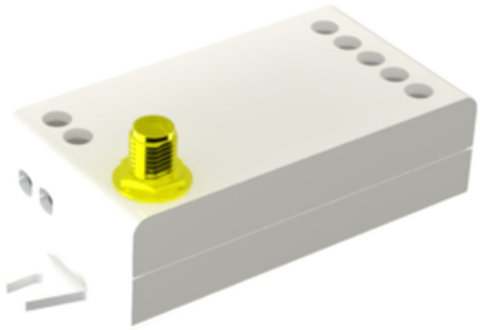
# casTen

## USA & Canada

**DMX Engineering LLC**
**http://dmx.engineering**



# Casambi Enabled Two-Channel 0-10VDC Master with Two Programmable Digital I/O

## Product Description

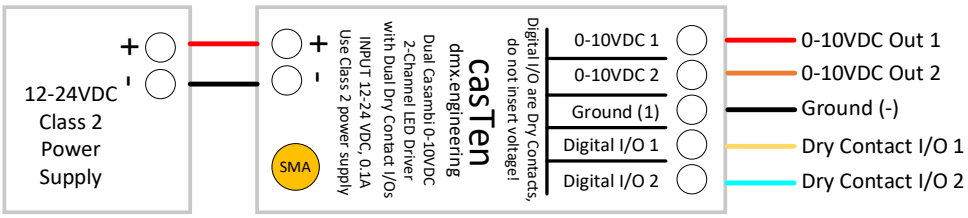
casTen is a Bluetooth controllable, Casambi enabled, two channel 0-10VDC master dimmer. It can drive up to 20Ma per channel to 0-10VDC analog enabled lighting devices and fixtures. The casTen is connected between a 12-24 VDC Class 2 power supply and provides a non-isolated, common ground to the input ground and all two outputs. casTen can control up to two analog lighting channels making it an ideal partner for tunable white (TW) applications, with Profiles are available for standard Casambi color tuning CCT controls.

Two configurable digital, dry contacts (no external voltages!) can each be configured as an input or output, programmable input OR output is supported with 3-way gang switch operational modes.

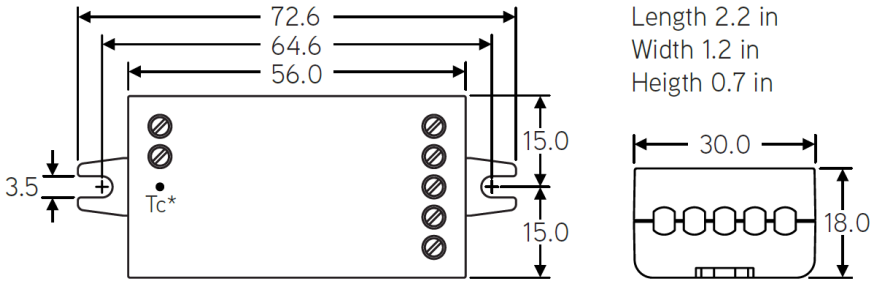
Multiple cas10 devices can be used in the same network to control different fixtures, channels or zones since the two channels of control can be mapped using the Casambi mobile application. Two channels are 0-100% dimming capable, with a single configurable digital ON/OFF from Dig3.

casCCDrive can be configured with the Casambi app which can be downloaded free of charge from Apple App Store and Google Play Store. Different Casambi enabled products can be used from a simple single luminaire direct control to a complete and full featured light control system where many units automatically form an intelligent mesh network.

## Typical Connection Diagram




## Mechanical Data




Length 2.2 in
Width 1.2 in
Heigth 0.7 in




Dimensions are in mm. * Tc point is on bottom side

Dimensions: 2.2 x 1.2 x 0.7 inch
72.6 x 30.0 x 18.0 mm
Weight: 0.8 oz (23 g)

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**Mesa, AZ 85207**

## Certifications

FCC ID: 2ALA3-CBM002A
IC: 22496-CBM002A

**Conforms to UL STD 916**
**Certified to CSA STD C22.2#205**

Intertek

## Technical Data

**Input**
Voltage range: 12-24 VDC, Class 2
No-load input current: 30 mA

**0-10VDC Outputs**
Two identical channels
Each has top and bottom trim for wire length compensation
20mA sink and source per channel

**Profiles**
2-channel straight output
Casambi CCT widgets
Each are supported with two in, two out, or one each for the digital I/O pins

**Digital Input/Output**
Digital I/Os are digital, dry contacts, do not drive with voltage. Casambi Profiles allow for the setting of the I/O direction.

**Input**: Connect to dry switch to the ground terminal. In mode an be set to Normal, Inverted, or MultiSwitch to allow for switch gang operation. **Output**: Connect to dry sensor to the ground terminal. In mode an be set to Normal or Inverted. **Caution!** This input should not be powered, and only used as a dry contact between the two connections.

**Radio transceiver**
Fanstel BT840 Radio Module
Operating frequencies: 2.401-2.483 Ghz
Maximum output power: typ. +3.4dBm
-103 dBm RX sensitivity in long-range mode

**Antenna Options**
Both internal and external (shown above) antenna models are available: **casTen I - Internal antenna** & **casTen E - External antenna**

**Operating conditions**
Ambient temperature, ta: -13...+113°F (-25...+45°C)
Max. case temperature, tc: +167°F (+75°C)
Storage temperature: -13...+167°F (-25...+75°C)
Max. relative humidity: 0...80%, non-cond.

**Connectors**
Wire range, solid & stranded: 0.5 - 1.5 $mm^2$
14 - 22 AWG, Wire strip length: .25" (6 - 7 mm)
Tightening force: 0.4 Nm / 2.6 Lb-in

**Installation**

Connect a Class 2 power supply with 12-24 VDC output voltage to the input connector of casTen. Make sure not to use a constant current LED driver and make sure that the cable polarity is correct. The cas10 has two 0-10VDC outputs, plus a common ground. Connect these dimming load wires accordingly. casTen can be configured having different types of digital inputs and outputs in addition to the 2 dimming 0-10VDC outputs. These configurations can be made by the end user from Casambi App using Profiles. As default, casTen is delivered with straight 2-channel Profile configuration with one digital input and one digital oputput. Top and Bottom Trim values for each channel allow for setting the bottom and top output values based on the Casambi 0-100% (0-255) values to work with fixtures that may not work well with 0V or 10V operation, both can be moved independently.

casTen's digital input mode (select the proper Profile) can be mapped just like **Pushbuttons** are mapped in the Casambi application. Once you add the cas10 to your Casambi network, navigate to the "More" button at the bottom of the app. Then press "Switches", where the cas10 will be shown. Press on the cas10 that you want to configure and select which Element(s) that you wish to control as a digital control. Configure the pushbutton to control a Casambi element by pressing on "Not in Use" .and then select what the pushbutton is to control, most likely "Controls and Element", which then you can select a certain Element to control. Note at the bottom of this screen there are user programmable parameters.

The digital inputs are dry contacts, do not power them! Simply open or short that to the ground terminal provided. Normal, inverted and Multi-Switch operations are offered. Normal wants a short to go "on", inverted a short to go "off", while MultiSwitch allows multiple casCVDriveLR3 units to be used in tandem to work like 3-way switches. The 10 gang sets allow for up to 10 difference pairing of cas10 units in this mode.

The digital outputs are also dry contacts, and switch another dry contact input, do not power these as well! The control for this will be on the Luminare screen, long press there to show the control at the bottom of the widget area.

**Range**

The range between two casTens or between a casTen and a smart phone can vary depending on obstacles and surrounding material. In open air the range between two casTens can be in excess of 200 ft, but if the unit is encapsulated into a metal structure, the range can be only few feet. Therefore, thorough testing is high suggested.

Casambi uses mesh network technology so each casTen acts also as a repeater. When testing the network, it is important to test that each unit can be controlled from any point of the network covered area.

**Compliance Statement**

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.

**Warning**

Changes or modifications not expressly approved by DMX Engineering and Design LLC could void the user's authority to operate the equipment.

**FCC Interference 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 of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and 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.

**Radiation Exposure Statement for Canada**

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

This equipment is exempt from the routine RF exposure evaluation requirements of RSS-102. This equipment should be installed and operated with a minimum distance of 20 cm between the antenna and the user or bystanders.

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:







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