LumaLinx Enhanced
Always Connected

LumaLinx Network Lighting Control APP Instructions

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INTRODUCTION

LumaLinx Network Lighting Controls (NLC) can address luminaires individually or in groups, utilizing Bluetooth® Low Energy Mesh 4.2 & 5.0 protocols. This state-of-the-art wireless control system is operated using the LumaLinx NLC APP in conjunction with various sensors, wall switches, power packs, and controller nodes. The system components are easily commissioned using the LumaLinx NLC APP on a mobile device, without requiring a gateway. The mesh network enables wireless communication up to 100 feet or more between devices, and commissioning does not require any internet access.

The LumaLinx NLC APP employs data encryption to ensure mesh network security. The configuration settings for each device are stored in encrypted QR codes and each network device cannot be accessed without the QR code. We have received UL 1376 verification for security capabilities, and the first to achieve full-stack, in-house R&D for networked sensors and controllers. The LumaLinx platform was also one of the first systems listed to DLC's Networked Lighting Controls (NLC5).

Luminaire level lighting control (LLLC) refers to a type of lighting control system where each individual light fixture is equipped with its own control device or integrated control system, allowing for independent control and management of each fixture. LLLC luminaires can detect human movements, ambient light level, and automatically turn on/off or dim the lights to provide comfort, safety, and energy

SYSTEM CAPABILITIES

LumaLinx platform LLLC luminaires have the following capabilities:

- **1st Time Delay (T1)**: Lights will maintain WORKING LIGHT LEVEL during the T1 period (in minutes) each time they detect human motion.

- **2nd Time Delay (T2)**: After lights have not detected any movement during the time period set in T1, T2(in minutes) will start.

  The brightness of lights can be reduced to DIM LEVEL during the T2 period to remind users that the lights will soon turn off.

  At the end of T2, lights will turn off

- **Dim Level**: Defines the brightness of lights during T2 period. Set as a percentage (%) of WORKING LIGHT LEVEL

- **Linkage light Level**: If no movement is detected during T1, but other lights in the same group detect movement, and the linkage is turned on in this group, this light will dim to linkage light level. Linkage light level is calculated as a percentage of the WORKING LIGHT LEVEL. Note: Linkage can override T2

- **Working Light level**: Defines the light level when a light's sensor detects human movements. The WORKING LIGHT LEVEL of a light is automatically controlled by a photosensor (if it is equipped with one). The WORKING LIGHT LEVEL may change according to the level of ambient light.

- **Auto Calibrate**: It is suggested to use AUTO CALIBRATE to set the WORKING LIGHT LEVEL, which has a self-learning process to remove ambient light interference for more precise results.

- **Manual Set**: A user may choose to manually set the WORKING LIGHT LEVEL. When making this setting, it is critical to exclude the ambient light by shielding the lights from sunlight or user can make this setting during nighttime.

Recommended Parameter Settings By Space Type
(Refer to the Project Controls Sequence of Operations)

Suggested settings for zone type						
Zone	1st Time Delay (T1) (minutes)	2nd Time Delay (T2) (minutes)	Dim Level (%)	Linkage light level (%)	Scenes	Wall Switches
Open office area	20 mins	1 min	50%	50%	No Scene	Button programmed to ALL OFF for quickly turning off lights when leaving office
Meeting room	20 mins	1 min	80%	80%	Configure PPT / Lecture scenes	Associate PPT / Lecture scenes to SCENE button on wall switch
Classroom	30-40 mins	5 mins	80%	80%	Configure PPT / Lecture scenes	Associate PPT / Lecture scenes to SCENE button on wall switch
Storage Room	10 mins	1 min	30%	80%	No Scene	No switch
Corridor	10 mins	1-Infinity mins	30%	50%	No Scene	No switch

Capacity Limits

The following chart provides the capacity limits of the LumaLinx NLC platform:

Luminaires	Up to 100 lights (nodes) per zone. Unlimited zones available with each zone having its own sharable QR code with commands and setting info assignable for administrative or user level
Luminaire / Group	A light can be a member of up to 20 groups.
Scene	Up to 32 scenes can be set to a light. Up to 127 scenes can be set to a zone.
Schedule	Up to 32 schedules can be set to a zone.
Switch	Up to 32 switches can be set to a zone. *Note: switches and lights are calculated separately. Adding switches to a zone does not affect the maximum number of lights.*

Control Intent Narrative and Sequences of Operations

Prior to purchasing and installing any NLC system, facility managers should define owner requirements and control system goals with a design document called the Control Intent Narrative (CIN) and Sequences of Operations (SOO). This will include facility and/or space purposes, operating schedules, applicable codes and standards, integration, project goals, and preferred vendors. The CIN and SOO may be somewhat vague at the beginning of the project and become fleshed out over time. Two industry standards that can assist in creating the CIN and SOO are:

1. ANSI/IES LP-6-20, *Lighting Control Systems: Properties, Selection, and Specification*.
2. ANSI/IES LP-16-22, *Documenting Control Intent Narratives and Sequences of Operations*

At a minimum, the Control Intent Narrative and SOO should contain:
- A floor plan and the functions of each zone
- Each light's model number, quantity parameter, and position
- Definition of Zones. It is recommended to divide a site into zones according to their lighting functions. Make sure each zone contains no more than 100 with no objects that may block the wireless signal transmission, such as concrete walls or large metal objects. The size of a zone should not outreach the limit of wireless coverage (ideally within a radius less than 150 feet and keeping zones to less than 9000 square feet)
- Group number, group name, scene number, scene name, and approximate scene design for each zone
- Switch type and number, as well as the function of the buttons for each zone.

CAUTIONS

1. **Do not use more than one mobile device during the commissioning process.**

   • Using multiple mobile devices may cause unexpected results such as data corruption, duplicate light addresses, etc.

2. **Ensure commissioning data has been synchronized to the cloud before sharing QR code.**

   • Access rights to the zone can be shared to other users by sharing the QR code. Before sharing the QR code, please make sure the zone data has been uploaded to the cloud (requires internet connection). The APP will try to sync the data automatically in the background to the server(cloud) whenever an update has been made to the zone. You may also select 'Force Sync' on the 'More' page to sync manually.

   Note: During the commissioning process, or whenever an update has been made to the zone, the APP will try to save and sync the commissioning data to the cloud. This requires an internet connection, either by WIFI or data connection.

   - The mobile device must have a good internet connection during commissioning to save/update the commissioning data to the corresponding QR code. If the internet connection is functioning properly, the APP will sync the data to the cloud in the background. You may share the QR code to other users immediately after commissioning is completed.

   - If the mobile device does not have a good internet connection during commissioning, the user will see an error prompt in the 'More' page but may continue the commissioning process. Please remember to 'Force Sync' the data to the cloud when the mobile device has a good internet connection.
   Do NOT share the QR code to others before you successfully sync the data.

   - If the mobile device has a poor internet connection, the APP will attempt to sync commissioning data to the cloud, but each communication may take longer or may fail after a long delay due to the poor connection. In such conditions, it will be difficult to continue the commissioning process.
   It is suggested to turn off WIFI (or put the phone in AIRPLANE MODE) and complete the commissioning process. At a time later when a good internet connection is available, the user can sync commissioning data to the cloud.
   DO NOT share the QR code to others before you successfully sync the data.

3. **Check for firmware updates.**

   • Continuous improvements to the LumaLinx Enhanced products may require a firmware update to maintain compatibility to the other devices in a Zone. If experiencing connectivity or feature issues, download the Spiral Engineering App for iOS platform devices and perform a search of products in need of a firmware update. Instructions are at Get Spiral APP

HOW TO DOWNLOAD AND NAVIGATE THE APP

To download the LumaLinx NLC APP, scan the QR code below, which corresponds to the type of smart phone/tablet that will be downloading the APP:

![Available on the App Store]

![Android App on Google Play]

The APP supports most Android smart phones. Some Android phone models may not be supported due to issues with the phone's hardware or firmware. The APP requires access to the network and Bluetooth, so please approve access requests from the APP. The APP will not collect user's private data. Accept the prompt to allow access to photos for QR codes to be automatically saved in your album.

Jaykal will update the APP when there are new features or bug fixes. Please enable the auto update of the APP so that new version of the APP will be pushed to your mobile phone.

APP Navigation

The LumaLinx NLC APP has **five tab pages** which you can move between to provide easy control of your lights. They are located in the bottom menu bar of the screen.

| Lights | Groups | Switches | Scenes | More |
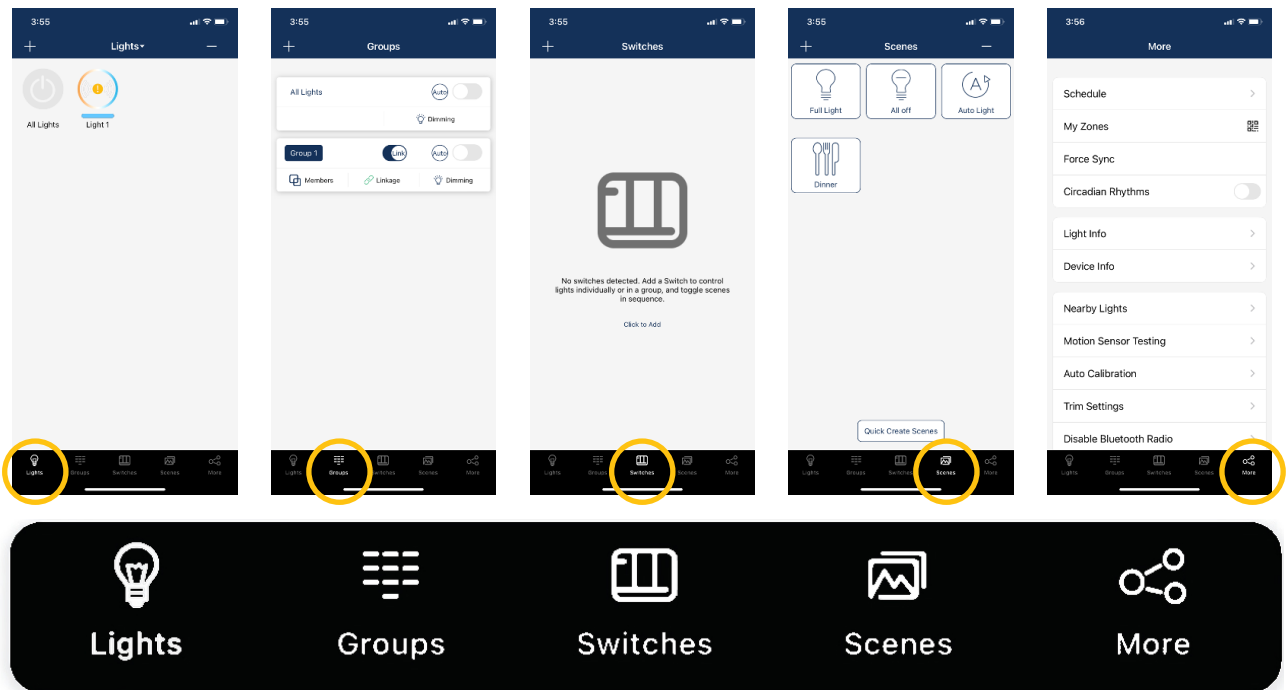
"Lights" shows all lights that are connected to the app. It allows the user to view and control individual lights.

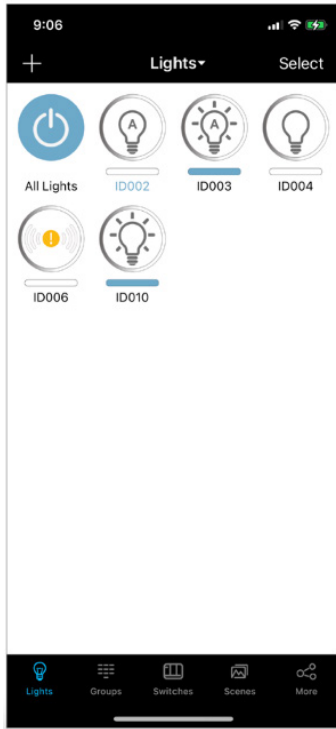**"Groups"** allows user to create and manage groups.

"Switches" displays all switches that are connected to the APP. It also allows the user to view/edit switch controls.

"Scenes" allows the user to create and manage scenes.

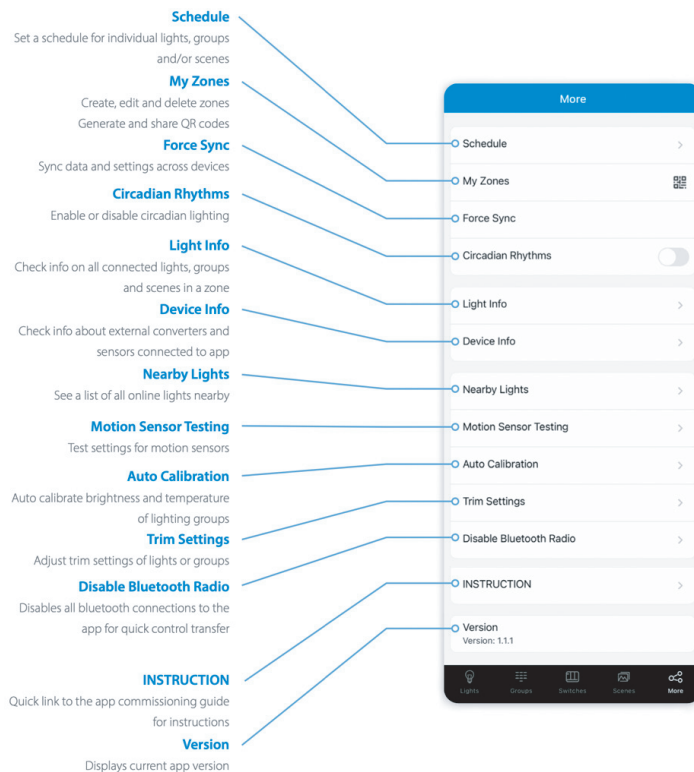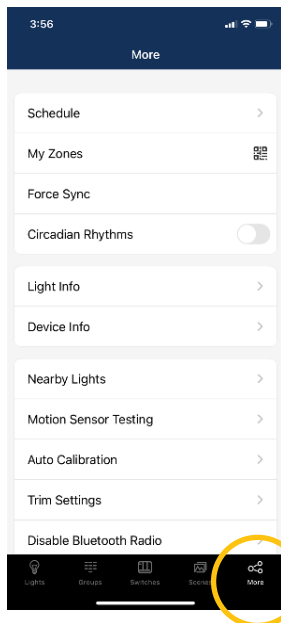**"More"** allows the user to view Schedules, Zones, Light and Device Info, and other additional settings.

Light Icons

Every light connected to the APP will be listed on the Lights page.
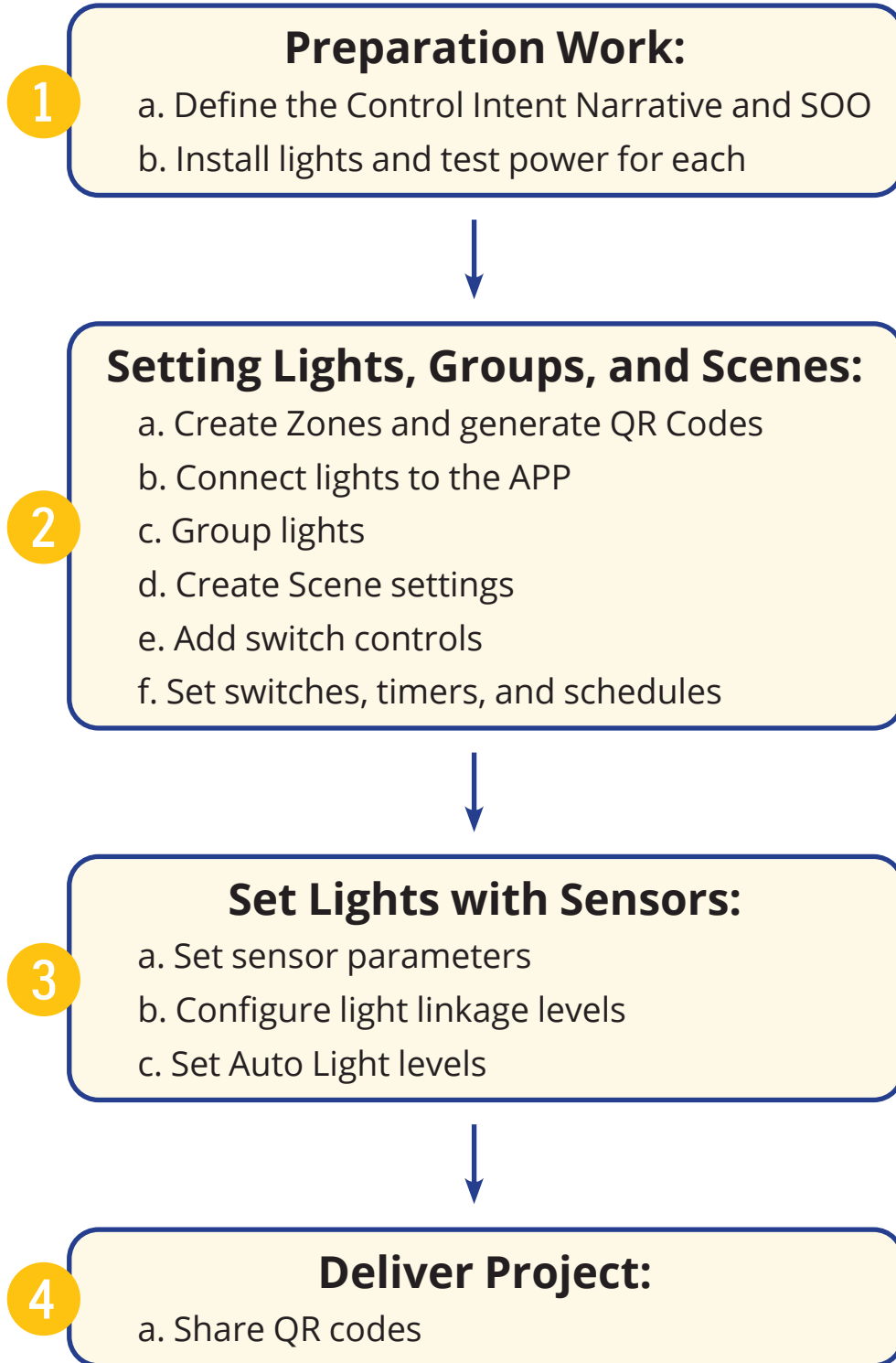Each light can display different icons to indicate the state of the device:

A. Auto-off – Light output is off, and will be triggered to auto-on if motion is detected.

B. Auto-on – Light output is on, and light is operating in auto mode.

C. Manual-off – Light output is off, and light output stays off until a scheduled event or manual command overrides this.

D. Manual-on – Light output is set to a manual override level via a scene trigger or manual override command. It will return to auto-off mode automatically after the sum of the motion sensor delays.

E. Offline – Controller is most likely either not getting power or is out of range of the mesh network.

F. Blue Light Name – This is the light which the phone/tablet is using to connect to the mesh network.

G. All Lights – A default full system on/off switch, toggles all lights in the region between auto-on and manual-off.

The More Page contains additional settings and features of the APP.

Schedule
Set a schedule for individual lights, groups and/or scenes

My Zones
Create, edit and delete zones
Generate and share QR codes

Force Sync
Sync data and settings across devices

Circadian Rhythms
Enable or disable circadian lighting

Light Info
Check info on all connected lights, groups and scenes in a zone

Device Info
Check info about external converters and sensors connected to app

Nearby Lights
See a list of all online lights nearby

Motion Sensor Testing
Test settings for motion sensors

Auto Calibration
Auto calibrate brightness and temperature of lighting groups

Trim Settings
Adjust trim settings of lights or groups

Disable Bluetooth Radio
Disables all bluetooth connections to the app for quick control transfer

INSTRUCTION
Quick link to the app commissioning guide for instructions

Version
Displays current app version

COMMISSIONING

The following commissioning procedure is recommended:

1
Preparation Work:
a. Define the Control Intent Narrative and SOO
b. Install lights and test power for each

2
Setting Lights, Groups, and Scenes:
a. Create Zones and generate QR Codes
b. Connect lights to the APP
c. Group lights
d. Create Scene settings
e. Add switch controls
f. Set switches, timers, and schedules

3
Set Lights with Sensors:
a. Set sensor parameters
b. Configure light linkage levels
c. Set Auto Light levels

4
Deliver Project:
a. Share QR codes

ZONES

It is recommended to create QR codes for all zones and pre-define all groups, scenes, and their names prior to commissioning in order to reduce work on site. A QR code represents a zone and all of the lights, switches, and other devices in that zone.
Note: A red dot in the Zone name window indicates that the data needs to be synced.

Creating Zones
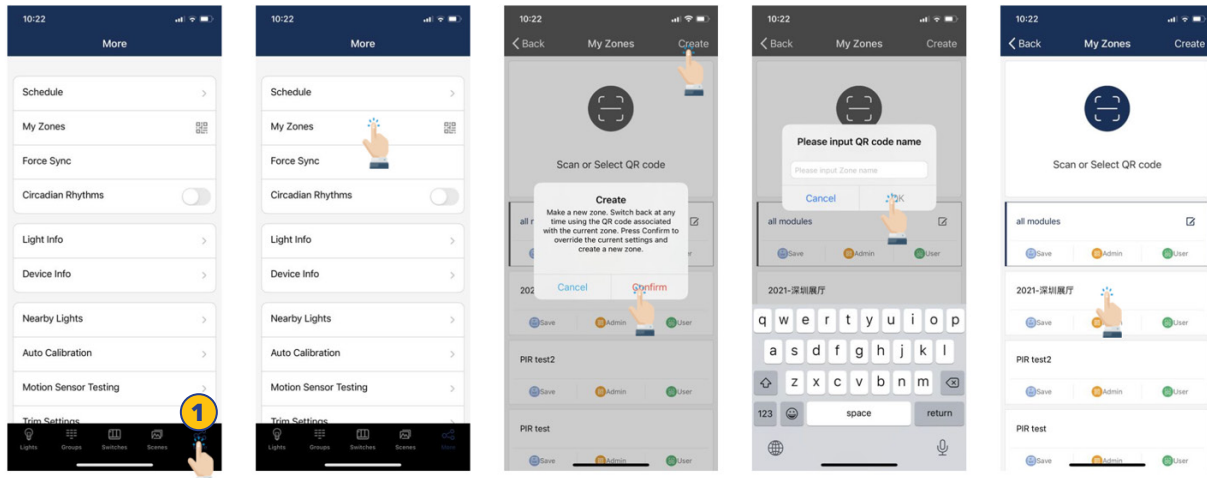
1. Start the LumaLinx APP and select the **More** page.

2. Then select the "**My Zones**" button.

3. Select "**Create**" in the top-right and then select "**Confirm**."

4. Input the name of the QR code and then select "**OK**."

5. All zones can be found in the "**My Zones**" list and you can switch between them by selecting them.

Renaming Zones
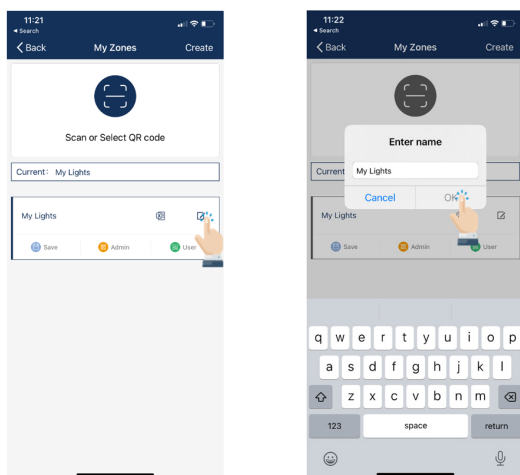
1. On the **My Zones** page, press the edit button located to the right of the zone name.

2. Enter preferred zone name as prompted.
3. Press "**OK**" to save.

Deleting Zones
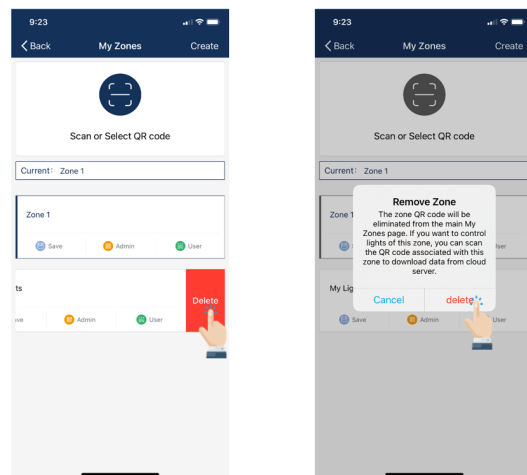
1. Select the **Zone** to delete and slide finger from right to left over that Zone.

2. Press the red delete button that appears.
3. Confirm by pressing "**Delete**."
Note: User cannot delete the zone in which they are currently active
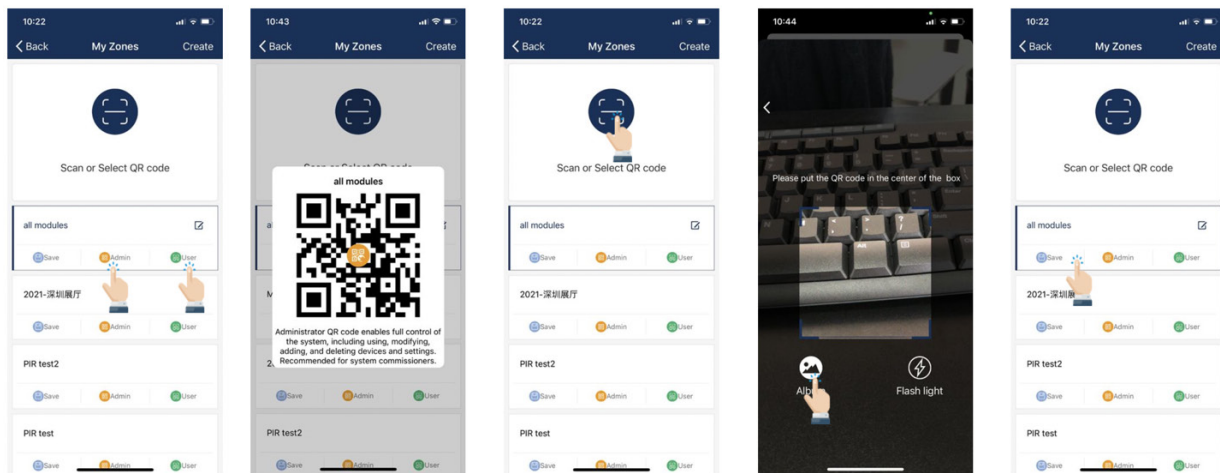
QR CODES

Whenever a zone is created, two QR codes are automatically generated, one for the **Admin level** and one for the **User level**. The QR codes represent the zone, as well as all of the lights, switches, and groups associated with that zone.

The **User** QR code allows the user to dim, activate a scene, or control lights on that zone, but it does not allow the user to add, delete, or change lights, groups, or scenes. The **Admin** QR code allows a user to control and edit all settings within the APP. Only users with the Admin QR codes can share Admin QR codes.
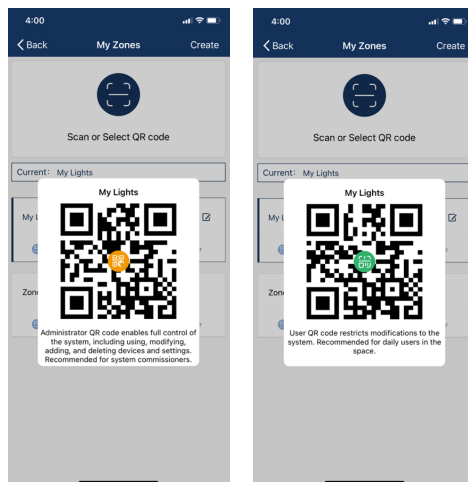
To Scan QR Codes

1. On the More page, select on **My Zones**.
2. Select a zone in the list or select "**Scan or Select QR code**".

3. Center the boxed camera frame around the QR code and scan it.

4. You can also select QR codes saved in the phone by pressing the "**Album**" button.
5. The APP will automatically add a new scanned Zone after the QR code has been scanned.
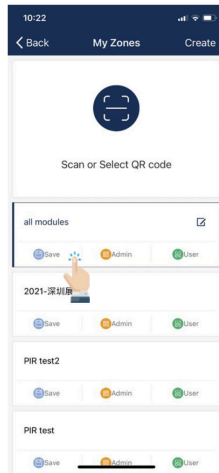
To Save QR Codes

1. Allow the APP access to photos for QR codes to be saved to the phone.
2. Press the "**Save**" button located under the zone name.
3. QR codes will be saved on an auto-generated album folder "**MyQRCode**".

To Share QR Codes
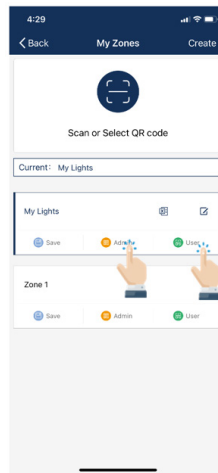
1. From the **My Zones** page, select the Zone to share and select on either Admin or User.

Note: A second method to share is to go to you photo library "MyQRCode" and select the QR Code for the project desired and send via email to the party for the project.
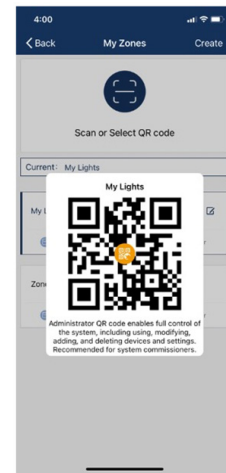
2. A QR code will be displayed on the app. It can then be scanned by another for sharing or you can screenshot it and send it to another for scanning.

LIGHTS

The Lights page is the first page you'll see upon opening the APP. It is the primary page for controlling individual lights. Add lights by zone, and **do not turn on more than 100 lights at the same time.** To prevent wireless communication interference, turn off lights by power source that are not in the current zone.
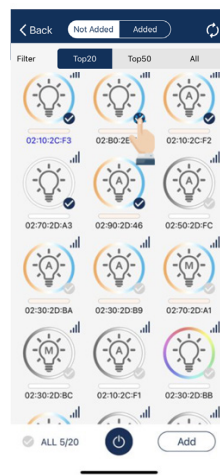
To Add Lights Into The APP
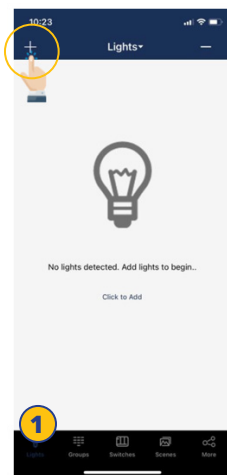
1. From the Lights page, select the "**+**" button in the upper left corner.

2. Select **Top20**, **Top50** or **All** from the filter at top of screen to show lights with the strongest Bluetooth signal

3. The APP will scan for lights that can be added to the zone. Lights can be identified in a room by pressing the icons to turn it on and off.

4. Select the lights you want to add by pressing the check mark located in the lower right corner of desired light icons.

5. Select "**Add**" to associate all of the selected lights into the zone.

6. Confirm by selecting the "**Add**" button in the dialog box. A light will blink to indicate a successful connection.
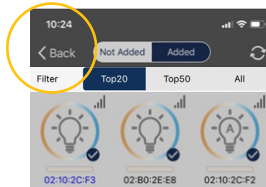
7. Select the "**Back**" button to return to the Lights page.

8. Confirm that all lights have been added and successfully connected

Note: Commissioning performance may deteriorate if there are more than 100 factory-setting lights powered up at the same site. Please power off some factory-setting lights before continue.
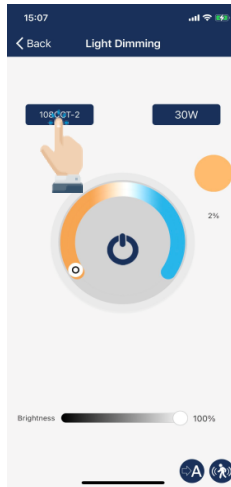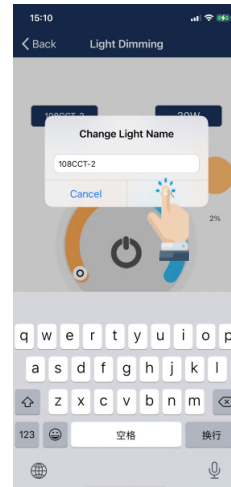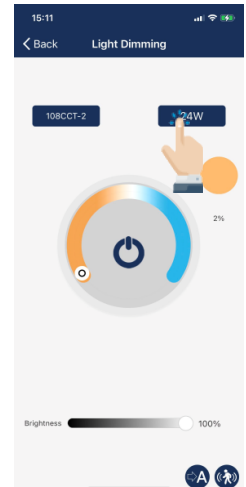
LIGHTS, CONTINUED

To Name or Rename Lights

1. From the Lights page, do an extended press on a selected light to go to the Dimming page.

2. Select on the light's name located in the upper left of the dimming/tuning slider.

3. Enter the light's new name in the dialog box.

4. Press "**OK**" to save.

5. Note that the wattage is the rated wattage after High-Trim is set. E.g., input 24 for a 30-watt luminaire with 80% of High-End trim setting.
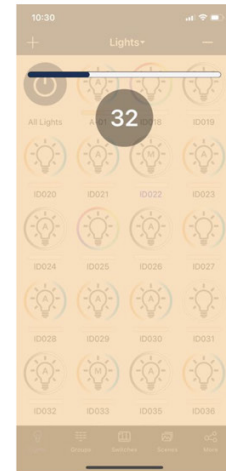
Quick Dimming and Color Tuning

1. From the Lights page, a quick select on a light's icon will turn it on or

2. Lightly slide a finger left or right across the light's icon to adjust brightness.

3. Lightly slide a finger up or down over a light's icon to adjust the color temperature.

Dimming Settings

From left to right below are examples of the Light Dimming pages for mono-dimmable, tunable white, RGB dimmable and for a direct/in-direct (two-channel) dimmable light.
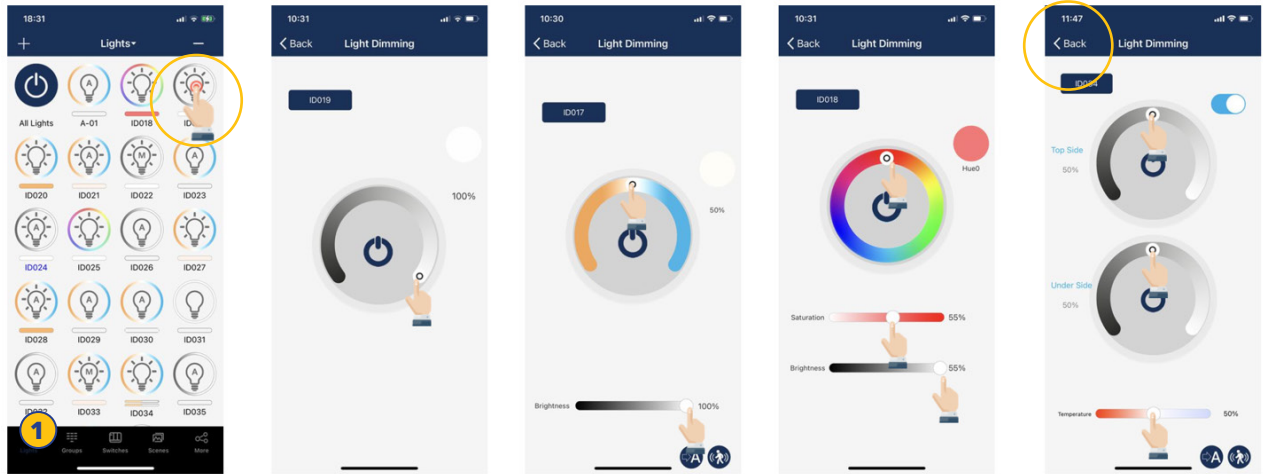
1. From the Lights page, do an extended press and hold on a light's icon to open the Light Dimming settings page.

2. The Light Dimming settings page appearance will vary according to the light's capabilities.

3. Set to the desired dimming and tuning levels.

4. Select the "**Back**" button to save settings.

To Delete Lights

Note: lights must be paired to app to be deleted. If not paired, a power reset is necessary. See page 37.
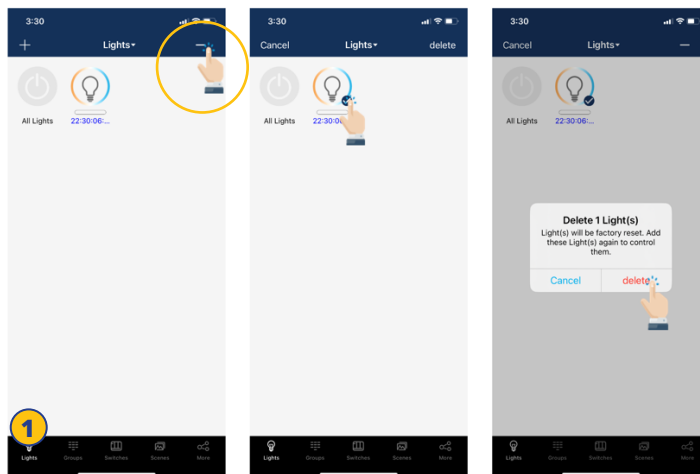
1. From the Lights page, select the "**-**" button in the upper right corner.

2. Select the lights you want to delete, by giving it a tap and check mark.

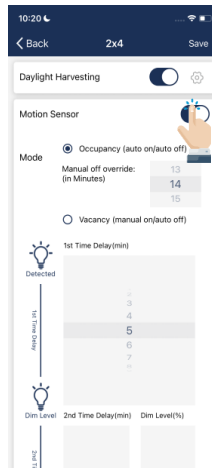**3.** Select "**delete**" in the dialog box to confirm.

LIGHTS, CONTINUED

Sensor Settings

1. From the Lights page, do an extended press and hold on a light's icon to open the Light Dimming settings page.
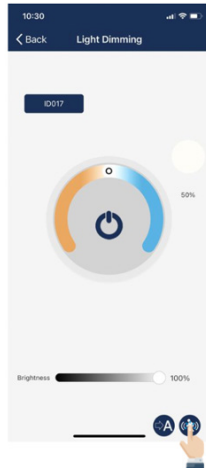
2. Select the "**Sensor Settings**" icon in the lower right corner.

3. Enable or disable motion sensors, and set levels as desired.

Manual OFF Override

User may set manual OFF override time in Occupancy mode.

When light is turned OFF manually, by either APP, switch or schedule, it remains OFF and won't be triggered by motion during the 'Manual OFF override time' period. If motion is detected during this period, it will restart the time counter.
After 'Manual OFF override time' timer times out, the lights will remain OFF but will be ready to be triggered by motion.
Default is set to 'Infinite'.
Note: function only works with firmware later than 231013
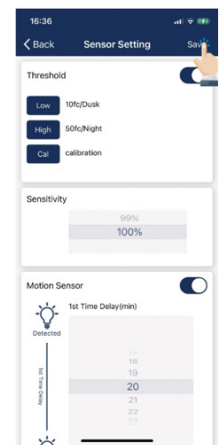
4. Select the "**Save**" button in the upper right to save sensor settings.

There are two working modes of motion sensors, their behaviors in Auto Mode are defined as follows, please see product spec for more details:
- Occupancy sensor, auto turns on when motion is detected, and auto turns off when T1/T2 timers time out.
- Vacancy sensor, manual turns on with switch and auto turns off when T1/T2 timers time out.

T1 and T2 time delays may set an "Infinite Time Delay" to prevent lights from turning off to meet special requirements for applications.

Daylight harvesting sensor is disabled by default. Enable it on APP and set appropriate auto set point threshold (auto-calibration) or manual ON/OFF threshold without auto-calibration.

Do not enable 'Daylight Harvesting' if no photosensor is installed or connected, otherwise it may keep dimming randonly because it can't get the correct ambient light level.

Daylight Harvesting Strategy
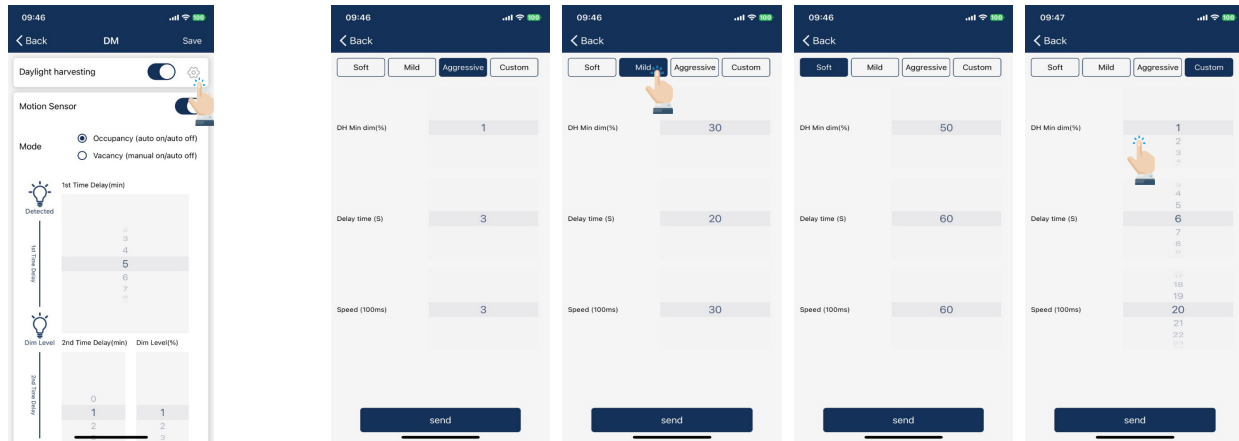
1. Select the setting button beside Daylight harvesting toggle button to set daylight harvesting

2. There are three pre-defined strategies, select the one that best fits application.

3. Custom will allow user to fine-tune the daylight harvesting parameters.

Adjustable parameters for daylight harvesting strategy include:
* DH Min dim(%)

It is the minimum light level that daylight harvesting sensor can dim a luminaire to. Set this parameter higher if you want keep the luminaire brighter and set it lower if you want to save more energy. If you set the value lower than the 'low-end-trim' then 'low-end-trim' is actually working.
* Delay time (S)

The time the sensor will wait to dim down the luminaire when ambient light has gone up. The unit of this parameter is in seconds. Set this value larger if you want the luminaire to hold the level longer even when ambient light has gone up.
* Speed (100ms)

How quick the sensor should dim the luminaire. The unit of this parameter is in 100 milliseconds. Set this value larger if you want the diming process to be more gentle and softer.

Name	Response speed to ambient light changes	Minimum daylight harvesting light level	Suggested applications
Soft	Slow	50%	Independent office, parlor, concierge area
Mild	Medium	30%	Open office, classroom, meeting room
Aggressive	Quick	= low-end-trim (1% or 10%)	Tea room, storage room, warehouse

GROUPS

Groups enable control of a defined set of lights/sensors, in a small area.
The APP provides a default group named "All Lights" which gives the user control over all lights in the zone.
Groups allow user to configured/change settings for all devices in a Group at same time.

Create a Group
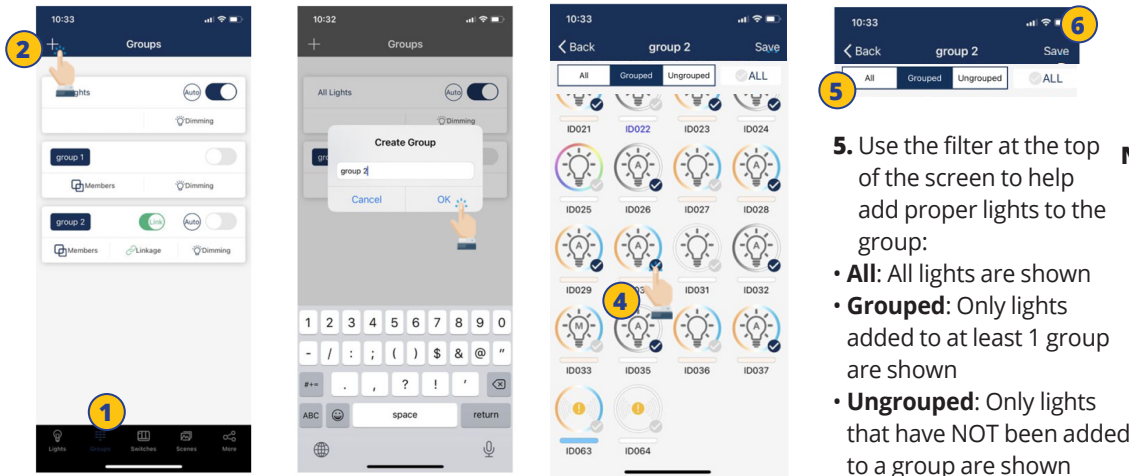
1. Select the "**Groups**" page in the bottom menu.
**2.** Select the "**+**" in the top left corner.

3. Type the group name and then press "**OK**".

4. Select the **lights** that you want to add in the group by selecting the checkbox in the bottom right of the desired Light icon.

5. Use the filter at the top of the screen to help add proper lights to the group:
• **All**: All lights are shown
• **Grouped**: Only lights added to at least 1 group are shown
• **Ungrouped**: Only lights that have NOT been added to a group are shown

6. After all Lights have been selected, press "**Save**" to save the Group.

Note: A single light can be a member of up to 20 Groups. This allows for linkage with multiple groups. See Page 17.

Rename a Group
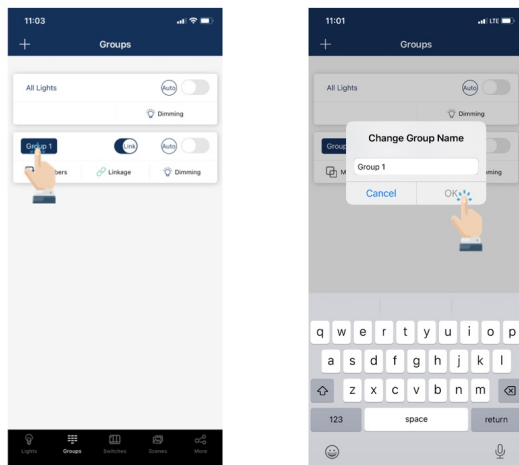
1. Select the Group that you wish to rename.

2. Enter new group name as prompted
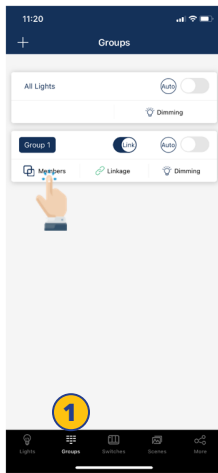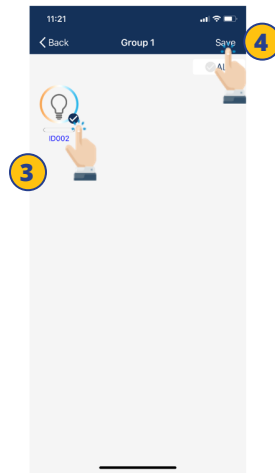**3.** Select "**OK**" to confirm.

Deleting a Group
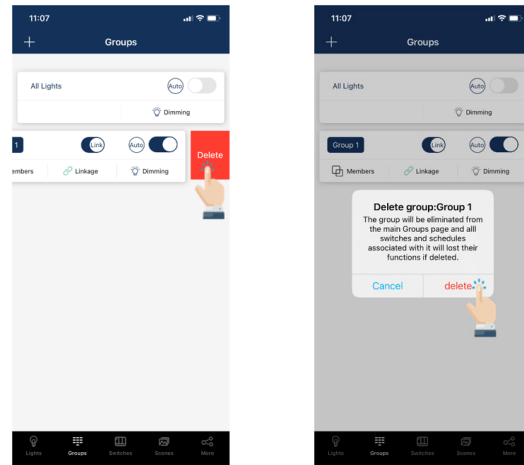
1. Select the Group to delete and slide finger from right to left over that Group.

2. Press the red delete button that appears.
3. Confirm by pressing "**Delete**."

GROUPS, CONTINUED
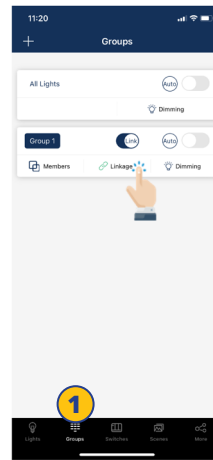
Add or Remove Lights In a Group

1. Select which group to add or remove lights, from the Groups page.
2. Tap "**Members**" to see all current lights in the group.
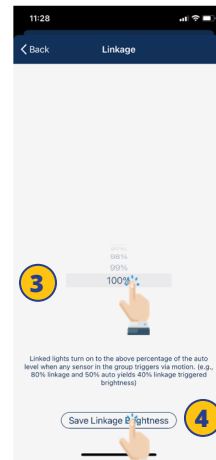
3. Select which lights you want to add or remove.
4. Press "**Save**" to confirm changes.

Adjust Group Linkage Level

1. Choose which group to change linkage settings, from the Groups page.
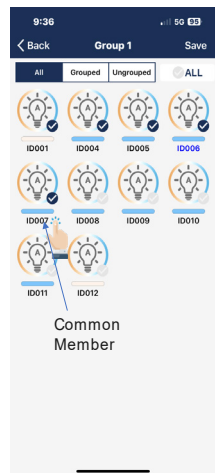**2.** Select "**Linkage**" to access the group linkage controls.

3. Set linkage brightness level according to preference.
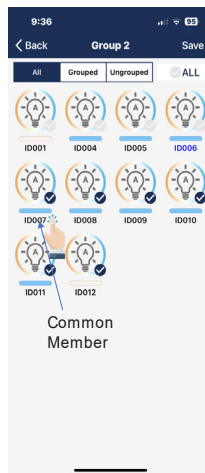**4.** Press "**Save Linkage Brightness**" to confirm changes.
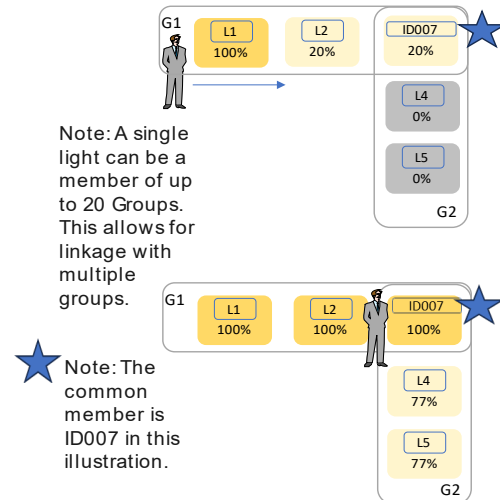
Multiple Group Linkage

1. Select the Member symbol to list the lights in Group

**2.** The common member should be in correct physical position as shown in illustration.

Multiple Group Linkage

Note: A single light can be a member of up to 20 Groups. This allows for linkage with multiple groups.

Note: The common member is ID007 in this illustration.

Note: For a light to respond to the 'Link' command from other lights in the same group, the 'Motion Sensor' function must be enabled for this light, even if the light does not have a motion sensor connected to it.

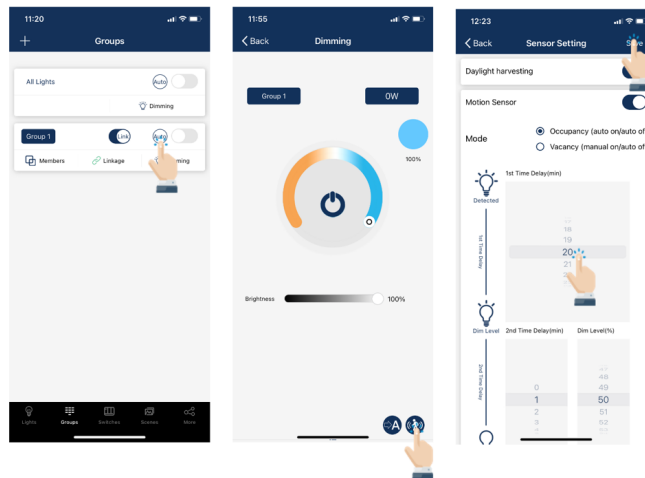## Adjust Group Dimming/Sensor
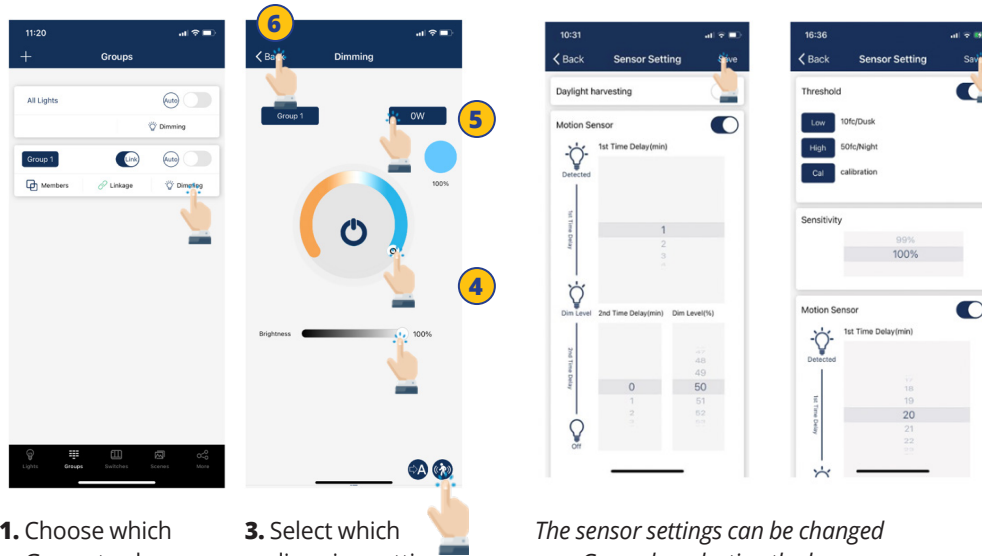
1. Choose which Group to change settings, on the Groups page.

2. Tap "**Dimming**" in the lower right corner.

3. Select which dimming settings to change.

4. Set dimming and/or tuning levels.

5. Set wattage levels.

6. Press "**Back**" to save changes.

The sensor settings can be changed as a Group by selecting the lower right hand motion symbol.

Activate Auto Mode

To set all of the Lights in a Group to Auto mode, that are controlled by sensors:

1. Choose which group to turn on/off Auto mode, on the Groups page.

2. Select the "**Auto**" button to turn auto mode on or off, for all of the Lights in this Group.

3. If there are lights with sensors in a group, you may set the sensor's parameter by selecting the sensor icon on the bottom right corner of the Dimming page.

4. Select "**Save**" to save sensor parameters.
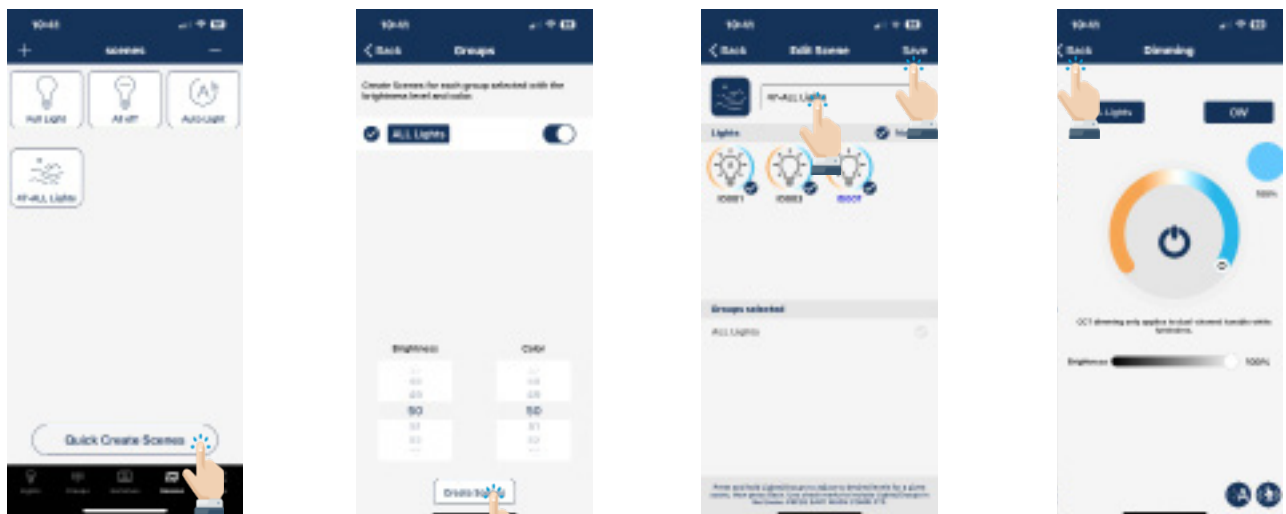
SCENES

Scenes establish programmed settings for individual lights or groups of lights. The Scenes can be set manually by users. The APP also has three default Scenes defined: All Off, Full Light, and Auto Light. Activating a scene will cause all members to adopt the settings to the selected scene. Users must add lights first, then the next step is sensor setting before creating groups and scenes.

Create a Scene
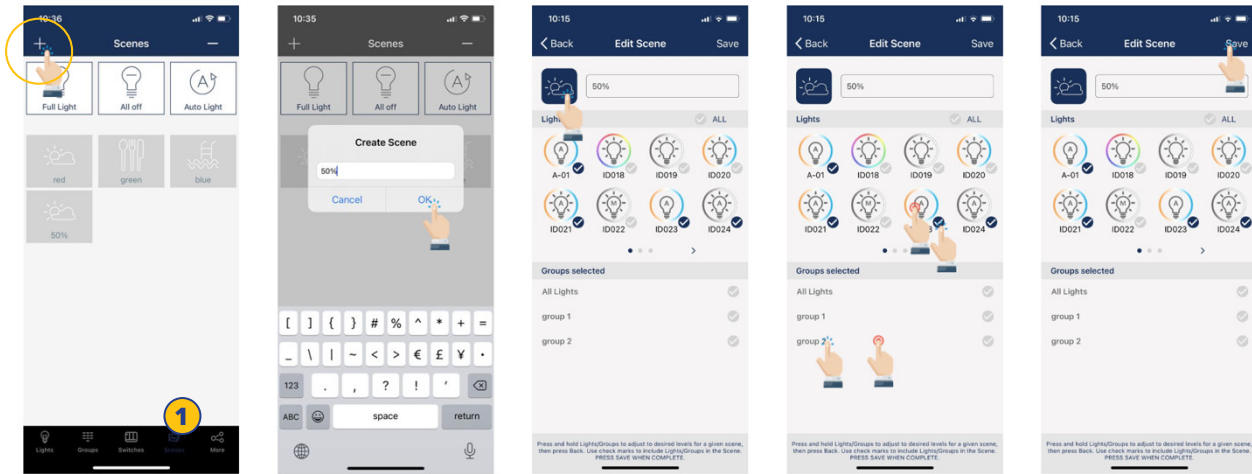
1. Select the "**Scenes**" page in the APP.
2. Select the "**+**" button in the upper left corner.

3. Type in the scene name and press "**OK**".

4. Select a desired icon to be the scene icon.

5. Select the individual lights or groups that will participate in the scene. An extended press on a light or a group will dim the light or group.

6. Select "**Save**" to save the scene settings.
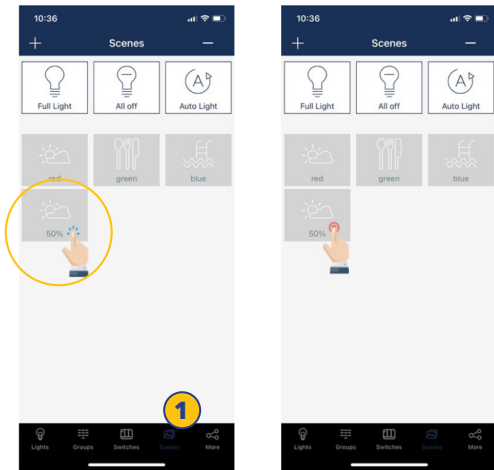
Create a Quick Scene

1. Select the "**Quick Scenes**".

2. Select the "**Group**" to adjust Brightness and Color.
3. Select the "**Quick Scenes**".

4. Select the scene to name and edit. Press and hold the "**Group**" to edit Brightness and Color.
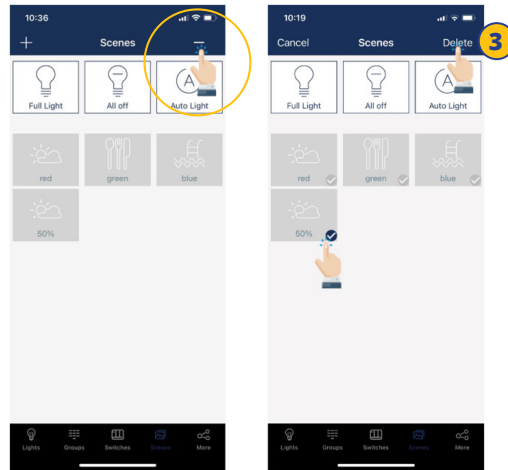
5. Make any edits and press Back and then Save.

SCENES, CONTINUED

Edit Scene Settings

1. Select the scene icon of the scene to edit/program.
2. Press and hold the scene icon to edit scene settings.
3. Press and hold Lights/ Groups and define settings desired.
4. Select "**Save**" to save the scene settings.

To Delete a Scene

1. Press the "**-**" button in the upper right corner.
2. Select which scene(s) to delete.
3. Press "**delete**" to confirm.

SWITCHES

LumaLinx smart switches can be added to the APP to control individual lights or groups. Depending on the type of switch, up to 3 scenes can be associated with a scene button. Switches will automatically stop pairing after 30 seconds or when a button is pressed. Switches are added into the Zones in which they are located.

Add a Switch
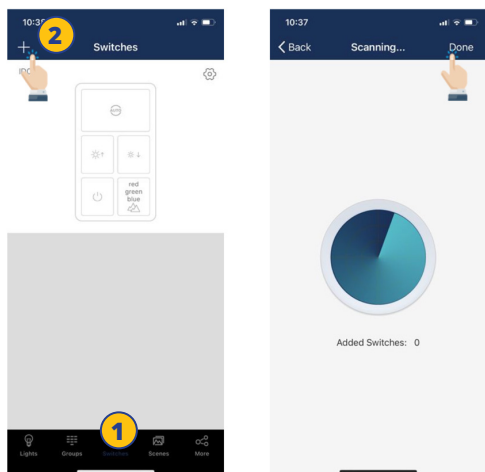
*Note: Please set the switch to pairing mode, then select '+' on the APP to add the switch to the ZONE.*

1. Select the "**Switches**" page of the APP.

2. Press the "**+**" button in the upper left corner.

3. The APP will search for nearby switches.

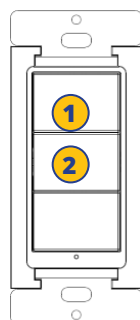**4.** Follow the instructions below in order to pair the specific Switch type.
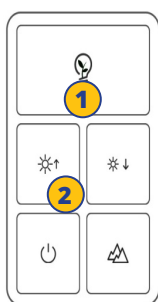
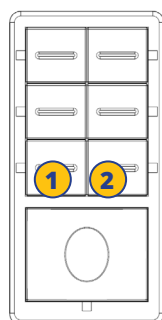Press the **button 1 and 2** together and hold for 2 seconds and then release.

Press the **button 1 and 2** together and hold for 2 seconds and then release.
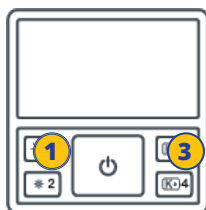
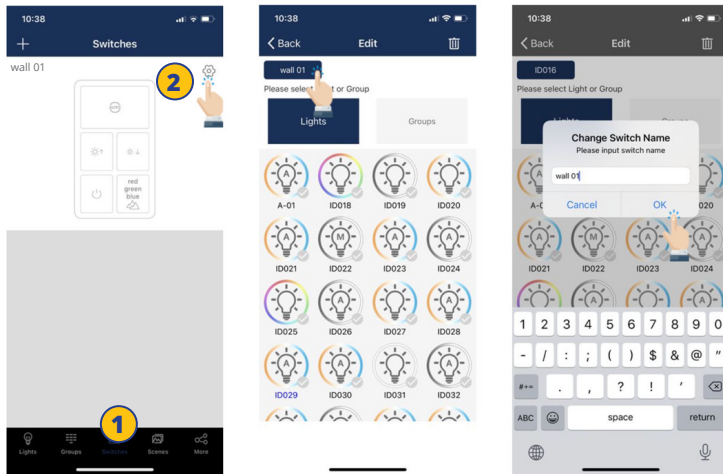Press the **button 1 and 3** together and hold for 2 seconds and then release.

Press the **button 1 and 2** together and hold for 2 seconds and then release.

Press the **button 1 and 2** together and hold for 2 seconds and then release.

Press the **button 1 and 2** together and hold for 2 seconds and then release.

Rename a Switch

1. From the Switch page of the APP, select a switch to rename.

2. Press the settings button in the upper right corner to access switch settings.

3. Select the current switch name displayed in the upper left.

4. Enter the new switch name and press "**OK**" to save.

Delete a Switch
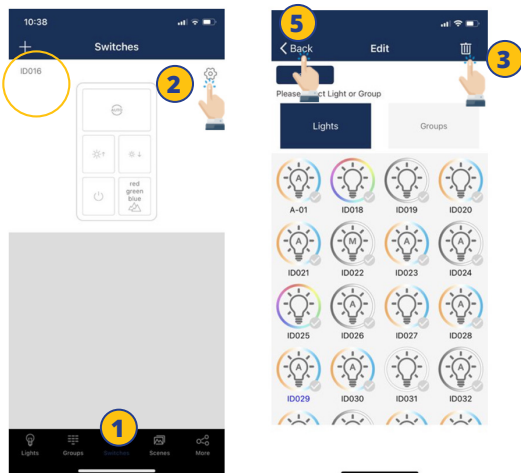
1. From the Switch page of the APP, select which switch(s) to delete.

2. Press the settings button in the upper right to access switch settings.

3. Tap the trash icon in the upper right corner.

4. Select "**delete**" to confirm.

**5.** Select the "**Back**" button in the upper left corner to return to the "**Switch**" page.

Edit Switch Settings

Button functions vary for different types of switches. For some switch models, buttons have pre-defined functions and can't be associated to scenes. Set the functions of the switches based on the type.

SWITCHES, CONTINUED

Associate Lights To Switches

Associate a button to a light and the user will be able to turn the light on or off by pressing this button.
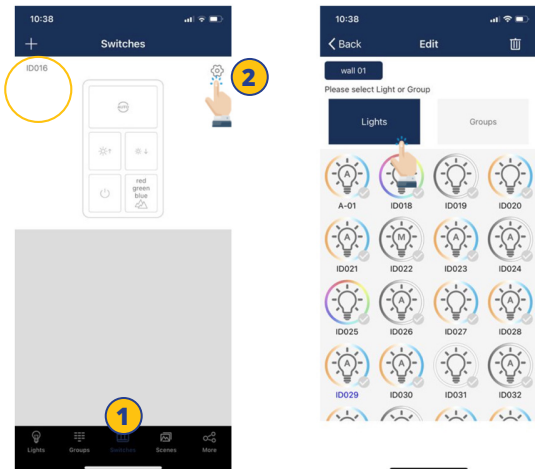
1. From the "**Switches**" page of the APP, select the switch to assign lights.
2. Press the settings button in the upper right to access switch settings.

3. Select "**Lights**" to see a list of individual lights.
4. Select only one light to assign to the switch.
5. Select "**Next Step**" at the bottom to continue.

Associate Groups To Switches

Associate a button to a group and then the user can turn the group on or off by pressing this button.
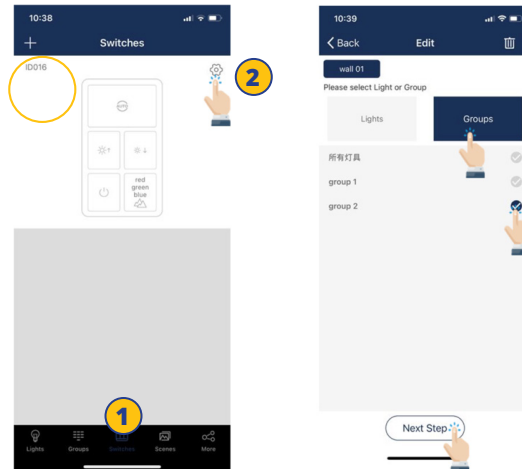
1. From the "**Switches**" page, select a switch to assign a group.
2. Press the settings button in the upper right to access switch settings.

3. Select "**Groups**" to see a list of groups.
4. Select only one group to assign to the switch.
5. Select "**Next Step**" at the bottom to continue.

Associate Scenes To Switches

Associate scenes to a button and the user will be able to change between these scenes when the user presses this button. Usually, a button can be associated with up to 3 scenes.

1. After associating one light OR group to the switch, there will be a prompt to select scenes next.
2. Select up to three scenes.
3. Select "**Save**" to confirm.

Note: Whenever a group or scene has been updated, please edit and save the switch settings again to make sure all settings are synchronized so that the switch can work as expected.

You may associate the following functions to the four keys of the 8-key switch besides the scenes:

- On: it will turn on the lights.
- On/Off: it will turn on/off the lights.
- Off with 15 minutes delay: it will turn off the lights after 15 minutes
- Off with 30 minutes delay: it will turn off the lights after 30

Note: the timed off will be interrupted and canceled if user manually dims the lights, for example, turn on, manually dim up/down by APP, switch or schedule.
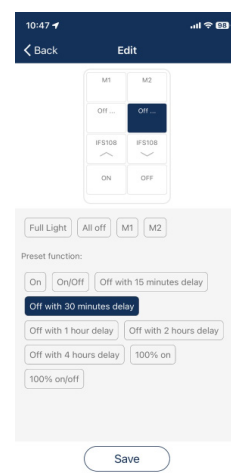
SWITCHES, CONTINUED

Ceiling Sensors

Ceiling sensors will also show up on the Switches page. There are two types of ceiling sensors:
1. **Dual mode ceiling sensor, JLS-LLE-CS107D:** It has Ultrasonic, PIR and photocell sensors inside.
2. **PIR ceiling sensor, JLS-LLE-CS107S:** It has PIR and photocell sensors inside.

A ceiling sensor can be associated to a group of lights and will turn on/off the group at specified conditions. It also has a relay to switch on/off a circuit. Please set the trigger/hold on condition, hold time, sensitivity and photocell threshold according to installation requirements.
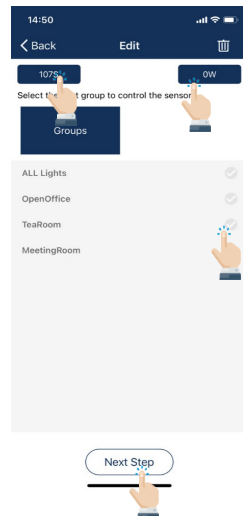

JLS-LLE-CS107S.A0

JLS-LLE-CS107D.B1
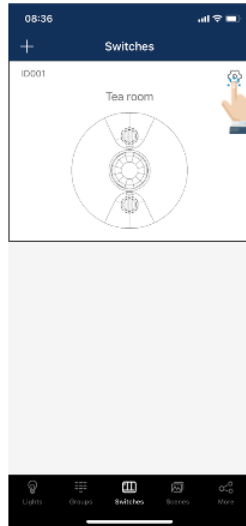
JLS-LLE-CS107D.A0

1. Select the setting button to configure the ceiling sensor.
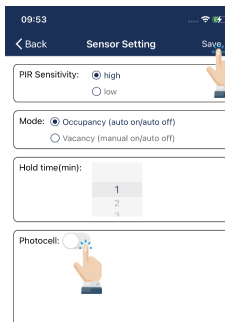
JLS-LLE-CS107S.A0 Configuration

When the photocell is enabled, the sensor won't turn on until the ambient light is below the threshold, even if a motion is detected.
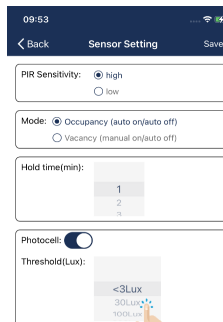
You may rename the sensor, input the rated wattage for relay output load, and associate the sensor to a light group.
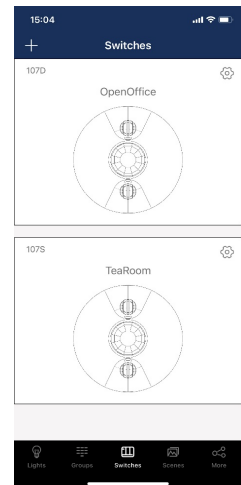

1. Then select "**Next Step**" to set the sensor parameters.

2. Select "**Save**" to save the settings.

3. You may set the hold time of the PIR sensor, enable/disable photocell and set the photocell threshold.

JLS-LLE-CS107D.A0 Configuration

You may rename the sensor, input the rated wattage for relay output load, and associate the sensor to a light group.

1. Then select "**Next Step**" to set the sensor parameters.

2. You may set the sensitivity of PIR and Ultrasonic sensors, how motion should be triggered and held, the hold time, enable/disable photocell, and set the photocell threshold.

3. Select "**Save**" to save the settings.

TRIGGERED BY and HOLD ON options:
• **PIR** – only motion detected by PIR is effective.
• **Ultrasonic** – only motion detected by ultrasonic is effective.
• **PIR + Ultrasonic** – only motion detected by both PIR and ultrasonic is effective.
• **PIR or Ultrasonic** – motion detected either by PIR or ultrasonic is effective.
• **None** – similar to vacancy mode, motion won't trigger any action.

When photocell is enabled, the sensor won't turn on until the ambient light is below the threshold, even if a motion is detected.

JLS-LLE-CS107D.B1 Series

The CS107D.B1 is a line-voltage dual-tech occupancy sensor that combines PIR and ultrasonic technologies to provide high accuracy and wide coverage. It also features integrated daylight harvesting. Commissioning via the LumaLinx app allows the sensor to turn a load on and hold it on if either or both technologies detect movement. The CS107D works seamlessly together with other wireless devices in the LumaLinx system.

- 120-277VAC input
- 600 sq ft room coverage
- Daylight Harvesting
- Dual-tech PIR + Ultrasonic technology provides high accuracy and wide coverage
- Wireless Bluetooth connection to other LumaLinx devices

JLS-LLE-CS107D.B1 Configuration

You may rename the sensor, input the rated wattage for relay output load, and associate the sensor to a light group.

1. Then select "**Save**".

2. You may set the sensitivity of PIR and Ultrasonic sensors, how motion should be triggered and held, the hold time, enable/disable photocell, and set the photocell threshold.

3. Select "**Save**" to save the settings.

JLS-LLE-BCS107 Configuration

The JLS-LLE-BCS107 battery powered, Bluetooth wireless ceiling mount sensor provides motion and daylight harvesting sensor functions.
Main features include
- Easy installation with multiple ceiling mount options
- 10 year battery life, easy maintainence.
- PIR occupancy/vacanacy and daylight harvesting sensor

The JLS-LLE-BCS107 sensor can be associated to a group of lights and will turn on/off the group at specified conditions.
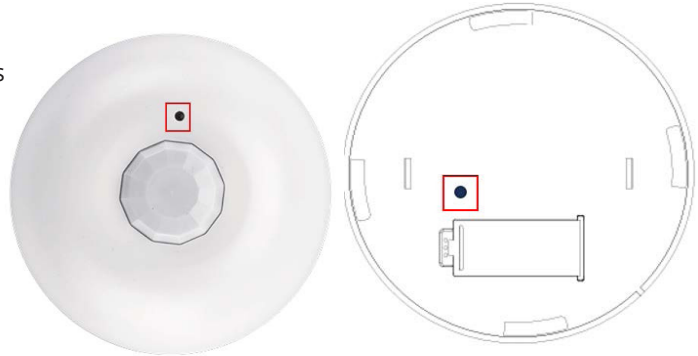
LED indicator flashes when it receives a wireless packet of informtion

Calibrate/Pairing Button:
- Short press: Calibrate daylight harvesting sensor
- Long press: Press and hold button for 3 seconds to set pairing mode. The LED indicator will flash quickly and then pair with app within 30 seconds

JLS-LLE-BCS107 Configuration

Pair from Switch page. Bind to either a group or individual lights similar to the CS sensors, Select 'Save". If you add lights to a group later, you will need to go back to the JLS-LLE-BCS107 con iguration page and save the settings again.
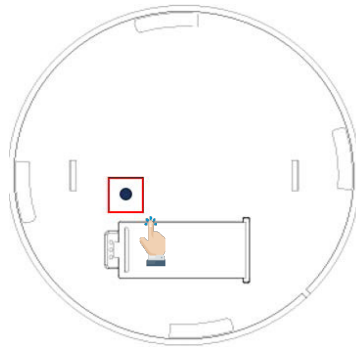
The daylight harvesting sensor wil respond slower than non-battery models.

Calibrate daylight harvesting with short press to calibrate button. You will need to ensure the sensor lens/daylight sensor is positioned towards the area to measure the ambient light level.
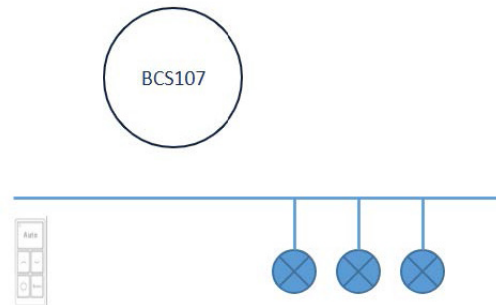
BCS107

To provide vacancy and bi-level dimming on LumaLinx interior light together with the JLS-LLE-BCS107 ceiling sensor:
- Commission the JLS-LLE-BCS107 and the lights to a ZONE with LumaLinx APP.
- Create a group and add those lights as members.
- Enable the motion sensor function for the group and select 'Vacancy'. (Even there are no motion sensors installed on these lights).
- Disable the daylight harvesting sensor function for the group.
- Set proper T1/T2 and dim level for the group.
- Dim the group to proper level and save it as auto point.
- Bind the JLS-LLE-BCS107 to this group.
- Calibrate the JLS-LLE-BCS107 properly.

ADDITIONAL DEVICES

There are a variety of LumaLinx advanced control products that do not directly control luminaires. These include plug load controllers, bridges, emergency lighting control devices, energy monitoring dongles, and RTC dongles. In the APP, most of these are referred to as "Devices."


Plug Load Controllers
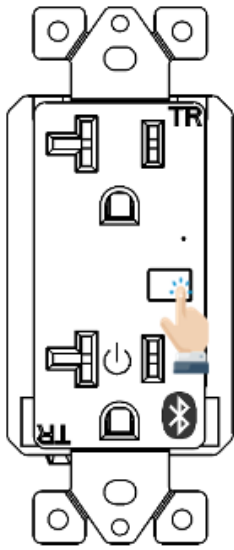
Plug load controllers appear on the Lights page. They can be automatically turned on or off when grouped with other lights, and then linked.

To turn the plug load controller on or off, press the button on the face of the receptacle.

To reset the plug load controller to factory settings, press and hold the button on the receptacle for 6 seconds.
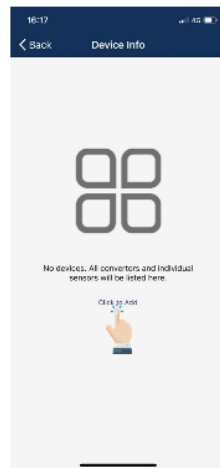
To add the plug load controller to a zone, press and hold the button on the receptacle for 6 seconds.

JLS-LLE-CR01 Energy Monitoring Dongle with Real-Time Clock

➤ Please refer to *LumaLinx energy monitoring instruction for more details*.
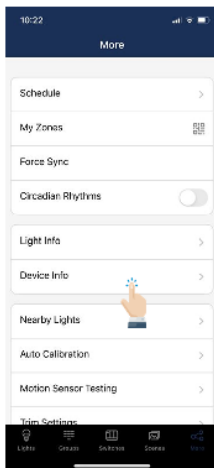
To add an Energy monitoring dongle:
1. From the More page, select the "**Device Info**" button.

2. Press "**Select to Add**" to have the APP search for the new device.

Note: see Energy Monitoring Tool Instructions at Get Setup Guide

PPA109S Emergency Lighting Controller

- JLS-LLE-PPA109S is an Emergency Lighting Control Device which complies with UL924.
- JLS-LLE-PPA109S needs to work together with LumaLinx smart lighting controllers and supporting products.
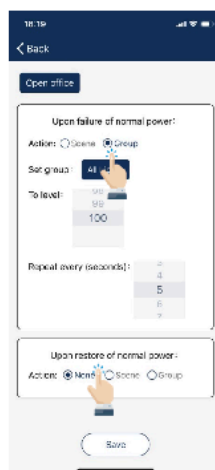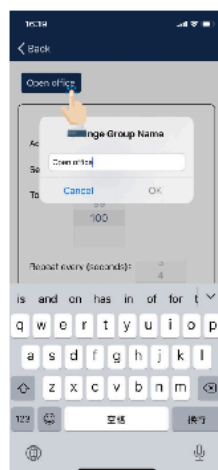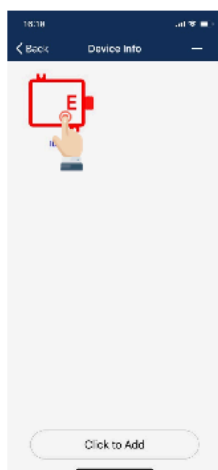- JLS-LLE-PPA109S is added to the mesh network as a device.
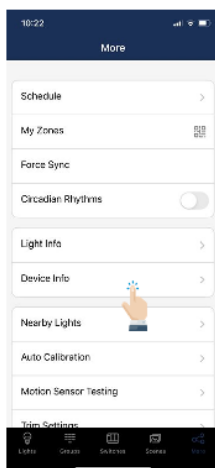
To add a JLS-LLE-PPA109S Emergency Lighting Controller
1. From the More page, selectthe"**DeviceInfo**" button.
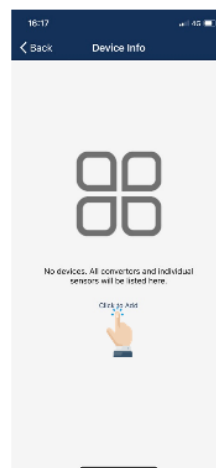
2. Press "**Select to Add**" to have the APP search for the new device.
3. Select the JLS-LLE-PPA109S device to create the check mark.
4. Select "**Add**" at the bottom of the page.
5. Select "**Add**" in the dialog box to confirm.

To configure PPA109S
1. From the More page, select the "**Device Info**" button.
2. Long press the JLS-LLE-PPA109S device icon to get to the configuration page.

3. Select the device name in the upper-left corner to edit the device's name.

4. You can set the actions to be taken upon failure of normal power, and upon restoration of normal power.

- The default action when normal power fails is "Set light level to 100 for the All Lights group".
- The default action is "None" when normal power is restored. You may choose a scene, or a group and a light level (including Auto) for those actions.
- You may set the repeat interval for action upon failure of normal power, in order to prevent luminaires from accidentally dimming in emergency situations.
- ➤ Please refer to *JLS-LLE-PPA109S instruction* for more details on how to wire and configure this device for various applications.

ADDITIONAL DEVICES, CONTINUED

JLS-LLE-CR04 Inter-Op Bridge

To add CR04 Inter-Op Bridge after it is plugged into a USB port:
1. From the More page, select the "**Device Info**" button.
2. Press "**Select to Add**" to have the APP search for the new device.

➤ Please refer to *CR04 Inter-Op Bridge User's Guide and Demand Response Instructions for more details.*

JLS-LLE-RP0 Signal Booster
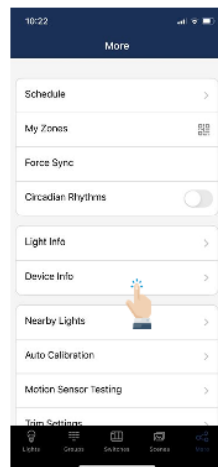
To add JLS-LLE-RP0 after it is plugged into a USB port:
1. From the More page, select the "**Device Info**" button.
2. Press "**Select to Add**" to have the APP search for the new device
3. Ensure the JLS-LLE-RP0 is added to the Zone being commissioned. Delete from Zone and add to the next Zone during commissioning.

➤ Please refer to *RP0 Commissioning Guide for more details*
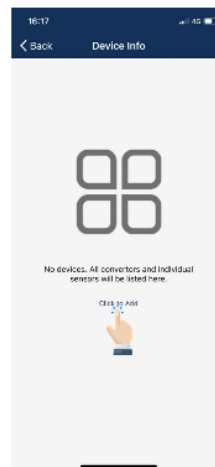
JLE-LLE-BG01 485 Bridge

➤ Please refer to *JLS-LLE-BG01 485 Bridge Instructions for more details.*

To add a JLS-LLE-BG01 485 Bridge:
1. From the More page, select the "**Device Info**" button.
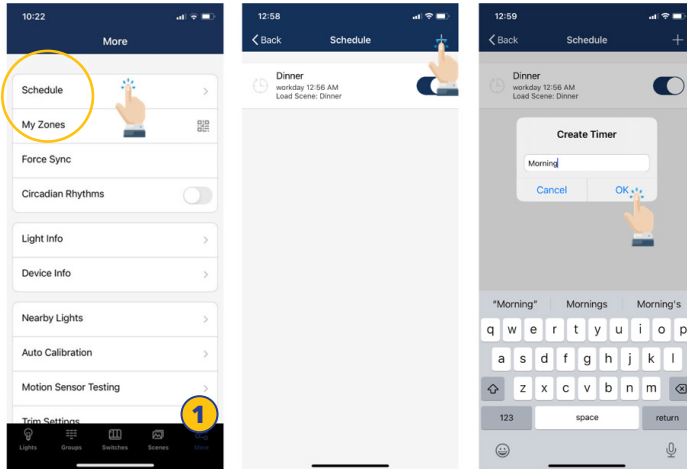
2. Press "**Select to Add**" to have the APP search for the new device.

SCHEDULES

Schedules allow the user to program lighting changes for specific dates and times. Schedules can be applied to an individual light, a group, or a scene.

Create a Schedule

1. From the "**More**" page, press "**Schedule**".

2. Select the "**+**" in the upper right corner.

3. Type in a name for the schedule.

4. Press "**OK**" to continue.

5. The user will need to associate the Schedule to lights, groups, or scenes, as well as set the schedule's time, before saving the Schedule.

Associate a Schedule To Lights, Groups, or Scenes
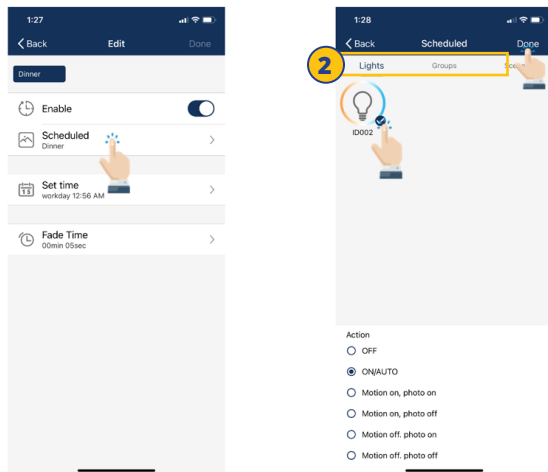
1. On the Edit screen of a selected schedule, press "**Scheduled**".

2. Choose between "**Lights**", "**Groups**", or "**Scenes**".

3. Select one light/group/scene to schedule.
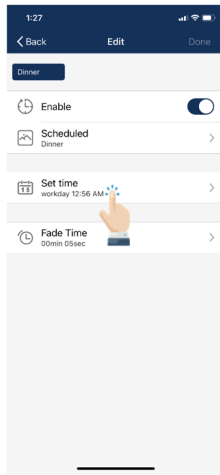
4. Press "**Done**" to continue.
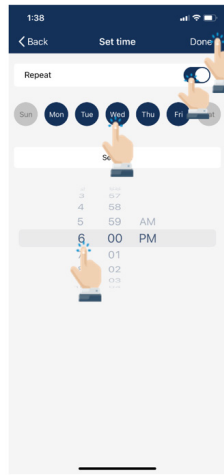
Set The Schedule's Date And Time
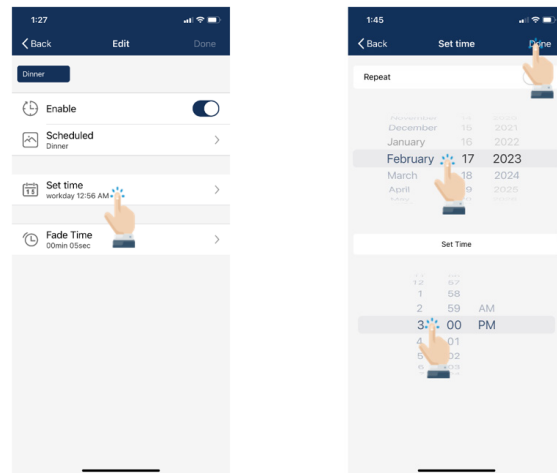
1. On the Edit screen of a selected schedule, press "**Set time**".

2. Choose preferred date for the schedule.

3. Choose preferred time for the schedule.

4. Press "**Done**" to continue.

SCHEDULES, CONTINUED
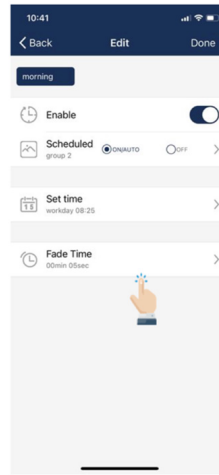
Set a Repeating Schedule

1. On the Edit screen of a selected schedule, press "**Set time**".
2. Select to enable the Repeat switch.

3. Choose which days of the week you want the schedule to repeat.
4. Set desired time for the schedule.
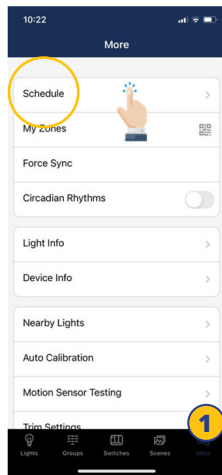5. Press "**Done**" to continue.

Set Fade Time For a Schedule

1. On the Edit screen of the selected schedule, press "**Fade Time**".

2. Set Fade Time to a desired duration.
3. Select "**Done**" to continue.

To Delete a Schedule

1. From the More screen, select "**Schedule**" to see a list of all schedules.
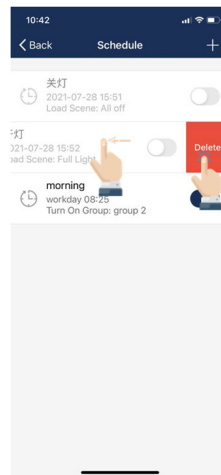
2. Select which schedule to delete and swipe finger to the left.
3. Press the red "**Delete**" button that appears.
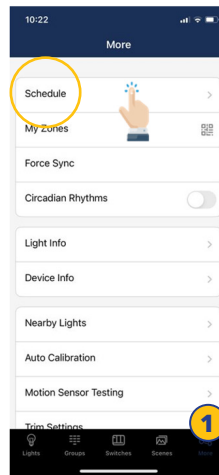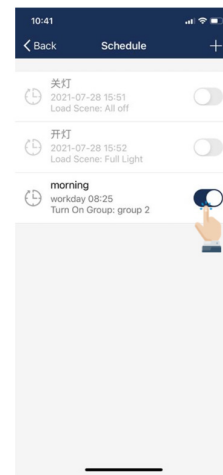4. Press "**Delete**" to confirm.

Enable Or Disable a Schedule

1. From the More screen, select "**Schedule**" to see a list of all schedules.

2. Select which schedule to enable/disable and select the enable/disable button on the right.
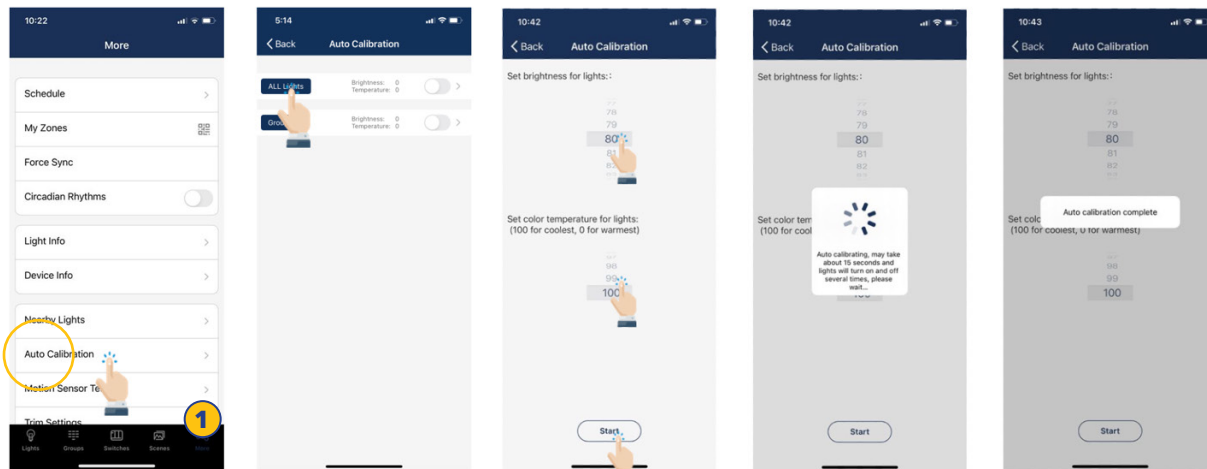
AUTO MODE

Lights with sensors can:

1. **Detect human movements** with a motion sensor, and automatically turn on or off the light.
2. **Detect ambient light** using a photo sensor to automatically dim up or down the light while providing sufficient and comfortable lighting, and energy savings. Such functionality is also referred to as "daylight harvesting."

There will be an "**A**" in the center of a light's icon if the light is in Auto mode. Auto mode indicates that light's level is automatically controlled by sensors. A light with a sensor will store the data from the sensor in the APP. This enables a light to fully 'harvest' natural light to dim itself, while maintaining a comfortable, safe, and energy saving light level.

There are two ways to set the Auto light level in the APP: "**Auto Calibration**" and "**Manual Setting**." To maximize energy savings, it is important to eliminate ambient light interference when setting the Auto mode light levels.

Set Auto Mode Using Auto Calibration

A user specifies parameters and the lights will automatically remove the ambient light interference by a self-learning process to determine the appropriate Auto mode light level. It is recommended to test with one light in a real or simulated environment to find the appropriate parameters and then quickly batch set the lights using "Auto Calibration." During the Auto Calibration process, the lights will turn on and off several times.

1. From the "**More**" page, select "**Auto Calibration**".

2. Select a group for Auto Calibration by selecting the group name.

3. Adjust parameters as desired.

4. Select the "**Start**" button to start Auto Calibration.

Set Auto Mode Using Manual Setting

"Manually setting" allows users to customize the Auto mode light level. The light will remember the light reading from the sensor directly without considering the ambient light. It is the user's responsibility to make sure the light level is correct by setting it at night or with the sunlight (or ambient light) shielded. By default, the Auto mode brightness starts at 100%.
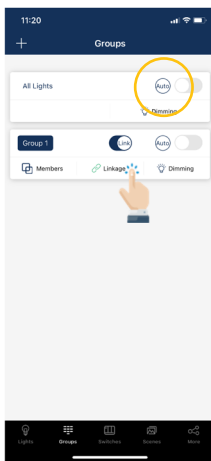

1. On the Lights page, select and hold a light icon to access the "**Light Dimming**" settings.
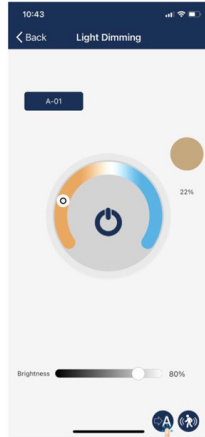
2. Adjust the dimming levels and color temperature as desired.

3. Enable Auto Mode by pressing the Auto button in the lower right.
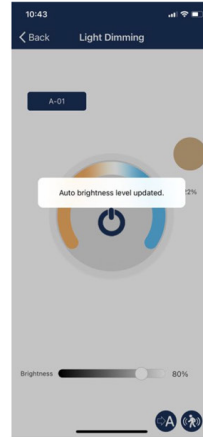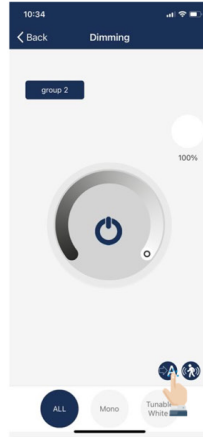
4. A confirmation will appear that the Auto Mode brightness level has been updated.

It is also possible to set a group to Auto Mode from the Groups page, using the Auto button to the right of a group name.

Note: Auto mode only applies to lights with sensor functions enabled, either motion sensor and/or photo sensor. When Auto light level has been set, the lights will return to the brightness/color each time it is powered on, or turned on by the APP, switch, or schedule. Auto light level does not apply to lights with sensor functions disabled, even when it has a sensor connected to it. Each time it is powered on, it will return to the last brightness/color.

SCHEDULED CALIBRATION

Set Scheduled Auto Calibration

The scheduled Auto Calibration feature allows users to set the Auto Calibration function for times when natural daylight will not affect ambient light levels in the space.
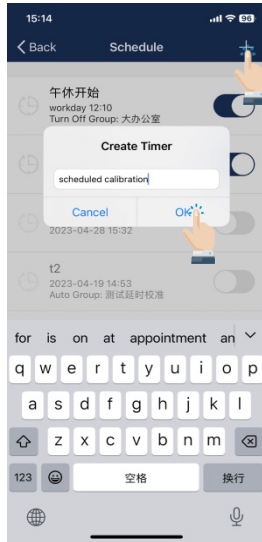
1. On the "More" page, select "Schedule", then select the "+" button to add a scheduled calibration. Input a name and selecet "OK".
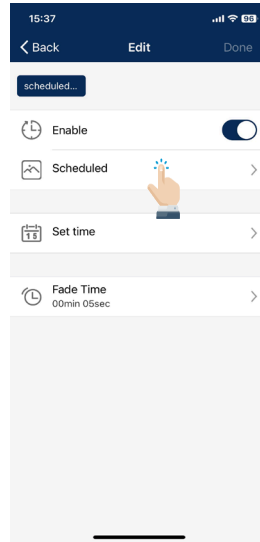
2. Select "Scheduled".

3. Select the group desired to calibrate. Then select "Schedule Calibration" at the bottom.

4. Then choose the appropriate brightness value and the color CCT in the prompt box and select "OK".

5. Then select "Done".
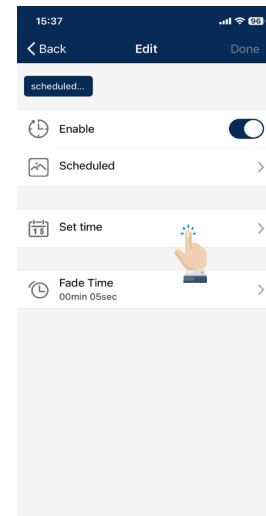
6. Select "Set Time" to set the appropriate Date/Time of the Scedule Calibration.
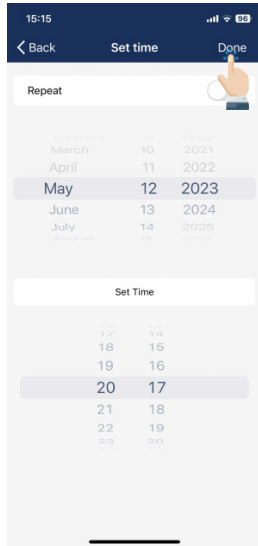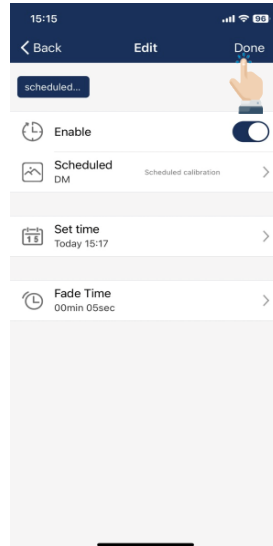
7. Select "Done".

8. Select "Done" to save the schedule

9. Schedules will show on "Schedule" list.

Note: Lights must be powered during Scheduled Calibration.Sensors must be firmware verions "230426" or later.Select "Set Time" to set the appropriate Date/Time of the Scedule Calibration.

ADDITIONAL SETTINGS

Checking Lights, Groups, and Scenes Information

From the More page, The Light Info tab will display a list of all of the information for lights, groups and scenes in a zone.
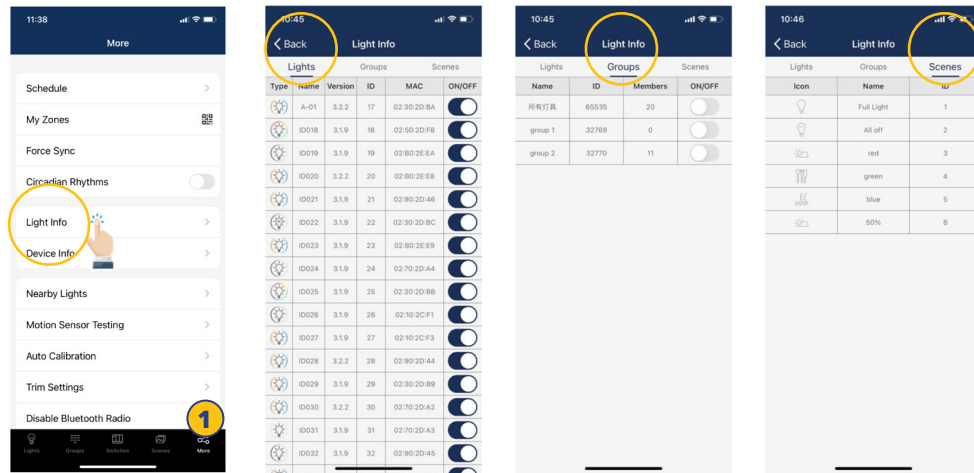
1. From the More page, select on "**Light Info**"

2. Switch between Lights, Groups, or Scenes to display the desired information.

Checking Other Devices Information
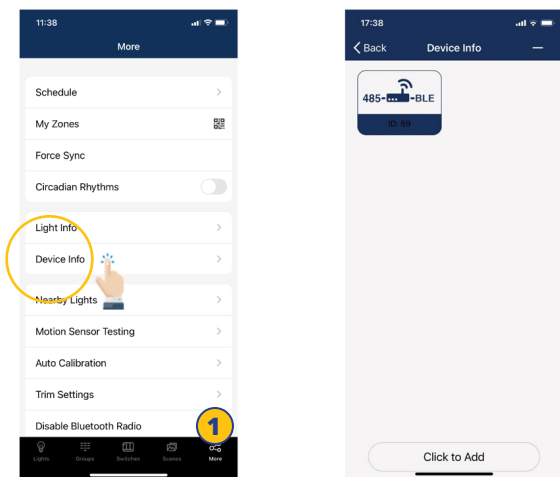
1. From the More page, select "**Device Info**" to check all gateway, transformer and sensor information.

To Check Nearby Lights

On the More page, the Nearby Lights tab is useful in the commissioning process because it lists all online lights that are connected and not connected to the APP.
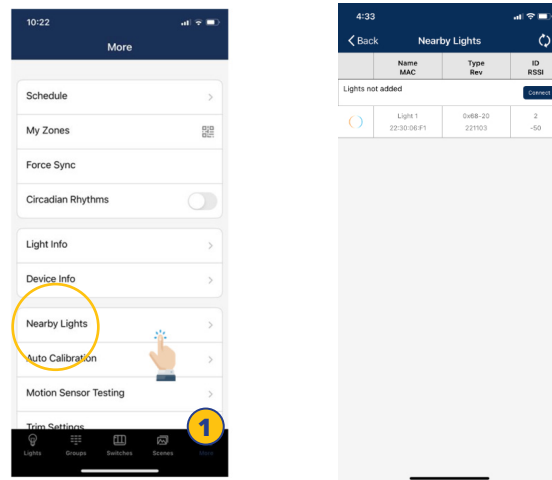
1. From the More page, select "**Nearby Lights**".

2. Press the Refresh button if lights don't show up.

ADDITIONAL SETTINGS, CONTINUED

Trim Settings

Users can set the High Trim and Low-End Trim that defines a maximum and minimum power for lights and groups.

Note: There is a 'Daylight min dim', which is the minimum level that daylight harvesting sensor can go when it is enabled.

1. From the More page, select "**Trim Settings**".

2. Select Lights or Groups to change settings.

3. Set to desired trim settings.
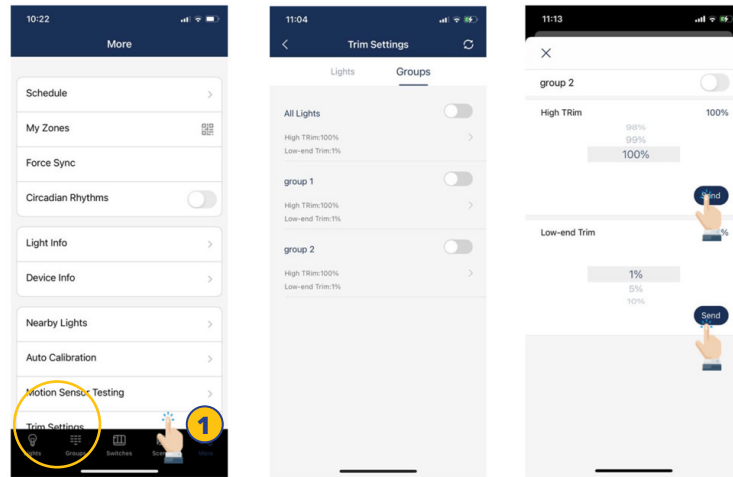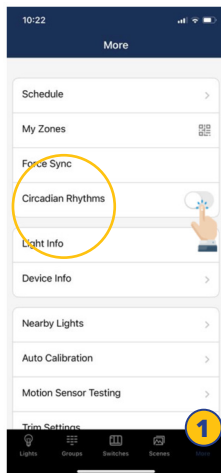**4.** Select "**Send**" to send trim settings to the light or group.

Circadian Rhythms

Circadian Rhythm synchronizes all of the lights' color temperature, and adjusts them based on the time of the day, in order to mimic natural daylight. This only applies to tunable white lights that are set in Auto mode.

1. From the More page, select the enable/disable button next to Circadian Rhythms.
2. Enabling Circadian Rhythms will automatically sync color temperature across all color tunable lights in Auto mode.

Motion Sensor Testing

Motion Sensor Testing allows users to test if motion sensors are working properly. Lights must first be set to Auto mode before running the test.
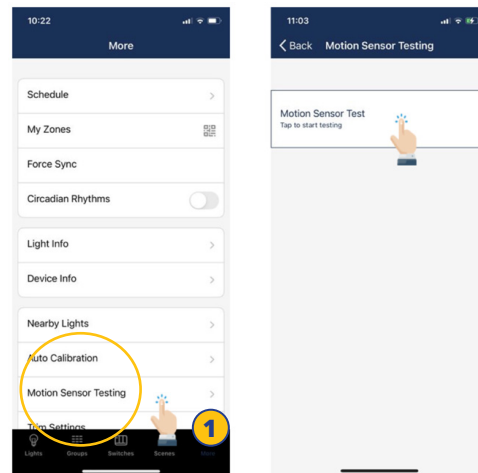
1. From the More page, select "**Motion Sensor Testing**".

2. Select to start the test. Lights with motion sensors should turn off as soon as the test is started.
3. Walk around to test the sensors and trigger the lights to turn on. Please wait for 6 seconds to trigger the sensor.

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To Disable Bluetooth Radio

Disabling the Bluetooth Radio disconnects all of the lights' connections to the APP to easily transfer control. **To restore, sensors will need to be reset.**

1. From the More page, tap "**Disable Bluetooth Radio**".

2. A warning dialog box will appear. Select "**Continue**" to

3. Select which Lights or Groups, to disable their bluetooth connection.
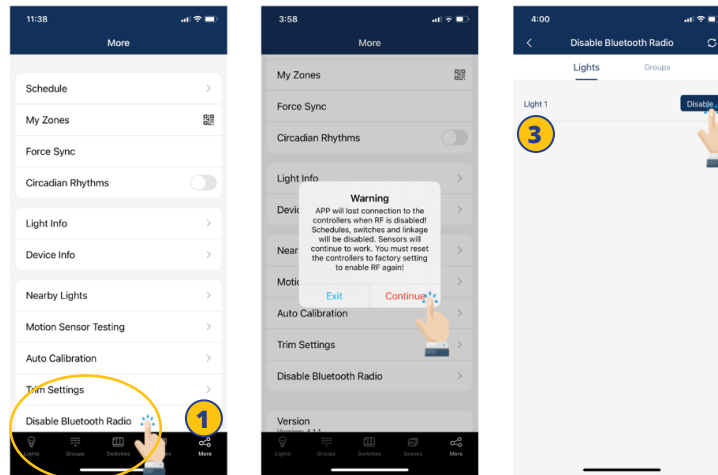**4.** Press "**Disable**". The APP will automatically refresh and sync settings.

Photocell Setting

1. For photocell sensors, the default ON/OFF threshold is 10/60 fc. User may change the thresholds. Click the button of 5fc/50fc/100fc will set 5/50/100 fc as ON threshold respectively and the lights will turn on/off several times to auto-calculate the OFF threshold. User may input a specified fc value as ON threshold and select the "Cal" button to calculate the OFF threshold based on it.

2. It will prompt a notice message during the calibration process. Please wait until the calibration ends. The light will quick flash several times if it failed to calculate the OFF threshold successfully. Please try to calibrate in another time. One possible reason for calibration failure is there are too much ambient light.

3. You may also manually input the On/Off threshold and select the 'Send' button to set the value to the sensor without calibration.

RESTORING FACTORY SETTINGS

There are two ways to restore factory settings for the lights.

Restore By Deleting Lights

The first way is by deleting lights from the APP. This is the easiest way.
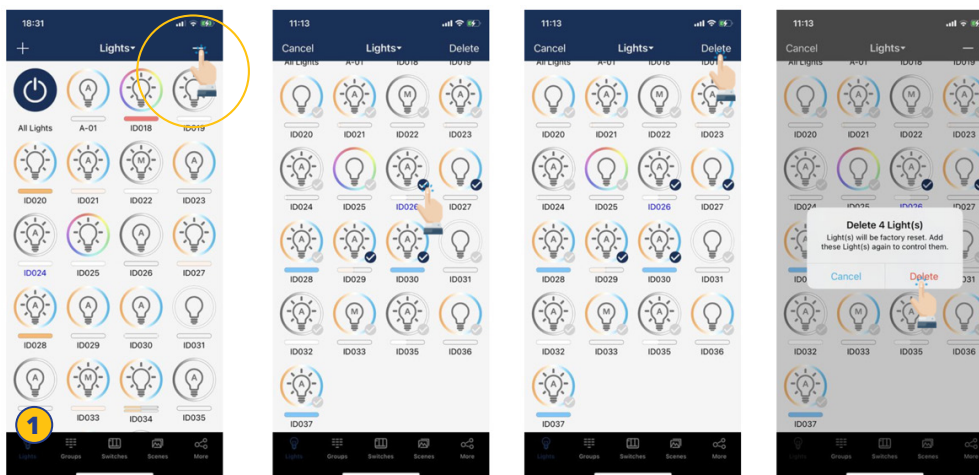
1. From the Lights page, select the "**-**" button in the upper right corner.

2. Select the check for each light that you want to delete and reset.

3. Select the "**Delete**" button in the upper right corner to delete and reset all selected lights.

4. Select "**Delete**" in the dialog box to confirm.

Restore By Power Reset

The second way to restore factory settings is to do the following power reset sequence:

1. Confirm all lights are off.

2. Turn on lights for 8 seconds; then turn the power off for 10 seconds.

3. Immediately turn the lights on and off, then wait for another 10 seconds. Repeat 3 times.

4. Turn the lights on for 8 seconds, then turn the power off for another 10 seconds. Repeat 2 times.

5. Turn the lights back on. Blinking Lights indicate a successful factory reset. All previous settings and data for these lights have now been deleted.

Waiting for at least 10 seconds will ensure that the fixture is completely powered off.

The duration will vary depending on the driver and the power supply. If the driver can cut power to the fixture within 3 seconds, then you may change the waiting period from 10 to 3 seconds to facilitate a faster reset time.

DEFAULT SENSOR SETTINGS

Integrated Sensors
Models: JLS-LLE-IFS108, JLS-LLE-IFS105, JLS-LLE-EFS106, JLS-LLE-EFS104, JLS-LLE-IFS101 Motion sensor = ON
Daylight Harvesting = OFF
T1 = 20 min
T2 = 1 min
Dim level = 50%
Sensitivity = 100%
High trim = 100%
Low end trim = 1% or 10%, depend on products Daylight min dim = Low end trim
Occupancy/Vacancy mode = Occupancy
Linkage = OFF
Linkage level = 100%
Photocell ON threshold = 50FC
Photocell OFF threshold = 150FC

Sensor-Ready Controllers
Models: JLS-LLE-FA102, JLS-LLE-WPPA102, JLS-LLE-PPA102S, JLS-LLE-PPA104S, JLS-LLE-WF20R Note:
Controllers without integrated sensors, may later connect to Eco-Sensors
Motion sensor = OFF
Daylight Harvesting = OFF
T1 = 20 min
T2 = 1 min
Dim level = 50%
Sensitivity = 100%
High trim = 100%
Low end trim = 1% or 10%, depend on products Daylight min dim = Low end trim
Occupancy/Vacancy mode = Occupancy
Linkage = OFF
Linkage level = 100%
Photocell ON threshold = 50FC
Photocell OFF threshold = 150FC

Line Voltage Occupancy Sensor Dual Mode
Model: JLS-LLE-CS107D.A0
PIR sensitivity: High
Ultrasonic sensitivity: Middle
Triggered by: PIR
Hold on by: PIR
Hold time: 1 min
Photocell: Off
Model: JLS-LLE-CS107D.B1
PIR sensitivity: High
Ultrasonic sensitivity: Middle
Triggered by: PIR or Ultrasonic
Hold on by: PIR or Ultrasonic
T1: 20 min
T2: 1 min
Daylight Harvesting: ON

Line Voltage Occupancy Sensor Single Mode
Model: JLS-LLE-CS107S
PIR Sensitivity: High
Mode: Occupancy (auto on/auto off)
Hold time: 1 min
Photocell: Off

Integrated Sensors (Wet Location) Models: JLS-LLE-EFS106-Z10-W, JLS-LLE-EFS106-AUX-W
Motion sensor: ON
Photocell: Off
T1 = 20 min
T2 = 1 min
Dim level = 50%
Sensitivity = 100%
High trim = 100%
Low end trim = 1% or 10%, depend on products
Occupancy/Vacancy mode = Occupancy Linkage = OFF
Linkage level = 100%
Photocell ON threshold = 50FC
Photocell OFF threshold = 150FC

LIGHTS FLASH INDICATIONS

Operation	Flash indication
IR remote disable BLE signal	Slow flash 3 time
IR remote enable BLE signal	Slow flash 3 time
IR remote reset lights to factory setting	Slow flash 3 time
Add lights	Reboot light
Delete Lamps	Slow flash 3 time
Manual reset to factory setting	Slow flash 3 time
OTA success	Slow flash 3 time
OTA failure	Quick flash 10 times
Delete from group	Slow flash 3 time
Add to group	Slow flash 3 time
Add a schedule	Slow flash 3 time
Add a schedule with incorrect parameters	Quick flash 3 times
Add a schedule failure of other reasons	No indication
Add scene	Slow flash 3 time
Delete Scene	Slow flash 3 time
Bind to a switch	Slow flash 3 time
Auto calibration	Turn on/off 4-8 times during the process
Auto calibration failure	Quick flash 10 times
Sensors settings	Slow flash 1 time

Contact support@jaykal.net with questions or for support.

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