Introduction

This application note describes method to allow useful control functions for common areas and exhaust fans.

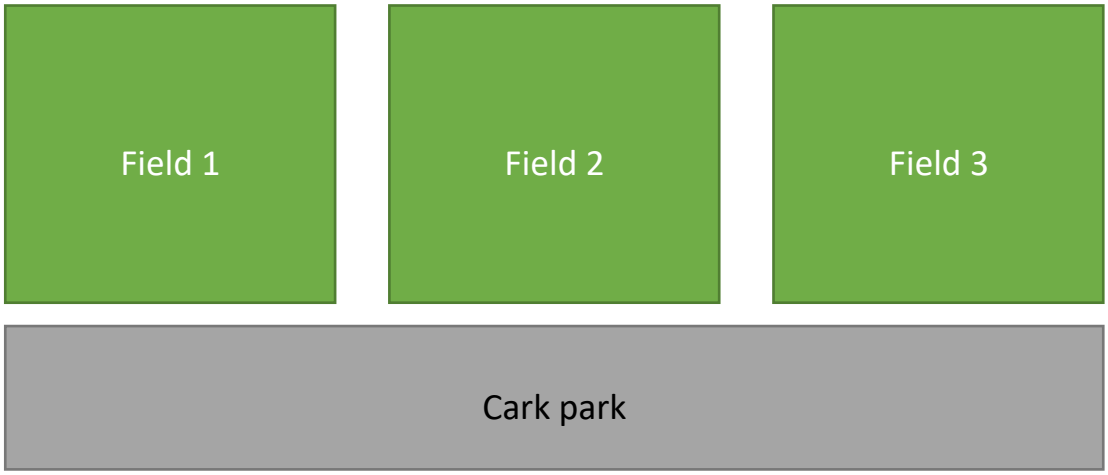
Common Area Control

Problem to be solved

The lighting of three sports fields can be turned on and off. Each field is independent, so the control of one field has no effect on the others.

When any of the sports fields have lighting turned on, the adjacent car park lighting must also be on.

When the lighting of all the sports fields is switched off, the car park lights must be switched off 10 minutes later.

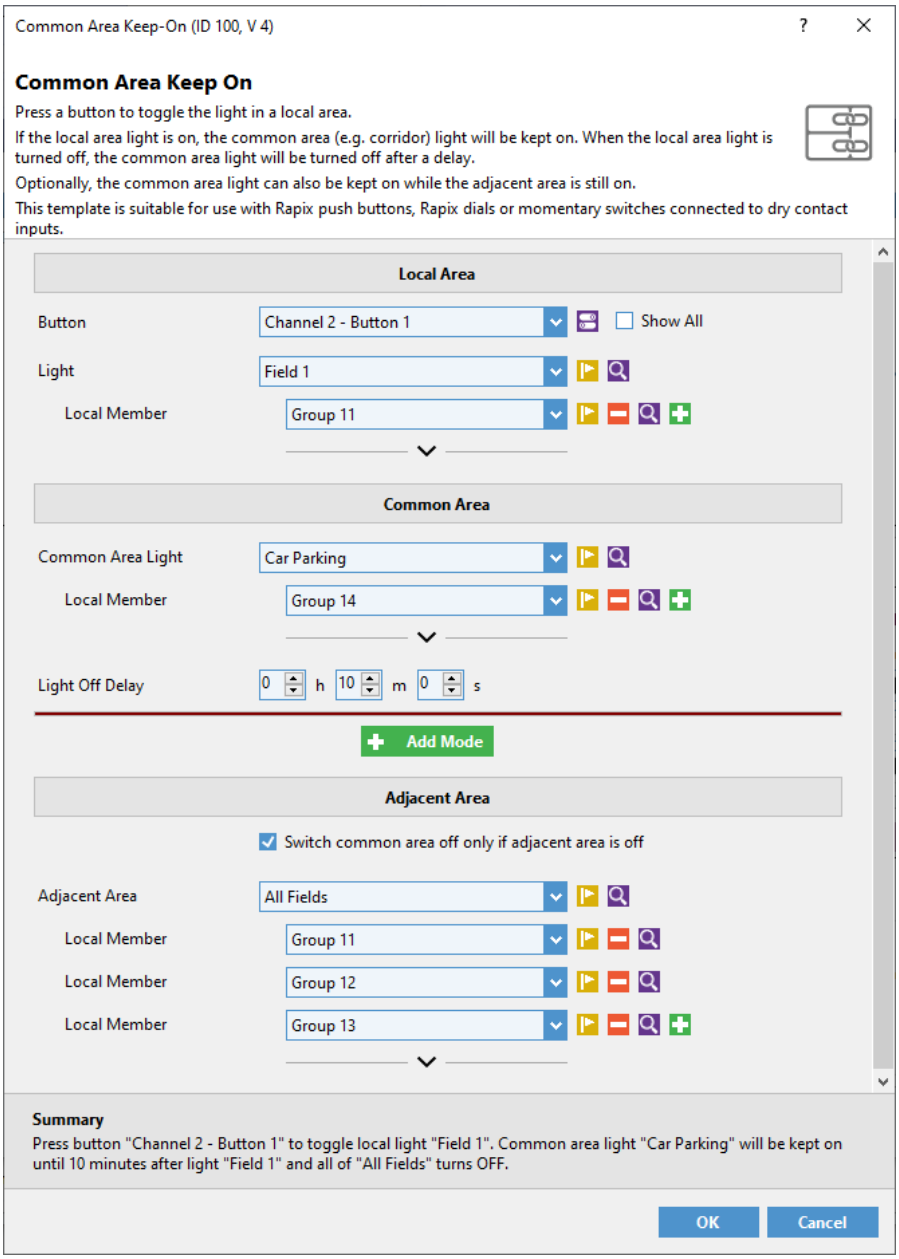


A sports field with a common area (car park) to be controlled

Solution 1

A possible solution uses the *Common Area Keep On* template. This template allows the control of an area (Zone) and ensures that the common area is also kept switched on.

An example is shown below, which uses the button that controls a space (*Field 1*) to also control the common space (*Car parking*):



The Common Area Keep On Template

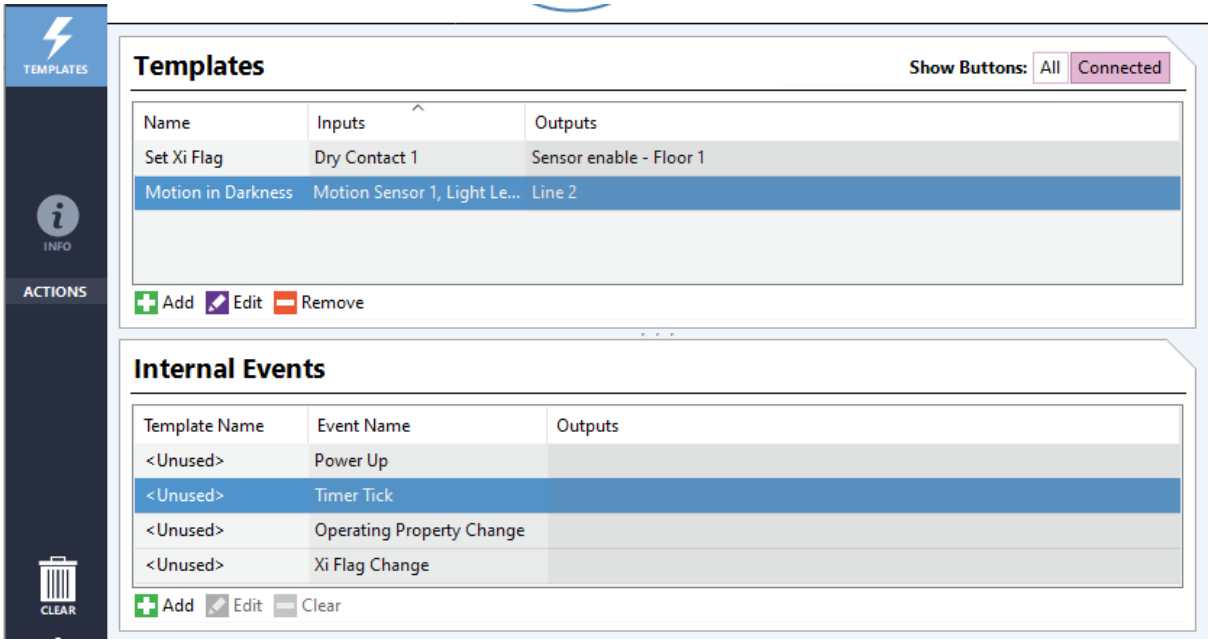
When using the Common Area Keep On template, the *Adjacent Area* will be a Zone that contains the areas that are adjacent to the common area. In this case, the Adjacent Area Zone contains Fields 1, 2 and 3.

This method works well for lighting that is controlled by buttons, but cannot be used for lighting controlled by sensors, schedules or other means.

Solution 2

A simpler, more powerful solution is to use the *Common Area Control* template.

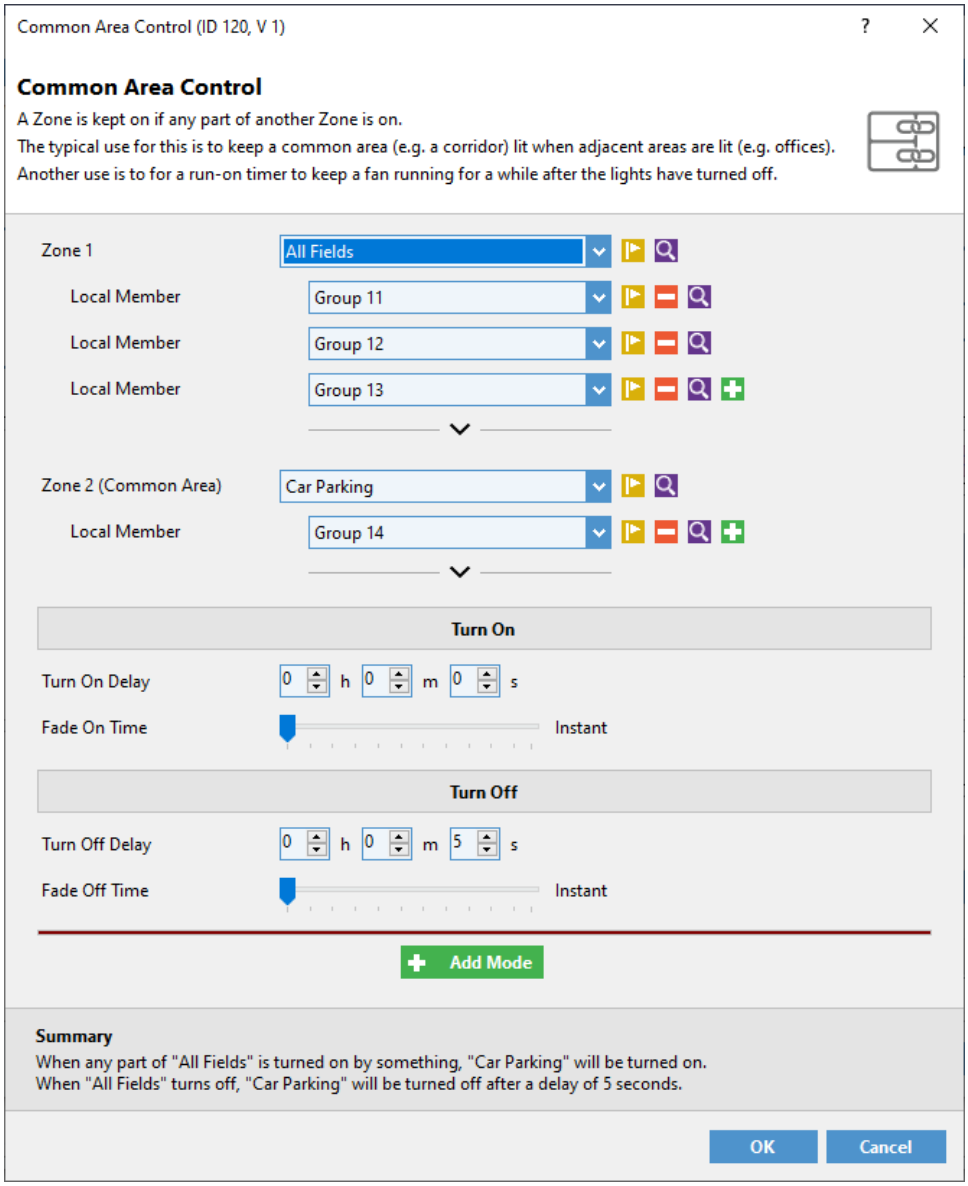
This template allows a common area to be kept on while any part of some other Zone is on. This template uses the timer-tick event, and can be found in the Internal Events list of the RAPIX Device templates tab:



The Internal Events list

To use the Common Area Control template, select the Timer Tick event and click on the **Add** button.

This is the configuration for the sports field:



The Common Area Control Template

The sports fields are all in Zone 1 and the car park is Zone 2 (Common Area).

The advantage of this approach is that it will work no matter how the areas in Zone 1 are controlled (e.g. wall switches, motion sensors, light level sensors or schedules).

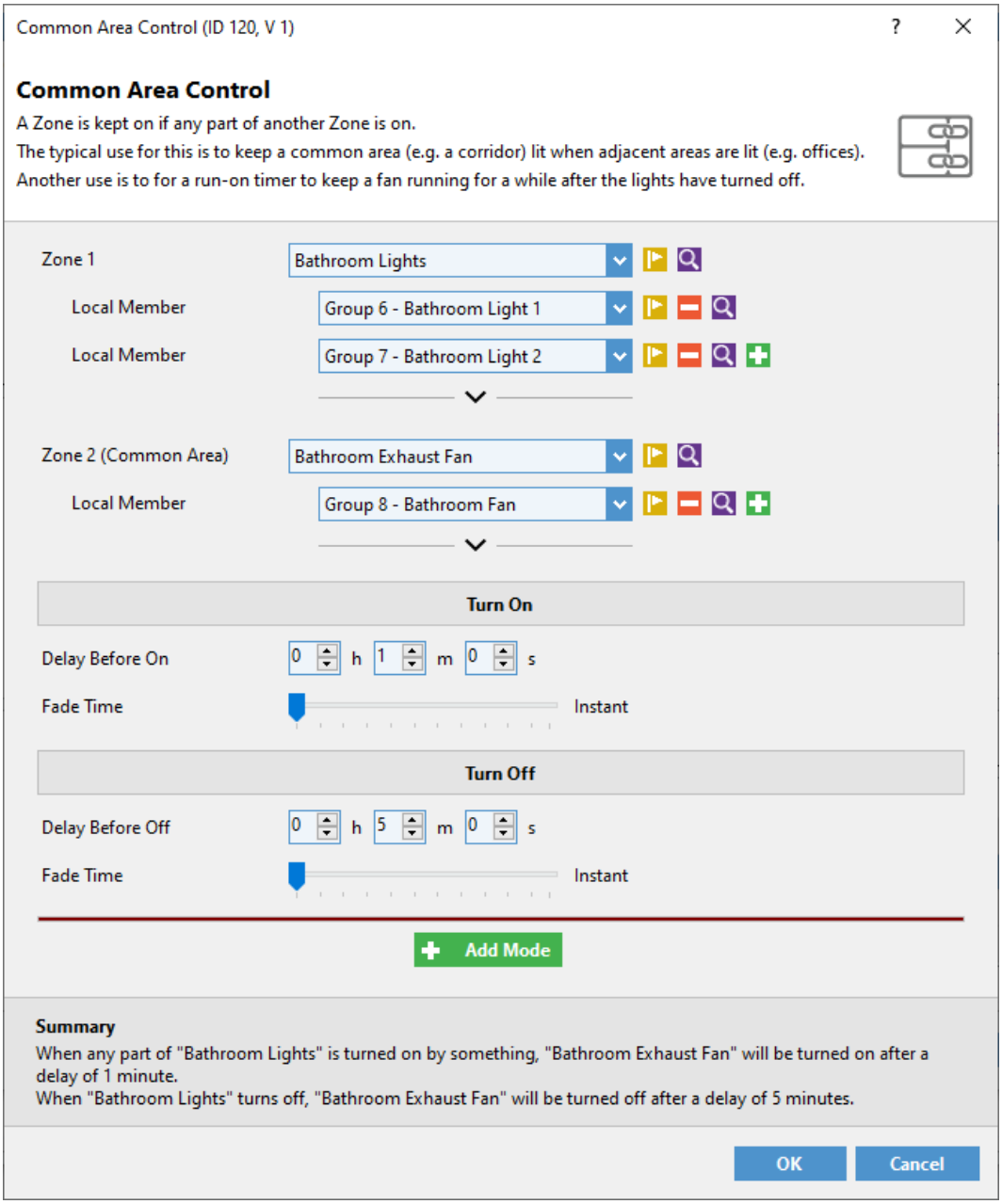
Exhaust Fan Control

Problem to be solved

An exhaust fan is to be turned on when any of the bathroom lights have been on for 1 minute, then stay on for 5 minutes after they are turned off.

Solution

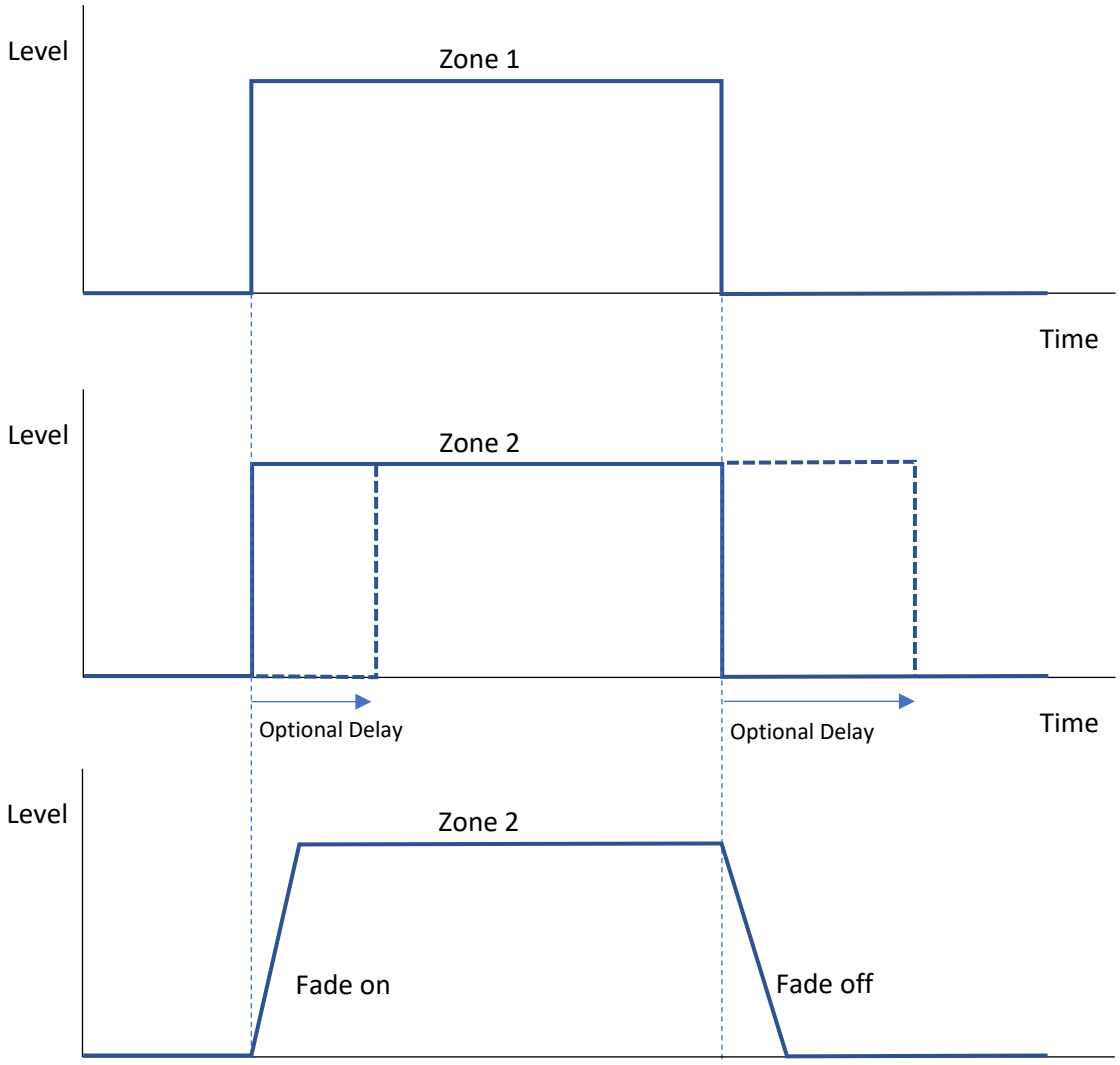
The solution is similar the previous example. The configuration of the Common Area Control template is shown below.



The Common Area Control Template

Common Area Control Template

The Common Area Control template causes a follower Zone (Zone 2) to follow the state of a first Zone (Zone 1). When any part of Zone 1 turns on, Zone 2 will be turned on, optionally after a delay. When all of Zone 1 turns off, Zone 2 will be turned off, optionally after a delay. The fade on and fade off times can be set independently. The delay and fade times can be used in any combination.

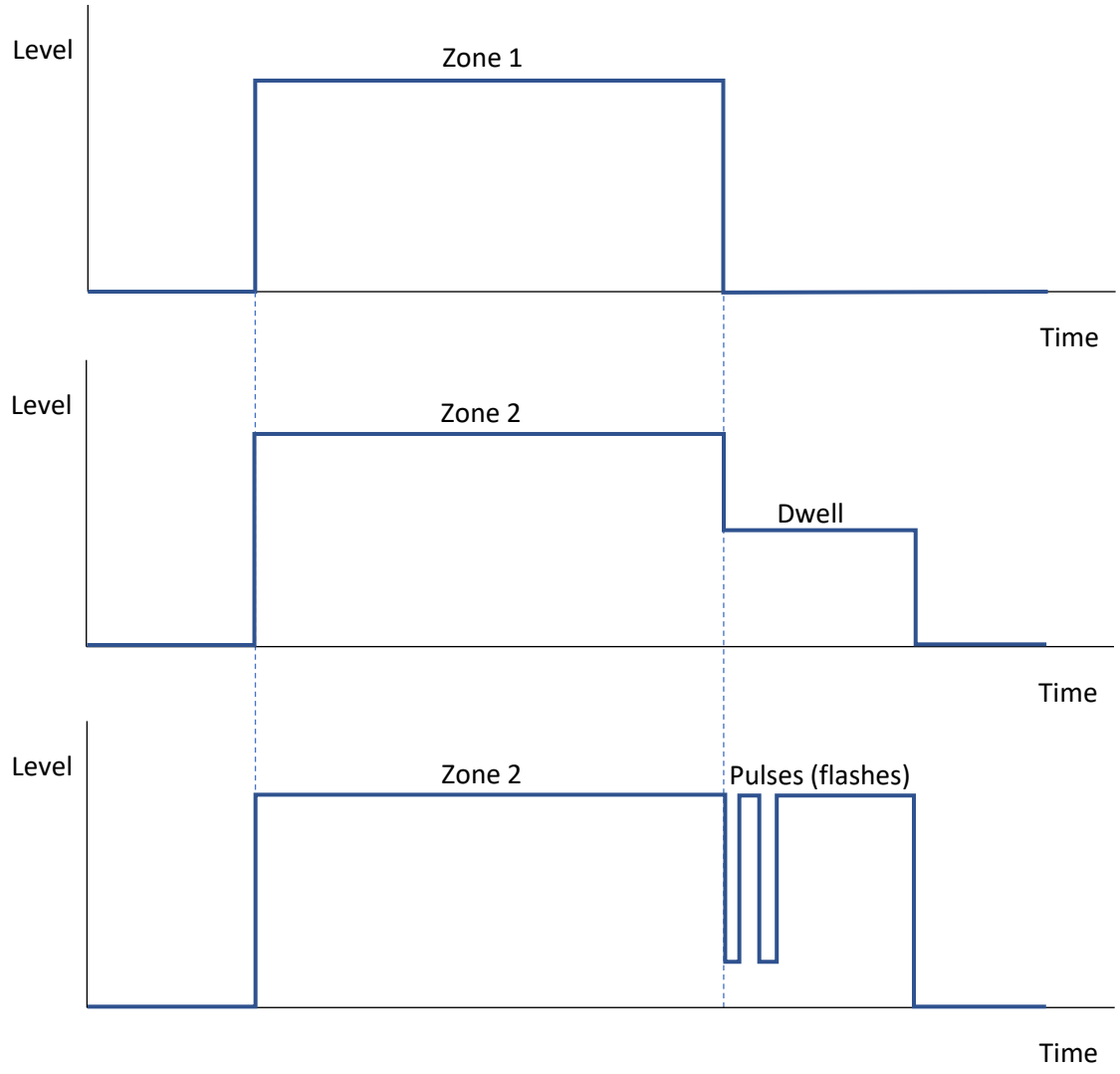


The Common Area Control Template Options

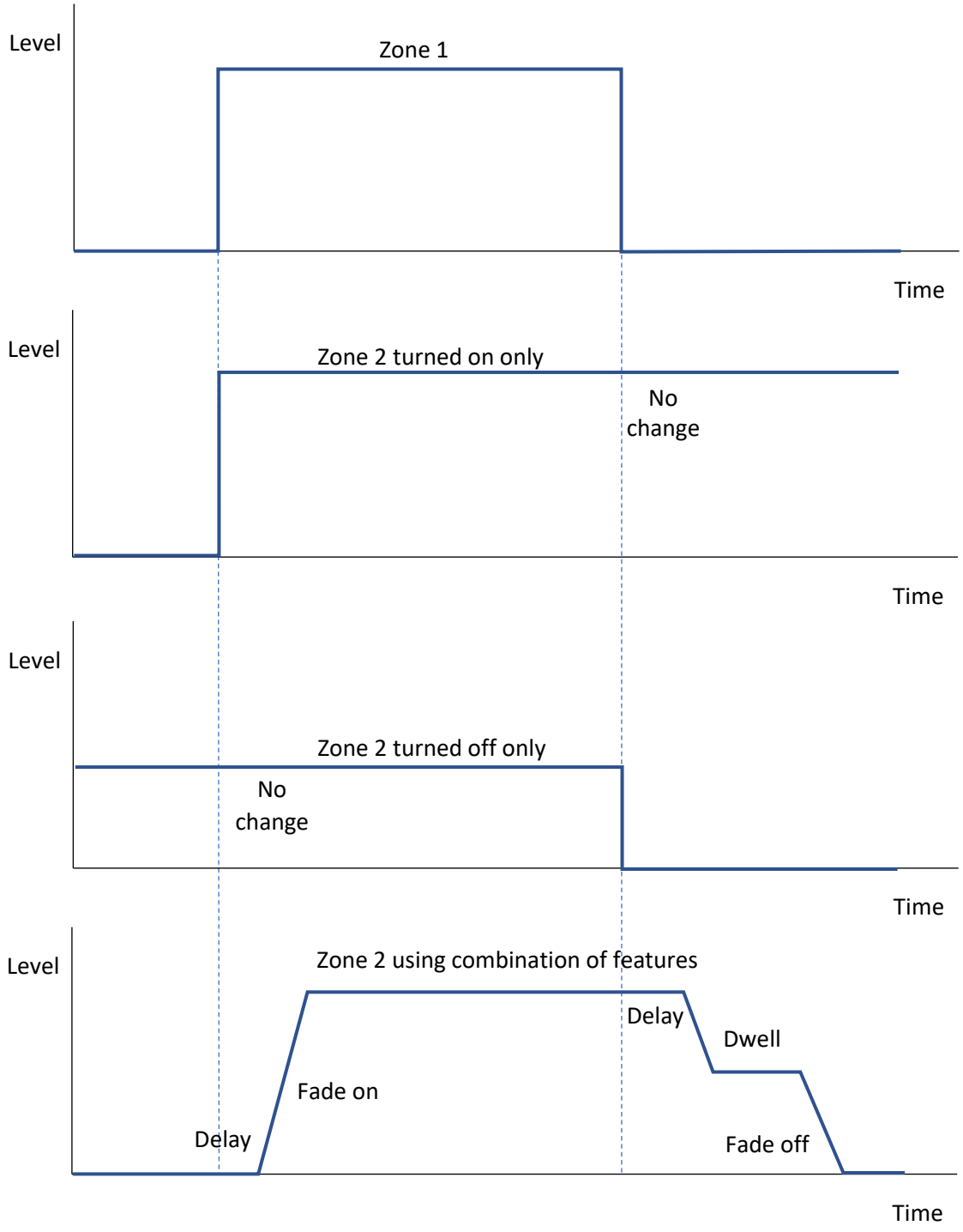
Common Area Control (Advanced) Template

The Common Area Control (Advanced) template provides the same capability as the Common Area Control template, but with additional options:

- The follower Zone (Zone 2) has various turn-on options in addition to the delay and fade time:
  - It be disabled by a RAPIX Flag;
  - It can be disabled by an Operating property (though modes);
  - It can be disabled entirely;
  - The level is selectable.
- Zone 2 has various turn-off options in addition to the delay and fade time:
  - It be disabled by a RAPIX Flag;
  - It can be disabled by an Operating property (though modes);
  - It can be disabled entirely;
  - Dwell, then off;
  - Pulse (flash) then off.



The Common Area Control (Advanced) Template additional turn-off options



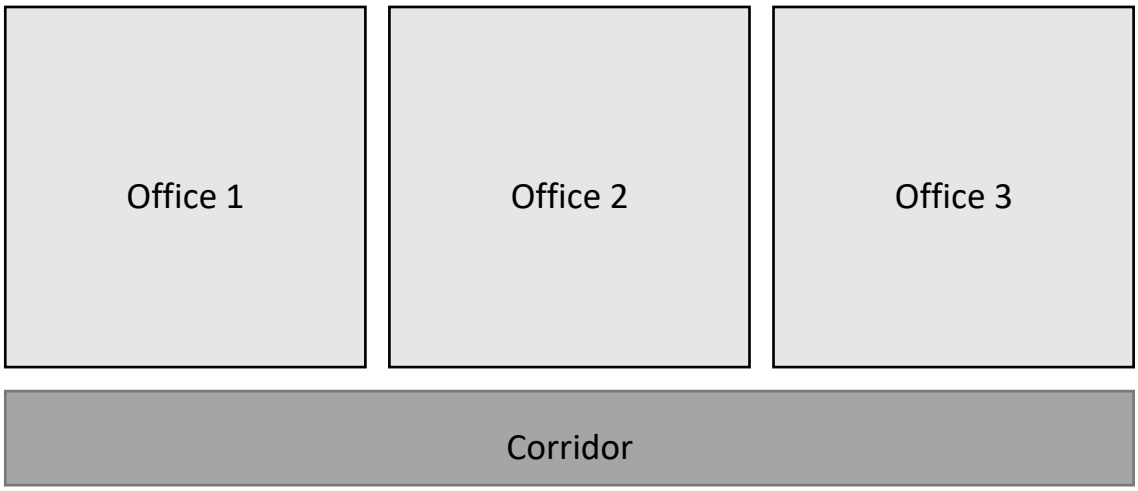
The Common Area Control (Advanced) Template additional examples

Corridor Control

Problem to be solved

When someone walks into the corridor or the offices, the local lights need to be turned on using motion sensors. When an area has been vacant for 5 minutes, the lights need to dim to 70% for 10 minutes before switching off.

The corridor light needs to stay on while any of the offices are occupied so that the exit path is always lit when someone is present.

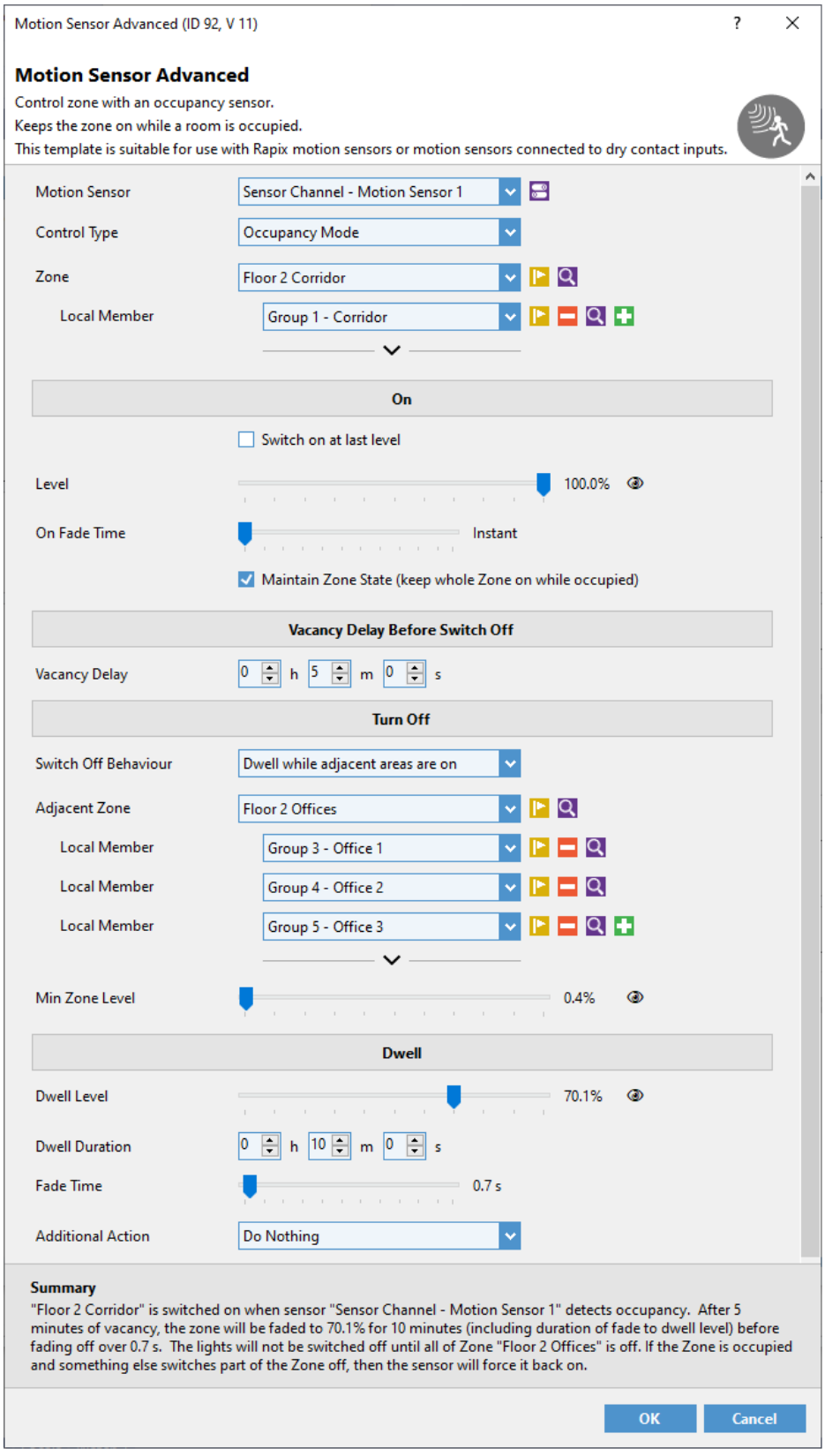


An office area with a common area (corridor) to be controlled

Solution

Each of the office areas can be controlled using the Motion Sensor template. The corridor needs to use the Motion Sensor Advanced template which has support for common areas.

In this case, the Adjacent Zone is created to contains Office 1, 2 and 3. The corridor light will be kept on while anything in the Adjacent Zone is on.



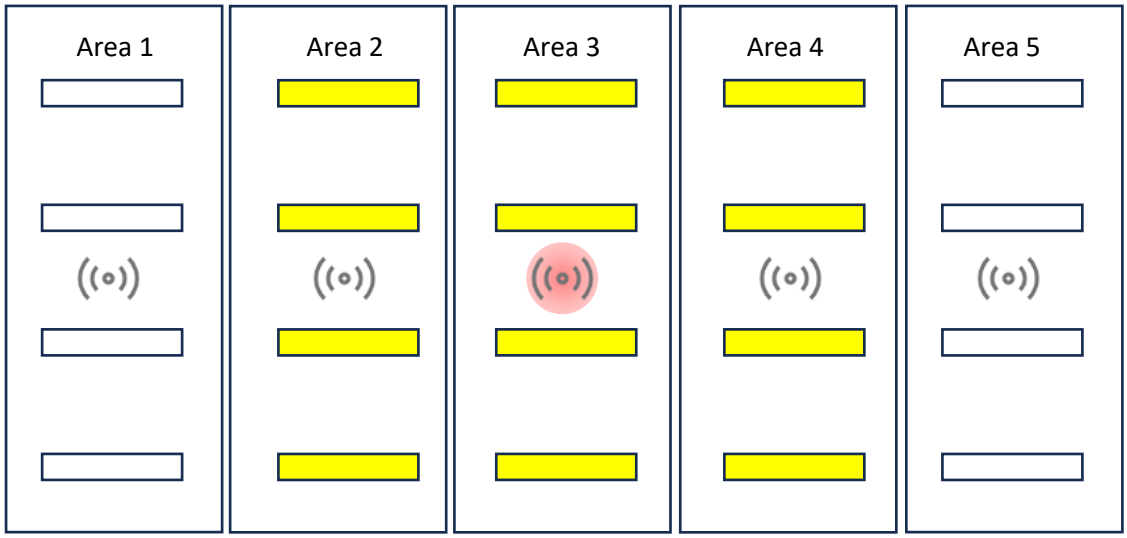
The Motion Sensor Advanced Template

Overlapping / Mutually Dependent Zones

Problem to be solved

A commercial building has many adjacent areas, each with a motion sensor. If an area is occupied, then its lights need to be on, and the adjacent areas need to be on also.

For example, in the diagram below, if the sensor in area 3 detects movement, then area 3 needs to be on, and also area 2 and area 4.



Potential Solution 1 – Motion Sensor Advanced template

Each area should be a DALI group (area 1 = group 1, area 2 = group 2 etc.).

If each motion sensor directly controls a zone containing its local group and the one on either side, then it will turn the areas on correctly, but may not turn them off correctly.

For example:

1. Motion in area 2 causes the sensor to turn on areas 1, 2 and 3.
2. Motion in area 4 causes the sensor to turn on areas 3, 4 and 5 (area 3 was actually already on).
3. Sometime later, area 2 is unoccupied and the sensor turns off areas 1, 2 and 3. However, area 4 is still occupied, so area 3 needs to be left on.

This can be solved as follows:

A. Use the Motion Sensor Advanced template
B. Select the “Maintain Zone State” option.

C. Set the fade off time to be at least 4 seconds for this to work well.

With this configuration, the example above will work correctly:

1. Motion in area 2 causes the sensor to turn on areas 1, 2 and 3.
2. Motion in area 4 causes the sensor to turn on areas 3, 4 and 5 (area 3 was actually already on).
3. Sometime later, area 2 is unoccupied and the sensor fades off areas 1, 2 and 3 over 4 seconds.
4. The sensor in area 4 detects that part of its zone is being turned off and turns the whole zone back on again.

Potential Solution 2 – Common Area Control template

You could try to solve the problem this way:

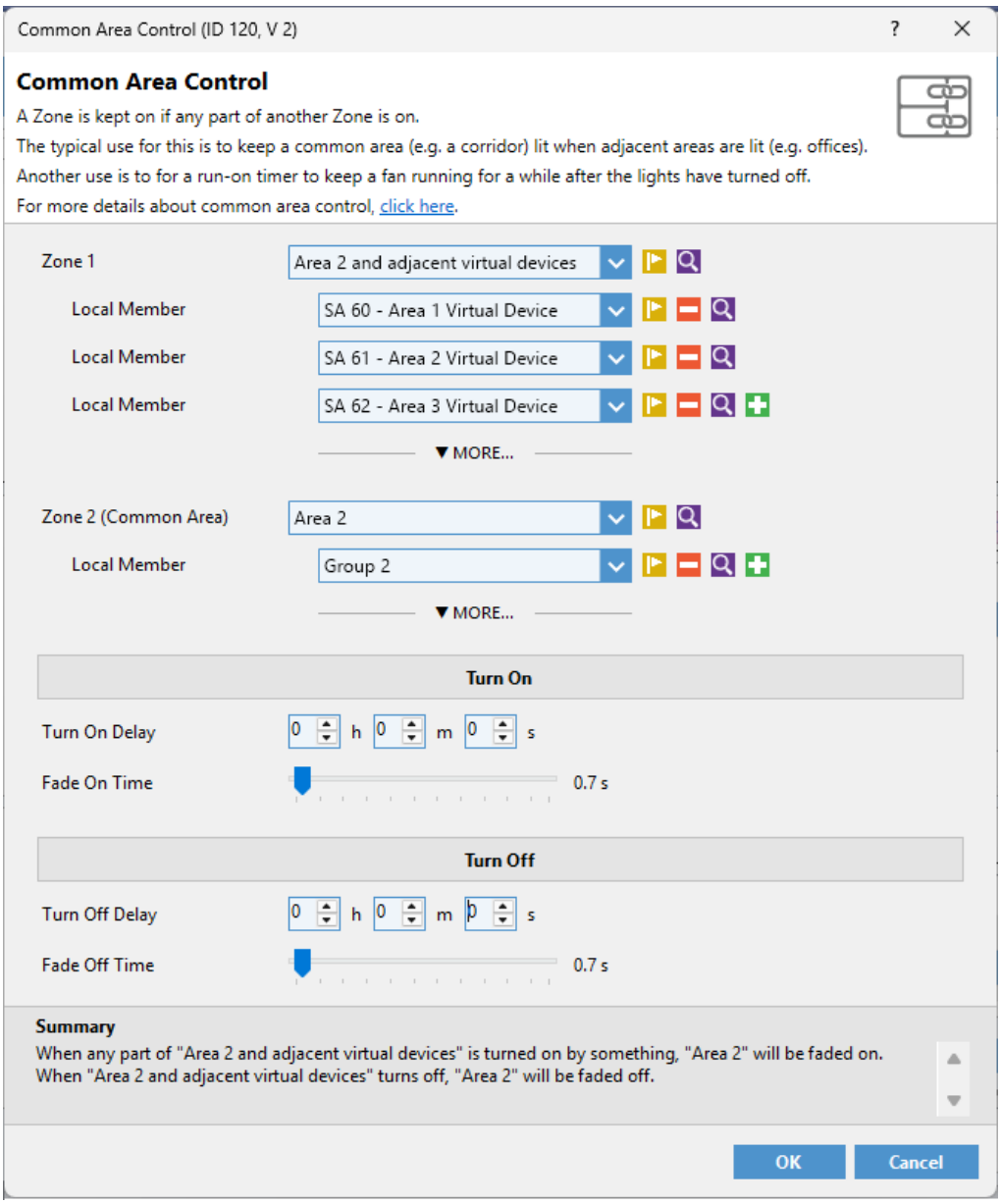
1. Each sensor controls the local area.
2. Each sensor also uses the Common Area Control template to keep the area on if the adjacent areas are on.

The problem with this is that as soon as one area gets turned on, all of the others will turn on and stay on.

This can be solved as follows:

1. Each sensor controls a virtual device (see the Virtual Zones application note for details)
2. Each sensor also uses the Common Area Control template to keep the area on if its virtual device or any of the adjacent area virtual devices are on.

For the sensor in area 2 in the example, the configuration would be something like:



Potential Solution 3 – Logic Code

This, and much more complicated requirements, can be solved using logic code. This is beyond the scope of this document. For more details, refer to the RAPIX Logic Programming Guide.

Change History

Rev	Date	Updated By	Comment
1	2 June 2020	DMS	First Release
2	4 May 2026	DMS	Added example of overlapping zones

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