

Application Note

Room Controller Applications for Additional Occupancy Sensors

Overview

The Room Controller low voltage interface ports provide +24 VDC to power the keypad(s), slider station, daylight sensor and occupancy sensors(s). The external +24 VDC power is limited to 90mA. The dual technology or “dual-tech” occupancy sensors draw a maximum of 25mA per sensor and are the largest consumer of external dc power.

Description

Table 1. Maximum Current Consumption of Various Accessories

Accessory	Max Current Consumption (mA)
Keypad	3.00
Slider	2.00
Daylight Sensor*	8.00
Occupancy Sensor, PIR	10.00
Occupancy Sensor, dual tech	25.00
Network node	18.00

*One daylight sensor is allowed per Room Controller panel

Applications that require more than one occupancy sensor can easily exceed the maximum allowable current output from the Room Controller low voltage accessory ports, which is 90mA. It is possible to connect additional occupancy sensors by using a Greengate switchpack to provide the necessary power.

The SP20-MV switchpack model can provide enough power to up to five occupancy sensors. The SP20-MV power supplies can also be wired together to allow additional occupancy sensors as needed.

Implementation

In order to utilize a switchpack in the system to allow for multiple occupancy sensors, the Room Controller must detect at least one occupancy sensor connected to it via the RJ45 port 3 or port 4. If no occupancy sensor power is drawn from the RJ45 ports, the Room Controller will not respond to the sensor open-collector pull-up outputs. For proper operation when using switchpacks to provide power to occupancy sensors, a 3000Ω resistor (1/2 W or greater power rating) needs to be fitted across the OCC-RJ45 Input/Output Device's sensor power (red) and return (black) lines to provide a >5mA load. (see **Figure 1**).

When sharing multiple occupancy sensors with multiple Room Controllers. A maximum of 50 occupancy sensors powered by 10 switchpacks can be shared with 20 Room Controllers. See **Figure 2** for typical wiring details.

Cooper Lighting

by **EAT•N**

Control Sequence

Large areas may require large number of occupancy sensors and Room Controllers. This wiring detail shows how to connect multiple occupancy sensors to four Room Controllers. (see Figure 2)

- First occupancy sensor ON will send an occupied command to all Room Controllers. If Occupancy Mode is enabled, the lighting will either turn ON to 50% (default) or to the desired preset scene. (See Figure 3 for Auto ON selection)
- Last occupancy sensor OFF will send an vacancy command to all Room Controllers and turn OFF all lighting. Thirty seconds after vacancy the controlled receptacles will turn OFF.

Even though the occupancy sensors are shared each Room Controller can also have independent daylight sensors and wallstations for small control zones.

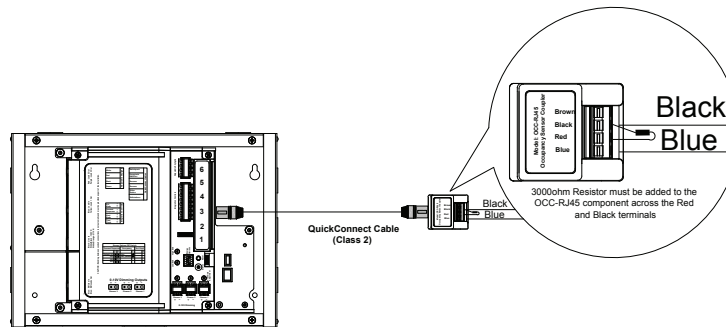


Figure 1. Input/Output Device Wiring with 3000Ω resistor

Note: The daylight sensors, which use the same RJ45 port connector as the occupancy sensors, draw power from a separate pin on the RJ45 port. As a result the daylight sensors will not activate the occupancy sensors detection circuitry.

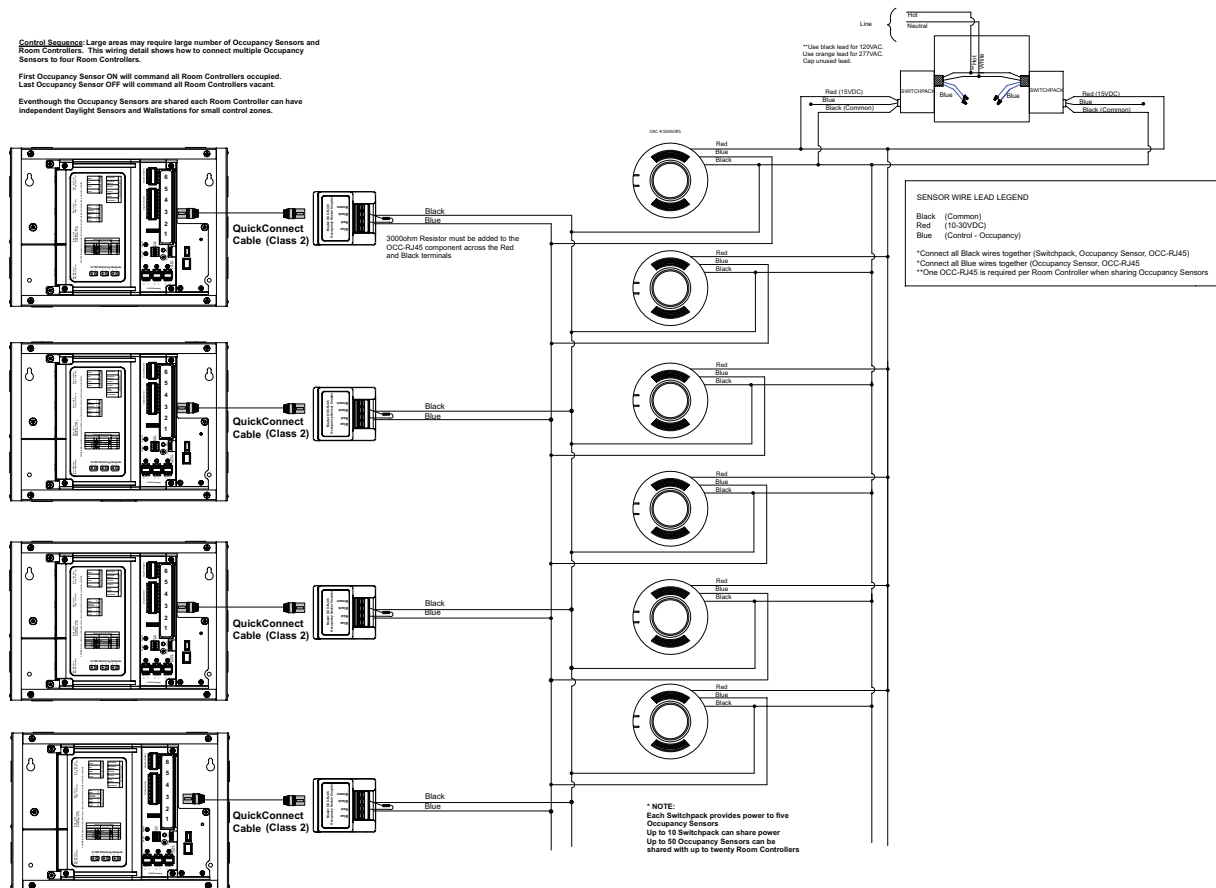


Figure 2. Multiple Room Controllers Connected to Multiple Occupancy Sensors

Figure 3
To OCC-RJ45
(Input/Output Device)
and Occupancy sensors

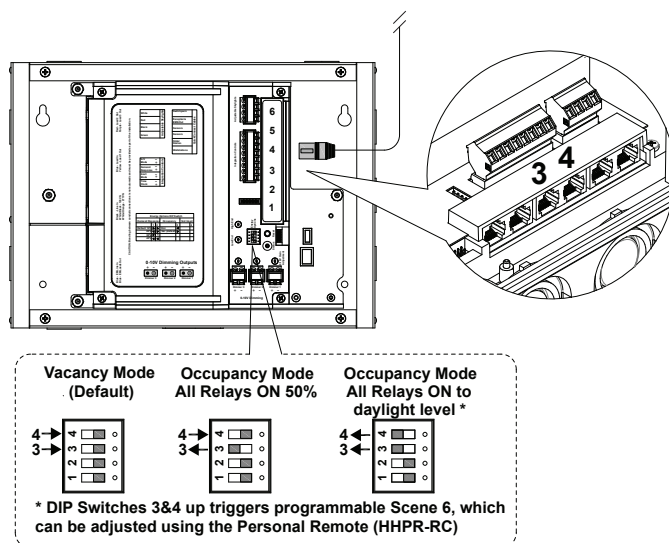


Figure 4. Room Controller Vacancy and Occupancy Selection

Note: Code requires that lighting be either turned ON Manually or can be Automatic ON. Title 24 provides additional PAF credits if the lighting is turned ON to no more than 50%. The Room Controller supports all of these functions. Out-of-the-box the Room Controller arrives in Vacancy (Manual ON) Mode.

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