



HCA Tech Note 137

Establishing Light and Dark based upon a light level reporting sensor

This technical note shows how to use the Aeotec Multi-Sensor 6 light level reports to control the `_Dark` and `_Light` flags in HCA.



The Aeotec Multi-Sensor 6 is a useful tool in that it reports light level in Lux values and can be powered from a USB connection. When powered by USB it auto reports changes in light level as they occur.

Note: This technical note assumes that you are familiar with these concepts. There are technical notes and user guide information on all these topics, so if you are hazy on them spend some time there first.

- Tags
- The Compute and Compute-Test elements
- Parameterized programs
- SmartThings or Hubitat

Program triggering

Rather than create a program that responds to the auto report, decodes the message, and extracts the light level data, it is better to handle this task indirectly. That is, let the SmartThings or Hubitat packages handle the receipt of the message from the sensor, process it to extract the data, and save the data into device tags. The program you create doesn't need to do any of that, all it needs to do is start if the tag that contains the light level changes. HCA version 17 and later has a Tag-Change trigger just for that.

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Start the program on this trigger:

A change of tag "HE_Illuminance" on "Hubitat Devices - Great Room Multi Sensor"

Change to tag named:

HE_Illuminance

On object containing that tag:

Dev: Hubitat Devices - Great Room Multi Sensor

Note: When using the [Any Device] or [Any Tag] choices, create the program with these parameters:

P1: [Object] The device with the tag

P2: [Value] The tag name

P3: [Value] The tag value

As you can see from the image above, the program that handles this trigger should have three parameters to know what tag on which device changed its value and what the new value is. In this case while the program receives the device and tag name, it isn't needed because the trigger is only on a single device and single tag.

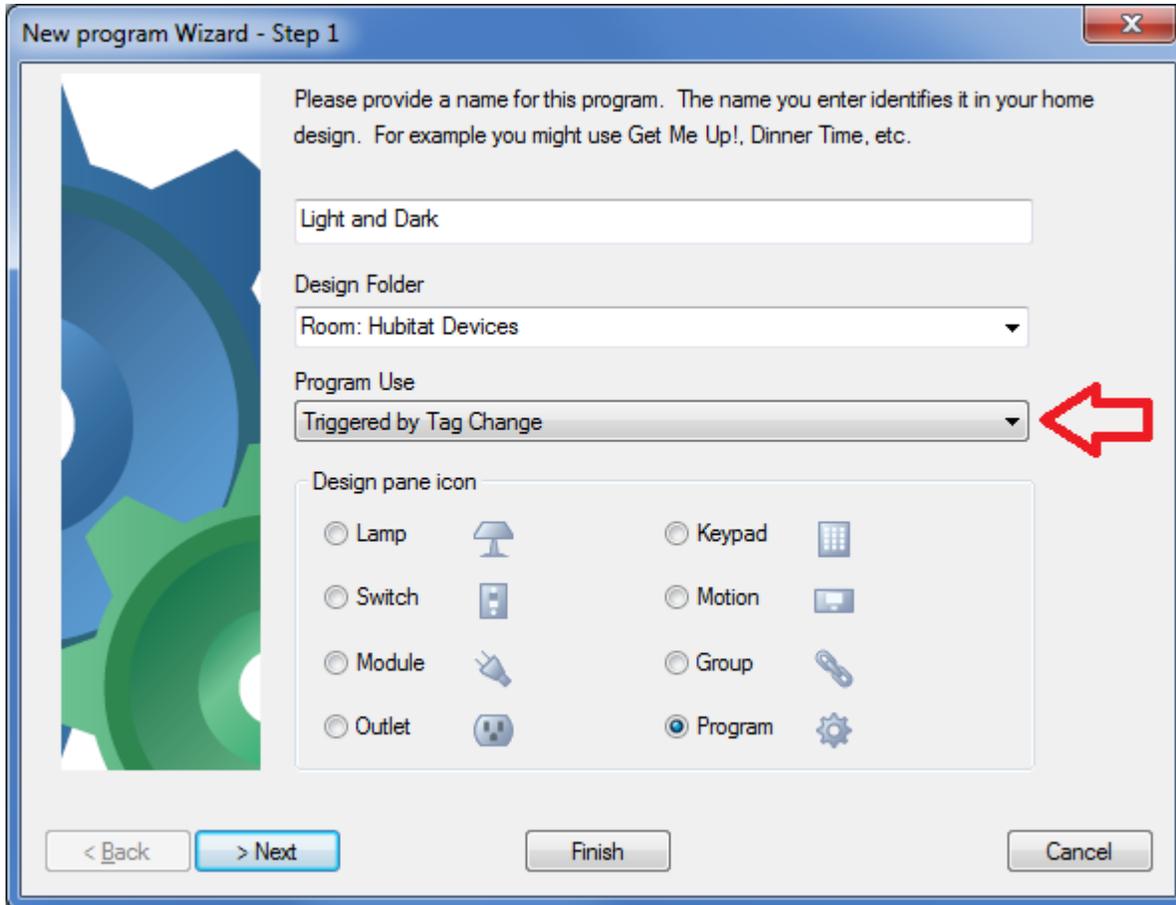
To create the program, HCA 17 has a quick way to do that which configures all the necessary program options and the parameters.

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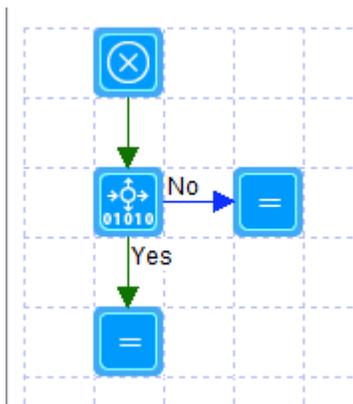


This creates the program, but you still must add the trigger as shown above.

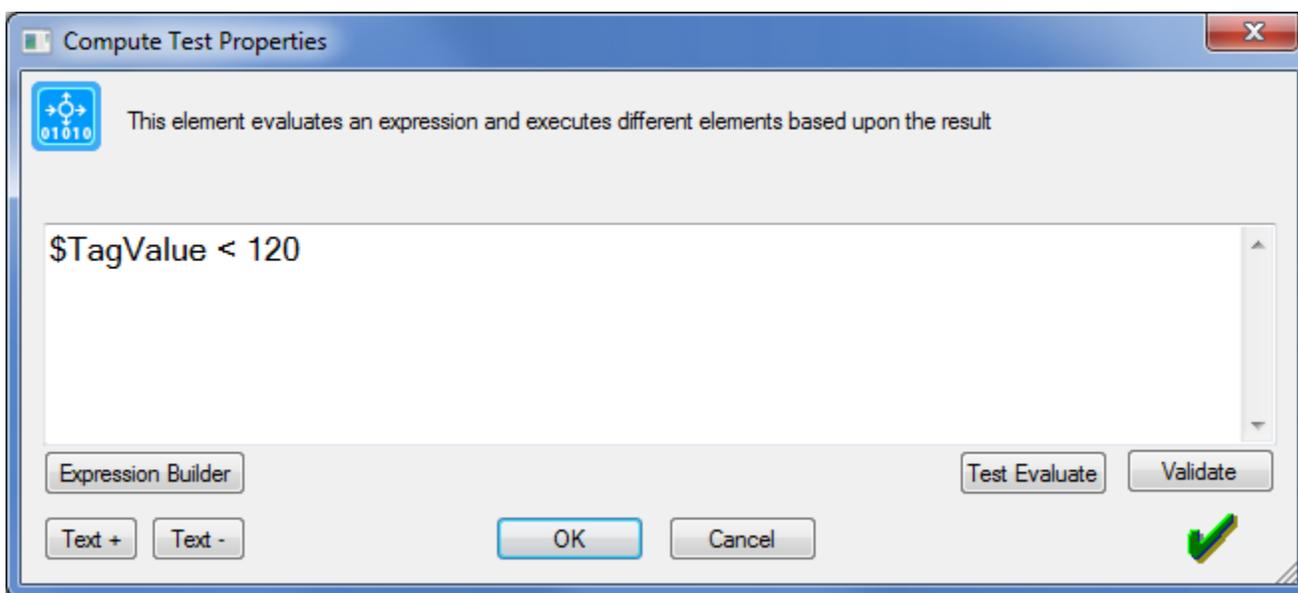


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The program itself is very simple – only 4 elements:



The Compute-Test element tests the value of the TagValue parameter like this:



Why the value 120? Light or dark is subjective. Each person decides if a room is light or dark differently. It depends upon the wall paint color, the number of windows and what one sees from the windows, and many other factors. The best way to determine what light level to use – the level below which means the room is dark - is to sit in the room at the end of the day and when it gets to the point where you would switch on a light to read, then that's the value to use. In this example any lux level below 120 Lux means it's dark.

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The "yes" path from the Compute-Test sets the variable "HouseDark" to 1.

Variable Set Properties

This element assigns a value to a variable

Assign to: HouseDark

Number

And the "No" path sets it to 0

Variable Set Properties

This element assigns a value to a variable

Assign to: HouseDark

Number

Why use this "HouseDark" variable? To tie this into the HCA light/dark system in Home-Properties. You could just use the HouseDark variable in your programs to do different actions when it's light or dark, but it is better to use the `_Light` and `_Dark` variables because they are used internally by HCA for some other tasks.

Name	Value
<code>_Dark</code>	No
<code>_Light</code>	Yes

Here is how to configure the Light and Dark variables in Home-Properties. Every minute or so HCA uses how you have configured Light and Dark, makes a determination, and then sets the two variables as appropriate.



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"Our Home" Properties

Name Location **Light** Security Customer Installer Notes Design Statistics DPI

Determine LIGHT By Variable Check Light-Dark Status

By Time

- At Local Sunrise
- At Sunrise
- At Sunrise plus 0 minutes
- At Sunrise minus 0 minutes
- When current time is 6:00 AM

By Variable

- When this Variable is to YES HouseDark
- When this Variable is NO HouseDark

"Our Home" Properties

Name Location Light **Dark** Customer Installer Notes Design Statistics DPI

Determine DARK By Variable Check Light-Dark Status

By Time

- At Local Sunset
- At Sunset
- At Sunset plus 0 minutes
- At Sunset minus 0 minutes
- When current time is 10:00 PM

By Variable

- When this Variable is to YES HouseDark
- When this Variable is NO HouseDark

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To recap how this works:

- The sensor reports a new light level.
- The Hubitat or SmartThings hub reports it to HCA. For Hubitat that is direct to the computer running HCA, for SmartThings it reports to its Cloud, passed to the HCA Cloud, then to your computer.
- The HCA Package for SmartThings or Hubitat processes the message and updates the tag on the sensor device with the new value.
- Your program runs when that tag value changes. It sets the "HouseDark" variable taking into account what you consider the light level below which it is dark and above which it is light.
- HCA periodically evaluates the Home Properties Light-Dark configuration and sets the global variables `_Light` and `_Dark`.
- You use those variables in your program to condition actions based upon light or dark.

##end##