Project: _____

Reference Type: _____

Item Code: _____

Date: _____

Notes: _____

CBU-PWM4-4-LR

Bluetooth-controllable 4ch PWM dimmer

⚠ **WARNING**
Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Warning!

⚠ Only qualified professionals should make the connections. Disconnect the power supply and verify its absence prior to installation.

DISPOSAL INSTRUCTIONS

This electrical product must not be disposed of as unsorted municipal waste. Please dispose of this product correctly: Regulations governing hazardous waste identification, classification, generation, management, and disposal, found in Title 40 of the Code of Federal Regulations (40 CFR), parts 260 through 273, should be observed.

PRODUCT DESCRIPTION

CBU-PWM4-4-LR is a Bluetooth-controllable, Casambi-enabled four-channel PWM dimmer for constant voltage LED loads, such as LED strips and constant voltage LED modules. It is connected between a 12-24 VDC power supply and the constant voltage LED load.

CBU-PWM4-4-LR can control up to four channels making it an ideal partner for RGBW and tunable white (TW) applications. The maximum combined output current is 4 A, which can be freely divided between all output channels. CBU-PWM4-4-LR is protected against overvoltage, overcurrent and short-circuit situations.

CBU-PWM4-4-LR can be controlled with the Casambi App, available for iOS and Android devices, as well as with traditional wall switches. The Casambi App can be downloaded free of charge from the Apple App Store and Google Play Store.

Different Casambi-enabled products can be used from a simple one-luminaire direct control setup to a complete and full-featured lighting control system, in which up to 250 units automatically form an intelligent mesh network.

DIMENSIONS (INCH)
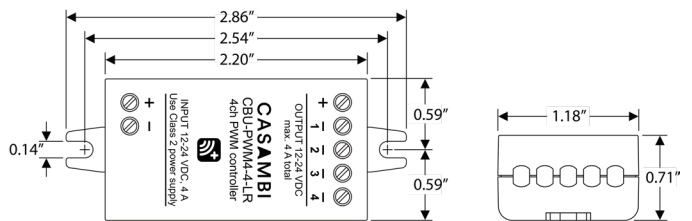
*t_c point is on bottom side • | Mounting hole diameter 9/64"

CERTIFICATIONS

FCC ID: 2ALA3-PWM44LR

IC: 22496-PWM44LR

UL: 5LE6 / E494741

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TECHNICAL DATA

Input
- Voltage: 12–24 VDC, Class 2
- Max. input current: 4.0 A
- No-load standby power: < 0.3 W

Output
- Output voltage: 12–24 VDC
- Max. output power: 96 W @ 24 VDC
48 W @ 12 VDC
- Max. output current: 4.0 A (can be freely divided between the channels)
- Min. load requirement: 0 W
- Dimming method: Pulse Width Modulation (PWM, freq. 400 Hz)

Radio transceiver
- Operating frequencies: 2,402...2,480 MHz
- Maximum output power: +8 dBm

Operating conditions
- Ambient temperature, t_a : -4° to 113°F
- Max. case temperature, t_c : 167°F
- Storage temperature: -13°...167°F
- Max. relative humidity: 0...80%, non-condensing
- Location of t_c point: The t_c point is marked on the enclosure.

Connectors
- Wire range, solid & stranded: 14–22 AWG
- Wire strip length: 1/4"
- Screw torque force: 0.4 Nm
- Input/output cable length: 120" (Max.)

Mechanical data
- Dimensions: 2.86 x 1.18 x 0.71 inch
- Weight: 0.82 oz.
- Degree of protection: IP20 (indoor use only)

RANGE

The range between two CBU-PWM4-4-LR units or between a CBU-PWM4-4-LR and a smartphone can vary a lot depending on the design of a product in which the antennas are housed and on the environment in which they operate. Long-range capabilities can reach approximately 650 feet (200 meters) with a good line of sight connection between nodes. However, if the unit is encapsulated in a metal structure, the range can be only a few feet. Therefore, thorough testing is highly recommended.

Casambi uses mesh network technology, which means that each CBU-PWM4-4-LR also acts as a repeater. When testing the network, it is important to test that each unit can be controlled from any point in the network-covered area.


**UP TO
200 feet***
(50 m*)

650 feet*
(200 m*)
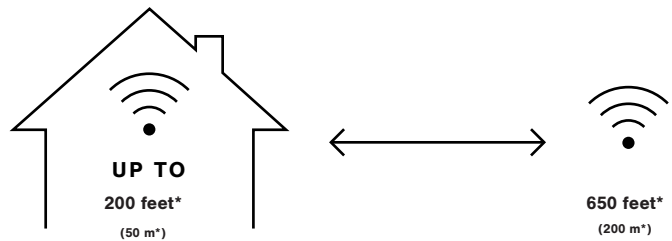
*The wireless range of a Casambi unit is dependent on several factors; how it has been integrated into a luminaire, where it has been installed; taking into consideration surrounding obstacles such as walls and other building materials that may block signals.

COMPATIBLE DEVICES

Compatible devices: Android and iOS Operating Systems.

We support the latest OS versions for Android and iOS, and their last two major versions respectively.
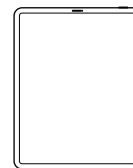
Tablets   Smartphones

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Project: _____

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CASAMBI MESH NETWORK COMPATIBILITY

There are different radio modes that can be selected when creating a network in the Casambi App: 'Balanced', 'Better Performance' and now 'Long Range' options. The CBU-PWM4-4-LR enables long-range capabilities only when the long-range radio mode has been selected and all the other devices within the network are long-range capable. It will revert to the shorter, standard range when deployed in networks set to 'Balanced' or 'Better Performance' modes.

INSTALLATION

Make sure that the power supply voltage is switched off before making any connections.

Connect a constant voltage 12-24 VDC Class 2 power supply to the input connector. Make sure not to use a constant current LED driver and make sure that the cable polarity is correct.

The product features one shared positive output connector (+), with each of the four channels having its own negative connector (-). This configuration is standard for multichannel LED strips. Connect the LED load wires accordingly.

Use 14-22 AWG solid or stranded conductor electrical wires. Strip the wire 1/4" from the end. Open the screw connector on top of the dimmer case and insert the wires into the corresponding terminals, tighten the screws. Overtightening the screws may damage the device. Make sure to connect the input and output correctly. If you install the dimmer in a heat-sensitive environment (e.g. inside a luminaire or in a ceiling outlet box above a luminaire), make sure that the ambient temperature does not exceed the specified maximum value. Using the dimmer in a heat-sensitive environment may limit the maximum output power.

The proper operation of CBU-PWM4-LR requires a carefully calculated total power consumption, the correct choice of a constant voltage power supply, and a suitable cross-section of the wires used in installation.

Taking into account power derating is critical for stable operation over the designated temperature range. 'Derating' refers to the reduction of the output power depending on the ambient conditions.

CBU-PWM4-4 is a UL Listed Open-Type device which means that it will have to be used together with a Class 2 power supply with maximum output power of 100 VA. The product can be installed outside of junction box. Make sure to comply with National Electric Code in installation and when selecting installation wires.

> ⚠️ **Warning!**
>
> Using CBU-PWM4-4-LR with maximum load will make it hot. Make sure to place the product in well-ventilated space and away from any flammable material.

FCC / IC COMPLIANCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna,
• Increase the separation between the equipment and the receiver,
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected,
• Consult the dealer or an experienced radio/TV technician for help.

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.

To maintain compliance with FCC's RF exposure guidelines, the distance must be at least 20cm between the radiator and your body, and fully supported by the operating and installation configurations of the transmitter and its antenna(s).
_____
This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

The device has been evaluated to meet general RF exposure requirement. To maintain compliance with RSS-102 - Radio Frequency (RF) Exposure guidelines, this equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
(1) l'appareil ne doit pas produire de brouillage;
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

le dispositif de a été évalué à répondre général rf exposition exigence.pour maintenir la conformité avec les directives d'exposition du RSS-102-Radio Fréquence (RF). ce matériel doit être installé et exploité à une distance minimale de 20 cm entre le radiateur et votre corps.

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Project: _____

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Date: _____

Notes: _____

TYPE OF LOAD

MAX. LOAD

Light-Emitting Diodes (LED) ——————————— 96 W @24 VDC
Light-Emitting Diodes (LED) ——————————— 48 W @12 VDC

FIXTURE PROFILES

Each CBU product can operate in various roles according to the chosen profile. It is possible to change the profile of an unpaired device using the Casambi App. Below are listed the fixture profile options for the CBU-PWM4-4-LR.

Profile#	Profile name / in app description	Description	Wiring
4027*(default)	PWM/4ch/Dim,RGBW	Pulse Width Modulation controlled outputs for RGBW LED strips.	1
4029	PWM/3ch/Dim,RGB	Pulse Width Modulation controlled outputs for RGB LED strips.	2
4030	PWM/2ch/Dim,TW	Pulse Width Modulation controlled outputs for tunable (cold+warm) white LED strips.	3
8122	PWM/1ch/Dim	Pulse Width Modulation controlled 1x output for LED strip.	4
4031	PWM/2ch/Dim	Pulse Width Modulation controlled 2x outputs for LED strips.	5
4032	PWM/3ch/Dim	Pulse Width Modulation controlled 3x outputs for LED strips.	6
4033	PWM/4ch/Dim	Pulse Width Modulation controlled 4x outputs for LED strips.	7
4885	PWM/4ch/Dim,RGB/White	Pulse Width Modulation controlled outputs for RGBW LED strips.	1
4887	PWM/VirtualDim,Elements	Pulse Width Modulation controlled 4x outputs for LED strips with master and separate dim control elements (sliders) in UI.	7
5037	PWM/3ch/Dim,RGB	Pulse Width Modulation controlled outputs for RGB LED strips.	2
8331	PWM/2ch/Dim[WarmCool]	Pulse Width Modulation controlled outputs for tunable (cold+warm) white LED strips.	3
18568	PWM/2ch/Dim,TW	Pulse Width Modulation controlled outputs for tunable (cold+warm) white LED strips.	3

* Default profile for CBU-PMW4-4-LR products delivered from the factory.
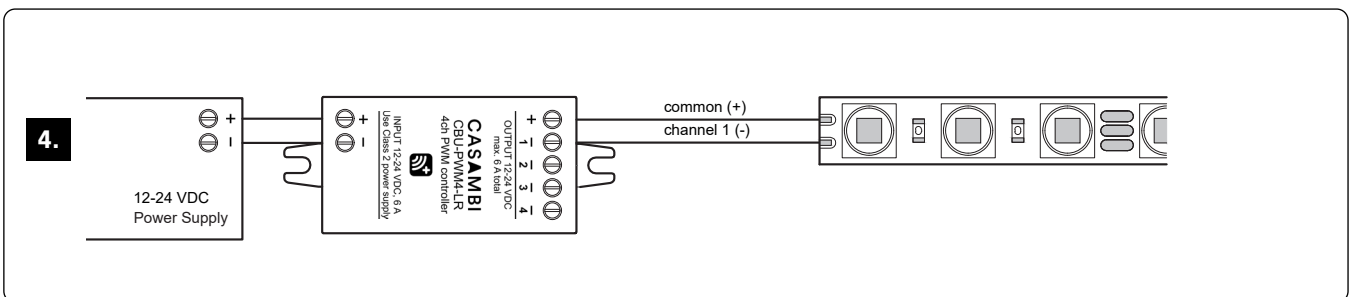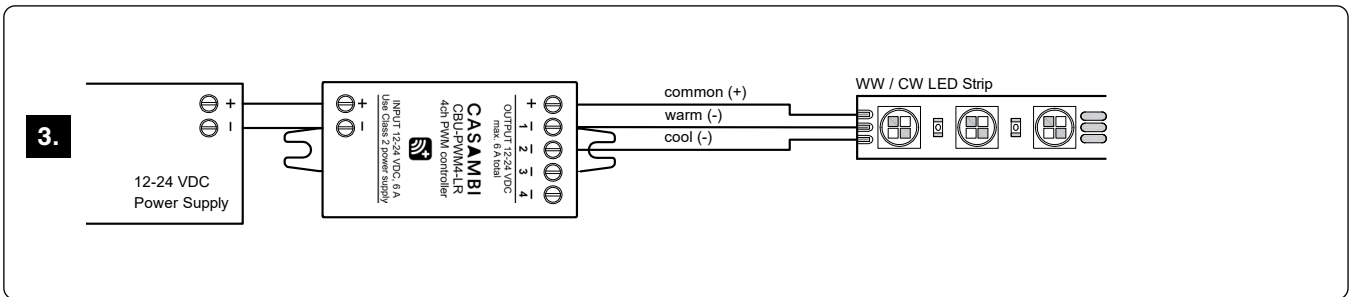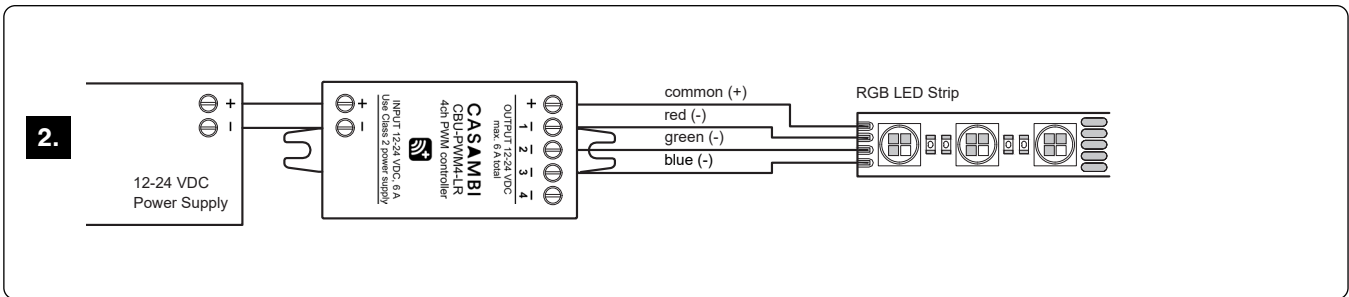
Project: _____

Reference Type: _____

Item Code: _____

Date: _____

Notes: _____

WIRING DIAGRAMS

1.

12-24 VDC Power Supply

CASAMBI CBU-PWM4-LR 4ch PWM controller
INPUT 12-24 VDC, 6 A
Use Class 2 power supply
OUTPUT 12-24 VDC max. 6 A total

common (+)
red (-)
green (-)
blue (-)
white (-)

RGBW LED Strip

2.

12-24 VDC Power Supply

CASAMBI CBU-PWM4-LR 4ch PWM controller
INPUT 12-24 VDC, 6 A
Use Class 2 power supply
OUTPUT 12-24 VDC max. 6 A total

common (+)
red (-)
green (-)
blue (-)

RGB LED Strip

3.

12-24 VDC Power Supply

CASAMBI CBU-PWM4-LR 4ch PWM controller
INPUT 12-24 VDC, 6 A
Use Class 2 power supply
OUTPUT 12-24 VDC max. 6 A total

common (+)
warm (-)
cool (-)

WW / CW LED Strip

4.

12-24 VDC Power Supply

CASAMBI CBU-PWM4-LR 4ch PWM controller
INPUT 12-24 VDC, 6 A
Use Class 2 power supply
OUTPUT 12-24 VDC max. 6 A total

common (+)
channel 1 (-)

Project: _____

Reference Type: _____

Item Code: _____

Date: _____

Notes: _____

WIRING DIAGRAMS

5.

12-24 VDC Power Supply — CASAMBI CBU-PWM4-LR 4ch PWM controller

common (+)
channel 1 (-)
channel 2 (-)

6.

12-24 VDC Power Supply — CASAMBI CBU-PWM4-LR 4ch PWM controller

common (+)
channel 1 (-)
channel 2 (-)
channel 3 (-)

7.

12-24 VDC Power Supply — CASAMBI CBU-PWM4-LR 4ch PWM controller

common (+)
channel 1 (-)
channel 2 (-)
channel 3 (-)
channel 4 (-)