Room Controller and DLVP with Partitionable Spaces

Overview

This application note answers typical questions about using Room Controller and DLVP systems with partitioned spaces, and will guide you in selecting the controls that best meet your needs.

Lighting controls in partitioned spaces:

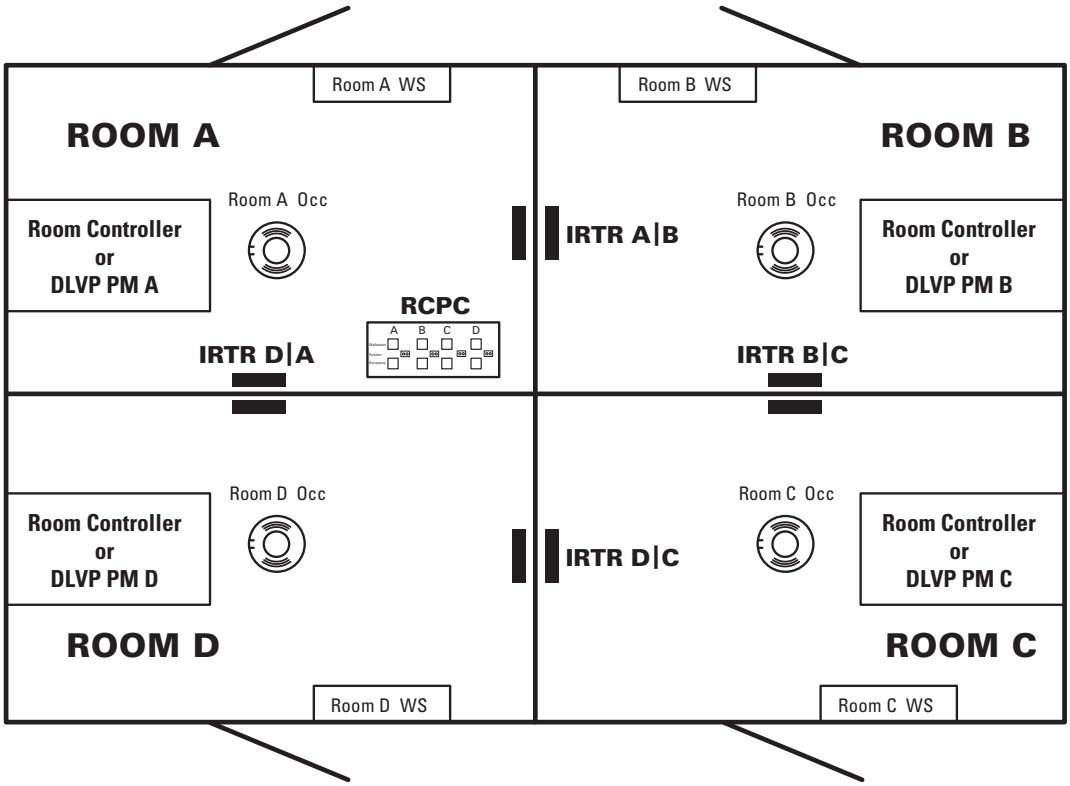
Most lighting controls are set up for a room with the expectation that the floor plan will be consistent. Many facilities have spaces that can be partitioned into smaller spaces to accommodate various activities using partition walls. These spaces include hotels' ballrooms, school gymnasiums and conference rooms. Partitioned spaces are always changing and need lighting controls that reflect that flexibility. Without Partition Control, all of the lights in the space are split into many smaller independent areas with multiple control options throughout the space. This way each room can be controlled independently when the partitions are closed. When the partitions are open and the room is combined into one large space, a user must go to every single control station and manually adjust the lights to match the layout of the room.

ASHRAE and IECC lighting control requirements:

ASHRAE and IECC both require spaces surrounded by ceiling height partitions to have an individual manual control (switches/dimmers). The control must be within the space or remote located with an indicator that identifies the space/area it serves. Exemptions to this requirement are for areas that must be continuously illuminated for safety/security and corridors or stairways used for means of egress. In addition, light reduction is required. ASHRAE 90.1 Section 9.4.1.2a requires a control step between 30% and 70%, which can be accomplished with a number of variations such as switching alternating lamp, dimming ballast/driver, or stepped ballast/driver. IECC-2012 Section C405.2.1.2 requires a control step of 50% with even illumination in the space and offers specific ways to accomplish this by controlling all lamps or luminaries such as dual switching alternate rows of luminaries, alternate luminaries, switching the middle lamp luminaries independently of the outer lamps or switching each luminaire or each lamp. Finally, ASHRAE 90.1 Section 9.4.1 and IECC Section C405.2.2 require automatic controls for interior lighting. Automatic time control and occupancy based (occupancy sensors) are methods that can be used to comply. ASHRAE 90.1 requires that any automatic control device for building interiors be either manual-on or controlled to automatically turn on to not more than 50%. This signifies that each sub-area of partitioned area will have a manual control and an occupancy sensor that would behave differently depending on the configuration of the space, i.e. one area or multiple sub-areas.

Eaton's solution:

Eaton's lighting controls can adapt to the room's configuration and use. A single control location can operate the entire space when all the walls are open and the space is configured as one large room. When that same space is separated by movable partitions, the lighting controls only affect the lights in their specific room.



Example Partition Space layouts:

Figure 1 illustrates a partitioned area with two partition walls and three sub-areas. The wallstations will be controlling three zones while the occupancy sensors will be turning all lights on or off based on occupancy within the space.

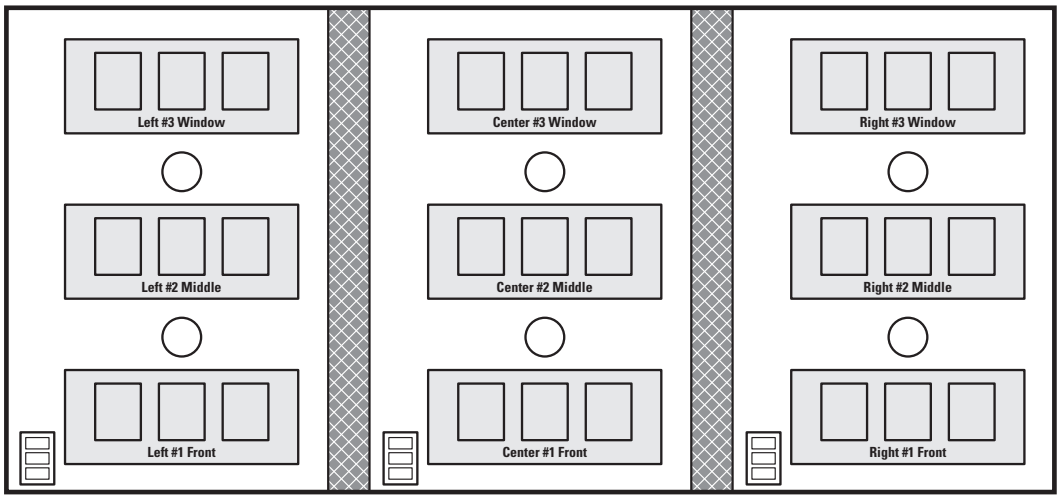


Figure 1. Ballroom with two partition walls closed

Figure 2 illustrates the zones when the partition walls are open.

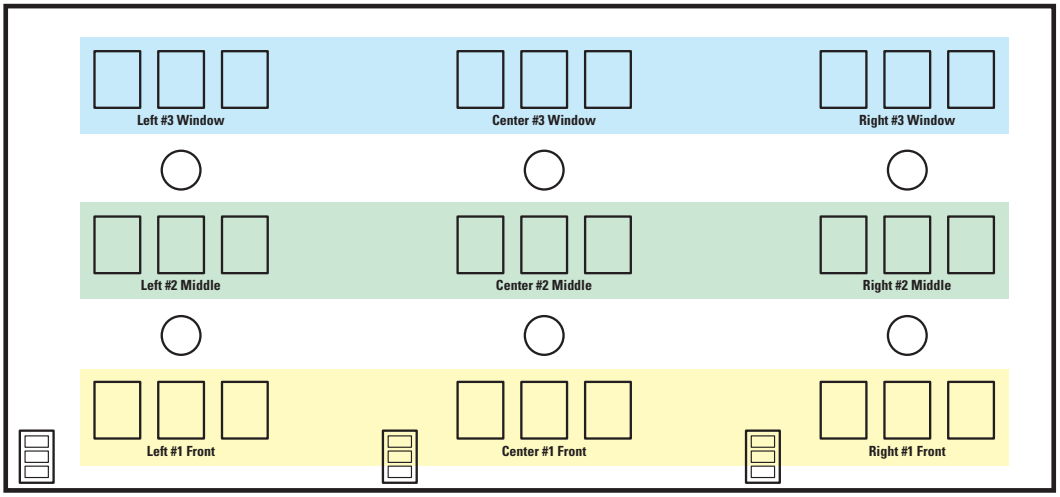


Figure 2. Ballroom with two partition walls open

System options:

Eaton offers various levels of automation and customization to meet the needs of your space and your budget. Partition controls can automatically sense the position of the walls and adjust the lighting control function accordingly.

Options for Room Controller/DLVP Systems include:

- Automatic Partition Status Control
- Manual Wallstation Controls
- Automatic Scene Selection Wallstations
- Automatic On/Automatic Off via sensor
- Manual On/Automatic Off via sensor
- Daylighting per system (daylighting is not shared across space)

IRTR – Infrared transmitter and receiver:

IRTR

The IRTR is perfect for installations where the occupants will be moving partitions themselves and a facility employee will not be available to ensure that the partition settings are correct. The Infrared Transmitter & Receiver detects when a wall has been moved and automatically signals the appropriate Room Controller or DLVP Units.

Automatic Sensing:

Mounted on the ceiling, the IRTR uses an invisible beam of Infrared light to sense whether a partition is open or closed. The IR sensor is automatic and does not require the user to do anything more than move the walls and set the light level in the space. The Room Controller or DLVP units automatically know which areas to control.

How it works:

The IRTR provides a signal to a RCPC Interface. The RCPC tells the Room Controller or DLVP units which areas of the room are affected by partitions. The IRTR must be used in combination with a RCPC interface.

Note: Up to four IRTR can be connected to one RCPC. Each RCPC can control up to four Room Controller or DLVP units.

Occupancy control:

When a space is partitioned each occupancy sensor in the room will detect occupancy in the room or area only. When more than one space is combined the first sensor to detect occupancy will turn the lights and plug loads ON and the last sensor to time out will turn the lights and plug loads OFF.

Daylight control:

The daylight harvesting is not affected by partition status. As part of the installation the user should ensure that only lights that are being affected by daylight regardless of the area's configuration will be associated to the daylight sensor.

Manual wallstation control:

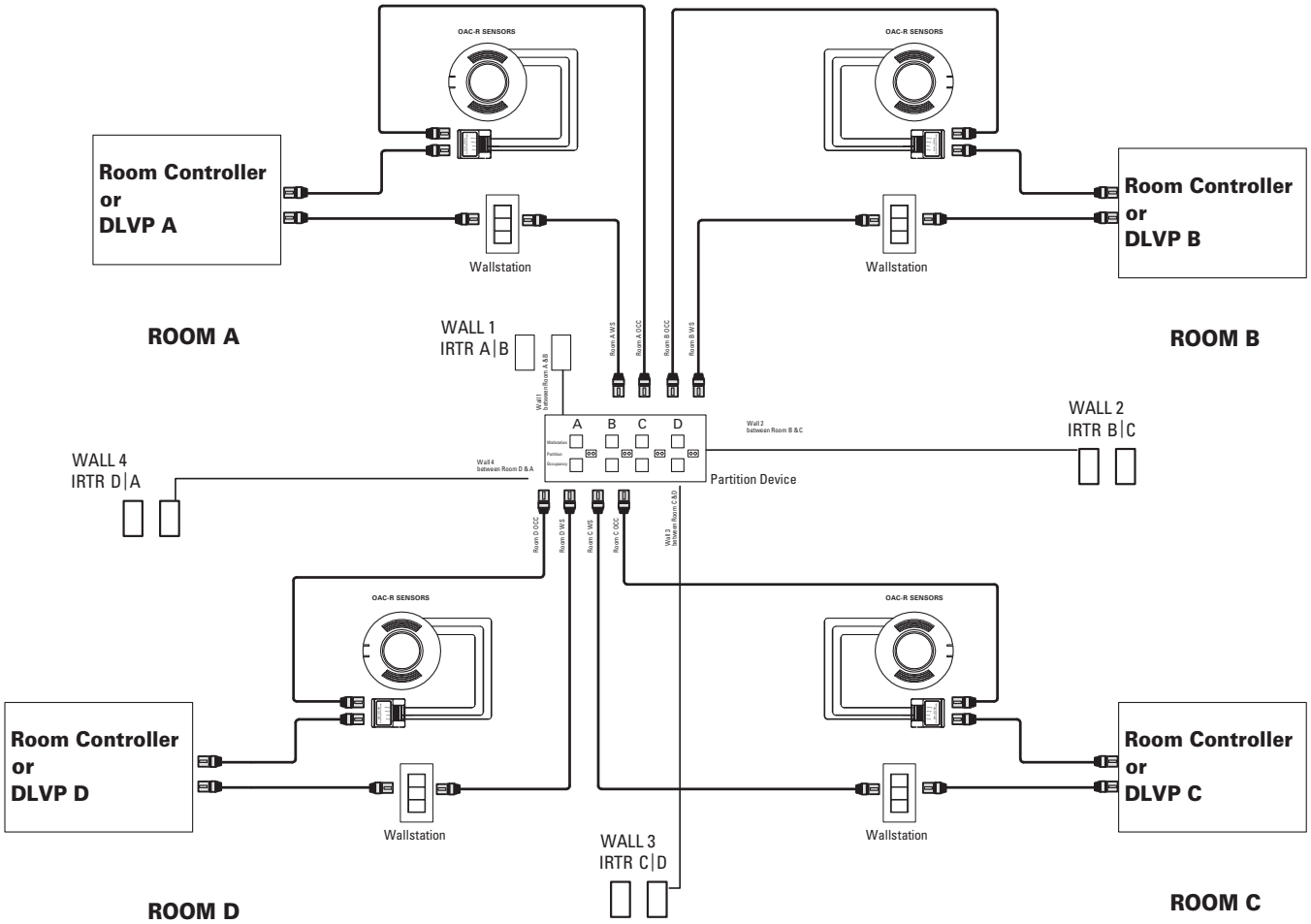
When a space is partitioned the wallstation shall issue commands only to the Room Controller or DLVP system it is connected to. When more than one space is combined any wallstation in the space will be able to control the entire room and perform the actions as programmed on the wallstations.

Note: It is recommended that spaces which can be combined have similar wallstations and scene programmed behavior. Actions called by each button on the wallstation will be affect any Room Controller or DLVP panel in the combined spaces. to manual wallstation control is uniform when the spaces are combined.

Custom wallstations with engraving:

Eaton's custom engraving capability provides the option of having the buttons engraved of your wallstation to match the specific layout of the space that you wish to partition.

System diagram:



Eaton
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.eaton.com/lighting
For service or technical assistance:
1-800-553-3879

Canada Sales
5925 McLaughlin Road
Mississauga, Ontario L5R 1B8
P: 905-501-3000
F: 905-501-3172

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