Greengate
Installation Instructions

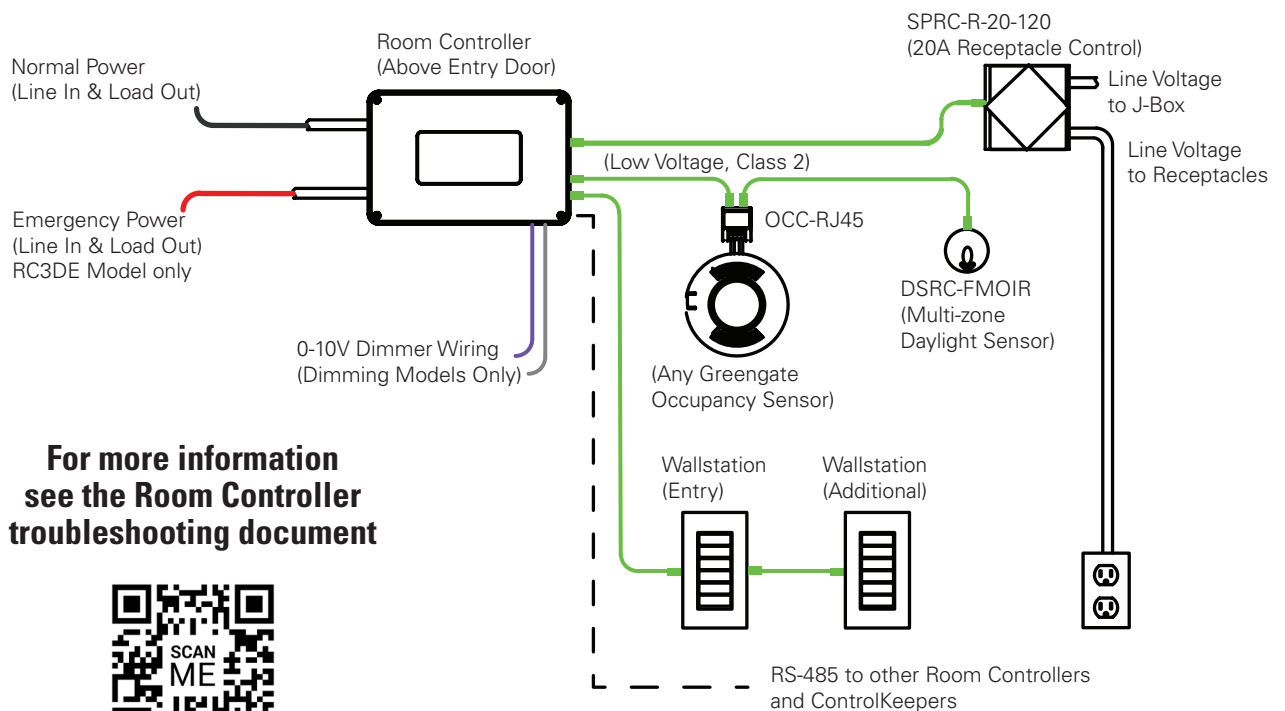| | Model #: RC3-PL | Model #: RC3-PL-N |
Model #: RC3	Model #: RC3D-PL	Model #: RC3D-PL-N
Model #: RC3D	Model #: RC3DE-PL	Model #: RC3DE-PL-N
Model #: RC3DE	Model #: RC3D-PL-CP	Model #: RC3D-PL-N-CP
	Model #: RC3DE-PL-CP	Model #: RC3DE-PL-N-CP

Room Controller

⚠ **SAFETY INSTRUCTIONS** ⚠

IMPORTANT SAFEGUARDS

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

- Installation should be performed by a qualified electrician
- Installation shall be in accordance with all applicable local and NEC codes
- Turn the power off at circuit breakers before wiring
- RC3DE models may contain circuits from more than one power source
- Designed for indoor installation and use only
- All new wiring must be fully verified before applying power
- Servicing of equipment should be performed by qualified service personnel

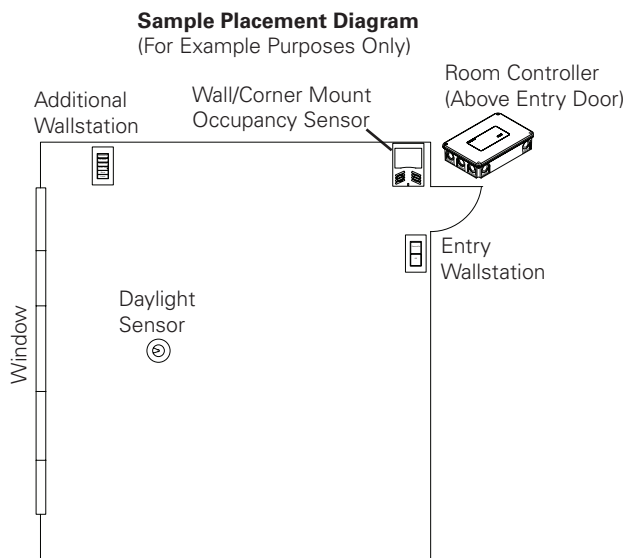**SAVE THESE INSTRUCTIONS**

System Overview

SPRC-R-20-120
(20A Receptacle Control)

Room Controller
(Above Entry Door)

Normal Power
(Line In & Load Out)

Line Voltage
to J-Box

Line Voltage
to Receptacles

(Low Voltage, Class 2)

Emergency Power
(Line In & Load Out)
RC3DE Model only

OCC-RJ45

DSRC-FMOIR
(Multi-zone
Daylight Sensor)

0-10V Dimmer Wiring
(Dimming Models Only)

(Any Greengate
Occupancy Sensor)

Wallstation
(Entry)

Wallstation
(Additional)

RS-485 to other Room Controllers
and ControlKeepers

**For more information
see the Room Controller
troubleshooting document**

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For more information see the Room Controller troubleshooting document

Sample Placement Diagram
(For Example Purposes Only)

Room Controller Plastic Enclosure (Model RC3DE shown)

Room Controller Metal Enclosure (Model RC3DE-PL shown)

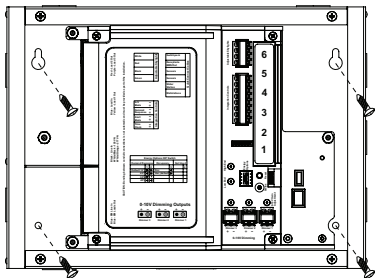The Room Controller is a room based system that simplifies design, code compliance and installation. The controller connects to occupancy sensors, daylighting sensors, wallstations and receptacle control accessories with provided Click & Go QuickConnect cables, providing a completely operational, out-of-the-box solution. Control up to three switched and three dimmed loads (dependent on model ordered) without the need for post-installation programming.

Additional advanced integration easily accomodates Demand Response, Alert Mode, A/V Mode and Time Clock requirements.

This document shows installation details regarding the Room Controller and accessory products.

⚠ **CAUTION** ⚠

Bonding between conduit connections is not automatic and must be provided as part of the installation.

Failure to install the Room Controller in the suggested location (above the entry door) may lead to the provided QuickConnect cabling being too short to reach the intended accessory locations.

Specifications

Input/Output Voltage	120/277 VAC 50/60Hz
Maximim Combined Load	20A
Ballast:	20A (LED)
Incandescent:	15A
Motor Load:	1 HP @ 120 VAC
Emergency Output: (RC3DE only)	
Ballast:	3A (LED)
Incandescent:	3A
Class 2 Dimming Output	0-10 VDC, sinks up to 100mA per output for control of up to 50 compatible ballasts/drivers.
Operating Environment	32° F to 104° F (0° to 40° C) For indoor use only.

Mounting

Mount the Room Controller above the entrance door of the room being controlled.

Connect any necessary line and low voltage conduit directly to the Room Controller.
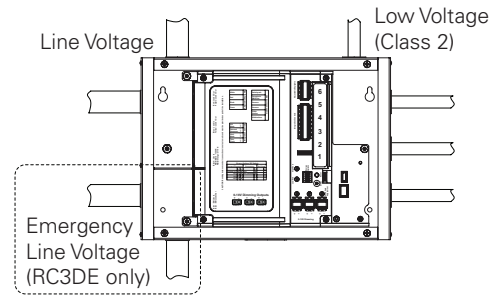

Load Wiring

⚠ CAUTION ⚠

Before Connecting Circuits:

1. Connect lighting load wiring directly to the circuit breaker to ensure there are no shorts or miswires.

2. For any 0-10V dimmable loads, separate the purple and gray leads for each zone controlled. All lighting loads should be at full bright output.

3. Isolate one dimming zone and temporarily connect the purple and gray 0-10V leads together.

4. Verify that the controlled zone dims to its lowest output level, then label the zone wiring for easy identification. Disconnect the 0-10V leads for the zone under test and then repeat for remaining dimming zones.

Wiring Diagram
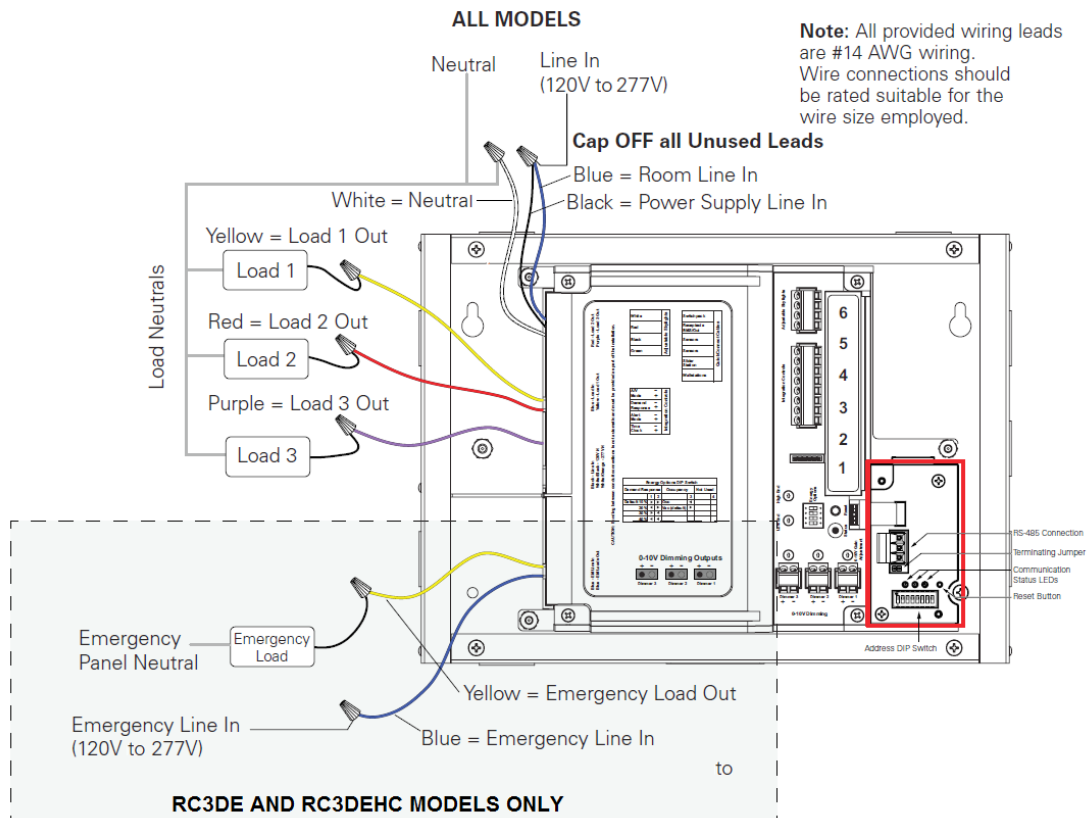
Normal Power Connections

The feeding circuit will provide power to the controlled loads as well as to the Room Controller's microprocessor. The maximum combined load of the three relays onboard the Room Controller should not exceed 20A.

Connect line voltage wiring to the provided leads, matching your room configuration to load 1, 2 and 3 according to your lighting layout and/or diagram on the Room Controller QuicKit.

## Connecting Emergency Power Line Voltage

The RC3DE model supports a 3A emergency relay. This is a UL 924 listed solution for emergency lighting control.

Under normal power operation, the emergency load will track operation to the load tied to the yellow lead (load 1). When normal power fails, the emergency relay will close and the load will be forced on to full brightness.

Connecting 0-10V Load Wiring

The RC3D and RC3DE models allow for connection of up to three 0-10V dimming zones depending on the model. Dimming outputs are independent of relay control to allow maximum flexibility in application. Switched zones and dimmed zones do not need to overlap in the Room Controller architecture as relays and dimmers are controlled separately.

Route the 0-10V purple and gray wires through one of the provided conduit knockouts in the low voltage section. 0-10V terminal blocks are removable for ease of wiring. Connect the 0-10V purple wire to the positive location and the gray wire to the negative location on the first dimmer terminal block. Repeat for additional dimming zones.
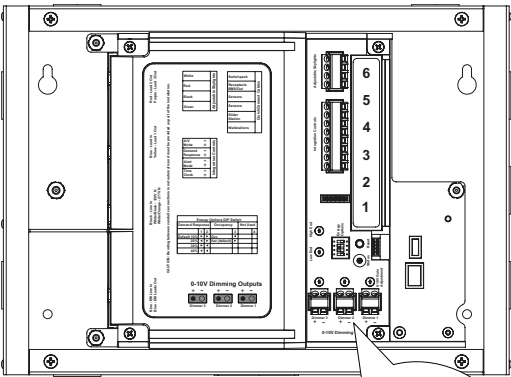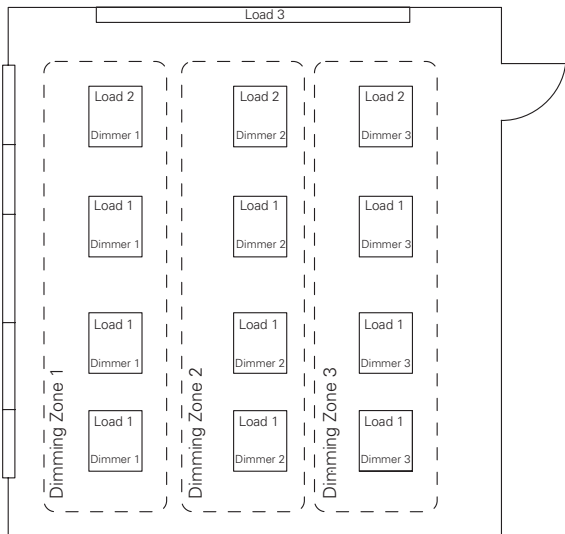
(RC3DE Model Shown)

Note: For daylight dimming applications, dimmer 1 should be the zone closest to the window. Dimmer 3 is the zone furthest from the window.

0-10V Gray (-)
0-10V Violet (+)
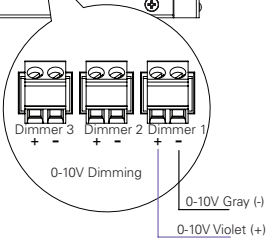
Zone Wallstations & Scene Wallstations

Specifications

Voltage	24 VDC supplied from Room Controller
Electrical	Class 2, LPS
Connections	Two onboard QuickConnect ports
Installation	Standard decorator opening
Operating Environment	32° F to 104° F (0° to 40° C) For indoor use only.

Mounting

Mount wallstations to a single gang wall box with a minimum internal depth of 2 inches (51mm). Up to twelve wallstations may be connected to the Room Controller to meet your application.

Note: Wallstations can be connected to more than one Room Controller, however they will perform the same functions. See the app note: "*Joining multiple Room Controllers via the keypad interface*" on our website.
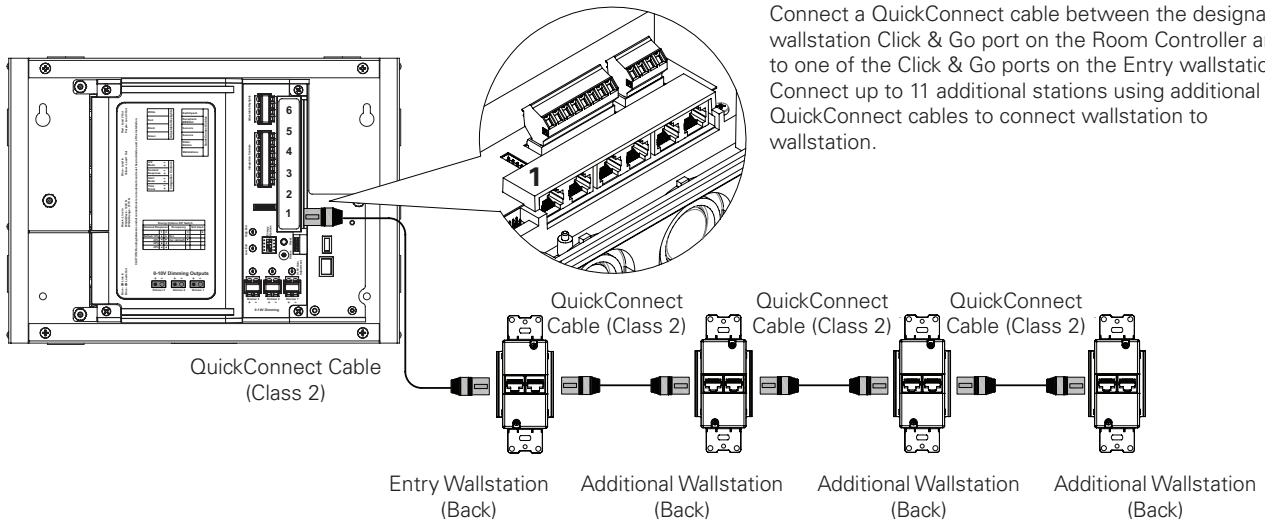
Connect a QuickConnect cable between the designated wallstation Click & Go port on the Room Controller and to one of the Click & Go ports on the Entry wallstation. Connect up to 11 additional stations using additional QuickConnect cables to connect wallstation to wallstation.

QuickConnect Cable (Class 2)

QuickConnect Cable (Class 2)

QuickConnect Cable (Class 2)

QuickConnect Cable (Class 2)

Entry Wallstation (Back)

Additional Wallstation (Back)

Additional Wallstation (Back)

Additional Wallstation (Back)

Use the shortest lengths of QuickConnect cable from your QuicKit that will reach your intended wallstation locations.

Once the wallstations are installed, connect the wallstations to the wall box and attach the wallplates.

Front Cover

Inner Plate   Main Body
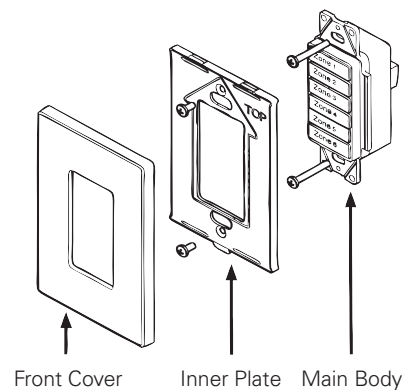
Functions

Zone wallstations are pre-engraved and control Room Controller outputs out-of-the-box. Zone wallstations provide output toggle functions and dimmer raise/lower functions

Scene wallstations are pre-engraved and control Room Controller outputs out-of-the-box. Scene wallstations go to a preset light configuration that can be adjusted using the HHPR-RC personal remote.

Motion Sensors - Ceiling/Wall/Corner Mount

The Room Controller QuicKits use OAC (C1, C2, C3) or OAWC (W1, W2, W3) model sensors to allow for occupancy control.

Specifications

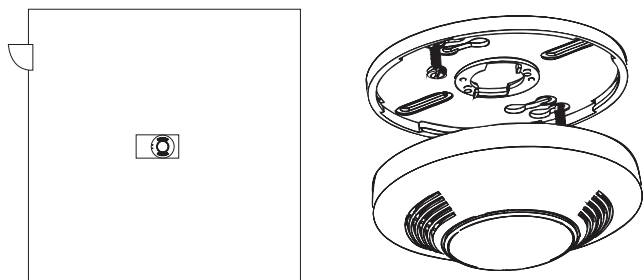|	
Voltage	10-30 VDC (24 VDC supplied from Room Controller)
Electrical	Class 2, LPS
Connections	Wire leads connect to a provided OCC-RJ45 Input/Output Device. The Input/Output Device contains two QuickConnect ports.
Operating Environment	32° F to 104° F (0° to 40° C) For indoor use only.

Note: The Room Controller connects to standard GG occupancy sensors, through the OCC-RJ45 Input/Output Device.
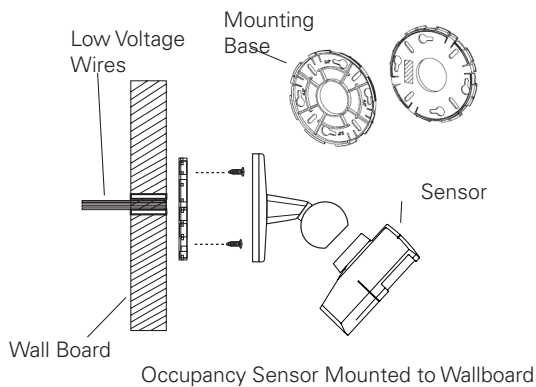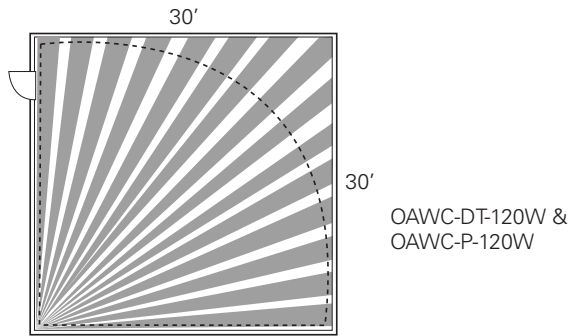
Ceiling Sensor Mounting

OAC sensors can be mounted to the ceiling, junction box or round fixture with raceway. Optimum mounting height is 8-10 feet. **Do not mount over 12 feet.**

Mount at fixture height to avoid obstucting view.

Mount the sensor at least 4-6 feet from air supply ducts to avoid false activation.

Wall/Corner Mounting

30'

30'

OAWC-DT-120W &
OAWC-P-120W

Low Voltage Wires

Mounting Base

Sensor

Wall Board
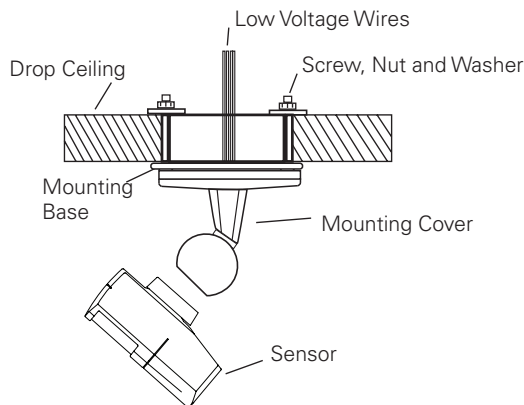
Occupancy Sensor Mounted to Wallboard

OAWC sensors can be mounted to the ceiling, junction box or round fixture with raceway. Optimum mounting height is 8-10 feet. **Do not mount over 12 feet.**

Mount at fixture height to avoid obstucting view.

Mount the sensor at least 4-6 feet from air supply ducts to avoid false activation.

Note: Occupancy sensors can also be mounted to an octagon box or round fixture with raceway.

Low Voltage Wires

Drop Ceiling

Screw, Nut and Washer

Mounting Base

Mounting Cover

Sensor

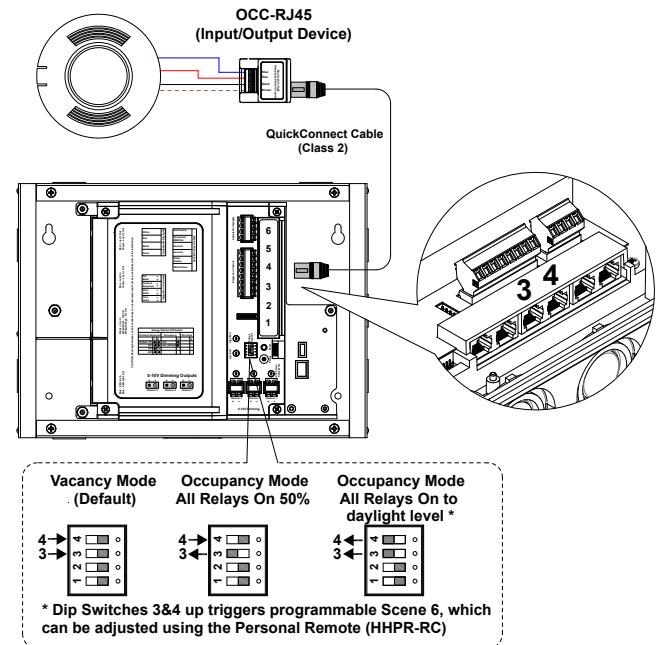Occupancy Sensor Mounted to Wallboard

Connecting the Occupancy Sensor to the Room Controller

Up to two occupancy sensors may be powered from the Room Controller. Sensors connect using the provided OCC-RJ45 Input/Output Device and QuickConnect Cables to ports 3 or 4 on the Room Controller.

Once the sensor is mounted, attach the OCC-RJ45 Input/Output Device to the sensor leads matching the wire colors to the label on the input/output device as shown. Connect the Input/Output Device to one of the two sensor ports on the Room Controller. Use the shortest lengths of QuickConnect cable from your QuicKit that will reach the input/output device location.

Connect a QuickConnect cable between one of the two Sensor Click & Go ports on the Room Controller and to one of the Click & Go ports on the OCC-RJ45 Input/Ouput Device.

OCC-RJ45
(Input/Output Device)

QuickConnect Cable
(Class 2)

3 4

Vacancy Mode (Default)	Occupancy Mode All Relays On 50%	Occupancy Mode All Relays On to daylight level *

* Dip Switches 3&4 up triggers programmable Scene 6, which can be adjusted using the Personal Remote (HHPR-RC)

Note: For spaces that need more than two occupancy sensors see the app note: "*Room Controller applications for additional occupancy sensors,*" on our website.

If you have a larger room that requires two occupancy sensors, the second sensor's input/output device may attach directly to the first sensor's input/output device or may be routed to the second sensor Click & Go port on the Room Controller.
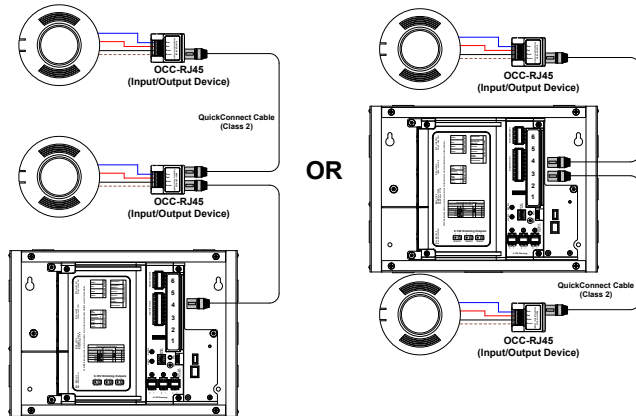
Daylight Sensor / IR Receiver

The Room Controller connects to one daylight sensor for multi-zone dimming control in the RC3D and RC3DE models.

Specifications

Voltage	24 VDC supplied from Room Controller
Electrical	Class 2, LPS
Light Sensor Range	
Low:	3-300 lux
High:	30-3000 lux
Direct Sun:	300-30000 lux
Connections	Sensor has a Click & Go ready connector to a provided GGRC-COUPLER.
Operating Environment	32° F to 104° F (0° to 40° C) For indoor use only.

Mounting

The daylight sensor can be mounted to a ceiling tile or fixture using the threaded post and locking washer in materials up to a 0.75″ thick. The accessory mounting bracket (DSCM-MT) allows the daylight sensor to be mounted to a hard wall.

• Ensure the daylight sensor is not obstructed and is not looking directly at electric lighting

• For skylights that contain motor controls, ensure the daylight sensor is mounted below the daylight blocking mechanism

• Remember to adjust the sensor head to point the arrow and lens in the correct position

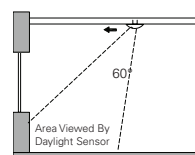• Ensure the daylight sensor is not looking out the window or skylight

Functions

The daylight sensor adjusts the light level in the space based on natural light. The daylight sensor is an open loop sensor that controls all three zones in the Room Controller. Out-of-the-box the Room Controller and daylight sensor provide three daylight dimming levels for primary, secondary and top lighting. The out-of-the-box daylight levels target approximately 45 fc at the work surface across the space depending on room size and fixture spacing.

The daylight sensor also acts as an IR receiver for the HHPR-RC personal remote and is required if the space needs an IR personal remote.
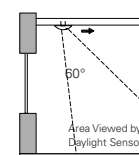
Room Controller wallstations allow the user to lower the light level below the daylight level setting. The Room Controller wallstations will never allow the light level to be raised above the daylight level setting.

Mount the daylight sensor one to two times the window height from the window wall. Position the sensor so its lens and arrow is pointed toward the window.
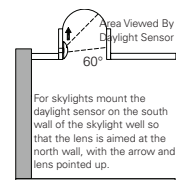
For narrower spaces mount the daylight sensor near the window with the sensor lens and arrow facing away from the window and pointing into the space.

For skylights mount the daylight sensor on the south wall of the skylight well so that the lens is aimed at the north wall, with the arrow and lens pointed up.
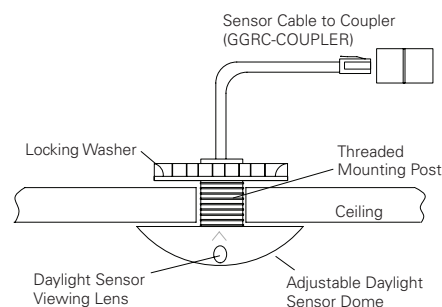
Ceiling Location   Narrow Location   Skylight Location

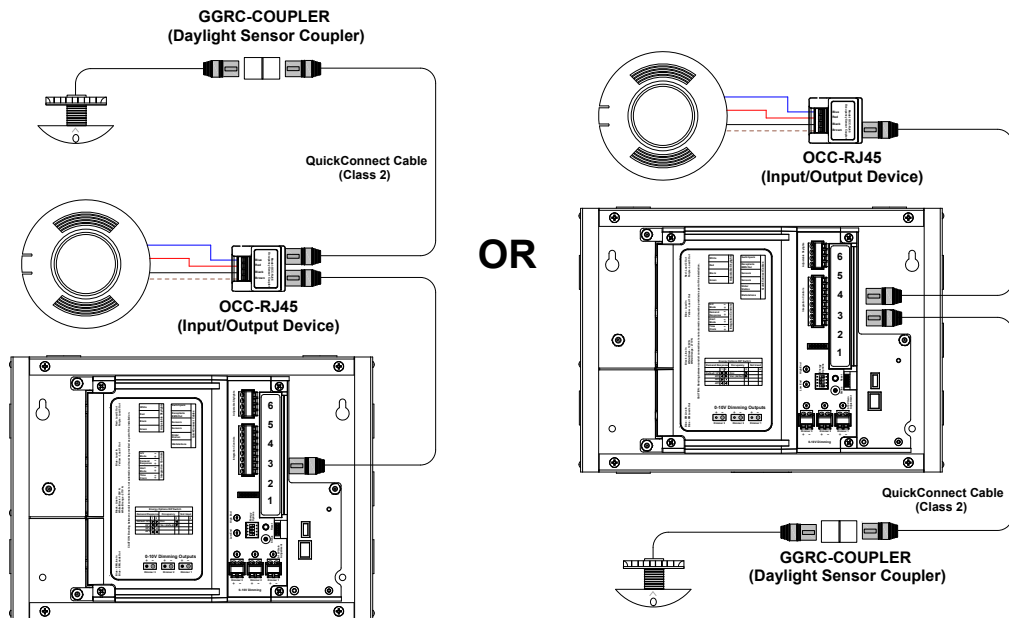## Connecting the Daylight Sensor to the Room Controller

One DSRC-FMOIR daylight sensor may be connected to the Room Controller. The daylight sensor connects using only the provided GGRC-COUPLER and QuickConnect Cable to ports 3 or 4 of the Room Controller.

Once the daylight sensor mounting area is prepared, attach the GGRC-COUPLER to the sensor. Connect the Daylight Sensor to one of the two sensor ports on the Room Controller, using the shortest length of QuickConnect cable from your QuicKit that will reach the desired location.

Connect the daylight sensor to the coupler. Connect a QuickConnect cable between the coupler and one of the sensor Click & Go ports on the Room Controller.

GGRC-COUPLER
(Daylight Sensor Coupler)

QuickConnect Cable
(Class 2)

GGRC-COUPLER
Click & Go Port
(one on each side)
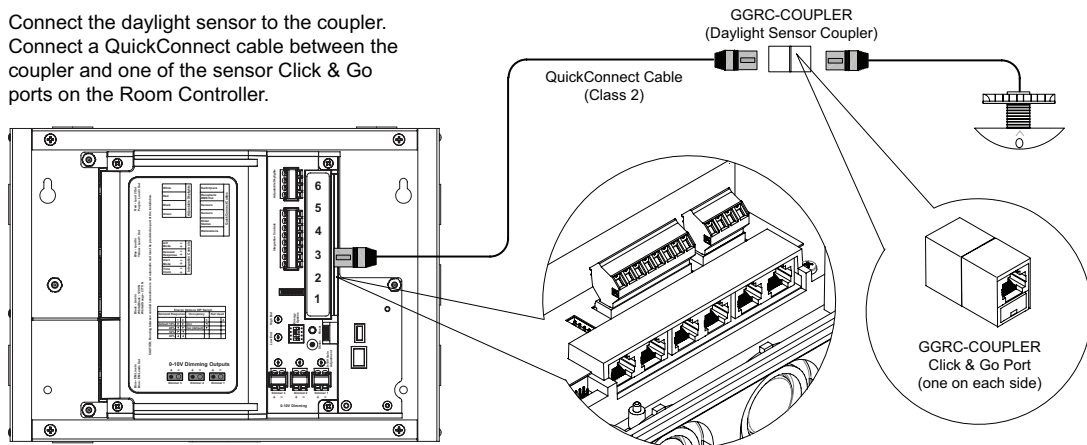
If occupancy sensors are being used in your room control strategy, an alternate wiring method may be used. Wire the daylight sensor to either the Room Controller or to the nearest free input/output device.

GGRC-COUPLER
(Daylight Sensor Coupler)

QuickConnect Cable
(Class 2)

OCC-RJ45
(Input/Output Device)

OR

OCC-RJ45
(Input/Output Device)

QuickConnect Cable
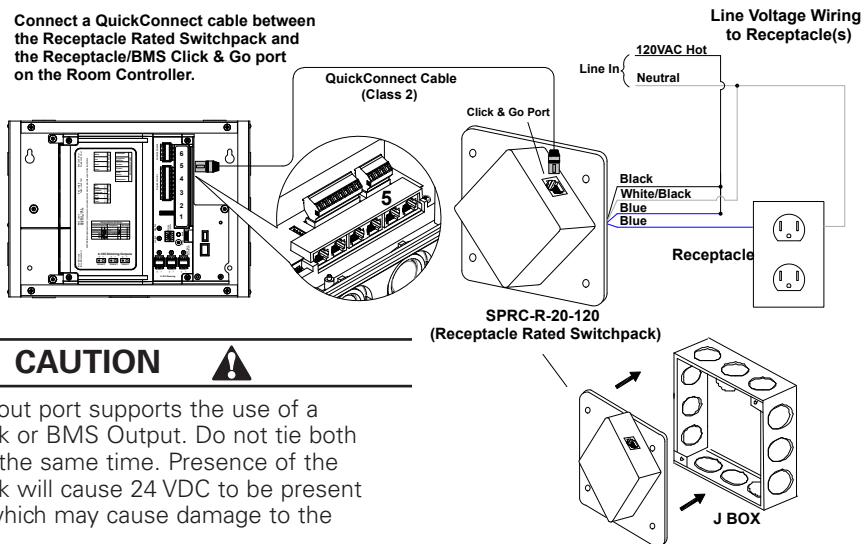(Class 2)

GGRC-COUPLER
(Daylight Sensor Coupler)

Receptacle Control Switchpack

The Room Controller connects to five Receptacle Control Switchpacks for control of 20A receptacle circuits. Receptacles will be turned on when the occupancy sensor senses motion (even when in Vacancy Mode) or when any switch button is pressed to turn lighting loads ON. Controlled receptacles will switch OFF when the occupancy sensor no longer senses motion or, in applications where there is no occupancy sensor, when commanded into After-Hours Mode from an external contact. The receptacle output will not blink warn in After-Hours Mode.

Mounting and Connection

The Receptacle Control Switchpack mounts to a standard four inch square junction box. All line voltage connections are made via flying leads. Connect the Receptacle Rated Switchpack to the Room Controller using one of the provided QuickConnect cables. If connecting more than one Receptacle Control Switchpack to the Room Controller, use the GGRC-SPLITTER accessory.

Connect a QuickConnect cable between the Receptacle Rated Switchpack and the Receptacle/BMS Click & Go port on the Room Controller.

QuickConnect Cable (Class 2)

Click & Go Port

Line Voltage Wiring to Receptacle(s)

120VAC Hot

Line In — Neutral

Black
White/Black
Blue
Blue

Receptacle

SPRC-R-20-120
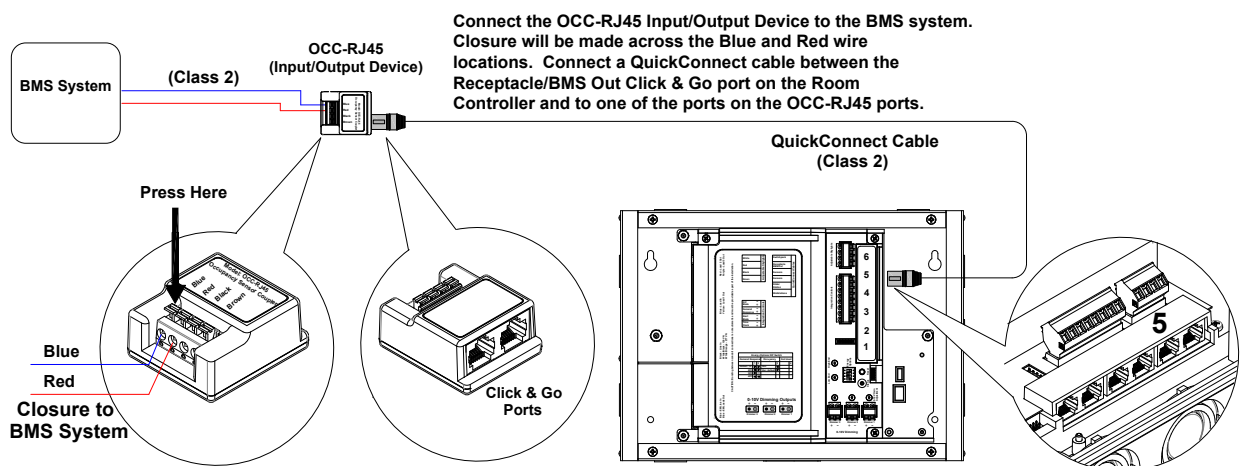(Receptacle Rated Switchpack)

J BOX

⚠ CAUTION ⚠

The Receptacle/BMS out port supports the use of a Receptacle Switchpack or BMS Output. Do not tie both items into the port at the same time. Presence of the Receptacle Switchpack will cause 24 VDC to be present on the BMS output, which may cause damage to the connected system.

Specifications

Electrical Ratings	
Input Voltage	120 VAC 50/60Hz
Relay Rating	120, 240, 277 VAC 50/60Hz
General Use:	20A
Standard Ballast:	20A
Electronic Ballast:	16A
Incandescent Load:	20A
Motor Load:	1HP @ 120 VAC
Control Voltage	24 VDC supplied by Receptacle Switchpack
Controller Connections	
Line Voltage	Flying leads
Room Controller	Click & Go port/QuickConnect cable
Operating Environment	32° F to 104° F (0° to 40° C) For indoor use only.
Housing	Medium impact injection molded plastic housing. ABS resin complies with UL 94V0. Plenum rated for external junction box mounting, with Teflon coated leads.

BMS Output Click & Go Connection

The Room Controller provides a dry contact closure output to a BMS or other system to indicate that the room is occupied. The BMS output will close when the occupancy sensor senses motion (even when in Vacancy Mode) or when any switch button is pressed to turn lighting loads ON. The BMS output will open when the occupancy sensor no longer senses motion or, in applications where there is no occupancy sensor, when commanded into After-Hours Mode from an external contact.
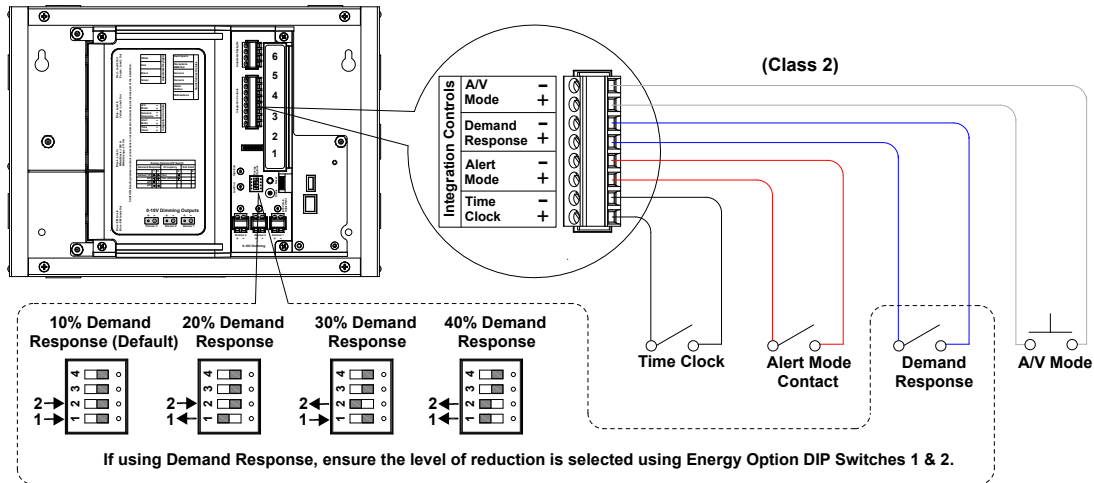

Connect the OCC-RJ45 Input/Output Device to the BMS system. Closure will be made across the Blue and Red wire locations. Connect a QuickConnect cable between the Receptacle/BMS Out Click & Go port on the Room Controller and to one of the ports on the OCC-RJ45 ports.

⚠ CAUTION ⚠

The Receptacle/BMS out port supports the use of a Receptacle Switchpack or BMS Output. Do not tie both items into the port at the same time. Presence of the Receptacle Switchpack will cause 24 VDC to be present on the BMS output which may cause damage to the connected system.

Advanced Integration Connections

The Room Controller allows for advanced input functionality from onboard integration control inputs including: External Time Clock, Alert Mode, Demand Response system and A/V system. The Room Controller will provide inputs for an external dry contact closure. (Advanced Integration connections are not available on all models.)

Connect the dry contact closure to the appropriate terminal for the application. The terminal block is removable for ease of wiring. Use 18 AWG, 2 conductor twisted pair wiring for connection. **Maximum distance must not exceed 1000 ft. (300m).**

Input	Function	Position	Operation
Time Clock Mode	• Time Clock Mode will not operate if occupancy sensors are attached to the Room Controller. • For use with Room Controllers not connected to occupancy sensors. • Switches the controller between After-Hours Mode and Normal Mode. • Contact Type Required: Normally Open, SPST Maintained. • Time clock input will vary if there is no occupancy sensor connected to the Room Controller	Open	Occ Sensor Connected & Occupied: DIP#3&#4 ON lighting = SCENE 6, Rec=ON DIP#3ON, #4OFF lighting = ALL ON, Dim 50%, Rec=ON DIP#3&#4 OFF lighting = Manual ON, Rec=ON Occ Sensor Connected & UnOccupied: Lighting = OFF Receptacle = OFF (30seconds after lighting) No Occ Sensor Connected: Lighting = Blink warn OFF (5min) Manual ON button press has a 1hr timer Receptacle = OFF (30 seconds after lighting)
		Closed	Occ Sensor Connected & Occupied: DIP#3&#4 ON lighting = SCENE 6, Rec=ON DIP#3ON, #4OFF lighting = ALL ON, Dim 50%, Rec=ON DIP#3&#4 OFF lighting = Manual ON, Rec=ON Occ Sensor Connected & UnOccupied: Lighting = Scene 5 Receptacle = ON No Occ Sensor Connected: Lighting = Scene 5 Receptacle = ON
		Pulse	Occ Sensor Connected & Occupied: Lighting= No Change Receptacle = ON Occ Sensor Connected & UnOccupied: Lighting = OFF Receptactle = OFF (30 seconds after lighting) No Occ Sensor Connected: Lighting = Blink warn OFF (5min) Receptact = OFF (30 seconds after lighting)
Alert Mode	• Overrides system functions to allow for fire alarm, emergency or other systems needing to call lighting to a full ON condition. • Contact Type Required: Normally Open, SPST Maintained.	Closed	Onboard relays close. Dimmers go to full. Solatubes open. Receptacle Switchpack turns OFF. Wallstation, occupancy and daylight controls are disabled.
		Open	System is returned to normal function leaving lighting in current state. If no occupancy sensor closure is detected, lighting will blink warn and turn OFF 5 minutes later.
Demand Response Mode	• Dimmers reduce current level and maximum output by 10%, 20%, 30% or 40% based on DIP Switch setting. • Contact Type Required: Normally Open, SPST Maintained.	Closed	Dimmers reduce by selected percentage over a 2 minute period. Controller continues to operate lighting within the reduced range.
		Open	Lighting range will revert to full scale.
A/V Mode	• Allows a 3rd party device or system to activate and de-activate the A/V scene. • Contact Type Required: Normally Open, SPST Momentary.	Momentary Closure	Toggles between A/V Mode and Normal Mode. In A/V Mode, relays will stay in their previous configuration. Dimmers will be reduced to maintain light levels at 20%[†] by default or other light level if reprogrammed using the Room Controller Personal Remote (HHPR-RC).

*Connected alternate voltage and receptacle switchpacks will not blink warn with onboard relay loads. They will remain ON during the blink warn process and will turn OFF with other lighting once the warning periods expire.

†Final dimmer output level is determined by the following combination:

- High end trim level
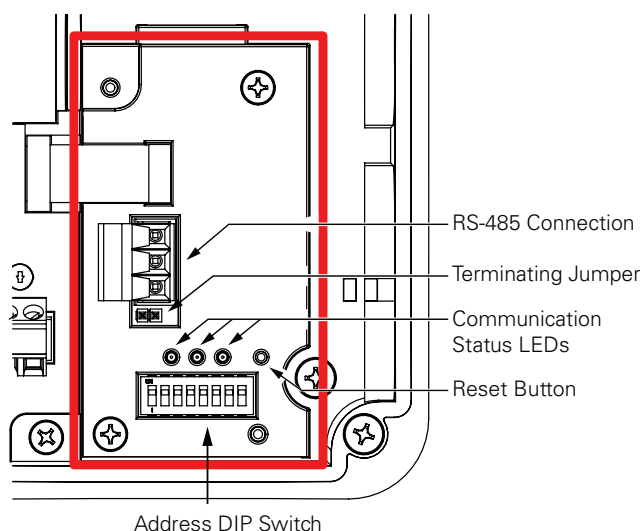- Daylighting contribution
- Demand Response value

If enough natural light is entering the space and any of these three features have been implemented, the target light level may be lower than shown. Raise commands from pushbuttons or sliders do not override or raise the lighting above the target threshold implemented by these advanced energy saving methods.

Room Controller Networking

This section applies to the RC3-PL-N, RC3D-PL-N and RC3DE-PL-N Room Controller models.

Room Controller Network Node

The diagram below calls out some of the various components of the network node.

RS-485 Connection

Terminating Jumper

Communication Status LEDs

Reset Button

Address DIP Switch

Network Wiring Notes

The Room Controller network is designed to communicate with other Room Controller and ControlKeeper network panels using a lighting control RS-485 network for communications. This allows the panels to share information and to be

programmed from a central location using the Keeper Enterprise Software.

Please refer to Table 1 for information on recommended network cables.

Acceptable Network Wiring	Suggested Cable	Eaton CAT#
Standard RS485	Belden 9841 (Shield is not used)	GG9841
Plenum RS485	Belden 89841 (Shield is not used)	GG89841

Table 1. Network Wiring Recommendations

For best network performance, one of the suggested cables should be used. If the specified cable is not used and communications problems occur that require troubleshooting assistance, additional charges for support may be assessed.

1. All low voltage wiring is Class 2.

2. All low voltage wiring must enter the cabinet from the low voltage section of the enclosure.

3. All low voltage wiring must be run in separate conduit from line voltage wiring.

4. Test all network wiring for shorts to AC ground before connecting to the Room Controller.

5. If using Belden 9841 or 89841, ensure shields are taped back and not connected to any metal surfaces.

6. Panels and devices on the RS-485 lighting network should be daisy-chained. Do not create a Star or T-Tapped configuration.
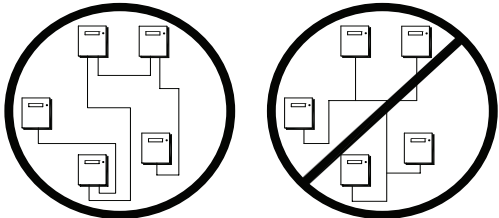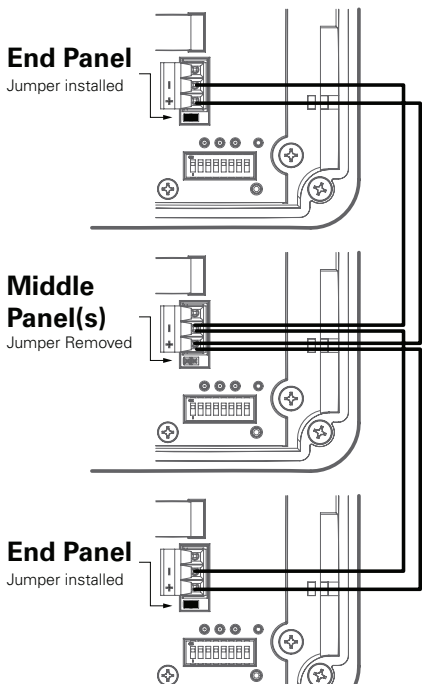

7. Total network length should not exceed 4000 feet.

8. Include one network repeater (Catalog #: RPTR) for every 32 panels on the network

Network Wiring Detail

The diagram below illustrates the networking of the Room Controllers. Pull the twisted pair wiring in conduit along the planned route, making certain that it is separated from any line voltage wiring.
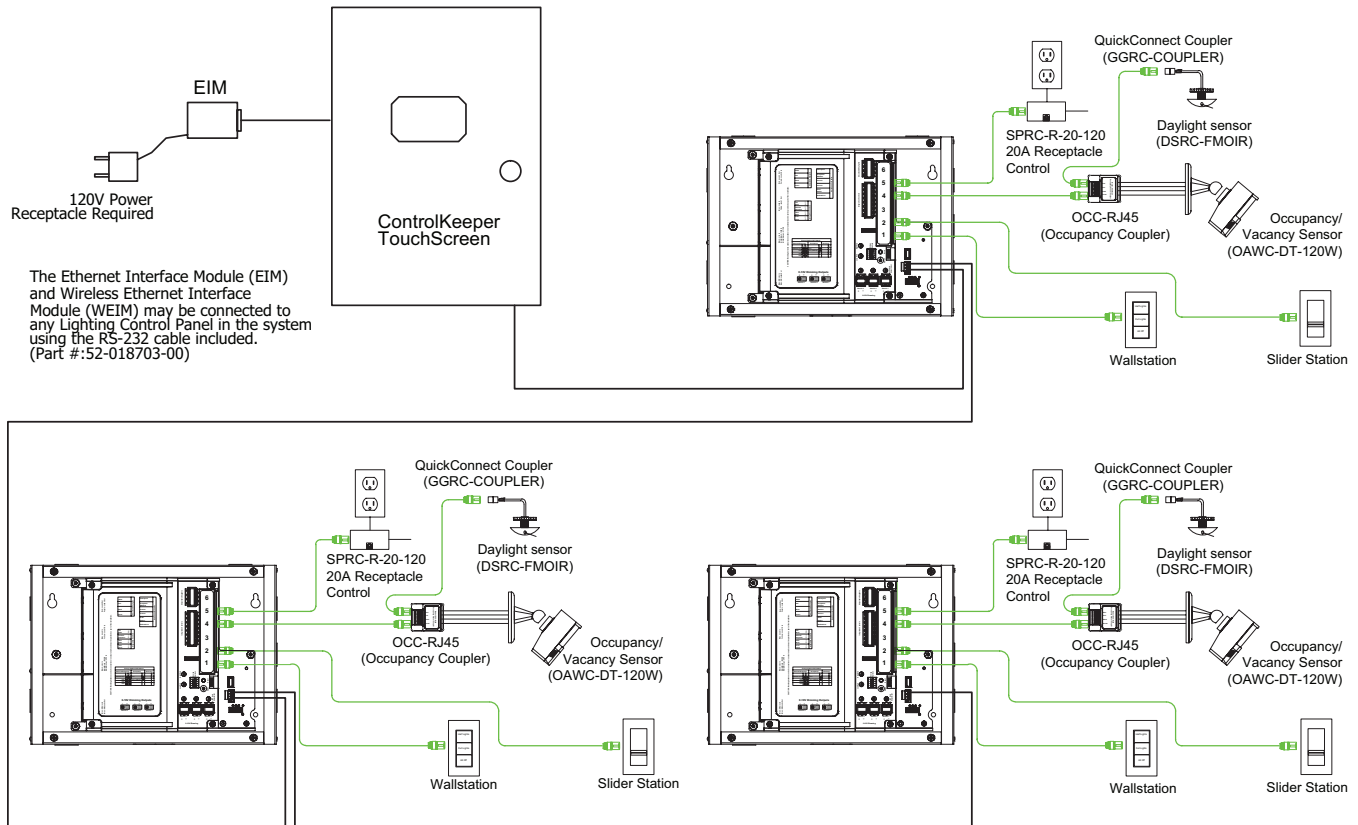
To network Room Controllers together:

1. Select end panels to establish the beginning and end of the network

2. The end panels will have the network termination jumpers installed and the panels in between will have them removed.

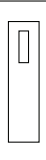3. Wire the panels together per the diagram below. For clarity the network node is seen below.

End Panel
Jumper installed

Middle Panel(s)
Jumper Removed

End Panel
Jumper installed

Advanced Integration Connections
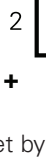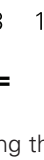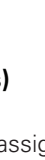
Room Controller Network Topology

EIM

120V Power
Receptacle Required

ControlKeeper
TouchScreen

The Ethernet Interface Module (EIM)
and Wireless Ethernet Interface
Module (WEIM) may be connected to
any Lighting Control Panel in the system
using the RS-232 cable included.
(Part #:52-018703-00)

QuickConnect Coupler
(GGRC-COUPLER)

SPRC-R-20-120
20A Receptacle
Control

Daylight sensor
(DSRC-FMOIR)

OCC-RJ45
(Occupancy Coupler)

Occupancy/
Vacancy Sensor
(OAWC-DT-120W)

Wallstation

Slider Station

QuickConnect Coupler
(GGRC-COUPLER)

SPRC-R-20-120
20A Receptacle
Control

Daylight sensor
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Daylight sensor
(DSRC-FMOIR)

OCC-RJ45
(Occupancy Coupler)

Occupancy/
Vacancy Sensor
(OAWC-DT-120W)

Wallstation

Slider Station

Network Address Switch Detail

After networking each panel an address will have to be assigned to each using the network address DIP Switch. The example below describes its use to address the room controller. Each switch position (1–8) has a value associated with it (1–128). Addresses 1 through 254 are valid for use but 255 (all values added together) is reserved for system use and should not be used.

1. Add the value for each switch position that is On to obtain the panel address.

1   +   4   =   5 (Panel Address)

2. Issue a soft reset by pressing the reset button to assign the address to the panel.
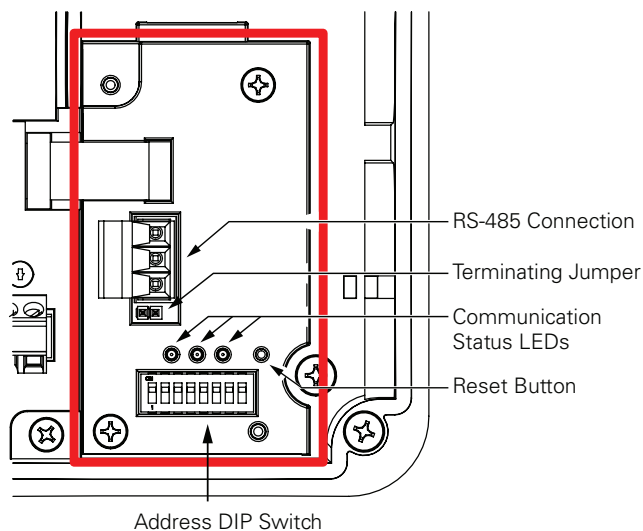
Bringing the Room Controller Online

The Room Controller is pre-programmed and ready for operation out-of-the-box. If no adjustments are done, the unit will operate from occupancy sensors, daylighting and wallstations.

To obtain maximum energy efficiency and occupant satisfaction, we recommend that you complete this short checklist to verify the unit is operating optimally for the space being controlled.

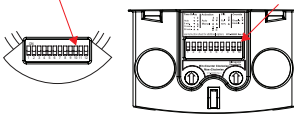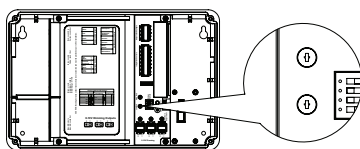|	**Room Controller Verification Checklist** **Room Location: _____**
1.	**Initial Power Up Response**
☐	Apply power to the Room Controller.
☐	Verify that all lighting loads turn on to full for 3 seconds before beginning normal operation.
2.	**Verify Occupancy Sensor Operation**
☐	Verify that the occupancy sensor has been located properly to prevent false activation.
☐	Wait 2 minutes from power-up, then place OAC or OAWC sensors in Test Mode by moving DIP Switch 10 out of its current position, wait 3 seconds, then put back into its original position.
☐	Move around the controlled area, verifying that the ocupancy sensor LEDs flash with each motion and stop flashing when you stand still.
☐	If not already ON, turn lighting ON from the wallstation controls. For any stations with Quiet Time buttons, make sure that Quiet Time Mode is de-activated (LED is not lit).
☐	Leave the room and wait approximately one minute for the lighting to turn OFF.
	If lighting does not turn OFF, refer to "Room Controller Troubleshooting" on page 23. Sensors will automatically exit Test Mode after a period of 5 to 10 minutes (timing is dependent on sensor model) and begin automatically adjusting based on occupancy patterns.
3.	**Verify Wallstation Operation**
☐	Check each wallstation for proper operation of intended loads.
4.	**Set Minimum and Maximum Trim levels**
	Trim levels have been preset to approximately 90% maximum. Additional energy savings can be gained by adjusting the trim further if electric lighting contribution is over the target illuminance for the space.
☐	Locate the position of the trim level adjustment dials on the Room Controller.
☐	Trim levels are being adjusted at night or shades have been used to darken the space during daylight hours.
☐	Using the wallstations, turn ON all controlled lighting. For fluorescent lighting loads, wait one minute to allow lamps to warm up.
☐	Using a small screwdriver, twist the maximum trim dial counter clockwise, then fully clockwise again. The lights will go full bright and the Room Controller will enter Adjustment Mode.
☐	Turn the maximum trim adjustment dial counter-clockwise in small increments until the light level is at the desired maximum level.
☐	Turn the minimum trim dial clockwise then fully counter clockwise. The light level in the room will go full dim.
☐	Turn the minimum trim dial clockwise in small increments until you begin to notice the light level increasing in the monitored space, then turn the dial slightly counter clockwise from where this change begins.
☐	Save the new trim settings and go back to normal operation by pressing the "All OFF" button on any wallstation. If "All OFF" is not pressed, the controller will automatically save these settings after two minutes.

5.	**Adjust Daylight Dimming Response***

	Out-of-the-box, the daylight sensor is operational for basic operation to automatically control dimmers 1, 2 and 3. Adjustments to default light levels are done using the Daylight Sensor Programming Remote HHPRG-RC. The remote control contains Zone Level buttons, 1, 2 and 3, which correspond to dimmers 1, 2 and 3 on the Room Controller. Zone 1 should be the zone closest to the window, while zone 3 is furthest into the space.
	When the remote is used to adjust light levels, within the daylight sensor's lens, the Red LED should flash each time the button is pressed. The Green LED will flash rapidly indicating that the Room Controller has entered Commissioning Mode.

	☐	Daylight levels are being set during the day when lighting should be dimming from daylight contribution, but not to the point where loads should be at a full dim level.
	☐	Press any wallstation "All OFF" button and then turn lighting ON again. Immediately after, verify that the Green LED in the daylight sensor lens is not on. If it is on, please follow the procedures on page 18 to change the sensor range and reset daylight levels.
	☐	Point the remote at the daylight sensor lens and press the raise or lower button for the appropriate zone until the desired light level is reached.
	☐	Repeat this process for each of the dimming zones as needed.
	☐	To save the new levels and exit Commissioning Mode, press the "All OFF" button on any wallstation. If "All OFF" is not pressed, the controller will save the settings and exit Commissioning Mode after two minutes.
	The setup process is now complete.	

*Some daylighting sites may require a more in-depth setup process due to sensor location or furnishings in the space. If daylighting does not appear to be operating after following this basic procedure, refer to the next section to make Advanced Daylight level adjustments.

Advanced Daylight Level Adjustments

For more in-depth adjustments in rooms where daylighting does not seem to operate as intended with the basic daylight setup performed, OR, if the Green LED seems to be on within your daylight sensor lens, follow the procedures below.

Daylight Levels should not be set at night or when the space is overly saturated with natural light. The daylight levels should be set during a time when loads should be dimming from the daylight contribution, but not to the point where the load should be at a full dim level.

Verify and Set the Daylight Sensor Range

The daylight sensor provided has three ranges of operation. The default level is the High Range of 30-3000 lux (approx. 3-280 FC), which will operate properly for most applications. The first step in this process will be to verify the current sensor range is adequate for the light level being sensed by the sensor.

If the sensor is reading too much light for its current range setting, it will flash its Green LED with a slow blink pattern (6 seconds ON, 1 second OFF, repeated)--this blink pattern may appear as if the Green LED is continuously on. Adjust the range if you see this behavior.

Reset Daylight Levels

1. First, identify the current programmed range for the sensor. Point the handheld remote at the daylight sensor lens and press the ID button on the remote. The sensor should flash its Red LED to indicate the current range.

Flash Pattern	Range Information
	Low Range 3-300 lux (approx. 0-28 FC)
	High Range 30-3000 lux (approx. 3-280 FC)
	Direct Sun Range 300-30000 lux (approx. 28-2800 FC)

2. Once you have determined the current range, point the remote at the daylight sensor lens and press the button for the new desired range level. The sensor will acknowledge the new setting by flashing the Red LED for the new set range.

3. If you have adjusted the range, wait 1 minute before making further adjustments to allow the sensor to settle. Make sure that the Green LED is OFF before you proceed.

Reset Daylight Levels

Adjustments to default light levels are done using the Daylight Sensor Programming Remote HHPRG-RC. The remote control contains Zone Level buttons 1, 2 and 3, which correspond to dimmers 1, 2 and 3 on the Room Controller. Zone 1 should be the zone closest to the window, while Zone 3 is the furthest into the space.

When the remote is used to adjust light levels, within the daylight sensor's lens, the Red LED should flash each time the button is pressed. The Green LED will flash rapidly indicating that the Room Controller has entered Commissioning Mode. To reset daylight levels and start daylight configuration from scratch, use the following procedure:

1. Ensure that daylight levels are being set during the day when lighting should be dimming from daylight contribution, but not to the point where loads should be at a full dim level.
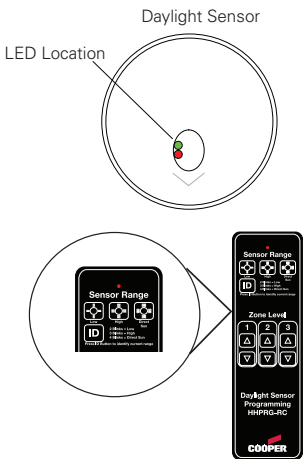
2. Reset the Room Controller's current daylight settings by using the onboard gain adjustment dials next to the dimmer output channels. Starting with dimmer
output 1, twist the gain adjustment dial fully clockwise, then fully counter-clockwise.

3. Repeat this process for dimmer outputs 2 and 3.

4. Press any wallstation "All OFF" button.

5. Turn controlled lighting back ON using the buttons on any wallstation. Immediately after, verify that the Green LED in the daylight sensor lens is not indicating that the sensor is out of range. If it is ON, follow the procedures on the previous page to change the sensor range before proceeding.

6. Point the remote at the daylight sensor lens and press the raise or lower button for the appropriate zone until the desired level is reached.

7. Repeat this process for each of the dimming zones as necessary.

8. To save the new levels and exit Commissioning Mode, press the "All OFF" button on any wallstation. If "All OFF" is not pressed, the controller will save the settings and exit Commissioning Mode after two minutes.

9. The room controller will now operate with the new daylight levels.
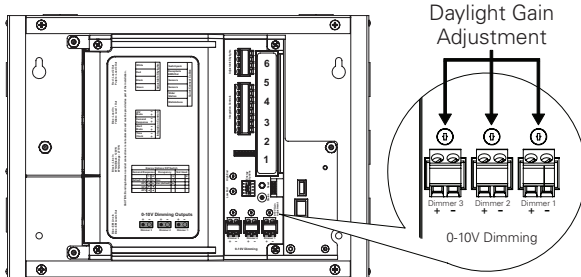
Note: It is possible to disable daylight dimming for any dimming zone allowing the dimmer to respond only to the raise/lower controls and wallstation presets. To disable daylight dimming, on the Room Controller, twist the desired dimmer's gain adjustment dial fully clockwise, and then fully counter clockwise. When setting daylight levels with the HHPRG-RC remote, avoid pressing the Zone Level adjustment buttons for the disabled zone. If adjusted in error, simply reset the gain adjustment dial again.

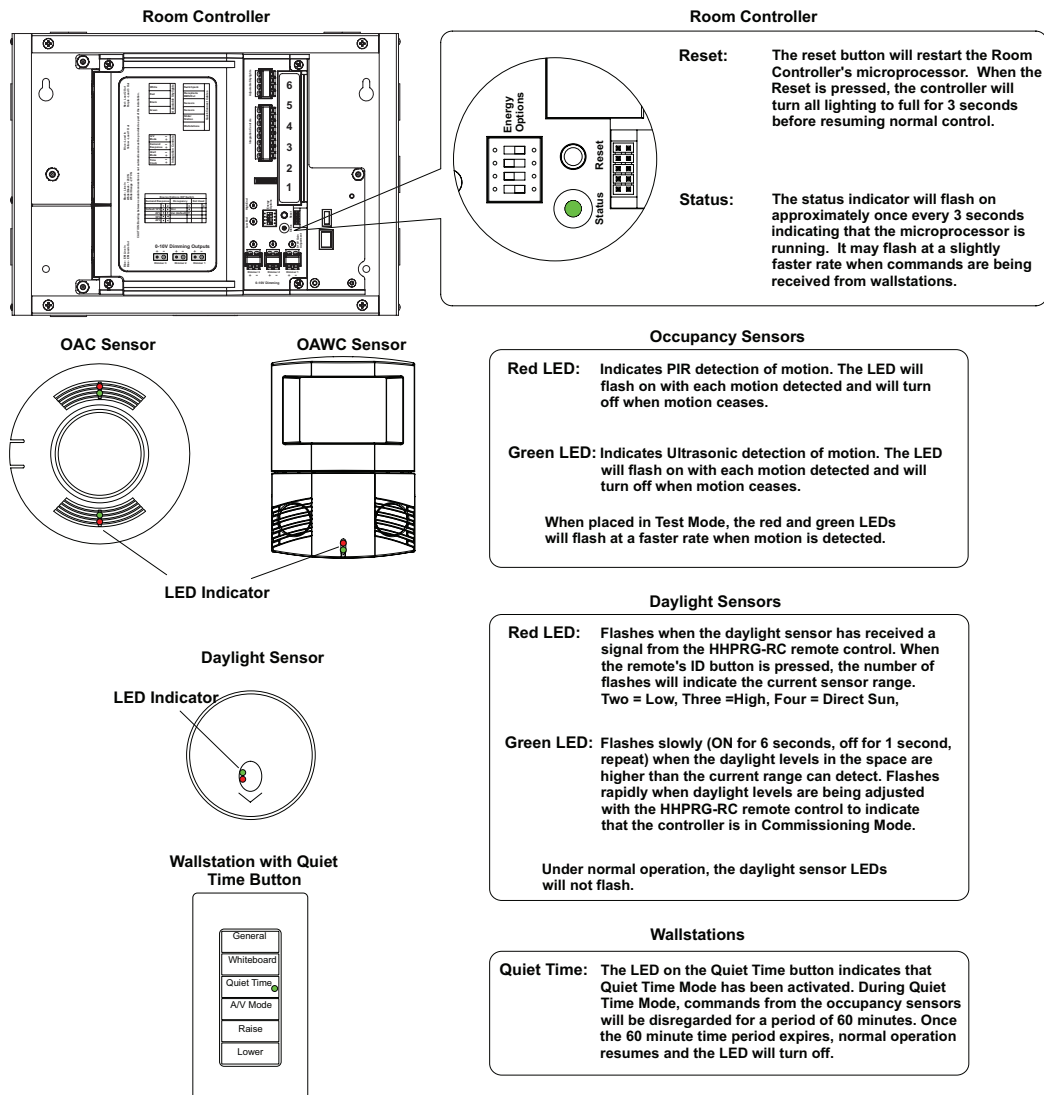## Emergency Lighting Testing and Control (RC3DE models only)

The RC3DE is UL 924 approved for control of emergency powered lighting loads through an onboard 3A emergency relay. UL 924 requires that devices have the capability to allow for monthly tests to ensure continued proper operation.

The emergency functionality can be tested from any wallstation in the room that has an "All OFF" button, without the need of a ladder or tools.

To test emergency lighting functionality:

1. Turn the lighting OFF with the "All OFF" button on any wallstation.

Room Controller

Room Controller

Reset: The reset button will restart the Room Controller's microprocessor. When the Reset is pressed, the controller will turn all lighting to full for 3 seconds before resuming normal control.

Status: The status indicator will flash on approximately once every 3 seconds indicating that the microprocessor is running. It may flash at a slightly faster rate when commands are being received from wallstations.

OAC Sensor

OAWC Sensor

LED Indicator

Daylight Sensor

LED Indicator

Wallstation with Quiet Time Button

General
Whiteboard
Quiet Time
A/V Mode
Raise
Lower

Occupancy Sensors

Red LED: Indicates PIR detection of motion. The LED will flash on with each motion detected and will turn off when motion ceases.

Green LED: Indicates Ultrasonic detection of motion. The LED will flash on with each motion detected and will turn off when motion ceases.

When placed in Test Mode, the red and green LEDs will flash at a faster rate when motion is detected.

Daylight Sensors

Red LED: Flashes when the daylight sensor has received a signal from the HHPRG-RC remote control. When the remote's ID button is pressed, the number of flashes will indicate the current sensor range. Two = Low, Three =High, Four = Direct Sun,

Green LED: Flashes slowly (ON for 6 seconds, off for 1 second, repeat) when the daylight levels in the space are higher than the current range can detect. Flashes rapidly when daylight levels are being adjusted with the HHPRG-RC remote control to indicate that the controller is in Commissioning Mode.

Under normal operation, the daylight sensor LEDs will not flash.

Wallstations

Quiet Time: The LED on the Quiet Time button indicates that Quiet Time Mode has been activated. During Quiet Time Mode, commands from the occupancy sensors will be disregarded for a period of 60 minutes. Once the 60 minute time period expires, normal operation resumes and the LED will turn off.

2. After lighting is OFF, press the "All OFF" button four times as if you were saying the separated syllables of the word "Emergency" {E-MER-GEN-CY}.

3. The emergency relay will turn ON in response to this command verifying that the emergency load control relay is operational.

4. Once the test is complete, turn OFF the emergency load by pressing the "All OFF" button again.

5. If left in Test Mode, the Room Controller will automatically exit the emergency test after 1 minute and turn OFF the emergency load.

System LED Indicators and Reset Buttons

The Room Controller has an onboard status indicator and reset button to assist with troubleshooting. In addition, other components within the Room Controller package have LED indicators that may indicate specific functions.

Room Controller Troubleshooting

Issue	Possible Causes	Suggestions
Lights will not turn ON automatically	Vacancy Mode set on Room Controller	● The default mode for occupancy control is Vacancy Mode. Use Energy Option DIP Switch 3 to place in Occupancy Mode. In Occupancy Mode, Load 1 (yellow) will trigger automatically upon occupancy.
	Vacancy Mode set on Occupancy Sensor	● If a sensor is being used that has an Automatic/Manual Mode, ensure that the sensor is in Automatic Mode.
	Connection Issue	● Verify that all Click & Go Connections are connected to the correct ports for the accessories being used.
Lights will not turn ON from wallstations	Connection Issue	● Verify that all Click & Go Connections are connected to the correct ports for the accessories being used.
	Microprocessor	● Verify that the Room Controller status LED is flashing. If it is flashing, press and release the reset button and verify that lighting turns ON for 3 seconds. If there is no response, contact technical support.
	Power Interruption	● If the Room Controller status LED is not flashing, check incoming voltage and/or wiring.
Lighting turns ON but is not the right zone	Wiring	● Verify that Load 1, Load 2, and Load 3 have been wired to the appropriate loads in the space to meet your application.
Emergency lighting does not turn ON with the correct zone (RC3DE only)	Wiring	● The Room Controller controls the emergency lighting along with the normal lighting Load 1 (yellow). Ensure that Load 1 (yellow) is connected to the load that the emergency lighting needs to operate with.
If still having trouble with lighting turning ON, call Technical Services at 1-800-553-3879		
Lights will not remain ON (Lights turn OFF approx. 30 seconds after the On command)	The controller senses that there is an occupancy sensor connected but is not seeing an occupied signal from the sensor.	● Verify that the occupancy sensor LEDs are flashing when motion is occurring. ● Make sure that the occupancy sensor coupler is connected to the correct wires from the occupancy sensor. ● If the occupancy sensor being used has an Auto/Manual selection, verify that the occupancy sensor is in Auto Mode. ● Verify that you are not using a VAC model sensor.

Room Controller Troubleshooting

Lights will not remain ON (Lights turn OFF approx. 60 minutes after the ON command)	After-hours mode	• The Room Controller is in After-Hours Mode. Verify that the system connected to the Time Clock Input has been programmed for the correct times. A closure indicates After-Hours Mode where 60 minute timers will run. An open state indicates Normal Mode.
If still having trouble with lighting remaining ON, call Technical Services at 1-800-553-3879		
Lighting will not turn OFF automatically	Occupancy Sensor	• Verify that the occupancy sensor is not overridden (DIP Switch 8 up). • Verify that the occupancy sensor is properly sensing lack of motion, is not located within 4-6 feet of air vents, and is not installed close to indirect lighting. Make sensitivity adjustments if necessary. • Place occupancy sensors in test mode to verify lighting turns OFF.
	Quiet Time	• If your wallstation buttons have a Quiet Time button, ensure that this is not activated. Motion sensors are ignored during the 60 minute Quiet Time count down.
	Occupancy Sensor or Time Clock connections are not present	• To turn lighting OFF automatically, the room controller requires either a vacancy command from an occupancy sensor, OR a time clock command to After-Hours Mode.
	Alert Mode	• If Alert Mode has been activated, lighting will be on and full bright until the alert is cleared. Disconnect contact into the Alert Mode terminal to verify normal operation resumes. Troubleshoot the connected system to determine the cause of the alert signal.

Lights will not turn OFF from wallstations	Connection Issue	• Verify that all Click & Go Connections are connected to the correct ports for the accessories being used.
	Alert Mode	• If Alert Mode has been activated, lighting will be ON and full bright until the alert is cleared. Disconnect contact into the Alert Mode terminal to verify normal operation resumes. Troubleshoot the connected system to determine the cause of the alert signal.
If still having trouble with lighting not turning OFF, call Technical Services at 1-800-553-3879		

Lights turn ON but remain at a dimmed level (lighting does not respond to dimming raise controls)	Slider Station	• If a slider station is installed, other raise lower controls will be disabled. Verify that the slider operates as intended.

	0-10V Output	• Disconnect 0-10V terminal blocks from the Room Controller. Lighting should go full bright:
		  • If lighting does not go full bright, check all wiring and ballasts/drivers for miswires and shorts on the 0-10V wiring until the problem is found.
		  • Verify with a meter that at least 10 VDC is present between the purple and gray disconnected leads. The Room Controller is a sink device (requires the ballast/driver provide the dimming voltage).
		  • If lighting does go full bright when disconnected from the Room Controller, check for polarity reversal on the 0-10V leads.
		• Reconnect 0-10V wiring to the Room Controller. Press the reset button on the Room Controller to verify that lighting turns ON and goes full bright for 3 seconds:
		  • If it does go to full bright before resuming the dimmed level refer to the Demand Response and Daylighting possible causes.
		  • If lighting does not go full bright during the 3 second reset period, check that the maximum trim level potentiometer is not set too low for the space.

	Demand Response	• Demand Response Mode may have caused light levels to automatically reduce. Check contact from demand response system. Verify that the demand response Energy Options DIP Switches are set for the appropriate lighting level.

	Daylighting	• Daylight levels may not be correct for your space. Press the reset button on the controller to verify loads turn ON to Full ON for 3 seconds. If loads go Full ON then resume dimmed level:
		  • Look in the Daylight Sensor lens to determine if the Green LED is ON fairly steadily. If it is, the sensor is seeing more daylight than its range will allow. Set a new range using the HHPRG-RC remote and the Advanced Daylight Level Adjustment procedures in the installation instructions.
		  • If the Daylight Sensor's green LED is not on, use the HHPRG-RC remote to adjust daylight levels per the Advanced Daylight Level Adjustment procedures in the installation instructions.
		  • Check the High End trim pot to ensure it is not set all the way counter-clockwise.

Lights turn ON but remain at a full bright level (lighting does not respond to dimming lower controls)	Slider Station	• If a slider station is installed, other raise lower controls will be disabled. Verify that the slider operates as intended.

	0-10V Output	• Disconnect 0-10V terminal blocks from the Room Controller. Lighting should remain full bright:
		  • Temporarily remove the 0-10V wiring for a zone and then connect the purple and gray wires together. Verify that the load goes full dim. If the load does not go full dim, check all wiring and ballasts/drivers for miswires and shorts until the problem is found.
		  • Verify with a meter that at least 10 VDC is present between the purple and gray disconnected leads. The Room Controller is a sink device (requires the ballast/driver provide the dimming voltage).
		  • If lighting does go full dim when disconnected from the Room Controller, check for polarity reversal on the 0-10V leads.
		• Reconnect 0-10V wiring to the Room Controller and continue with the additional troubleshooting steps listed below.

	Alert Mode	• If Alert Mode has been activated, lighting will be ON and full bright until the alert is cleared. Disconnect contact into the Alert Mode terminal to verify normal operation resumes. Troubleshoot the connected system to determine the cause of the alert signal.

Lights turn ON at a full bright level and responds to manual dimming lower controls but do not appear to dim automatically from daylighting	Daylighting	• Verify that the daylight sensor is installed in a location that is not obstructed from receiving daylight. • Verify that the daylight sensor is properly connected to the Room Controller per the installation instructions. • Verify that the daylight sensor lens is oriented properly for the location it is installed in. • The sensor range may be set too high. If the sensor is located in a darker location, try reducing the sensor range to a lower range using the instructions in the Advanced Daylight Level Adjustment section. • Use the HHPRG-RC remote to adjust daylight levels per the Advanced Daylight Level Adjustment procedures in the installation instructions. • Check the Low End trimpot to ensure it is not set all the way clockwise.
If still having trouble with dimmer response ON, call Technical Services at 1-800-553-3879		
Receptacle switchpacks will not turn ON	Alert Mode	• Alert Mode turns OFF all receptacle switchpacks while the alert is active. Disconnect contact into the Alert Mode terminal to verify normal operation resumes. Troubleshoot the connected system to determine the cause of the alert signal.
	Connection Issue	• Verify that all Click & Go Connections are connected to the correct ports for the accessories being used.
	Power Interruption	• Check incoming voltage and/or wiring to the receptacle switchpack.
Receptacle switchpacks will not turn OFF	Occupancy Sensor or Time Clock connections are not present	• To turn OFF, the receptacle switchpacks require either a vacancy command from an occupancy sensor, OR a time clock command to After-Hours Mode. Wallstations do not cause receptacles to turn OFF. Ensure that one of these methods is being used to successfully integrate receptacle switchpacks.
If still having trouble with receptacle response ON, call Technical Services at 1-800-553-3879		
Solatubes will not close	Wrong Button Pressed	• Solatubes close only with certain buttons. Make sure that the button you are pressing should control the Solatube. Refer to the Wallstation Operation Charts in your installation instruction for button operation details.
	Alert Mode	• Alert Mode opens all Solatubes while the alert is active. Disconnect contact into the Alert Mode terminal to verify normal operation resumes. Troubleshoot the connected system to determine the cause of the alert signal.
	Connection Issue	• Verify that the Solatube Daylight Dimmer is a supported model and has been connected properly to the Room Controller.
	Power Interruption	• Verify incoming voltage and/or wiring to the Solatube daylight dimmer.
Solatubes will not open	Wrong Button Pressed	• Solatubes open only with certain buttons. Make sure that the button you are pressing should control the Solatube. Refer to the Wallstation Operation Charts in your installation instruction for button operation details.
	Connection Issue	• Verify that the Solatube Daylight Dimmer is a supported model and has been connected properly to the Room Controller.
	Power Interruption	• Verify incoming voltage and/or wiring to the Solatube daylight dimmer.
If still having trouble with Solatube response ON, call Technical Services at 1-800-553-3879		

WARRANTIES AND LIMITATION OF LIABILITY

Please refer to **http://www.eaton.com/LightingWarrantyTerms** for our terms and conditions.

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