

EH-MC10-MESH-EVK USER GUIDE



General Description

The EH-MC10-Mesh-EVK is mesh development kit for CSRmesh.

The development board internal integration RGB LED display, buttons, buzzer, battery holder, digital Temperature Sensor , AIO interface and debug SPI interface.

Application

Smart Home, Smart Industrial, Smart City

Features

• Bluetooth® Radio

- Fully embedded Bluetooth® v4.0 single mode
- TX power +7dbm,-92.5dbm RX sensitivity
- 128-bit encryption security
- Range up to 70m
- Integrated chip antenna

• Support Profiles

- Mesh network node
- Sensor
- Switch

• User Interface

- Firmware upgrade over the air (OTA)
- USB or two dry batteries supply
- Debug SPI interface
- RGB LED display
- Buzzer

• USB or two dry batteries supply

- Operating temperature range:
-30 °C to 80 °C

VERSION HISTORY

Version	Comment
V1.0	Full Production Release
V1.1	Update the Package

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Content

1、 Introduction	1
2、 Package	1
3、 Connecting up the Hardware	2
4、 Using the Smartphone APP	3
4.1 Light Control Application Overview	3
4.2 Main Menu	4
4.3 Places	4
4.4 Managing Places	5
4.5 Creating a New Place	6
4.6 Areas	7
4.6.1 Creating New Areas	7
4.6.2 Configuring an Area	8
4.6.3 Controlling an Area	9
5、 CSRmesh Devices	10
5.1 Adding New Devices	11
5.1.1 Detected Device List	11
5.1.2 Scanning QR Code	13
5.1.3 Setting Short Code	13
5.2 Configuring Existing Devices	13
5.2.1 Deleting a Device	14
5.2.2 Renaming a Device	14
5.2.3 Assigning Areas to a Device	14
5.2.4 Assign a Device as a Favourite	15
5.3 Controlling a Device	15
5.3.1 Lights	15
5.3.2 Thermostat and Heater Control	16
6、 Settings	17
6.1 Gateway Configuration	18
6.2 Edit Gateway	18
6.3 Deleting a gateway	19
7、 Consumption	20
8、 Contact Information	20

1、 Introduction

This is documentation helps you set up and use the CSRmesh Development Kit for EH-MC10.

2、 Package

For the mesh network testing, the following components are suggested:

- 3 × EH-MC10 demo board(For LED, for Sensor, for switch is selected)
- 1 × SPI Programmer and SPI interface Cable
- 6 × AA alkaline batteries(2 for each Target Board)



3、 Connecting up the Hardware

it is now safe to power on the target board and connect it to the APP of phone.



Figure 3.1: Target Board (reverse)

1. Remove the target board from the packaging at an approved workstation
2. Install 2x AA batteries into battery holders on the reverse of the board, observing the correct polarity, or use USB connect to PC for power supply
3. Set the Power On/Off with on the Target board to the VBAT position



Figure 3.2: Target Board (front)



Figure 3.3: SPI Programmer

4. Connect the Target board to the SPI programmer using the SPI cable
5. Connect the smaller connector of the cable to the SPI programmer
6. Connect the other end of the USB cable to free USB port on the development PC
7. The device drivers reference SPI user guide

4、 Using the Smartphone APP

This section describes how an android smartphone app can connect to the Light control application running on the target board and control the LED located in it.

An iOS version of the app also available.

4.1 Light Control Application Overview

The CSRmesh light control application allows the user to control devices within the CSRmesh Network.

The Android application works by connecting to CSRmesh device. This device acts as a bridge from the Android application to the rest of the

CSRmesh network. The following section describes how to use the CSRmesh Android application to control light devices that are part of a CSRmesh network.

4.2 Main Menu

The main menu is available via the hamburger menu icon on the top right of the application. This displays the menu options shown in Figure 4.1. From this menu you can manage places, login to the cloud via Facebook and control manage and set up the CSRmesh network.

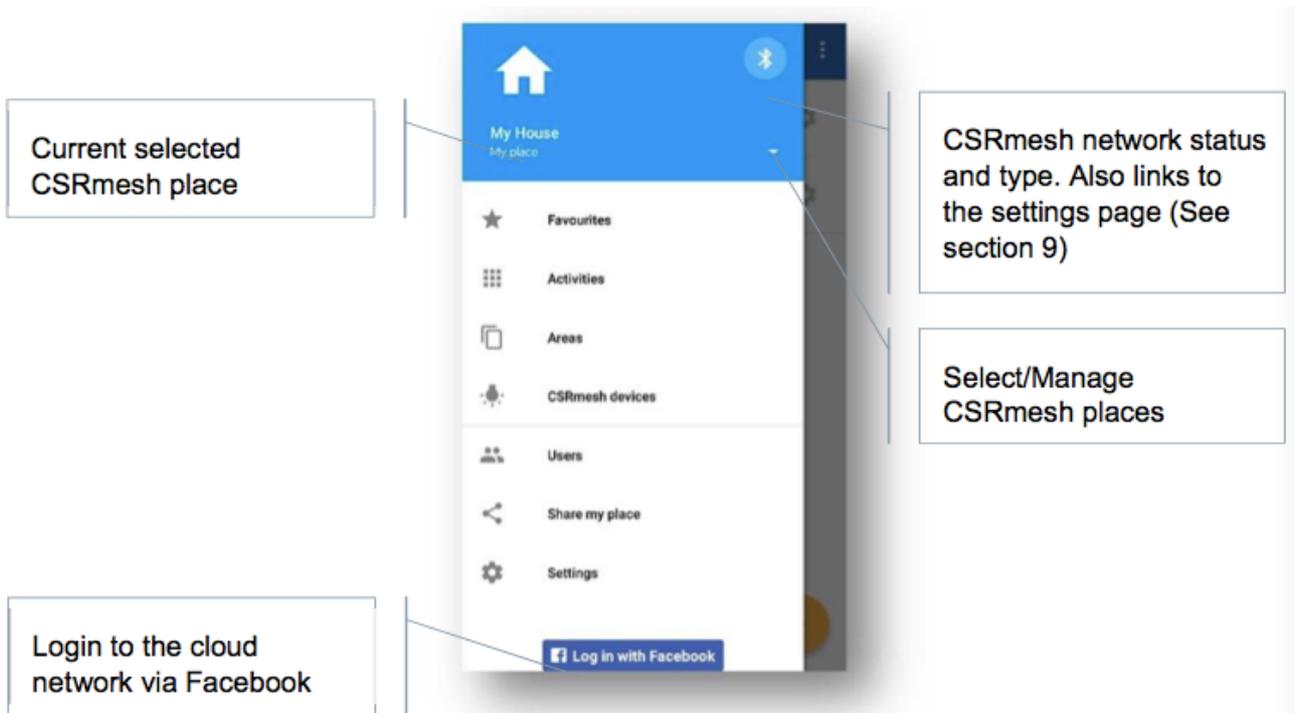


Figure 4.1: Main Menu

4.3 Places

The current selected place is displayed on the main menu as shown in Figure 2.1. Selecting the down arrow from the main menu displays the configured and shared places and options to manage and create new places as shown in Figure 4.2

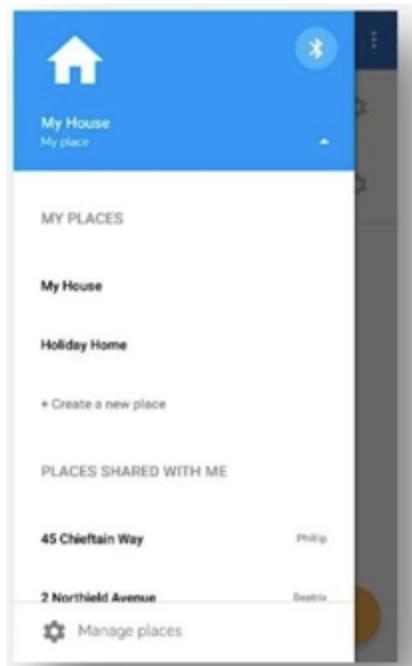


Figure 4.2: Places

4.4 Managing Places

Selecting Manage places allows you to manage existing places and create new places to control as shown in Figure 4.3. Selecting the plus icon allows you to create a new place to control, while selecting the settings icon next to existing places allows you to configure an existing place.

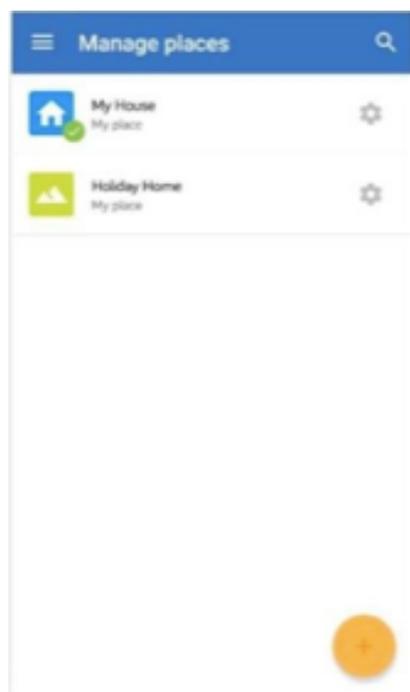


Figure 4.3: Managing Places

4.5 Creating a New Place

To create a new place, select the plus icon from within Manage places or select Create a new place from the places menu. A new place can be defined as shown in Figure 4.4. This allows you to define the place name, icon and color. Additionally you need to define the Network key passphrase for this new place.

When creating a new place, you can also select to import a database file from a previously created place using the IMPORT DATABASE option. See Section Error! Reference source not found. for details on sharing places.

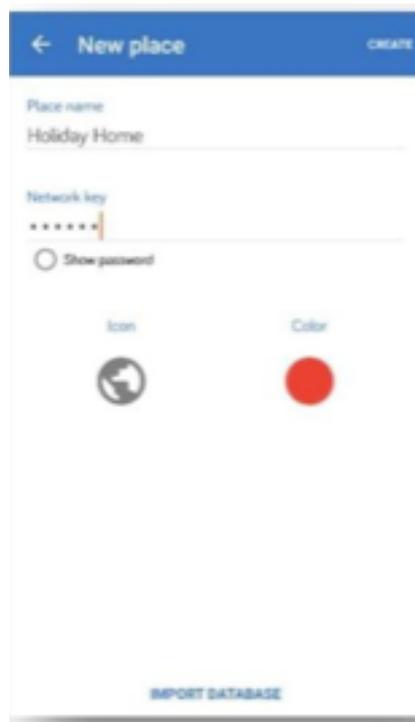


Figure 4.4: Creating a New Place

4.6 Areas

Selecting the Areas option allows you to control and configure existing areas and create new areas within the currently selected place as shown in Figure 4.5.

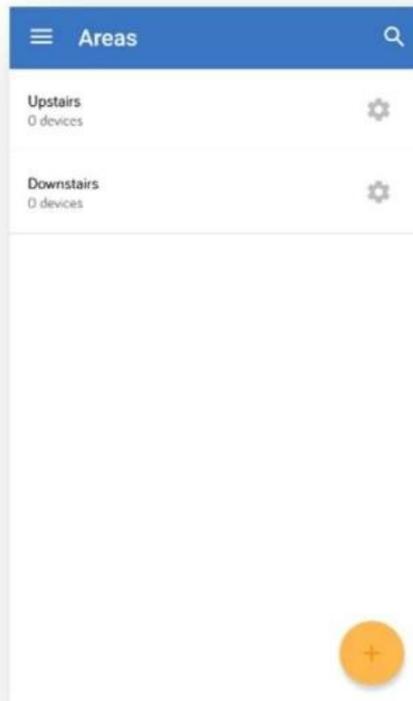


Figure 4.5: Areas

4.6.1 Creating New Areas

Selecting the plus icon allows you to create a new area within to the currently selected place. The new area can be configured as shown in Figure 6.2.

Note:

Devices cannot be assigned until the areas has been created and saved.

4.6.2 Configuring an Area

Selecting the settings icon next to an area allows you to configure and edit the selected area as shown in Figure 4.6:

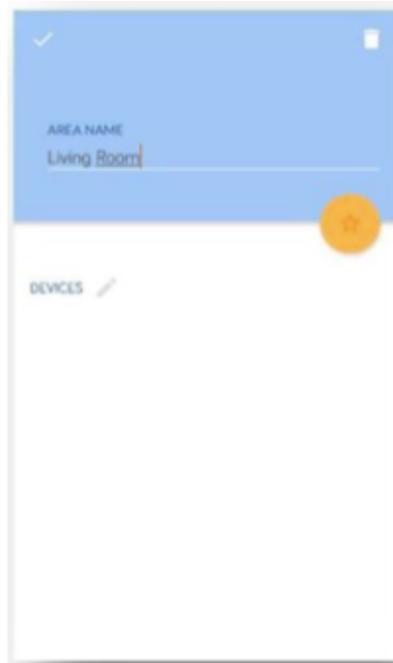


Figure 4.6: Areas

1. Deleting an Area

Selecting the delete icon will prompt you to accept or cancel the delete operation. Selecting Accept will remove the area from the current selected place and remove any device assignments.

2. Renaming an Area

You can rename the area by editing the associated AREA NAME field. No changes will be applied until you select the tick icon to accept the changes. Selecting the OS back option will discard all changes.

3. Assigning Devices to an Area

You can select the device edit icon to assign devices to an area as shown in Figure 4.7: . You can select multiple devices from the list of available devices to assign to the area. When a device is selected, the tick icon is shown. No area configuration changes will be applied until

you select the tick icon to apply the changes. Selecting the OS back option will discard all changes. It is also possible to assign devices to areas when configuration device as described in Section 0.

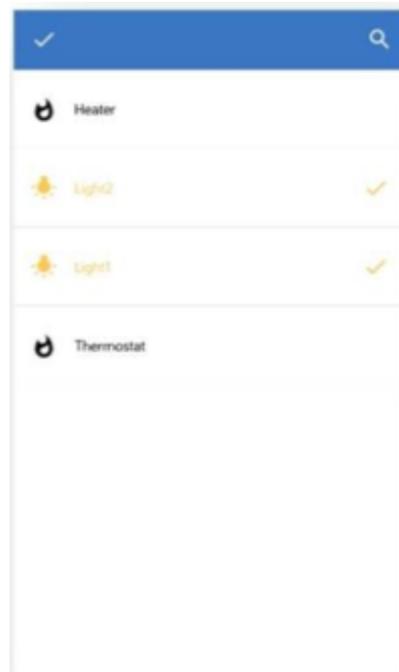


Figure 4.7: Area Device Assignment

4. Assigning an Area as a Favourite

Selecting the star icon on the area will add or remove the device to the favourite list.

Note:

Not currently supported

4.6.3 Controlling an Area

Selecting the area allows you to control the area settings as shown in Figure 4.8. This allows you to control the devices within the area together, e.g. lights or heating.

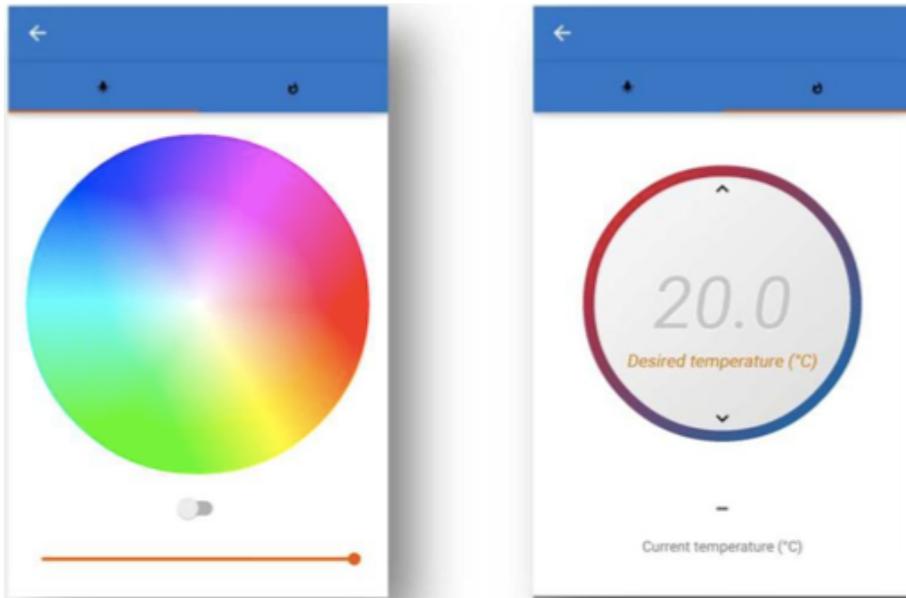


Figure 4.8: Controlling an Area

5、CSRmesh Devices

Selecting CSRmesh devices allows you to control and configure existing devices and add new devices to the currently selected place. Figure 5.1: shows a places configuration of two lights, a thermostat and a heater. Selecting the search icon allows you to filter the CSRmesh device list to find devices to configure and control.

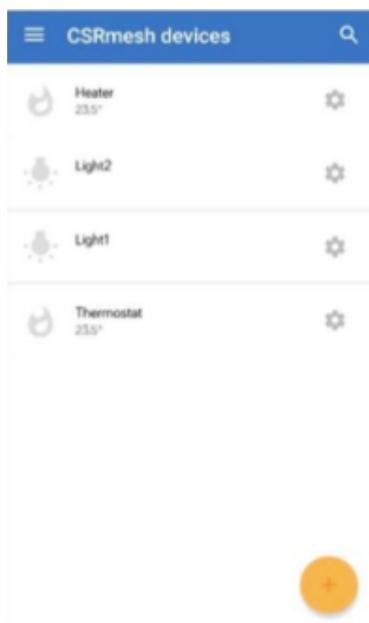


Figure 5.1: CSRmesh Devices

5.1 Adding New Devices

Selecting the plus icon allows you to add a new device to the currently selected place. There are three methods of adding a new device as shown in Figure 5.2. After a device has been added, the device will appear within the CSRmesh device list to where it can be configured as described in section 5.2.

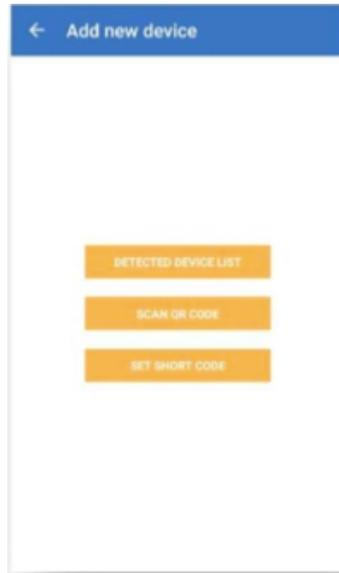


Figure 5.2. Adding a New Device

5.1.1 Detected Device List

Selecting this option will scan for un-associated CSRmesh devices that are advertising the CSRmesh UUID. Available devices will be listed when they are discovered as shown in Figure 5.3.



Figure 5.3. Detected Devices

You can select a device to associate which will highlight the selected device as shown in Figure 5.4. If supported on the CSRmesh device, it should indicate that the device has been selected to be associated. (e.g. flashes an LED)



Figure 5.4. Detected Device Selected

If the device selected is not the correct device to add, you can select another device. If the device is the correct device to be added, you can then select ASSOCIATE DEVICE as shown in Figure 5.5.

Note:

The association can be cancelled by tapping on the cancel button once the association has been initiated.

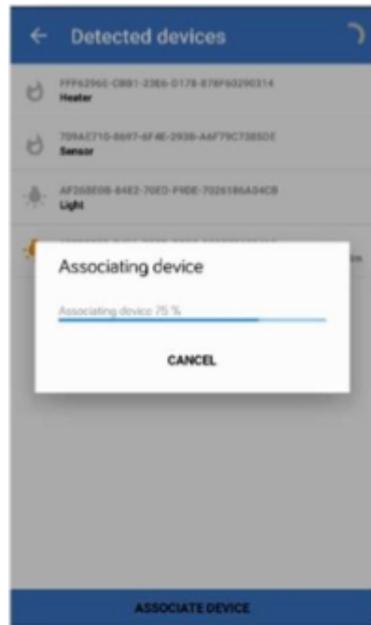


Figure 5.5. Association

5.1.2 Scanning QR Code

Selecting this option prompts you to scan a QR code that contains the UUID and Access Code of the device to be associated. After successfully scanning a valid QR code, the device association will start as shown in Figure 5.5.

Note:

This requires a QR scanner application to be installed on the Android device.

5.1.3 Setting Short Code

Selecting this option allows you to manually enter the short code of the device to be associated. After entering the short code the device association will start as shown in Figure 5.5.

5.2 Configuring Existing Devices

Selecting the settings icon next to each device allows you to configure and edit the selected device as shown in Figure 7.6 for a light and a

thermostat CSRmesh device. Also, when a device is associated the configuration screen will come up to allow you to edit the device.

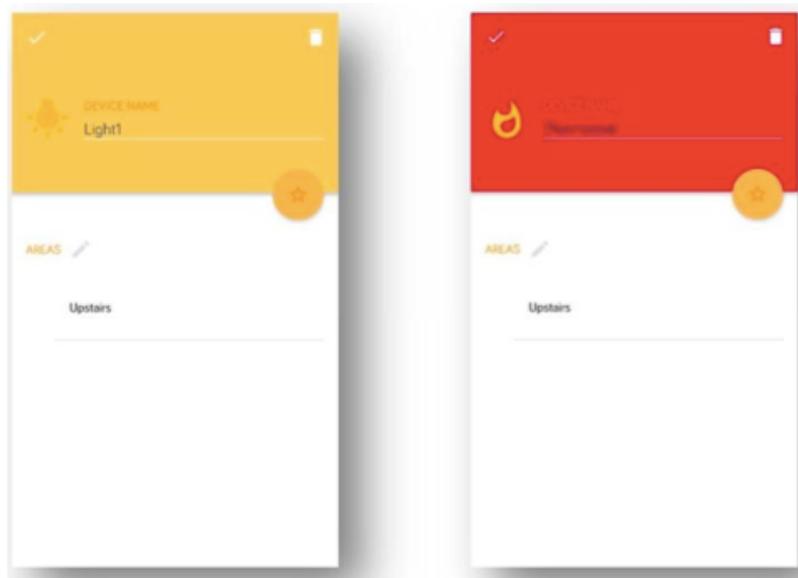


Figure 5.6. Configuring Devices

5.2.1 Deleting a Device

Selecting the delete icon will prompt you to accept or cancel the delete operation. Selecting Accept will remove the CSRmesh device from the current selected place and assigned areas.

5.2.2 Renaming a Device

You can rename the CSRmesh device by editing the associated DEVICE NAME field. Any changes will not be applied until you select the tick icon to accept the changes. Selecting the OS back option will discard all changes.

5.2.3 Assigning Areas to a Device

You can select the area edit icon to assign a device to an existing or new area as shown in Figure 5.7. You can select multiple areas from the list of available areas to assign to the device. When an area is selected, the tick icon shows. Additionally you can create a new area by selecting the NEW GROUP option. After the new area is created,

the device can be assigned to the area accordingly. Any area configuration changes will not be applied until you select the tick icon to apply the changes. Selecting the OS back option will discard all changes. It is also possible to assign devices to areas when configuring areas as described in Section 0.



Figure 5.7. Assigning a Device to an Area

5.2.4 Assign a Device as a Favourite

Selecting the star icon on the device will add or remove the device to the favourite list.

Note:

Not currently supported.

5.3 Controlling a Device

Selecting a device allows you to control the device settings. The type of controls shown depends on the type of device selected.

5.3.1 Lights

Figure 5.8 shows the light control. This allows you to set the desired color and brightness. Additionally the light can be turned on or off.

Note:

The state of this control reflects the last known state. It may not represent the actual state if the device state is modified from another controller.

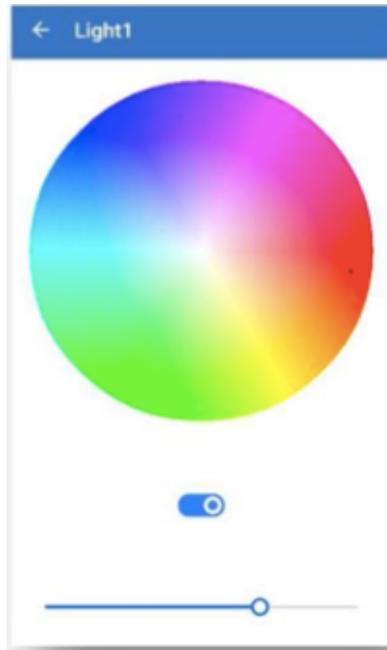


Figure 5.8. Assigning a Device to an Area

5.3.2 Thermostat and Heater Control

Figure 5.9 shows the temperature control. This allows you to set the desired temperature and read the current temperature.



Figure 5.8. Thermostat and Heater Control

6、 Settings

Tapping the top right bubble icon mentioned in the section 2 or selecting the settings option within the main menu allows you to get to the settings view. Once a gateway is associated you will be able to switch between different channels as Figure 6.1 shows.

Bluetooth channel: By selecting this channel, all the mesh messages will be sent via Bluetooth. Bluetooth connection with a bridge is required.

Gateway channel: By selecting this channel, all the mesh messages will be sent via WIFI to the gateway which will relay the mesh messages to the mesh network. This option will only work if the device is connected to the gateway WIFI.

Cloud channel: By selecting this channel, all the mesh messages will be sent via Internet to the server which will relay the mesh messages to the gateway and this one will relay them to the mesh network.

Note:

Auto connection channel not supported.

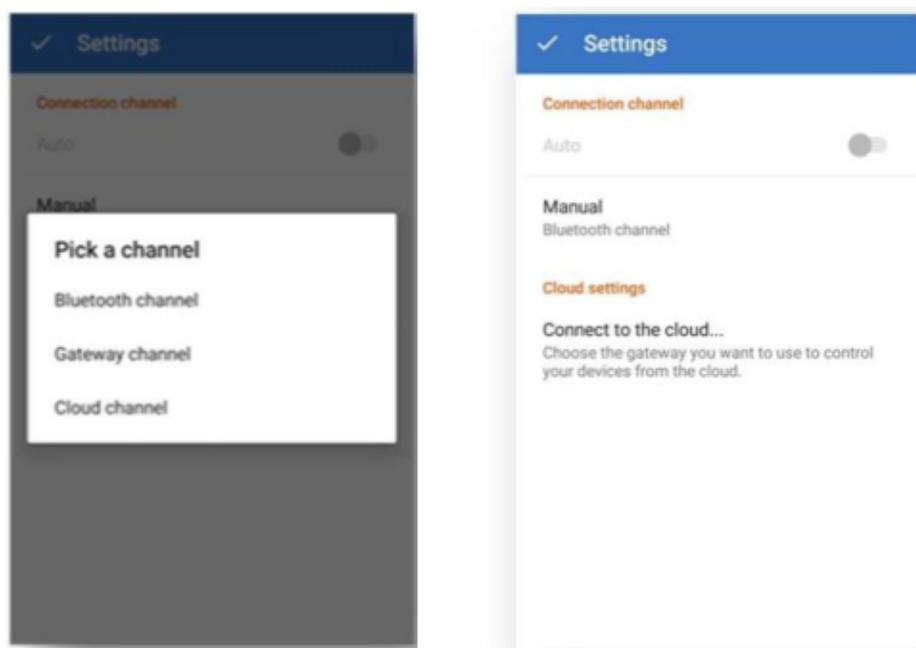


Figure 6.1. Settings

6.1 Gateway Configuration

In order to be able to control your mesh network via internet, a gateway needs to be configured. By tapping to the option "Connect to cloud..." the application will show the list of gateways as Figure 6.2 Gateway configuration shows. By tapping the gateway to be configured and selecting ASSOCIATE DEVICE the cloud setup will start.

Note:

In order to be able to see the gateway in the gateway association view, you need to be connected to one bridge via Bluetooth and to have WIFI enabled and connected to your gateway.

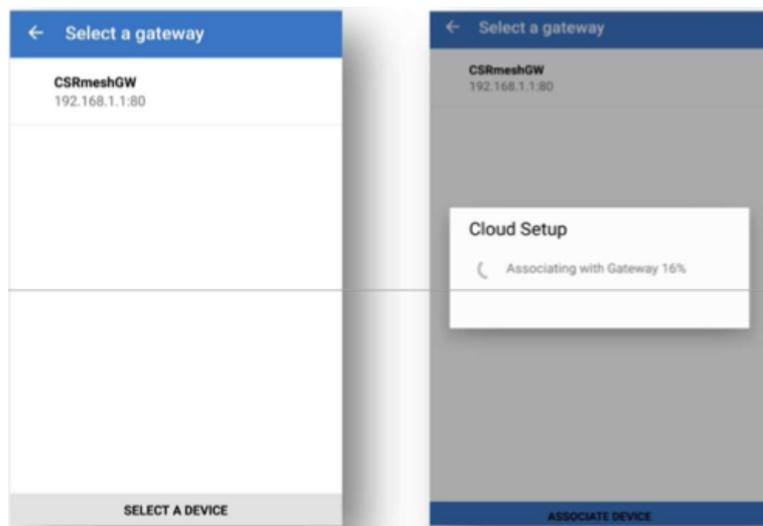


Figure 6.2. Gateway Configuration

6.2 Edit Gateway

Once a gateway is fully associated, the last option of the settings view (Section 9) will change from "Connect to cloud" to "Associated gateway". Selecting "Associated gateway" allows you to edit and see details from the associated gateways as shown in Figure 6.3 Edit gateway.

On the one hand, in order to see or edit gateway details, select the gateway you want and a view like Figure 9.3 will be shown. On the

other hand, you can tap on the "+" button in order to add more gateways to your network.

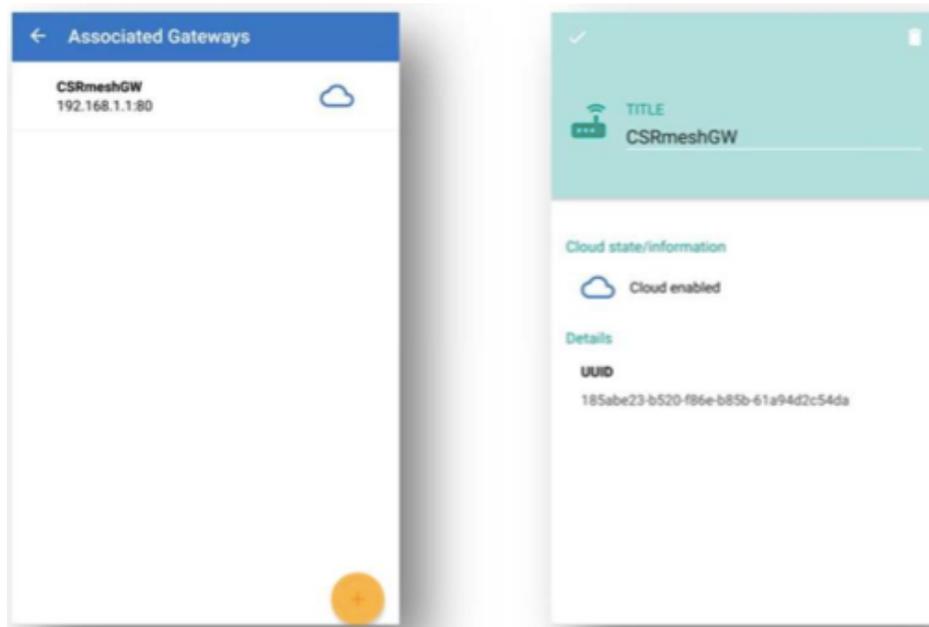


Figure 6.3. Edit Gateway

6.3 Deleting a gateway

Selecting the delete icon will prompt you to accept or cancel the delete operation. Selecting Accept will remove the gateway from your mesh network.

7、Consumption

The Table 7.1 shows the CSRmesh mode total current consumption measured.

Mode	Description	Total current
Mesh network node	Lighting	24mA
Sensor	Broadcast	17.6mA
Sensor	Idle	5uA
Switch	Broadcast	17.6mA
Switch	Idle	5uA

Table 7.1. Consumption

8、Contact Information

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