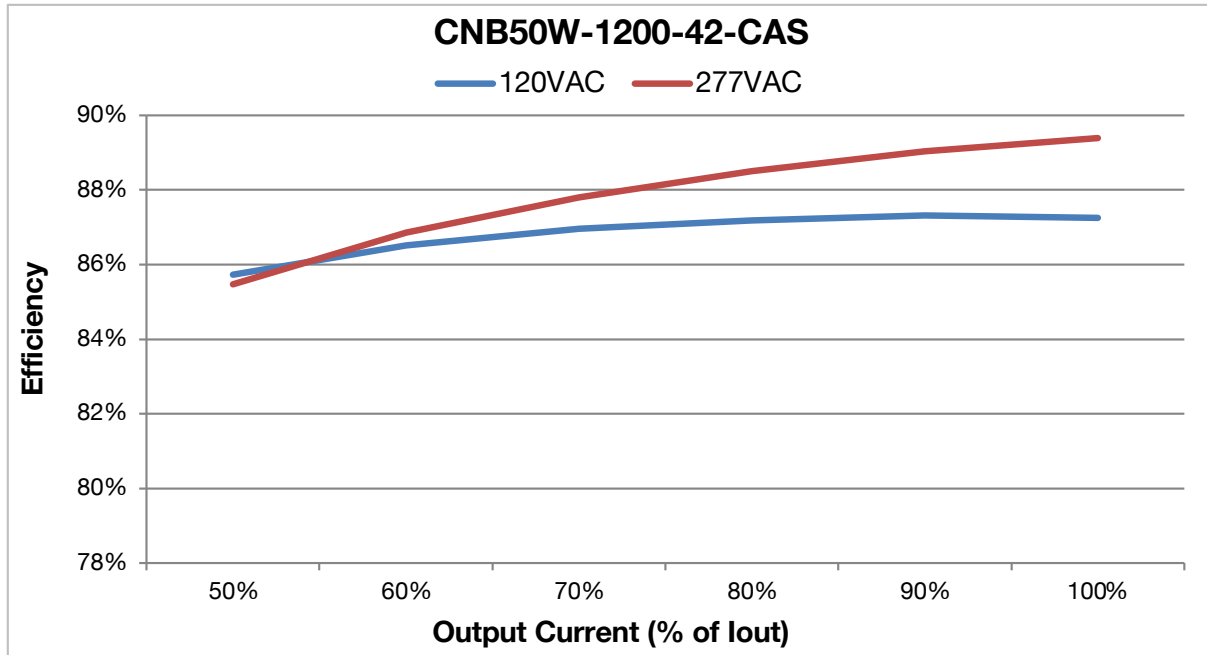


Figure 4

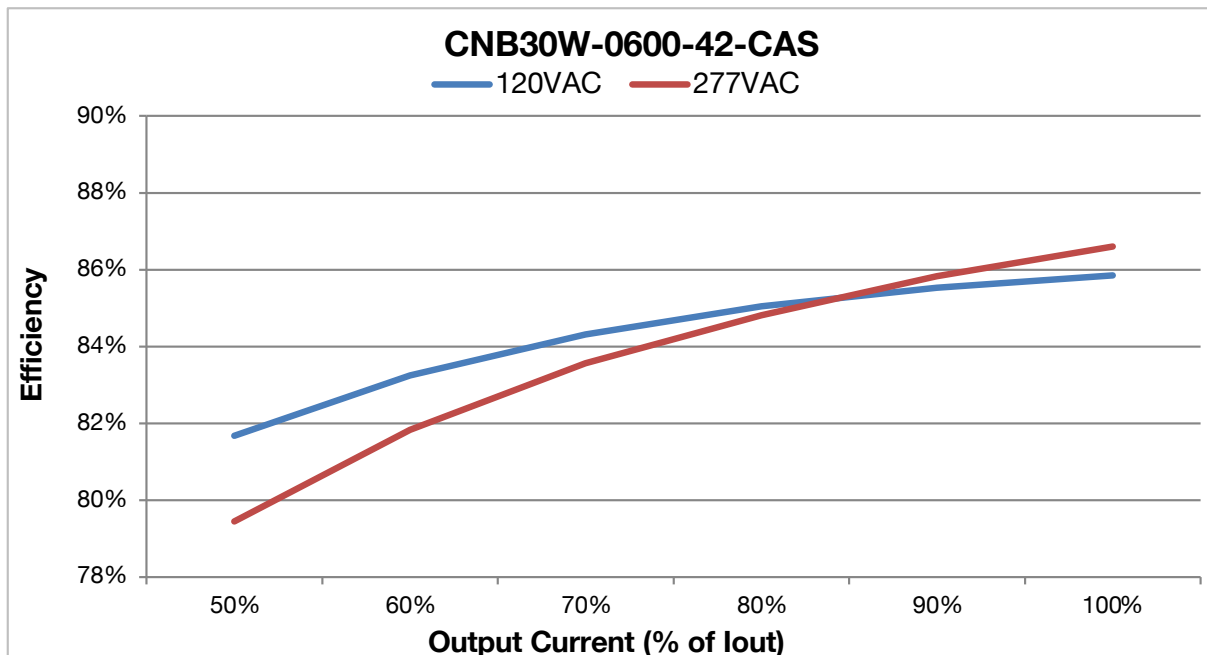


Figure 5

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

12 – POWER FACTOR VERSUS LOAD

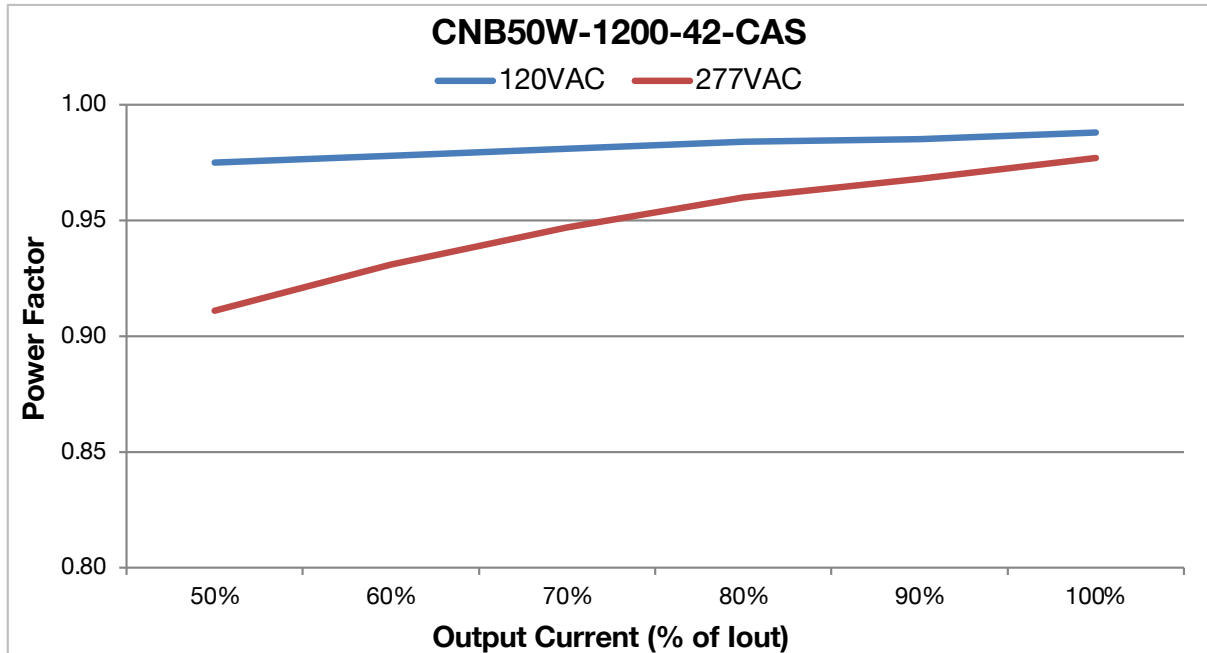


Figure 6

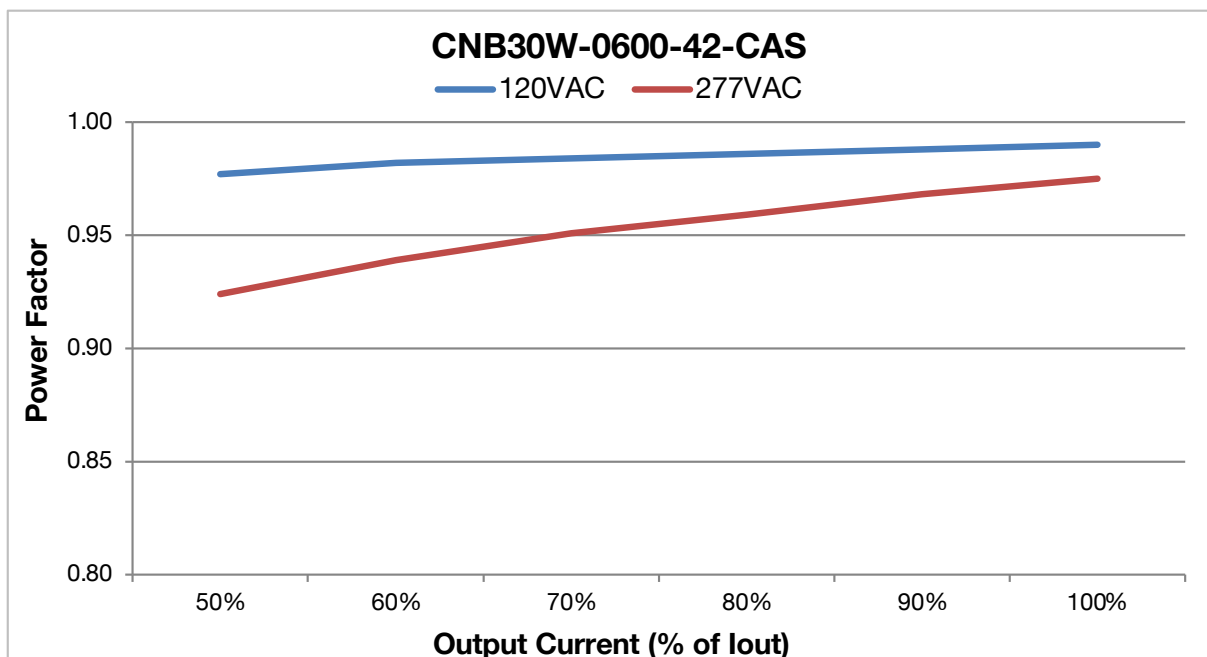


Figure 7

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

13 – TOTAL HARMONIC DISTORTION (THD) VERSUS LOAD

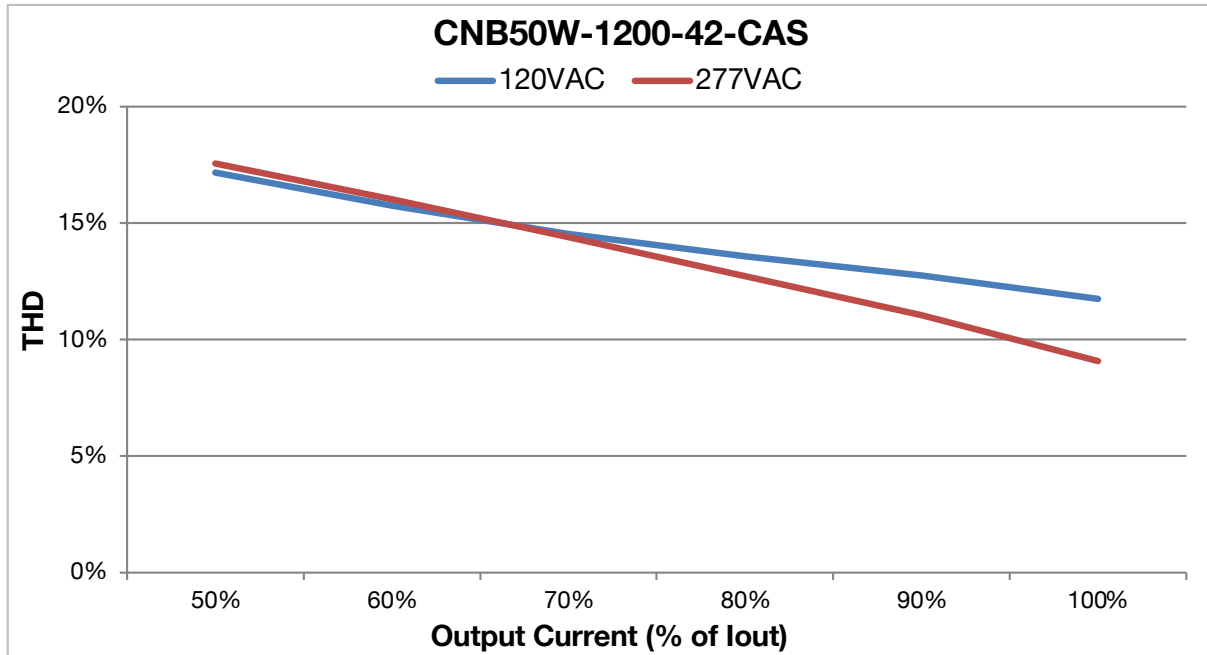


Figure 8

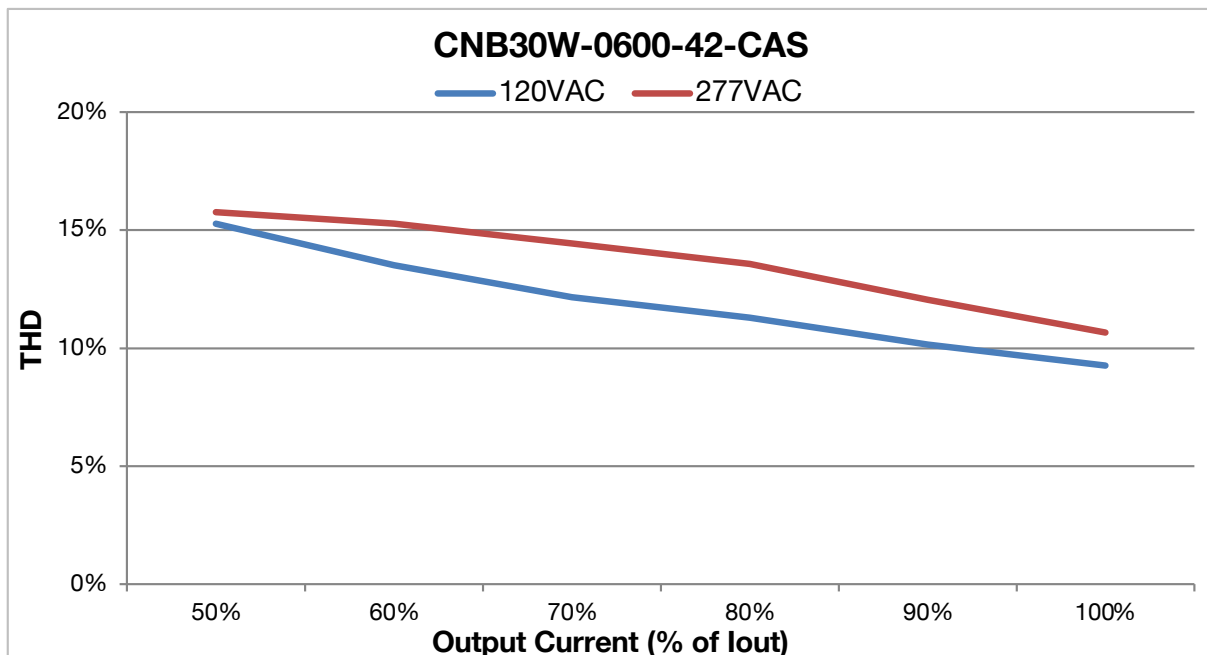


Figure 9

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

14 - MECHANICAL DETAILS

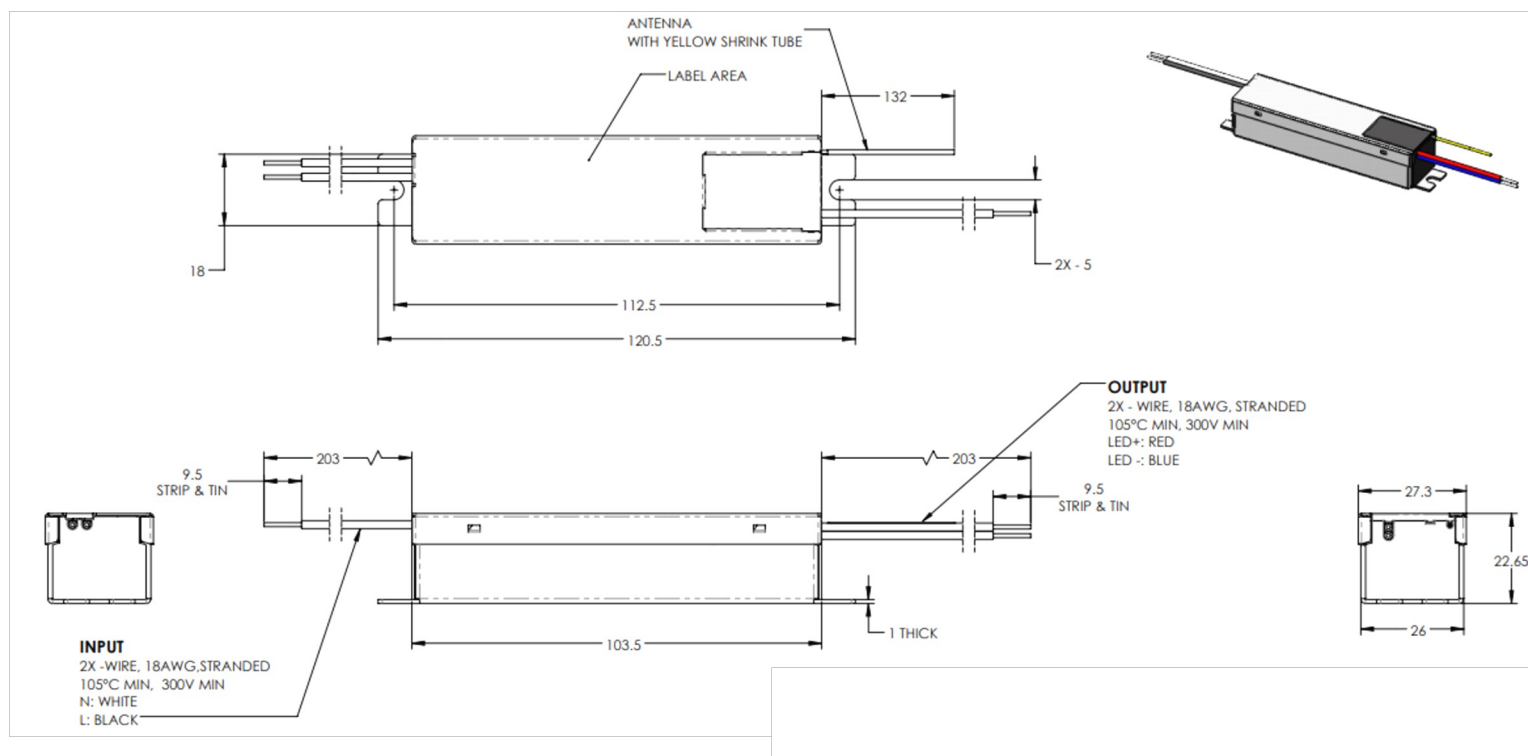
- **Packaging:** Aluminum case
- **I/O Connections:**
 - **Models with flying leads:** 18 AWG on all leads, 203mm (8 in) long, 105°C rated, stranded, stripped by approximately 9.5 mm, and tinned. All the wires, on both input and output, have a 300 V insulation rating.
- **Ingress Protection:** IP20 rated
- **Mounting Instructions:** The CNB driver case must be secured on a flat surface through the two mounting tabs, shown here below in the case outline drawings.

15 - OUTLINE DRAWINGS

Dimensions: L 103.5 * W 27.3 * H 22.65 mm (L 4.07 * W 1.07 * H 0.89 in.)

Volume: 64.0 cm³ (3.89 in³)

Weight: 114 g (4.02 oz)



All dimensions are in mm

Figure 10

50 & 30 W Programmable CC Class 2 LED Driver with Casambi Wireless Control

16 - LABELING

The CNB50W-1200-42-CAS is used in figure 11 as an example to illustrate a typical label.

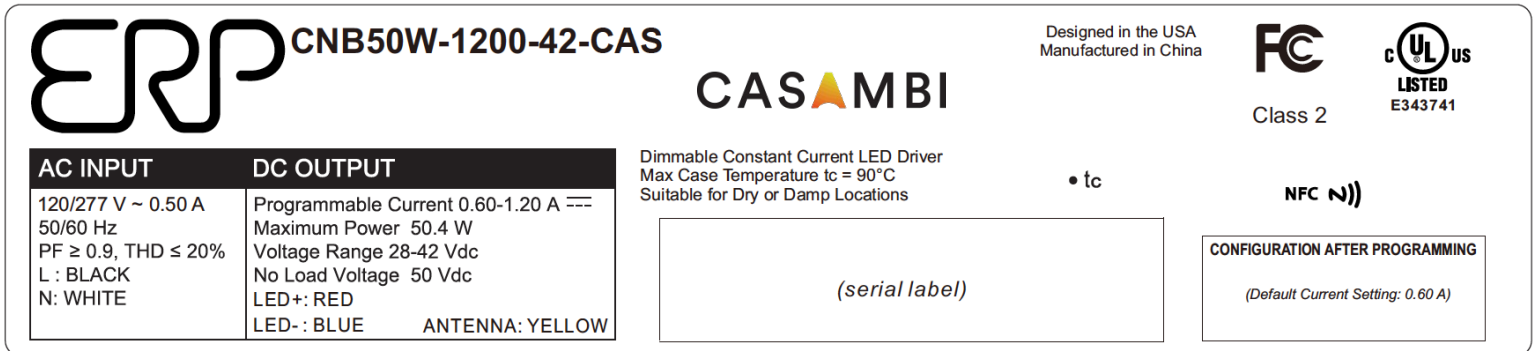


Figure 11

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CASAMBI

Revision History

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