PHILIPS

Sensors

EasySense

SNS210 MC

LED

Installer & End User Manual

July 2021

Content

Introduction

This document is an instruction guide for installers and end users of the EasySense SNS210 MC working together with the Philips MasterConnect app.

EasySense SNS210 MC sensor is the ideal solution for per-luminaire control of new LED luminaires. It combines occupancy and daylight sensing in one package. The result is a cost-effective and easy-to-install solution ideal for energy-savings. Commissioning and configuration during and after installation is quick and easy using the Philips MasterConnect app. This app works via Bluetooth Low Energy (BLE) technology and is available for free in the App Store and the Google Play Store.

The outline of this document is as follows: a brief introduction of the stand-alone system built with EasySense SNS210 MC components is made. The next section describes the installation procedure using MasterConnect App. Once installed, the lights can be configured to adapt to project or application needs. A detailed explanation of the configuration settings is made in the subsequent section. Configuration of lights to adjust lighting installation in desired way is easy and can be done at any point after commissioning. The following section discusses energy reporting at group level, followed by the upgrade path of a standalone lighting installation to a gateway.

MasterConnect App Availability

The "Philips field app MC" is available on both Google Play Store (for Android phones) and App Store for iPhones.

The minimum phone requirements are:
· Android phones: Android version 6 or higher.
· iPhones: iOS version 11 or higher.
· Bluetooth: BLE version 4.2 or higher.

For best performance, please see the latest list of tested phones on the document on our website
https://www.usa.lighting.philips.com/products/lighting-components/easysense/easysense-sns210mc.

Remark:
· For devices not officially tested, please note that the MasterConnect App may not work to guaranteed performance.
· Huawei phones are not officially supported.

StandAlone System
How it works

A stand-alone system sets up multiple MasterConnect nodes such as EasySense SNS210 MC devices into a single network or group; thereby enabling occupancy sharing, sophisticated light behavior and manual switch control over the group. The system can be set up via a phone app called 'Philips MasterConnect' which makes the phone act as a gateway. Therefore, a stand-alone system simply comprises MasterConnect devices, a manual switch and a MasterConnect app.

For setting up the system, the MasterConnect app opens a BLE connection between the app and the 1st SNS210 device (node 1). The app creates a network id & key, exchanges BLE security credentials to add a node to group, for example Group-A. When an installer proceeds to add the next device to the same group, it then assigns the same network id & key to the 2nd device (node 2). The process of adding more SNS210 nodes can continue up to 30 devices, beyond which creating another group is advised. Each of the SNS210 devices when added to a group (nodes 3, 4, 5), gets connected with other SNS210 nodes in a ZigBee mesh sharing the same assigned network id. For adding a manual switch, the app opens the ZGP network and the installer can commission a ZGP switch (node 6) to manually control the lights.

Once a group is created, the light behavior can be configured from the MasterConnect app to meet application requirements.

BLE connection

ZigBee connection

EasySense SNS210 MC

ZGP Switch

MasterConnect App

5
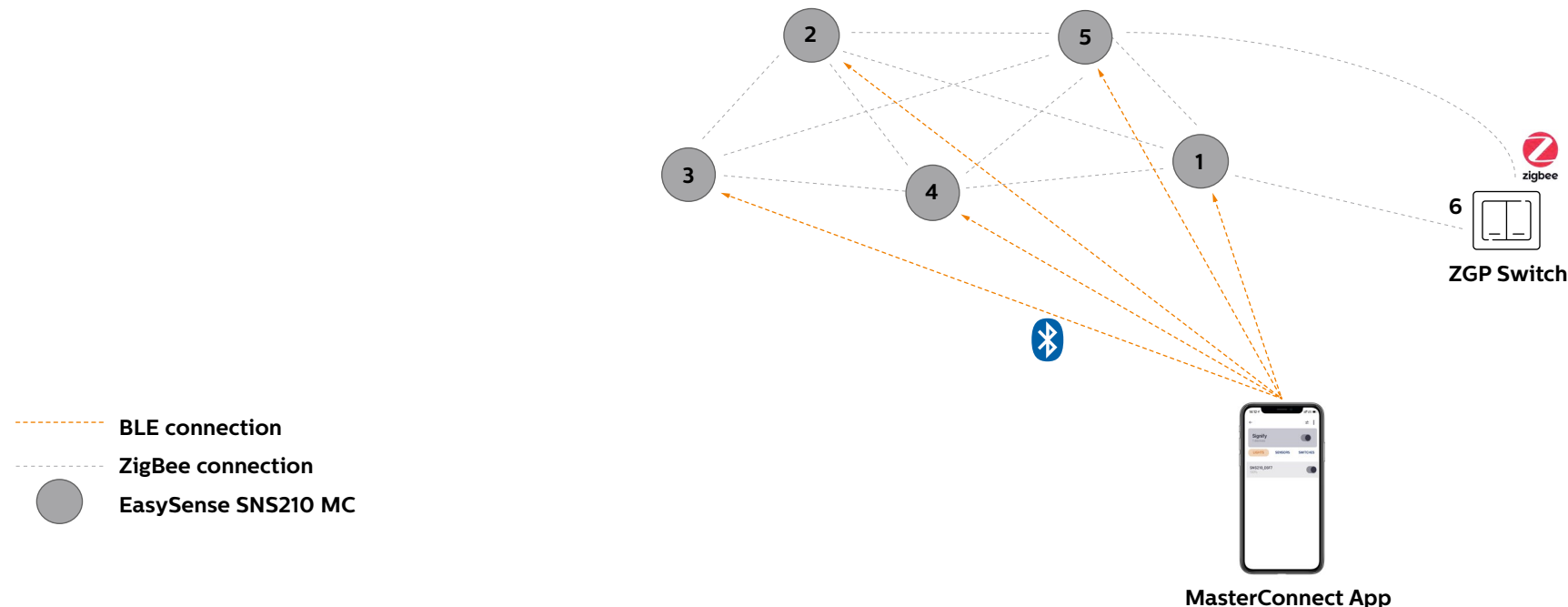
Typical System Components

Several components are available to compose a system. Such as:

• Lights
These are the in-luminaire MC nodes. This can be a MC driver or a SNS MC node. There are two different SNS MC types:
  – With Bluetooth and ZigBee radio as well as occupancy and daylight sensing, such as SNS210 MC
  – With Bluetooth and ZigBee radio and no sensing (radio only), such as SNS410 MC

• Switches
Two or four button Zigbee switches based, piezo powered (no batteries):
  – EasyAir switches
  – Compliant switches from external suppliers

• Sensors
Stand-alone Zigbee sensors for office and industry applications. Either with occupancy sensing only or with daylight harvesting as well.
They can be commissioning to a group or a zone.

• Gateways
Allowing connecting your system to the Internet. These are supplied by partners.

Commissioning

Login

Purpose:
Only registered users get access to setup a lighting system i.e. commissioning and configuring using the MasterConnect app.

How to:

• Download and install the Philips MasterConnect app from App Store or Google PlayStore
• When opening the app for the first time, register with your e-mail address. You will receive an e-mail with a 6-digit verification code that needs to be filled in the app. Register with your name.

Remarks:

• Make sure that you have a strong internet connection.

• Make sure Bluetooth is activated on the smartphone* in use. Allow for Location Access services to be enabled, when requested by the app.

• A verification code is obtained at every log-in; no password needs to be remembered.

• Regularly check for app-updates, as it is recommended to use the most recent version for best performance and most options. Usually auto-update can be enabled in the smartphone settings.
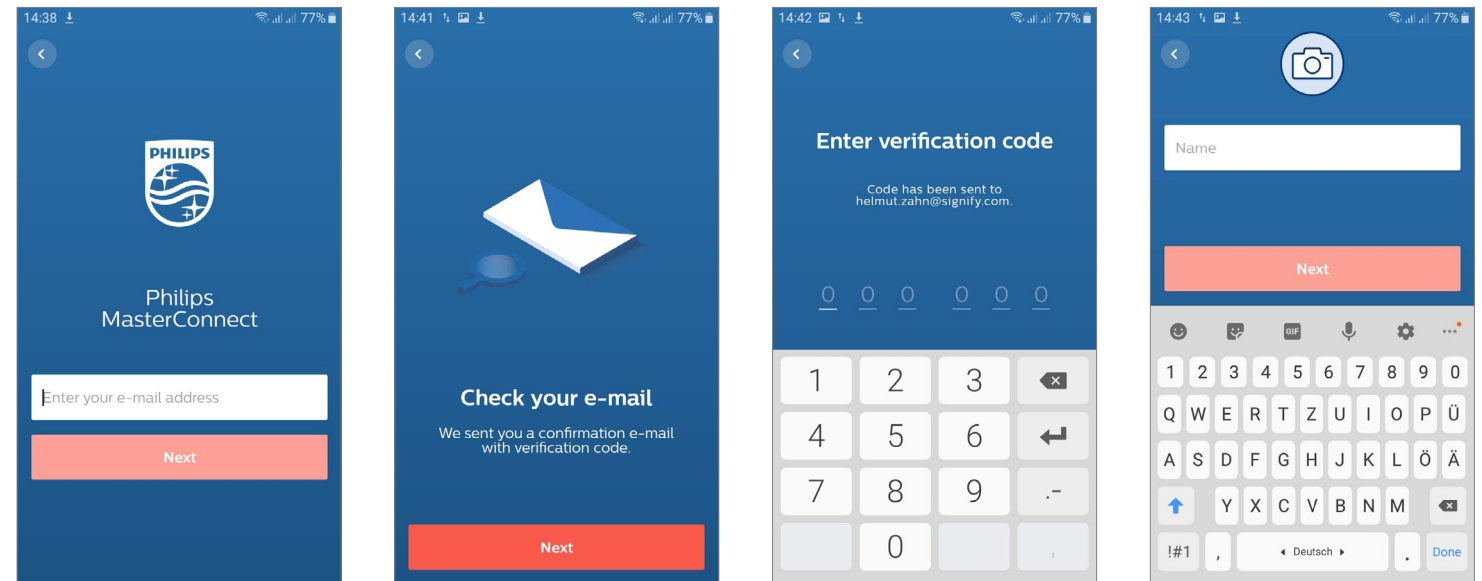
* See the list of recommended phones for this app on our website.

8

Plan project and wireless groups

Purpose:
Define a new lighting project and plan the luminaire groups, in which the luminaires and wireless components need to operate together. It is recommended to give meaningful names to "Projects" and "Groups". Project name can be associated with a building and the group names can be associated with rooms or areas within the building.

How to:
- Create a project name, and if desired, add a location for that project (This can be the name of the building, for example – Building ABC) fill in the location optionally.
- Creation of the first project is prompted automatically. For another project, select the building icon to get a list of earlier projects made under the same account, and add a new one.
- For each group of luminaires that need to work together, a group is defined by giving it a name. (This can be the room number, for example – Room 101).
- Creation of the first group is prompted automatically after project creation. For more groups push "+" to add another one.
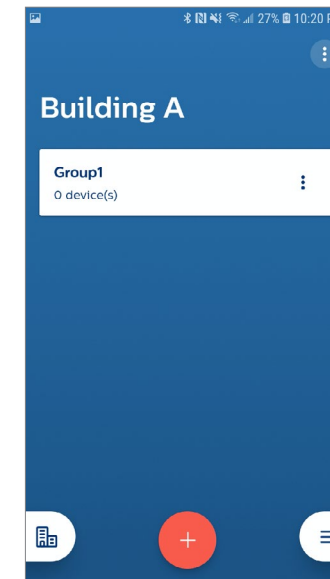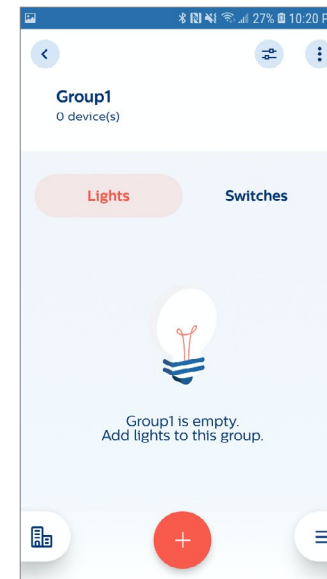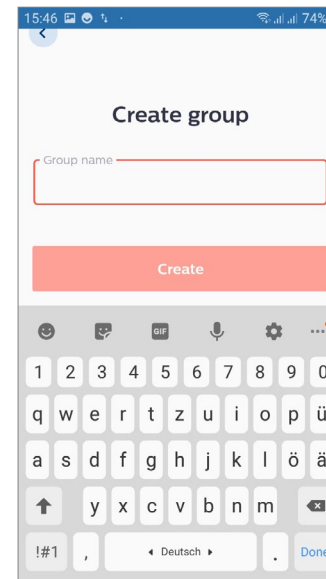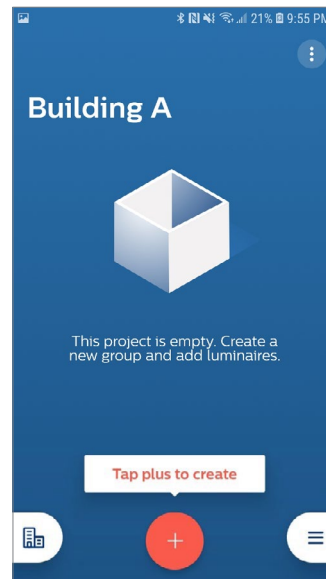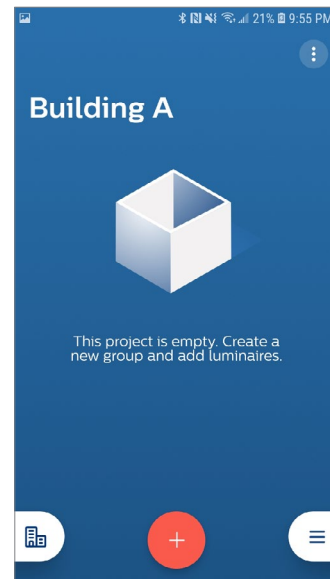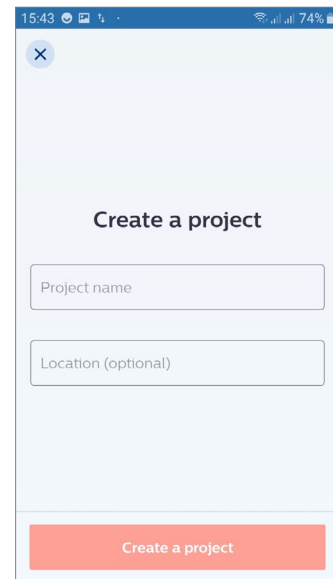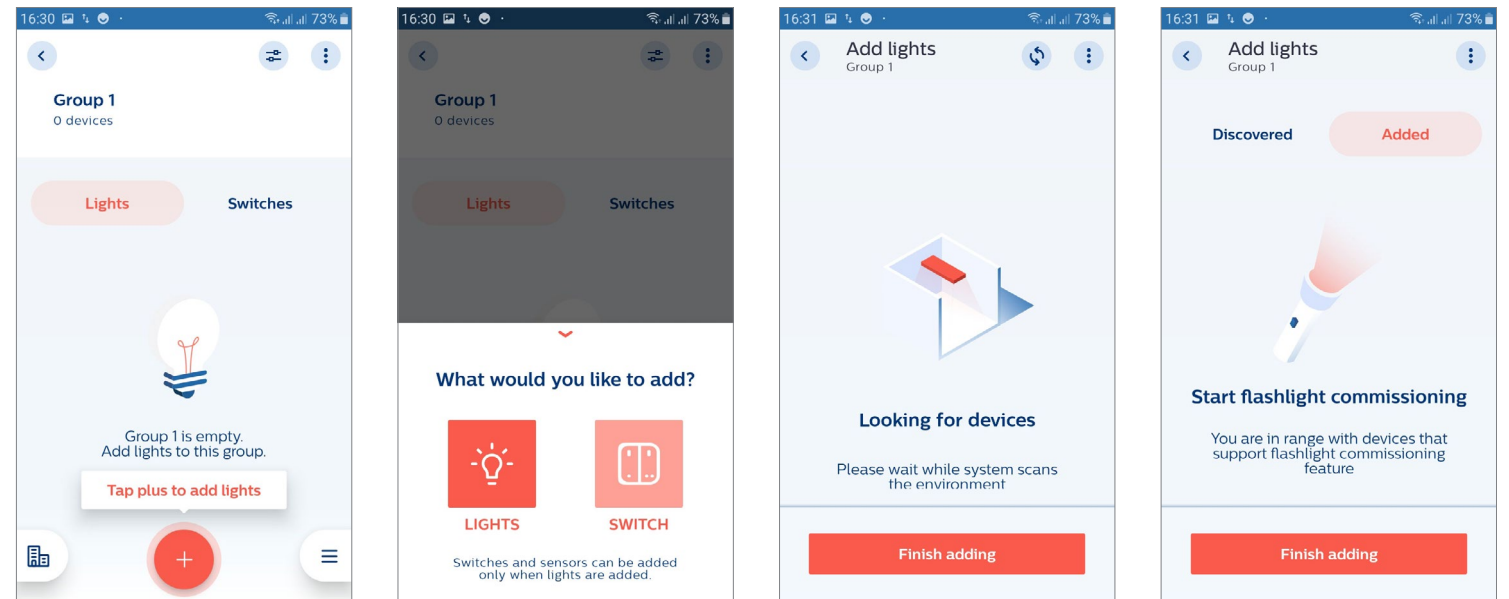
Grouping

Purpose:
To each defined group, selected lights are assigned.

How to:
· The "Lights" tab should be highlighted. Tap "+" and select "Lights" to start discovering all the luminaires that are in close reach for commissioning.
· Please wait for about 10 seconds and when a flashlight (or a torchlight) shows up on a screen, lights have been detected but not added to the group yet.
  From all discovered lights, there are two ways to add lights in a group:
    – Through point and trigger approach using a flashlight/torchlight or
    – Through the received signal strength (RSSI), also known as list based approach

Remarks:
· Bluetooth on your smartphone needs to be activated. In the event Bluetooth is disabled, MasterConnect app will prompt for activation, which the user needs to confirm.

· The luminaires should be powered up.

· The term "lights" refers to a luminaire with built in wireless sensor or wireless driver.

· Lights that are added in a group are considered claimed devices and therefore, not available for other groups, projects or users anymore.

· The maximum number of lights in a group should not exceed 30 when switches are used. If the lights are operated in automatic mode only, without any switches, the maximum number of lights in a group is 40.

Grouping
# Flashlight (Torchlight) commissioning

Purpose:
To select the luminaires in a room/building bwith flashlight/torchlight.

How to:
- Direct the light of a flashlight/torchlight to EasySense SNS210 sensor that you like to add to a group. The sensor is triggered by a sudden change from relatively low light level to a higher light level.
- The smartphone responds to detection of light with a sound and a brief vibration. Now the BLE connection starts to setup. On the 2nd beep, the triggered light dims down. In the app the selected light shows up with its Bluetooth address and the number of added luminaires is increased by 1.
- Go to the next light to be added to the group and repeat the process.
- When all luminaires for a group have been selected, choose "Finish adding". The number of devices that are bind to that group are now displayed in the group overview.

Remarks:
- Use a flashlight/torchlight with a well-defined light cone and point to the sensor from 3cm – 5cm distance only to cause a steep light increase.
- Typically illuminance of the sensor should increase by ≥5000lx suddenly.
- It is required to wait for 2 beeps, after which a light will show up in Added menu. Wait for another 3 seconds before proceeding to the next light.
- In case a light is not added with the flashlight, please re-try.
- If light remains unreachable, it might be that it was not in the scan list because of a too big range, e.g. in case of a long corridor. A re-scan of the lights with closer range is required to add this light to the list. See "How to:" on page 10.
- It is strongly recommended not to change the flashlight sensitivity in the App settings section.


11
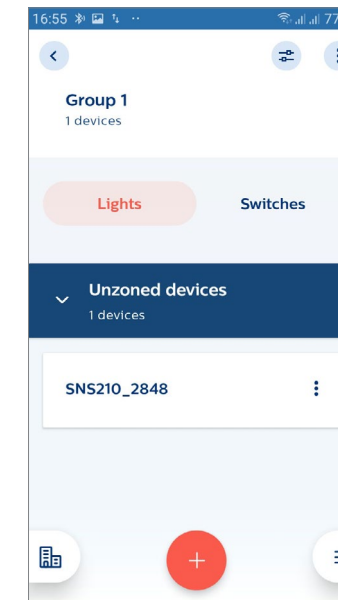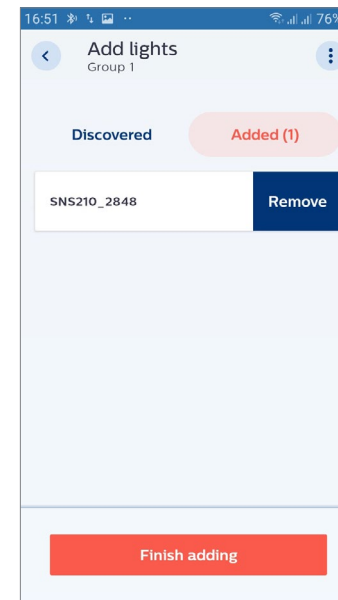
Grouping
RSSI List based

Purpose:
To select the luminaires from a list of all the luminaires in reach.

How to:
- Instead of using a flashlight click on the button "Discovered". A list of all the luminaires with wireless component in reach is shown.
- Press "Add" for all those luminaires that need to be added to the group. When multiple devices are added simultaneously, a loading bar pops up. Wait for it to finish and then press "Finish adding".

Remarks:
- To check which luminaire in the room is indicated in the app with a certain Bluetooth address, select the device: the corresponding luminaire will blink 10 times.
- In case not all lights are listed, please re-try (please press the back-facing arrow, then select the plus sign to rescan). The lights are sorted based on the signal strength received by the smartphone and only those with the strongest signal are listed.
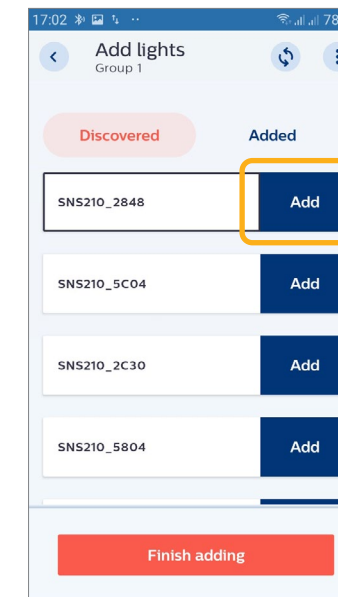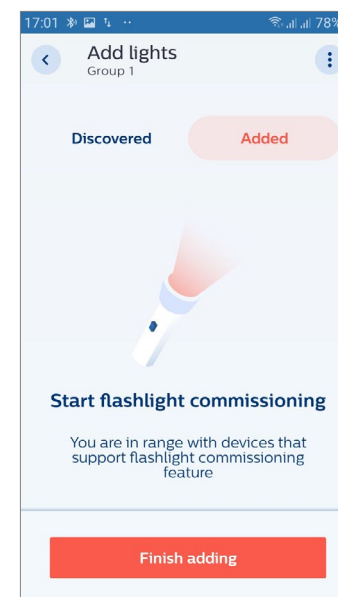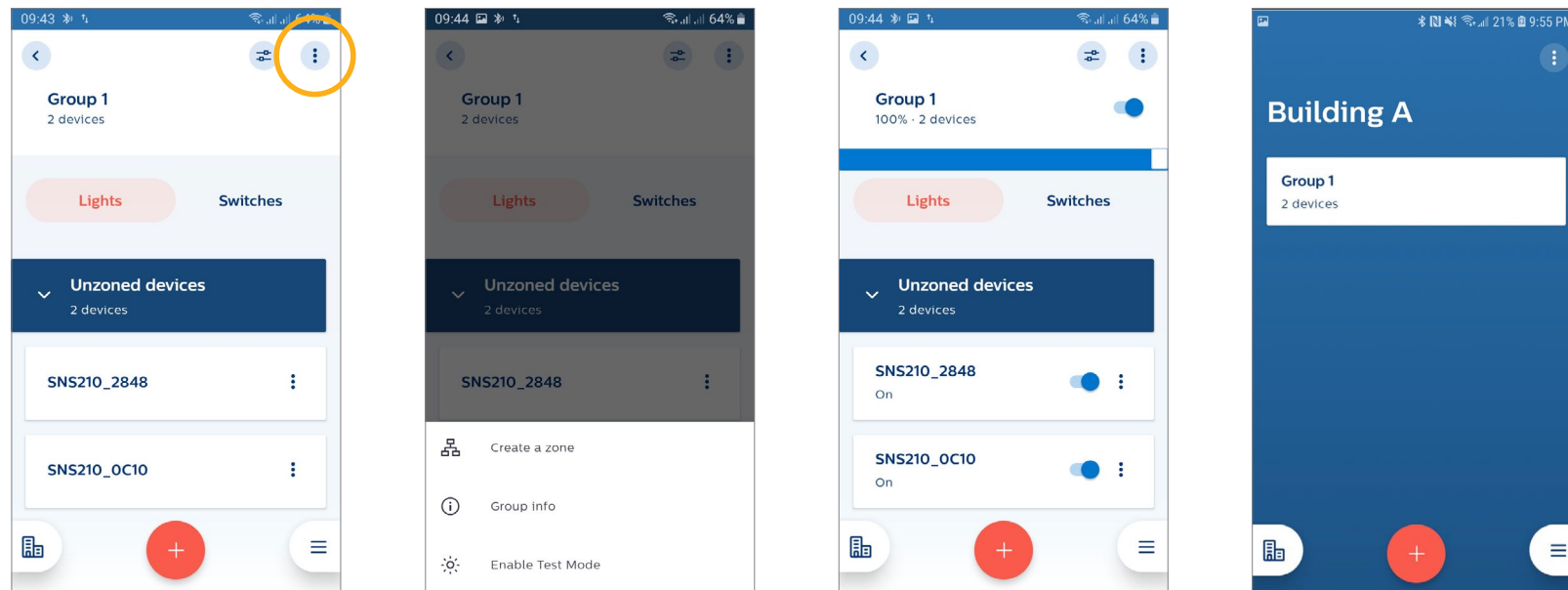
Installer test

Purpose:
To make a quick check that all luminaires in a group are well-commissioned and work as expected, a simple switch on/off or dimming command can be given to the group to verify that commissioning was done as desired.

How to:
- Tap the three dots and choose "Enable Test Mode". Now the whole group of lights or individual luminaires can be switched on and off with the app. With a simple adjustment of the blue bar, the dim level of the luminaires in the group can be controlled. Verify that all luminaires respond properly! In test mode the response of the fixtures is not immediate and might need a few seconds.
- After testing leave, the test environment by going back one screen (arrow in upper left corner).

Remarks:
- The information of a device can be obtained by selecting the name of the device. The information can be copied to the clipboard by long press.

Installer test (continued)

- The device information can be obtained by selecting the name of the device. This information can be copied to the clipboard by a long press.
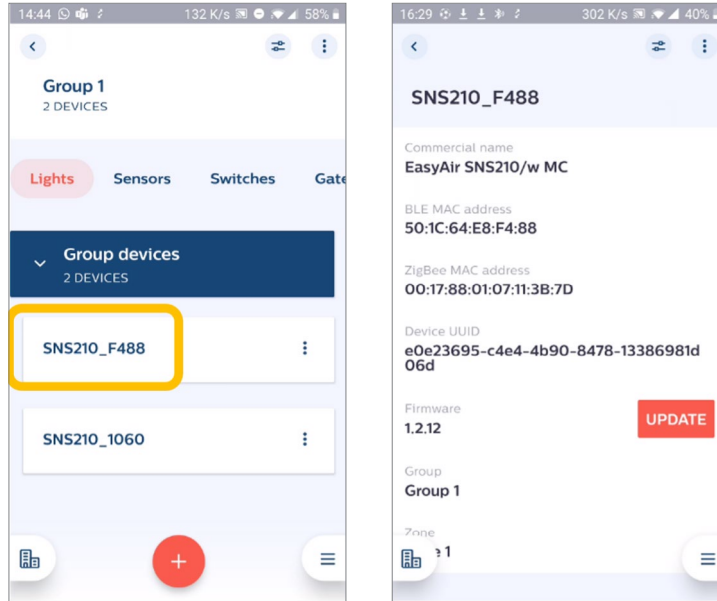
Identifying Groups and Nodes by blinking

You can easily identify a Project or Group with the command "Turn on identifying by blinking".

Identify on Group level:
· Press the three dots right of the group's name.
· A screen appears "Turn on identifying by blinking".
· The luminaires in the Group start to blink. The blinking will stop automatically after a while. To interrupt the blinking, press the three dots again and press "Turn off identifying by blinking" again.
· If the blinking has not been interrupted and you want to let the blinking start again, first press "Turn off identifying by blinking" and then press "Turn on identifying by blinking" again.

How to:
· Press the Group label.
· Press the three dots right of the node's name.
· A screen appears in press "Turn on identifying by blinking".
· The luminaires in the Group start to blink. The blinking will stop automatically after a while. To interrupt the blinking, press the three dots again and press "Turn off identifying by blinking" again.
· If the blinking has not been interrupted and you want to let the blinking start again, press "Turn off identifying by blinking" to enable that function.
· On Android phones, blinking of a node can also be initiated by press & hold of the node's name.
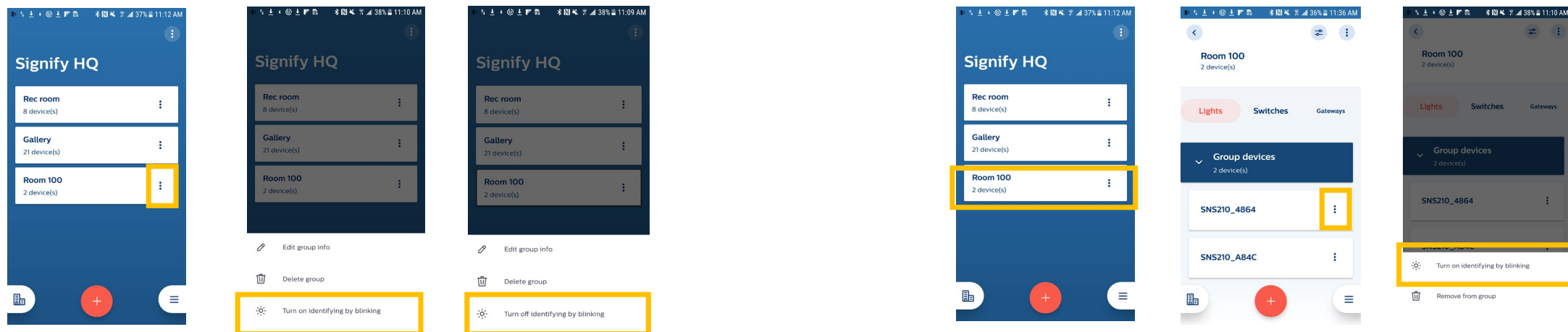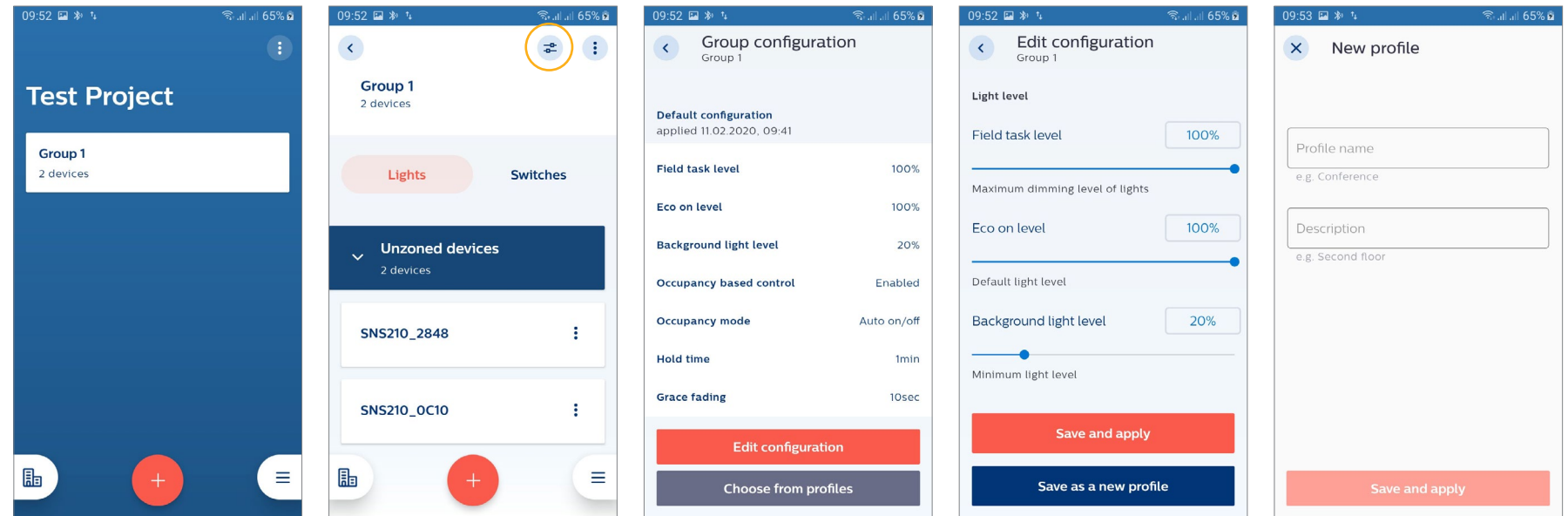
Group Configuration

Purpose:
To customize light levels, light behavior and response times of all lights within a group to adapt to application needs.

How to:
- To modify configuration navigate to the group to be configured, tap the icon as shown below. Choose "Edit configuration", change the parameters according to your requirements and press "Save and apply".

Remarks:
- The lighting parameters related to the sensors are explained in the "Configuration" section starting page 37.
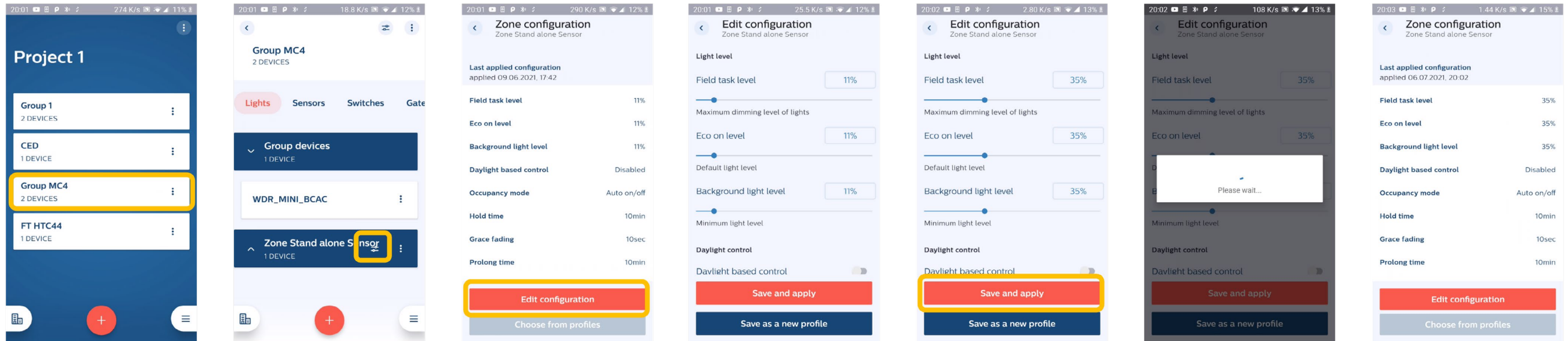
Zone Level Configuration

Purpose:
To customize light levels, light behavior, and response times of a zone within a group to adapt to application needs.

How to:
- Go to the group of which the light is part of and click on settings icon of the Zone to be configured. Choose "Edit configuration", change the parameters according to your requirements and press 'Save and apply" to modify configuration.
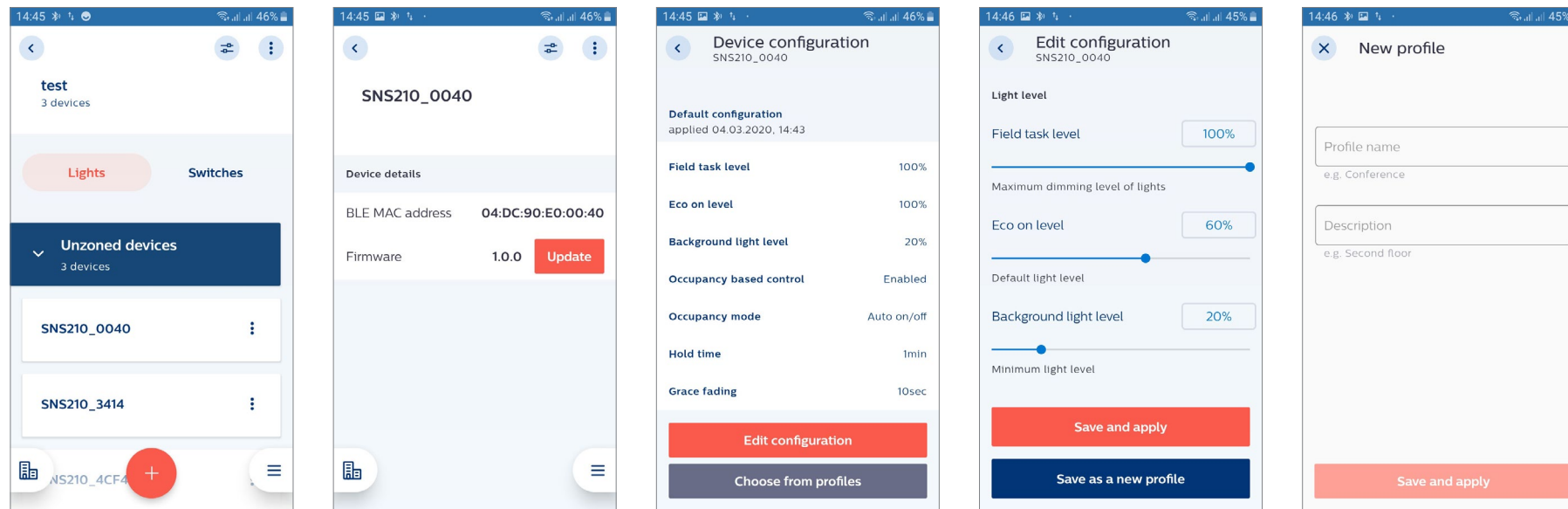
Single Light Configuration

Purpose:
To customize light levels, light behavior and response times of a single light within a group to adapt to application needs.

How to:
- To modify configuration navigate to the group of which the light belongs and select the light to be configured. Tap the icon in the upper right corner. Choose "Edit configuration", change the parameters according to your requirements and press "Save and apply".

Single Light Configuration (continued)

Remarks:
- The lighting parameters related to the sensors are explained in the "Configuration" section starting page 37.
- If a device does not respond to a single light configuration setting it is recommended to trigger "Refresh network" and then send the new setting again (select the group, select the three dots and choose "Refresh network").
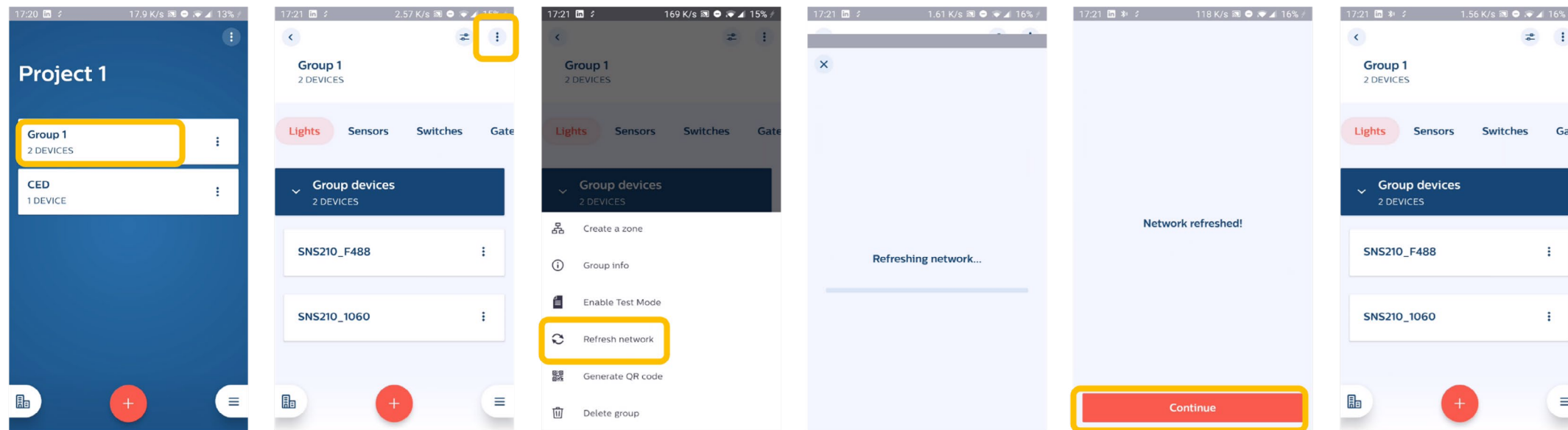
Save a profile for re-use

Purpose:
• Profiles are used for saving a combination of configuration parameters (e.g. light levels, occupancy and daylight control and timers) for specific applications. It is recommended to provide meaningful names to the profiles based on associated application – e.g. private office, corridor, classroom etc. for easy re-use at a future point.
• Profile data is automatically saved ONLY on the phone initially used.

How to:
• Save the parameters by selecting "Save as a new profile". Give it a name and optionally add a description for that profile.
• To recall a profile select on "Choose from profiles", select on the one in the list that you need and select "Choose".
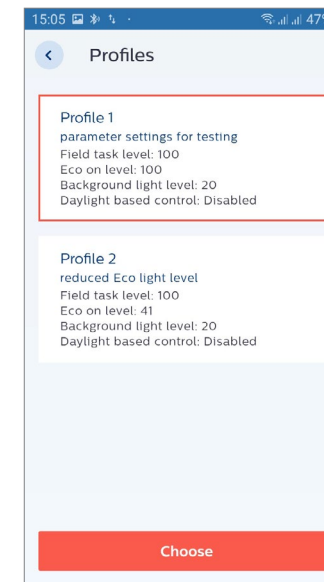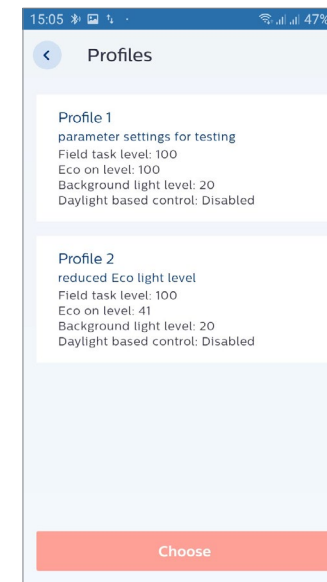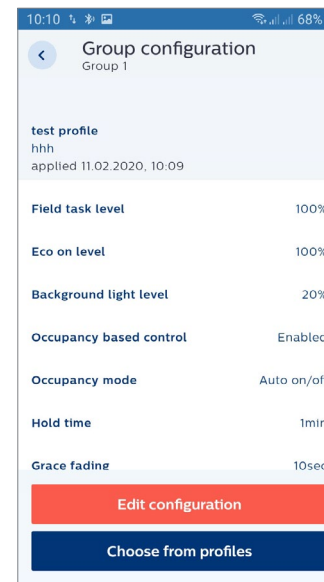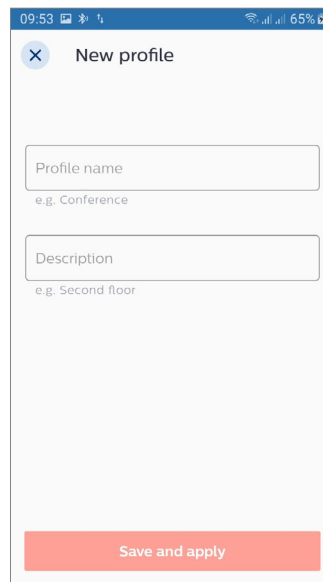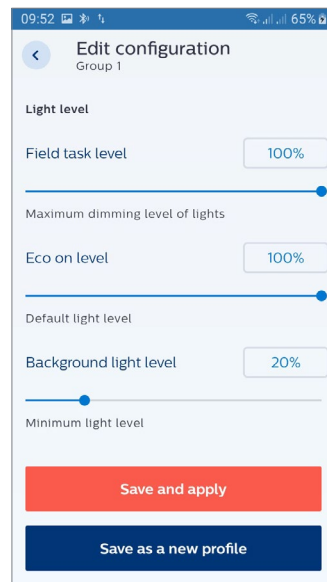
Zoning

Purpose:
A group of lights can be split into different zones which can be controlled by different switches or occupancy trigger. For example: in a classroom the teacher might want to have extra control over the school board light with a switch while the general lights in the room stay on. A large conference room may be divided into two zones with contained occupancy sharing within each zone.

How to:
· Select the three dots and choose "create a zone". After giving it a name the luminaires for that zone can be selected. Finally choose "Add to a zone".
· Repeat this procedure for all the zones needed.

Remarks:
· The separation into zones can be verified via 'Enable Test Mode'. For details, see page 13 about the test mode.

· No change in light behavior can be done at zone level
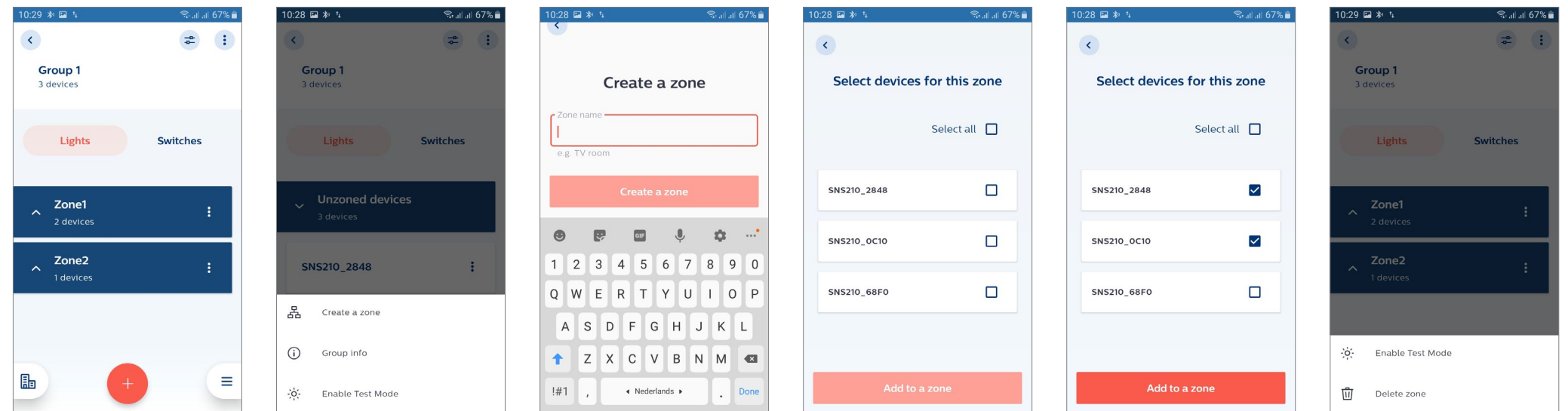
Adding switches

Purpose:
A wireless Zigbee Green Power (ZGP) switch can be added to a group or zone for lighting control.

How to:
- Choose "Switches" on the page of a group that needs to be configured, "+" and again "Switch". From the drop-down list of compliant switches select the brand of switch you like to add and indicate whether you would like to add to a zone or to the whole group.
- Follow the switch commissioning instructions on available on our website. Please follow the instructions carefully, e.g. press the right buttons and don't do pressing sequences too fast.
- Once commissioned, the app requests to test if the switch works correctly. Test the switch by making another button press, and once it works as expected, press "Everything is fine".
- Please take note of the important remarks below.

Remarks:
- Add all luminaires in a group first and then add a switch. Switch binding mechanism is to each node within the Zigbee group at the time of commissioning. If new nodes are added after commissioning, switch binding does not take place.

- A switch can be added either to a group or to a zone. Once added to a zone, another switch will need to follow the same choice i.e. either a group or a zone.

- Up to 5 switches can be added within a group. All switches attached within a group should belong to a single brand. Combining switches from different brands is not recommended.

- In case switches are used for a group and for zones of that group, three things need to be taken into account:
- 1. The switch of the group should be added first.
- 2. Only 2-button switches should be used for the group.
- 3. In the zones 4-button switches with scene setting can be used.

  It is recommended to use not more than one 4-button switch per zone.

  In case the switch is not detected during the commissioning procedure, please re-try.
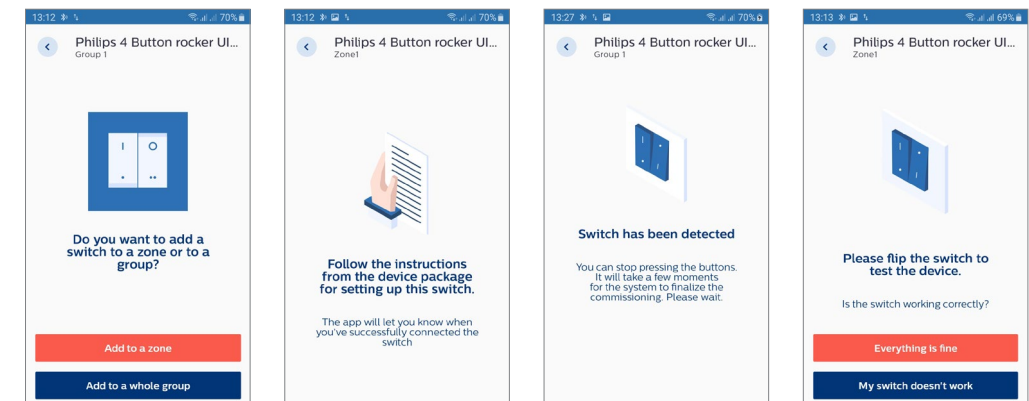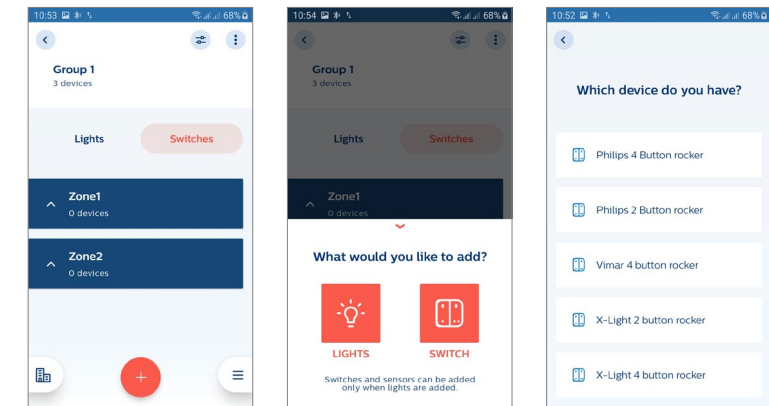
Configuring scenes

Purpose:
Different lighting configuration settings can be stored in scenes. With any 4-button wireless switch, up to 2 scenes can be configured. You may add up to 5 switches to a group, all belonging to the same brand but only 2 scenes will be supported across all switches.

How to:
- Choose "Assign a scene" and the button with which that scene will be switched on and off.
- The light levels of all the luminaires in the scene can be set individually or get the same value when set together. Test the scene setting by pressing the selected button of the wireless switch.
- After that eventually a second scene can be set with the second button (if available on the selected switch).
- Once all scenes have been configured and all light levels are as expected, tap "Finish".
- For scene recall, it is advised to divide the group of 40 nodes in 2 zones and attach switch(s) to each zone. In case zoning is not preferred,the group size can go up to 30 nodes.
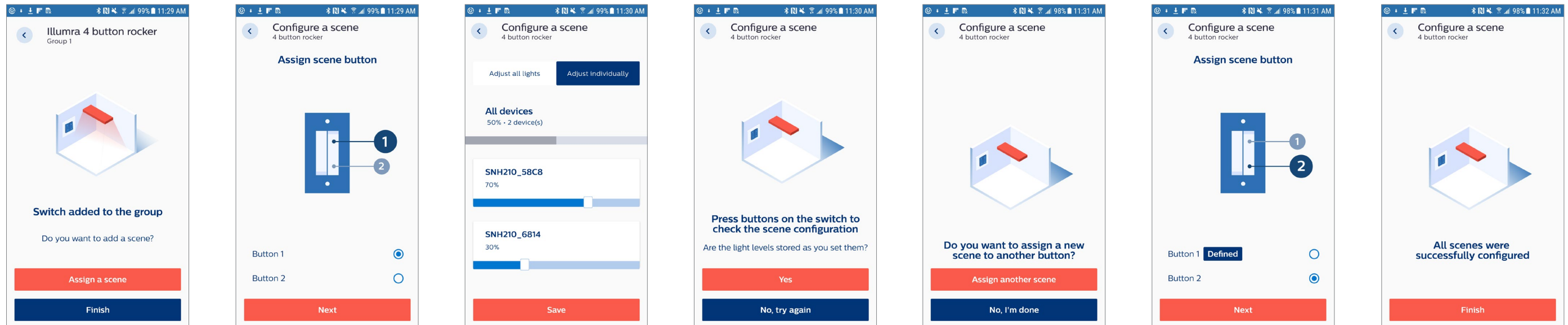
Tunable White – Configuring CCT levels

Purpose:
- When SNS210 is used with a FlexTune SR driver, the Color Temperature (CCT) of the fixture can be configured in addition to the Brightness. This applies to the automatic/manual ON level as well as the two scene recall levels (short press of the scene buttons). These Color temperature configuration sliders will automatically appear in the MasterConnect App.
- In addition to the scene recalls, press and hold of the Scene-1 button will gradually increase the CCT and press and hold the Scene-2 button will gradually decrease the CCT.

How to:
- Configure the color temperature (CCT) for the automatic/manual ON level in the "Edit configuration" screen as shown below on the picture on the left.
- Configure the color temperature (CCT) for the Scene buttons in the "Configure a scene" flow as shown below on the pictures on the right. This can be done for each of 2 the scene buttons on the 4 button ZGP switch. The Brightness can be configured as well for each scene.
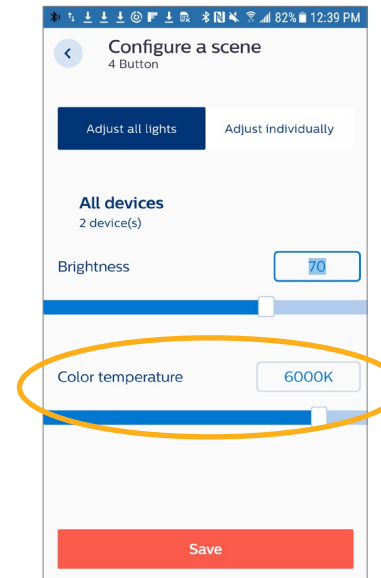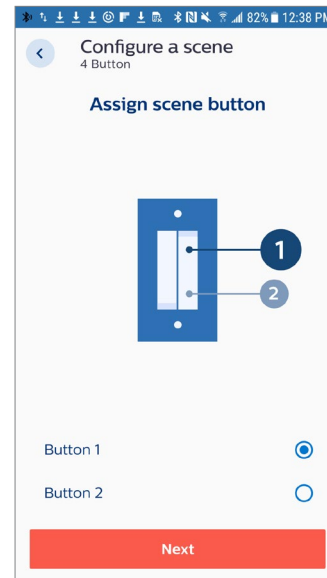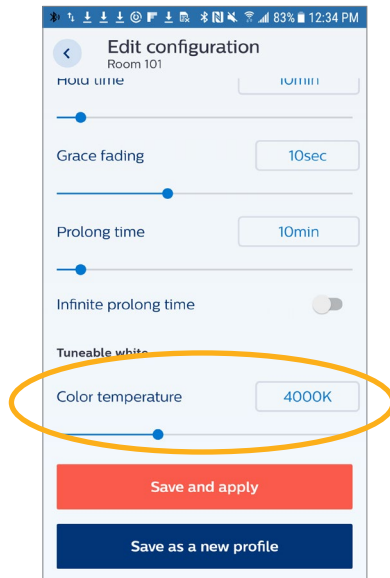
Generating QR Code

Purpose:
To provide lighting control access for end users via smartphone or tablet with the MC control app.

How to:

- Generating a QR code can be done on group or zone level.
- To generate QR code for a zone click on the 3 dots on the zone tab and select "Generate QR Code."
- To generate QR code for a group click on the 3 group dots.
- A QR is ready to be shared and can be printed for placement at the intended application area, making it accessible for scanning Qr by an end-user.
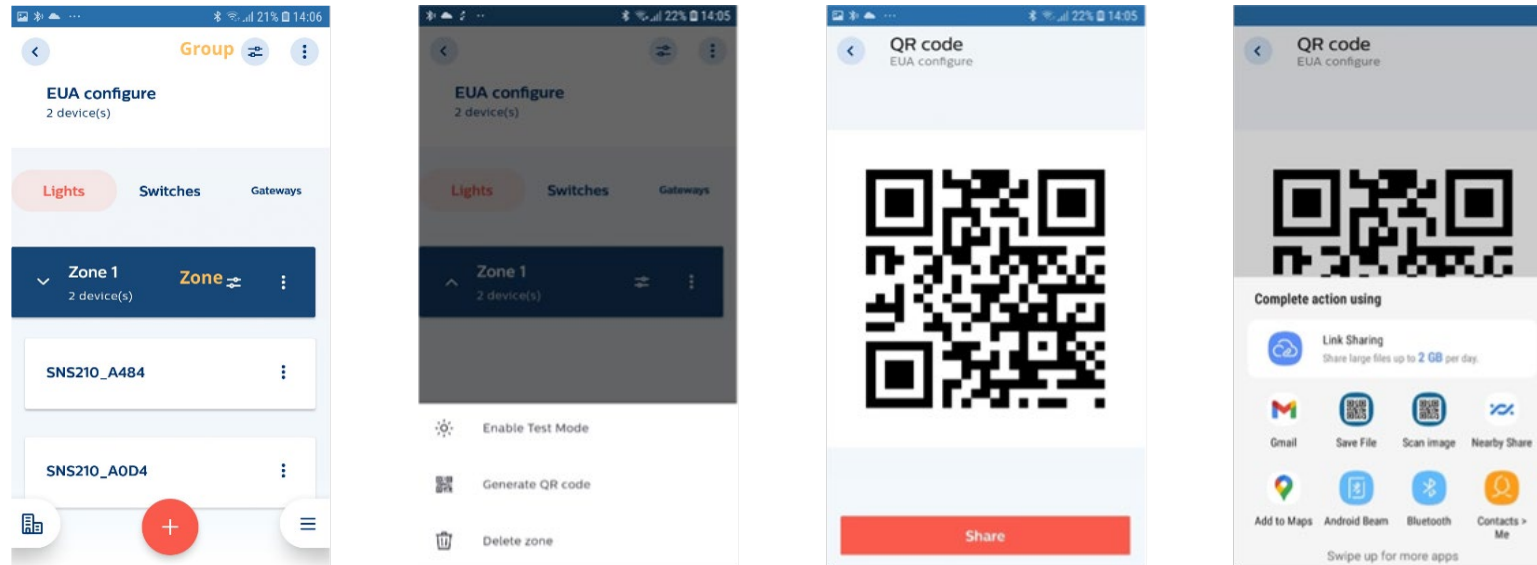
Remarks:

- It is not supported to mix tunable white and single-color white lights in one group.
- For QR generation the installer needs to be in range of the lights.
- Within one group QR codes should be generated either for the whole group or for one or more zones, but not for the group and a zone.
- The light settings of scenes 1 and 2 that show up with the MC control app, can be adjusted by setting scenes using a 4B switch before the QR code is generated. However, this adjustment of scenes for end user control is only possible if the firmware of the SNS210 MC sensors is FW 1.2.12.v

25

Maintenance

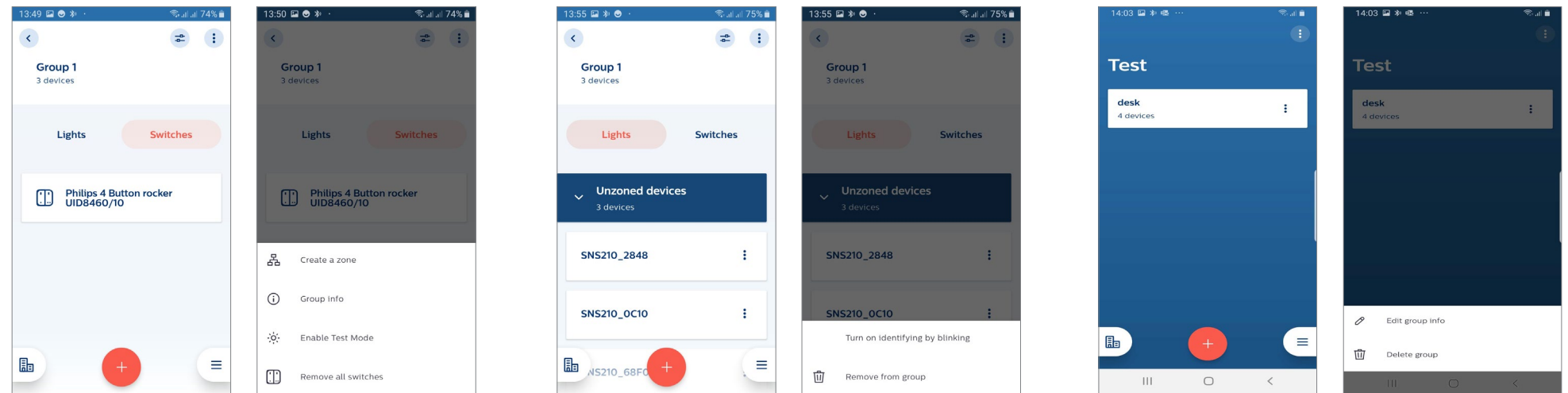# Remove/Reset devices from a group − standard method

Purpose:
Each of the MasterConnect components are secure i.e. devices once claimed by a user cannot be used by another user. In case any adaptations are needed on an existing installation, these MasterConnect wireless components need to be released from the app. Only then, the reset devices can be used in other groups, projects or by other users. Either entire group or single devices can be reset via the MasterConnect App.

How to:
· **Remove a single light**: In the group overview, choose the light to be removed by selecting the three dots next to the light and choose "Remove from group". The intensity of the light goes to full light level. Repeat this step for other individual lights in the group.
· **Remove switches**: In the group overview, go to "Switches" tab. Select the three dots and choose "Remove all switches".
· **Remove group**: Same as above 2 scenarios, a group is removed by clicking on the three dots and choosing "Remove group". As a feedback, the intensity of all lights goes to full light level.

Remarks:
· When *Remove Group* does not finish in first attempt, advise to make a second attempt to finish.

· For the removal of switches, all devices of the group controlled by a switch need to be in range of the smartphone.

Remove/Reset devices from a group – safe mode

Purpose:

When the smartphone used to commission system is not available, components cannot be removed via the standard method. Instead, components shall be reset via the Safe Mode.

How to:

The luminaires must be powered ON for more than 15 seconds.

· Power OFF mains for more than 10 seconds but less than 15 seconds (disconnect device from mains).
· Power ON mains for more than 2 seconds but less than 10 seconds (reconnect device to mains).
· Repeat above process for 4 times.
· On the 5th cycle, leave the fixtures powered ON at the end. You should see a short dim-down/dim-up signal. Sensors are now in Safe Mode.
· Scan with "Device Maintenance" to discover the sensors that are now In Safe Mode and Reset them, see screenshots below:
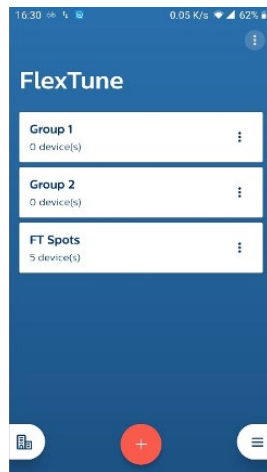
Click on three lines in the right-bottom corner
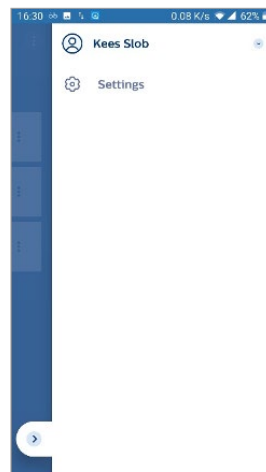
Click on "Settings"
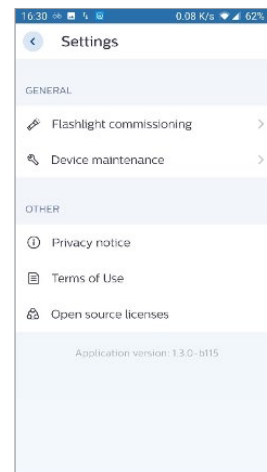
Click on "Device Maintenance"
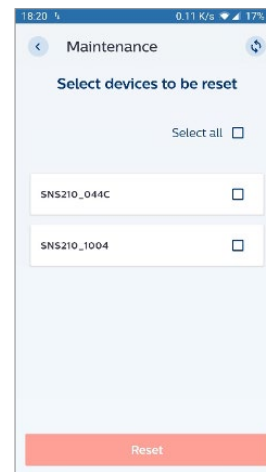
Click on "Select all"
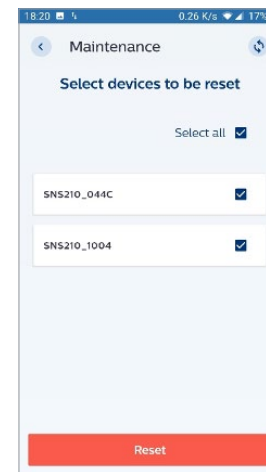
Click on "Reset"
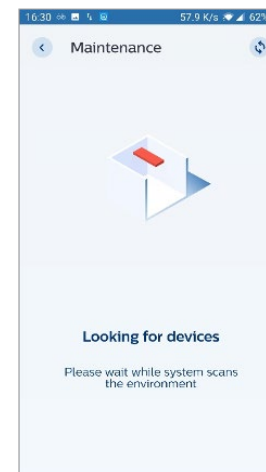
App will start looking for devices
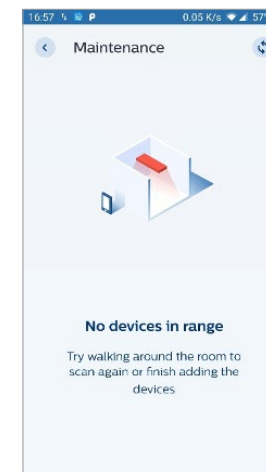
If Reset was successful, no devices in Safe Mode are found (If devices are still visible: press "Reset" again)
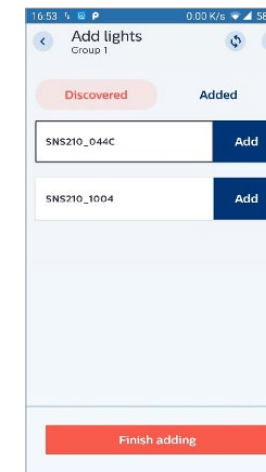
If you want to add a light in a group, they are visible now

28

How to check for app version

Purpose:
To look up the version number of the MasterConnect app that is used.

How to:
In the start screen of a project, the version number of the app can be read after clicking on the three dots in the upper right corner of the screen.
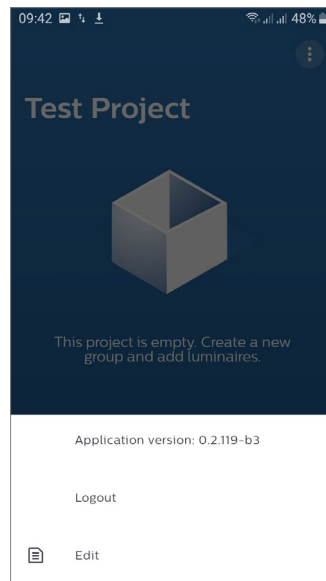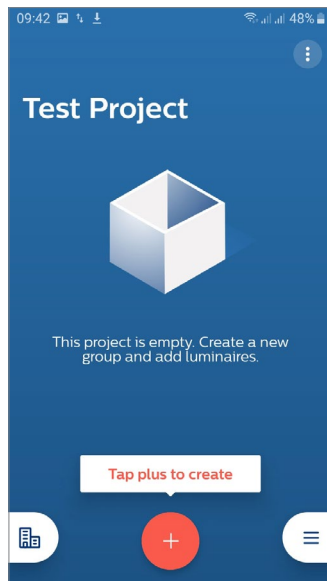
Over the Air upgrade

Purpose:
To enable a firmware update of MasterConnect components such as EasySense SNS210 via the app without any effect on the existing group setup. Such updates may include new released features, security and bug fixes.

How to:
- A firmware .gbl file must be stored on the smartphone.
- Select the light for which the firmware update is required. The current firmware version appears on the screen. Choose "Update", "Upload file", navigate to the saved SNS210.gbl file on the phone and select it. Soon after, the upload process begins. When the upgrade is ready after a few minutes, a confirmation message is displayed. The new firmware version will be now visible.

Remarks:
- Don't interrupt the upgrade process. Keep the smartphone in close reach of the device being upgraded.
- At this moment, over the air upgrade can be done at device level only.
- The upgrade process may take 3 to 7 minutes depending on the smartphone used.
- When a firmware upgrade is complete, switch commissioning is lost. A recommissioning of the switches is required.
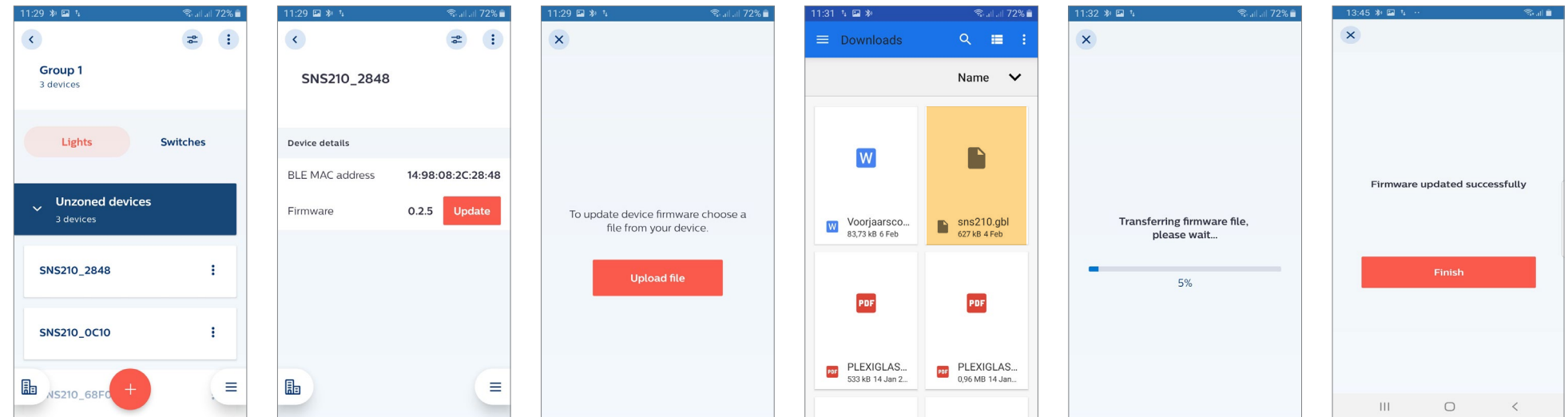
Project Back-up and Access Sharing

Purpose:
The Philips Field App MC offers the capability to store user created projects in the cloud. This capability allows users to access their projects (even when a phone is lost) and give project access to specific contributors.

Before you can use the Project backup and access sharing function, an activation step in project settings of the app is required:
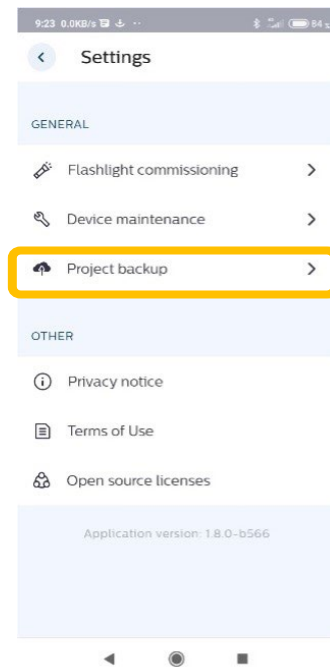
Choose 'Project backup' in the project settings
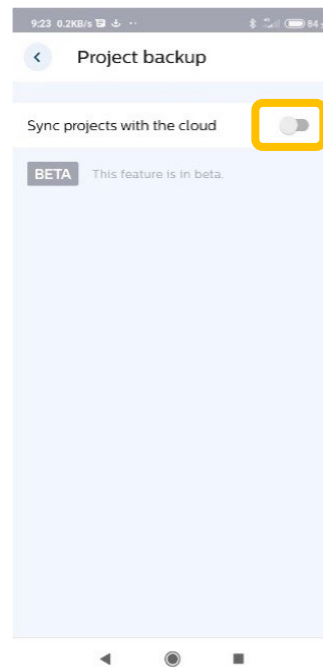
Activate 'Sync projects with the cloud'
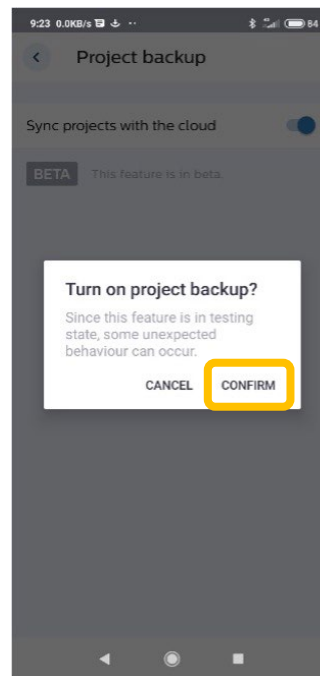
Confirm

Project Back-up and Access Sharing (continued)

Definitions:
- **Upload**: Local data of a project are transferred to the Cloud.
  - When a Project has been created or edited, the app will ask if you want to upload the Project. Each time you upload a project the version in the cloud will be overwritten.
- **Download**: Cloud data of a project are transferred to your device.
  - Each time you download a project the local version will be overwritten.
- **Sync**: The app checks the local and the Cloud data of your projects. Projects that have an updated version in the Cloud will be downloaded, projects that have an updated local version will be uploaded.

How to:
- When a project has been created or updated, the user will be prompted to upload the project to the cloud. Once a project is uploaded, the previous project will be overwritten.
- To grant project access, simply open and edit the project to add contributor email address(s), see screenshots on page 35.

Project Back-up and Access Sharing (continued)

Remarks:

Accounts
- Same email address may be used on a different phone to retrieve data; however, a new account name has to be used.
- Usage of the same account name on different phones is allowed, with different email addresses.
- If an error is found on login, please 'Add another account' and use the same email address to login. All project data will be available.
- If a project is created with a newly registered email, it can take up to 30 minutes for access to be granted.
- Be aware that only users who have already registered for Philips Field App MC can be added as contributors.

Projects
- Simultaneous editing the same project on different phones is not allowed.
- When another user has modified a project to which you are invited, a notification about the changes does not show up when your app is already active but only when the app is restarted.
- Projects can only be deleted when all contributors have been removed first from the project list.

Syncing & Sharing
- Always check if uploading, downloading, and syncing have been completed successfully. If not, try again. Downloading of an incomplete project can result in loss of project data.
- Project backup sometimes fails. If it continues to fail after a retry, please use the "Report a Problem" feature (see page 52) to send the app data logs to the MasterConnect Team for analysis.
- The time for syncing depends on the number of devices in a project (typically 4 seconds per device).
- Ensure the screen timeout/auto lock is not activated during Syncing. This is a general remark for both Android and iOS phones. For iOS phones in particular, please adapt the phone Settings.
- Do not use another app during data synchronization (sync).
- When deleting or adding devices to a group, always sync (upload) the project to the Cloud. This syncing must be done every time a change is done per group. Make sure the project is synced successfully by verifying the syncing notification.
- After sharing access to a new contributor, it can take some minutes for the new contributor to get the project fully downloaded.

Project Back-up and Access Sharing (continued)

Remarks:

Back ups

- Energy reports are not backed up in the Cloud. Therefore, after downloading a project from the Cloud, previously generated energy reports will not be shown. Nevertheless, when generating a new report, this report will be based on all previously generated energy data and provides accurate information.
- Profiles are not part of the cloud back up process.
- Scene parameters are stored in the devices, however, parameter settings from the app are not backed up in the cloud.
- Daylight Areas are not backed up.

General

- Device Wifi must be enabled (but commissioning can still take place offline).
- Do not reset a device that is saved in the cloud. It is not removed from the project but cannot be controlled anymore.
- To retrieve lost devices, please contact your local account manager for support.
- This feature is not available in China.

Project Back-up and Access Sharing (continued)

Usercase 1: User 1 creates a project and adds User 2 as contributor
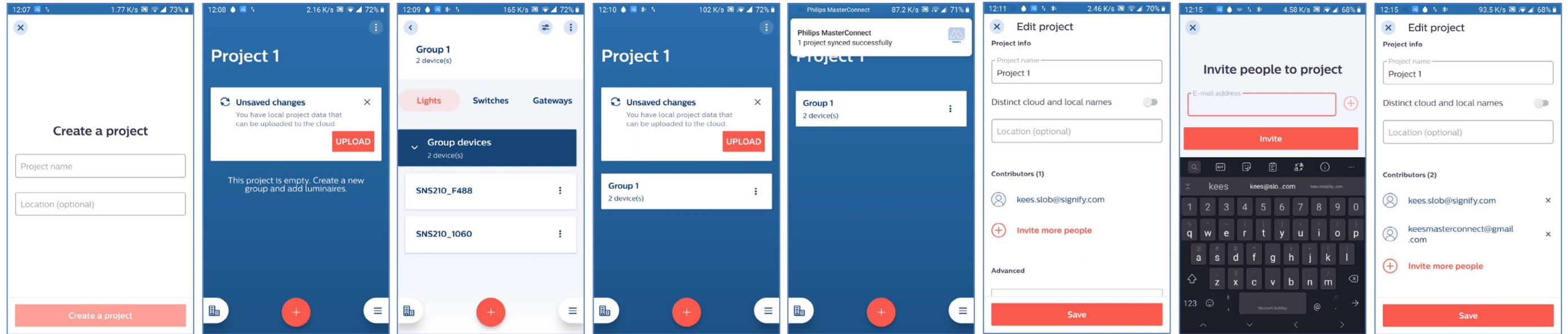
Create a new project.

App will ask if you want to upload the project. Press UPLOAD.

Create a group and add devices to the group, in this case two LIGHTS (SNS210MC).

App will ask if you want to upload the Project. Press UPLOAD.

App will confirm that the project has been uploaded successfully.

Go to the project editor. Press INVITE MORE PEOPLE.

Type the email address of the person to be added as contributor. Press the plus sign next to the email address.

Press SAVE

Project Back-up and Access Sharing (continued)

Usercase 2: User 2 downloads a project, edits, and uploads again
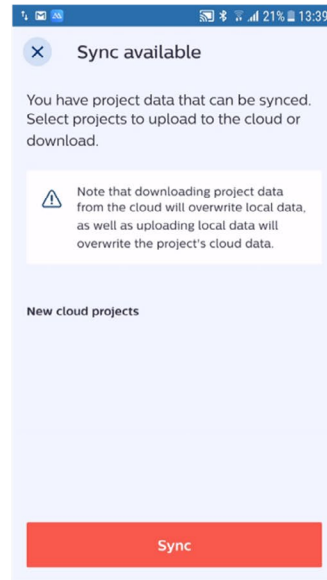
User 2 opens the app and is notified that project data can be synced.
Click *Sync*
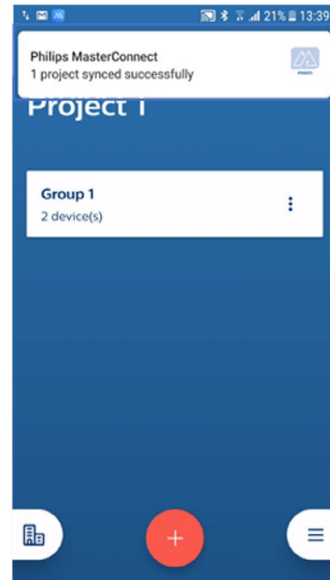
Project 1 is downloaded to phone of User 2

User Two edits Project 1, e.g. sets CCT to 5000K, and saves the project.
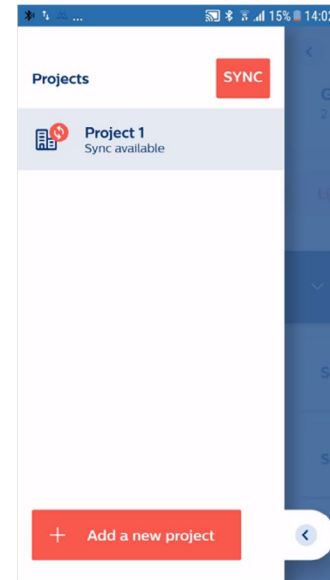
Project 1 can be synced. After pressing Sync, Project 1 will be uploaded.
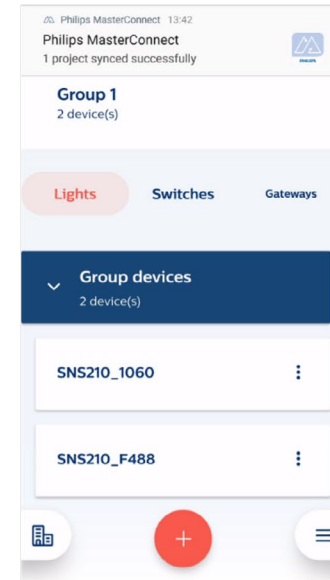
User 2 gets a notification that project has been synced successfully.

Working in one project simultaneously

You cannot work simultaneously in one project. If installers want to work simultaneously in one building, we suggest the following way of working:
• User 1 creates Project Floor 1 and adds User 2 as contributor. User 1 commissions Project Floor 1
• User 2 creates Project Floor 2 and adds User 1 as contributor. User 2 commissions Project Floor 2
• If needed more projects and users can be added
• All users are continuously updated about the status of all Floors and work on their own Projects only

36

Configuration

List of Configuration Parameters

EasySenseSNS210 MC sensor can be configured using the MasterConnect App. The following parameters can be configured via MasterConnect App for entire group of lights or a single light.

Field Task Level
Field task Level can be tuned to reduce the maximum output of a luminaire to a certain percentage of the AOC (adjustable output current) of the SR driver. After installation, there is a possibility that the field task light level is not set according to the end user needs (e.g. light level too high). Task light level is a configurable parameter and can be adjusted by the installer or building maintenance personnel to a value between 1% and 100% through the app.

Eco-on Level
A configurable light level to enable eco-friendly light behavior, enabling energy savings. In automatic behavior, lights switch on to Eco-on Level and it can be set to a value between Field Task level and Background Light Level. With a manual switch override, a user could dim up from Eco-on level to Task Level.

Background Light Level
A configurable light level that can be set as the lowest dim level and enables comfort for end users. This light level comes into play when the hold time has expired and before the lights switch off completely after a prolonged-period.

Group/Zone occupancy sharing
A configurable feature which enables EasyAir SNS210 MC to share its local occupancy detection status with the rest of the group. This can enable granular dimming i.e. when presence is detected within the group, the luminaires in non-occupied areas or 'elsewhere' can be configured to stay

at a desired light level (specified by Group light behavior parameter). In case occupancy sharing is disabled while group occupancy sharing being enabled, elsewhere occupancy is taken as local occupancy trigger.

Occupancy based Control
When enabled, occupancy detection takes place to control the lighting. Unless commissioned into the group, the sensor does not respond to occupancy detection. Out of the box, lights remain switched on in nonoccupied areas.

Occupancy mode
This feature can be configured to maximize lighting control behavior with wireless switches. The mode options are auto on/off, manual on/off and manual on/auto off. For more details, refer Page 27.

Group occupancy sharing
It is a configurable feature which enables EasySense SNS210 MC to share its local occupancy detection status with the rest of the group. This can enable granular dimming i.e. when presence is detected within the group, the luminaires in non-occupied areas or 'elsewhere' can be configured to stay at a desired light level (specified by Group light behavior parameter).

In case occupancy based control is disabled while group occupancy sharing being enabled, elsewhere occupancy is taken as local occupancy trigger.

List of Configuration Parameters (continued)

Group light behavior

It enables choice of light behavior for the rest of the group i.e. to determine the light levels of lights within a group that reside in non-occupied areas. Group light behavior enables granular dimming of lights within a group and brings comfort to users via lighting.

Daylight based control

When enabled, daylight-based dimming is activated to further enable energy savings. With this feature, when there is plenty of daylight, light output from the luminaire adjusts to maintain a certain light level.

Daylight based control is locally done for every light within a group. It can be used even if Occupancy based control is disabled e.g. in Manual on/off mode. Unless commissioned into the group, the sensor does not respond to daylight. Out of the box, lights do not dim down in case there is abundance daylight.

See also the section on "Daylight regulation".

Hold time

It is a configurable timer that begins once occupancy is not detected anymore. Lights continue to be at Eco-on level for a period set as Hold Time, before dimming down to Background Light Level. If occupancy is detected again during Hold Time, the timer stops and automated occupancy cycle re-starts.

Prolong time

It is a configurable timer that keeps the lights at Background Light Level for a time period set as Prolong Time before switching off. Prolong Time comes into effect after the elapse of Hold Time period.
In case Group light behavior is set to Eco-on level, lights in non-occupied areas continue to remain to Eco-on light level. They dim down to Background light level for 1 minute before switching off.

Infinite prolong time

When enabled, lights do not switch off and continue to be in Background light level or Eco on level (when set via *Group Light Behavior* parameter)

Grace fading

It is the transition time period where the lights are being dimmed down from the Eco on light level to the Background light level. This is a configurable parameter and enables slow change of light levels for improved comfort.

Color Temperature

This option is only available in combination with Tunable White fixtures with FlexTune driver. This is the configurable Color temperature (CCT) of the fixture when its turns ON based on Occupancy trigger or with short press of the manual ZGP switch.
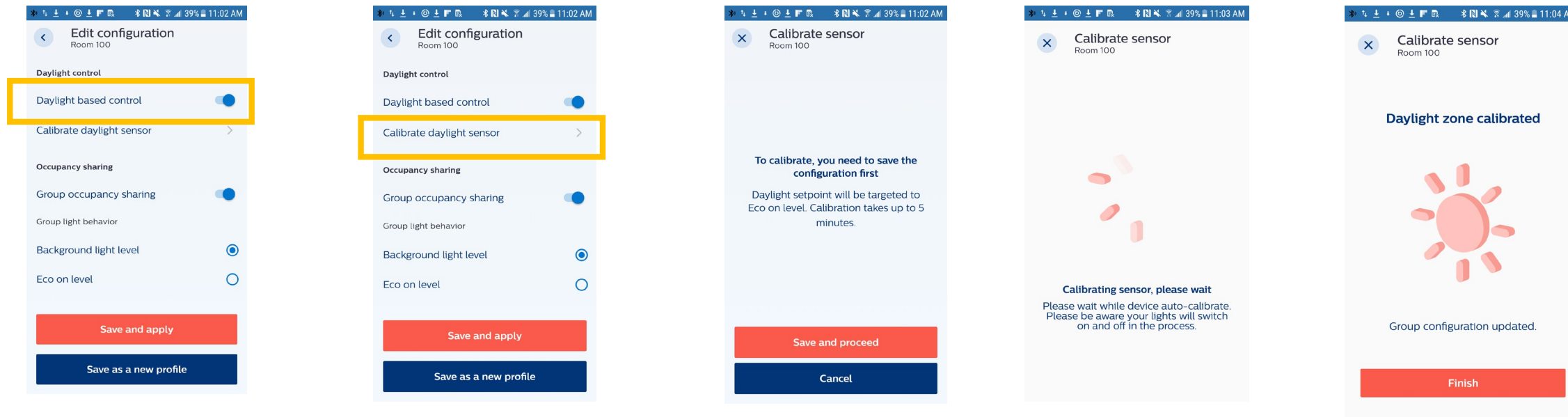
Daylight Regulation

Purpose:
In the presence of daylight, a luminaire is dimmed to a fixed light level on the working plane to save energy.

How to:
- When day-light based control is switched on, the light output adjusts approximately to 500 lux (this value is highly fixture and application dependent) times the percentage value set for the Eco-on level. If the Eco-on level is set to 80% for example, the light output from the luminaire adjusts to 400 lux on desk level.
- Any time after configuration a calibration routine can be initiated. When the calibration routine is complete the light level adjusts to the full light output (given by the operating current of the luminaire) times the percentage value set for the Eco-on level. By adjusting the operating current of the luminaire and the Eco-on level in the App a user has full control on the light level realized on the desk.
- Please take note of the important remarks on next page.

Daylight Regulation (continued)

Remarks:
- The calibration for daylight dependent light regulation needs to be done in the absence of daylight, i.e. at night or with blinds closed.
- When the calibration is run the light output of the luminaires first goes to a low level and to a high level before it regulates to the set light level. This procedures normally takes one minute but may take up to 5 minutes.
- The lux levels are an estimation for a typical office configuration; the precise level depends on the amount of light reflecting surfaces in the field of view of the sensor. If the light level is not as wanted, please do the calibration and adjust the light level via the Eco-on level.
- To determine the optimum Eco-on level it is recommended to turn off daylight regulation temporary before calibration, and to measure illuminance as a function of Eco-on level.

Occupancy sharing within a group or a zone

Purpose:
Individual lights with SNS210 MC sensors within a group or a zone can share occupancy. If one light is triggered, it also triggers the other lights in the group or zone.

How to:
If 'Group/Zone occupancy sharing' is enabled the light shares occupancy. If 'Zone occupancy sharing' is enabled as well, occupancy is shared with the other lights in the zone only; if it is disabled, occupancy is shared with the whole group.
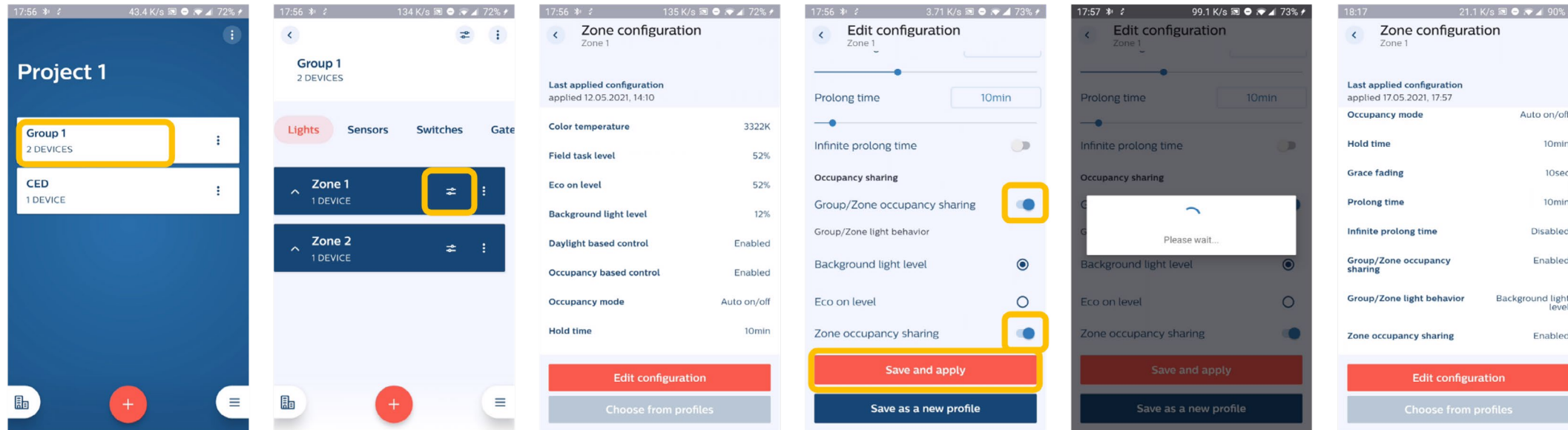
Occupancy modes

This feature can be configured to maximize lighting control behavior together with wireless switches. The mode options are auto-on/auto-off, manual-on/ manual-off and manual-on/auto-off.

Auto-on/Auto-off mode: Lights are switched on and off automatically based on occupancy detection and timer settings. This is the default operating mode for the sensor. In this automatic behavior, lights always switch on to Eco on level. For more details, refer Figures 1, 2, 3 on pages 44, 45, 46.

Manual-on/Auto-off: Lights are turned on with a manual command from a wireless switch. A manual on command switches on the lights to Eco-on level and can be further tuned up to Task Level. Lights turn off automatically once vacancy is detected, and timers expire. This mode is typically selected to achieve maximum energy savings. For more details, refer Figure 4 on page 47.

Manual-on/Manual-off: Lights are turned on and off manually through a wireless switch. This is typically used in applications which just need wireless manual control for switch on/off or dimming functionality. This setting must be selected for a MasterConnect System consisting of Xitanium Wireless Drivers only.

Occupancy Cycle (without Daylight Harvesting enabled)
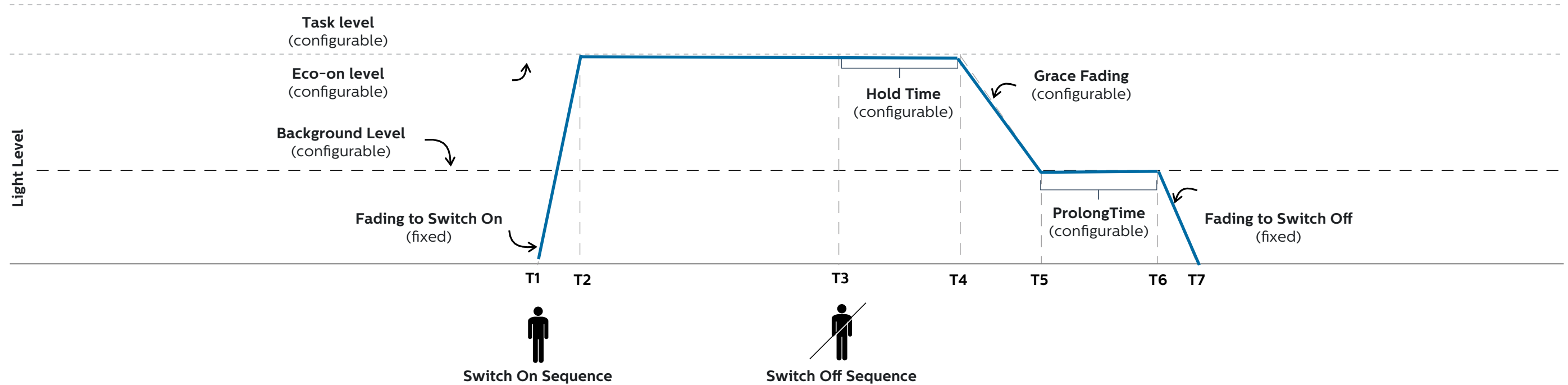# Eco-on Level < Task Level

Figure 1

Figure 1 shows the occupancy cycle during automatic light behavior. On occupancy detection, lights switch on to Eco on level. Once vacancy is detected, Hold time starts. During Hold time, lights remain at Eco on level and then dim down to Background light level, with a configurable Grace Fading time period. Lights remain at this dim level until Prolong Time expires; after which lights switch off.

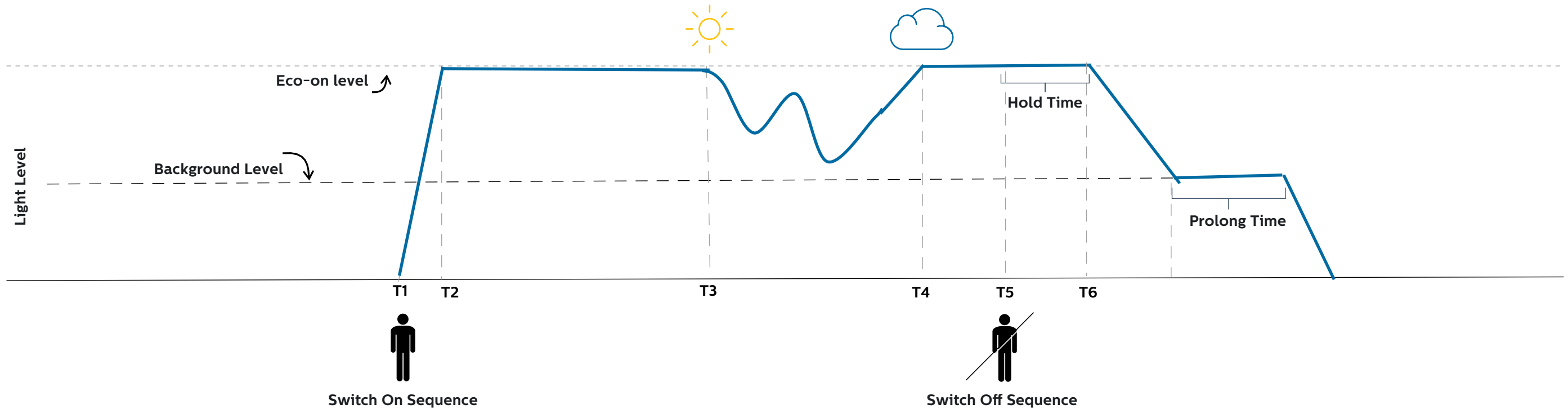# Auto On / Off with Daylight Dimming

Figure 2

Figure 2 shows how daylight dimming takes place during Auto on/Auto off mode. Once occupancy is not detected anymore, the timers (Hold time and Prolong time) start. Once the timers expire, lights switch off.

Auto On / Off with Manual Override with Eco ON Light Level < 100%

Figure 3

Task Level = 100%

Eco-On Level = 80 %

Background light level = 20 %

Min dimming level = 1 %

Manually dimming up

Manually dimming down

Hold time   Grace Prolong time
time

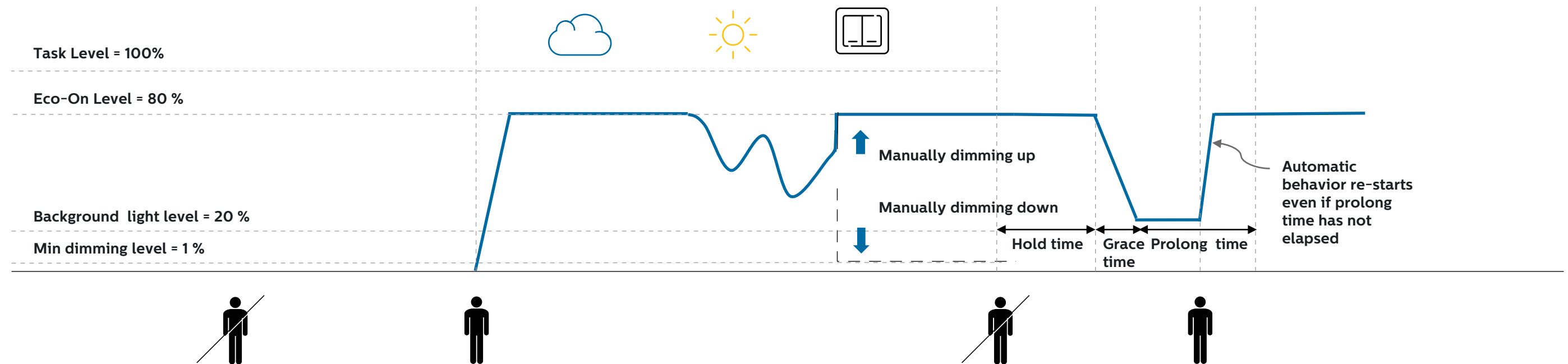Automatic behavior re-starts even if prolong time has not elapsed

Figure 3 above shows how daylight dimming takes place during Auto on/Auto off mode and the effect of manual overrides.

In case of manual override with a switch, lights can be dimmed up or down between the Task Level and Minimum dimming level.
When no occupancy is detected anymore, the timers (Hold Time and Prolong Time) get started.
In case occupancy is re-detected during Hold time, the existing light behavior continues and the timers are reset.
In case occupancy is re-detected during Prolong Time (or after), automatic light behavior starts and the timers are reset (as shown).
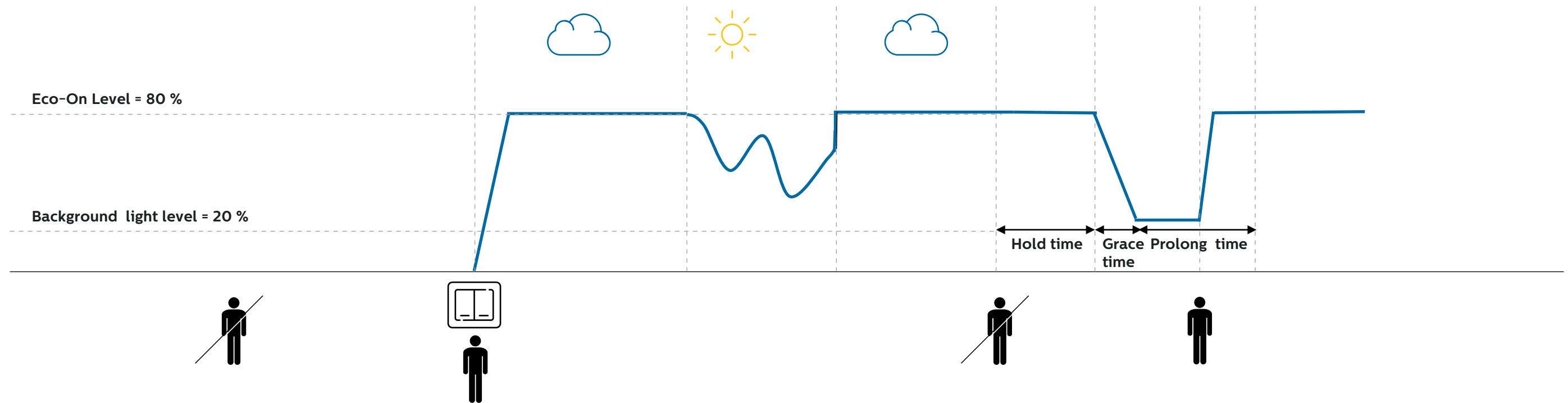
Manual On / Auto Off

Figure 4

Figure 4 shows how daylight dimming takes place during Manual on/Auto off mode. Occupancy detection starts to determine the light behavior soon after manual trigger.

Summary of Configuration Parameters Available in MasterConnect App

Parameter Name	Default value	Range	Description
Field task level	100%	1 – 100%	Maximum trim level of power level of the luminaire.
Eco-on level	100%	1 – Task Level	A configurable switch-on light level. This parameter enables energy-savings and its value should be a percentage level between the field task level and background light level.
Background light level	20%	1 – Eco on Level	is the lowest dim level and used when space is not occupied.
Daylight based control	Enabled	Enabled/ Disabled	Turn daylight control on or off.
Occupancy based control	Enabled	Enabled/ Disabled	To enable/disable occupancy detection
Occupancy mode	Auto on / Auto off	Auto on/off; Manual on/ off; Manual on/Auto off	Different modes to maximize lighting control behavior with use of wireless switches

| Parameter Name	Default value	Range	Description
Group occupancy sharing	Enabled, Background light level	Background light level or Eco-on level	is a configurable feature to allow SNS210 to share its local occupancy detection status with other SNS210 nodes in the group. As long as presence is detected within the group, the luminaires stay on at the Background light level/Eco-on level (configurable) in non-occupied areas.
Hold time	10 min	2 – 100 minutes	is the time period from the point at which the last movement has been detected (e.g. when last occupant left the room).
Prolong time	10 min	2 – 100 minutes	The time for which lights remain at the background level before turning off. Time can be configured from 7 – 100 minutes.
Infinite prolong time	Disabled	Enabled/ Disabled	When enabled, lights continue to stay on background level and do not switch off.
Grace fading	10 sec	1 – 25 seconds	is the dimming transition time from the Eco-on level to the Background light level.

Energy Reporting

The MasterConnect App can be used to retrieve energy usage reports at group level. Each reading stores the time stamp along with the total energy (in kWH) used by all the light fixtures in the group. The screen displays the previous and current readings along with the energy used for this time interval. The interval data provides a quick snapshot for the energy consumed for a desired time period, for example, 1 hour or 1 month between readings. All the past reports are stored in "History" and can be retrieved by the user at a later point. Light fixture energy data for this report is read from the real measured energy counters of the Xitanium SR Drivers connected to EasySense SNS210 MC.

Following parameters are displayed:
• **Previous Reading:** Time stamp (date and time) and the total energy used by the group of lights at the time of last reading.
• **Current Reading:** Time stamp (date and time) and the total energy used by the group of lights at this reading. This number is set to zero at first commissioning of the group.
• **Interval:** The time interval between above two readings and the energy used by the group of lights during this period.
• **Group Average Burning Hours:** This displayed number should be ignored. This feature will be updated in a future App release.
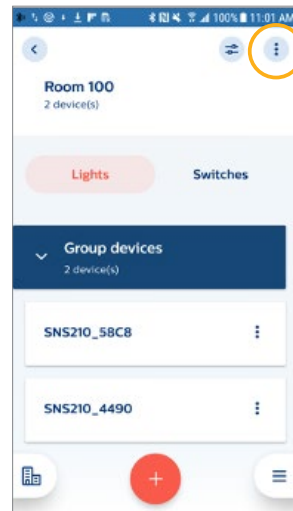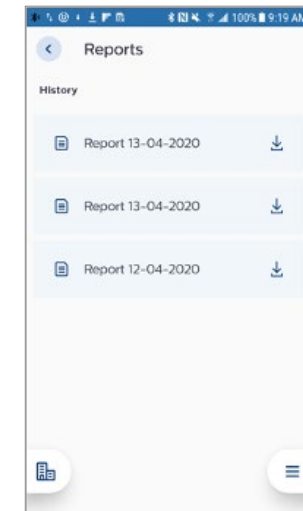

| Click on Group | Click on "3 dots" at top | Click "Group Info" | Click on "Generate new report" | After a little while, the energy report is generated and latest numbers are visible | Click on "View history" to see the list of all energy report files. Example: report file is shown to the right |
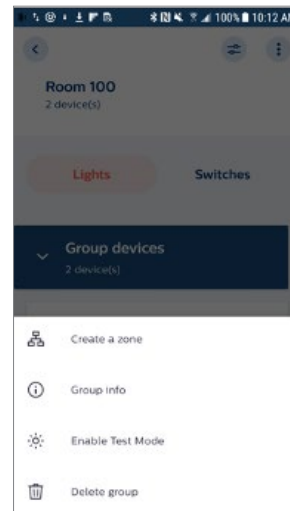
Energy Reporting (continued)

Remarks:

• Energy reporting is supported for up to 20 devices. If more devices are used, the reported values may be compromised, as not all devices are taken into account.

• In rare cases a report may fail to capture all the devices in the allotted time. If this happens, we recommend waiting for a few minutes and generating another report. The "current reading" number will always be correct when all the devices in the group are captured. The Xitanium SR drivers in the fixtures maintain a continuous and accurate counter for energy used.

• If the app indicates that the reported energy is not complete because a devices has been missed, it is recommended to trigger "Refresh Network" and then generate a new energy report: Select group, select the three dots and choose "Refresh Network"

User ID	Project Name	Group Name	Timestamp	Energy Used (kWH)	Selected Device ID	Number of Operative Fixtures in Group	ID of all Operative Devices in Group
username@xyzmail.com	Building HTC 1	Room 100	2020-04-13T09:17:57. 899-05:00 [America/Chicago]	43:347	14:70:A0:30:58:C8	2	14:70:A0:30:58:C8, FC:D8:A0:BC:44:90
username@xyzmail.com	Building HTC 1	Room 100	2020-04-13T07:44:25. 276-05:00 [America/Chicago]	21:872	14:70:A0:30:58:C8	2	14:70:A0:30:58:C8, FC:D8:A0:BC:44:90
username@xyzmail.com	Building HTC 1	Room 100	2020-04-12T20:40:16. 018-05:00 [America/Chicago]	0	14:70:A0:30:58:C8	2	14:70:A0:30:58:C8, FC:D8:A0:BC:44:90

50
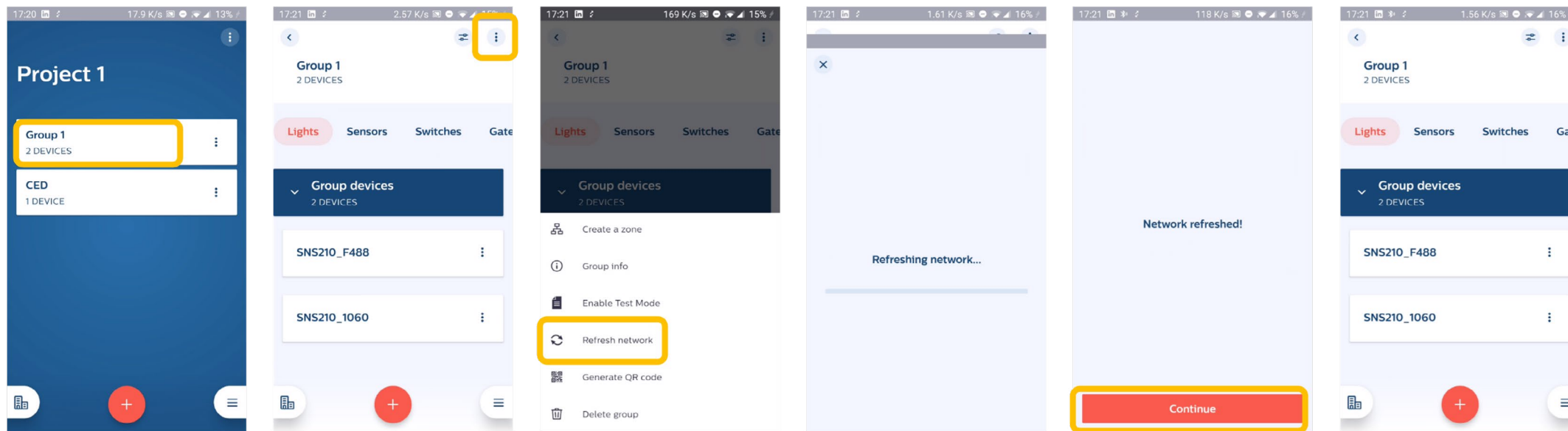
Security

- MasterConnect devices out of the factory start out with open interfaces for BLE and Zigbee communication for easy set up.
- Zigbee device communications become encrypted with secret keys (AES–128) and thus, secure on the first commissioning of MasterConnect devices into a project.
- Once commissioned, the MasterConnect devices from a project will only be visible on the MC App of the user that claimed it at first. Other users will not be able to work with these already claimed devices in the MC App.

Remark
Due to the open Zigbee interface, the MC devices may join another open (rogue) Zigbee network if significant time elapses between installation of luminaires and commissioning with the MC App. In this case, the MC APP will still discover these devices and allow commissioning of these devices into a proper MC network.

Known Limitations

- In a group, all SNS210 MC sensors should be operated with the same firmware version. A mix of firmware versions may cause unpredicted behavior.

- It is not possible to edit and delete configuration profiles. To store a new configuration a new profile should be created.

- Project backup sometimes fails. If this continues to fail after a retry, please use the "Report a Problem" feature to send the app datalogs to the MasterConnect Team for analysis.

Troubleshooting Tips

Feature	Potential issue	Advised workaround
Login	Occasionally an error message is received, or no confirmation code is received via email.	• A re-try with a new account with same email address and user-name typically resolves the problem • Otherwise re-try with another email address
Commissioning RSSI List Based	At times, app reports an error	• A re-try typically resolves the problem • Ensure the smartphone is within range during commissioning • Ensure the phone in use is from the recommended phone list
Commissioning Torchlight Based	At times, commissioning using torchlight is not always successful	• Wait for additional 3 seconds after the 2nd beep before proceeding to the next light
Adding a wireless switch	Switch commissioning fails	• For non-Philips switches, remember to exit the linking mode on the switch by pressing any other button on the switch (as given in the switch instruction sheet). Test the switch by pressing ON/OFF buttons • Ensure ZGP switch commissioning is carried out as described by manufacturer. Also available on our website • Make sure only 1 brand of switches are used within a group
Group removal after commissioning	Removal on group level may not fully succeed. Occasionally a device may not get reset leading to unsuccessful re-commissioning thereafter	• A complete reset is advised via IR remote "Philips IRT9015/00". Please contact your OEM or Philips representative/customer care for further support

Coming Soon!

Gateway
Working with Gateway

Purpose:
Enabling projects with central control via a gateway and dashboard.

How to:
- The Philips MasterConnect system can be setup in standalone way and works without a gateway. Out of the box, MasterConnect products – EasySense SNS210 MC and Xitanium wireless drivers can be commissioned via MC App but are also open for joining Zigbee networks of gateways from partner companies like Ubisys GmBH.
- To commission Philips MC wireless products with partner gateways, software and apps of the partners need to be used. These systems can not be set up with the MasterConnect app at this moment.
- Please refer to gateway suppliers for information on how to set up a system with their gateway.

References

Website:
https://www.usa.lighting.philips.com/products/lighting-components/easysense/easysense-sns210mc

Disclaimer

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