



# HCA Tech Note 135

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## Responding to sensor changes

This technical note shows how the HCA 17 Tag-Change trigger can be used to create programs that start when sensors - supported by Hubitat or SmartThings – change acquired sensor data.

The Hubitat and SmartThings managed devices often have sensor data in addition to their primary function. For example, some contact closure sensors have a temperature sensor in addition to an indication of "open" or "closed". A motion sensor may also have temperature and humidity. These "free" sensor values can be used in a variety of ways.

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

**Before beginning a few words on sensors:** Anytime you come to rely on sensor data you are taking a risk. Why? The obvious reason is that the sensor could be reporting incorrect data. While that is a low probability event there are other potential problems to consider. The biggest is the number of elements between the sensor and the intelligence that does something with the data. Between the sensor and the controlling hub there is some form of wireless which always can be interfered with. The hub could break or update on its own to a new version or a battery go dead. Then if you go beyond that, there is the communication path from the hub to the HCA server machine which could be a local network or through a cloud. Then there is Windows which could decide to update itself at exactly the wrong time. Then finally there is HCA which, like all software isn't perfect. **The bottom line is you should only tie anything that is task critical to a fully mechanical system or at a minimum, to limit the number of elements between the sensor and the intelligence.**

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## Where the sensor data is stored

Whenever the device reports a change in state, which tends to also include sensor data, the Hubitat and SmartThings HCA packages save that data as tags on the device. For example, these are the tags on an Aeotec Multi-Sensor

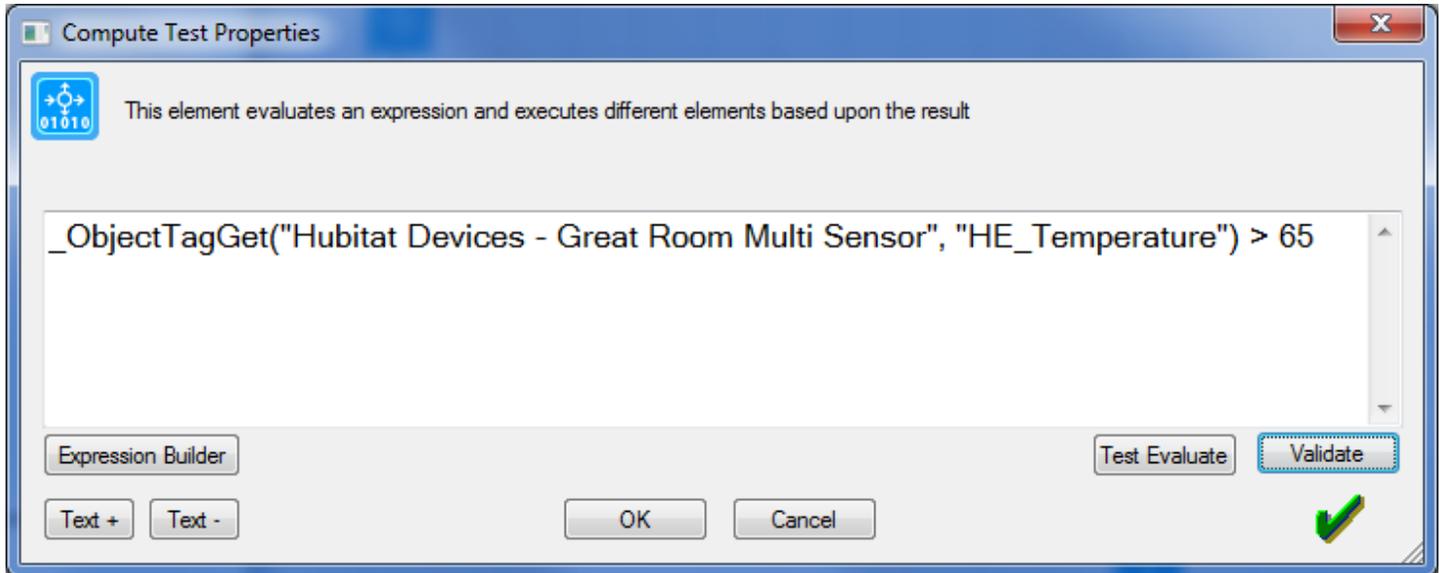
Tag Name	Current Value
HE_type	Aeon Multisensor 6
HE_devType	Sensor
HE_devSubType	motion
HE_Illuminance	68
HE_Temperature	66.8
HE_Humidity	58
Annotate	
HE_Acceleration	null
HE_Battery	100
HE_UltravioletIndex	0

As you can see this sensor reports lots of different values in addition to its main task of acting as a motion sensor. The Hubitat package stores these values as "HE\_xxx" and the Smart Things package stores them as "ST\_xxx". Where "xxx" is the sensor name.

Any program can utilize this data using the `_ObjectTagGet` function. For example, this Compute-Test element checks to see if the temperature is over 65 degrees.



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In addition, you can also use the HCA version 17 Tag Change trigger to start a program whenever there is a change to a tag value on a selected device. This lets you create, for example, a program that sends you a message when a sensor value is outside a range.

If you are using HCA 17 or later, it's easy to create a program that handles a tag change as it creates the necessary structure for you. For older versions you will have to enable program parameters and add them to the Begin-Here element.



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New program Wizard - Step 1

Please provide a name for this program. The name you enter identifies it in your home design. For example you might use Get Me Up!, Dinner Time, etc.

Temperature respond

Design Folder  
Room: Habitat Devices

Program Use  
Triggered by Tag Change

Design pane icon

Lamp  Keypad  
 Switch  Motion  
 Module  Group  
 Outlet  Program

< Back > Next Finish Cancel

This creates the program so that it automatically receives the device, tag, and tag value that changes, but it is up to you to add the necessary triggers. In this example we trigger on the "great room" sensor when the temperature changes.

Start the program on any of these triggers:

Trigger
▶ A change of tag "HE_Temperature" on "Habitat Devices - Great Room Multi Sensor"

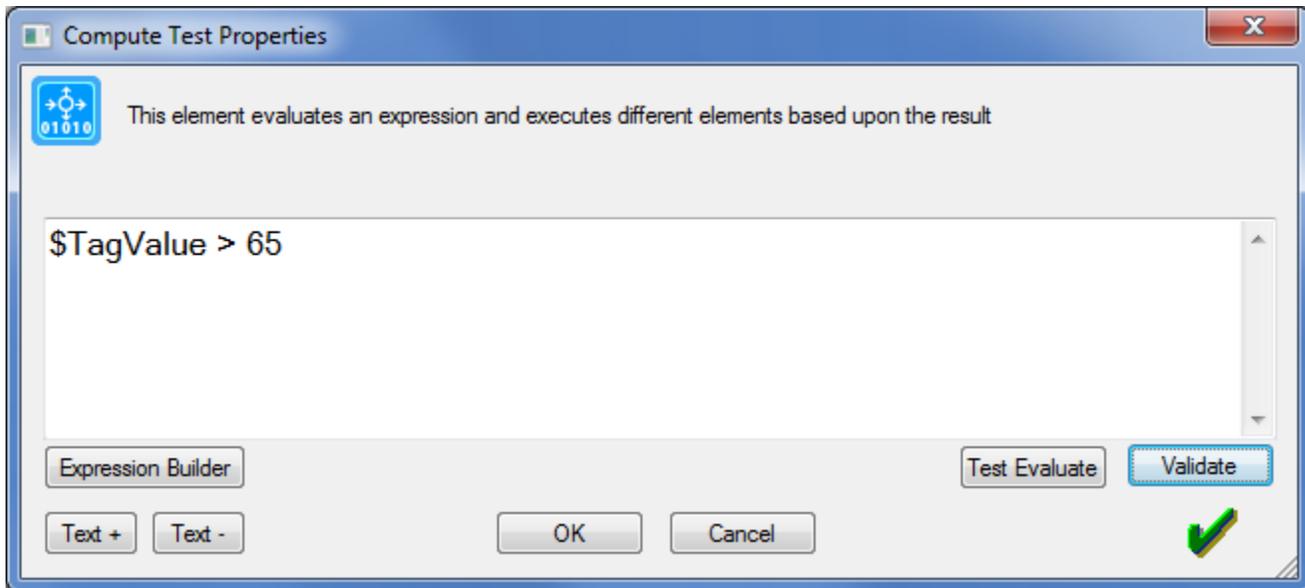
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The program then can test the changed sensor value as:



You can build whatever you want along the "yes" path form the Compute-Test.

## Sensors that auto report

Since sensors tend to be wireless, they don't want to report too often as they will use battery power quickly if they are too "chatty". Some sensors only report when their primary function happens. For example, an open/close sensor when it opens or closes, or a motion sensor when there is activity or the activity ends. Along with that report often comes additional sensor data. In addition to this some devices have provision for external power – the Aeotec multi-sensor 6 has this but the Aeotec Tri-Sensor doesn't – and when powered that way they auto report much more frequently.

It will all depend upon your device and how it works. Some experimentation may be needed.

##end##

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