

LOGIC SUITE FOR CRESTRON HOME

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SUPPORTED INSTALLATION

These are Crestron Home drivers for Crestron Home processors.

DESCRIPTION

This document describes the configuration of Ultamation's "Logic Suite" extension device drivers for Crestron Home. Logic Suite drivers are used to perform common logical operations within the Crestron Home system, including AND, OR and XOR and more.

The drivers can be used to trigger events based on the results of these logical operations performed upon the states of a set of inputs.

INSTALLATION

The drivers can be found under:

Drivers > Logic > Ultamation

Adding the Drivers

Ensure a room is selected, and then click on the '+' against the appropriate device.

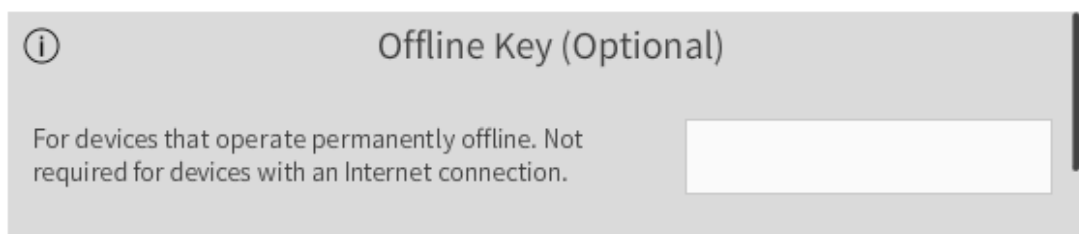
You will be asked to provide a descriptive name – this can be anything you wish.



Enter a descriptive name for AND Extension

OK Cancel

These drivers are licenced via the cloud, but an optional "offline" key can be requested under special circumstances. Please **FIRST** refer to the "Licensing" section below and then contact support@ultamation.com if you REQUIRE offline activation. The same offline key can be used for multiple driver instances in the same system.



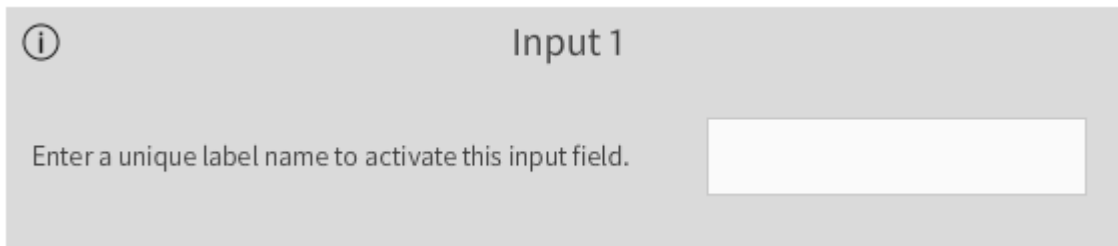
i Offline Key (Optional)

For devices that operate permanently offline. Not required for devices with an Internet connection.

If you do not have a cloud licence and do not enter a valid offline licence key, the system will function for ONE hour and then control will be suspended. The offline licence key can be entered at any time after initial setup without having to reconfigure each tile.

AND, OR & XOR

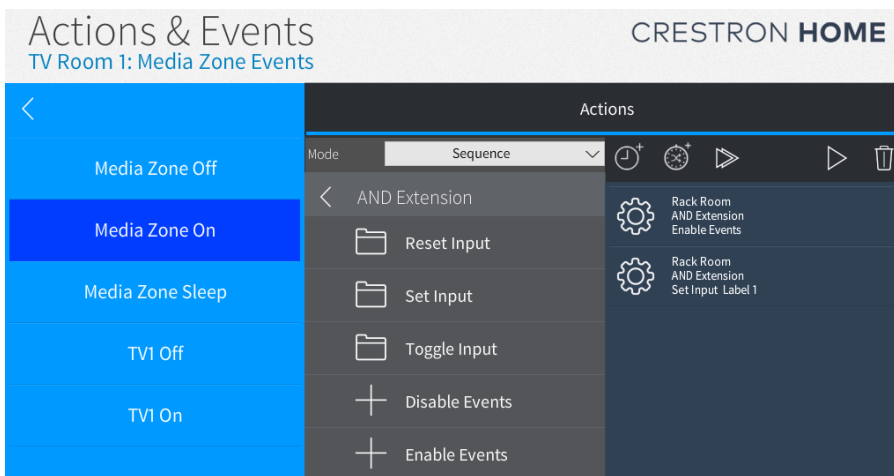
These three modules are all structured similarly, differing only in how their output is calculated. You are asked to name inputs when adding to your system.



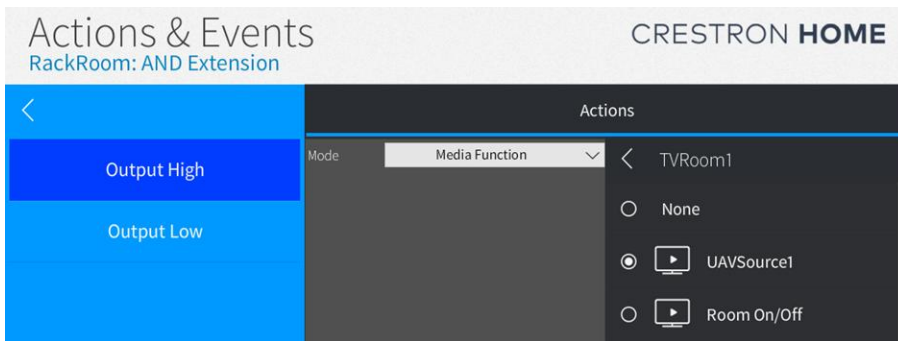
Inputting a unique name into each input field will activate that input. This will allow you to use this input in quick actions and events, as well as manually set it using the module's tile.

Actions & Events

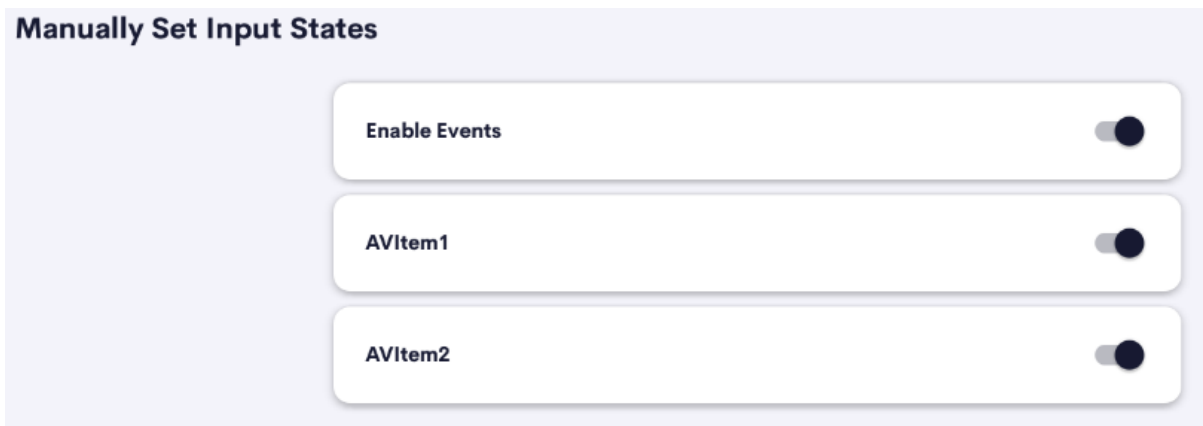
Each of these extensions exposes three programmable functions attached to the inputs configured above. 'Set Input' allows events, such as a Media Zone turning on, to set an input state to high, 'Reset Input' to low, and 'Toggle Input' to perform a logical NOT upon an input's current state. Functions are also available for enabling and disabling the 'Output High' and 'Output Low' events.



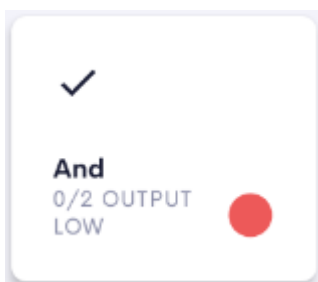
Changing an input state causes a logical operation to be performed, resulting in an 'Output High' or 'Output Low' event being triggered which can be used to trigger actions. The current output state is displayed on the extension's tile. You can use these to perform certain actions only under certain conditions. For example, you may want a light to turn on if it is dark *and* a person triggers a sensor. Or you may want the light to turn on if it is dark *or* the sensor is triggered.



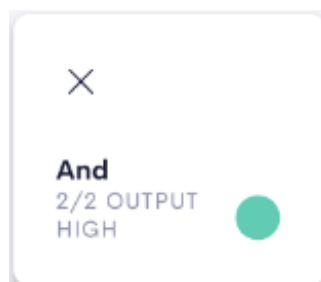
'Output High' or 'Output Low' events can be disabled by clicking upon the tile for the extension, and toggling 'Enable Events'. Inputs can also be manually toggled.



Disabling events changes the icon upon the extensions tile, and it will display a red or green circle based on the current output state. When the tile is disabled the output events are no longer evaluated.



1: Events Enabled



2: Events Disabled

Counter

This driver is intended for situations where you want to trigger some behaviour every n^{th} time an input is received. It takes a single input and increments a counter every time this input is triggered. It then triggers an output, depending on the current count. When it reaches a maximum output, the next input will wrap the counter back to the minimum output.

You are asked for an attribute named 'threshold' when adding this driver to your system. The threshold is the maximum output, after which the counter will wrap around to the first output. This must be input as a number between 1 and 10. It will default to a value of 10 if it is outside these bounds.

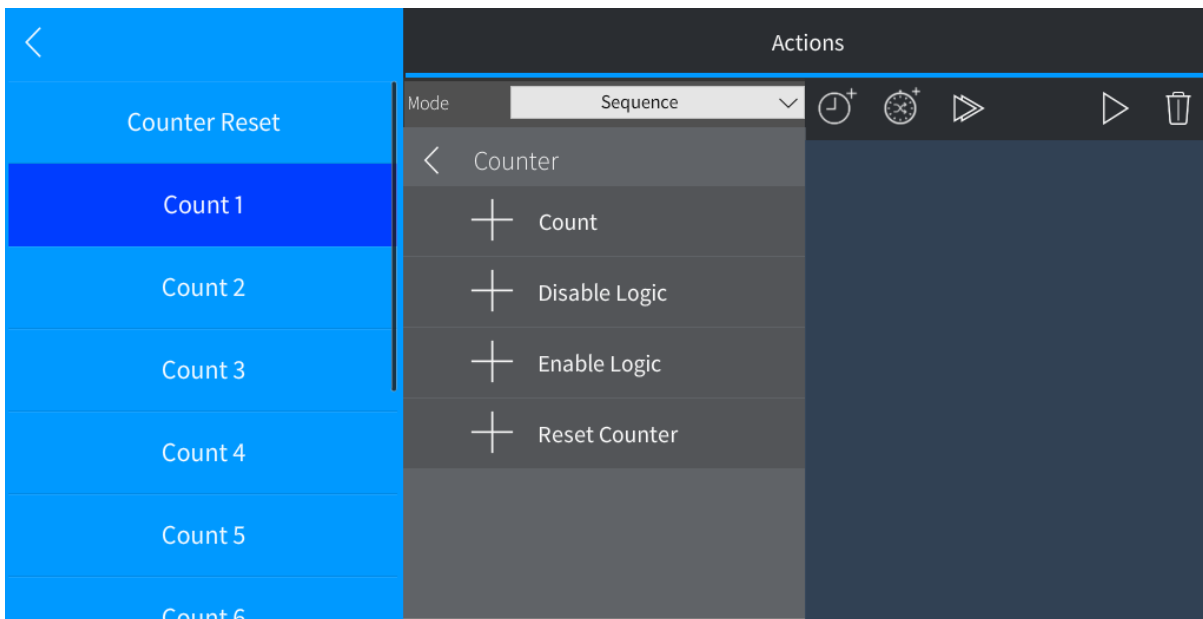


Actions & Events

The Counter driver has four programmable actions: toggle input, reset counter, enable events and disable events.

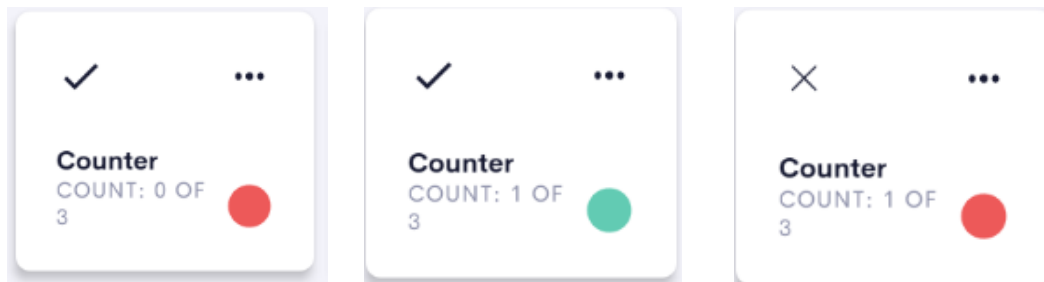
Toggle input manually sets the input to the opposite of its current state, reset counter sets the count back to 0, and enable/disable events enable and disable the triggering of outputs.

The driver also has eleven programmable events. Ten of these correspond to a counter output, and the eleventh is an event that triggers when the counter is reset.



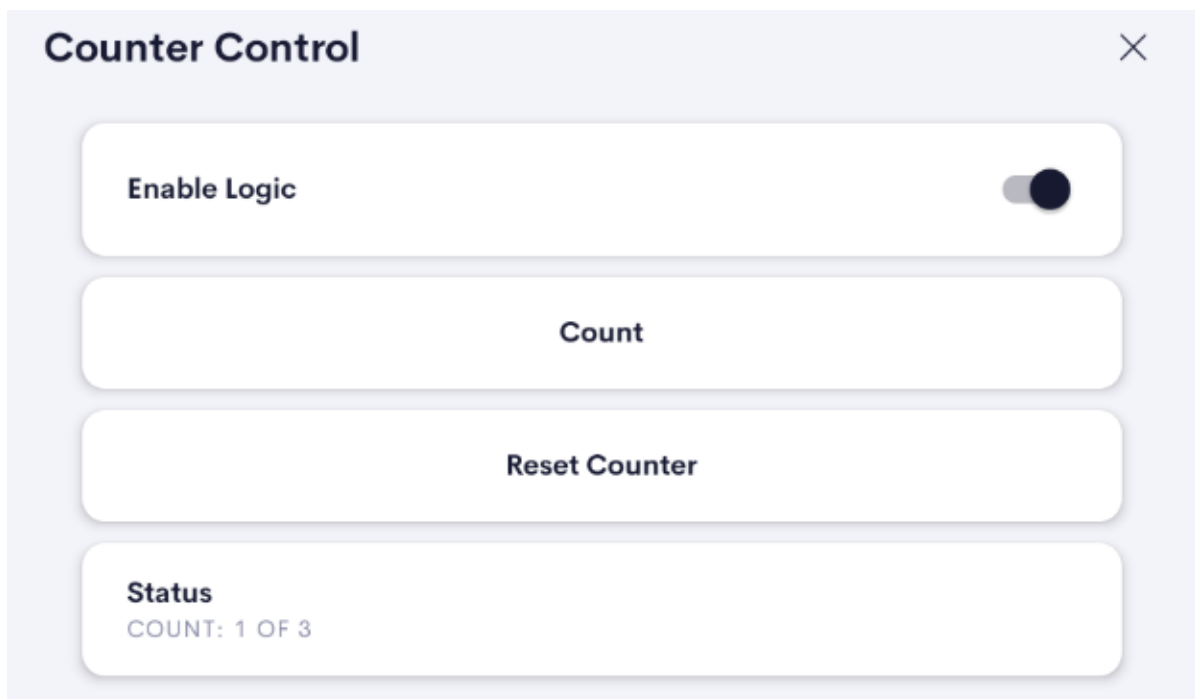
Here you can see the output events, including the reset event, and the 4 actions that can be triggered.

The extension implements a tile in Crestron Home. This tile shows basic information, including the name of the counter, the current count, and shows an icon which changes depending on whether events are active or not.



1: Output not currently set 2: Output currently set 3: Events disabled

Tapping on the ellipsis on the tile brings up a toggle and two buttons. Here events can be manually toggled, the counter can be reset, and the input can be toggled.



Interlock

This driver emulates a standard 'Interlock' symbol. It is intended for situations where you want to trigger some behaviour when an input is received or goes low. It takes up to 10 inputs and has an output for each input. When one of these inputs is triggered, the corresponding output is triggered. When another input is triggered, its corresponding output is triggered, along with the 'low' output for the previous output.

The following parameters are used to label and activate a maximum of 10 input fields which are then available for use within Crestron Home's Actions and Events section. Each input field must be given a unique name.

i **Input 1**

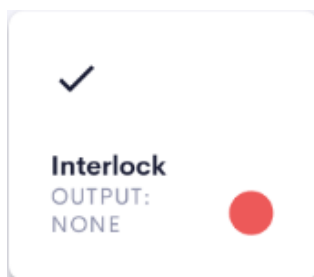
Enter a unique label name to activate this input field.

Actions & Events

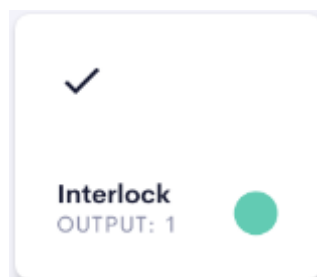
The Interlock driver has multiple programmable actions. There is a 'set input' action for each named input, which will trigger its respective input. Other than these, there are actions for enabling/disabling events, and an action to reset the interlock.

The driver also has 21 programmable events. 20 of these correspond to an Interlock output (a 'high' event and a 'low' event for each output), and the last is an event that triggers when the Interlock is reset.

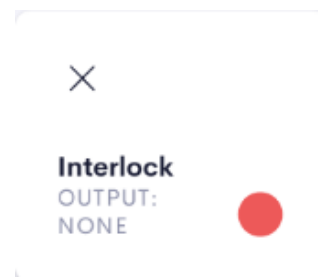
The extension implements a tile in Crestron Home. This tile shows basic information, including the name of the Interlock, the current output, and shows an icon which changes depending on whether events are active or not, and a second icon that changes when an output is active.



1. No output currently set

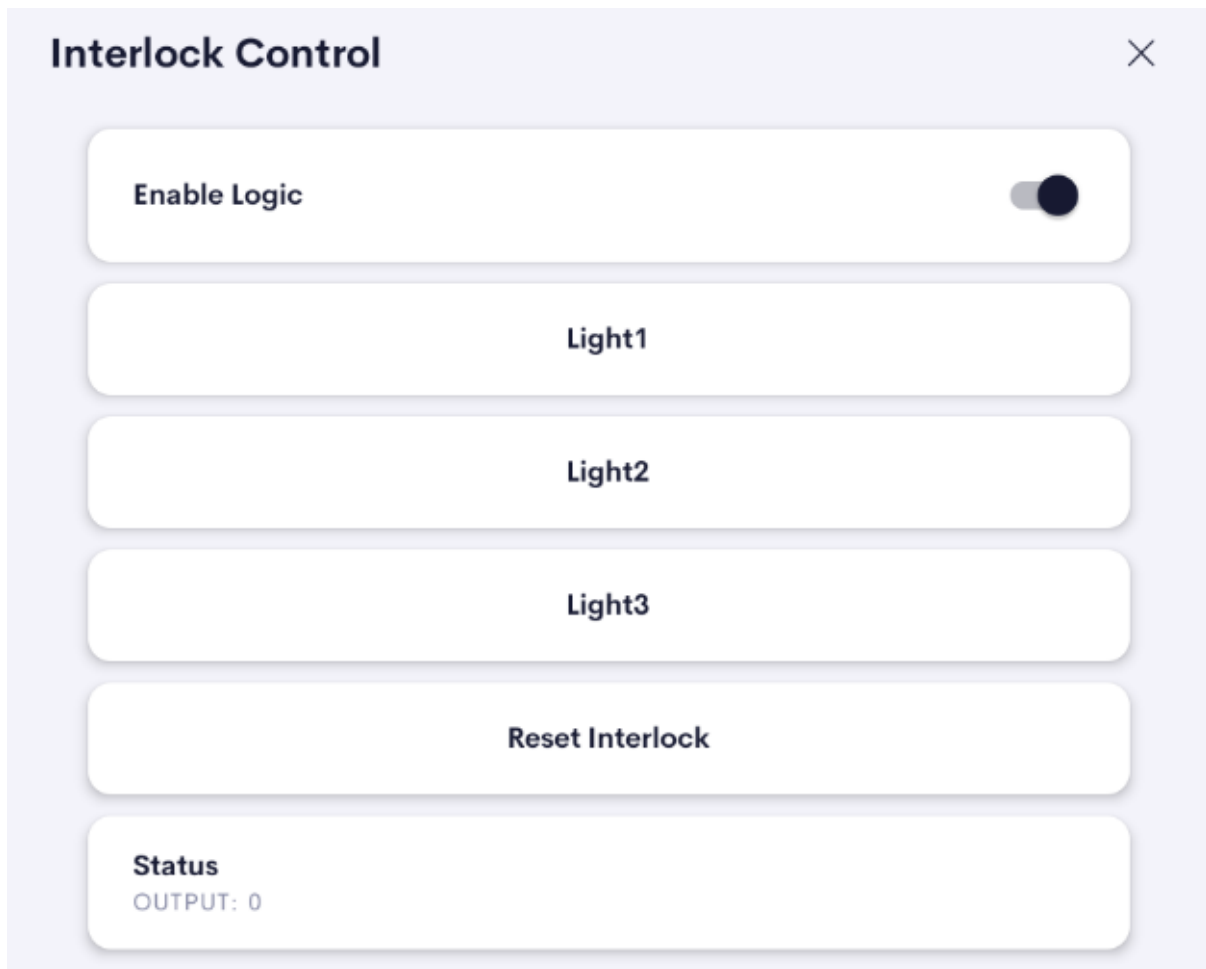


2. Output set



3. Events disabled

Tapping this tile will bring up a menu containing an events toggle, a button for setting each named input, and a button to reset the interlock.



Tapping each named input will set that input to 'high', triggering its respective output. The next time an input is tapped, it will be set to high, and the previously tapped input will be set to low. Using the above setup as an example:

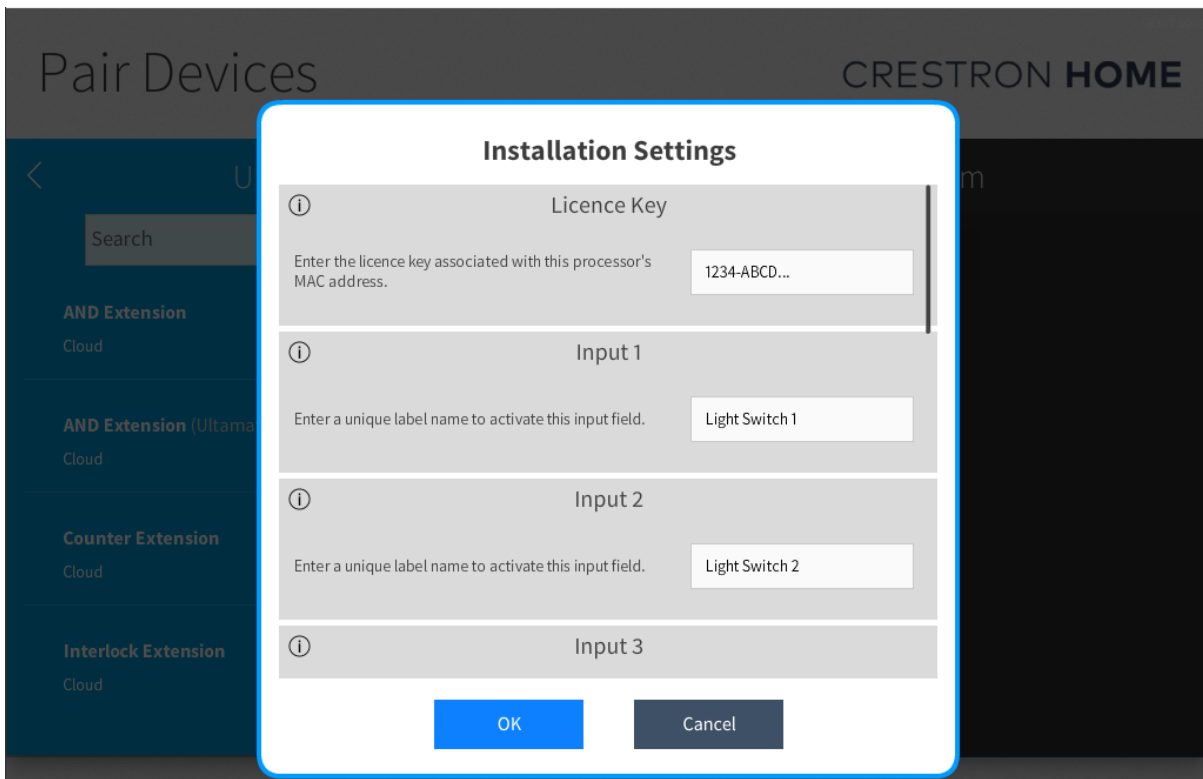
1. User taps 'Light1': its associated high output is triggered.
2. User taps 'Light2': its associated high output is triggered, and the low output associated with 'Light1' is also triggered.

Essentially, it acts like radio buttons, disabling the previous selection when a new selection is made.

Tapping 'Reset Interlock' will trigger the low output associated with the current input, setting the interlock to a state where no input/output is currently selected.

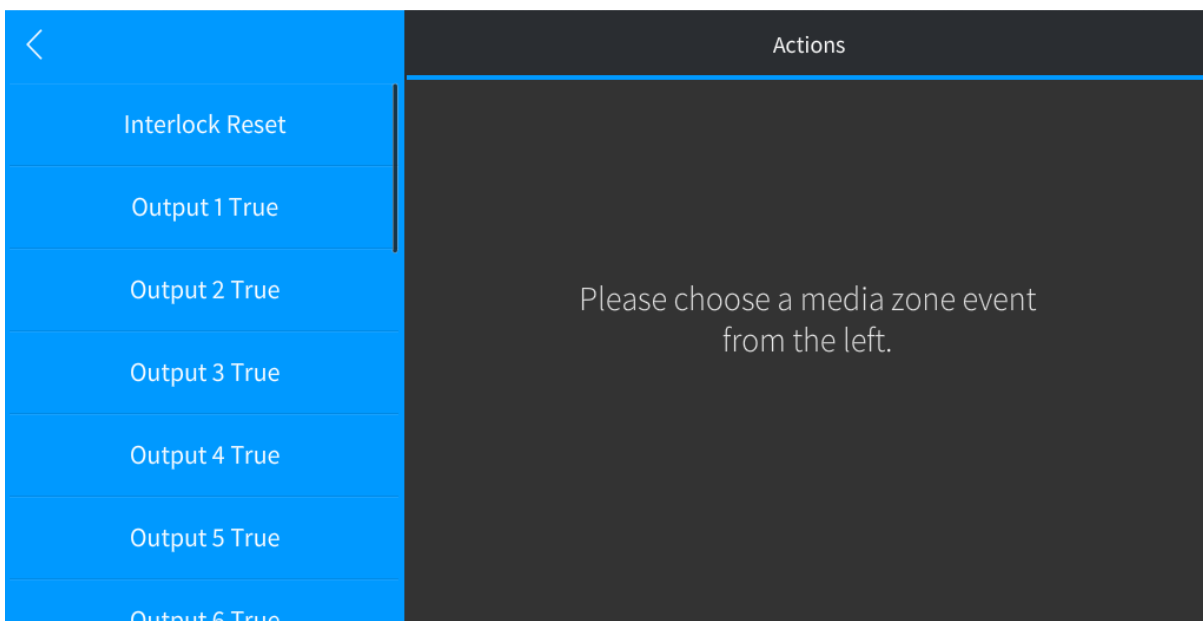
Example

Let's say you have an array of lights, but you only want one to be active at once. This behaviour can be achieved using the Interlock module.

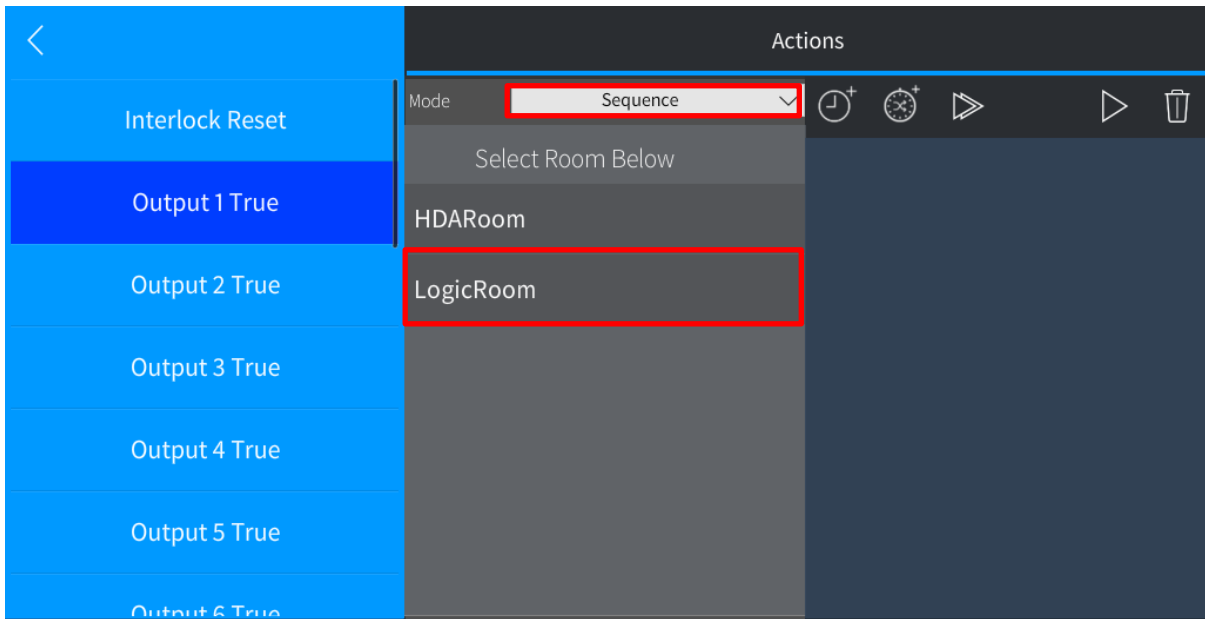


Start by adding the device and naming an input for each light. In this example, we will use 3 inputs, but you can add up to 10. We will use UI tiles to emulate the lights in the room.

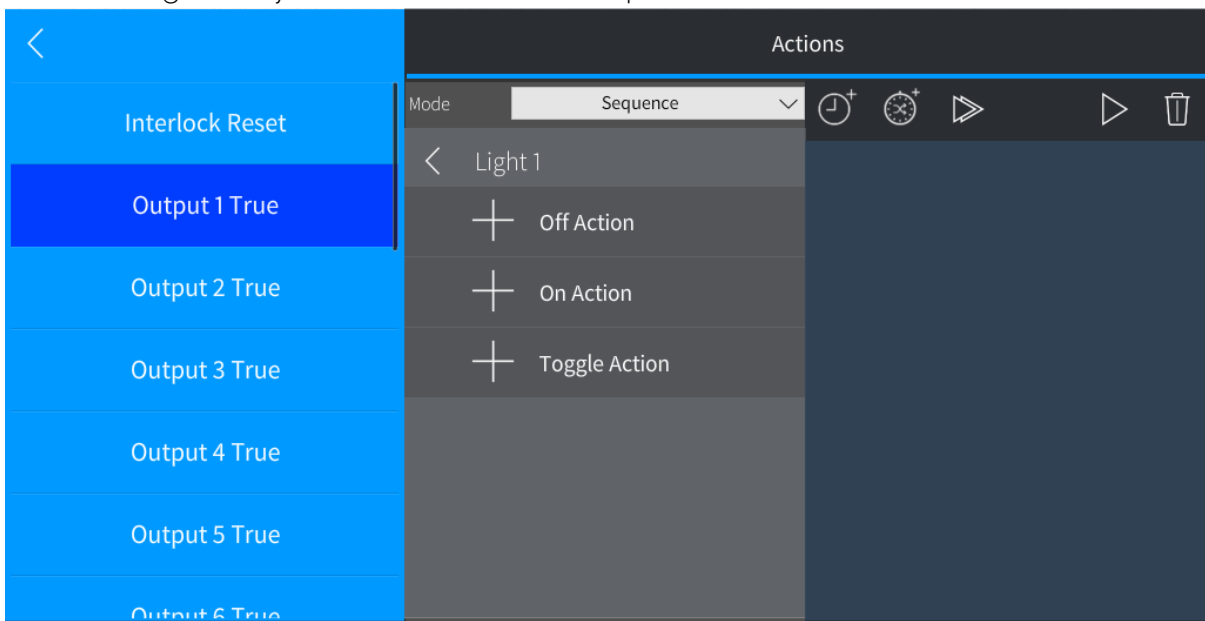
Next, navigate to the 'Actions & Events' screen and select the room with the Interlock extension. Press the Interlock, and you should see a screen like follows:



Press 'Output 1 True', and under 'Mode' select sequence. Select the room with the first light in.



Select the light that you want to activate, then press 'On Action'.



Then, in the list of events scroll down to 'Output 1 False', and repeat the previous steps, but press 'Off Action' instead of 'On Action'.

Repeat this twice more: to link up light 2 to output 2, and to link light 3 to output 3.

Now, in Crestron Home, selecting an input on the interlock will activate its respective light, and deactivate any other lights currently on.

Occupancy Logic Module

When this driver is given a manual on signal, the occupancy logic is ignored, and the connected device is on indefinitely. When a manual off signal is given, the occupancy logic will only turn the device on for a specified amount of time if it receives a signal indicating that the room is occupied. Such a signal will restart the timer. When the timer elapses, the connected device is turned off.

The most common example would be a light in a room with a motion detector. This module would allow the light to be turned on manually by a light switch. When the light is turned off at the switch, the light is turned on if the motion detector is triggered.

When adding this module to your system, you will be asked for two parameters.

The image shows a configuration interface for the Occupancy Logic Module. It consists of two vertically stacked panels, each with an information icon (i) in a circle on the left. The top panel is titled "Occupancy Time" and contains the instruction "Enter the time after which the state will change to off if no occupants have been detected. Specify in hh:mm:ss." followed by a text input field containing "00:01:00". The bottom panel is titled "Grace Period" and contains the instruction "Enter the time after a manual off event in which the on event cannot be triggered. Specify in seconds." followed by a text input field containing "5".

The second parameter is the occupancy time. This is the amount of time the connected device will be turned on for following an occupant detected signal. It should be specified in the format of hh:mm:ss. An invalid input here will result in the parameter defaulting to a value of 1 minute.

The third parameter is the grace period. This is the amount of time after a manual turn-off in which any occupant detected signals will be ignored. This should be specified in seconds. An invalid input here will result in the parameter defaulting to a value of 5 seconds.

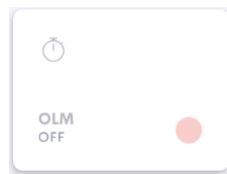
Actions & Events

The Occupancy Logic Module has 4 programmable actions, "Set Manual Control On", "Set Manual Control Off", "Toggle Manual Control", and "Occupant Detected". It also has 2 programmable events, On Event and Off Event.

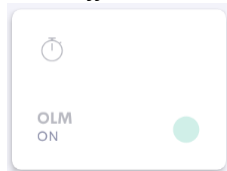
Set Manual Control On triggers the On Event and puts the tile in its on state. Set Manual Control Off triggers the Off Event, puts the tile in its off state and starts the grace period. Toggle Manual Control checks if the module is currently manually on. If it is, then it calls Set Manual Control Off. Otherwise, it calls Set Manual Control On.

When the device has been set manually off and the grace period isn't active, a call to Occupant Detected will turn the device on, put the tile in its on state and start an occupancy timer. Any additional Occupant Detected calls before the timer elapses will

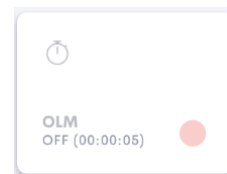
reset it. When it does elapse, the tile will re-enter its off state and the device will be turned off again.



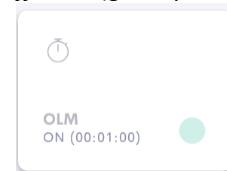
Off state



On state



Off state (grace period)

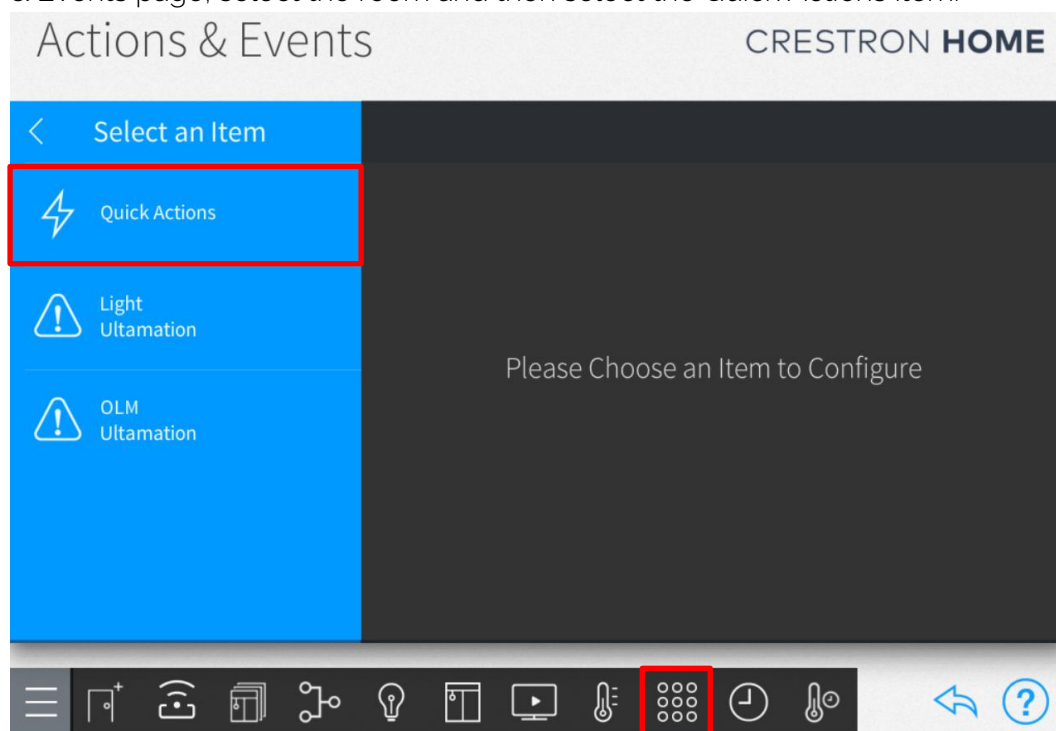


On State (occupancy timer running)

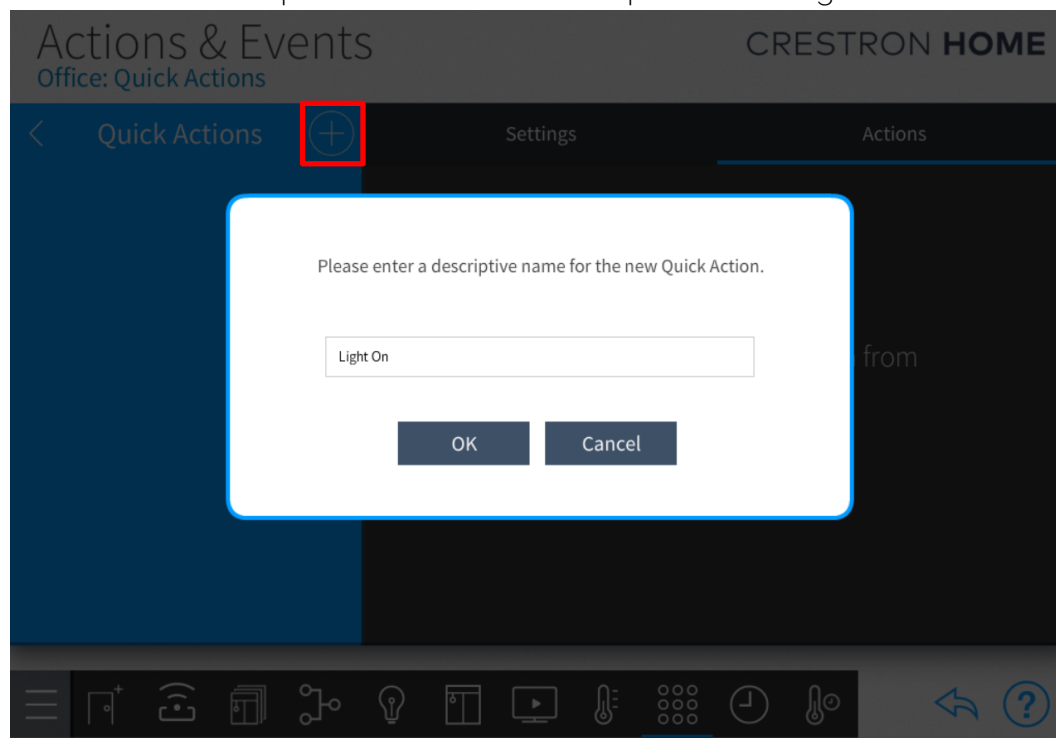
Example

As an example, here is a setup for a light and a motion sensor in an office. An instance of Ultamation's UI Toggle Tiles is used to represent the light. Quick actions are used to emulate the light switch and motion detector. The Occupancy Logic Module has been named OLM. For simplicity, all the tiles are in the same room.

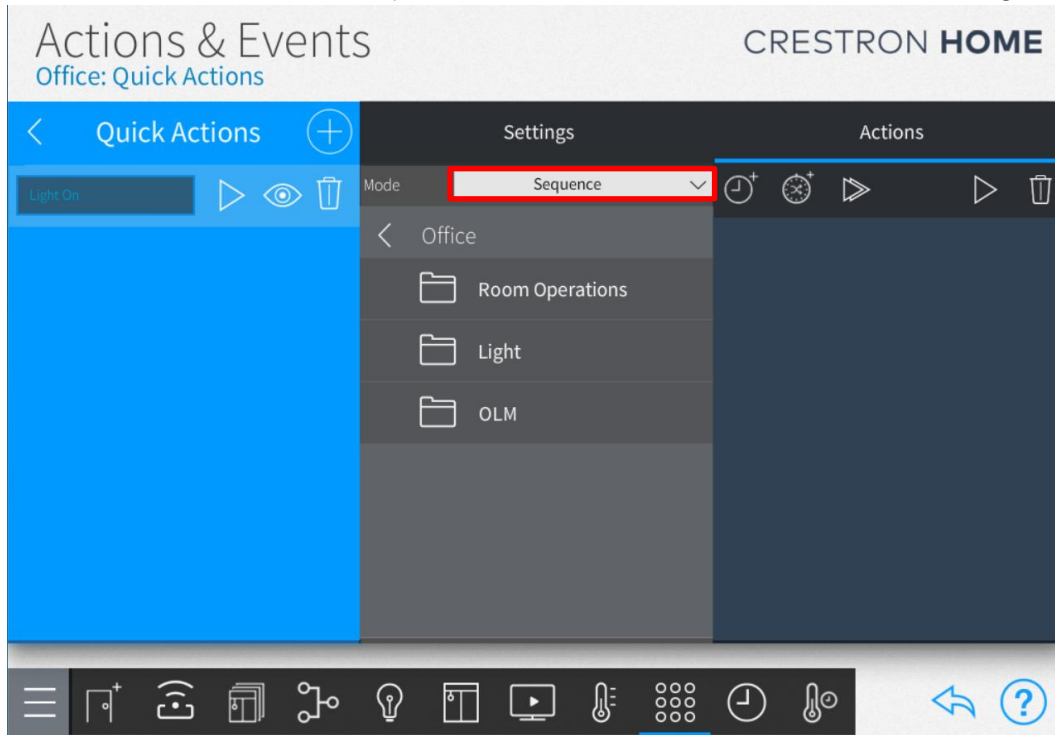
First, we will create the quick actions to turn off, on, and toggle the light. Go to the Actions & Events page, select the room and then select the Quick Actions item.



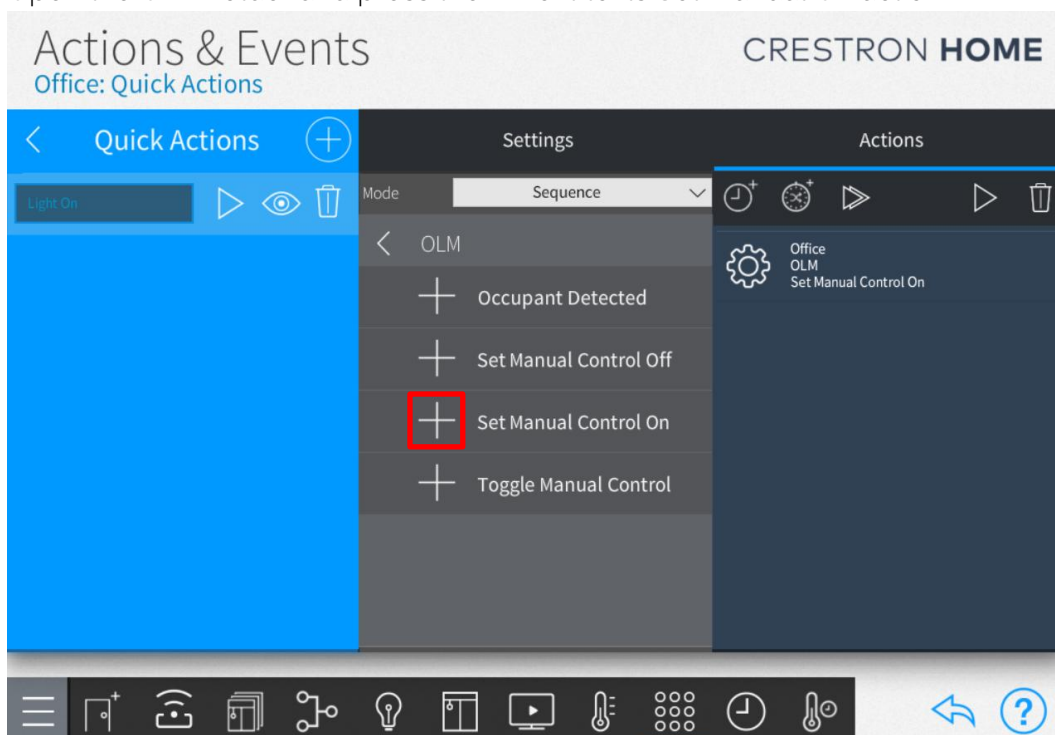
Press the '+' in the top left and name the new quick action "Light On".



Under actions, select the sequence mode. Then select the room containing the tiles.

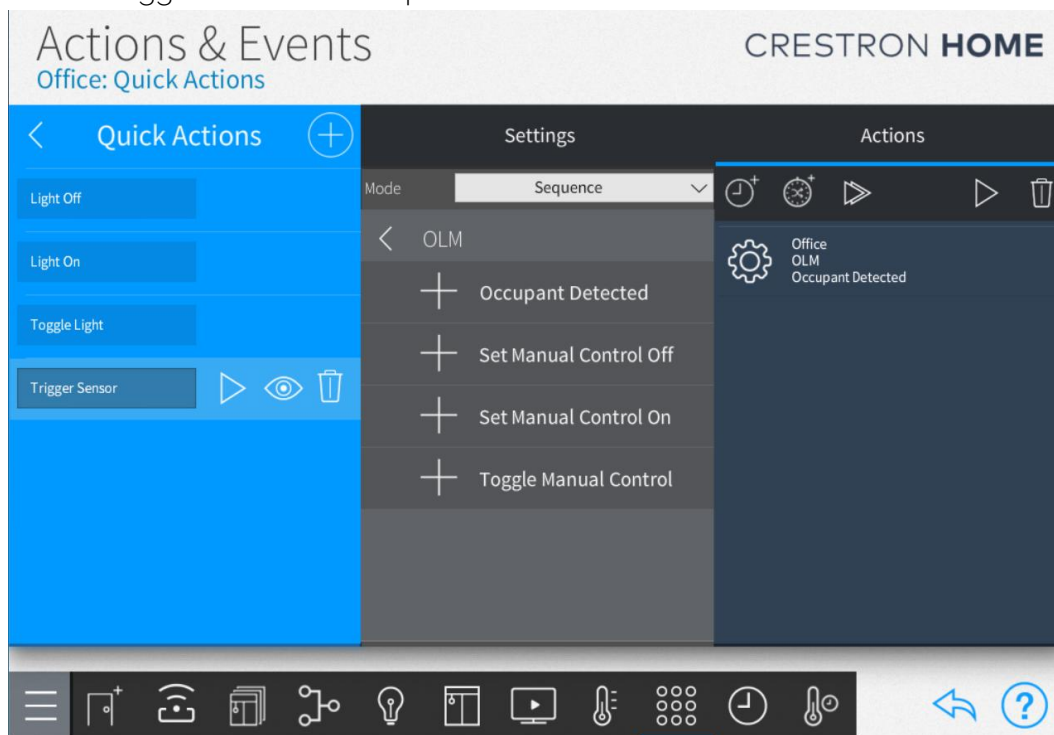


Open the OLM folder and press the '+' next to its Set Manual On action.

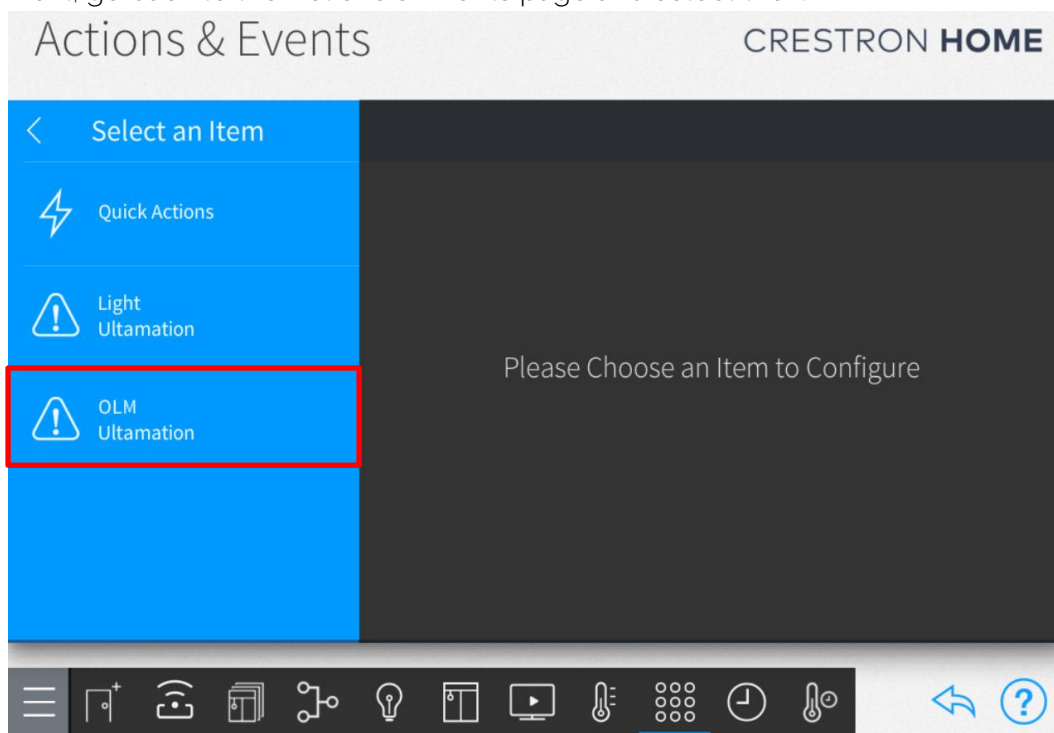


Repeat these last three steps for the following quick actions and OLM actions:

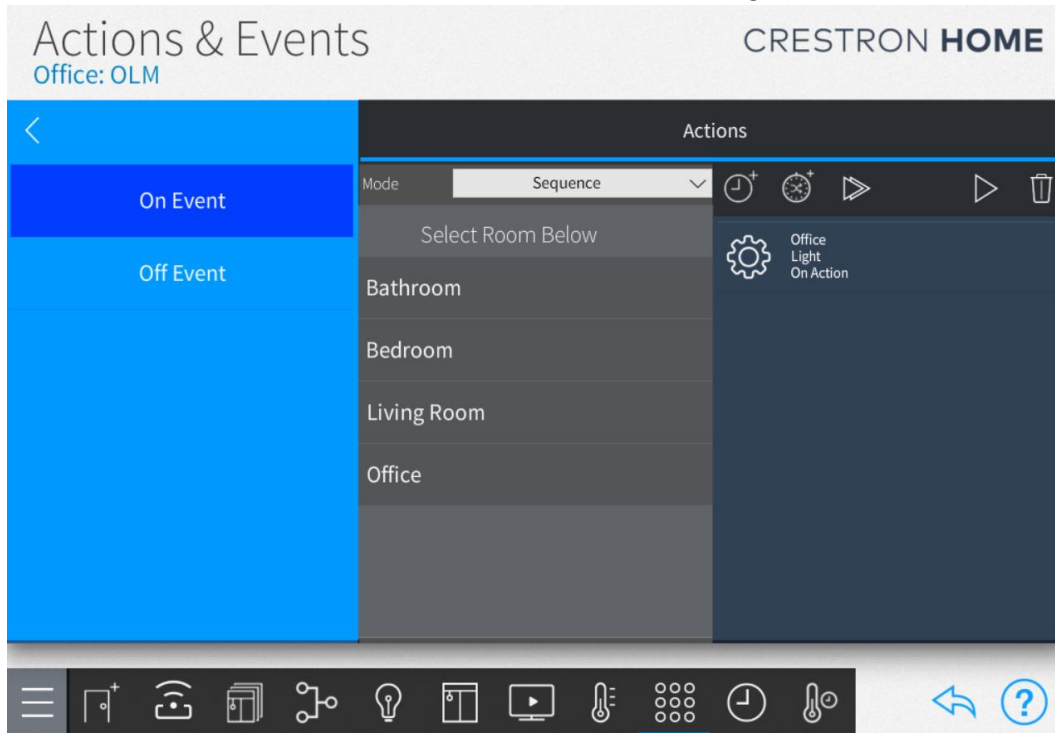
- Light Off – Set Manual Control Off
- Toggle Light – Toggle Manual Control
- Trigger Sensor – Occupant Detected



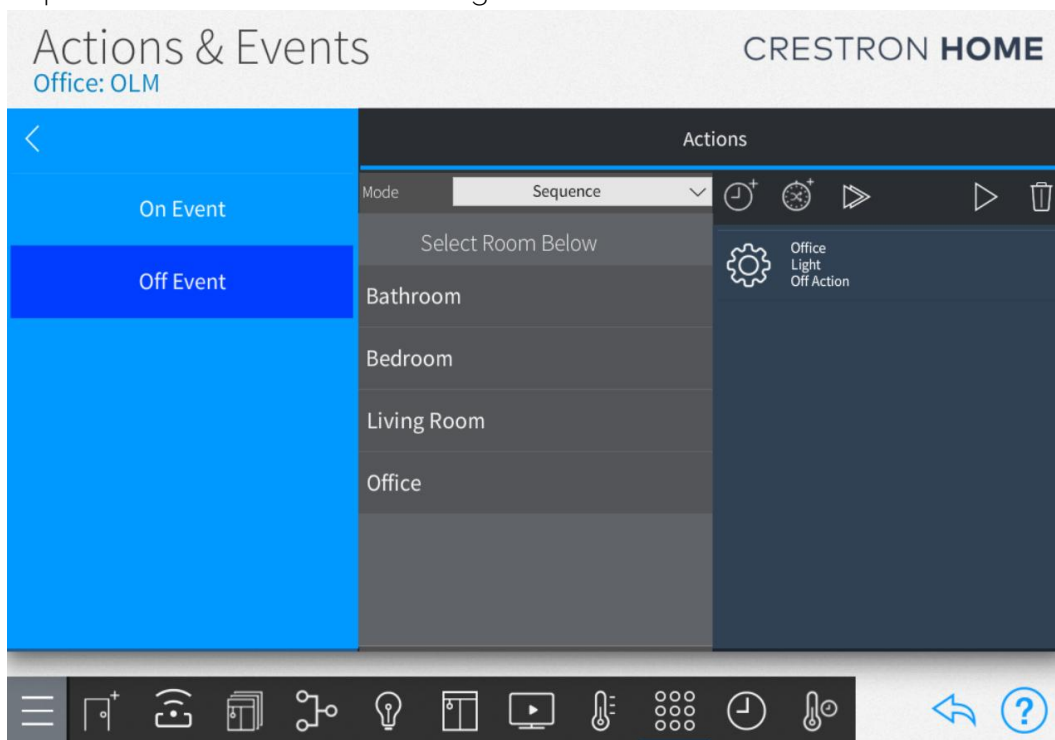
Next, go back to the Actions & Events page and select the OLM.



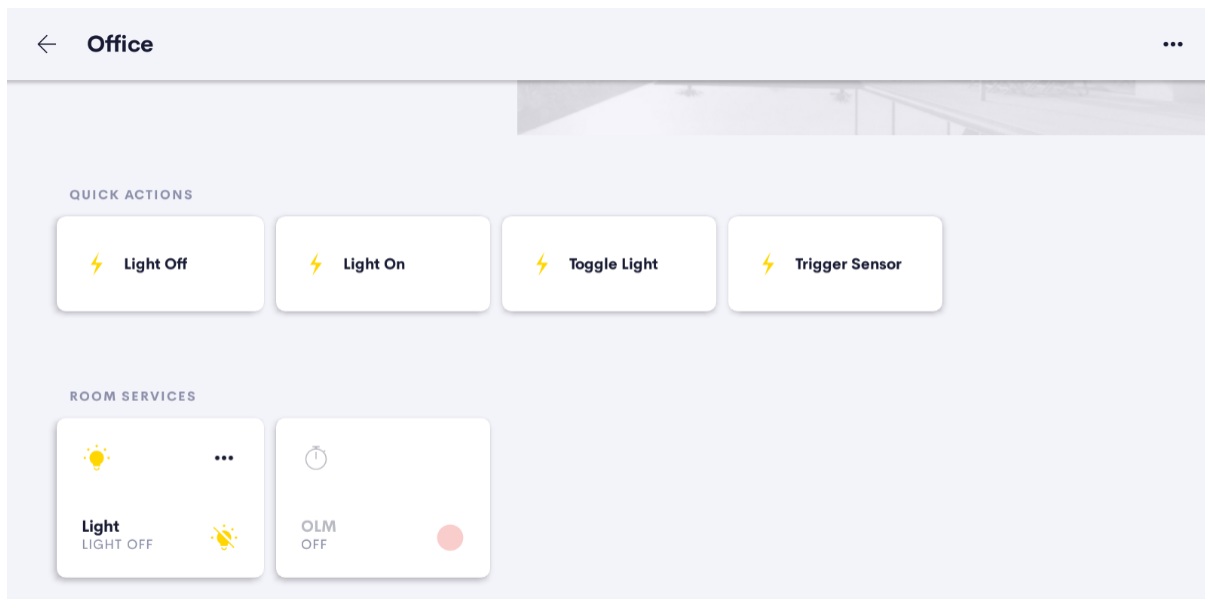
Connect the OLM's On Event to the On Action for the Light.



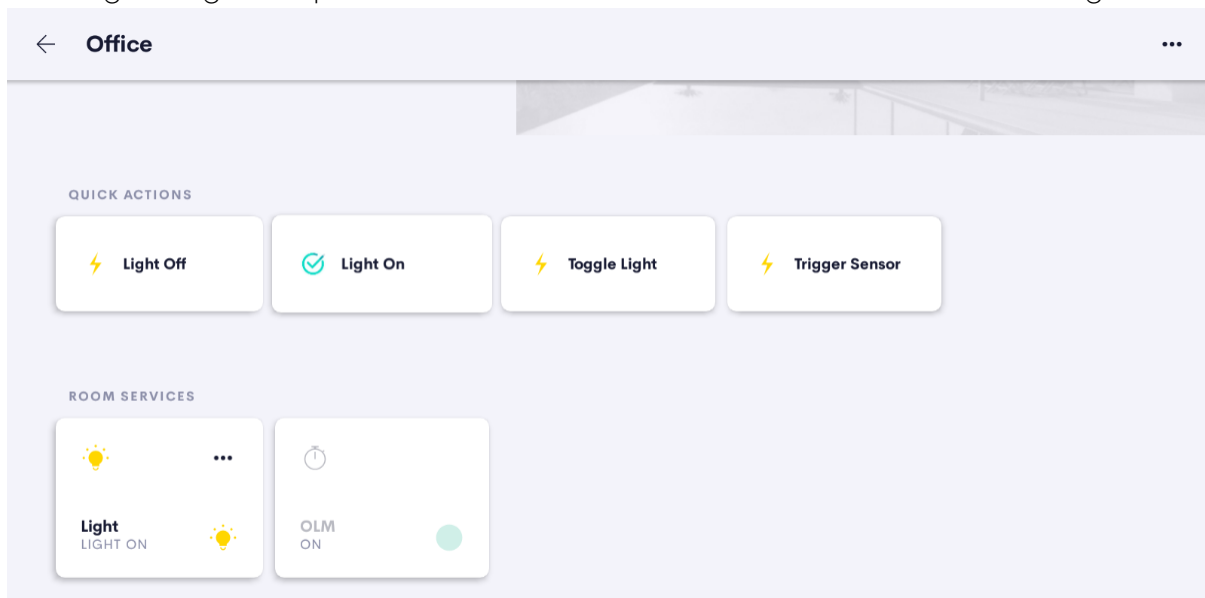
Repeat for the Off Event and the Light's Off Action.



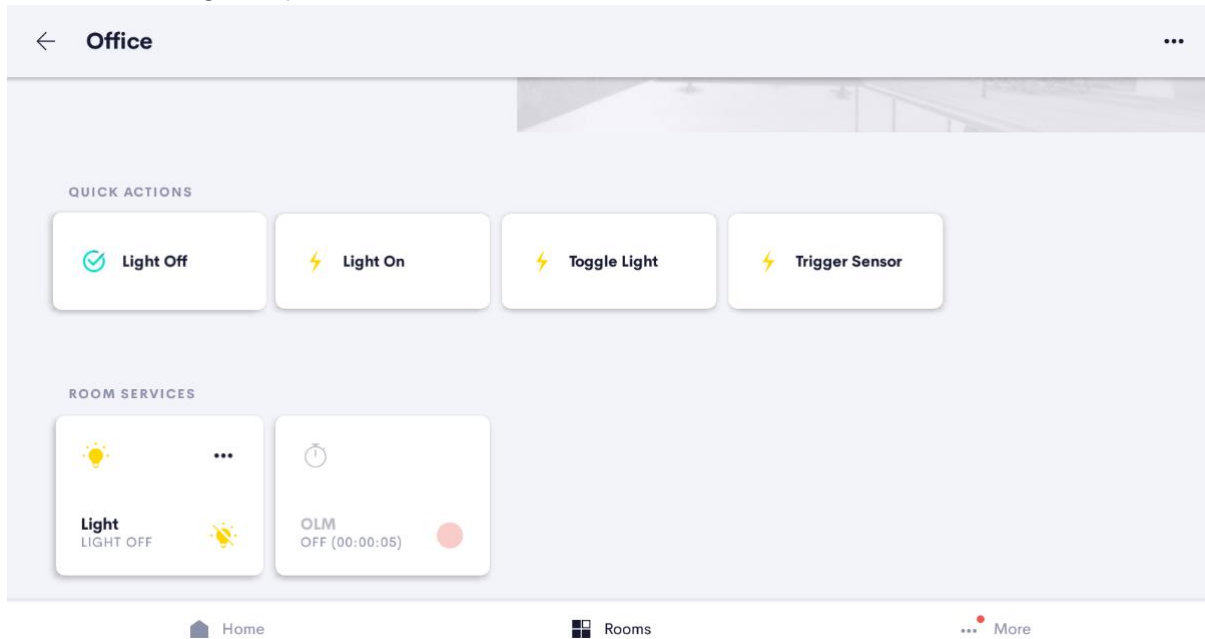
In the room this will create the following screen:



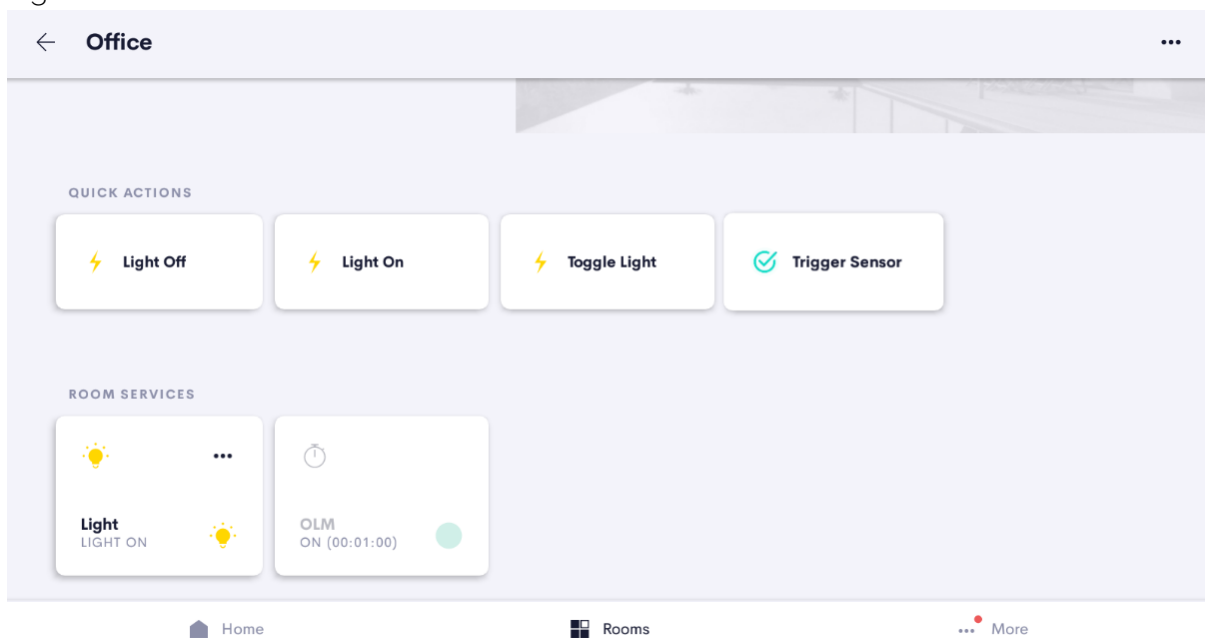
Pressing the Light On quick action will turn on the OLM which then turns on the light.



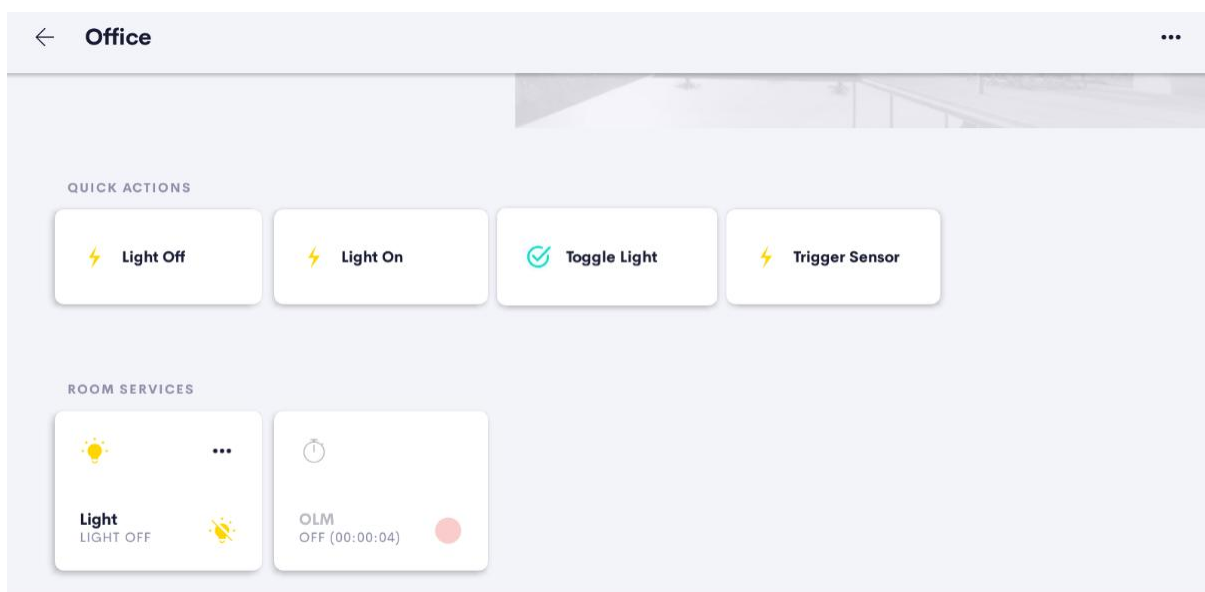
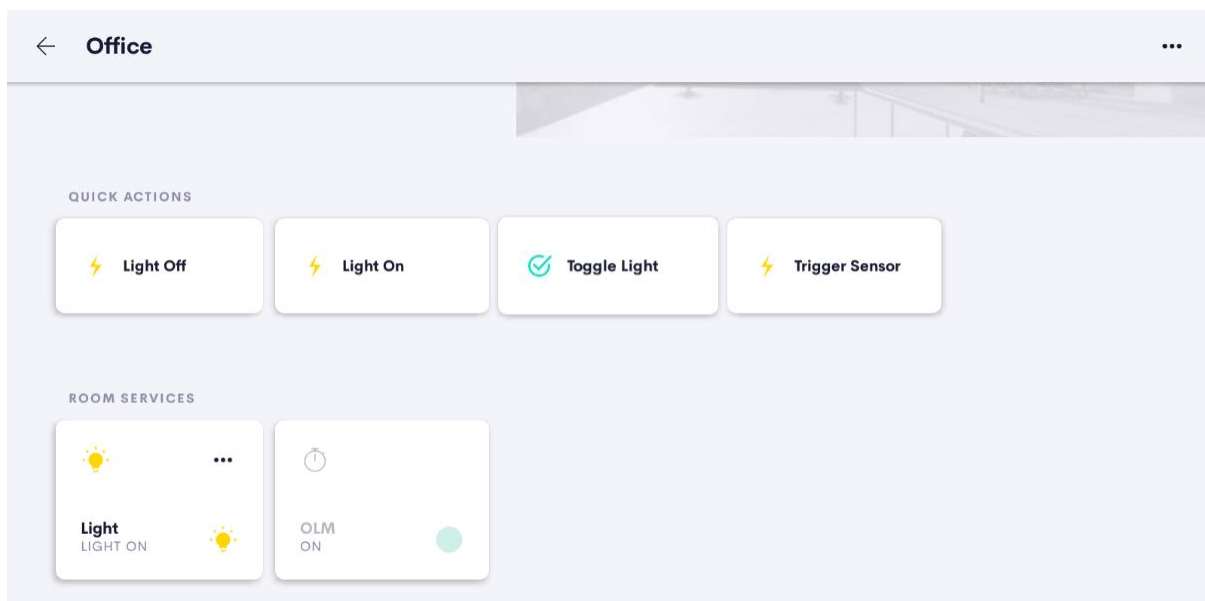
Pressing the Light Off quick action will turn off the OLM which then turns off the light. It also starts the grace period.



When the grace period has ended, pressing the Trigger Sensor quick action will temporarily turn on the OLM and Light. When the timer on OLM elapses, the OLM and Light will turn off.

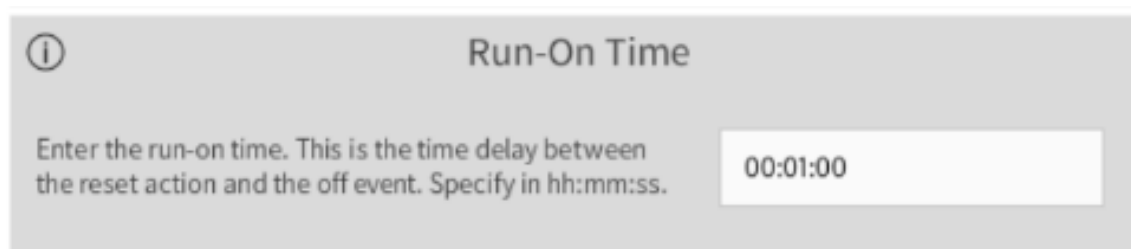


The Toggle Light quick action will change the OLM and Light from off to on or vice versa.



Run-On Timer

This driver is intended for situations where you want to turn on two devices at once but then have the one device stay on for some time following the other device being turned off. An example is a light and an extractor fan in a bathroom. The fan should turn on when the light is switched on. The fan should remain on as long as the light is. When the light is switched off, the fan should remain on for an amount of time and then switch off. This is the run-on time.



The only required parameter is the amount of time used by the timer. It should be specified in the format of hh:mm:ss. An invalid input here will result in the parameter defaulting to a value of 1 minute.

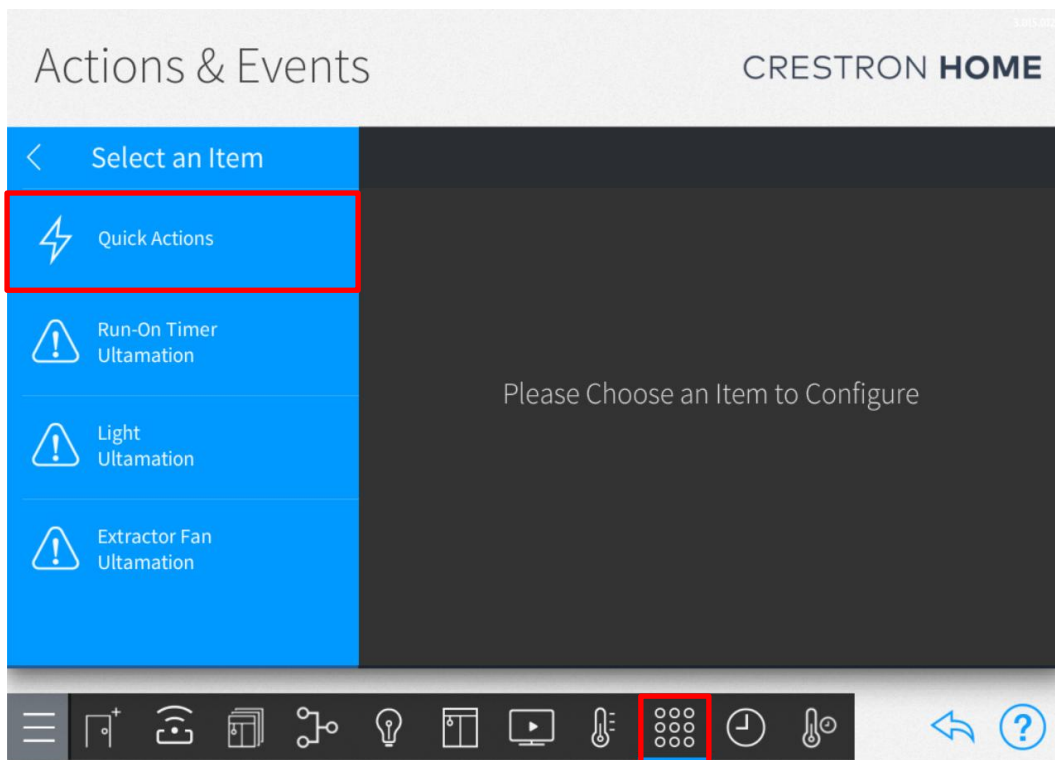
Actions & Events

The Run-On Timer driver has two programmable actions, Set and Reset, and two programmable events, On and Off. The Set action puts the tile in its on state and triggers the On Event. Reset starts the run-on timer. The Off Event is triggered when this timer elapses. the tile then moves to its off state.

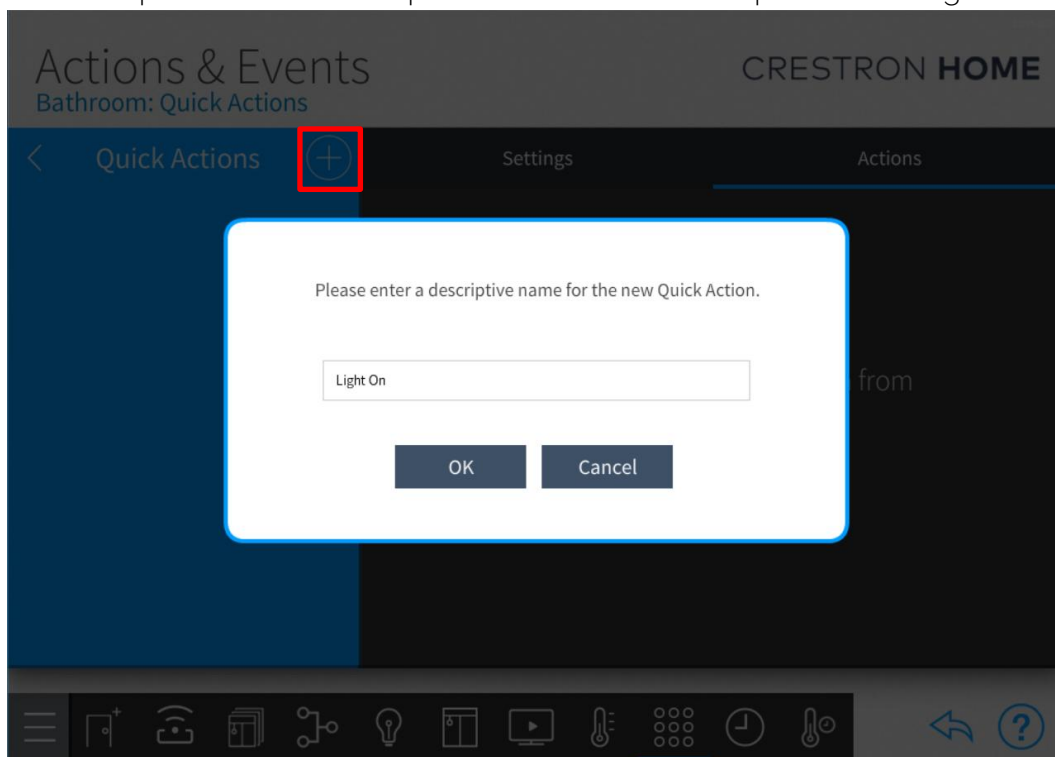


Example

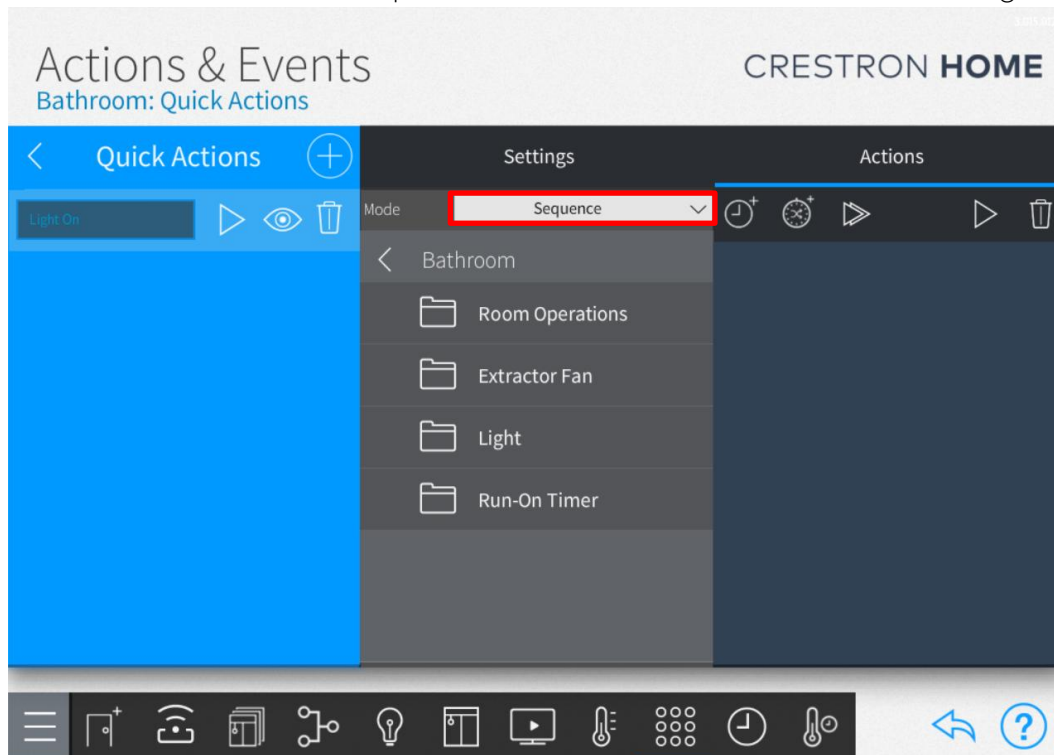
As an example, here is a set up for a light and extractor fan in a bathroom. Instances of Ultamation's UI Toggle Tiles are used to represent the light and fan. Quick actions are used to emulate the light switch. For simplicity, all the tiles are in the same room. First, we will create the quick actions to turn off and on the light. Go to the Actions & Events page, select the room and then select the Quick Actions item.



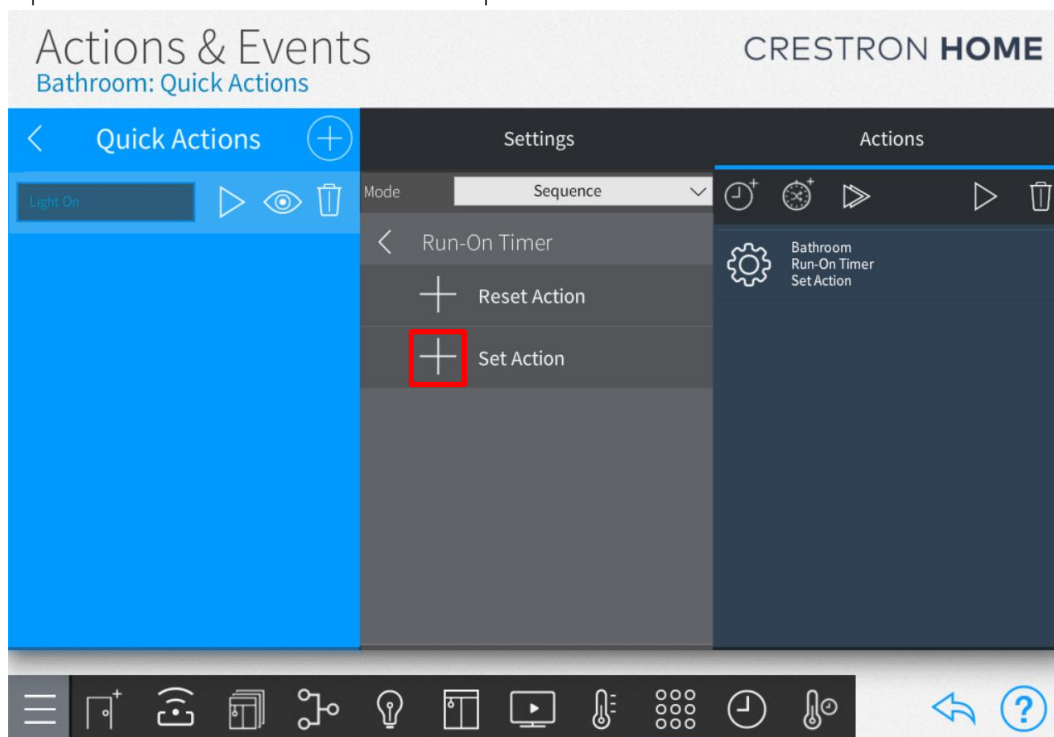
Press the plus button in the top left and name the new quick action "Light On".



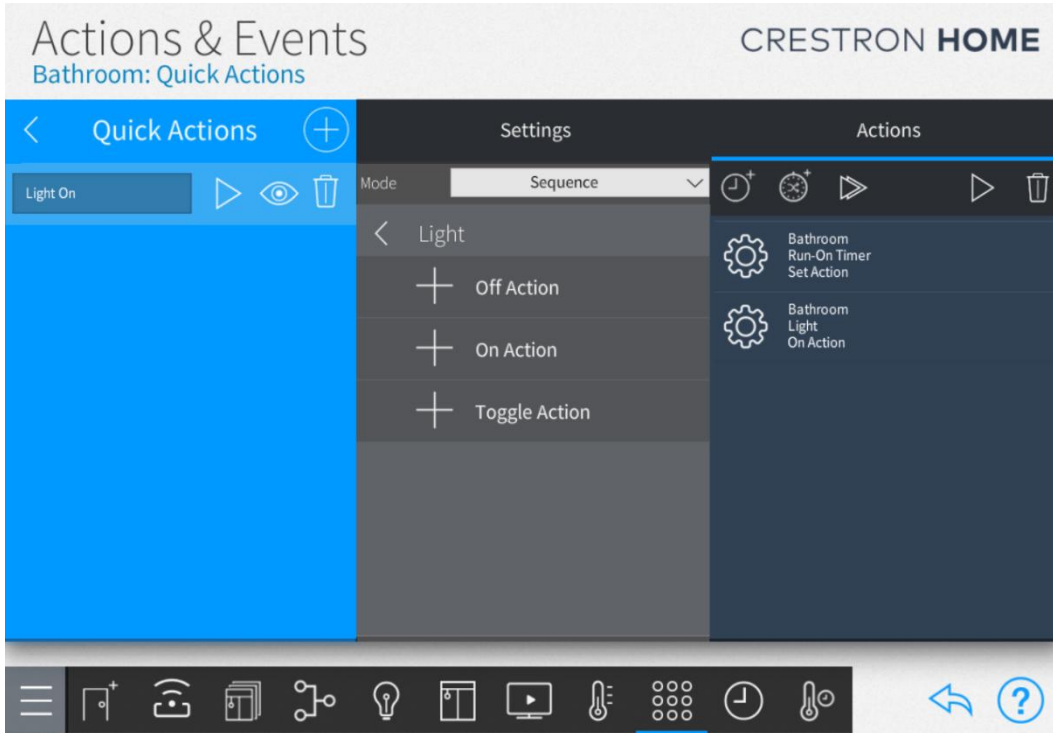
Under actions, select the sequence mode. Then select the room containing the tiles.



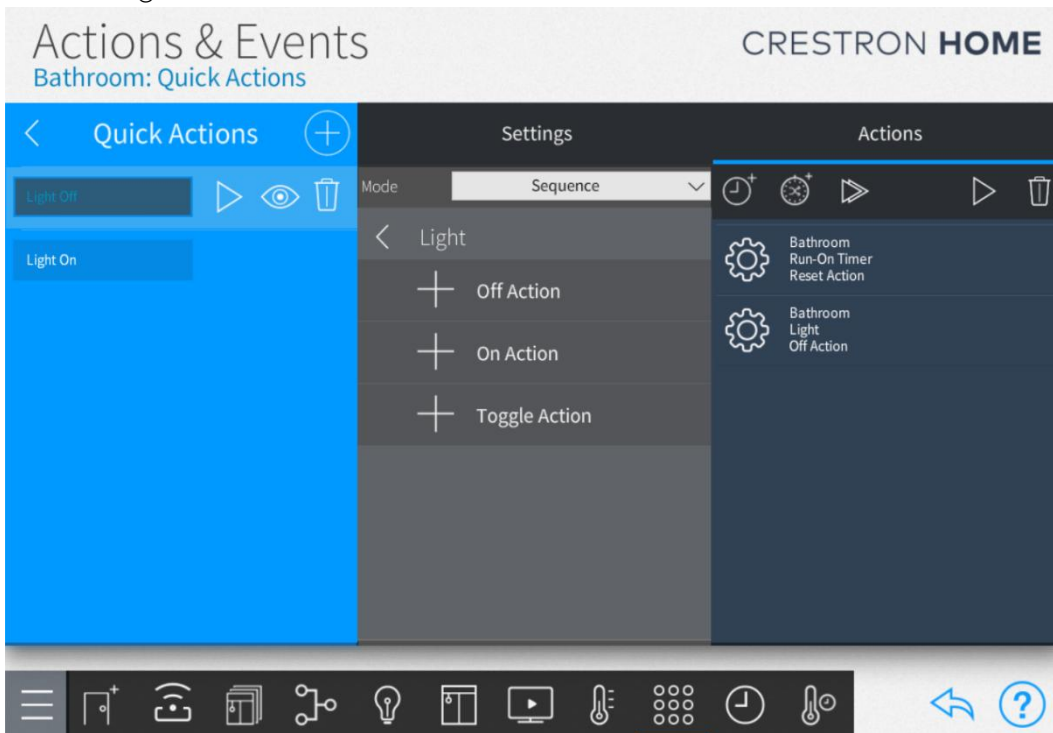
Open the Run-On Timer folder and press the '+' next to its Set Action.



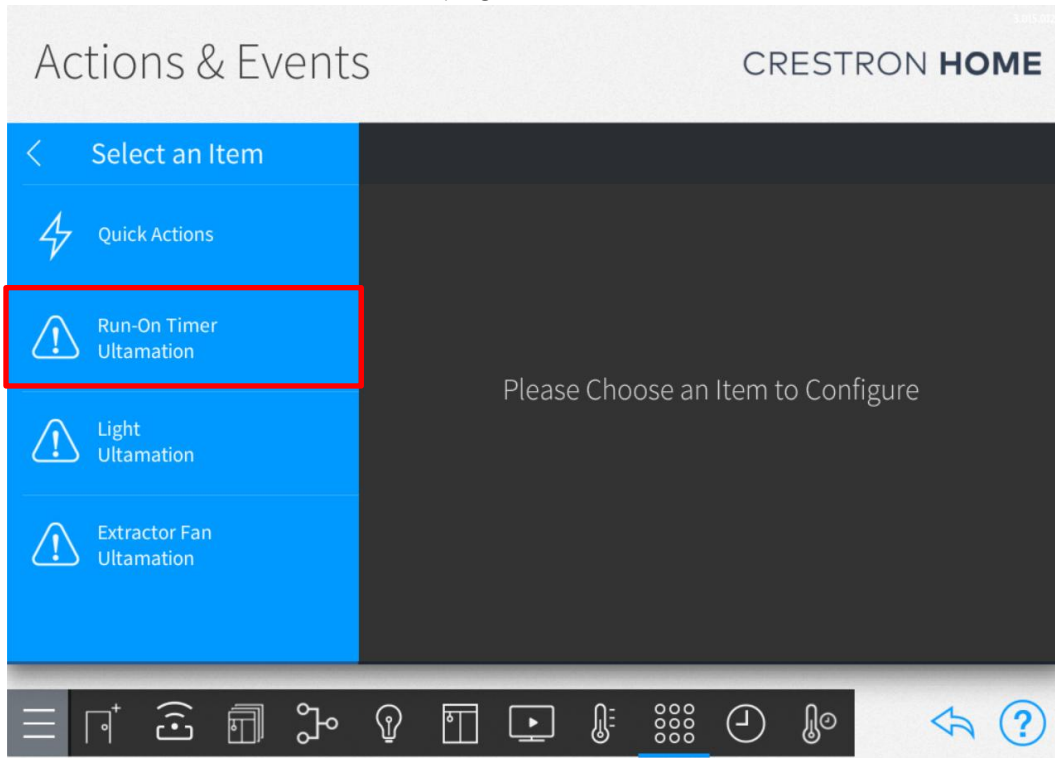
Then add the Light's On Action to this same quick action.



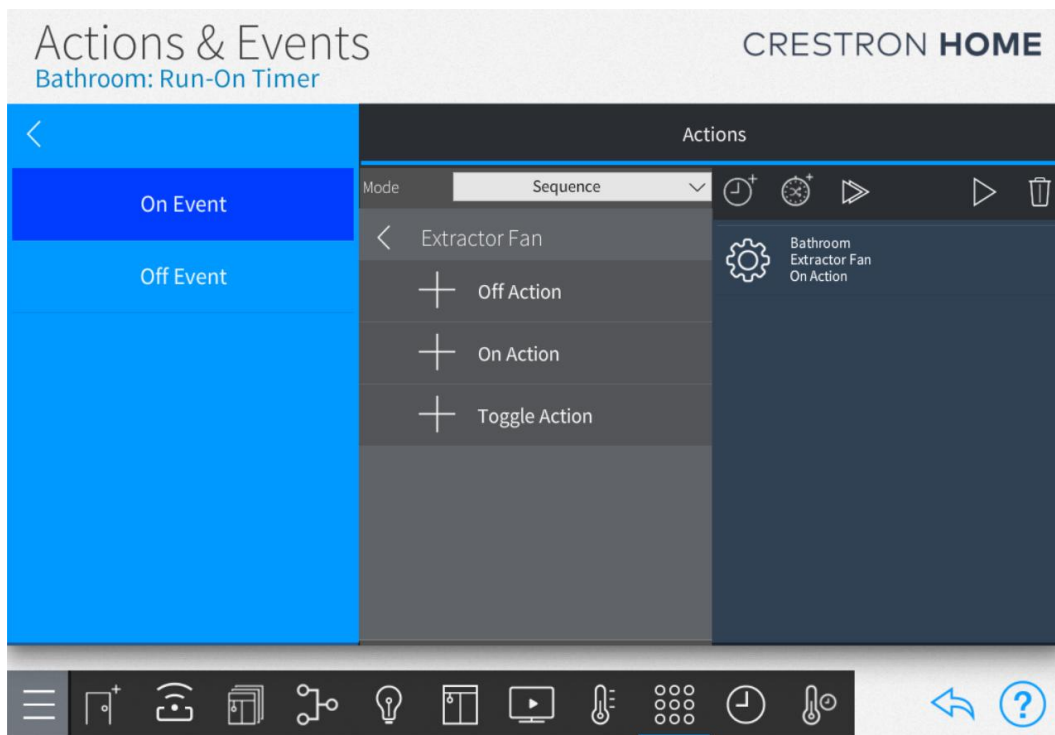
Next create a "Light Off" quick action and connect it to the Run-On Timer's Reset Action and the Light's Off Action.



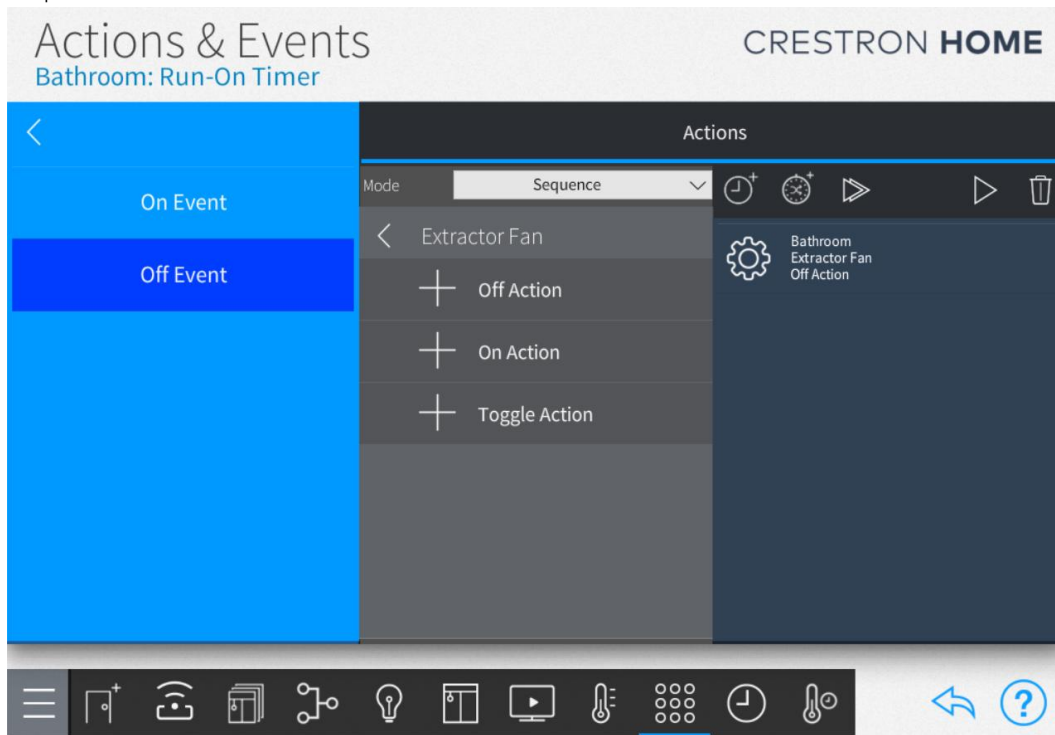
Go back to the Actions & Events page and select the Run-Timer.



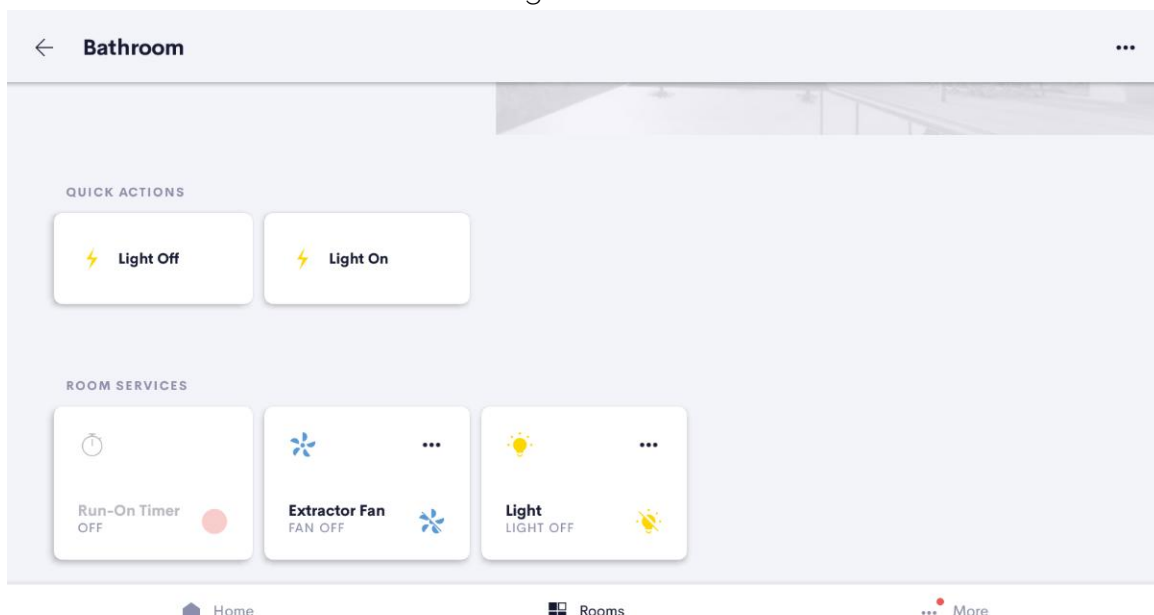
Connect the Run-On Timer's On Event to the On Action for the Fan.



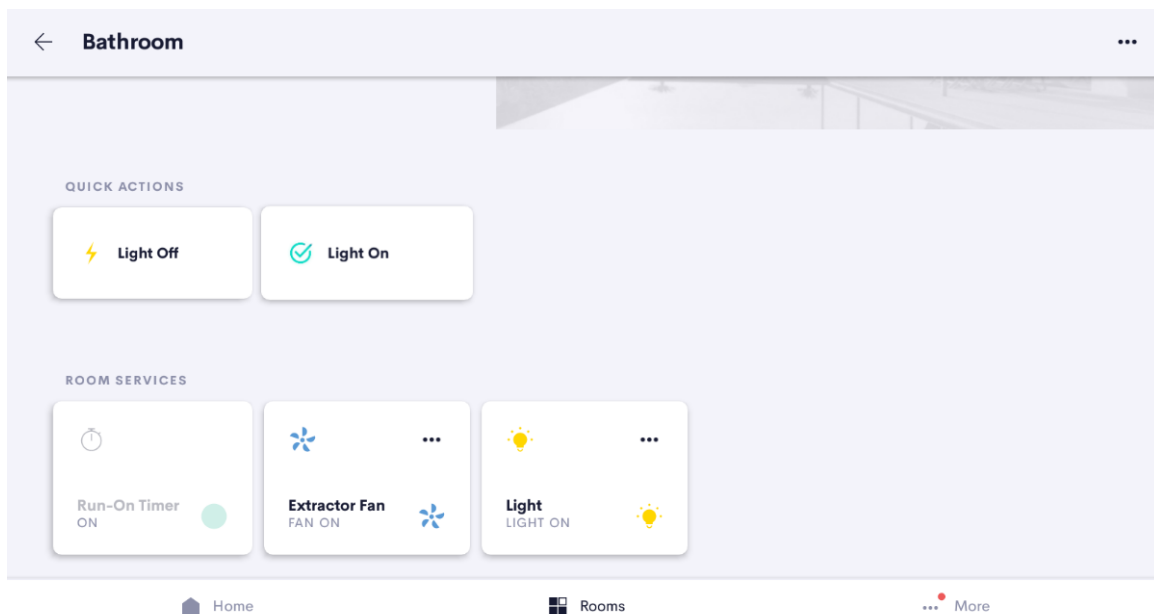
Repeat for the Off Event and the Fan's Off Action.



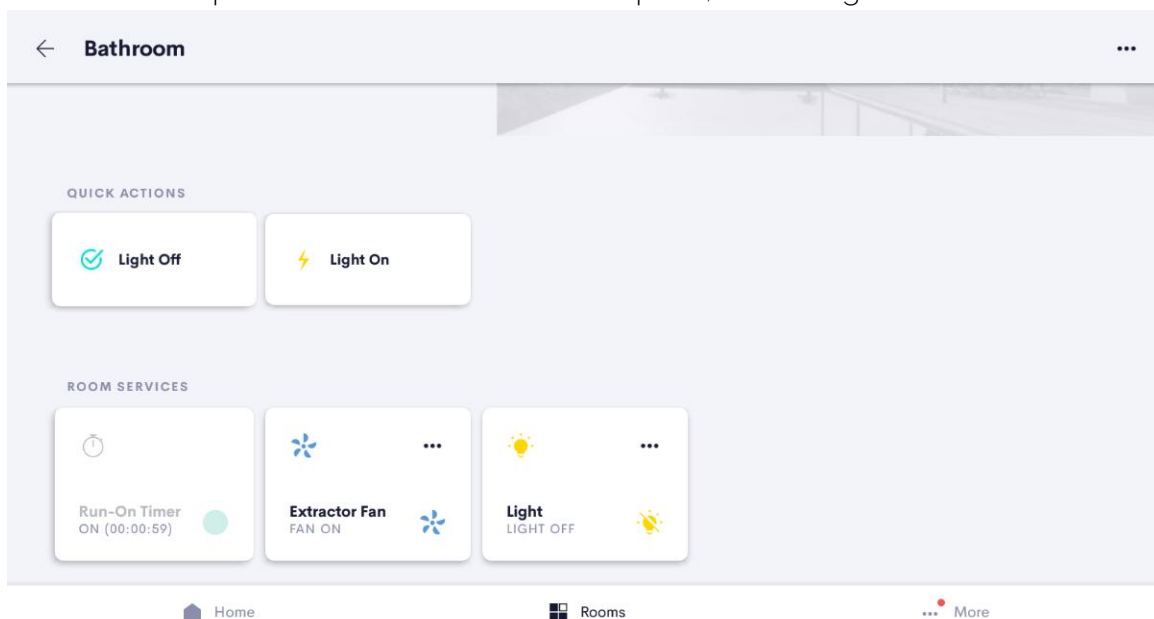
In the room this will create the following screen:



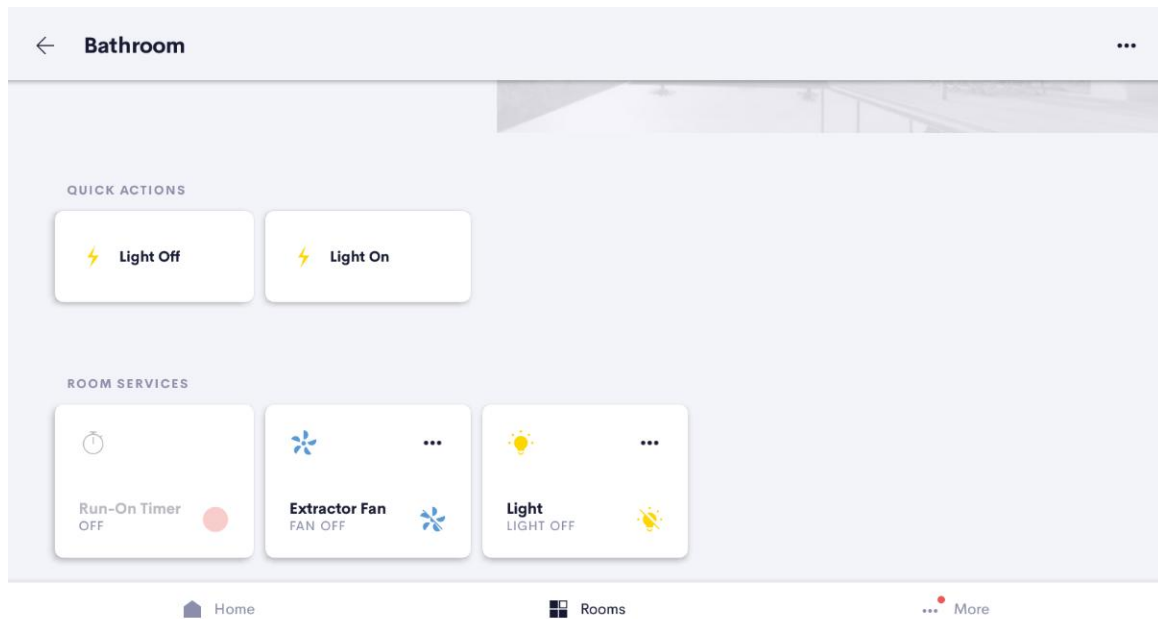
Pressing the Light On quick action will turn the light on and the Run-On Timer, which then turns on the Fan.



Pressing the Light Off quick action will turn the light off and trigger the Run-On Timer's reset action. This begins its timer. Pressing Light On at any point before the timer has finished will stop and reset it. The fan will be kept on, and the light will be turned back on.



When the timer has finished it will stop and reset, and the Run-On Timer will trigger its off event which turns the Fan off.



Oscillator

This driver implements the logic of an oscillator. Where an actual oscillator has a single input, this module has two actions called Input High and Input Low. Calling these represents the state of the input changing to high or to low. In the same manner there are two events, Output High and Output Low, which are invoked to indicate a change in the output. The low time and high time for the output can be set via parameters in the installation settings.

(i)

High Time

Enter the high time in seconds. Specify in hh:mm:ss.SSS.

00:00:05

(i)

Low Time

Enter the low time in seconds. Specify in hh:mm:ss.SSS.

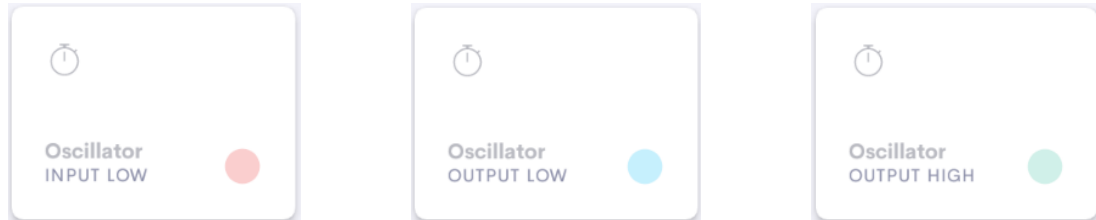
00:00:05

There are two parameters required. The first is the amount of time the output will be high for in each oscillation. It should be specified in the format of hh:mm:ss.SSS. An invalid input here will result in the parameter defaulting to a value of 5 seconds.

The second parameter is the amount of time the output will be low for in each oscillation. It should be specified in the format of hh:mm:ss.SSS. An invalid input here will result in the parameter defaulting to a value of 5 seconds.

Actions & Events

The Oscillator driver has two programmable actions, Input High and Input Low, and two programmable events, Output High and Output Low. The Input High action causes the tile to begin oscillating between the output high and output low states. Entering these states will trigger the Output High and Output Low events, respectively. The Input Low action puts the tile into the input low state, stops the oscillation, and triggers the Output Low event.



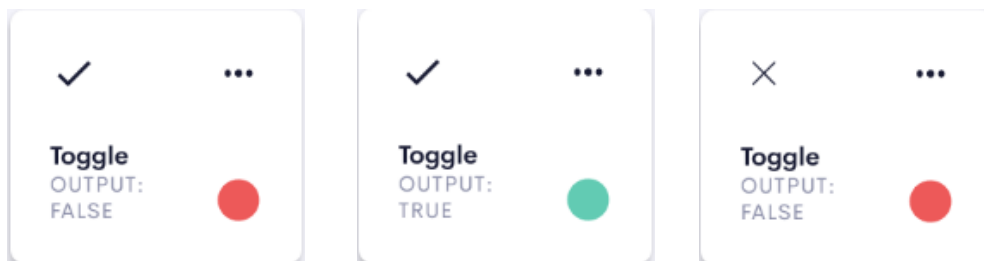
Toggle

This driver toggles between two outputs when it receives an input. For example, it could be used to toggle a light on and off when it receives input.

Actions & Events

The Toggle driver has three programmable actions, two for enabling/disabling events, and one for toggling the input.

It has two programmable events, 'Output High' and 'Output Low'. The high output is triggered when the first input is received, the low output when the second input is received, and alternates between the two outputs from there.



1. No output currently set

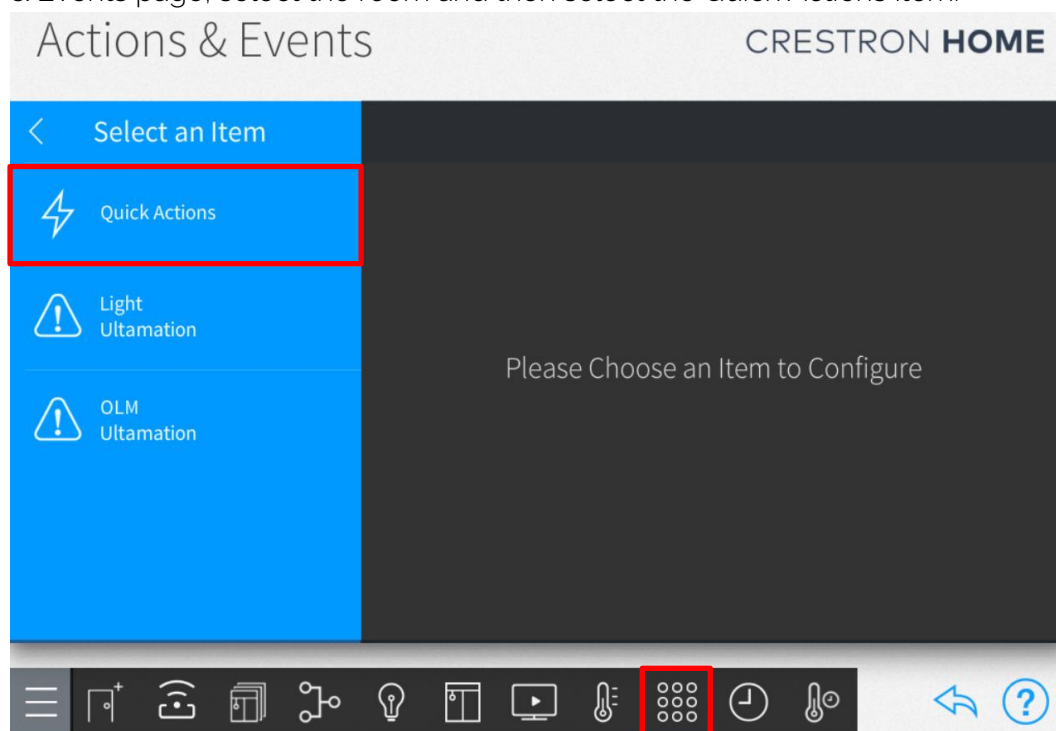
2. Output set

3. Events disabled

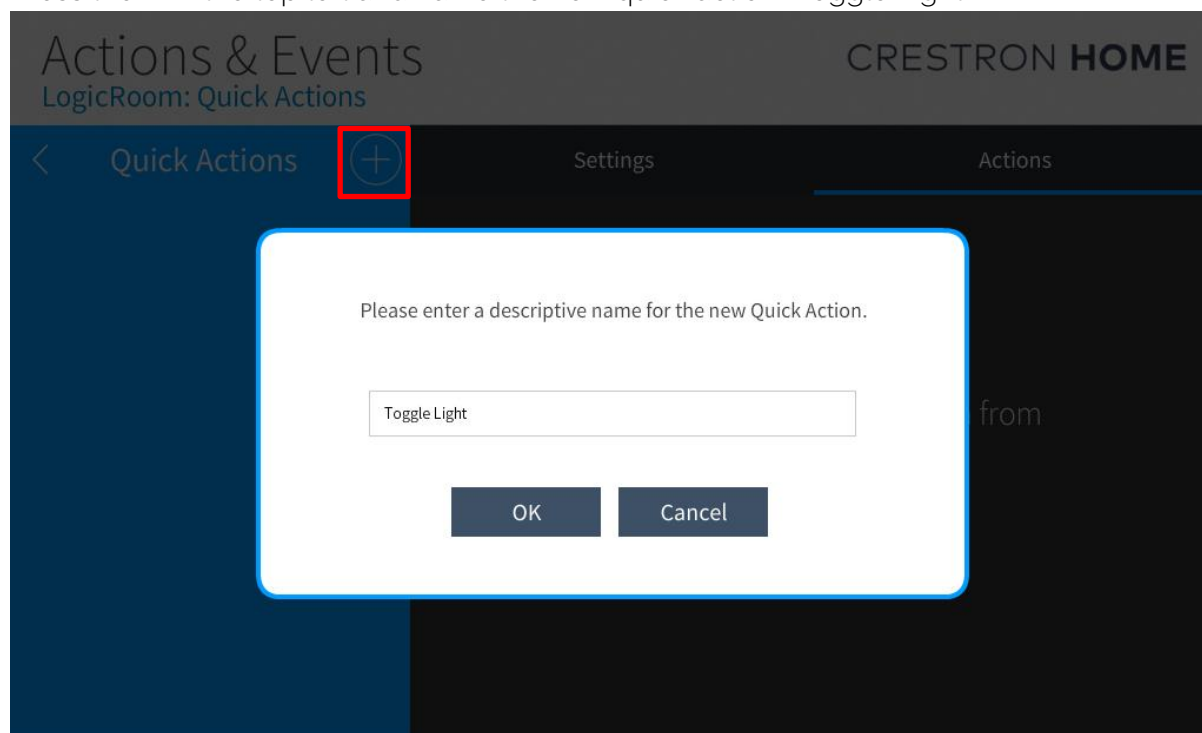
Example

As an example, here is a setup for a light in an office. An instance of Ultamation's UI Toggle Tiles is used to represent the light. Quick actions are used to emulate the light switch. The Toggle Module has been named Toggle. For simplicity, all the tiles are in the same room.

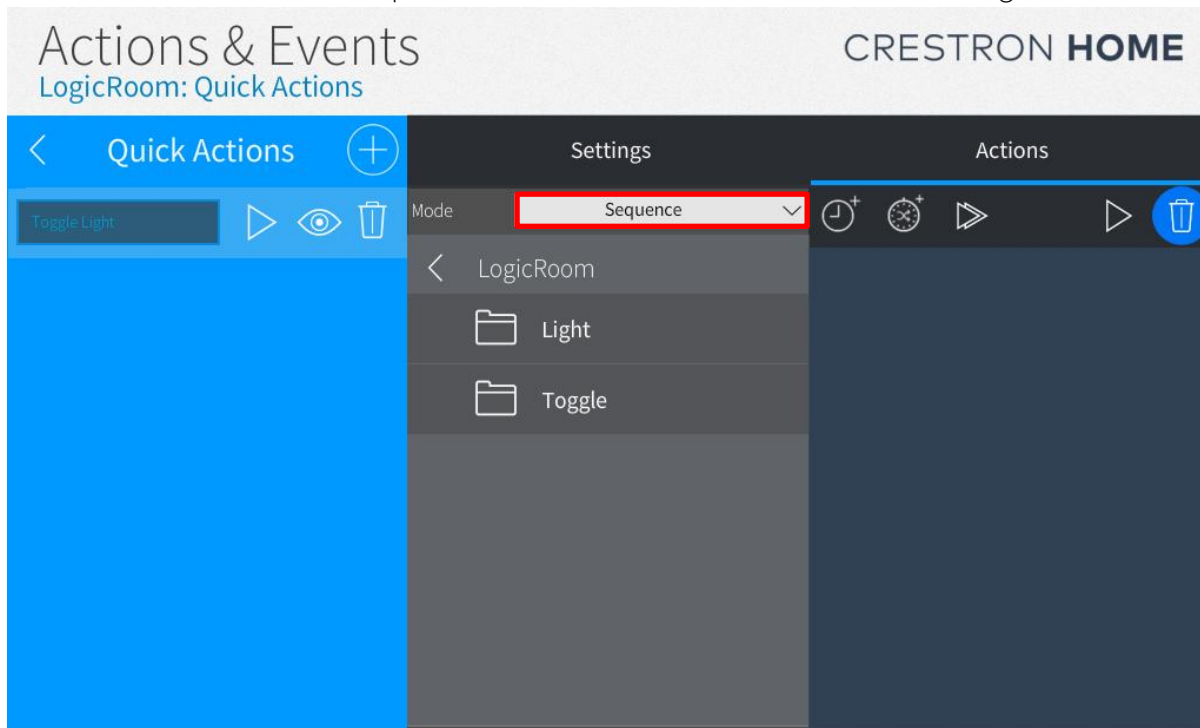
First, we will create the quick actions to turn off, on, and toggle the light. Go to the Actions & Events page, select the room and then select the Quick Actions item.



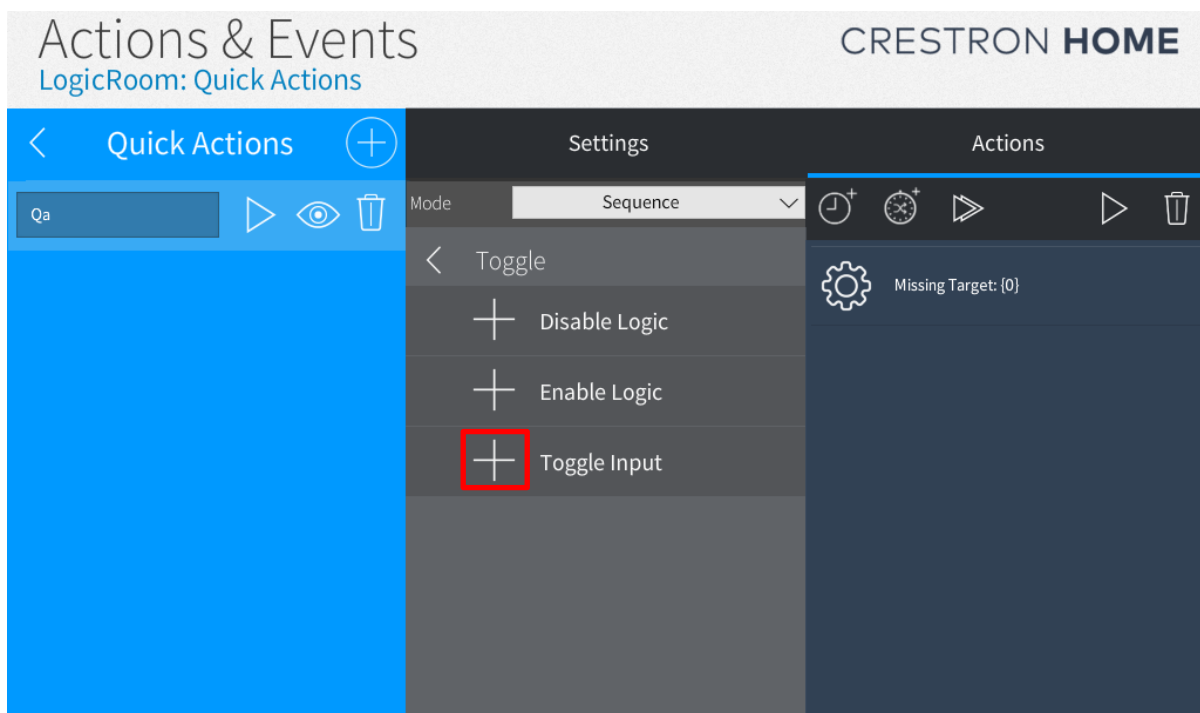
Press the '+' in the top left and name the new quick action "Toggle Light".



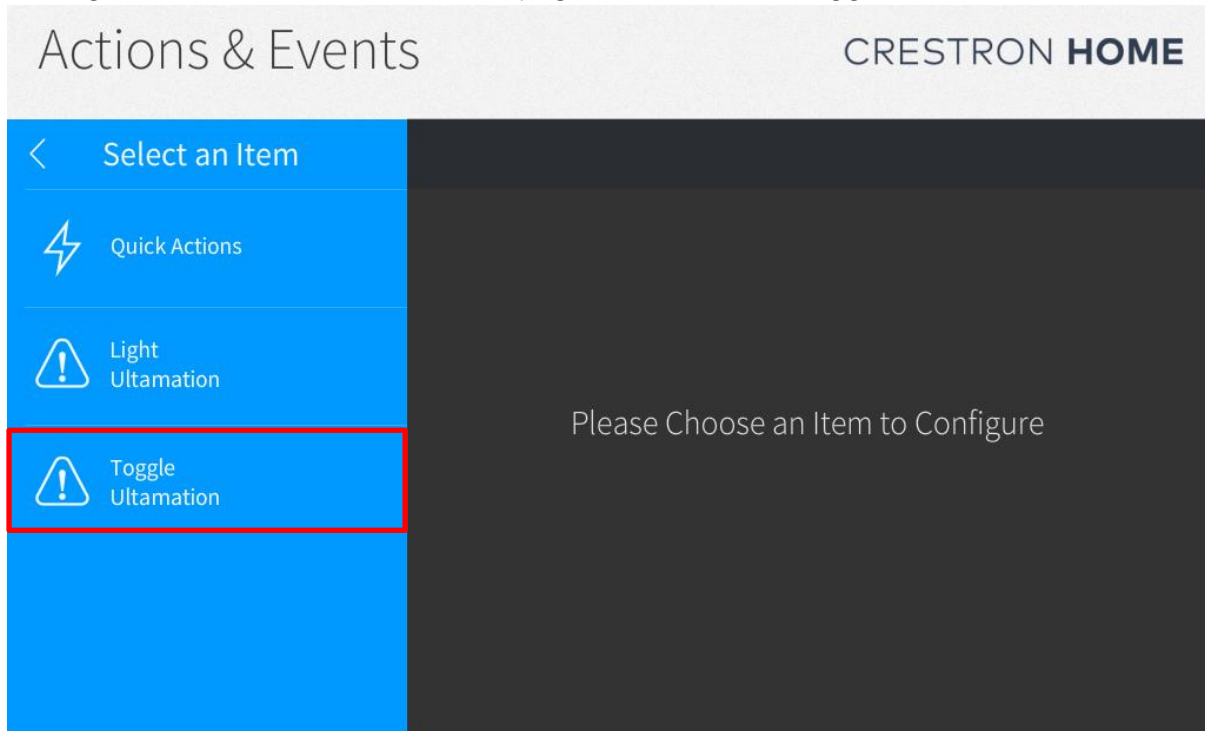
Under actions, select the sequence mode. Then select the room containing the tiles.



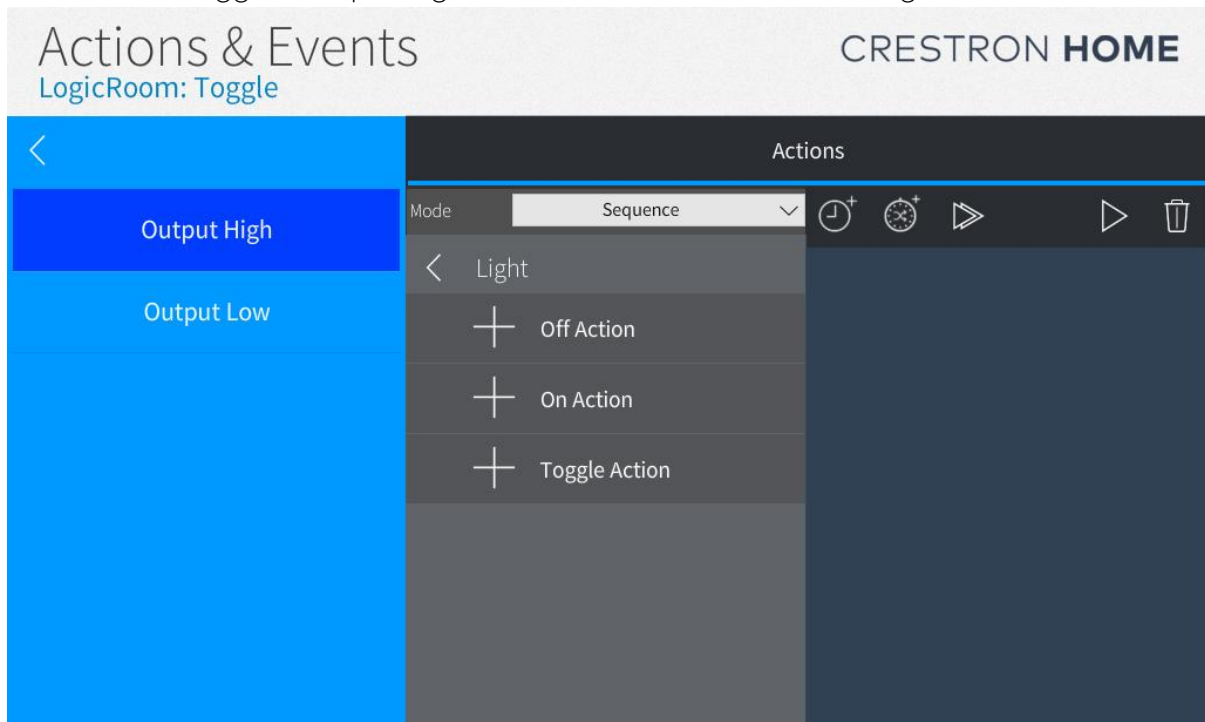
Open the Toggle folder and press the '+' next to its 'Toggle input' action.



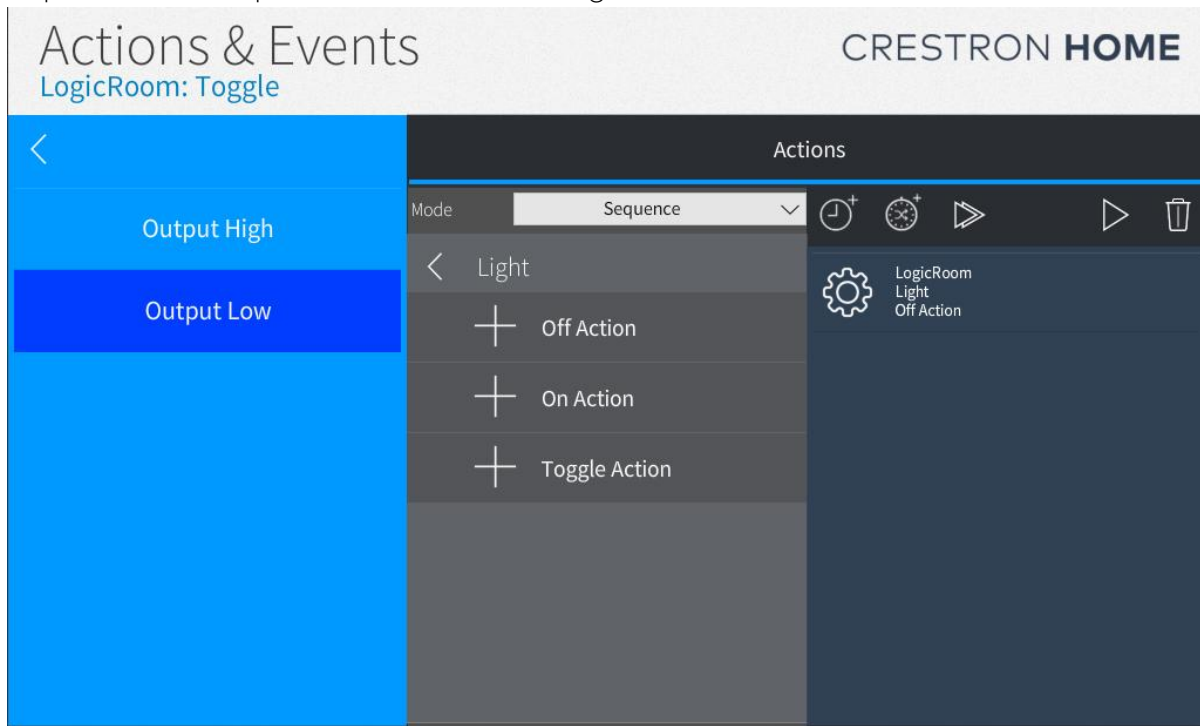
Next, go back to the Actions & Events page and select the Toggle.



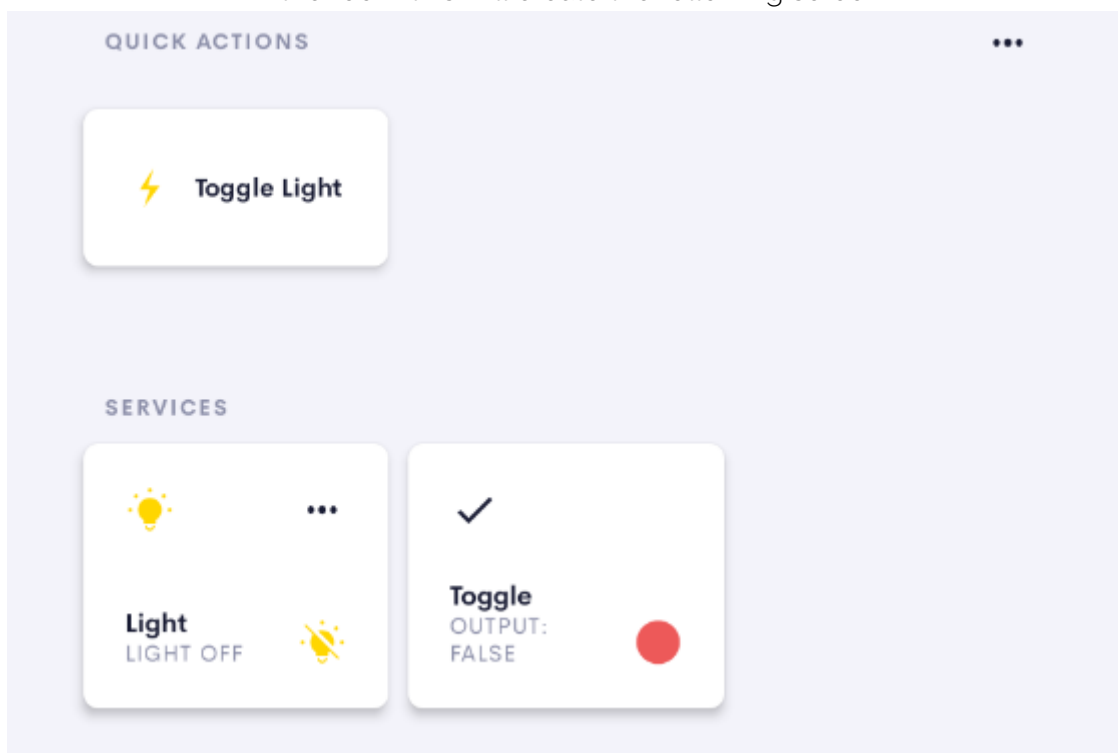
Connect the Toggle's Output High event to the On Action for the Light.



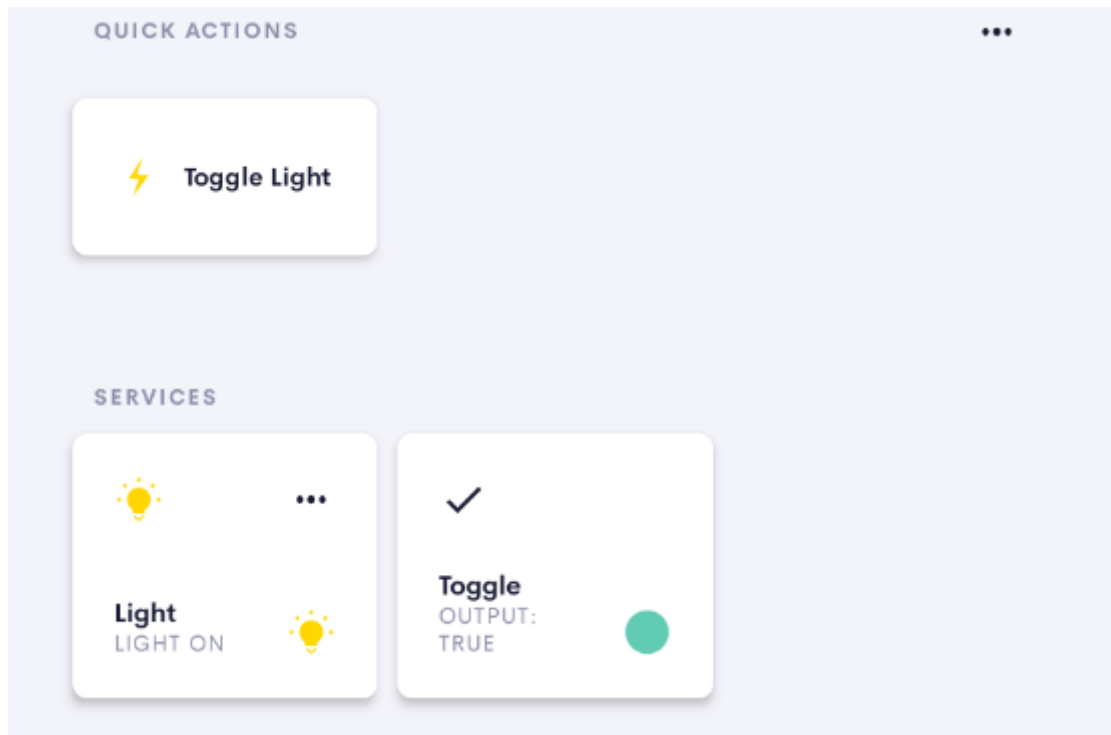
Repeat for the Output Low event and the Light's Off action.



In the room this will create the following screen:



Pressing the toggle light action will send an input to the Toggle driver, which will then toggle the light on or off.



Timer

This driver implements the logic of a countdown timer. Its tile displays the time it will elapse at.

Actions & Events

The Timer has three programmable actions (set, stop, reset) and three events (elapsed, reset, stopped).

The set action takes two parameters, the number of seconds to run for and an option to make the timer repeat indefinitely.

The stop action stops the timer and triggers the stopped event.

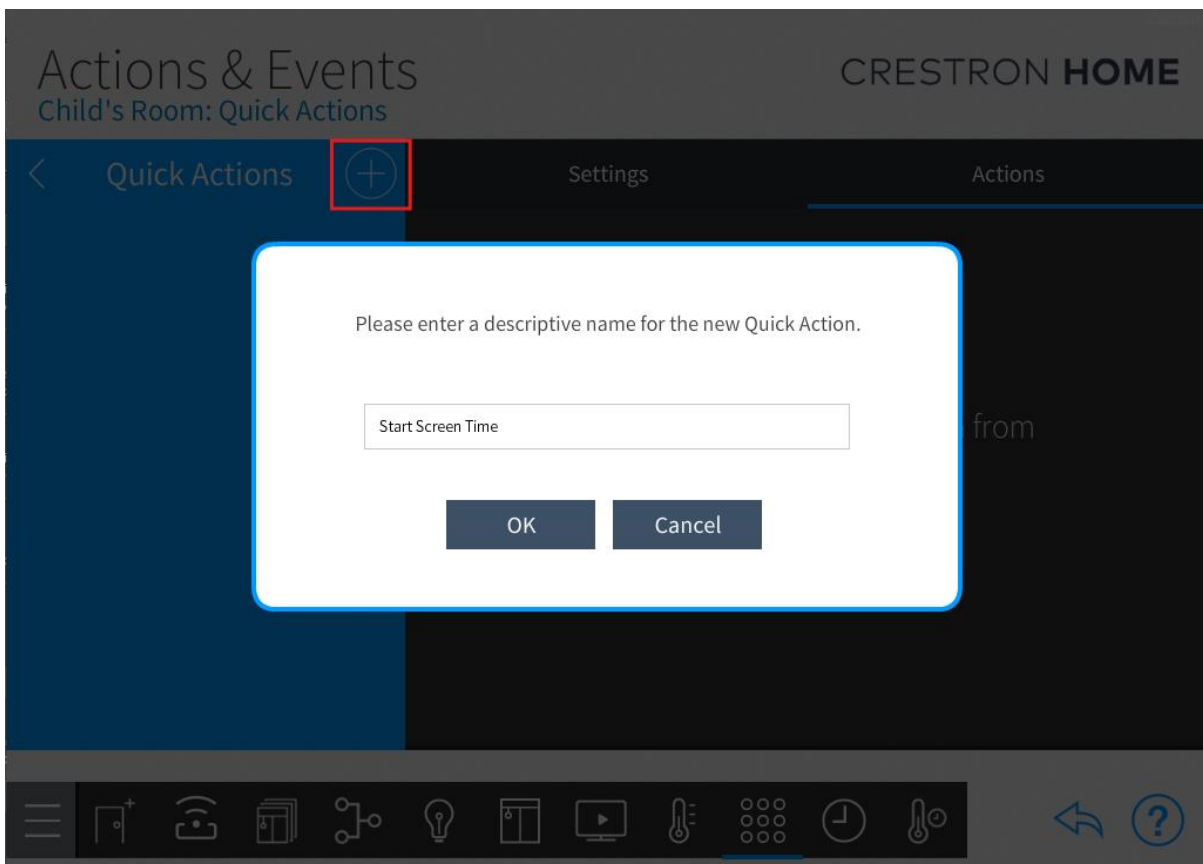
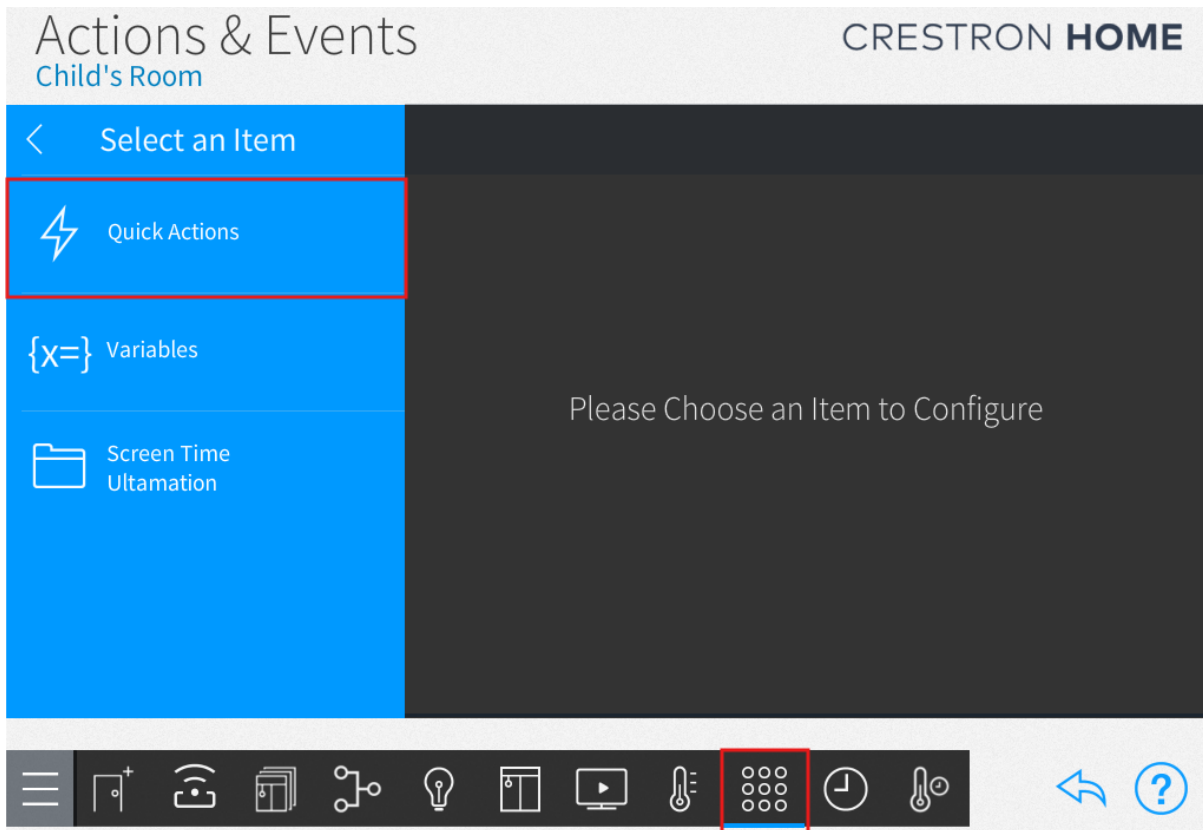
The reset action starts the timer again with the parameter values entered the last time the start action was triggered. It also triggers the reset event.

The elapsed event is triggered when the timer runs out without having been stopped.

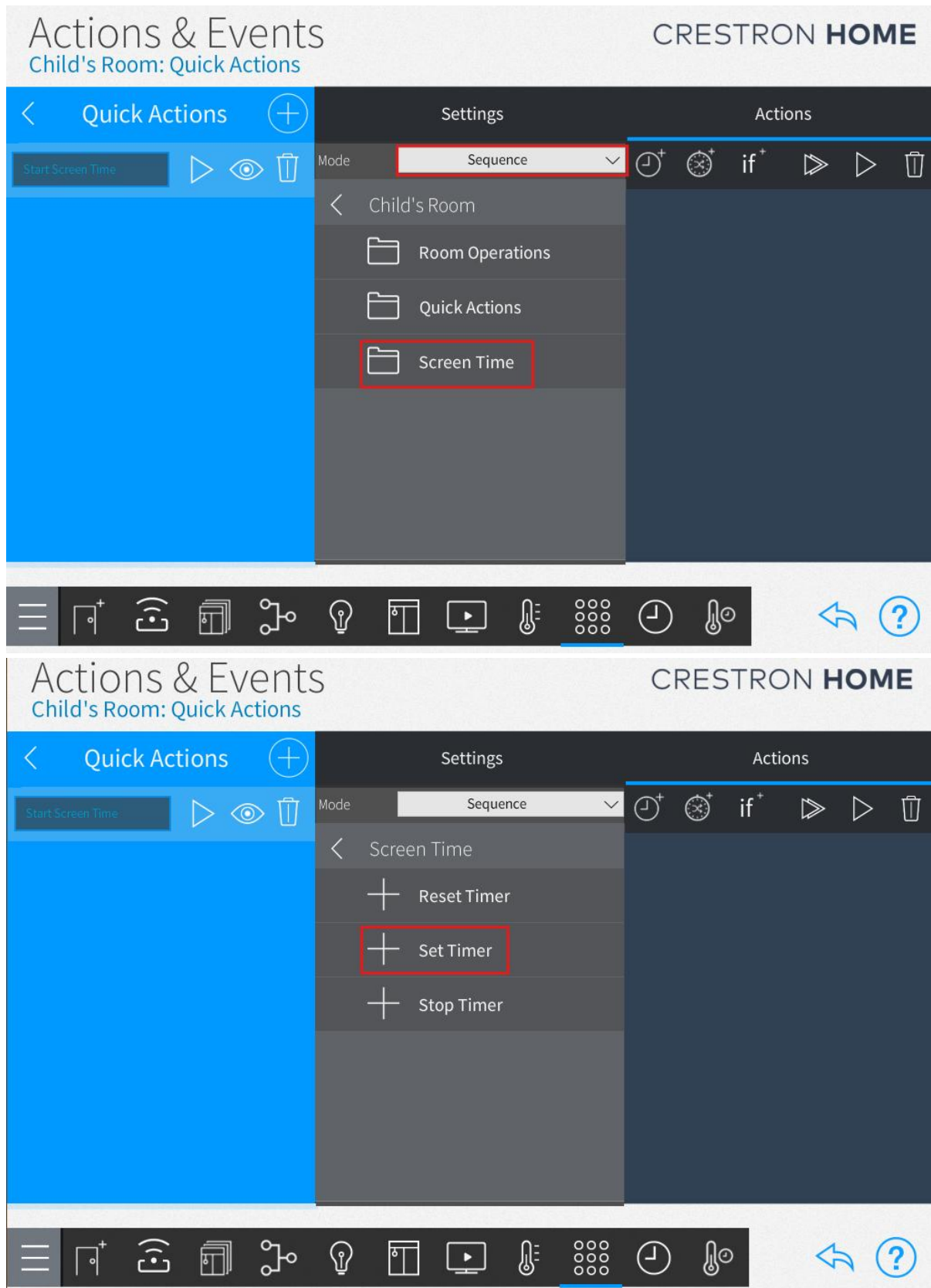
Example

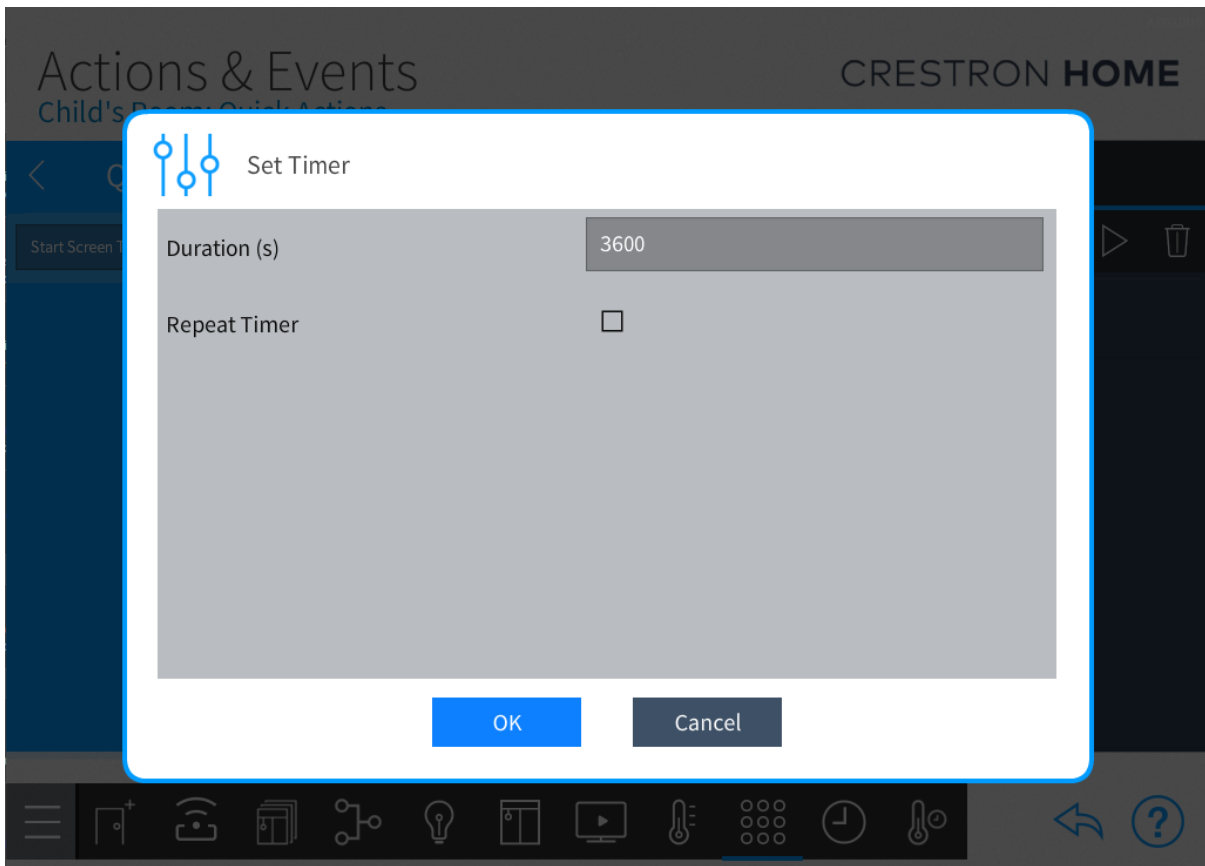
As an example, here's a setup for turning a TV off in a child's room after an allotted amount of "screen time".

First, add a Timer called "Screen Time" to the room along with a TV. Then create a quick action called "Start Screen Time".

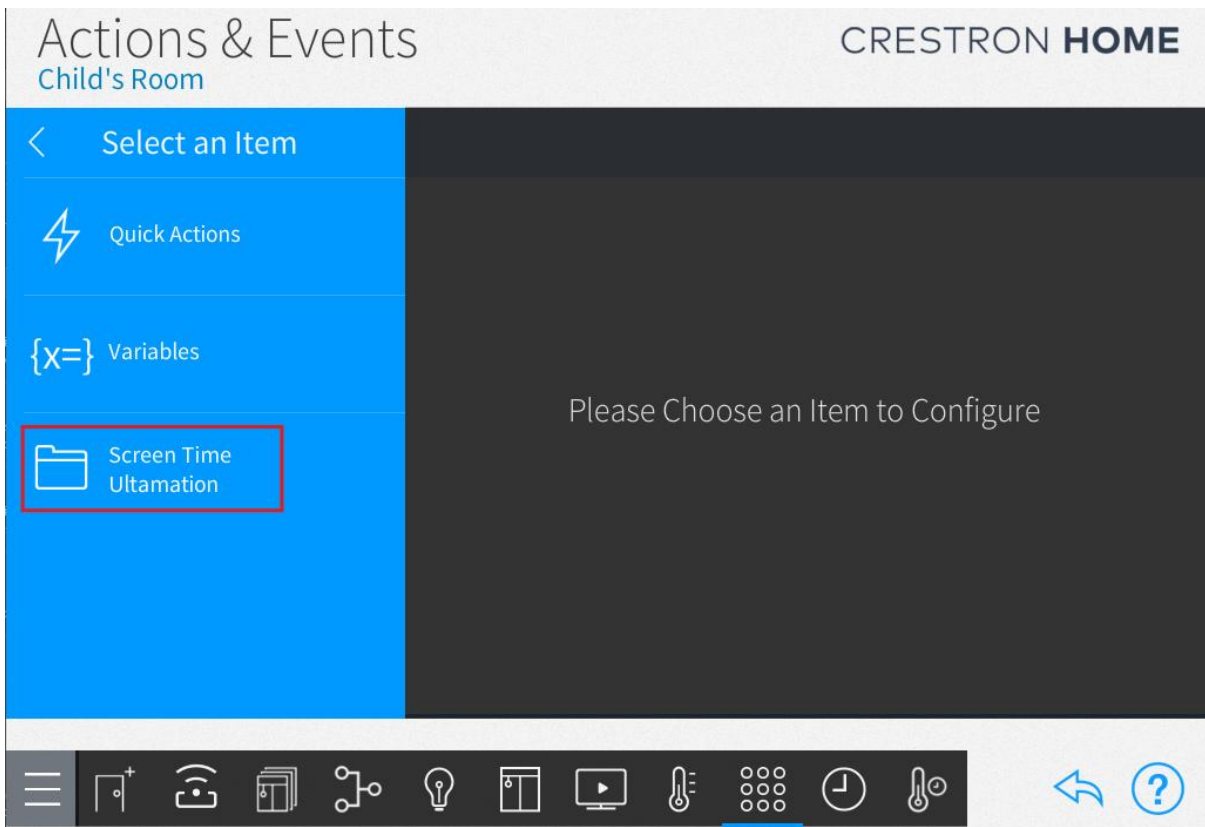


Under actions, select the sequence mode. Then select the room containing the Timer. Make it trigger the Set action on the Timer with 3600 seconds (1 hour) and no repeating.

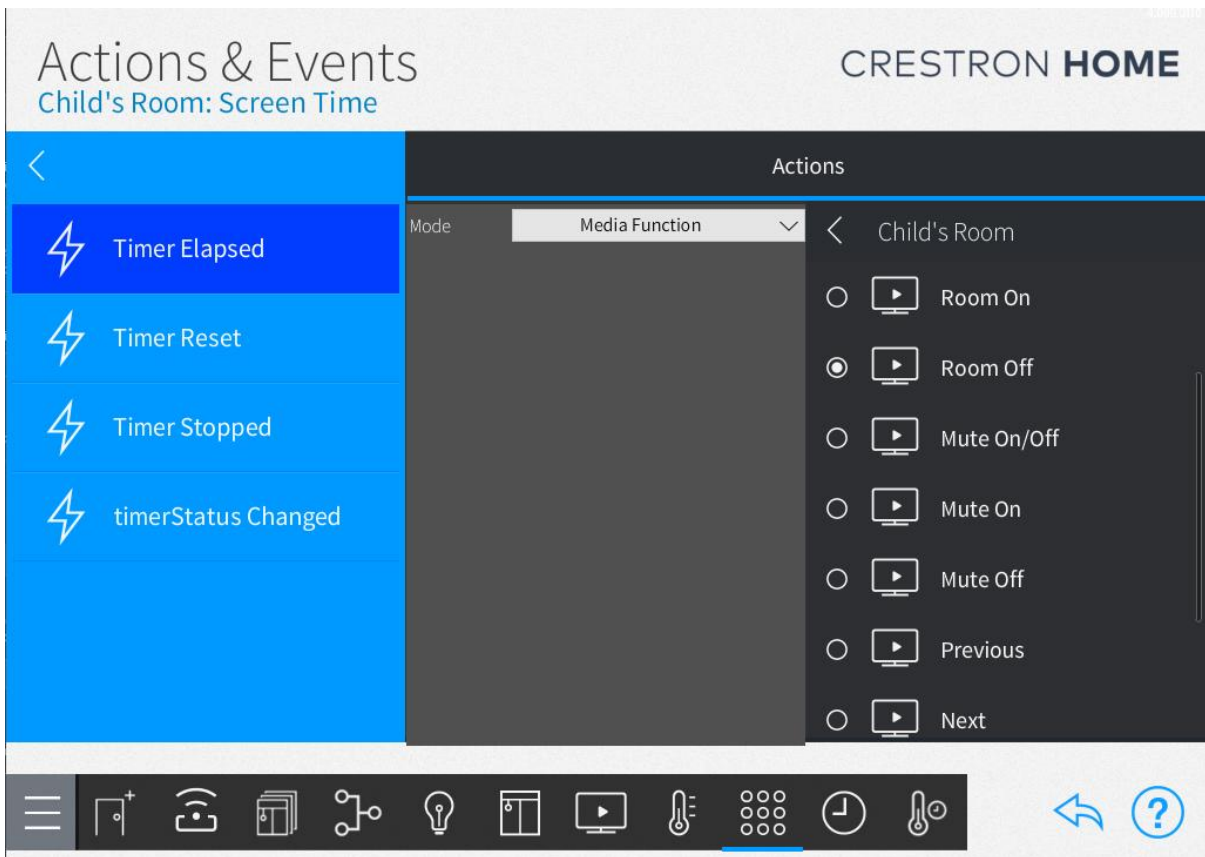




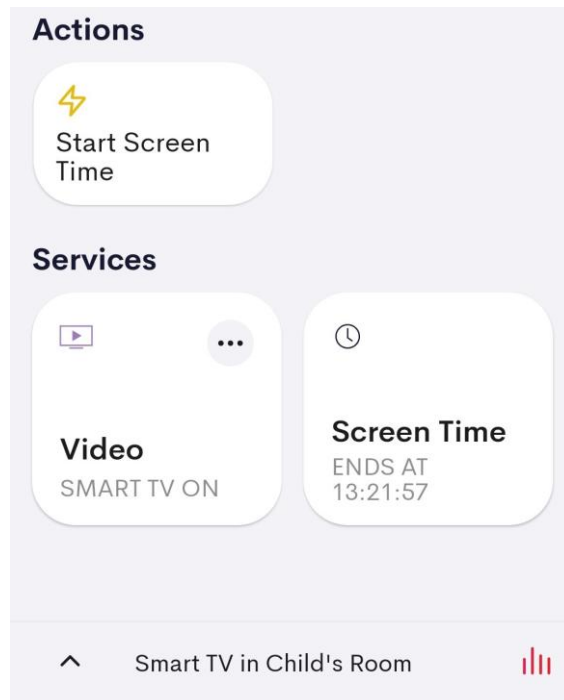
You can also connect it to logic for turning on the TV and selecting the source. Next go back to the "Select an Item" page for the room and open the Screen Time folder.



Connect the Timer Elapsed event to Room Off Media Function in the Child's Room.



This will appear in the Crestron Home app as shown below, when the quick action is triggered. The TV will be turned off at 13:21:57 when the timer elapses.



SUPPORT

If you have any issues with an integration solution please let us know by contacting Ultamation support on support@ultamation.com and please include as much detail about your issue as possible, such as a recent processor error log.

Licence verification messages are posted to the error log, so please ensure you have checked this.

LICENCING

This integration solution (including software, images and all other associated assets distributed as part of the purchased download package) is licenced on a PER PROCESSOR basis.

A purchase should not be completed without correct information as refunds cannot be issued for errors or changes made to details following purchase.

This is an electronic product and there is no physical delivery.

The integration solution is provided without any warranty with respect to the reliability of the controlled device or changes to device protocol. We will endeavour, through best efforts, to maintain the integration solution's functionality and any bug fixes will be provided free-of-charge. Additional functionality may be released as a variation of this integration solution and this will be a separate, purchasable, product.

CLOUD LICENCE

This integration solution contacts Ultamation's licencing server at startup. If the server finds a matching licence for the integration solution and processor then the integration solution will be licenced. Otherwise, the integration solution will check the offline licence key. If you purchase a licence **after** you have loaded the integration solution, please reboot the system to see changes take effect.

If you purchased a licence **before** it was migrated to the cloud service, i.e. you have a licence key already, you must enter this into the **Offline Key** user attribute. If you purchased the integration solution **after** it was migrated, and you don't have a licence key, no further action is required.

If no licence exists for the product/processor the integration solution will enter a short trial period (ONE HOUR) to allow for verification of correct control or evaluation.

To request an OFFLINE key, please contact support@ultamation.com with your order details and a brief explanation why you REQUIRE offline activation. Ultamation reserve the right to refuse offline activation.

NOTE: Once an offline key has been issued no further licence changes will be granted. Moving the integration solution to a new processor will require an additional licence purchase.