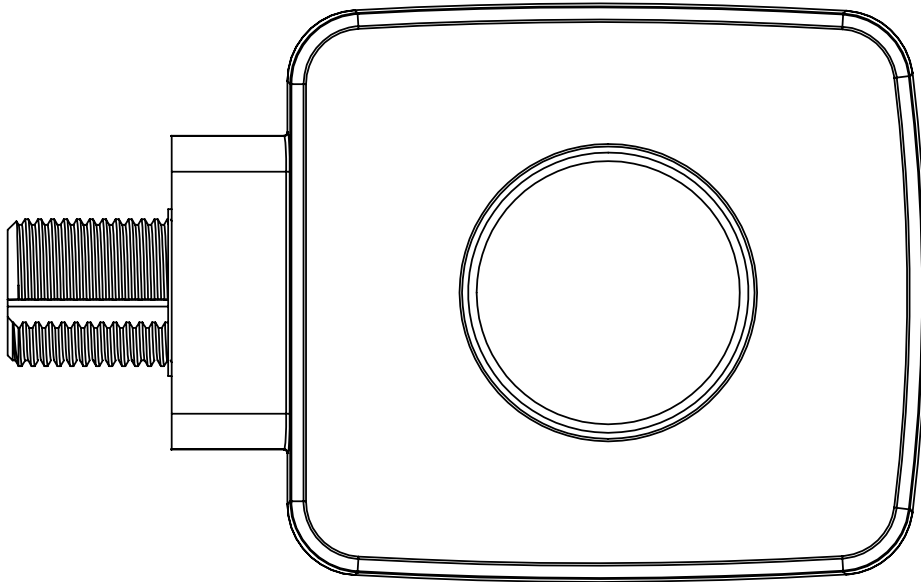


Douglas Lighting Controls Bluetooth® Fixture Controller & Sensor

BT-FMS-A



Installation Manual

*Patent Pending

WARNING!

SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES

For use in wet/damp locations.

Risk of Electric Shock. All servicing should be performed by qualified service personnel. To reduce the risks of electric shock disconnect power supplies before servicing.

Be aware that Line Voltage Connections may be 120VAC or 277VAC or 347VAC

IMPORTANT SAFEGUARDS

- READ AND FOLLOW ALL SAFETY INSTRUCTIONS.
- Do not mount near gas or electric heaters.
- Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this equipment for other than intended use
 - Wireless devices are only for lighting control
 - Wireless controls cannot be used with portable heating appliances
- Insulate unused leads individually

SAVE THESE INSTRUCTIONS

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1. INTRODUCTION

1.1. General Description

The Douglas Lighting Controls **Bluetooth**® Fixture Controller & Sensor provides automated individual and group control of light fixtures using onboard sensors and Bluetooth technology. It is easily installed for ON/OFF or bi-level light functionality. The daylight sensor provides additional energy savings by adjusting (0-10V dimming) the lights to work with the amount of natural daylight available in open-sided parking garages or from windows.

Configuration of the Douglas Lighting Controls Fixture Controller & Sensor is done conveniently at deck level with our Smartphone App using the Bluetooth protocol to communicate with the device. A wireless mesh network is created between devices for control over a group of Douglas Lighting Controls Bluetooth Fixture Controller & Sensors.

The Controller & Sensor has a maximum vertical range of 40 feet and is powered from the fixture. It is tested to applicable UL and CSA standards and enables users to meet ASHRAE 90.1 and Title 24 energy code requirements. Once the device(s) are configured, the system will automatically operate to control lighting based on occupancy in the area and the system settings.

Typical Applications: Parking Garages, Warehouses, Manufacturing Facilities.

2. DESIGN FEATURES

- Bluetooth Wireless Technology
- Occupancy sensor
- Daylight sensor
- Relay
- 360° coverage pattern
- Water-tight/waterproof design (IP65)
- 0-10V dimming, daylight harvesting, bi-level set-points, ON/OFF
- Deck level system set-up using iOS smartphone app

3. SPECIFICATIONS

Mounting

- The device is designed to be mounted to a listed enclosure

Wireless Range

- 150' Clear line of site. 50' through standard walls (distances may vary based on location and environment. Additional devices may be required at time of system set-up to ensure Bluetooth® network integrity.)

Input Voltage

- 120/277/347VAC; 60Hz

Load Ratings

- 800W @ 120VAC standard ballast
- 1200W @ 277VAC standard ballast
- 3300W @ 277VAC electronic ballast
- 1500W @ 347VAC standard ballast

Dimming Control

- 0-10V analog dimming, 25mA sinking capable

Operating Environment

- Outdoor use, Ingress Protection Rating: IP65
- Operating temperature: -40°F to 131°F (-40°C to 55°C)
- Storage temperature: -40°F to 140°F (-40°C to 60°C)

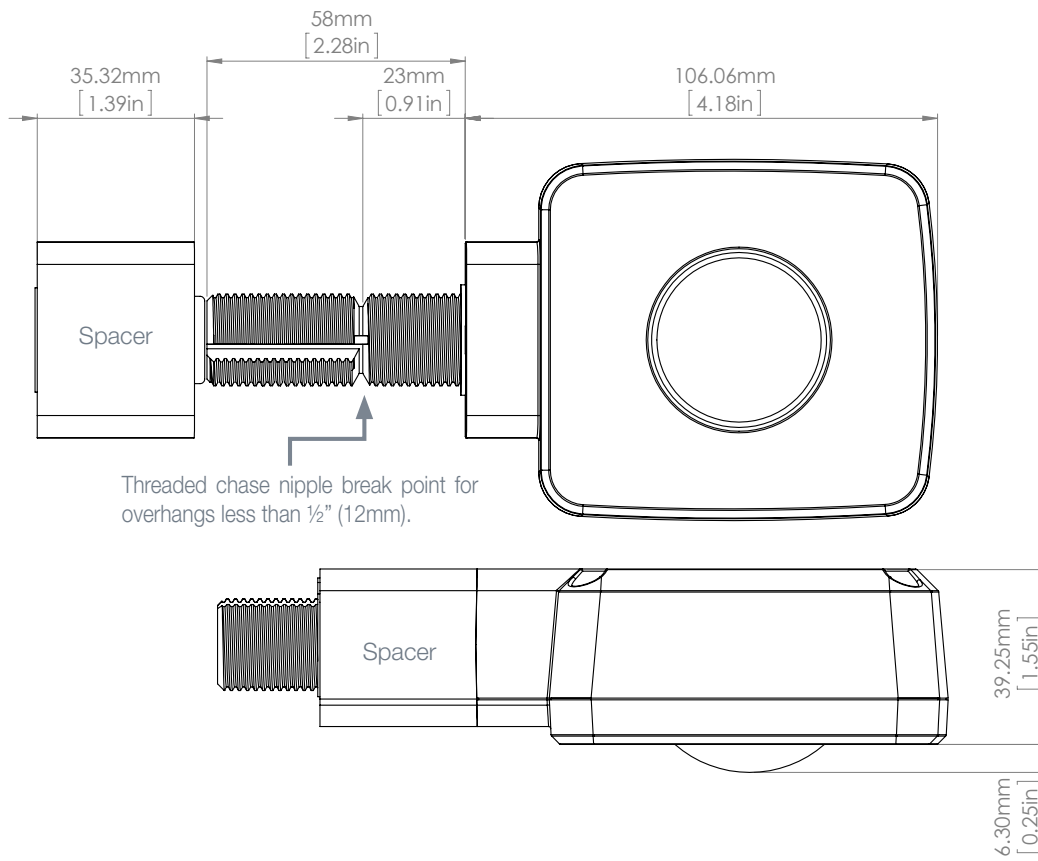
Approvals:

- ETL Listed
 - Certified to CAN/CSA Std. C22.2 No. 14
 - Conforms to UL 508 Standard
- Meets ASHRAE Standard 90.1 requirements
- Meets CEC Title 24 requirements
- Contains IC: 8254A-B1010SP0
- Contains FCC ID: W7Z-B1010SP0

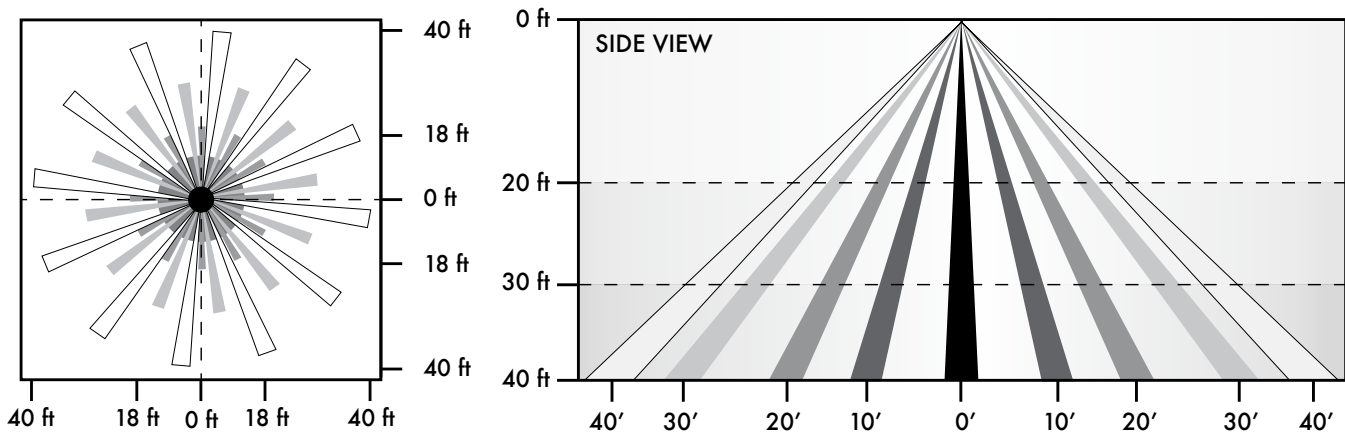
Warranty

- Standard 1-year warranty – see Douglas Lighting Controls' warranty policy for complete details

4. DIMENSIONS



5. COVERAGE



6. INSTALLATION FEATURES

The device is designed to be mounted into a 1/2" knockout in a listed light fixture or electrical junction box or panel with an opening that can fit the threaded chase nipple.

- Thoughtful design to maximize sensor coverage range
- Bluetooth enabled for deck level configuration and wireless mesh networking

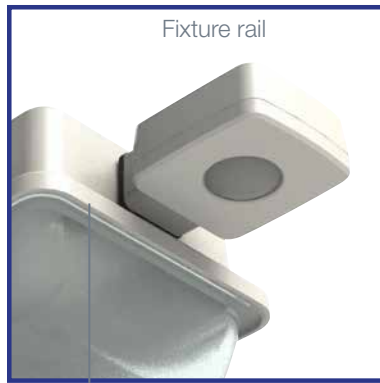
7. INSTALLATION / WIRING

⚠ CAUTION ⚠

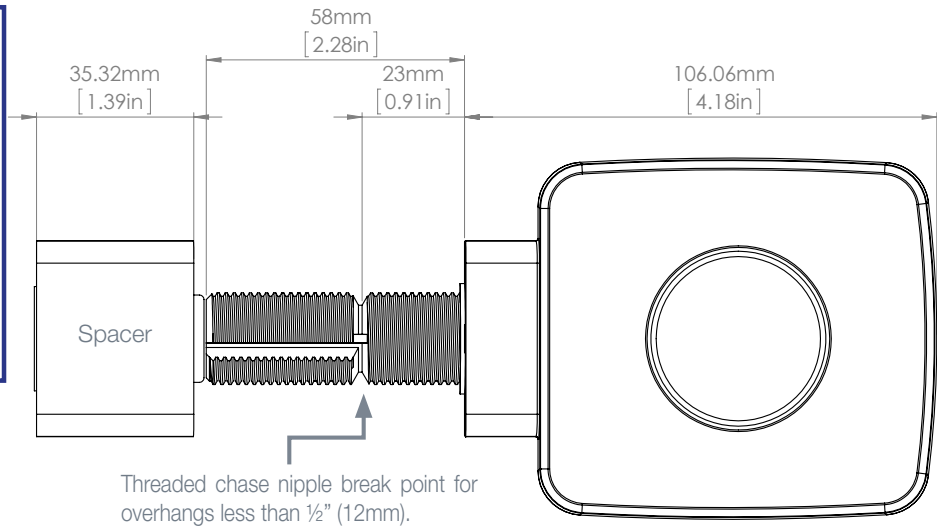
Risk of Electric Shock. All servicing should be performed by qualified service personnel. To reduce the risks of electric shock disconnect power connections before servicing.

- Douglas Lighting Controls Bluetooth Fixture Controller & Sensor mounts directly into a standard 1/2" knockout
- If fixture overhang is greater than 1/2" then use full length chase nipple and spacer. For overhang less than 1/2" the chase nipple length can be reduced by using needle nose pliers to snap the extension at the break point (see diagram on next page).
- Install device into position (use spacer if fixture overhang is greater than 1/2")
- For installation with field installed conductors of 60°C minimum rating.
- The following wire connections are provided:
 - 0-10V connection (violet / grey): #20AWG
 - Line Voltage/Relay connection (black / white / red): #14AWG
- Connect wires as shown on diagram
- Use appropriate sized wire-nuts to connect field installed conductors
- System programming and configuration > see System Set-up section

7. INSTALLATION / WIRING



Fixture rail

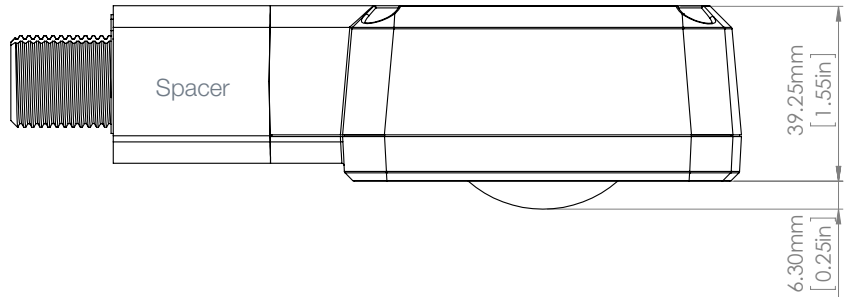


Threaded chase nipple break point for overhangs less than 1/2" (12mm).

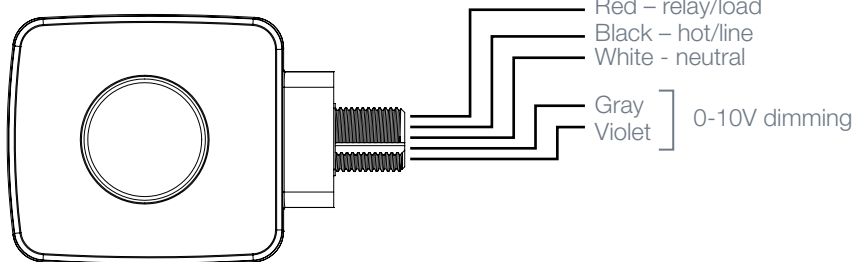


Mounting

Use Spacer and full length threaded chase nipple for fixture rail overhang greater than 1/2" (12mm).



Wiring



8. SYSTEM SET-UP

Before You Start

- A best practise is to use a dedicated iPod or iPhone as the project's system set-up device rather than a personal smartphone as the system settings stay with the Apple ID.
- When setting up the iOS device Apple ID, iCloud account, and network access, chose names carefully, record accurately, and store in a reliable location.
- Once a Fixture Controller & Sensor has been added to a network (associated), do not remove (disassociate) it before ensuring it is connected to, and communicating with, the system set-up device.

System Set-Up Overview

The system set-up device

Each lighting control installation requires an iOS device and an iCloud account to be used for system set-up and storing system parameters. Acceptable devices include:

- iPod Gen 6 or newer and iOS 10.x or higher
- iPhone 6 or newer and iOS 10.x or higher

Douglas Lighting Controls recommends using a project-dedicated device, not one which is used for personal and/or other company data and communications. Details on iCloud accounts, including instructions for setup, can be found at www.apple.com/icloud.

An iOS device with iCloud account is needed to download the App and to back up the system parameters on iCloud. Each iCloud account can have only one instance of the App, and the App can create and maintain only one database. A database stores the system parameters. The database is identified by the *Network Key* and accessed using the *Admin Password* (both values are entered during system set-up).

Description of the system set-up process

After an iOS device is configured with an iCloud account and the App downloaded, the system set-up process can begin. First, system parameters are entered. These include:

- Site Name
- Network Key
- Admin Password

Record this information accurately and store in a reliable location. These parameters are critical to accessing the system. A good method for recording this information is screen capture the network setup page. To take a screen shot, press and hold the ON/OFF button, then momentarily press the Home button. The screen capture will be saved as an image accessible via the Photos icon. The screen capture can then be emailed to a few people for recovery purposes. Again, it is very important to keep track of this data and of the iOS device itself.

After the system network parameters are established, typical system set-up steps will be:

- Finding unassociated Douglas Lighting Controls Bluetooth Fixture Controller & Sensor (FMS)
- Associating an FMS to the Network
- Creating "rooms" for the project
- Completing the FMS setup
- Adding and setting up additional FMS

8. SYSTEM SET-UP

Spatial organization

A Douglas Lighting Controls Bluetooth wireless network can have multiple rooms and each room can have up to eight lighting zones. Rooms and Zones are defined in the system set-up. Review your floor plans to find, and if needed, develop a room and zone plan

Settings

- Occupancy Timeout is set at the room level and applies to all FMS in that room.
- Minimum and maximum dimming boundaries (high and low trim) are set at the zone level and apply to all FMS/Fixtures in that zone.
- Daylight Setpoint (lux), for closed-loop control (daylight harvesting), is set at the FMS level and only applies to fixture(s) connected to that FMS.
- Daylight enable, for closed-loop control (daylight harvesting), is set at the FMS level, and applies only to fixture(s) connected to that FMS.
- Bi-level (high/low) control is enabled in the FMS level and applies only to fixture(s) connected to that FMS.

Features not used by FMS

Some features shown on the App are not used by FMS. These include:

- Scenes
- Quiet time and quiet mode timeout
- Vacancy mode
- Partial mode (for the occupancy control response)

Although these will appear on the App, it is not necessary to assign values to them.

Device compatibility

Douglas Lighting Controls BT-FMS-A can only be associated with other BT-FMS-A devices. Other Bluetooth wireless devices from Douglas Lighting Controls or other manufacturers cannot be inter-mixed.

Preparation for a system set-up project

System set-up will progress quickly with up-front planning. Creating a plan for how to name and configure each device will save time and provide useful elements for documenting the project at its conclusion. A simple example is outlined in the three figures below.

8. SYSTEM SET-UP

Fig. 1 One level of a small, multi-level parking garage having 12 luminaires positioned over two drive lanes. Each luminaire is equipped with an FMS. This level has an open wall section (a daylighting opportunity) on the far right and a pedestrian access point (elevator) on the far left.

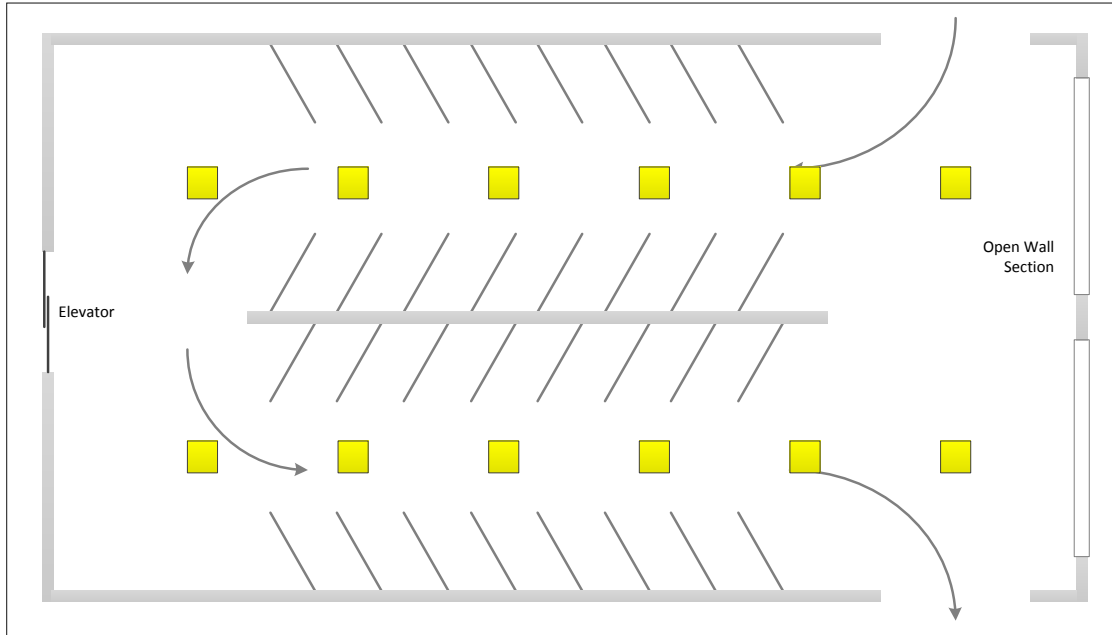
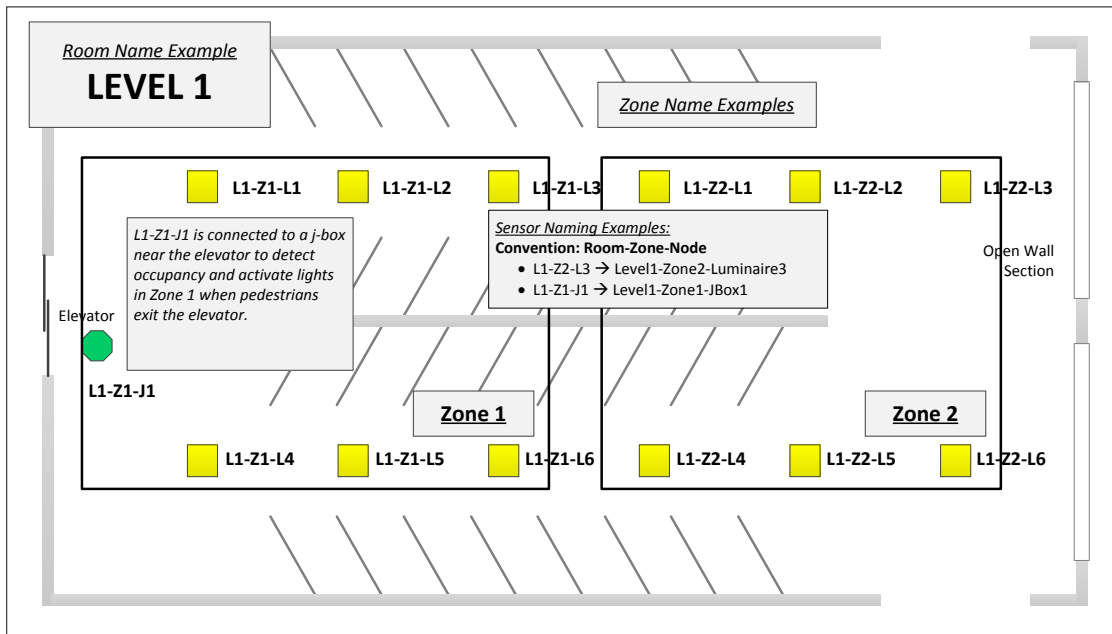
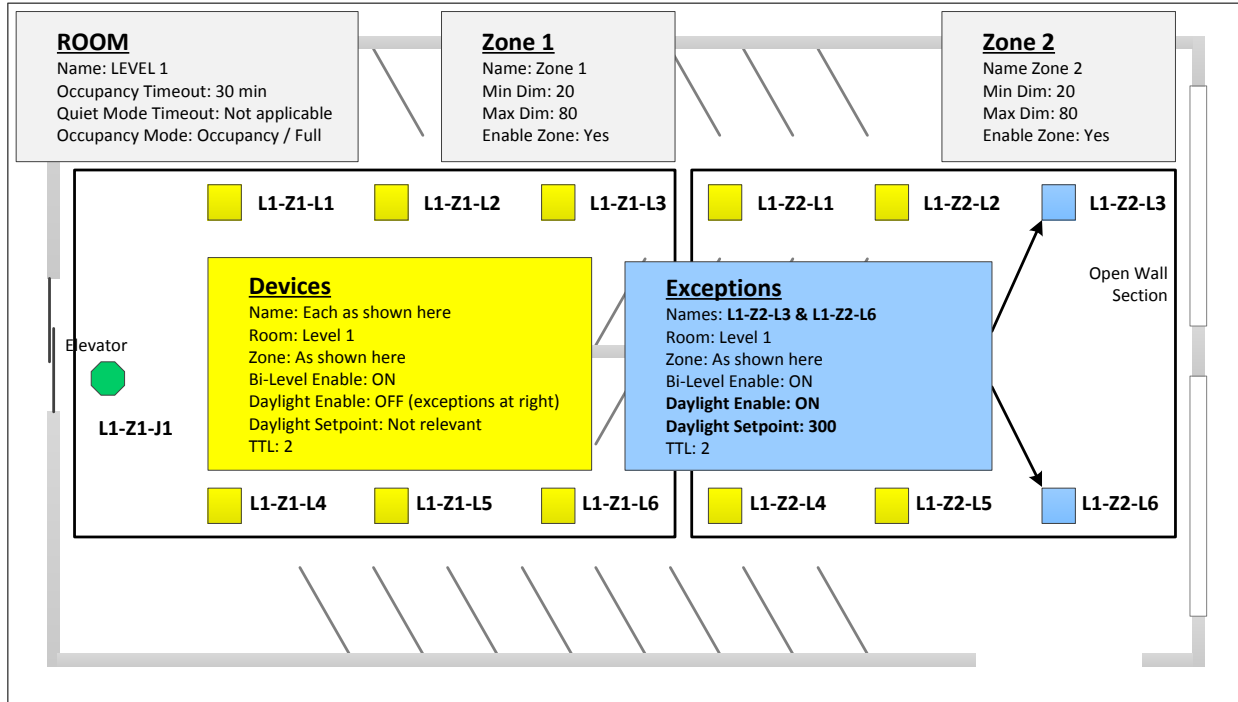


Fig. 2 Shows FMS naming assignments for a ROOM (Level 1) with two zones: Zone 1 on the left and Zone 2 on the right. Naming for each FMS using room, zone, and local information is also shown. An additional FMS is located on a junction box near the pedestrian (elevator) access point.



8. SYSTEM SET-UP

Fig. 3 Shows system set-up for the room, both zones and each of the (13) BT-FMS-A devices.

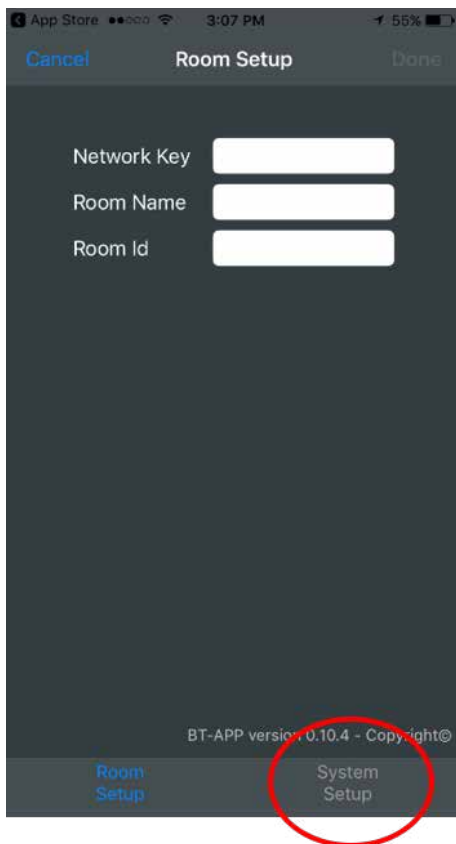


8. SYSTEM SET-UP

System Set-up

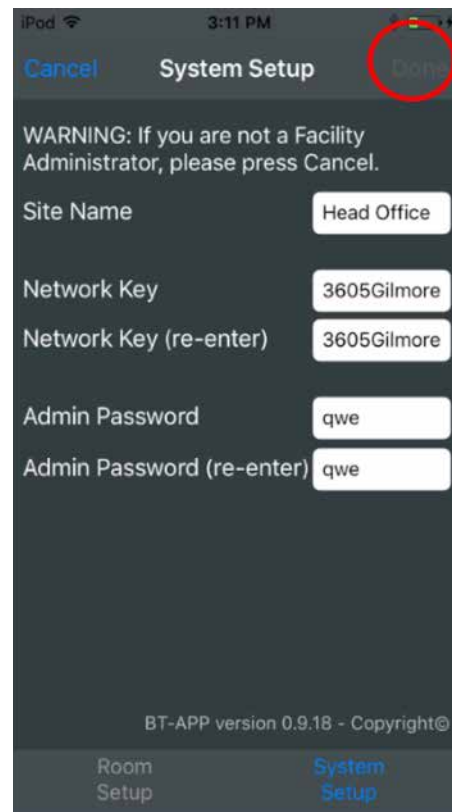
Download the System set-up APP

- Ensure your Smartphone's Bluetooth is **ON**
- Search Douglas Lighting Controls in the App Store and download Douglas Lighting Controls BTCC
- Open the APP and select **System Setup** (bottom right)



System Setup

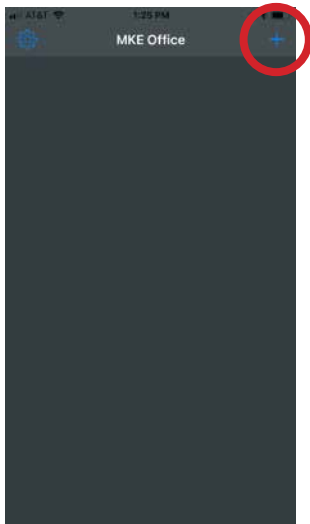
- Select and enter information for the Site Name, the Network Key and Admin Password
- Save this information – you will need it later. It cannot be retrieved if lost or forgotten.
- Tip: To screen capture your System Setup > press and hold Power, then press Home button
- Press **Done** (upper right)



8. SYSTEM SET-UP

Find Unassociated FMS

- Press “+” (upper right) to discover unassociated devices



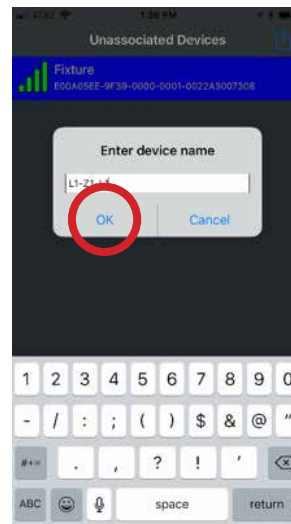
ADD FMS to Network

- Select the FMS for identification
- Connected lights will flash and status LED (behind the FMS lens) will flash orange
- Press the **upload** icon (upper right) to associate



Enter FMS Name

- Enter FMS name
- TIP: Names cannot be duplicated – error message will appear
- Press **OK**



FMS is Associated

- FMS is now associated and shown in the associated device list
- Because the FMS has not been added to a room, it is listed as Room: Global
- Press cog wheel to set up FMS



8. SYSTEM SET-UP

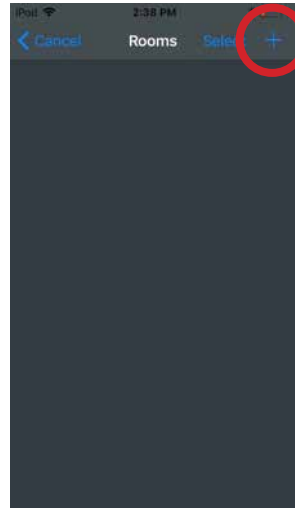
Setup FMS & Room

- FMS cog wheel selected
- Press “>” to edit room



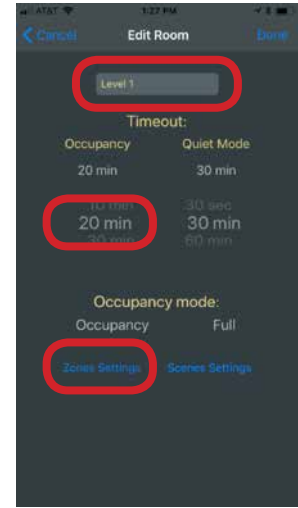
Room Setup

- Press “+” to create a room,



Room Setup

- Enter Room name.
- Adjust Occupancy Time-out period
- Set-up Zones
- (see next page)



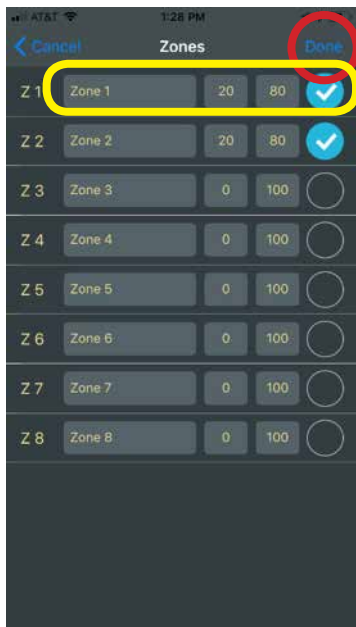
The following items are not applicable to FMS systems

- Under Timeout
 - Quiet Mode
- Under Occupancy Mode:
 - Vacancy
 - Partial
- Scenes Setting

8. SYSTEM SET-UP

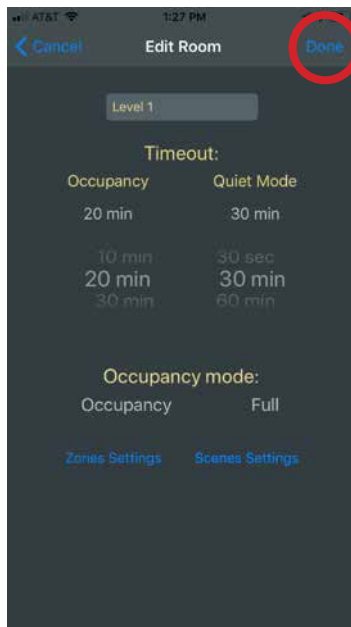
Zone Settings

- Up to eight (8) zones (Z 1 through Z 8) can be defined for each room
- If desired, zones can be re-named by tapping on the leftmost gray field
- Dimming Min & Max levels (Low & High trim) can be set in the second and third gray fields respectively
- Press the circle in the rightmost column to enable selected zones
- Press **Done** to return to the edit room page



Edit Room

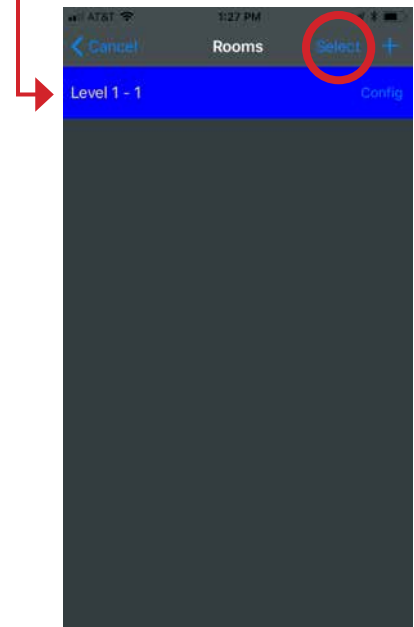
- Press **Done** to return to the room selection page



Room Selection

- Press Select to return to the selected device page

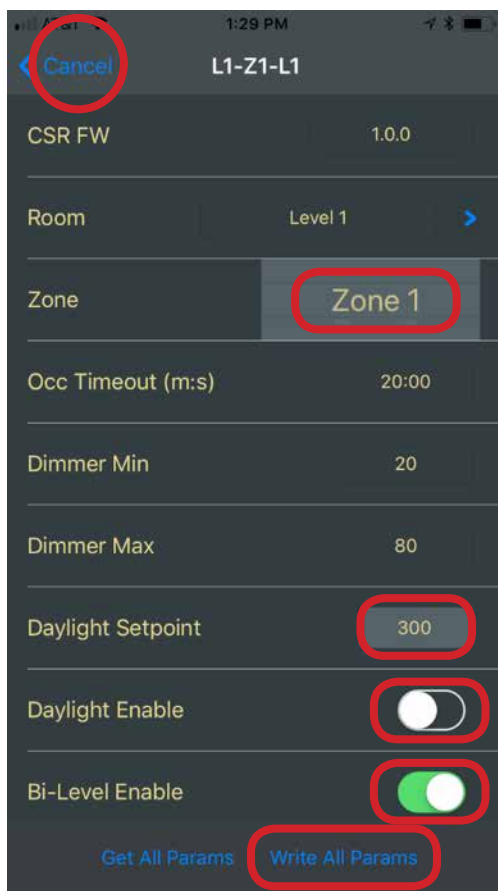
NOTE: On the Rooms page, each new Room is assigned a sequential number following the dash. This is the room identifier, not the name or number entered when naming a room



8. SYSTEM SET-UP

Selected Device Page

- Select the Zone (Zone 1 through Zone 8) this sensor will control
- Daylight Setpoint (lux) – adjust as required for the area below this FMS
- Daylight Enable – enables Daylight harvesting – adjusting the dim level based available daylight and the Daylight Setpoint
- Bi-level Enable
 - When enabled, on occupancy, the zone will operate at the zone’s Maximum dimmer value. When the zone is unoccupied, the zone will operate at the minimum dimmer value.
 - When disabled, on occupancy, the zone will operate at the zone’s Maximum dimmer value, once the area is unoccupied and the timeout period is complete, the zone will be actioned OFF.
- When finished, press **Write All Params** to save all settings
- Then press **Cancel** to return to the associated devices list, where additional devices may be selected and programmed. Be sure that each FMS is assigned a room and not left as Global.
 - **NOTE:** TTL is the last field. Its default value is 2 and must be left at this value unless advised by the factory.



- To discover additional BT-FMS-A devices (after pressing **Write All Params**) press **Cancel** to return to the Associated Devices list, then press “+” to find any unassociated devices. Once found they can be named and associated. Afterwards, associated devices which are in **Room: Global** should be set up following the same process.

Setup Continued

8. SYSTEM SET-UP

System Changes and Maintenance

Setup Changes

If a sensor or a room must be removed from the system, see instructions below.

Disassociating (removing) a sensor from a network

Associated Device List

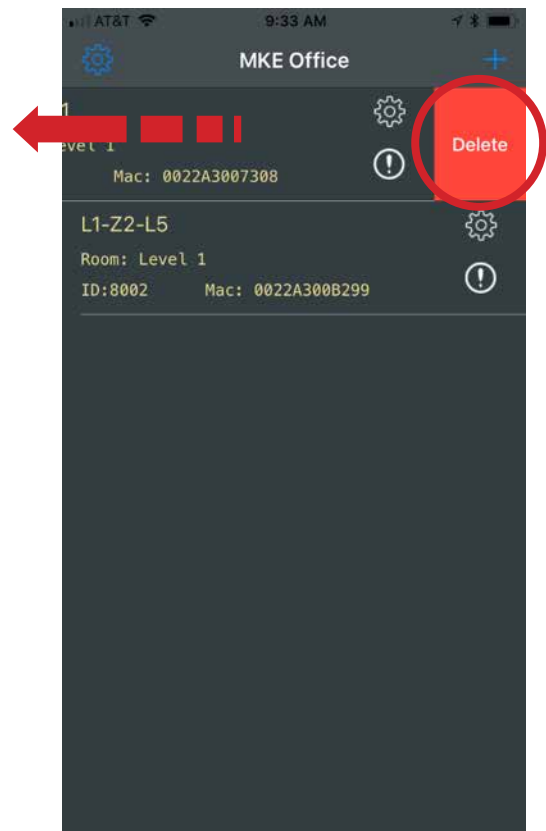
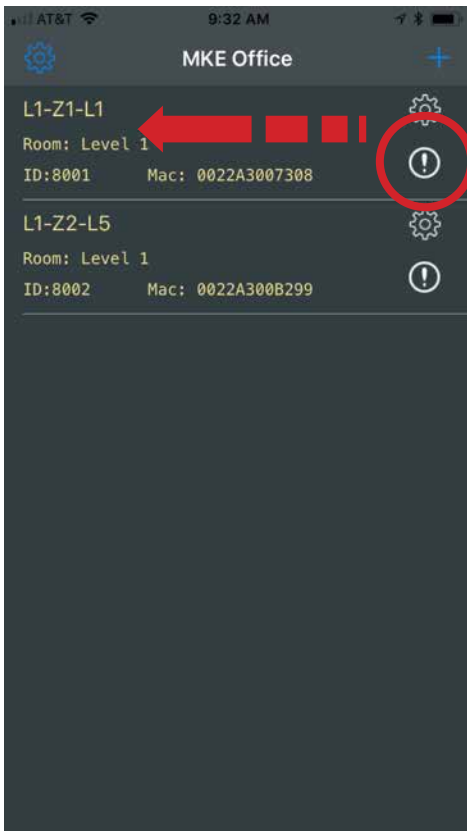
- To disassociate (remove) an FMS from a Network:

IMPORTANT!

- Open the associated device list and identify the sensor to be removed. Press the “**alert**” icon (exclamation point) to confirm the sensor is in range and in communication with the system set-up device. The sensor will flash its indicator LED and flash the lights ON/OFF. **If this does not happen, do not proceed with disassociation.**

Device Ready for Disassociation

- Swipe left to expose “**Delete**”.
- Press “**Delete**” to disassociate the device and remove it from the network. After doing this, the device will no longer appear on the associated devices list, but will appear when searching for unassociated devices.



8. SYSTEM SET-UP

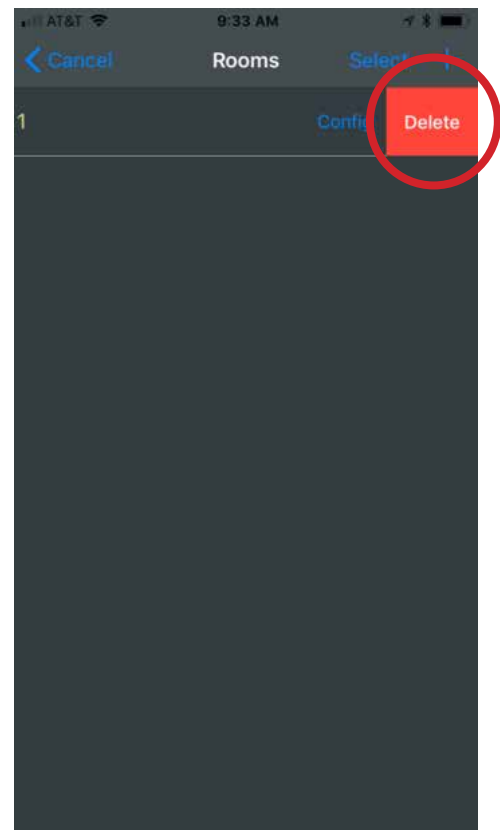
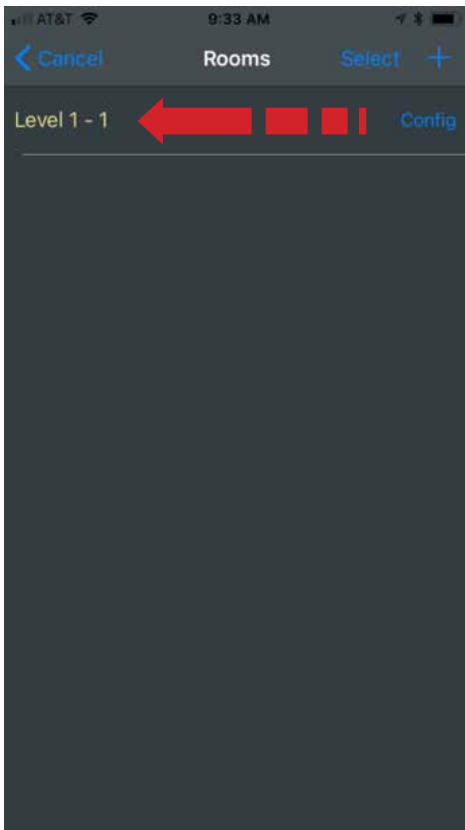
Removing a room

Setup Changes

If a sensor or a room must be removed from the system, see instructions below.

Preparing room for removal from network

- Rooms can also be removed from a network, by swiping left or reveal “Delete”, the pressing “Delete”.



Replacing a nonfunctional or malfunctioning sensor

- Remove sensor from network as described above.
- Obtain a replacement sensor and install according to the FMS Quick Installation Guide.
- Setup the replacement FMS as described above

The logo for Douglas Lighting Controls features the word "DOUGLAS" in a large, bold, blue serif font. A stylized blue swoosh is positioned above the letter "D". Below "DOUGLAS", the words "LIGHTING CONTROLS" are written in a smaller, blue, all-caps sans-serif font.

DOUGLAS

LIGHTING CONTROLS

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direct: 604-873-2797
lighting@douglaslightingcontrols.com
www.douglaslightingcontrols.com

Your Douglas Lighting Controls representative:

A large, empty rectangular box with a thin black border, intended for a signature or name.

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LIT#: BT-FMS-AFC&SM050218