

# Pragmalux Sensus batterijloze schakelaar 4B Casambi wit mat



**Important:** Read All Instructions Prior to Installation

## 1. General description

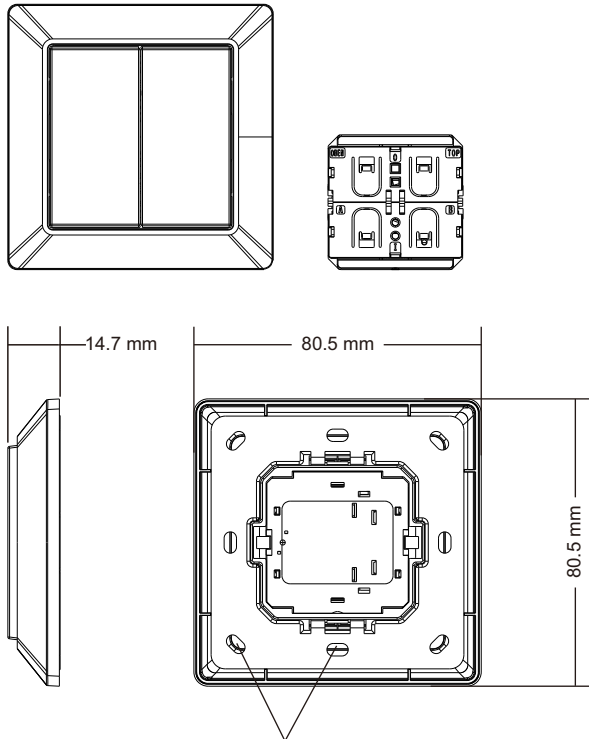
### 1.1 Basic functionality

The push button transmitter enables the realization of energy harvesting wireless switches for lighting, building or industrial automation control systems using Bluetooth® low energy technology.

The module inside the transmitter is mechanically compatible with existing switch elements enabling quick integration into a wide range of designs. Key applications are wall-mounted or portable switches either with up to two rockers or up to four push buttons.

The pushbutton transmitters are self-powered (no batteries) and fully maintenance-free. They can therefore be used in all environments including locations that are difficult to reach or within hermetically sealed housings. The required energy is generated by an electro-dynamic energy transducer actuated by an energy bow located on the left and right of the module. This energy bow which can be pushed from outside the module by an appropriate pushbutton or switch rocker.

When the energy bow is pushed down or released, electrical energy is created and a radio telegram according to the Bluetooth® low energy standard is transmitted. This radio telegram transmits the status of all four contact nipples when the energy bow was pushed down or released. The transmitter radio telegrams are protected with AES-128 security based on a device unique private key.



The switch can be fixed on the wall with 3M glue or screw.

**Figure 1 – The Push Button Transmitter & Inside Module**

## 1.2 Technical data

Antenna	Integrated PCB antenna
Max. transmit power measured	0.4dBm / 1.1mW
Communication Range (guidance only)	75 m ideal line of sight / 10 m indoor environment
Communication Standard	Bluetooth Low Energy (BLE)
Radio Frequency (min / max)	2402 MHz / 2480 MHz
Radio Channels (default)	CH 37 / 38 / 39 (2402 MHz / 2426 MHz / 2480 MHz)
Data Rate and Modulation	1 Mbit/s GFSK (default) / 2 Mbit GFSK (NFC option)
Configuration Interface	NFC Forum Type 2 Tag (ISO/IEC 14443 Part 2 and 3)
Device Identification	Unique 48 Bit Device ID (factory programmed)
Security	AES 128 (CBC Mode) with Sequence Code
Power Supply	Integrated Kinetic Energy Harvester
Inside Module Button Inputs	Up to four buttons or two rockers
Dimensions	80.5 x 80.5 x 14.7 mm

## 1.3 Environmental conditions

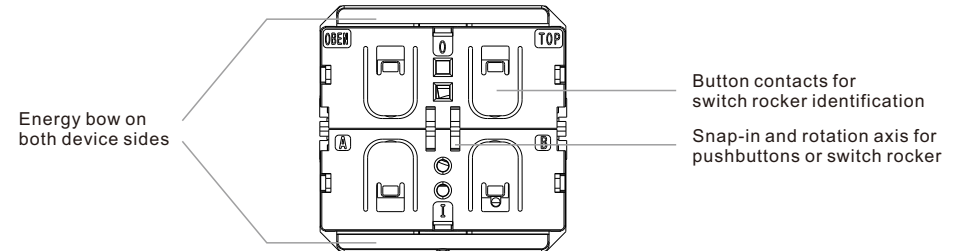
Operating Temperature	-25°C ... 65°C
Storage Temperature	-25°C ... 65°C
Humidity	0% to 95% r.h. (non-condensing)

## 2. Functional information

### 2.1 Product overview

The pushbutton transmitter from Pragmalux enables the implementation of wireless remote controls without batteries. It transmits Bluetooth Low Energy (BLE) data telegrams where the required energy is provided by a built-in electro-dynamic energy generator.

The product outline with key functional components is shown in Figure 2 below.



**Figure 2 – Inside Module Outline**

### 2.2 Basic functionality

These switch devices contain an electro-dynamic energy converter which is actuated by an energy bow (1). This bow is pushed by an appropriate push button, switch rocker or a similar construction mounted onto the device. An internal spring will release the energy bow as soon as it is not pushed down anymore.

When the energy bow is pushed down, electrical energy is created and a BLE radio telegram is transmitted which identifies the action (pressed or not pressed) and the status of the four button contacts (2). Releasing the energy bow similarly generates energy which is used to transmit a different radio telegram.

It is therefore possible to distinguish between radio telegrams sent when the energy bar was pushed and radio telegrams sent when the energy bar was released.

By identifying these different telegrams types and measuring the time between pushing and releasing of the energy bar, it is possible to distinguish between "Long" and "Short" button contact presses. This enables simple implementation of applications such as dimming control or blinds control including slat action.

### 3. Commissioning with Casambi Platform

#### 3.1 Pair to Casambi Network

The battery-less push button transmitter can be paired to a Casambi network. The transmitter can be added to a Casambi network using an Android device with NFC, or with iOS devices with 2-way NFC & running iOS 13 or newer. The transmitter can control individual luminaires, groups of luminaires, all luminaires in a network, elements, scenes and animations.

To add the push button transmitter to the platform, please execute the following steps:

**Step 1:** by factory default, the push button transmitter can not be added to the Casambi network, it shall be set to pairing to Casambi network mode by executing following operation:

Remove the rocker(s) and the switch housing from the module. Then, all four button contacts (A0,A1,B0 and B1) have to be pressed at the same time while the energy bow is pressed & held at both sides for over 10 seconds. The four button contacts can be released at any time after pressing the energy bow. (As shown in Figure 3)

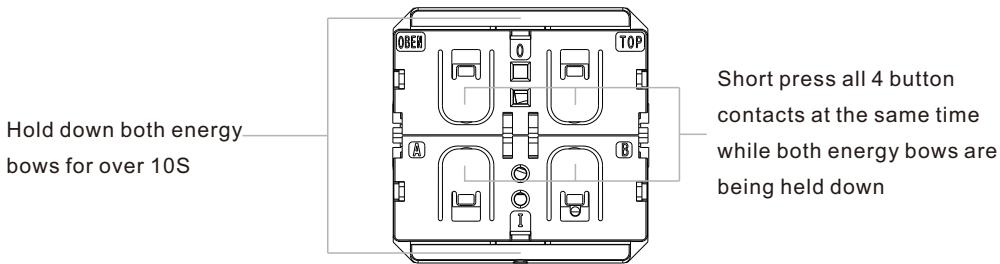


Figure 3 – Operation to enter pairing to Casambi network mode

**Step 2:** In the Casambi app, go to More -> Switches.

**Step 3:** Tap on "Add an EnOcean switch". (As shown in Figure 4)

**Step 4:** Touch the switch to the NFC reception area of your mobile device.

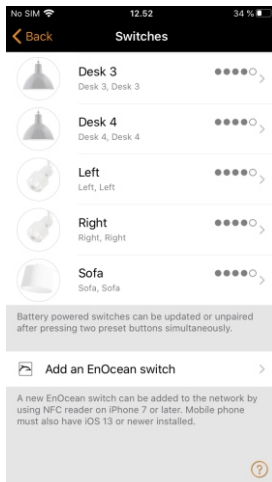


Figure 4

**Step 5:** When the NFC reader detects the switch your device may buzz and the Switches page is opened showing the switch, the switch model will be displayed as "PTM215B". (As shown in Figure 5)

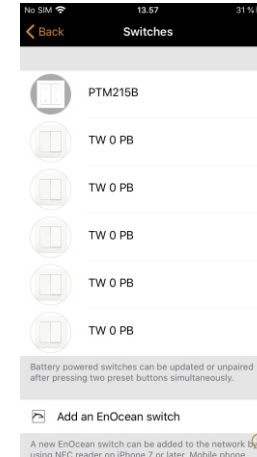


Figure 5

**Step 6:** When you tap on the switch a configuration page for it is opened. Here you can configure the functionality of your switch, change the name and the faceplate to match the type you are using. Please make sure you have the correct faceplate set before you start configuring. (As shown in Figure 6 & Figure 7)

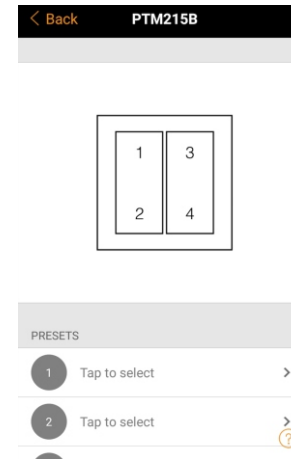


Figure 6

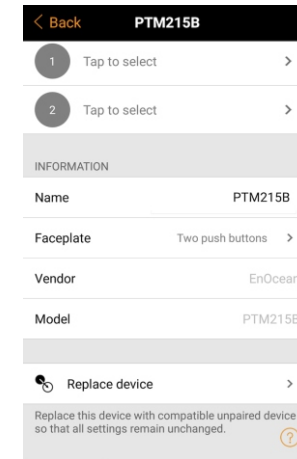


Figure 7

**Step 7:** By clicking on the faceplate picture (as a default the Casambi app will show the 4 button faceplate) you will be directed to a list of all possible faceplate options. Choose the one to match your BLE switch.

**Step 8:** Select the function for the buttons of your switch by tapping on the PRESET fields.

#### 3.2 Removing the Push Button Transmitter from Casambi Network

To remove a push button transmitter from a Casambi network, simply delete the switch from the Switches list.

#### 4. Installation

