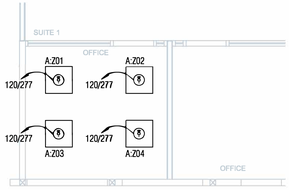
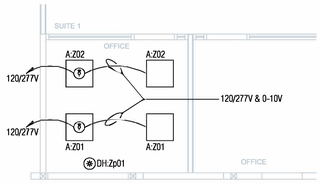


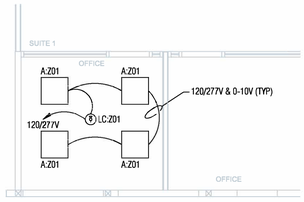
Office Application

An office can be controlled via the Lightcloud control system in various ways.

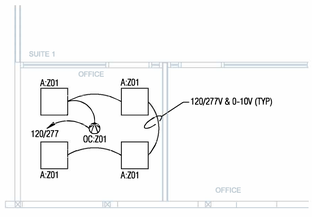
1. For ultimate flexibility and controllability, an LC Controller can be added to each fixture on-board. This will allow for individual control of each luminaire, and eliminates the need for 0-10V daisy chained control wiring.In this case, the office has four (4) individual zones.



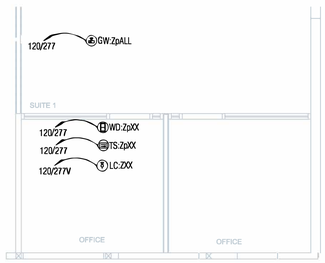
2. Two Zones could be provided by adding an LC Controller on-board two of the fixtures then daisy chaining the 120/277V and 0-10V Control wiring to the second fixture. This would be a good choice when using the Daylight Harvester. In this case, the two fixtures adjacent to the windows could be one Zone, and the other two can be a second zone.



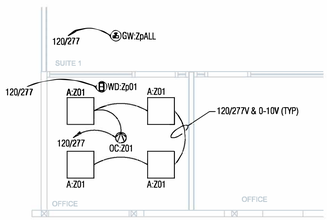
3. One LC Controller can control up to 15 Amps of load. In this scenario, we are using one LC Controller to control all the fixtures in the office. This will minimize device quantities, but the 0-10V control wiring will need to be daisy chained to each fixture as well as power wiring if dimming is desired.



4. One OC can act just line and LC Controller, and can control up to 15 Amps of load. In this scenario, we are using one OC to control all the fixtures in the office. The OC can be programmed as both Occupancy and Vacancy Sensing. This will minimize device quantities, but the 0-10V control wiring will need to be daisy chained to each fixture as well as power wiring if dimming is desired.



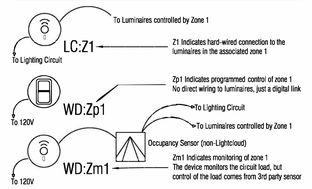
5. Local controls can be provided in offices. The WD can be programmed to operate up to four functions. The TS can be programmed to control an unlimited number of functions and scenes. Each device requires 120/277V, but no other wiring.
6. Some Codes require switching receptacles based upon occupancy and/or time of day scheduling. An LC Controller used in conjunction with a Contactor can be used to accomplish this.
7. All Lightcloud installations will require a Gateway. The GW requires 120/277V, but no other wiring. The GW can communicate with up to 200 LC Devices. Additional GW's will be required for higher quantities.



8. For this Typical Office scenario, control could be Manual-On, Auto Off with dimming and overall time of day scheduling.

(1)LCGATEWAY
(1)LCSENSE
(1)LCDIMMERW

Lightcloud Zone Notation



Lightcloud Symbol Key

- GW - Gateway (1 2 4 5 6 7)
- LC - Controller (1 2 3 4)
- OC - Occupancy Ceiling Sensor (1 2 3 4 8)
- VC - Vacancy Ceiling Sensor (1 2 3 4 8)
- RAB - Hard-wired Sensor (non-Lightcloud)
  Indicates non-Lightcloud wired control device. Consult Lightcloud.com for assistance with integration into a Lightcloud system..
- DH - Daylight Harvester (open loop) (1 2 9)
- WD - Wall Box Dimmer/Switch (1 2 4 8 9)
- TS - Touch Screen Wall Display (1 2 4 9)

Lightcloud Notes

1. Wireless ranges vary greatly depending on which materials stand in the way between two devices. For line of sight applications, max device distance is 250 feet. For interior applications, 30 feet between devices is good practice.
2. Avoid placing devices near microwaves, motors, elevator mech rooms or radio antennas to minimize interference with the wireless signal.
3. Neutral wire of the load must be connected to the white-red sense wire in order to measure power use. If the Switched Neutral line cannot be used, it should be tied to the regular neutral wires (i.e. all neutral wires joined).
4. Designed to be hard-wired to AC power. An external readily accessible disconnect device, such as a circuit breaker, is required.
5. Contact RAB only for replacement of Gateway LI-ion battery. CAUTION! RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
6. Install in location with good cellular signal. Locations with significant concrete and brick construction, or underground locations, are not recommended. DO NOT INSTALL INSIDE METAL ENCLOSURE.
7. Install in dry or non-condensing damp environment only.
8. Must be installed in UL-approved single gang wall-box enclosure. Use only solid copper wire.
9. Indoor use only.
10. Changes or modifications to Lightcloud equipment not expressly approved by RAB Lighting, Inc. may void the user's authority to operate this equipment.

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CLIENT:

XXX

REV	DATE	DESCRIPTION	BY
###	MM.DD.YY	PROJECT AWARD DATE	XXX

PROJECT:

XXX

SCALE:	AS SHOWN
DATE:	XXXXX
CASE NUMBER:	XXXXX
DESIGNED BY:	CBarnes, LC
DRAWN / CHK BY:	SFillion, LC

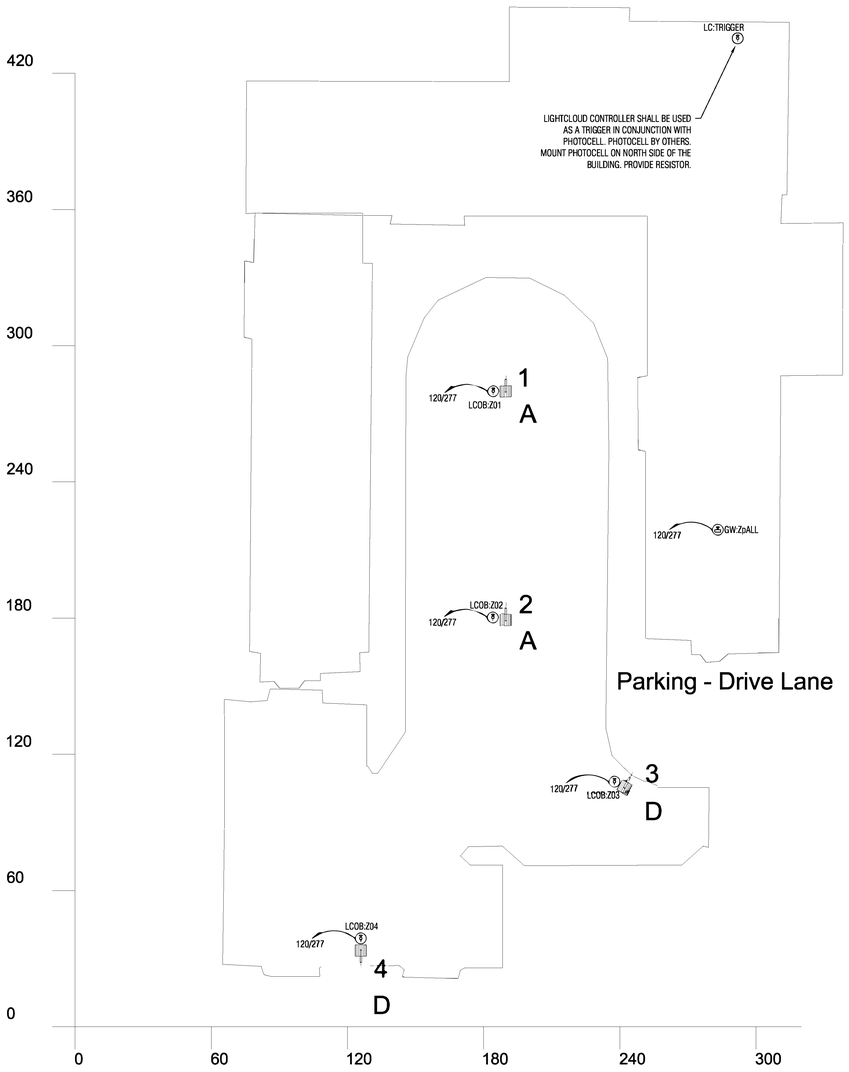
TITLE:

Lightcloud Application Information - Private Office Example

DRAWING NUMBER:

EL-7.1

C:\Users\catherine.barnes\Desktop\For Rob Rilley.dwg



Parking Lot Application

A Parking Lot can be controlled via the Lightcloud control system in various ways.

1. The Lightcloud Lighting Control System can control exterior / site lighting via time of day scheduling. Photocells , Motion Sensors, and any variety of additional third party devices can be used in conjunction with an LC Controller to allow for additional control inputs. When an LC Controller is used in this manner as a trigger, a small resistor is required, RESLC/120V.

2. For existing parking lots there are a few ways to add the Lightcloud control system. For these cases, we would assume that we are interested in ON/OFF only since adding 0-10V control wiring is probably not existing, and probably it would be cost prohibitive to add it to an existing parking lot.

   A. Intercept exterior lighting circuits at the panelboard and install the LC Controller ahead of the site lighting loads. Ensure loads are less than 15A.
   B. Add one LC Controller at each pole/fixture. LC Controllers are rated for outdoor use. Depending on site topography, pole locations and vegetation repeaters may be required to ensure adequate signal strength.

3. For a new parking lot, we have the capability to use the dimming feature to realize energy savings. Control strategies could include dimming the lights to a low output on a time of day basis, with a motion sense override.

   A. The most flexible solution for a new parking lot is to add one LC Controller per fixture. This allows for the installation of power wiring only to each pole, no daisy-chaining of control wiring will be necessary.
   B. Exterior fixtrues could be zoned in a similar fashion as interior fixtures. For example, for a front row of fixtures at a car dealership, an LC Controller can be added to the first fixture on the circuit, then the power and control wiring can be daisy chained to the rest of the fixtures in the row. This allows the entire front row to act as one Zone.
   C. The least flexible way to control a parking lot would be to add as many fixtures to a LC Controller as possible, up to 15A load. Power and Control wiring would need to be daisy chained.

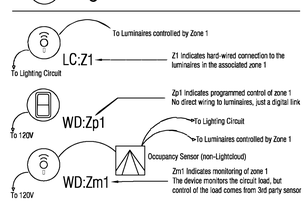
3. For the application on the left, assume that this is a new installation and the fixtures are by others, but have 0-10V dimming. The intent would be to add (1)LC Controller on-board each fixture, then an LC Contoller and resistor to allow for photocontrol, then the Gateway. This will allow for time of day control with photocell input. Coordinate installation of Gateway to ensure proper signal strength. Provide any repeaters as required for a properly functioning system.

   (1)LCGATEWAY
   (5)LCCONTROL20/D10
   (1)RESLC/120

Lightcloud Symbol Key

- GW - Gateway ①②④⑤⑥⑦
- LC - Controller ①②③④
- OC - Occupancy Ceiling Sensor ①②③④⑨
- VC - Vacancy Ceiling Sensor ①②③④⑨
- RAB - Hard-wired Sensor (non-Lightcloud)
  Indicates non-Lightcloud wired control device. Consult Lightcloud.com for assistance with integration into a Lightcloud system..
- DH - Daylight Harvester (open loop) ①②⑨
- WD - Wall Box Dimmer/Switch ①②④⑧⑨
- TS - Touch Screen Wall Display ①②④⑨

Lightcloud Zone Notation



Lightcloud Notes

① Wireless ranges vary greatly depending on which materials stand in the way between two devices. For line of sight applications, max device distance is 250 feet. For interior applications, 30 feet between devices is good practice.

② Avoid placing devices near microwaves, motors, elevator mech rooms or radio antennas to minimize interference with the wireless signal.

③ Neutral wire of the load must be connected to the white-red sense wire in order to measure power use. If the Switched Neutral line cannot be used, it should be tied to the regular neutral wires (i.e. all neutral wires joined).

④ Designed to be hard-wired to AC power. An external readily accessible disconnect device, such as a circuit breaker, is required.

⑤ Contact RAB only for replacement of Gateway Li-ion battery. CAUTION! RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

⑥ Install in location with good cell/air signal. Locations with significant concrete and brick construction, or underground locations, are not recommended. DO NOT INSTALL INSIDE METAL ENCLOSURE.

⑦ Install in dry or non-condensing damp environment only.

⑧ Must be installed in UL-approved single gang wall-box enclosure. Use only solid copper wire.

⑨ Indoor use only.

⑩ Changes or modifications to Lightcloud equipment not expressly approved by RAB Lighting, Inc. may void the user's authority to operate this equipment.

ADVISORY DRAWING SET
NOT FOR CONSTRUCTION

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CLIENT:

XXX

REV	DATE	DESCRIPTION	BY
###	MM.DD.YY	PROJECT AWARD DATE	XXX

PROJECT:

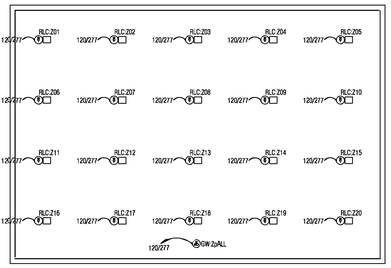
XXX

SCALE: AS SHOWN
DATE: X
CASE NUMBER: X
DESIGNED BY: CBarnes, LC
DRAWN / CHK BY: SFillion, LC

TITLE:
Lightcloud Application Information - Exterior Parking Example

DRAWING NUMBER:
EL-7.2

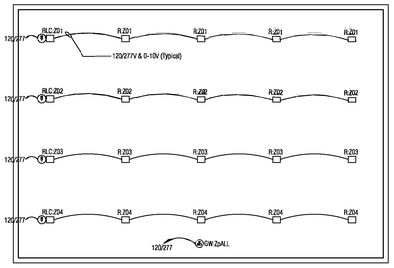
C:\Users\catherine.barnes\Desktop\For Rob Rilley.dwg



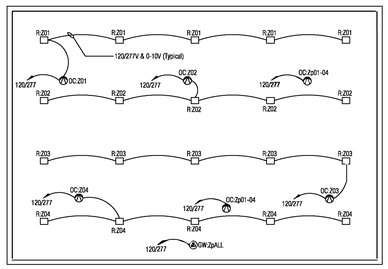
High Bay Storage Application

A Storage Area can be controlled via the Lightcloud control system in various ways.

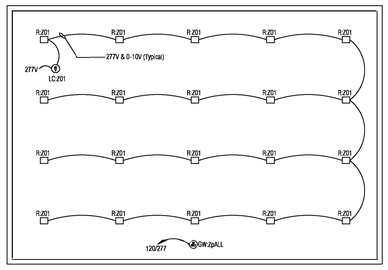
1. For ultimate flexibility and controllability, an LC Controller can be added to each fixture on-board. This will allow for individual control of each luminaire, and eliminates the need for 0-10V daisy chained control wiring. The same can be said for an OC Sensor. We can provide the /LCS option on each fixture to sense occupancy, and we will only need the power wiring. In this case, the storage area has twenty (20) individual zones. Other devices would likely be requested such as local wall controls or daylight harvesting.



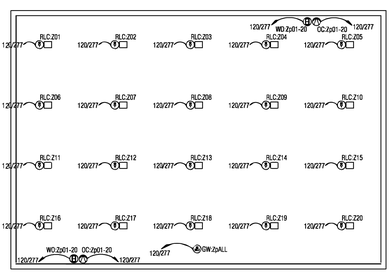
2. Four Zones could be provided by adding an LC Controller (or LCS High Bay Occupancy Sensor) on-board four of the fixtures then daisy chaining the 120/277V and 0-10V Control wiring to the subsequent fixtures in that zone. This would be a good choice if there are racks in the storage area, or when there might be skylights for daylighting. In this case, each row is acting like one zone. Zones could be configured alternatively based upon clients needs. Other devices would likely be requested such as wall controls.



3. This scenario is based upon a full coverage occupant sensing system approach. Based on a 20'AFF Mounting Height, the LCHBSENSE15/D10 has a 33' coverage pattern, so for this storage area (6)sensors would be required. Each sensor can control a Zone, so in this case there ***could*** be up to (6)Zones. For this example, we are showing (4)four zones only. The (2)two sensors that do not control a zone are simply considered "Programmed" only, as designated by the lowercase 'p' in the naming convention. Based upon client needs and wishes other devices would likely need to be provided such as wall controls and daylight sensors.



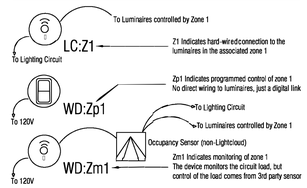
4. This scenario uses the least amount of devices possible. One LC Controller can accommodate all up to a 15A load so if we assume that these fixtures are RAIL150's and they are fed with 277V, we can control all luminaires as one zone. The LC Controller can be mounted anywhere or onboard the first fixture. This will minimize device quantities, but the 0-10V control wiring will need to be daisy chained to each fixture as well as power wiring if dimming is desired.



8. For this Typical Storage Area, each RAIL fixture will have LC on-board. Assume a Wall Dimmer by each of the (2)Man Doors. Add a High Bay Occupant Sensor above each Man Door as well to ensure automatic override after hours.

(1)LCGATEWAY
(20)RAIL150W/D10/LC
(2)LCDIMMERW
(2)LCHBSENSE15/D10

Lightcloud Zone Notation



Lightcloud Symbol Key

- GW - Gateway (1 2 4 5 6 7)
- LC - Controller (1 2 3 4)
- OC - Occupancy Ceiling Sensor (1 2 3 4 9)
- VC - Vacancy Ceiling Sensor (1 2 3 4 9)
- RAB - Hard-wired Sensor (non-Lightcloud)
  Indicates non-Lightcloud wired control device. Consult Lightcloud.com for assistance with integration into a Lightcloud system..
- DH - Daylight Harvester (open loop) (1 2 9)
- WD - Wall Box Dimmer/Switch (1 2 4 8 9)
- TS - Touch Screen Wall Display (1 2 4 9)

Lightcloud Notes

1. Wireless ranges vary greatly depending on which materials stand in the way between two devices. For line of sight applications, max device distance is 250 feet. For interior applications, 30 feet between devices is good practice.
2. Avoid placing devices near microwaves, motors, elevator mech rooms or radio antennas to minimize interference with the wireless signal.
3. Neutral wire of the load must be connected to the white-red sense wire in order to measure power use. If the Switched Neutral line cannot be used, it should be tied to the regular neutral wires (i.e. all neutral wires joined).
4. Designed to be hard-wired to AC power. An external readily accessible disconnect device, such as a circuit breaker, is required.
5. Contact RAB only for replacement of Gateway Li-ion battery. CAUTION! RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
6. Install in location with good cellular signal . Locations with significant concrete and brick construction, or underground locations, are not recommended. DO NOT INSTALL INSIDE METAL ENCLOSURE.
7. Install in dry or non-condensing damp environment only.
8. Must be installed in UL-approved single gang wall-box enclosure. Use only solid copper wire.
9. Indoor use only.
10. Changes or modifications to Lightcloud equipment not expressly approved by RAB Lighting, Inc. may void the user's authority to operate this equipment.

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CLIENT:

XXX

REV	DATE	DESCRIPTION	BY
###	MM.DD.YY	PROJECT AWARD DATE	XXX

PROJECT:

XXX

SCALE: AS SHOWN
DATE: XXXXX
CASE NUMBER: XXXXX
DESIGNED BY: CBarnes, LC
DRAWN / CHK BY: SFillion, LC

TITLE:

Lightcloud Application Information - Open Storage Example

DRAWING NUMBER:

EL-7.3

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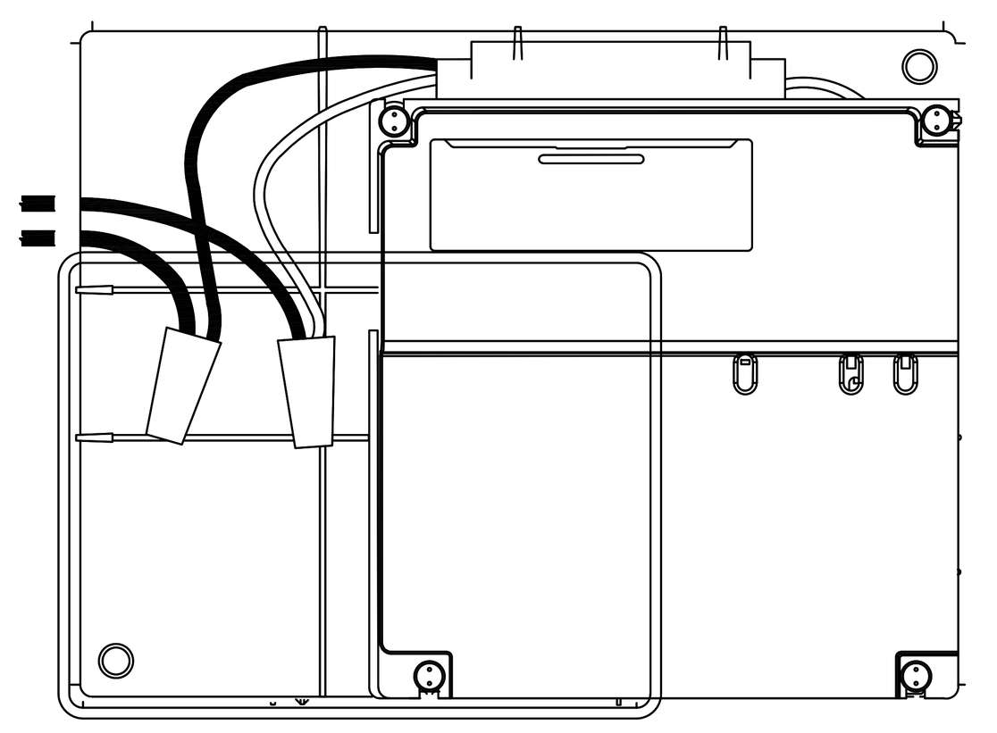
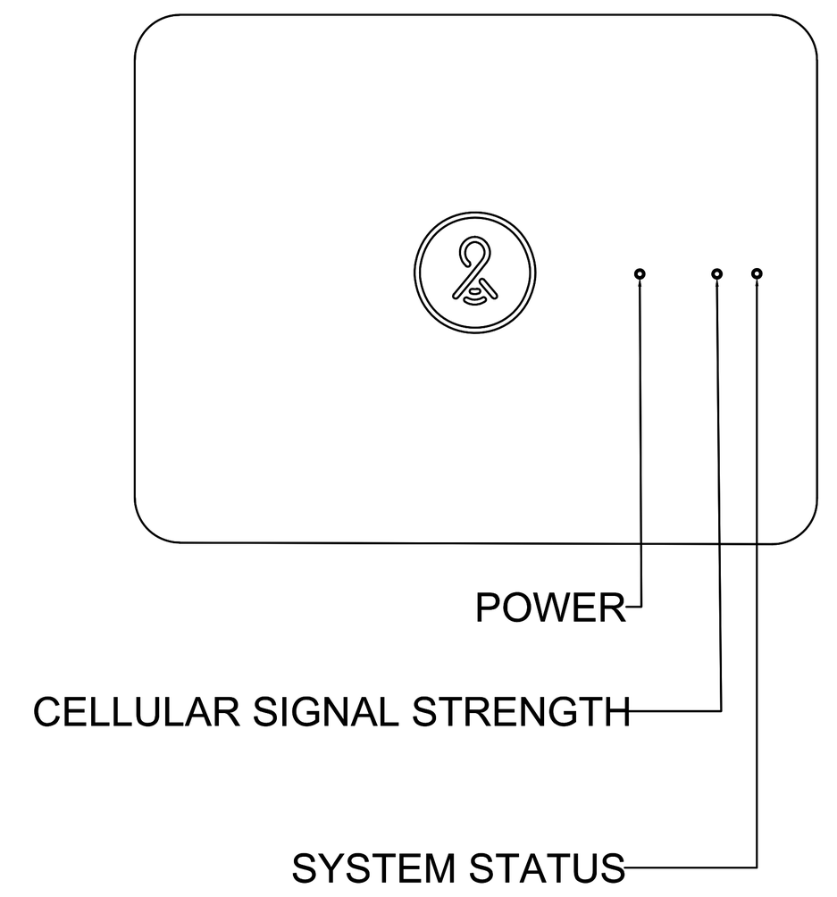


THE LIGHTCLOUD GATEWAY IS RATED 120-277VAC AND CONTAINS AN INTEGRAL JUNCTION BOX FOR HARD-WIRED INSTALLATION BY A QUALIFIED ELECTRICIAN.

Detail 1 — GW - Gateway Wiring Diagram



LED INDICATORS

POWER
GREEN: FULLY POWERED

CELLULAR
OFF: NO OR POOR CELLULAR SIGNAL. YOU MUST MOVE THE GATEWAY TO A LOCATION WITH BETTER CELLULAR SIGNAL.

SOLID YELLOW: ADEQUATE CELLULAR SIGNAL. THIS SIGNAL STRENGTH WORKS FOR MOST APPLICATIONS, BUT IF POSSIBLE, MOVE TO A LOCATION WITH BETTER SIGNAL.

SOLID GREEN: GOOD CELLULAR SIGNAL.

SYSTEM STATUS
BLINKING YELLOW: INITIALIZING

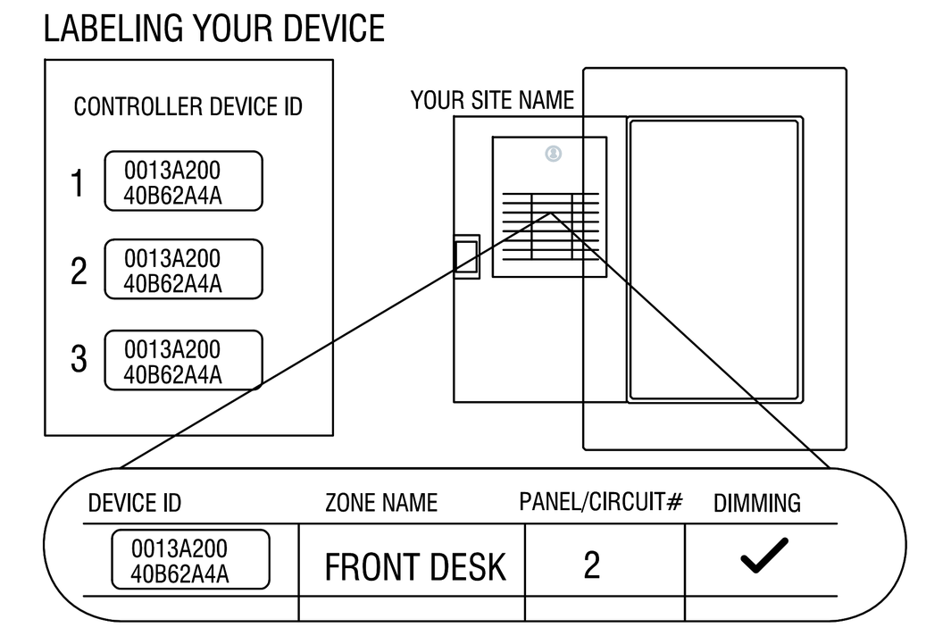
SOLID YELLOW: ERROR: CANNOT REACH LIGHTCLOUD SERVICE. CHECK CELLULAR SIGNAL STRENGTH AND CALL RAB FOR TECHNICAL SUPPORT.

BLINKING GREEN: SETUP MODE ENABLED (ACCEPTING NEW DEVICES)

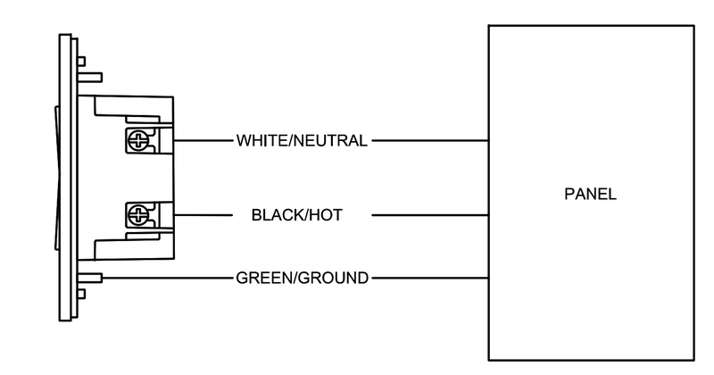
SOLID GREEN: NORMAL OPERATION

Detail 2 — GW - Gateway Status Indicators

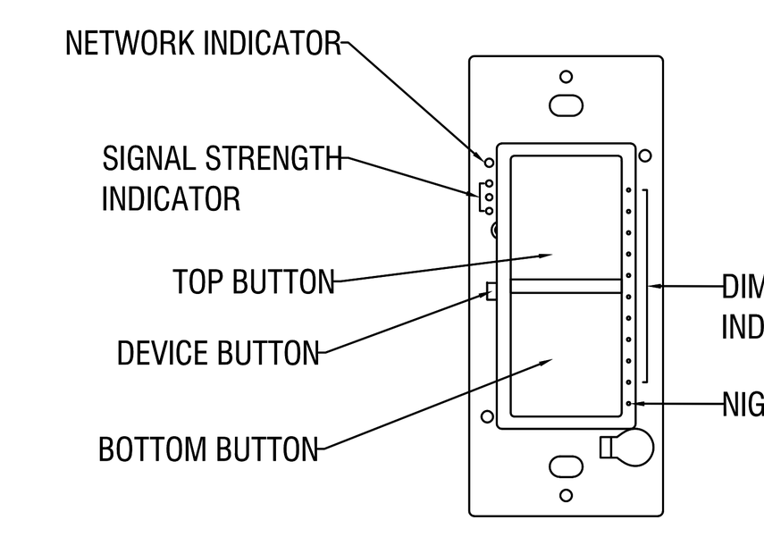
LABELING YOUR DEVICE



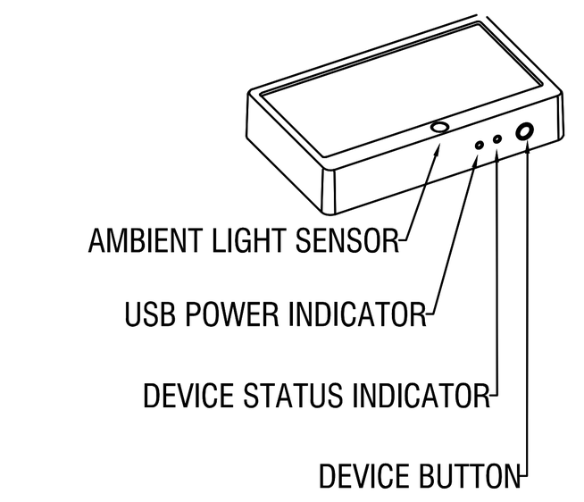
Detail 3 — Lightcloud Commissioning Device ID Table



Detail 4 — WD - Wall Dimmer Wiring Diagram

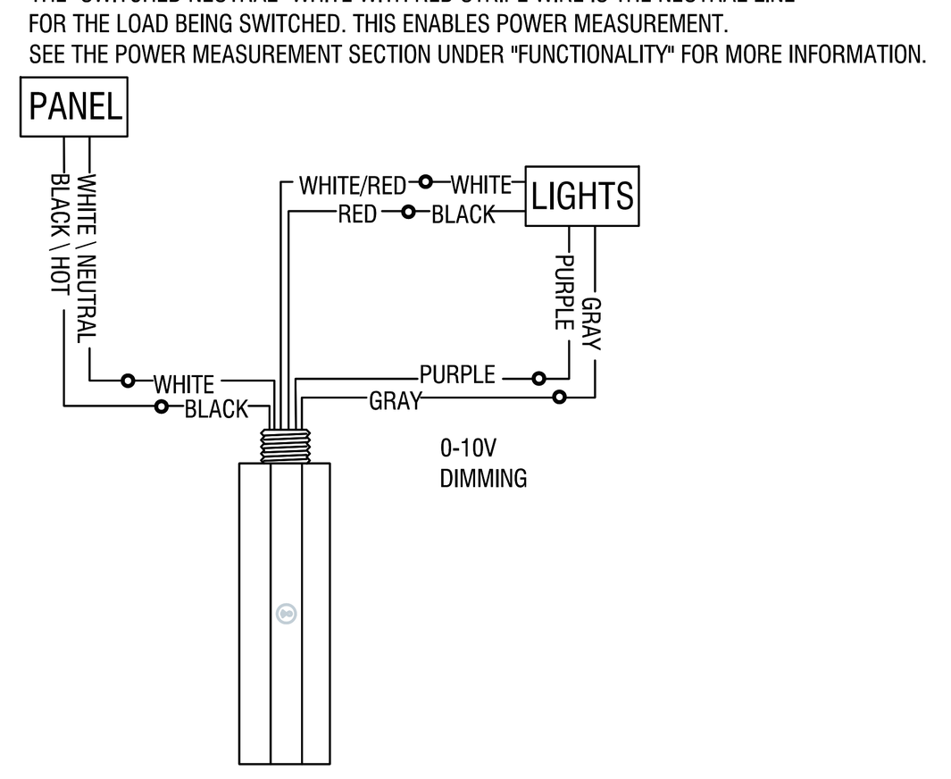


Detail 5 — WD - Wall Dimmer Status Indicators



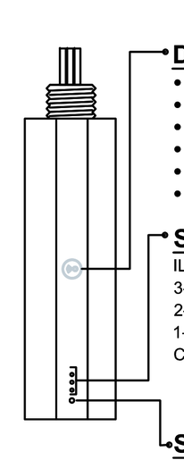
Detail 6 — DH - Daylight Harvester Status Indicators

SWITCHED NEUTRAL
THE "SWITCHED NEUTRAL" WHITE WITH RED STRIPE WIRE IS THE NEUTRAL LINE FOR THE LOAD BEING SWITCHED. THIS ENABLES POWER MEASUREMENT. SEE THE POWER MEASUREMENT SECTION UNDER "FUNCTIONALITY" FOR MORE INFORMATION.



Detail 7 — LC - Controller Wiring Diagram

CONFIRM DEVICE CONNECTIVITY
CONFIRM STATUS INDICATOR IS SOLID GREEN (SEE DETAILS BELOW)



DEVICE IDENTIFICATION BUTTON

SIGNAL INDICATOR

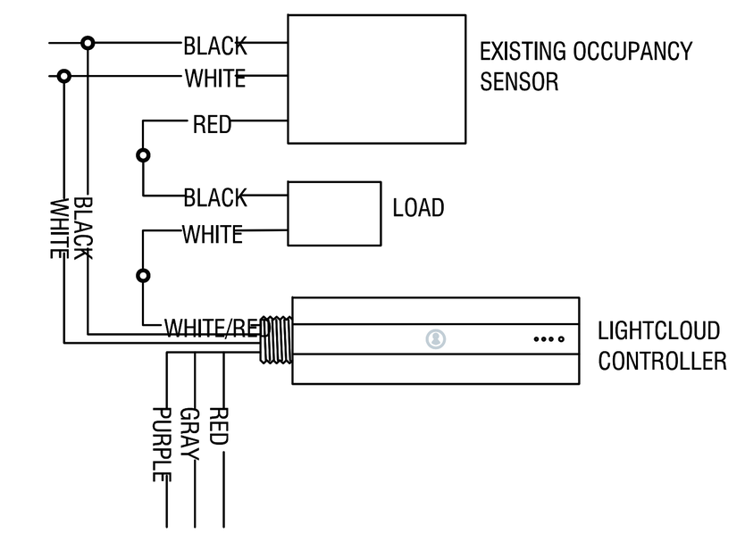
STATUS INDICATOR

Detail 8 — LC - Controller Status Indicators

OPERATING MODES

CONTROLLER: PROVIDES SWITCHING AND DIMMING FOR A SINGLE ZONE

TRIGGER: DETECT WHEN AN ATTACHED CIRCUIT IS OPEN OR CLOSED. FOR EXAMPLE, YOU COULD ATTACH THE CONTROLLER IN TRIGGER MODE TO AN EXISTING OCCUPANCY SENSOR TO ALLOW YOUR LIGHTCLOUD SYSTEM TO REACT TO THE SENSOR.



REPEATER: DISABLES ZONE CONTROL AND POWER MEASUREMENT, AND EXTENDS THE RANGE OF YOUR NETWORK.

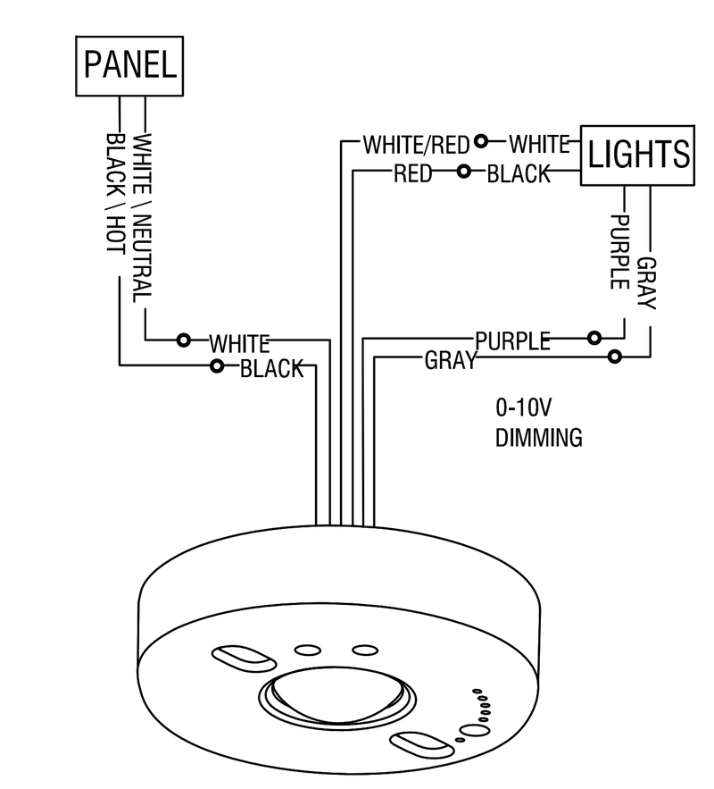
POWER MEASUREMENT: THE LIGHTCLOUD CONTROLLER IS CAPABLE OF MEASURING THE POWER USAGE OF THE ATTACHED CIRCUIT. IN ORDER TO UTILIZE THIS FUNCTION, THE NEUTRAL WIRE OF THE LOAD MUST BE CONNECTED TO THE WHITE-RED SENSE WIRE. IF THE SWITCHED NEUTRAL LINE CANNOT BE USED, IT SHOULD BE TIED TO THE REGULAR NEUTRAL WIRES (I.E. ALL NEUTRAL WIRES JOINED).

POWER LOSS DETECTION: IF POWER TO THE CONTROLLER IS LOST, THE DEVICE WILL DETECT THIS AND ALERT THE LIGHTCLOUD APPLICATION.

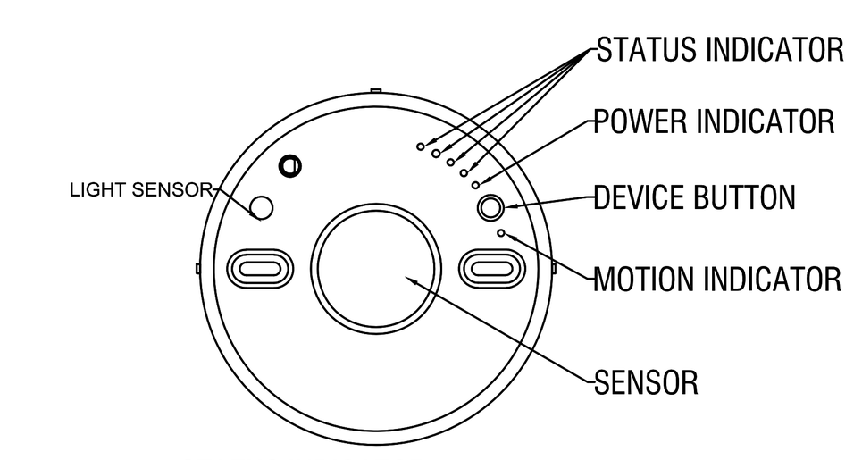
EMERGENCY DEFAULT: IF COMMUNICATION IS LOST, THE CONTROLLER MAY OPTIONALLY FALL BACK TO A SPECIFIC STATE, SUCH AS TURNING THE ATTACHED CIRCUIT ON.

Detail 9 — LC - Controller Trigger Mode Wiring

SWITCHED NEUTRAL
THE "SWITCHED NEUTRAL" WHITE WITH RED STRIPE WIRE IS THE NEUTRAL LINE FOR THE LOAD BEING SWITCHED. THIS ENABLES POWER MEASUREMENT. SEE THE POWER MEASUREMENT SECTION UNDER "FUNCTIONALITY" FOR MORE INFORMATION.



Detail 10 — OC - Occupancy/Vacancy Sensor Wiring Diagram



STATUS INDICATOR

POWER INDICATOR

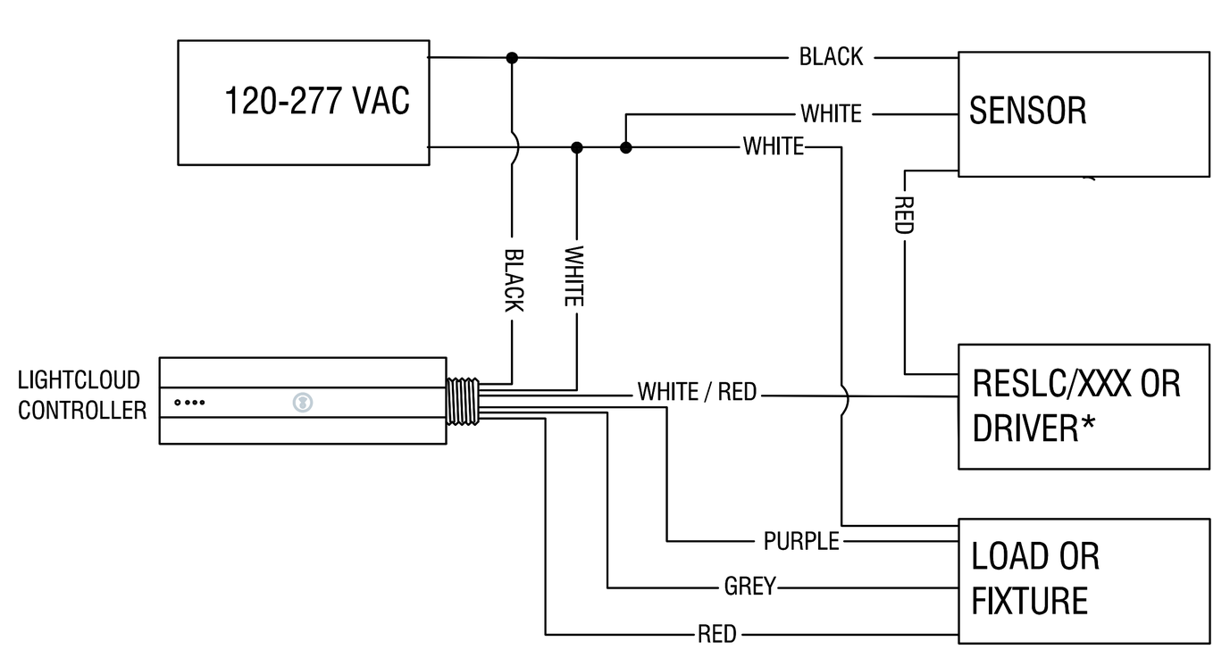
SIGNAL INDICATOR

DEVICE BUTTON

MOTION INDICATOR

SENSOR

Detail 11 — OC - Occupancy/Vacancy Sensor Status Indicators



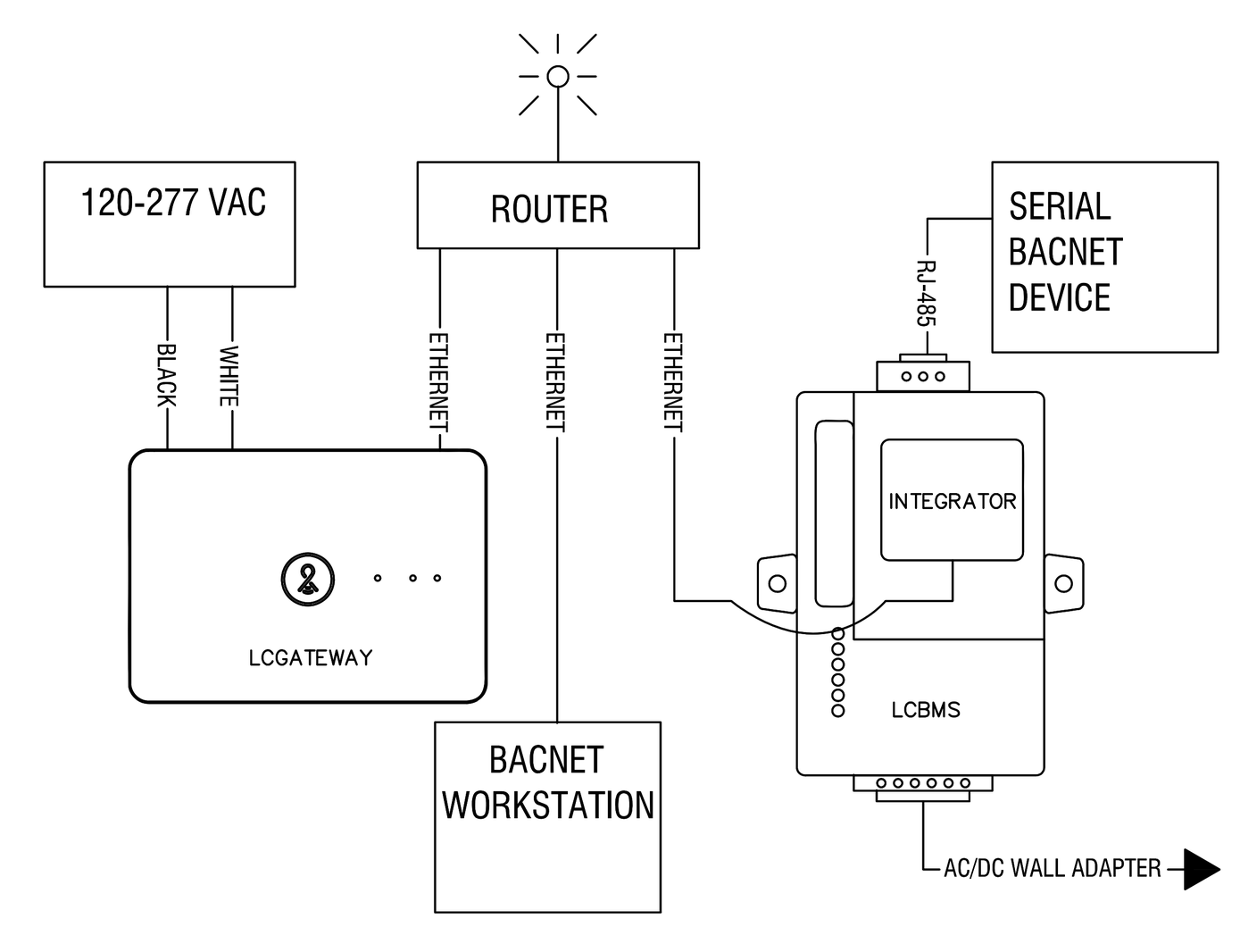
ADVANCED TRIGGER: LIGHTCLOUD CONTROLLERS CAN RECEIVE INPUTS OR TRIGGERS FROM 3RD PARTY SWITCHING DEVICES SUCH AS MOTION OR LIGHT SENSORS.

RESISTANCE: A RESISTOR OR SECOND FIXTURE DRIVER MUST BE USED BETWEEN THE CONTROLLER AND SENSOR. RESLC/120 FOR 120VAC APPLICATIONS OR RESLC/277 FOR 277VAC APPLICATIONS. THE DRIVER MUST ME GREATER THAN 10mA.

INSTALLATION: ANY WIRES NOT IN USE MUST BE CAPPED OFF OR OTHERWISE INSULATED. THIS PRODUCT SHOULD ONLY BE INSTALLED BY A QUALIFIED ELECTRICIAN AND IN COMPLIANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.

EMERGENCY DEFAULT: IF COMMUNICATION IS LOST, THE CONTROLLER MAY OPTIONALLY FALL BACK TO A SPECIFIC STATE, SUCH AS TURNING THE ATTACHED CIRCUIT ON.

Detail 12 — AT - Advanced Trigger Wiring Diagram

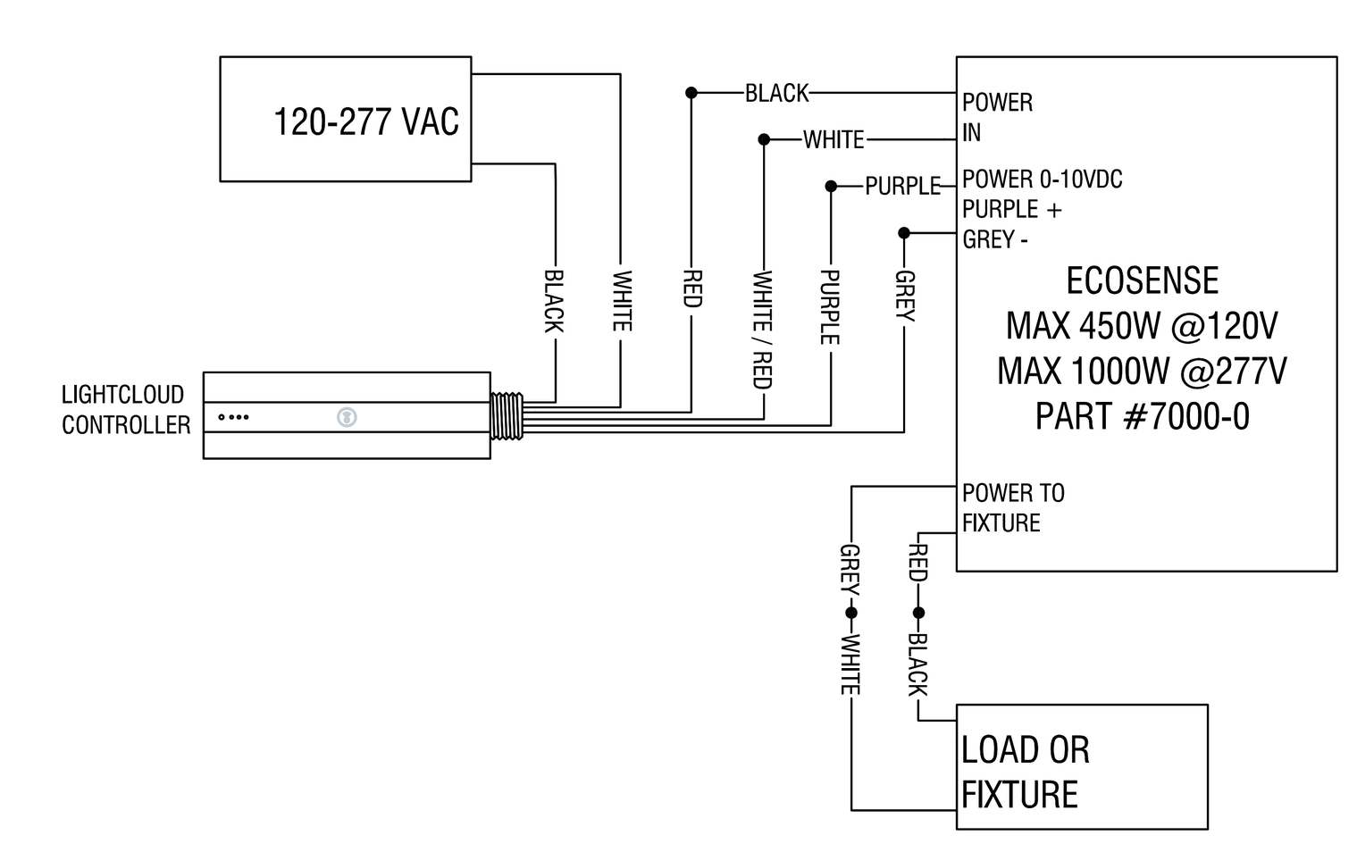


INTEGRATOR: INTEGRATOR INPUT SHALL BE 9-30 VDC OR 12-24 VAC.

GATEWAY: THE GATEWAY SHALL BE HARDWIRED TO A 120V POWER SUPPLY.

INSTALLATION: ANY WIRES NOT IN USE MUST BE CAPPED OFF OR OTHERWISE INSULATED. THIS PRODUCT SHOULD ONLY BE INSTALLED BY A QUALIFIED ELECTRICIAN AND IN COMPLIANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.

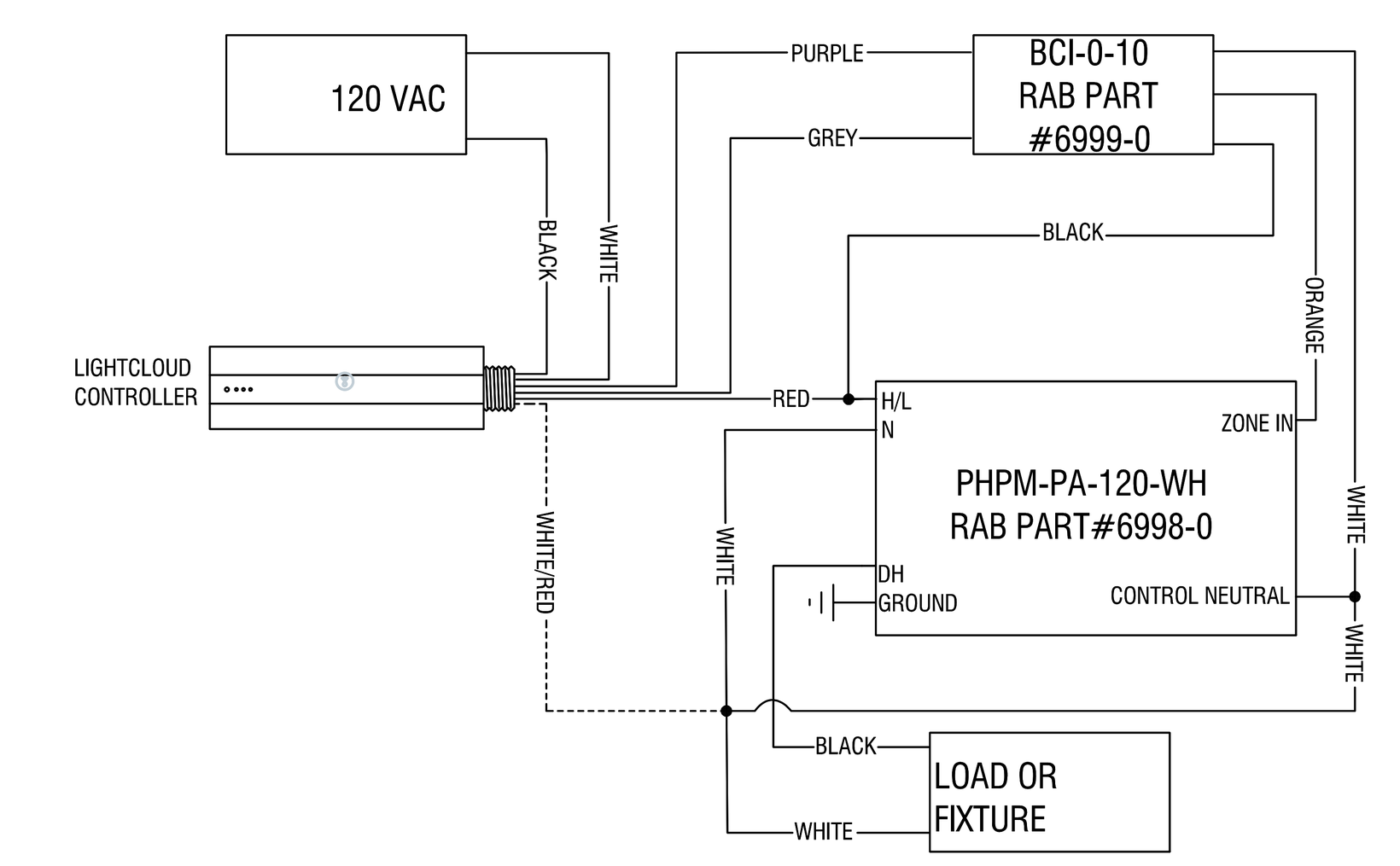
Detail 13 — I - Integrator Wiring Diagram



PHASE DIMMING <450W: LIGHTCLOUD CONTROLLERS CAN DIM PHASE LOADS USING A PHASE DIMMING ADAPTER. FOR LOADS LESS THAN 450W @120V AND 1000W @ 277, WE RECOMMEND THE ECOSENSE ECOSPEC ADAPTER.

INSTALLATION: ANY WIRES NOT IN USE MUST BE CAPPED OFF OR OTHERWISE INSULATED. THIS PRODUCT SHOULD ONLY BE INSTALLED BY A QUALIFIED ELECTRICIAN AND IN COMPLIANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.

Detail 14 — PD - Phase Dimming <450W Wiring Diagram

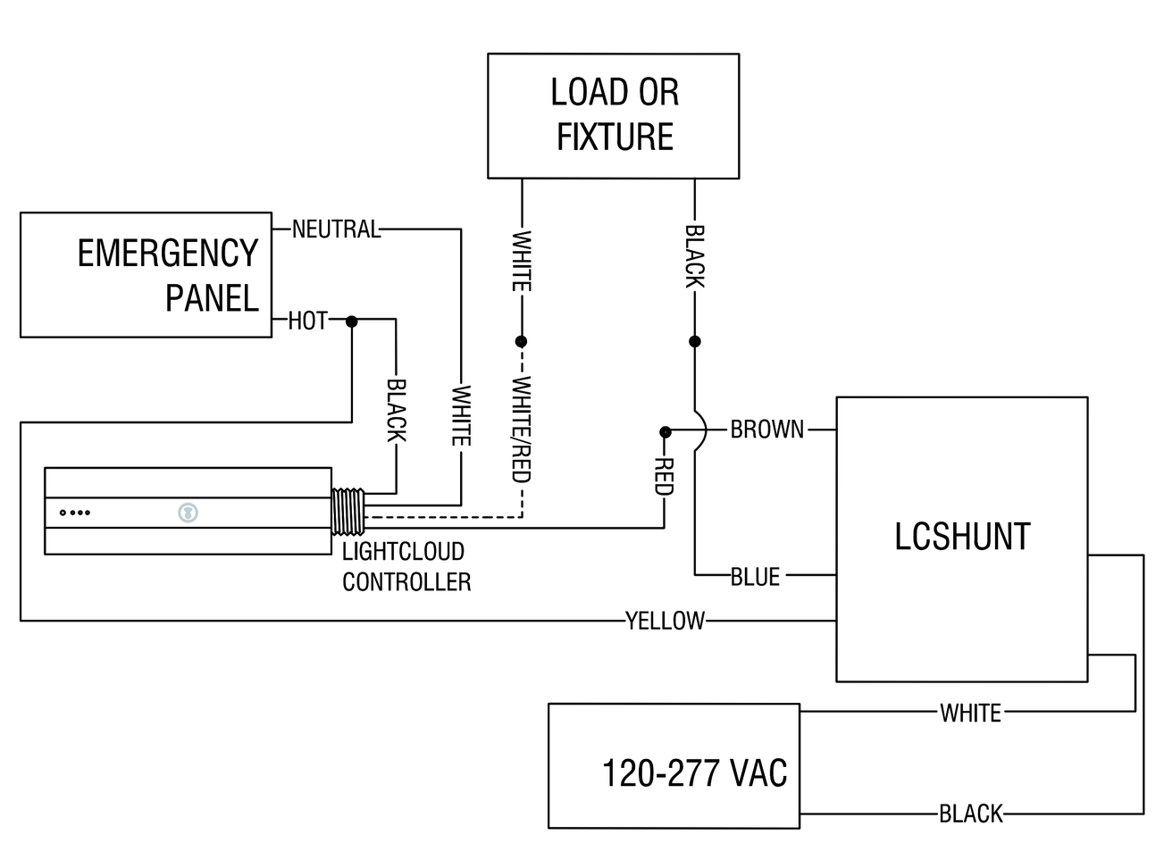


PHASE DIMMING 450W - 1800W: LIGHTCLOUD CONTROLLERS CAN DIM PHASE LOADS USING A PHASE DIMMING ADAPTER. FOR LOADS BETWEEN 450W-1800W, WE RECOMMEND THE LUTRON PHPM-PA-120-WH PHASE DIMMER AND BCI-0-10 BALLAST CONTROL INTERFACE.

RATINGS: PHASE DIMMER: LUTRON PHPM-PA-120-WH, 120V@16A. BALLAST CONTROL INTERFACE: LUTRON BCI-0-10, CONTROL INPUT VOLTAGE: 0-10V; CONTROL INPUT CURRENT: SOURCE 500μA; COMPATIBLE VOLTAGE: 120-277 V~ 50/60Hz.

INSTALLATION: ANY WIRES NOT IN USE MUST BE CAPPED OFF OR OTHERWISE INSULATED. THIS PRODUCT SHOULD ONLY BE INSTALLED BY A QUALIFIED ELECTRICIAN AND IN COMPLIANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.

Detail 15 — PD - Phase Dimming 450-1800W Wiring Diagram

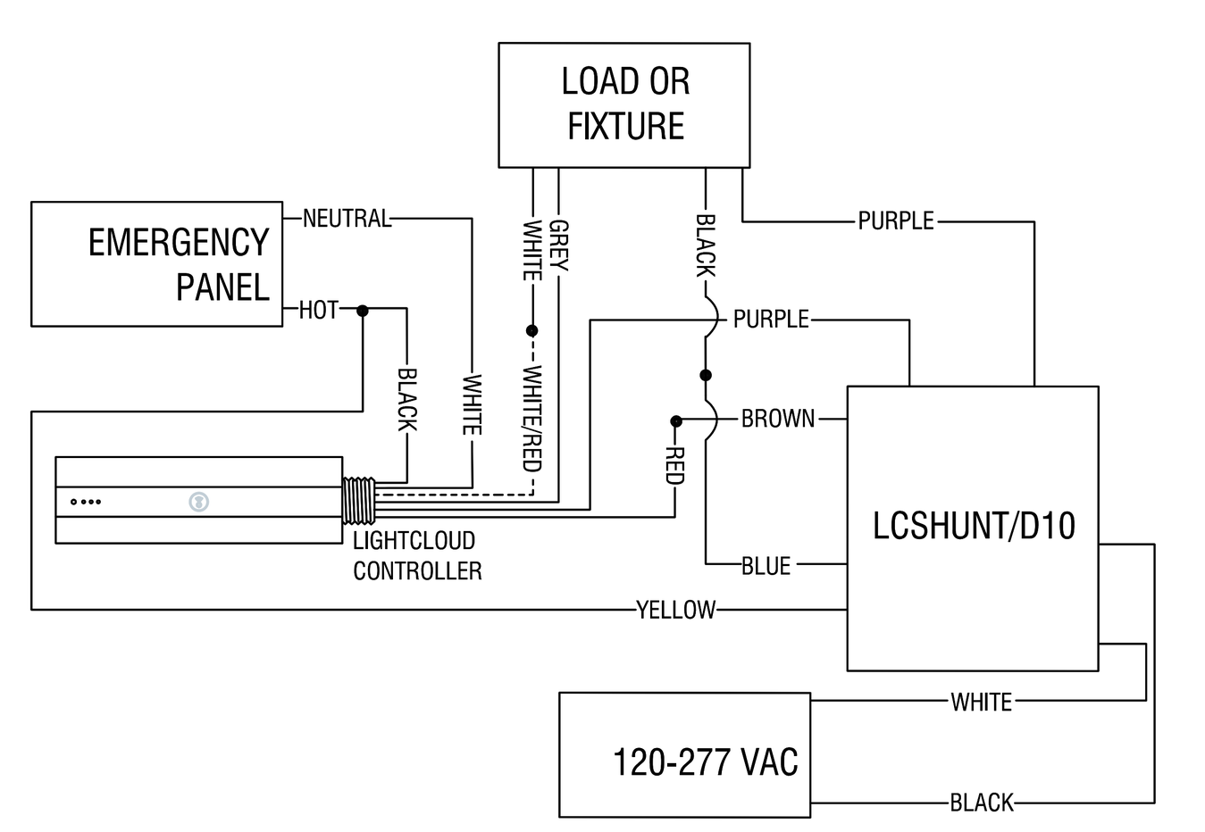


EMERGENCY SHUNT ON/OFF: LIGHTCLOUD CONTROLLER EMERGENCY FIXTURE WIRING WITH LCSHUNT FOR ON/OFF OPERATION ONLY.

RATINGS: THE LCSHUNT INCLUDES A 20A RATED HIGH VOLTAGE FORM C (N/O & N/C) RELAY AND IS UL924 LISTED FOR EMERGENCY LIGHTING CONTROL APPLICATIONS. THE LCSHUNT CAN BYPASS A LINE VOLTAGE SWITCH OR DIMMER, ENSURING THAT AN EMERGENCY FIXTURE ILLUMINATES AT FULL BRIGHTNESS DURING A UTILITY POWER INTERRUPTION.

INSTALLATION: ANY WIRES NOT IN USE MUST BE CAPPED OFF OR OTHERWISE INSULATED. THIS PRODUCT SHOULD ONLY BE INSTALLED BY A QUALIFIED ELECTRICIAN AND IN COMPLIANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.

Detail 16 — UL - UL924 Relay On-Off Wiring Diagram

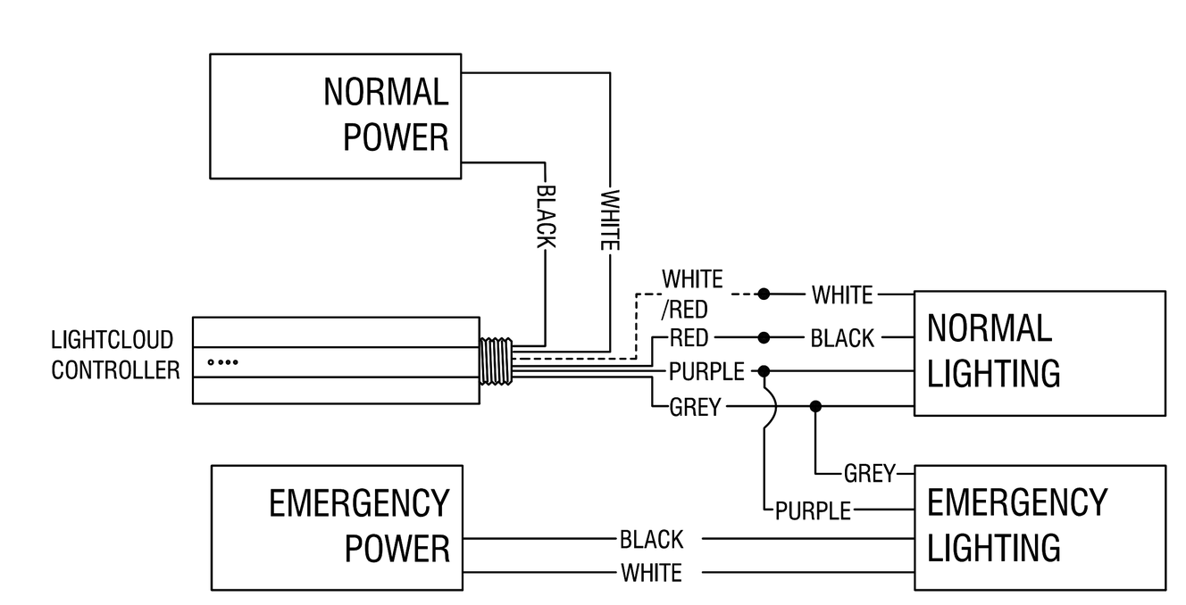


EMERGENCY SHUNT DIMMING: LIGHTCLOUD CONTROLLER EMERGENCY FIXTURE WIRING WITH LCSHUNT/DIM FOR ON/OFF AS WELL AS 0-10V DIMMING OPERATION.

RATINGS: THE LCSHUNT/D10 INCLUDES A 20A RATED HIGH VOLTAGE FORM C (N/O & N/C) RELAY AND IS UL924 LISTED FOR EMERGENCY LIGHTING CONTROL APPLICATIONS. THE LCSHUNT/D10 CAN SIMULTANEOUSLY BYPASS A LINE VOLTAGE SWITCH OR DIMMER, ENSURING THAT AN EMERGENCY FIXTURE ILLUMINATES AT FULL BRIGHTNESS DURING A UTILITY POWER INTERRUPTION.

INSTALLATION: ANY WIRES NOT IN USE MUST BE CAPPED OFF OR OTHERWISE INSULATED. THIS PRODUCT SHOULD ONLY BE INSTALLED BY A QUALIFIED ELECTRICIAN AND IN COMPLIANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.

Detail 17 — UL - UL924 Relay On-Off / Dimming Wiring Diagram

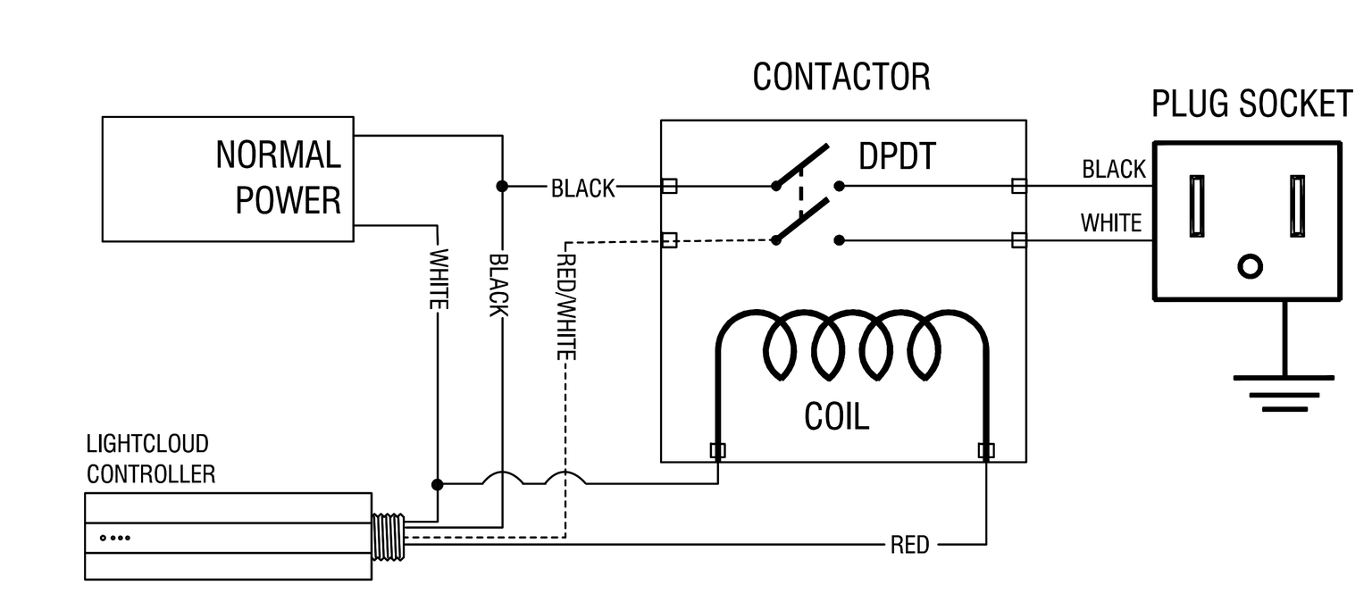


EMERGENCY AND NORMAL INTERCONNECT: LIGHTCLOUD CONTROLLERS CAN BE USED TO CONTROL EMERGENCY LIGHTING FED WITH "ALWAYS ON" EMERGENCY POWER. UPON LOSS OF POWER, EMERGENCY LIGHTING WILL FAIL TO "FULL ON" LIGHT OUTPUT.

NOTE: IN SPACES WHERE THERE IS ONLY ONE LUMINAIRE, AND IT IS CONNECTED TO EMERGENCY POWER, THE CONTROLLER WILL NEED TO BE CONNECTED TO A NORMAL POWER CIRCUIT FOR PROPER OPERATION. EMERGENCY FIXTURES WITH ON-BOARD BATTERY BACKUP DO NOT REQUIRED SPECIAL WIRING.

INSTALLATION: ANY WIRES NOT IN USE MUST BE CAPPED OFF OR OTHERWISE INSULATED. THIS PRODUCT SHOULD ONLY BE INSTALLED BY A QUALIFIED ELECTRICIAN AND IN COMPLIANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.

Detail 18 — EM - Emergency / Normal Interconnect Wiring Diagram



PLUG LOAD CONTROL: LIGHTCLOUD CONTROLLERS CAN BE USED TO CONTROL POWER TO RECEPTACLES THROUGH A CONTACTOR. CONTACTOR BY OTHERS.

INSTALLATION: ANY WIRES NOT IN USE MUST BE CAPPED OFF OR OTHERWISE INSULATED. THIS PRODUCT SHOULD ONLY BE INSTALLED BY A QUALIFIED ELECTRICIAN AND IN COMPLIANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES.

Detail 19 — Lightcloud Plug Load Control Wiring Diagram

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CLIENT: XXX

REV	DATE	PROJECT AWARD DATE	DESCRIPTION	BY
###	MM.DD.YY			XXX

PROJECT: XXX

SCALE: AS SHOWN
DATE: XXX
CASE NUMBER: XXX
DESIGNED BY: CBarnes, LC
DRAWN / CHK BY: SFillion, LC
TITLE: Wiring Diagrams

DRAWING NUMBER:
EL-7.4

ADVISORY DRAWING SET
NOT FOR CONSTRUCTION

C:\Users\catherine.barnes\Desktop\For Rob Riley.dwg

Installing a Lightcloud® System

1 Step One

Position the Gateway

a. **Avoid Problem Materials and Devices.**
Don't place the Gateway in a metal enclosure, thick concrete or brick rooms. Also don't place the Gateway near microwaves, elevator rooms, amplifiers, or other antennas.

Problem Materials

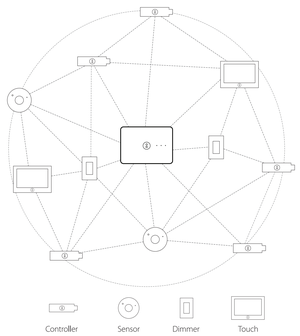
Problem Devices & Signals


Microwaves


Elevator Mechanical Rooms


Amplifiers & Antennas

b. **Choose a location that is as close to as many other Lightcloud devices as possible.**



**All of the devices don't have to be within a 100' of the Gateway 4G, but it's ideal to have as many within direct range as possible.*

c. **Test the cellular signal.**
Plug in the Gateway and check the cellular signal strength. The cellular signal strength LED should be solid green. Yellow is also adequate but not ideal.
If the cellular signal strength LED is off, move the Gateway to a new location and test again.

2 Step Two

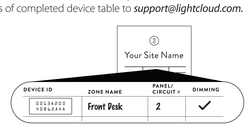
Record the Gateway's Device ID

Each Lightcloud device has a unique Device ID for identification that needs to be documented. To document the Device IDs, use one of the following 3 methods.

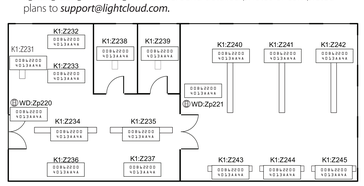
a. **LC Installer App - Free**
Scan Device IDs and send information to RAB
Download: *lightcloud.com/lcinstaller (Available for iOS and Android)*

b. **Device Table - Included with the Gateway and Lighting Schedule**
Attach Device ID stickers to Device Table and complete information.
Send detailed photos of completed device table to ***support@lightcloud.com.***

Additional Device Tables can be downloaded at: ***lightcloud.com/devicetable***



c. **Floor Plan**
Attach the Device Identification sticker to its location on a floor plan, lighting design, or design schedule. Send detailed photos of completed plans to ***support@lightcloud.com.***



3 Step Three

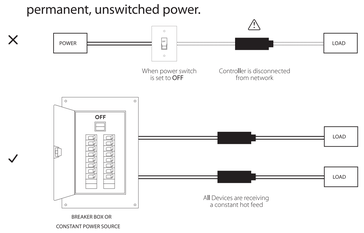
Permanently Install the Gateway

a. **Mount the Gateway to the wall.**
b. **Wire the Gateway for line power.**

4 Step Four

Install and Document the Other Lightcloud Devices

a. **Follow the Device Manuals to wire the other devices for permanent, unswitched power.**



b. **As you wire each device, document their Device IDs using the same method you chose to document the Gateway's Device ID in step 3.**

5 Step Five

Submit Device Information

After wiring and organizing all of the devices, submit the device information using the lc installer app or email photos of the documented device ids to ***Support@lightcloud.com.***

6 Step Six

You're Done!

Lightcloud support will remotely configure the system.

Note: *Don't Leave The Job-site Until Lightcloud Support Has Verified That All Of The Devices Have Joined The Network And Have Been Properly Documented.*

Device Table

Site Name:

Site Address:

DEVICE ID	ZONE NAME	AREA/ROOM	CIRCUIT	DIM	PWR/ENGY	NOTES
	GATEWAY					

DEVICE ID	ZONE NAME	AREA/ROOM	CIRCUIT #	DIM	PWR/ENGY	NOTES

Installation Checklist

Gateway

- ☐ Gateway has cellular reception.
- ☐ Gateway is located centrally to other Lightcloud Devices.
- ☐ Gateway is installed to permanent, constant power.
- ☐ Gateway is free from locations with heavy interference.
- ☐ Gateway is in an unobstructed location.
- ☐ Gateway's Device ID has been recorded.

Controller Sensor Dimmer Touch

- ☐ Device is within range of one or more Lightcloud Devices.
- ☐ Device is wired to permanent, constant power.
- ☐ Device is free from locations with heavy interference.
- ☐ Device is in an unobstructed location.
- ☐ Device ID has been recorded.

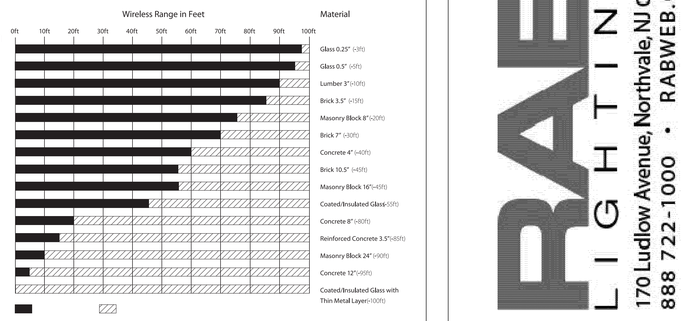
Lightcloud Best Practices

Wireless Range Through Building Materials

The range and reliability of the Lightcloud wireless mesh network is greatly impacted by building materials and environmental factors.

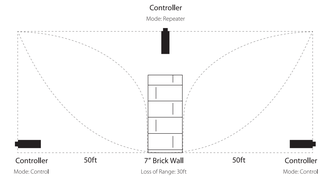
To maintain a high-quality, reliable installation, the maximum indoor wireless range of a Lightcloud Device is 100 feet.

Use the chart to the right to approximate the range of devices through various materials.



Connect Devices Separated by an Obstruction

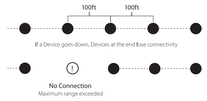
When two Devices are separated by an obstruction like brick or concrete, add a Controller in Repeater mode near one side of the obstruction. Controllers in Repeater mode extend the mesh network without controlling a load.



Device Placement — Indoors

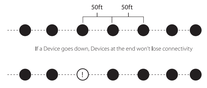
Avoid Long Lines or Chains

When possible, avoid installing Lightcloud Devices in a long line or "chain," as this can make the network more fragile.



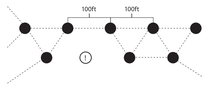
Tight Linked Chains

If creating a chain of Devices is unavoidable, try to place them closer together so that if one Device can't communicate, the surrounding Devices will still be able to reach each other.



Create a Mesh Pattern

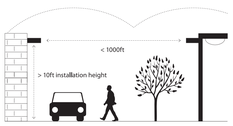
Ideally, Devices should be able to mesh together with other Devices in order to create redundancy.



Device Placement — Outdoors

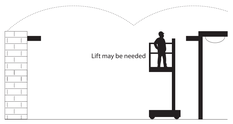
Outdoor Devices with no interference or obstructions have a maximum range of 1000ft and suggested mounting height of greater than 10ft.

Place Controllers above obstructions



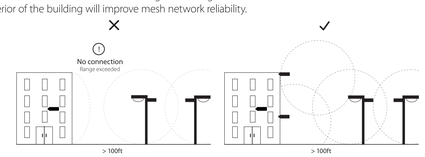
Raising Controllers above obstructions such as trees, improves network reliability and prevents signal loss. Keep in mind, some obstructions are temporary such as cars and people — these obstructions could cause intermittent connection loss.

Finalize pole installation before leaving site



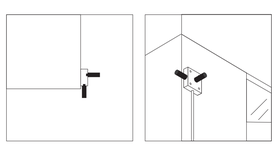
Connecting Lightcloud Inside A Building To An Adjacent Outdoor Space

Place a Controller on the exterior of the building within range of the interior and exterior mesh network. Multiple Controllers on the exterior of the building will improve mesh network reliability.



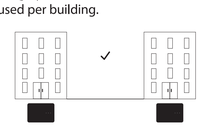
Device Around Corners

If you need to direct a wireless mesh signal around the corner of a building, you can install two Controllers in a 90° fashion from each other as pictured.

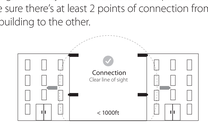


Multiple Buildings

It is highly recommended that one Gateway is used per building.



If a single Gateway must be used for multiple buildings, make sure there's at least 2 points of connection from one building to the other.



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170 Ludlow Avenue, Northvale, NJ 07647
888 722-1000 • RABWEB.COM

CLIENT:

XXX

REV	DATE	DESCRIPTION	BY
###	MM.DD.YY	PROJECT AWARD DATE	XXX

PROJECT:

XXX

SCALE:	AS SHOWN
DATE:	XXX
CASE NUMBER:	XXX
DESIGNED BY:	CBarnes, LC
DRAWN / CHK BY:	SFillion, LC
TITLE:	

Installation Guidelines

DRAWING NUMBER:

EL-7.5

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