Focus luminaires with Bluetooth sensor

Square 250 and 270

Peleé Wall

Quarto 270 and 380

Yoyo 350 and 535

The LED versions of the products listed above are available with bluetooth sensor.

The sensor is a high-frequency sensor, also known as a radar. It emits micro waves and reacts to the returning echo. This means that the sensor will react to any movement by humans and animals, but also to whirling leafs or branches. A high-frequency sensor can detect activity through thin walls and other "obstacles". However, the sensitivity can be set for each sensor and adjusted to the individual location.

All luminaires with a sensor can be grouped and connected in a wireless MESH network. Here they can be controlled individually or along with other luminaires in the network.

The bluetooth sensor solution is advantageous in staircases, offices, class rooms, corridors, etc. where light levels can be adjusted to activity at the location. Lighting intervals and levels can be set to fit each individual application.

See quick guide and the complete manual at the following pages.

FOCUS-LIGHTING

Quick guide - Bluetooth sensor

You have a Focus luminaire with the option sensor control. Each luminaire is equipped with a Bluetooth unit, acting as a wireless connection. All luminaires can be connected to each other in a MESH network. Furthermore, the Bluetooth unit is a movement sensor (radar). Every single luminaire (and sensor) must be programmed via the Koolmesh app.

We have made this quick guide in order to help you get started. We refer to detailed information in the enclosed Koolmesh User Manual. Not all functions in Koolmesh are available in the Focus luminaires, and we have adjusted the manual accordingly. The complete manual is available at koolmesh.com/app-highlights.

How to get started:

Installing the luminaires
All luminaires must be installed and connected to 220V. Conventional switches can be used where necessary. With all luminaires switched on, you are ready to programme the installation via Koolmesh. Please note that update of software may require disconnection of power to the luminaires.

The Koolmesh app
Download the app from Apple or Android.

Account (User manual page 4-5 and page 26-27):
You start with creating an account in Koolmesh. You'll need an email address and a password. The account can be transfered to any new administrator after the programming or at any time. Any programming of the system will be saved automatically in Cloud and will be avaiable for other users with logon rights.

Now you are ready to define the design of the project, ie. the location as well as the grouping and relation between the luminaires in the installation.

Project (page 6):
You create the project; for instance a school.

Network (page 6-8):
For each project you need to create the networks to be used in the project. A network is defined by reachability, ie. all luminaires in the network must be able to communicate wirelessly. A floor could be one network.

Zone (page 9-10):
The next subdivision is zones. A zone will typically comprise all luminaires to react on the same activation. For example a class room. All luminaires must belong to at least one zone.

FOCUS-LIGHTING

Quick guide - Bluetooth sensor

Group (page 11):
If a special programming of some luminaires in a zone is required, these luminaires can be defined in a group. It could be the luminaires along the windows in a class room (the zone). Grouping of luminaires (in one or more groups) is optional.

Scene (page12-13):
The scene is defined by the action of a luminaire when the scene is "called" by the movement sensor. Several scenes are preset (turn on/off, dimming 10, 50, 75%). If required, new scene types can be created.

Now you are ready to start the detailed programming of every single luminaire and movement sensor. To avoid having to programme every single luminaire individually, you can programme them in groups - more at Bulk commisioning on page 29 in the manual.

Devices tab (page 14):
All luminaires in the network will be listed in this display (unless the luminaire is too far away). You must set parametres for the luminaire and the sensor, for example by connecting the luminaire to a zone or, if necessary, renaming the luminaire. **Please note that a software update may be required before connecting a luminaire to a zone. In connection with the update, power to the luminaire must be switched off.**

Luminaires tab (page 18):
The only action required here is to define how the luminaire should react in case of power failure. You can set the luminaire to continue as before the power failure or to keep turned on at a level of light defined by you. (Manual page 18-20)

Motion sensor tab (page 21):
A movement sensor is installed in each luminaire, and it is the heart of the system. The sensor can either be activated or deactivated. Furthermore, if it reacts unwantedly, its sensitivity can be adjusted. For each individual sensor you will have to set several parametres for the action of the sensor when activated. For example turning on, dimming, or turning off a zone or a group of luminaires. The period after activation of the sensor is divided in "Holdtime" and "Standby time". For both periods you must define the action of the luminaire and how long the action should last.

FOCUS-LIGHTING

App User Manual

User Guide v2.0

Contents

Introduction

Koolmesh is an advanced lighting control solution based on Bluetooth SIG Mesh technology. Bluetooth Mesh is the only low power wireless technology in all modern smartphones, tablets, making it the only mainstream and future proof low power radio technology in the world.

Koolmesh technology can be integrated into fixtures, LED-drivers, LED-modules, switches, sensors, and different kinds of control modules creating an optimal solution in terms of easy installation and functionality with minimal additional hardware and deployment costs. Koolmesh-ready products that are produced by Koolmesh partners and are 100% compatible with Koolmesh's native products

Koolmesh technology provides a mesh network where all the intelligence of the system is replicated in every node.

The Koolmesh app works as one of the user interfaces in Koolmesh lighting control solution: as the commissioning tool as well as a remote gateway which allows commissioning agents, contractors, installers, and facility managers to configure, control and manage lighting infrastructures based on qualified Bluetooth mesh.

App Installation

The Koolmesh app works with iOS as well as Android which are free to download from Apple App Store and Google Play. Or users can download via scan below QR-code.

Smartphone app for both iOS & Android platform

Create Account

Users can access login page after installation

1. When you try to login, there will pop up a window that need you to allow your mobile phone 's Bluetooth and turn on Bluetooth to get access the Koolmesh app.
2. First-time users, then they need to create an account, fill in and accept the terms and conditions as requested (see figure 1.1). If users forgot the password, then users can click "Forgot password?" to find it back, and Koolmesh app will send the password by email which needs to be valid (see figure 1.2).
3. After the account is registered and login to Koolmesh app. There will pop up a window that "Get your current location to calculate the sunrise, sunset, and light intensity at your latitude, and our sensor devices will adjust accordingly", please allow it. After that you can continue the operation by select "Quick Setup" or "Advanced Setup".
4. If users already have an account, please login directly with an existing account (see figure 1.3).
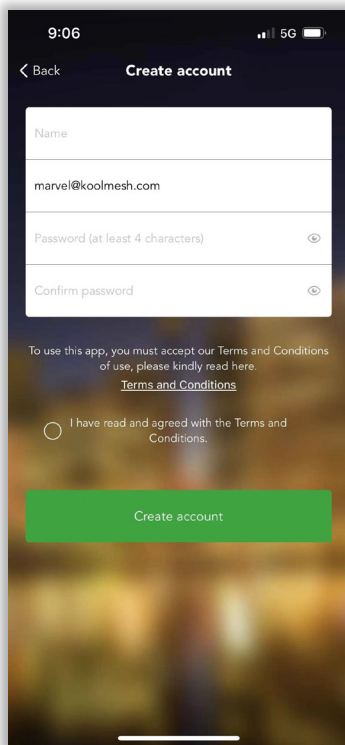
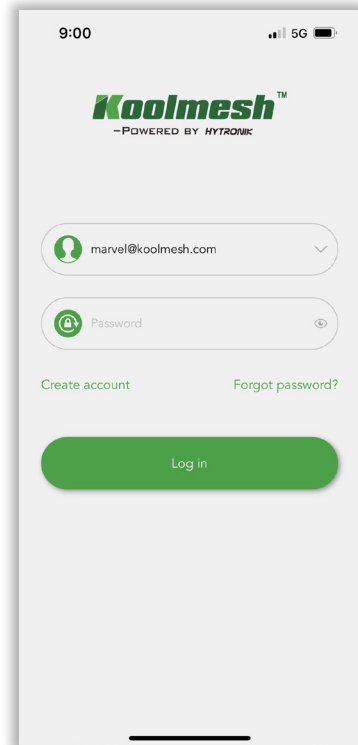*Figure 1.1* Create account   *Figure 1.2* Retrieve password   *Figure 1.3* Sign in app
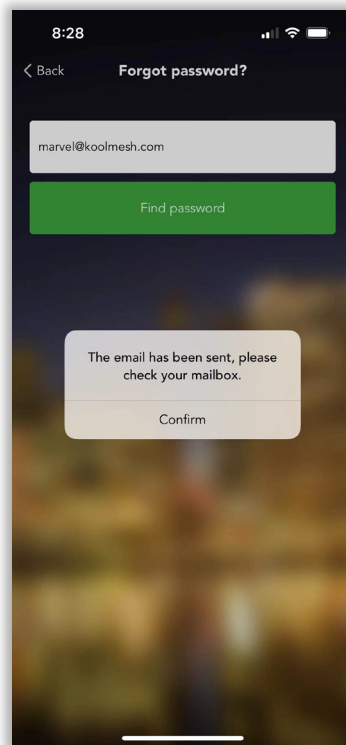
▶ Each account can be accessed by one user each time.

Example: When installer A goes to a parking lot where there is no internet access to do the commissioning, installer A still can do all the commissioning off-line, and all the settings will be saved to the local. When internet connection resumes, the preset settings will be restored to the server automatically. Under normal situations (have internet access), if there is another installer B log in to Koolemesh who is using the same account with installer A and installer A would be forced to log out when installer B logs in to the Koolmesh app at the same time. Therefore, if installer A would like to continue the commissioning, then installer A needs to log in again to the koolmesh app. However, installer A can do off-line commissioning and would not be forced to log out even though installer B logs in to the koolmesh app using the same account with installer A when there is no internet access. Under this situation, installer A continues to do all the commissioning. But when installer A finish the commissioning and go back to office or

somewhere have internet access and found that installer A been forced log out because installer B log in with same account. When installer A logs in to the Koolmesh again it will turn out that some of the commissioning is somehow missing. That is because when there is no internet, installer A has no access knowing that it has been forced to log out. So those commissioning after installer B log in will be missing.

Change E-email and Password

Users can change their exciting E-email, account password and Koolmesh app's language which including seven languages, they are English, Deutsch, Svenska, Français, Italiano, Polski, čeština by click in the top right corner of the setting page.
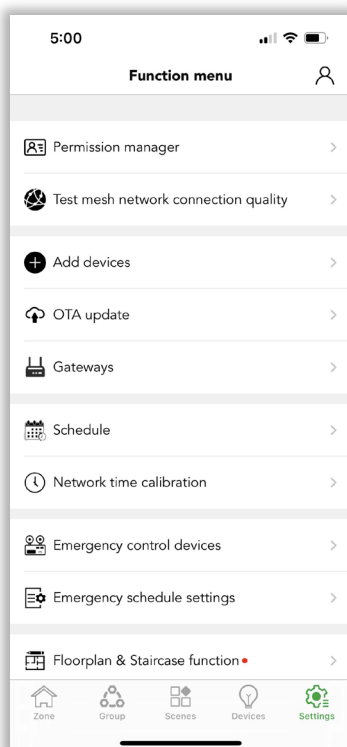
Figure 2.1 *Setting page-1*   **Figure 2.2** *Setting page-2*
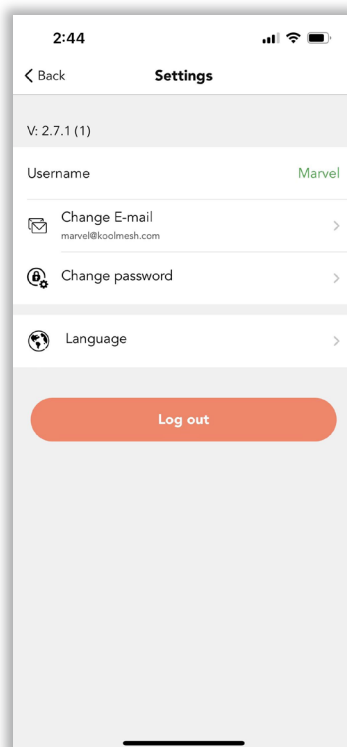
Network

1.1 Create and manage networks

If you are a first-time user and first taking devices into use, devices need to be added to a network and zone first, and users can follow guidelines in the app.
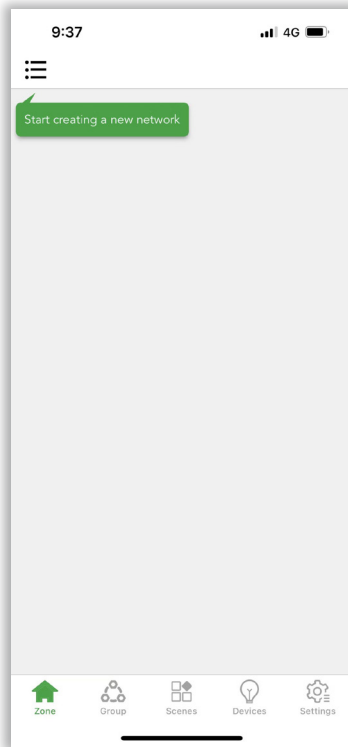
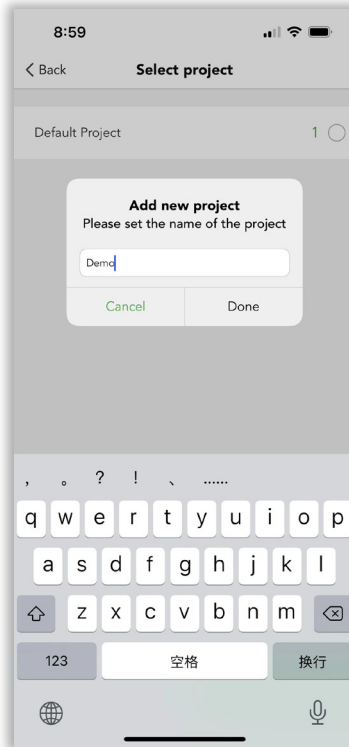

Figure 3.1 *Zone page*

Figure 3.2 *Zone page*

1. Create a network by clicking ☰ on the left corner of the zone (see figure 3.1) and create a network by clicking ⊕ .

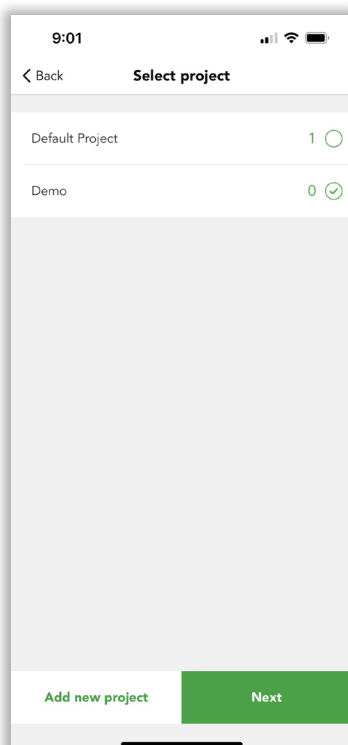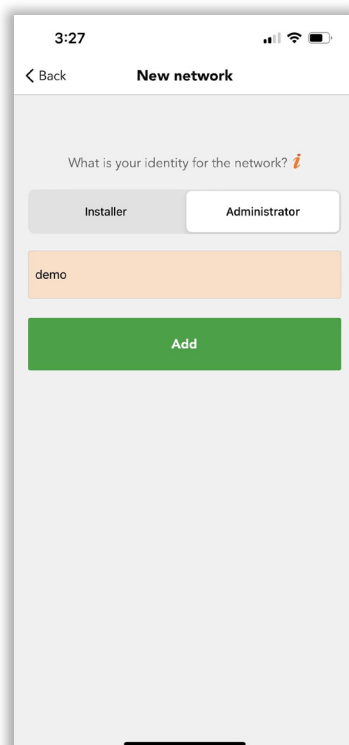2. Create a project and name it, like "Demo" (see figure 3.2).

Figure 3.3 *Select project*

Figure 3.4 *Add network*

3. Select identity and "add". (see figure 3.3).

1.2 How to manage network

After creating a network, users can check all the network information and project information and manage the network. In Koolmesh app, one project can have multi networks. In the top left corner of the zone page, users can click ☰ to review all the projects and networks being created under this account, also can change the project name (see figure 3.5), switch between projects and networks, manage or delete the network, even create a new network, and get a shared network.

1. Click ✎ to change the name of the project in "My networks" (see figure 3.6)
2. Click ⋯ for network management and modify owning projects and delete the network (see figure 3.6).
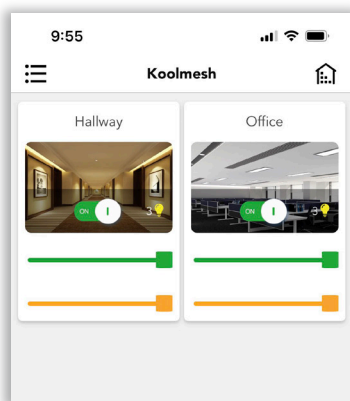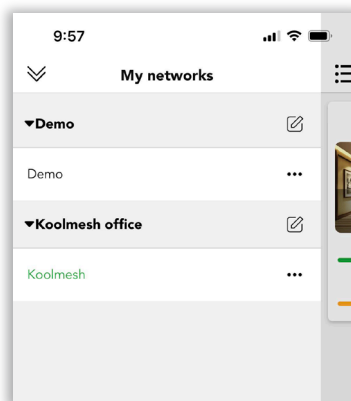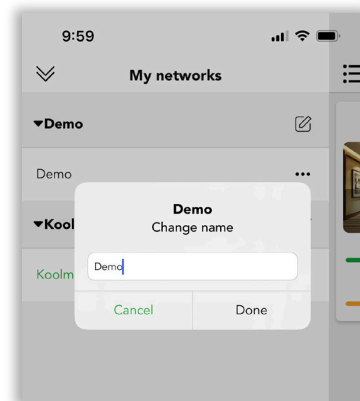
Figure 3.5 *Home page*

Figure 3.6 *My networks*
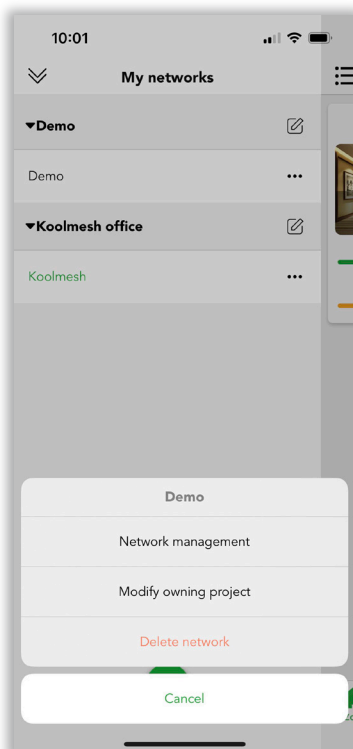
Figure 3.7 *Change name*
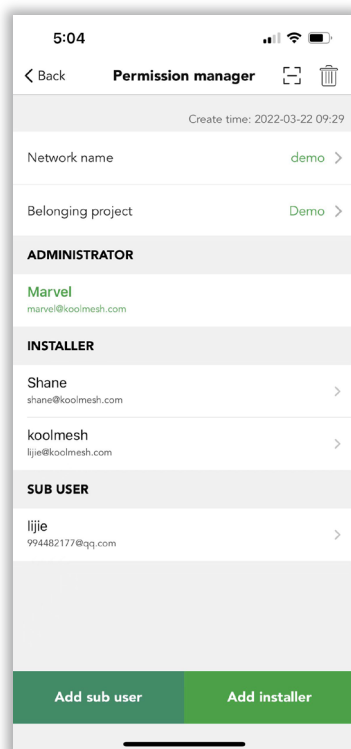
Figure 3.8 *Modify project*

Figure 3.9 *Permission manger*

In "network management" users can rename the network and modify owning projects (see figure 3.8). Also, can check all the accounts in the network and add a sub user or installer (see figure 3.9).

Clicking ⛶ enable users to get a shared network via scanning QR code or Key in a network sharing key.

Clicking 🗑 enable users to delete the network via key in the Koolmesh account password. If there are devices in the network, after deleting the network, Koolmesh app will no longer be able to control these devices.

In "modify owning project" Koolmesh will list out all the projects being created under this account, so users can modify the network from project A to project B which enables users to manage the network conveniently. Users also can create a new project and modify the certain project if needed.

Example: network "Koolmesh" under project "Koolmesh office"

If users would like to change network "demo" from project "Demo" to project "Koolmesh office", then users can click demo's ⋯ to use "modify owning project" and select "Koolmesh office" and done to finish the modification.
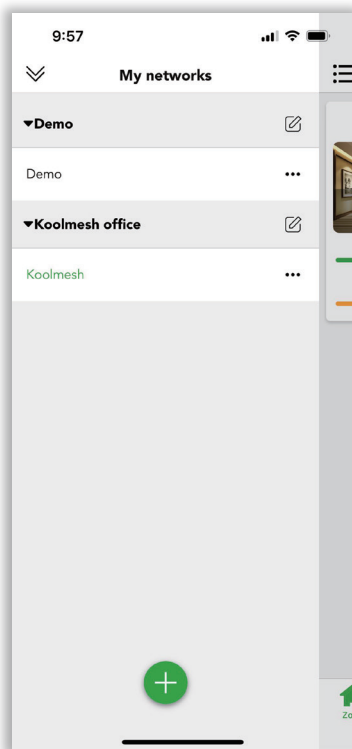

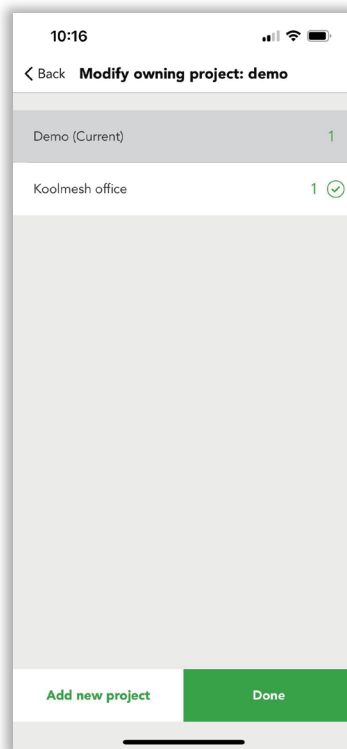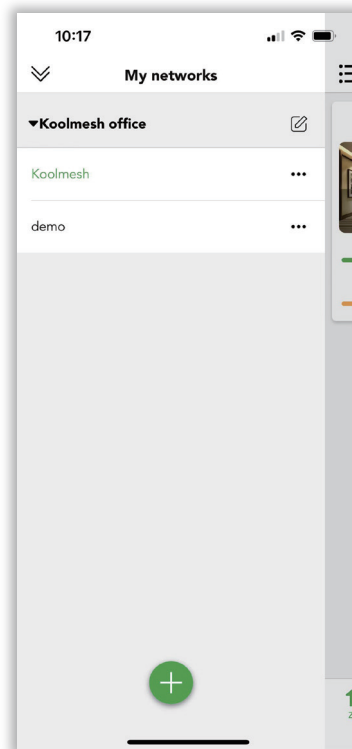*Figure 3.10* Modify project   *Figure 3.11* Modify network   *Figure 3.12* Modification done

Create and manage zone

Users need to create a zone after finishing network and project creation, and users can create a zone by following the guideline. A network can have multi zones and every device must be included in one zone but can exist in different groups. Users can name the zone and select the cover picture from Koolmesh App defaults. Or click ⬚ to take the photos on their own or select the picture from their album and "done" to create a zone, like "office". (see figure 4.1)
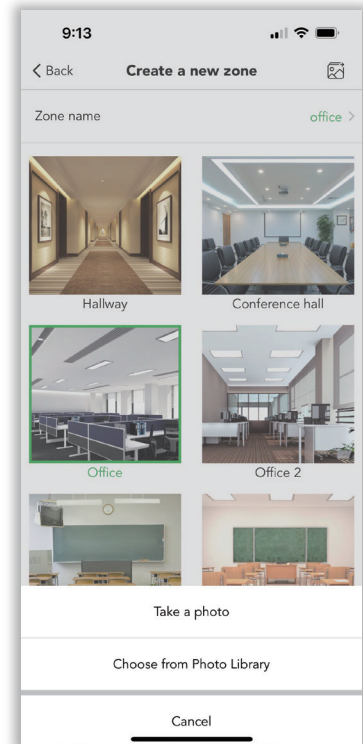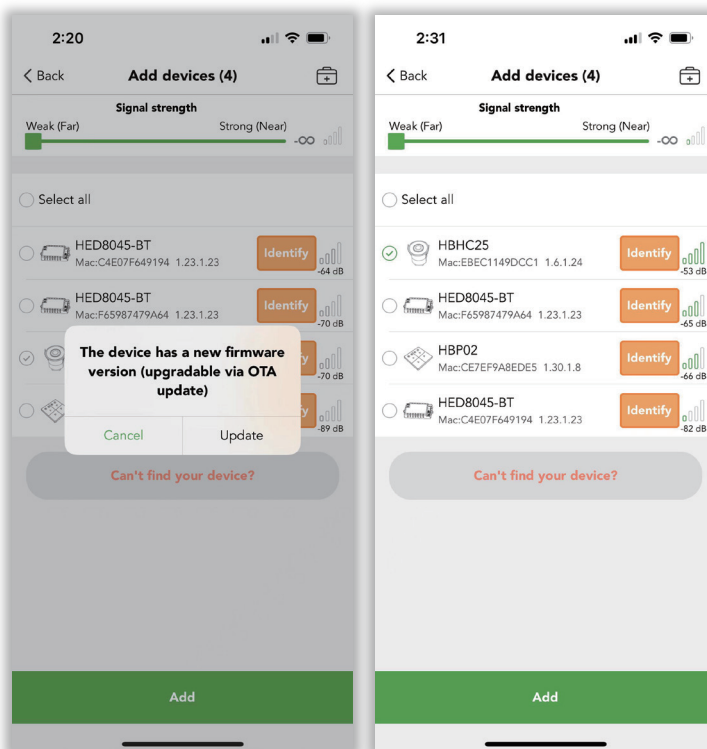

Figure 4.1 *Create a new zone*

Figure 4.2 *Add device-1*

Figure 4.3 *Add device-1*

After it is finished, users can add the device as instruction. Generally, Koolmesh app will search all the Koolmesh-enabled devices around them and list all the devices by Bluetooth signal from strongest to weakest.

Before users add the device, users need to "start" to add the device to the zone and rename as they want. If the firmware of device is not the latest version, like "HBHC25 ". when user select the device, Koolmesh app will pop up that "The device has a new firmware version (upgradable via OTA update)". Users can choose "update" then Koolmesh app will link to the Nearby devices to "start updating". After finished, user can continue the device adding, like "HBHC25 " to zone "Hallway" and rename as "Hallway 2(HBHC25)". Users also can add multiple devices if they have a large network. Just be aware that users need to rename the devices one by one and to "identify" every device before adding.

All the zones created by users have been listed out on the "Zone" Setting but not including those zones without a device, like zone "Hallway" "Office"(see figure 4.4). Click 🏠 to the "zone management", the users can review all the zones including the zones without device, like zone "warehouse"(see figure 4.5). In the "zone management" users can click the cover of the zone they would like to edit which can rename and change the photo of the zone, like "Hallway"(see figure 4.6). If users would like to remove the zone, then need to remove all the devices first. The zone "warehouse" can be deleted directly because there is no device in it.
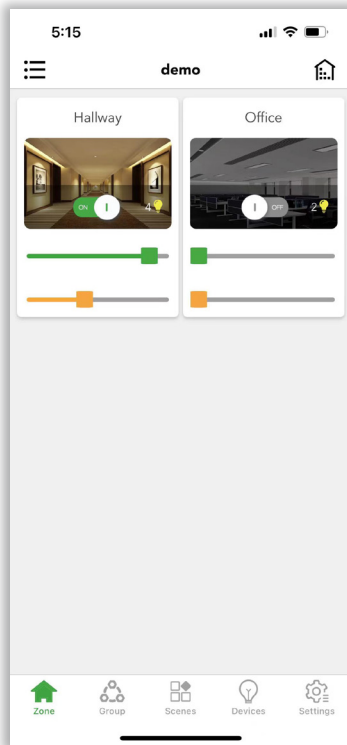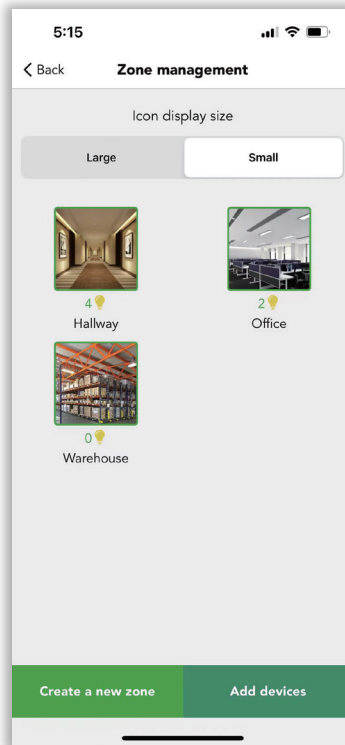

Figure 4.4 *Zone*
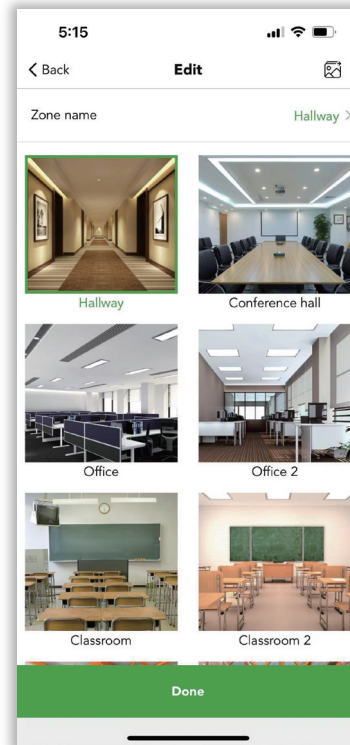

Figure 4.5 *Zone management*

Figure 4.6 *Edit zone*

Group

Grouping is a method of organizing device icons in the Luminaire groups tab. This can make it easier to set all the devices (especially if you have a large network). Groups can be considered physical collections of devices in an area (e.g., all devices in a row or in one room). Users can name groups and set common dim levels or color temperature for all devices in the same group. Single device can exist in many different groups but will only exist in one zone.
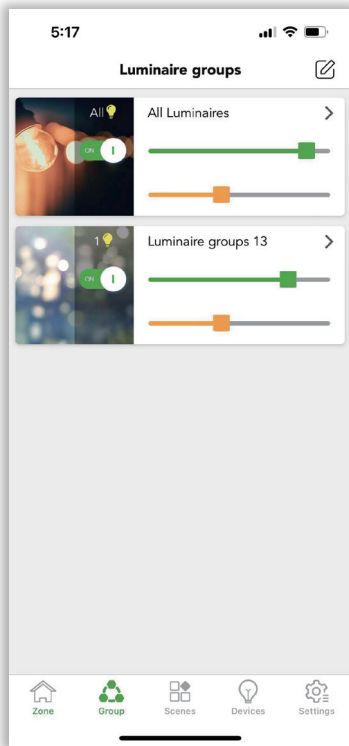
Click ✎ in the right corner of the Group page to "create a new group".
Then name and select the luminaries to finish the creation (see figure 5.1)

Figure 5.1 *Luminaire groups*

In the "Luminaire groups management" page, users can long press on the cover of any one of the groups to hide groups and edit and remove it.

Hide groups
⌀ means other users and installers can't see this group in the Group page if users hide it unless they long press on the cover of any one of the groups to show the group.

Figure 5.2 *Groups management*

Scene

Scenes allow you to create and recall lighting situations. A scene can control any variation of luminaires in the network. Luminaires can be used in multiple scenes, but single luminaires cannot exist in more than 16 scenes at the same time. The number of scenes created in a single mesh network is without limitation. In the system, there a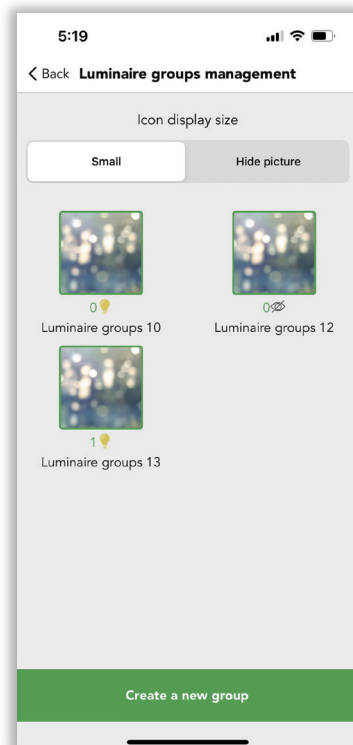re 3 default generic scenes that the users can directly use, they are "All off", "All 50% brightness", "All on". The 3 default scenes are applied to all the luminaires in the network.

Scene will never activate itself automatically. There are three ways in the Koolmesh system to activate the scene function.

1. By manual control:
    1) Users can activate the scene in the scene page by just clicking on the scene picture.
    2) They can activate the scene through the Push switch (need to be configured).
    3) They also can activate the scene through Hytronik BLE touch panel HBP02 (Need to be configured).
    4) The Koolmesh app also supports the Enocean switch (BLE version), the users can activate the scene through the Enocean switch (need to be configured).

2. By the motion sensors:
    The scene can be activated by the motion sensor. Once the movements are detected by the motion sensor, then it will activate the scene automatically. Users need to set up the motion sensor setting first.

3. By the schedule:
    Users can set up a schedule to activate a scene at a certain time of day.
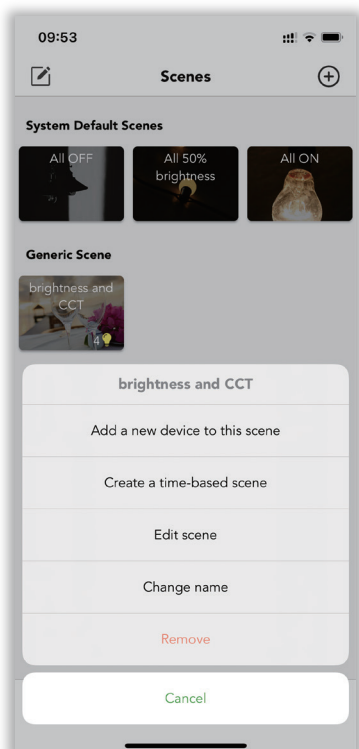
Users can "create a new scene" from the top right corner. Users can edit the existing scene by clicking on the top left corner or just long press on the scene cover. After long pressing on the scene cover, there are some new options. Users can add new devices into this scene, create a time-based scene, edit the scene, change the name, and remove (delete) the scene.

Figure 6.1 *Scenes*   **Figure 6.2** *Create scenes*

Type of scenes

There are 5 types of scenes that can be created in the Koolmesh app. Users can create the scene depending on their requirements (see figure 6.3).

Figure 6.3 *Type of scenes*

Figure 6.4 *Lux on/off scene*

1. Generic Scene

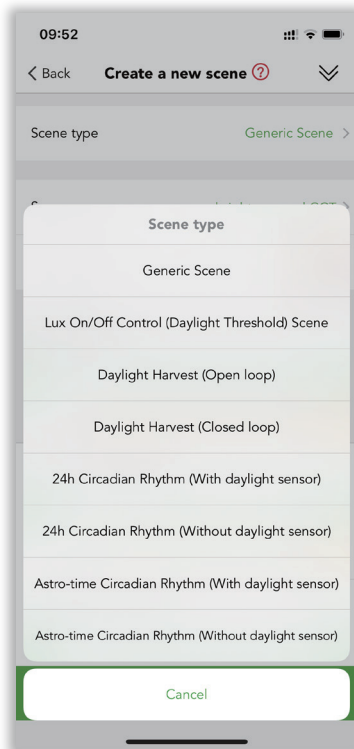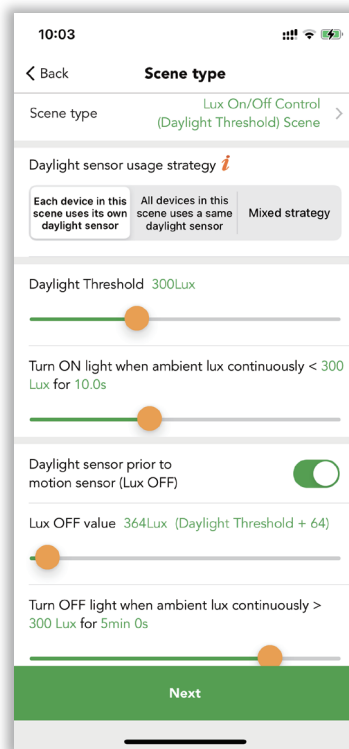This is a very simple lighting scenario (usually containing several luminaires adjusted to different dimming levels and/or color temperatures) that you wish to be able to recall. Users just need to set a fixed brightness level and color temperature to luminaires.

2. Lux On/Off Control (Daylight Threshold) Scene

The luminaries turn on and off depending on the lux level setting. The scene's output is always defined by the dimming level(s) of the luminaires selected within the scene. The daylight sensor will keep measuring the ambient lux level. Users need to define the daylight threshold value, if they need the daylight sensor to turn off the luminaires, then they will need to define the Lux off value as well.
There are many options in the scene (see figure 6.4).

- **Daylight sensor usage strategy:**

  If a dedicated sensor is selected and a daylight sensor is in the luminaire. The scene will run based on the lux reading from this dedicated sensor instead of using the external daylight sensor. If the dedicated daylight sensor is disabled, the scene will run based on lux reading from the external daylight sensor instead.

Devices Tab

In the Devices Setting, Koolmesh app lists out all the devices by zone under this network; users can modify all the parameters for every device. Users can click " Identify " to check if they connect the right luminaire or click the luminaire which they would like to set, like "Office 4 (HED8045-BT)". When users would like to change the parameters then users need to click "Office 4 (HED8045-BT)" (see figure 7.1), app will link to all the parameters automatically (see figure 7.2).
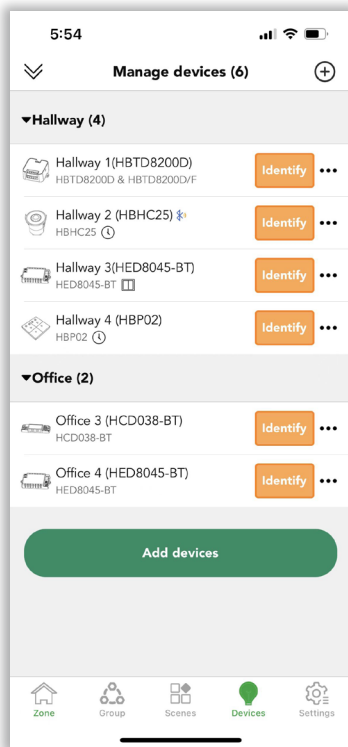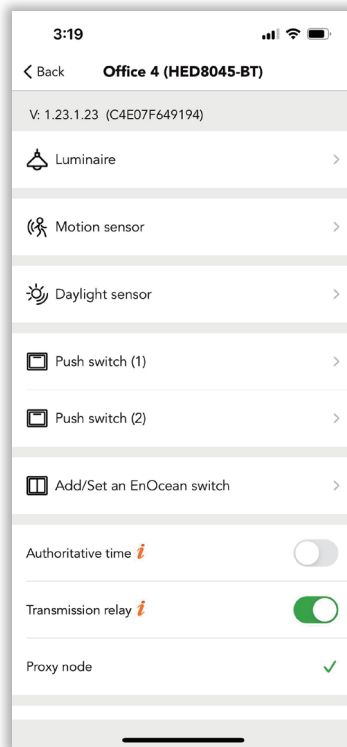

Figure 7.1 Devices-1   **Figure 7.2** Paramaters settings

Luminaire Motion sensor and Daylight sensor can refer to related sections.

● **Authoritative time**

Users turn on this function means the entire network time will be based on this device when there is no mobile phone and gateway connection. (If the phone or gateway has connection, it will be based on the phone or gateway time instead)

Example: When users are out for traveling and set a scheduled timer light on 50% at 7:00 pm and turn off the light at 12:00 pm every day. If users haven't turned on this function, then every luminary has a time deviation which may lead to some luminaries light on at 7:05 and turn off at 12:05; some luminaries light on 7:09 and turn off at 12:09. To keep the consistency, users can turn on this function to make sure all the luminaries in this network have the same timer.

● **Transmission relay**

It means every device can receive and transmit the Bluetooth signal. When there are many nodes in the network and the nodes are densely distributed, then user can turn on this function to make the network transmission become more smoothly. The default setting in the Koolmesh app is to turn on this function. We recommend user to turn on this function to decrease the network traffic and speed up the transmission.

Two ways to add the devices:
1. Users can click ⊕ in the top right corner to add the device
2. Directly click "Add devices".

※ The device quantity in one network is dependent on the installation environment, users need to make sure every single device in the network is in the range of Bluetooth can cover. But one device can only be added to one network at a time. When a device is adding to network A already and user would like to change it to network B. Then users can reset the device from network A first and add it to network B or users can search the device by "can't find your devices" in Other Network by using network B and select the device but need to "re-power the device" before adding. This function is mainly to guarantee the safety of devices.

Example: Like "Office 4(HED8045-BT)", change it from network "Koolmesh" to network "demo".
Users can reset "Office 4(HED8045-BT)" first (how to reset device please refer to " Two ways to reset the device") under network "Koolmesh" and adding HED8045-BT (how to add device please refer to " Two ways to add the advice") under network "demo". Or users can add the device directly by "can't find your devices?" by using network "demo", then find HED8045-BT in "Other Network" which list out all the devices by Bluetooth signal from strongest to weakness (see figure 7.3). After "identify" to double confirm and "start". Under this situation, users need to re-power HED8045-BT as requested to finish adding (see figure 7.4). If not, Koolmesh app will have an error message that "setup failed, please try again" (see figure 7.5).
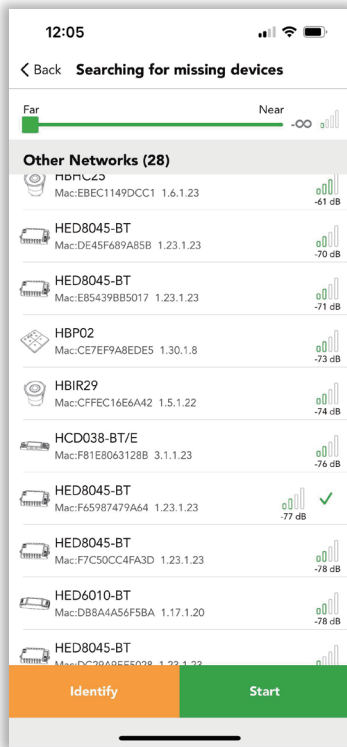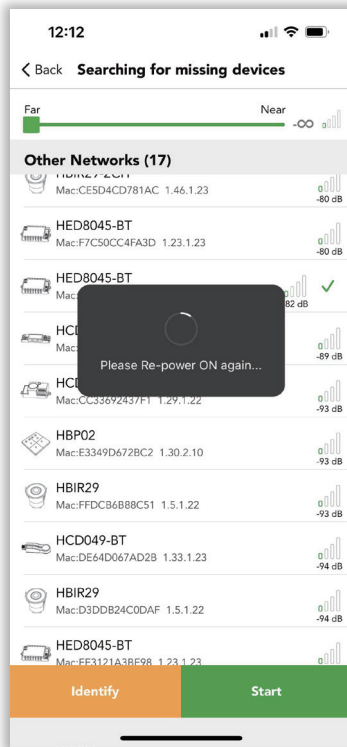

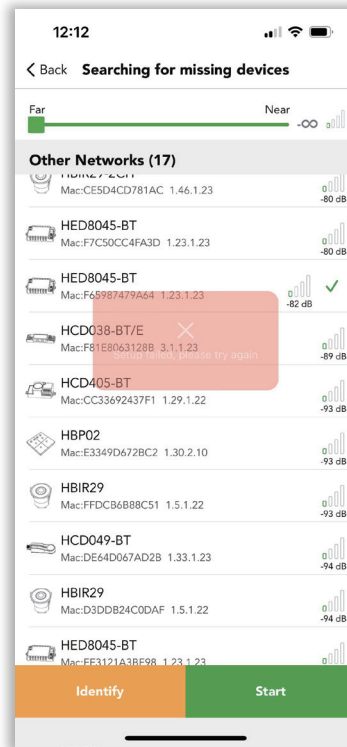**Figure 7.3** *Devices-2*   **Figure 7.4** *Devices-3*   **Figure 7.5** *Setup failed*

Two ways to reset the device:
1. Users can select the device which they would like to reset and slide to the left side to "reset" (see figure 7.6).
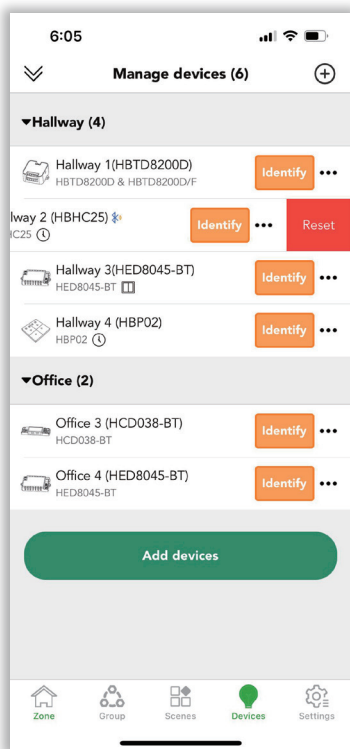2. Click ··· to reset, like "Hallway 2(HBHC25)" (see figure 7.7).

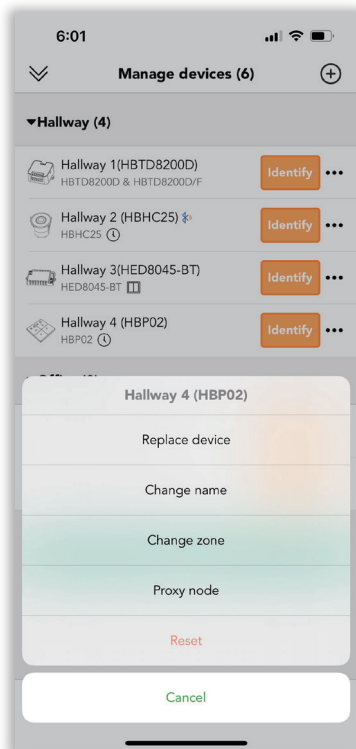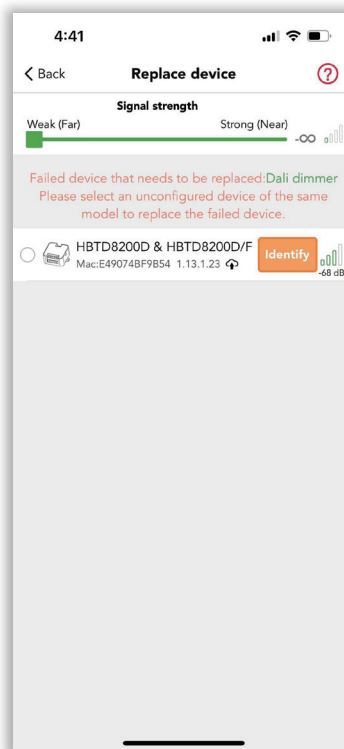|		
Figure 7.6 Reset-1	**Figure 7.7** Reset-2	**Figure 7.8** Replace device

※ Adding device and deleting device need to be connected via Bluetooth directly, so users can't add and delete the device via remote control.

※ The quantity of devices in a network should be greater than or equal to the quantity of user.

Example: In Koolmesh app, there always have one device connect with the Koolmesh app to receive the command and then transport the message to other devices by Bluetooth signal when users using the Bluetooth to connect the device directly. So, when there is only one device in the network, then the second user cannot control the device after login. Because after user login, Koolmesh app will connect the device directly by Bluetooth automatically. But if there is only one device then when the second user login to the same network and cannot connect to the any one of device. Under this situation, second user have not access to control the device. Like user connect the device Hallway 2(HBHC25), there have 6 devices in the network which means can have max 6 accounts in this network to control the devices at the same time.

● **Replace device**
Replace device only can apply on the same model device when user would like to do maintenance then user can directly copy all the parameter from currently device to the new one. They don't need to set the parameter again.

Example: Like "Hallway 1(HBTD8200D)", if users would like to do the maintenance or replace the failure one, they need to strip out the old device and wiring to the new one first. After it is finished, on the "Manage devices" of Devices page, users can select the failure device they would like to replace and click   to "Replace device" to search for the new device. After searching, users can use "identify" to double check if it is the correct device users would like to replace (see figure 7.8). If it is the correct device, then users can "start updating" to finish replacing.

● **Change name**

Users can change the devices name as they want

● **Proxy node**

Proxy node 🔷 allow users to connect the device with Bluetooth directly which enable users to check the all the device's information. The default setting is connecting the Koolmesh app with the strongest Bluetooth signal device which means what is connected may be not the nearest from the user's position (especially when they have a large network), then users can use this function to change which devices to connect Bluetooth directly, refer to below picture.

Example 1:
If users would like to check the hardware programming time of the devices, then users need to connect the device via Bluetooth instead of gateway first. Because connect with Bluetooth means Koolmesh app receive all the information from device, but if users connect with gateway means users receive all the information from server which does not allow to check the information of device itself, that is why user needs to connect Bluetooth to check the hardware programming time. Then click the device users would like to check like "Hallway 2 (HBHC25)", in the device setting page, users can directly click the position of the hardware version to check the details (see figure 8.9).

Example 2:
When installer A does commission on site where they have no internet access. After finishing, installer A logs out the app and goes back somewhere that has internet access which will find that all the commissioning has been covered by the server. Under this situation, installer A can go back on site to use "Proxy node" to check the commissioning via connecting the Bluetooth directly with the device.

Example 3:
If Koolmesh app connects with the strongest Bluetooth device "Hallway 2(HBHC25)", but users would like to connect with "Office 4(HED8045-BT)", then users need to select device "Office 4(HED8045-BT)" and click ••• to "Proxy node".
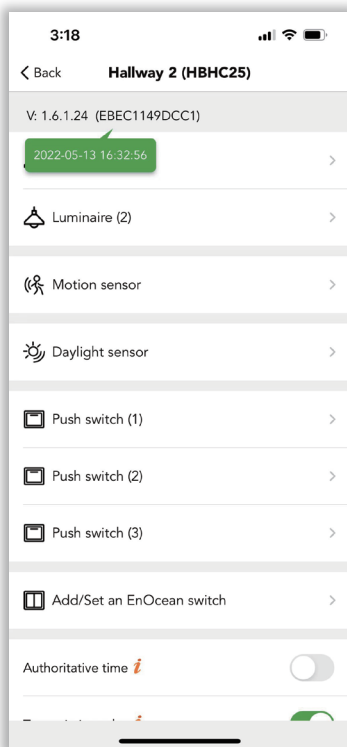

Figure 7.9 *Hardware programming time*

Luminaires Tab

Luminaires that are added to the network will be displayed in the luminaires section in the function menu page. It will show each luminaire belonging to which zone or group with the device name. users can click on the luminaires icon to access the luminaires settings.

At the top is the luminaires status bar, users can adjust the luminaires brightness or CCT here (see figure 8.1).
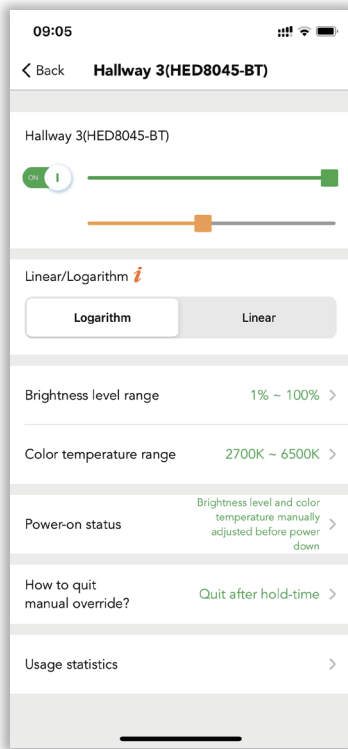

Figure 8.1 *Luminaire settings*

- **Linear/logarithm**

  It's two different dimming methods. Normally the dimming profile should be in line with the dimming pattern of LED drivers. E.g., if the drivers prefer the linear dimming, then we will adjust it to linear by default.

- **Load type**

  This is dependent on the driver type, if the driver supports dimming and color changing or it's DT8 driver, the users need to choose Dimming & color tuning (DT8). Otherwise, users should choose dimming only (DT6).

- **Brightness level range**

  The maximum and minimum brightness levels determine the adjustable brightness range of his luminaires. The system brightness level range is 1%-100%, default setting is 10% to 100%. Users can adjust the range by themselves (see figure 8.2).

- **Color temperature range**

  The maximum and minimum color temperature determine the adjustable brightness range of his luminaires. The system color temperature range is 2000K-8000K, default setting is 2700K to 6500K. Users can adjust the range by themselves (see figure 8.3).
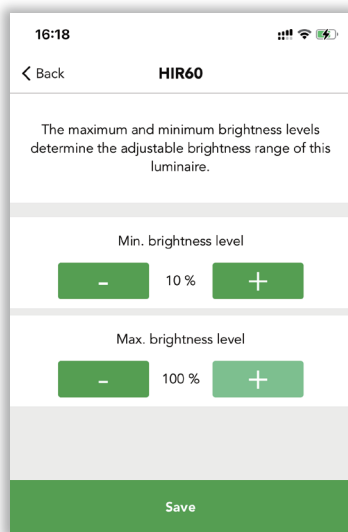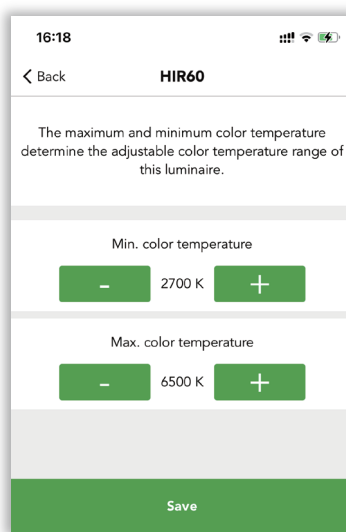

Figure 8.2 *Brightness level*

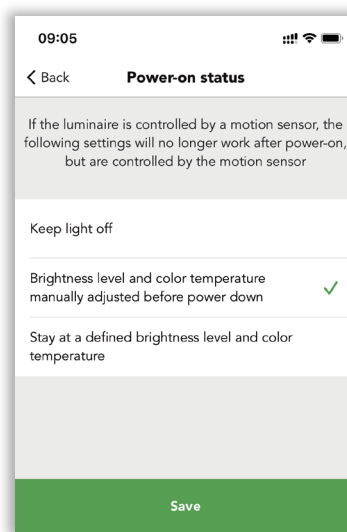**Figure 8.3** *Color temperature*

Figure 8.4 *Power-on status*

● **Power-on status**

Koolmesh system gives the users options to decide what's the status of the luminaires when they are powered on. Users can choose to keep lights off, or brightness level and color temperature manually adjusted before powering down or stay at a defined brightness level and color temperature.

If the luminaire is controlled by the motion sensor, the following settings will no longer work after power-on. But are controlled by the motion sensor.

If the users choose to "keep lights off". Users need to define after powered on, whether the luminaires are controlled by the motion sensor (auto mode) or controlled by the manual defined brightness and CCT (can be zero). The when the luminaires are powered on, the luminaries will stay off. No matter what the status of the luminaires before switched off.

e.g., if the luminaries were to manually change the dimming to 10%, then after hold time, the luminaries quit the manual mode. The motion sensor starts to work and recalls an 80% brightness scene. Suddenly the luminaires are powered off when it encounters a power failure during the scene period. After the power is resumed, the luminaries will recover to the last time manually modified status (e.g., 10% brightness) but not the scene. And, if the last state option is selected and luminaires were off when power was switched off, then the luminaires will stay off when power is resumed.

For any products which have the motion detection function (sensors, Bluetooth drivers plug in with sensor head). After power resumed. The sensor will send out a virtual motion command to the driver to recall the hold time scene automatically, which means the client does not need to walk around to trigger the motion sensor to activate the hold time scene.

If users choose "brightness level and color temperature manually adjusted before power down", Then luminaires will recover to the same dimming level and color temperature which were previously in use before the luminaires were powered off. But there is a limitation, the system only can remember the manually changed dimming level and CCT, will not recover the "scene".

e.g., if the luminaries were manually change the dimming to 10%, then after hold time, the luminaries quit the manual mode. the motion sensor starts to work and recall an 80% brightness scene. Suddenly the luminaires are powered off when encounter a power failure during the scene. After the power was consumed, the luminaires will recover to the last time manually modified status but not the scene. And, if the option is selected and luminaires was off when power was switched off, then the luminaires will stay off when power consumed.
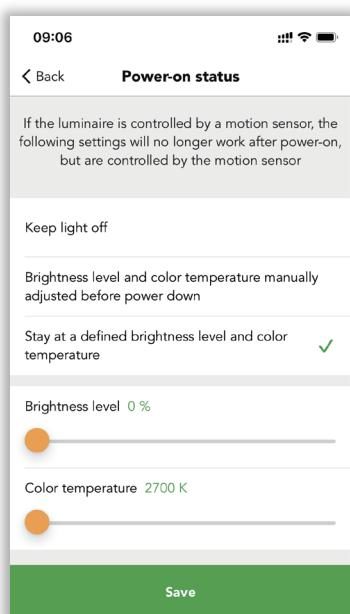
If users choose "stay at a defined brightness level and color temperature". Then users need to define the brightness and color temperature here (see figure 8.5). After the power consumed, the luminaries will stay at the defined brightness and color temperature.

Figure 8. 5 *Power-on status-2*

● **Manual control**

Any changes users manually made from the app, push switch, Bluetooth panel, Enocean switch, and the gateway will let the sensors or luminaires into the manual control mode. E.g., users change the luminaires brightness through the app, change the sensor settings, change the scene settings etc.…

How to quit manual override ?

In order to let the luminaires or sensors switch back the auto mode from manual control mode. In the Koolmesh system we provide this option for the users to choose.

1. Do not quit automatically, so the luminaires or sensors will stay in manual control mode forever.
2. Quit after hold time. After hold time, the luminaires or sensors will switch back to the auto mode.
   E.g., if the hold time is 10 mins, then after 10 mins, it will quit the manual control mode.
3. Quit after stand-by time. After stand-by time, the luminaires or sensors will switch back to the auto mode.
   E.g., if the stand-by time is 5mins, then after 5 mins, it will quit the manual control mode.
4. Quit after a specific time.
   Users can define a specific time to quit the manual control mode. E.g., 2:00am. (see figure 8.7)
5. Quit after count-down time. We also provide a count-down method for the users. If the users know what time they want to stay in the manual control mode, they can use this option. For example, in an office, the maintenance team will usually take 1 hour to quickly check the whole office luminaires status. So, once they process the checking, they will switch all the luminaires to 100% brightness through the push switch, users can set the count-down time to 1 hour (see figure 8.8). After 1 hour the maintenance team finished their work, the luminaires will switch back to the auto mode and will run the dedicated scene automatically.
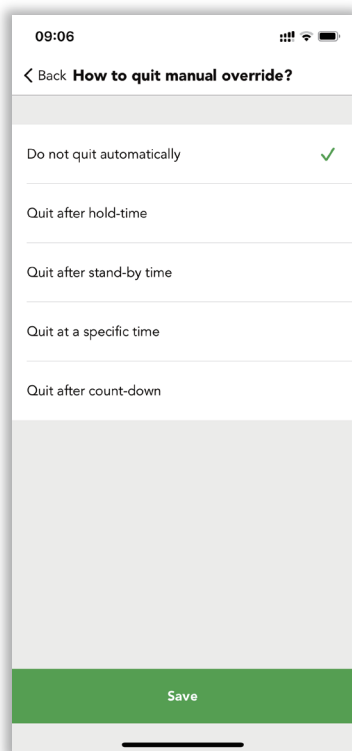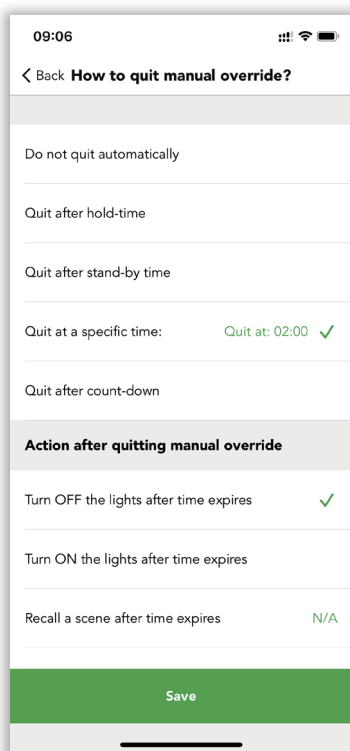

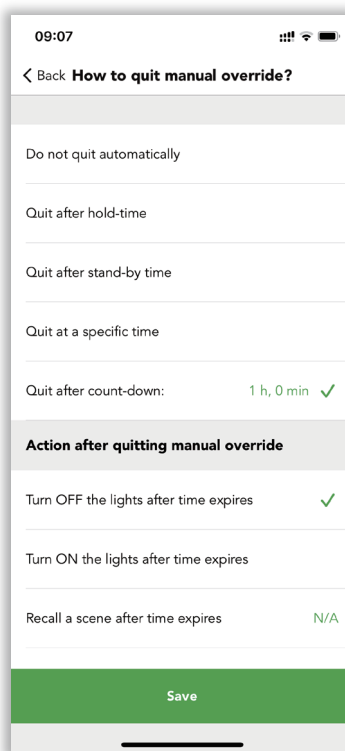**Figure 8.6** *Quit mode-1*   **Figure 8.7** *Quit mode-2*   **Figure 8.8** *Quit mode-3*

Motion sensor Tab

All the added motion sensors should be found under the motion sensor section in the function menu page. Motion sensor is the most important part of the Koolmesh system. It is the core of auto-control. In this motion setting, users can define a lot of settings related to the motion sensor including the tri-level control.

After clicking on the "motion sensor", it will display a list of all the sensors that are in different zones (see figure 9.1). When the motion sensor is activated by the movement, then there is a red dot under the human icon that will flash one time. On the right will display which zone or group or luminaires are controlled by this motion sensor.
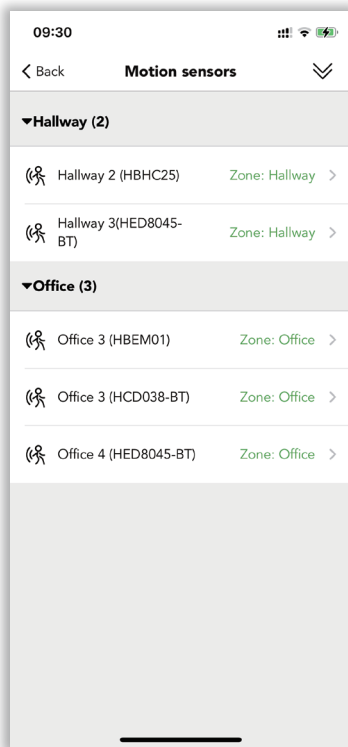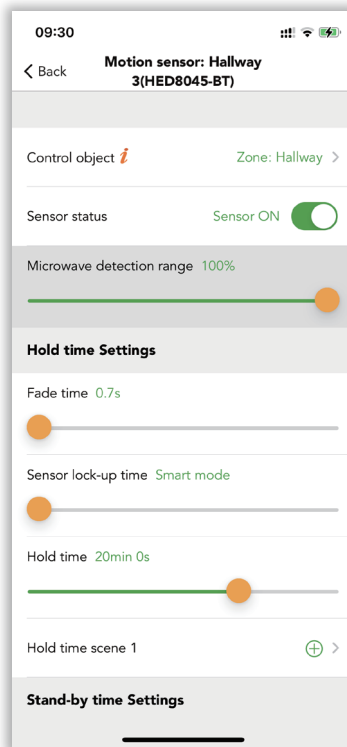

Figure 9.1 *Motion sensors*

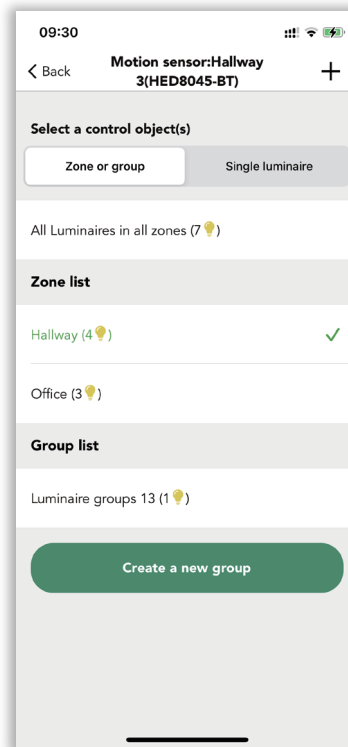**Figure 9.2** *Sensor settings-1*

Figure 9.3 *Control object setting*

- **Control object**

    Select which object you would like this motion sensor to control, e.g., a luminaire, a group, or a zone.

- **Sensor status**

    On: means the motion detection function is on, motion sensor will work as normal.
    Off: means disabled the motion detection function. Motion sensors will not work in any conditions.
    If the motion sensor is a Microwave sensor, then in the Koolmesh app you can adjust the detection range of the sensor, but this function is not available for the PIR sensors.

- **Hold time settings**

    A part of the tri-level control, users need to define the hold time and hold time scene. There are also some options under this section.

- **Fade time**

  The time it takes the luminaries to transition from the initial status to the hold time scene status. (Brightness and CCT).

- **Sensor lock-up time**

  The interval between two motion signal commands. For example, if the motion sensor was activated and it will activate the hold time scene for the hold time like 20 mins, so during the 20 mins, if the motion sensor is still being activated, it will keep sending out the motion command to the relevant nodes but those command will not be executed by the nodes. So, this will increase the network congestion and will decrease the network stability. Users can use this option to reduce the useless motion commands by setting the interval time. The default is smart mode that it's the half of the hold time, users can adjust the time by themselves. But we highly recommend using the smart mode.

- **Hold time**

  When the movements were detected by the motion sensor and activate the hold time scene. The hold time scene will last for the hold time, after the hold time expires, it will activate the stand-by time and stand-by time scene. When the motion sensor keeps detecting the movements, then the hold time scene will never expire. It will refresh the hold time until the last movement was detected and keep the hold time scene for a new period of hold time, after it's expired it will activate the stand-by time and stand-by scene. The hold time cannot be zero but can be infinity.

- **Hold time scene**

  The scene will be activated during the hold time; the scene needs to be selected from the existing scenes or click inside to create a new scene.

- **Stand-by time settings:**

  A part of the tri-level control, users need to define the stand-by time and stand-by time scene.

- **Fade time**

  The time it takes the luminaries to transition from the initial status to the hold time scene status. (Brightness and CCT).

- **Stand-by time**

  After the hold time and hold time scene expired, it will activate the stand-by time scene and will last for stand-by time, then the luminaires will turn off. Stand-by time can be zero and can be infinity.

- **Stand-by time scene**

  The scene will be activated during the stand-by time; the scene needs to be selected from the existing scenes or click inside to create a new scene.

- **Sensor mode**

  Auto: after the sensor is triggered, the scene is automatically called. The luminaries will be turned off after expiration of hold time & stand-by time.

Semi-auto: the sensor is only activated on the manually press of a Push switch, or via touch panel, or via Enocean switch, or via the app. The luminaries keep being on in the presence and turn off automatically after expiration of hold time & stand-by time (absence detection mode).

● **Mode in priority**

Manual prior to sensor: the sensor will not interrupt the manual override mode.
Sensor prior to manual: when the sensor is triggered, it will quit manual override mode.
Then activate a scene according to the sensor settings.

● **Enable staircase function**

If it's on, when entering a floor, the luminaires on this floor will go to full ON, while the neighboring upper and lower stairs will go to dimming level according to the scene pre-set.
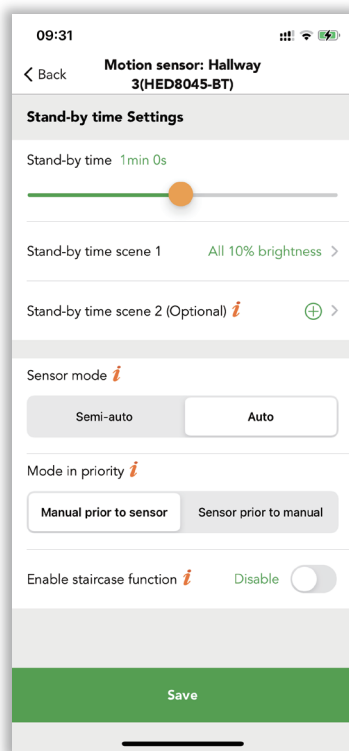

Figure 9.4   *Sensor settings-2*

Control logic

The control hierarchy allows manual lighting control and automatic lighting control to work together. Manual control is any physical action, like selecting a scene by tapping on the scene icon in the app, pushing a switch, push button, or Bluetooth touch panel, or Enocean switch. Automated control is, for example, commands generated by motion sensors and schedule. There are three parts of control in the Koolmesh system: motion sensor auto control, manual control, and schedule control.
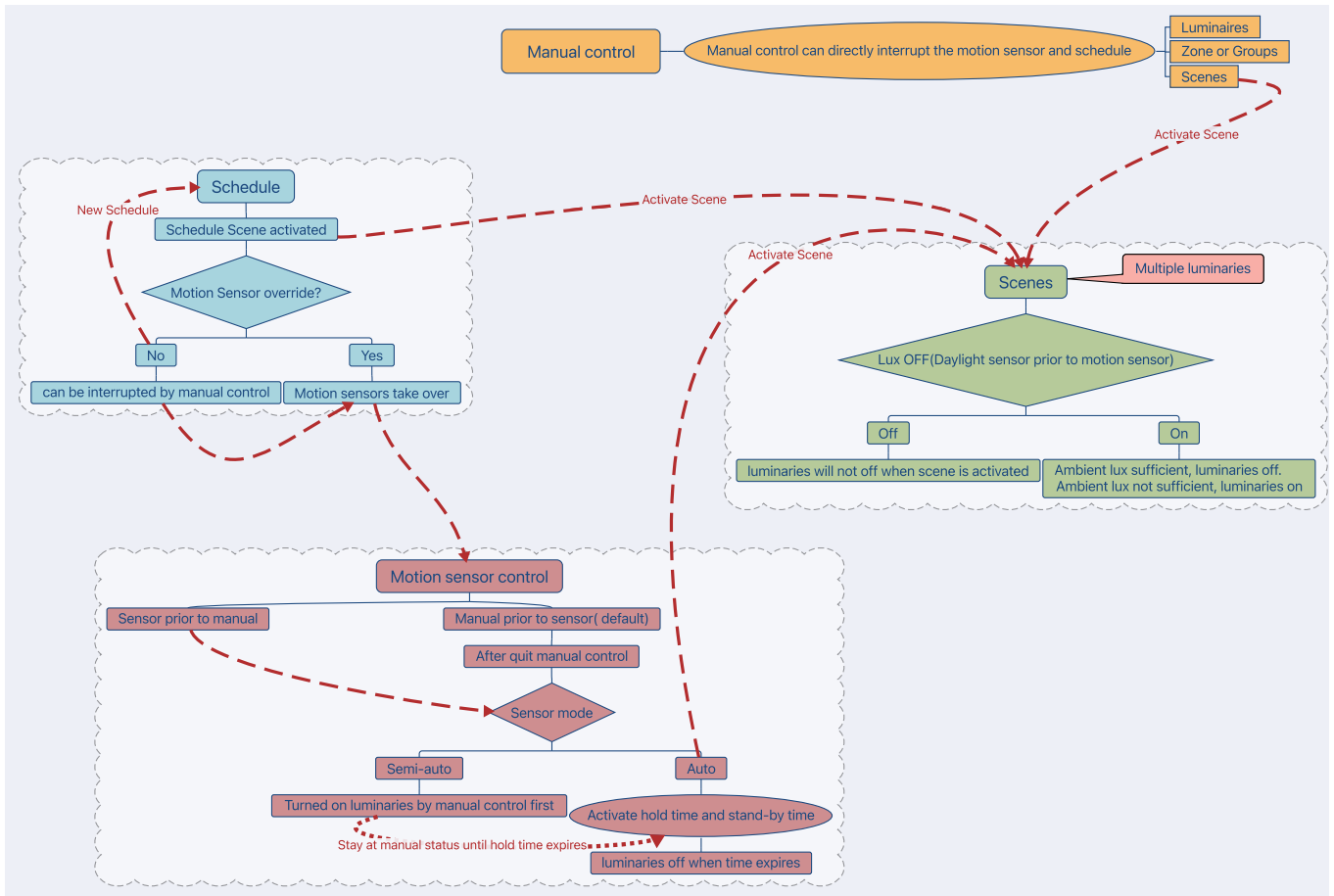

Figure 10.1 *Control logic*

- **Motion sensor auto mode**
  The behavior of the motion sensor, it can be divided into two different modes in the Koolmesh system: auto mode and semi-auto mode.

  Auto
  After the sensor is triggered, the scene is automatically called. The luminaries will be turned off after expiration of hold time & stand-by time.

  Semi-auto
  The sensor is only activated on the manual press of a Push switch, or via touch panel, or via Enocean switch, or via the app. The luminaries keep being on in the presence and turn off automatically after expiration of hold time & stand-by time (absence detection mode).

- **Manual control**

  Action from App, Push switch, Bluetooth touch panel and Enocean switch.

- **Schedule control**

  Users can create a schedule based on the date, week, time, or sunrise sunset time to recall a specific scene.

Sensor mode and mode priority

- **Sensor auto + sensor prior to manual control**

  When there is no schedule involved, the motion sensor will be the highest priority in the system. When the motion sensor is triggered, it will make the luminaires into the hold time scene immediately no matter if the luminaires are in what status. For example, when users dim down the brightness through the Push switch, then when they trigger the motion sensor, the luminaires will recall the hold time scene immediately. After hold time, if there is a stand-by time scene, it will also activate the stand-by time scene, after stand-by time, the luminaries will turn off.

- **Sensor auto + manual prior to sensor control**

  When there is no schedule involved, the manual control will be the highest priority in the system. When the motion sensor is triggered, it will automatically run the hold time scene and stand-by time scene. But if the users use the app, push switch, Bluetooth touch panel or Enocean switch changed the luminaires status (brightness and CCT). Then the luminaires will go to manual control status. Users can decide how long the manual control needs to be implemented. They can define how to quit manual control in two ways, first is in the luminaires setting, in the "how to quit manual override". There are 5 options for the users to choose. They can decide to quit or not quit or how long time to quit (automatically quit). The other one is in the push setting; they can define the single press or double press function to "sensor take over". When the users single press or double press on the Push switch, then the luminaires will switch back to the auto mode (manual quit).

- **Semi-auto + sensor prior to manual control**

  When there is no schedule involved, the motion sensor is only activated on the manual press of a Push switch, or via touch panel, or via Enocean switch, or via the app. Which means only when the users turn on the luminaires, then the motion sensor is activated. Then users trigger the motion sensor, it will activate the hold time scene and stand-by time scene. If no movements are detected, then the luminaires will go off. Users need to manually turn on the luminaires again to make the motion sensor work again.

- **Semi-auto + manual prior to sensor control**

  When there is no schedule involved, the motion sensor is only activated on the manual press of a Push switch, or via touch panel, or via Enocean switch, or via the app. After the users manually turn on the luminaires, then activate the motion sensor, the motion sensor will not recall the hold time scene due to "manual prior to sensor control". It will stay in the manual control. For example, if the users use the push switch to turn on the luminaires and trigger the motion sensor, then the luminaires will stay at this manual brightness and CCT for hold time (default is hold time, depending on "how to quit manual override" setting). After hold time, then the stand-by time scene will be recalled, after stand-by time, the luminaries will go off. Apparently in this case, the luminaires will never run the hold time scene, but it will recall the stand-by time scene after hold time expires.

Permission manager

In this section, users can have a full overview of the whole network about the permission management. It will list out all the relevant accounts no matter what identities they are. For example, users can see who the admin of this network is, who is the installer. When this network was created. ⊡ enable users to get a shared network via scanning code or key in a network sharing key. 🗑 enable users to delete the network via key in the Koolmesh account password. They can also transfer the ownership of this network to another account. Adding new installers or adding new sub-users are allowed in this section.
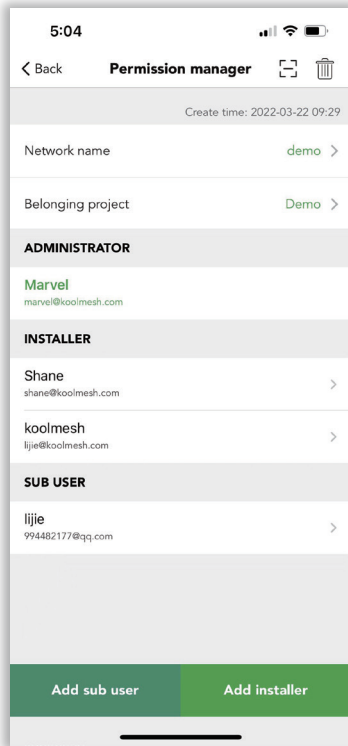
Figure 11.1 *Permission manager*

- **Administrator**

  1) Highest privileges which can delete and share the network.
  2) Have the ownership of the network but can transfer the ownership to another account as well.
  3) Can add and delete sub-users and installers also assign privileges to sub-users.
  4) Can use and modify all the parameter of the devices.
  5) Change the account type of installers and sub-users.

  ※ One mesh network will only have one Administrator account but can have many installers or sub-users.

- **Sub-user**

  1) The sub-user's identity / level do not usually have the full access and permissions to the network. permission needs to be assigned by the administrator, they cannot transfer or add Installers and sub-users.

  2) Can use all the profile of the device. It also can delete the network from their own account, but the network will still exist in administrator and installers or other sub-users accounts.

- **Installer**

  1) Networks can be shared to other accounts, it also can delete the network from their own account, but the network will still exist in administrator and installers or other sub-users accounts.
  2) Can use the all the profile of the device.
  3) Can add new installers but can't delete other installers.

All the authorization processes are protected by the Koolmesh protocol, and all the encryption keys are generated randomly, and are unrepeated (as detailed above). All the account data is encrypted and saved, with backup on the cloud servers.

Example 1: If the user is the administrator of the network, then the user can invite installer A to do the commissioning. In the settings page. Users can click "permission manager" to "add installer" , then the Koolmesh app will generate a QR code and an encrypted, randomized key (remains open and valid for 1 hour). So, installer A can use the Koolmesh App to scan this QR code or key in the encrypted randomized key to get access to the same network. After finished, installer A will appear on the "INSTALLER" list. When installer A finishes the commissioning, then users can delete installer A from this network by clicking 🗑 or changing the installer A account type to sub-user which the permission needs to authorize by user in the "User setting" page (see figure 11.2). Or installer A can delete the network by click 🗑 , then installer A will have no more access to the network (see figure 11.3).
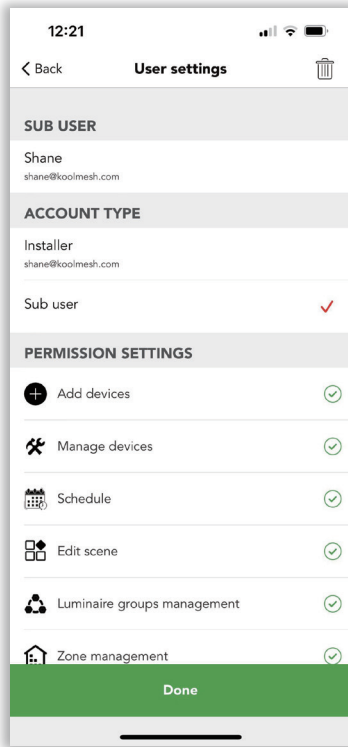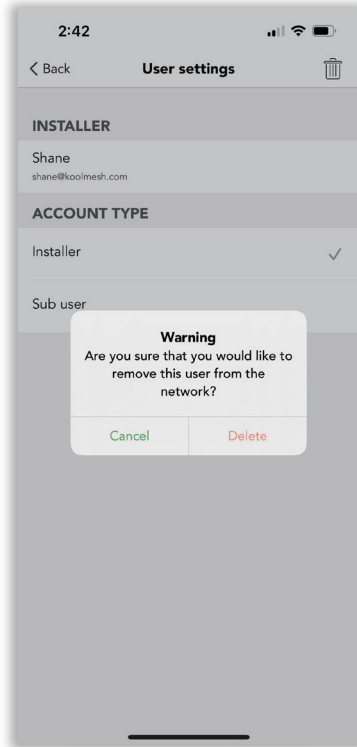
Figure 11.2 *User settings*

Figure 11.3 *Delete installer*

Figure 11.4 *Add sub-user*

Example 2: If the administrator would like to invite another sub-user A. In the settings page. Users can click "permission manager" to "add sub-user", then the Koolmesh app will generate a QR code and an encrypted, randomized key (remains open and valid for 1 hour, see figure 11.4). So, sub-user A can use the Koolmesh App to scan this QR code or key in the encrypted randomized key to get access to the same network. After finishing, sub-user A will appear on the "SUB-USER" list. But the privileges of sub-user A are extremely limited which need to be assigned by the administrator. administrator can assign the permission in the "PERMISSION SETTING". There is "Transfer ownership" at the bottom of the QR- code page which means the administrator can transfer the ownership to the sub-user. administrator can click "Transfer ownership" and then key in the password of their account, then the sub-user who scans the QR code will be the administrator of this network.

Example 3: If installer A does commission on site and creates the network which selects the identity as "installer". Under this situation, after installer A finished all the installation and commissioning, installer A can transfer the ownership via "add-sub-user", there is a "Transfer ownership" at the bottom of QR- code page, then installer A can key in the password of the account. Sub-users can access the network and get the ownership. installer A will have no access to the network.

Over the Air (OTA) update

To improve using experience, Koolmesh also supports Over-the-air upgrade function which enables users to maintain and update the firmware of the device. ● This means there is a new version firmware of devices that can be updated and Koolmesh will list out all the devices that need to be updated in the OTA page. Users can select the device which would like to do OTA upgrades and "start updating". Normally if the devices are working fine and without any bugs, then Koolmesh recommends that users do not need to do the OTA operation unless the new firmware fixes the bugs or adds new functions. But users need to be aware that the OTA function does not support upgrades through the gateway.
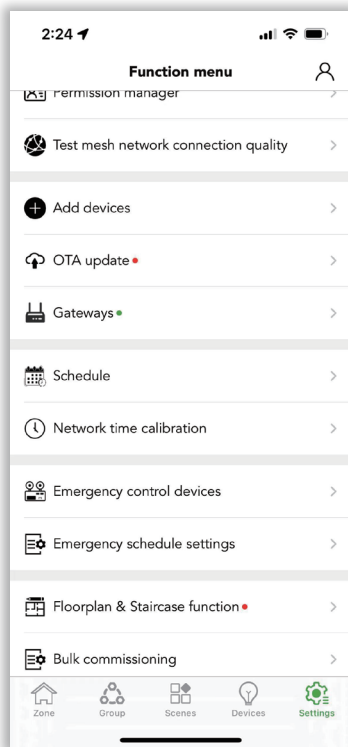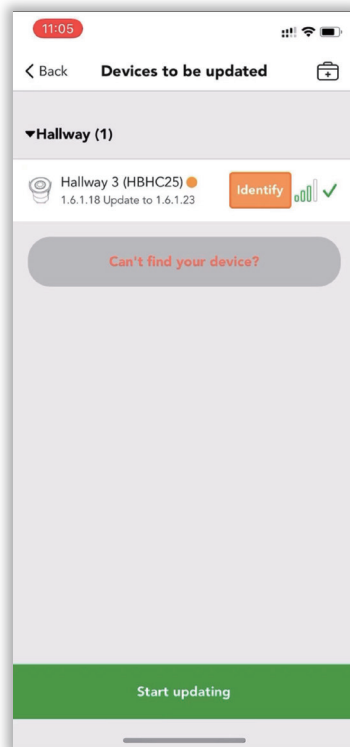
Figure 12.1 OTA-1   *Figure 12.2* OTA-2

Bulk commissioning

To save more time when users are doing the commissioning, especially when users have a larger network, Koolmesh supports the function of bulk setting. In this section, users can set the luminaire or motion sensor or emergency devices in batch volume independently. For every independent part, Koolmesh has a default setting which the user can apply accordingly. If not, users also can copy the parameters directly from exciting devices or modify all the parameters (more settings can refer to Luminaries /motion sensor/ emergency sections). Also, users can clear data via bulk commissioning.

- **Set luminaire parameters in batch volume**

    Users can review the system default and all existing profiles for luminaries. Those profiles with 🔒 are created by others and cannot be deleted or edited, like "Customer profile" and "Dali dimmer". For those profiles created by the user can be deleted by sliding to the left side. There are two ways to create and apply a new profile. More details about luminaire setting can refer to Luminaires setting.

    There are two ways to create and apply a new profile. More details about luminaire setting can refer to Luminaires setting.

    ① Copy parameters from an existing device and then "Choose" the device user would like to copy and "Next '' Luminaire parameters, user can rename the profile and change the parameters based on the existing profile. After that, users can click 💾 to save and "Next" to select the devices the user would like to apply and "start setting". After it is finished, this profile can appear in the "Select a profile" page, like Hallway 2 (HBHC25) (2), copy Hallway 2 (HBHC25) (2) 's setting to apply on the office's luminaries "Office 4 (HED8045-BT)", profile name as Hallway.

    ② Click "Add a new profile" to name the profile and set all the parameters of the luminaries and click " 💾 " to save and "Next" to select the devices user would like to apply and "start setting". After it is finished, this profile can appear in the "Select a profile" page.
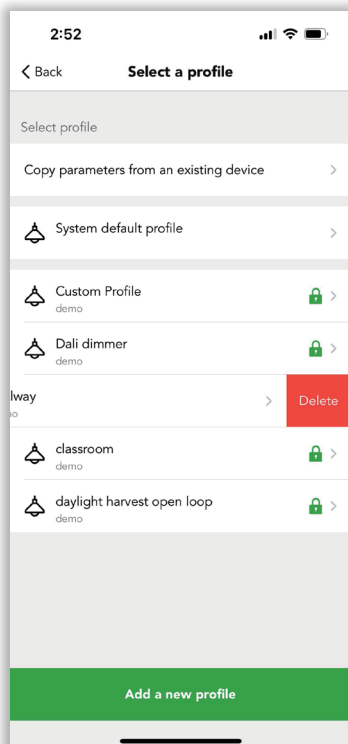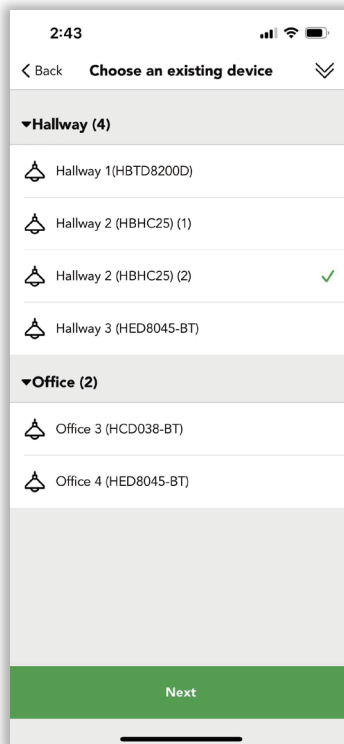

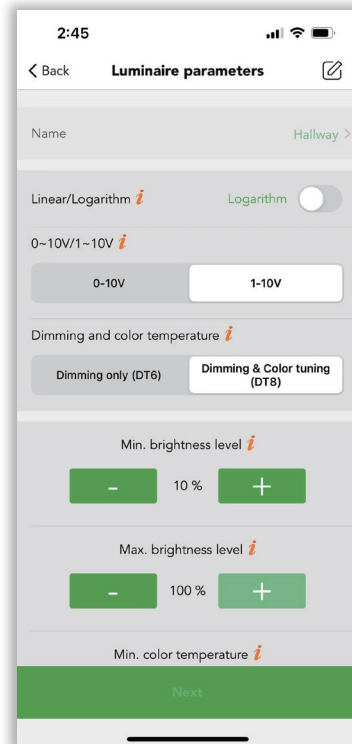**Figure 18.1** *Set in batch volume*   **Figure 18.2** *Copy parameters*   **Figure 18.3** *Parameters settings*
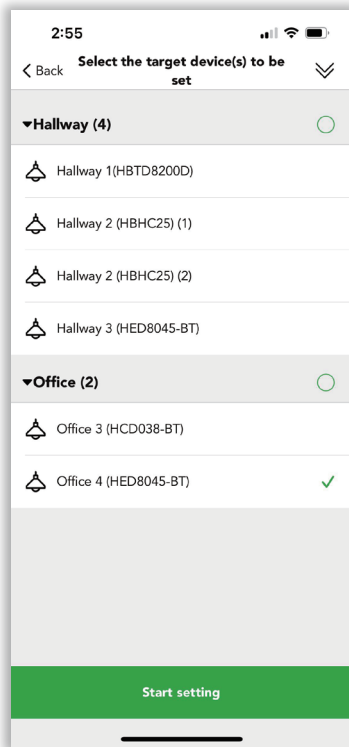
Figure 18.4 *Set target device*
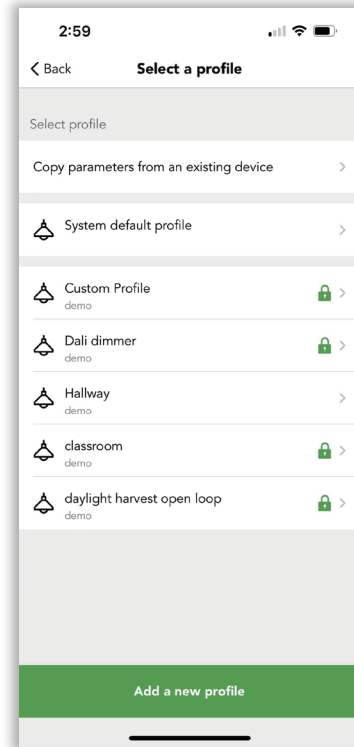

Figure 18.5 *Syncing*

Figure 18.6 *Finished setting*

Set motion sensor parameters in batch volume please refer to "Set luminaire parameters in batch volume". But user need to be aware that the "Microwave detection range" only applicable for microwave sensor.

Set emergency parameters in batch volume please refer to "Set luminaire parameters in batch volume".

Device social relations

In this section, Koolmesh lists out all the devices by zone in the network which users can check all the status for every individual device. Which zone the devices belong to and the control subject or control by which panel and push switch. Also enable users to change related parameters, all the parameters setting user can refer to the related section.
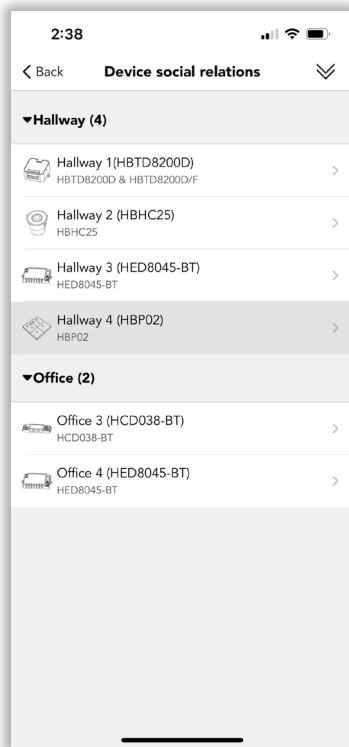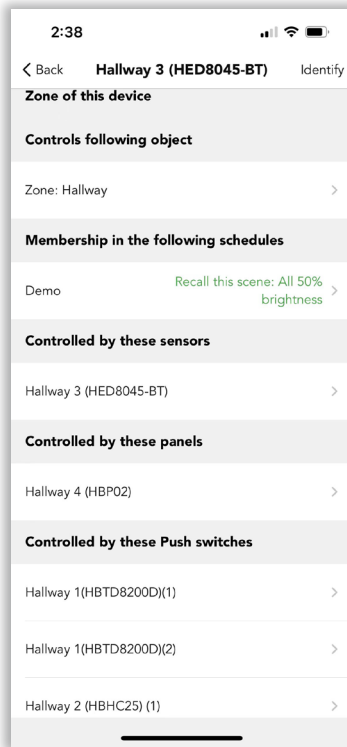

Figure 19.1 Device list

Figure 19.2 Social relations check