



# Getting Started with HCA and UPB

This Getting Started Guide continues from the previous “Getting Started with HCA – Installation and Introduction” which covers installing HCA and the basic operations available from the ribbon. This guide assumes that you have reviewed that.

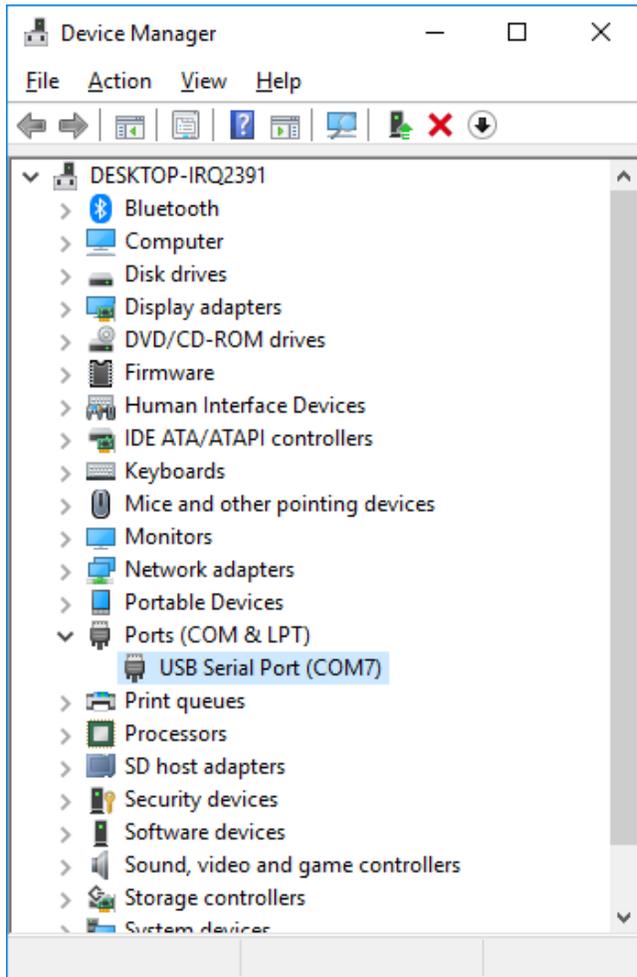
In this guide these topics are covered.

- Connecting the UPB interface to HCA
- Creating a new design file
- Adding UPB devices using the HCA Designer
- Controlling devices from the HCA user interface
- Scheduling a device to come on at sunset
- Responding to a button press on a keypad

**If you have not already purchased HCA and you are looking to test drive this software, you can download a free 30-day trial of HCA Plus from the HCA support website at [www.HomeControlAssistant.com](http://www.HomeControlAssistant.com)**

## Connecting the UPB interface to HCA

Before HCA can control UPB devices in your home, you must connect an interface to your computer. For UPB control HCA requires the Powerline Interface Module (“PIM” but also called a “CIM” by some manufacturers). This is available in a serial and USB models from several manufacturers and HCA supports both. The USB version of the PIM requires installation of a device driver that creates a virtual serial port. Usually Windows automatically installs the necessary device driver when you connect it to your computer. But if you have problems, refer to the documentation that came with the interface and available on the Powerline Control Systems web site as the instructions are clear and tell you what must be done to get the device driver loaded.



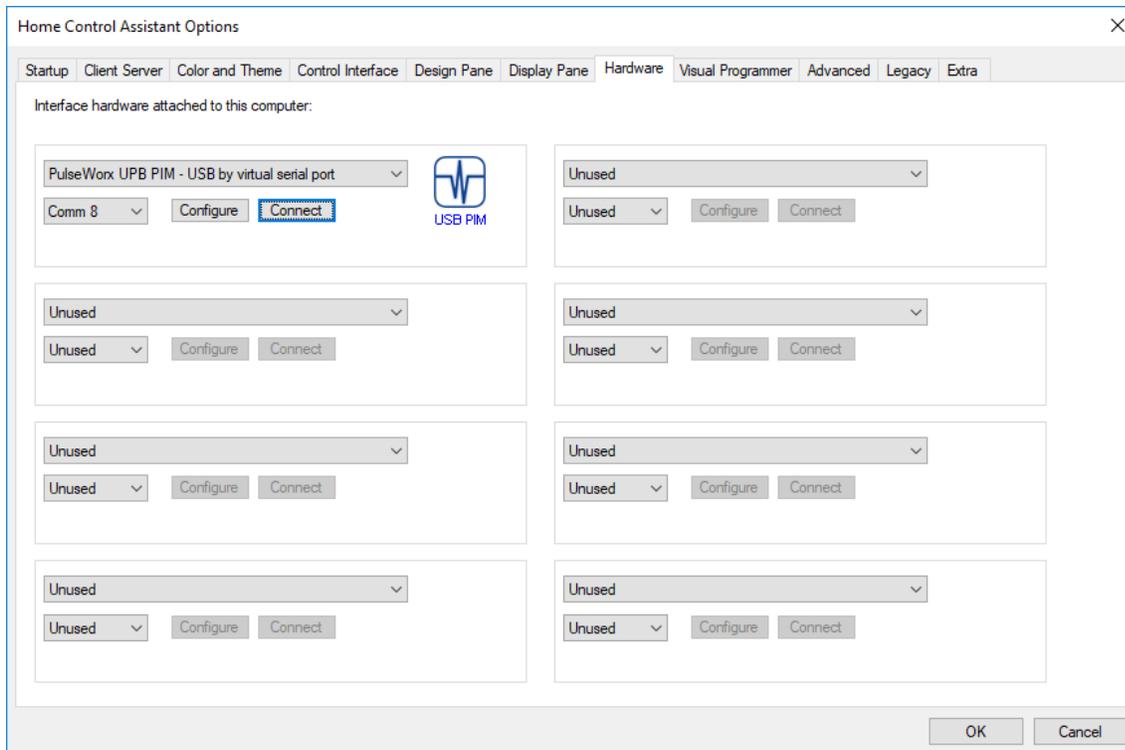
Once you have connected the PIM, HCA must know what port is assigned to it to communicate with it. Open the Windows Device Manager and in there it appears as “USB Serial Port”

If many ports are listed and you are not clear which port the PIM is using, leave the Device Manager open and note what ports it shows. Then unplug the PIM and see what port is no longer shown when the display refreshes and that’s the one it is using. Plug it back in and you can then use that port in HCA and connect.

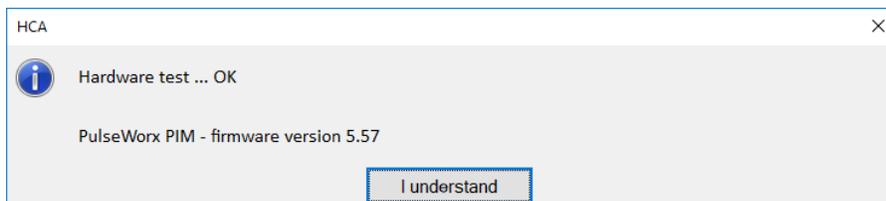
In the image to the left, the PIM is on port 7.

If you have the serial version of the PIM, but don’t have a serial port – many recent PCs don’t have them – there are widgets that make a serial port from a USB port. We can recommend the IO-Gear GUC232A USB to Serial Adapter as we have tested with it extensively.

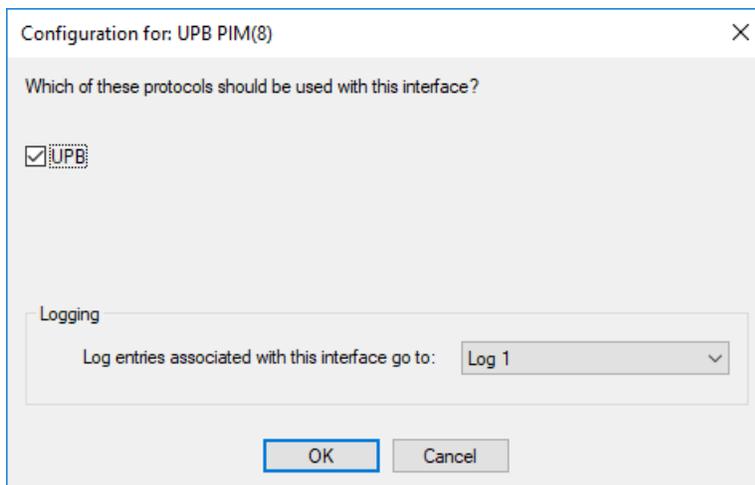
Once you have the automation interfaces connected to the computer, select the *Interfaces* category from the HCA ribbon and press the *Configure* button. The *Hardware* tab of HCA Properties opens.



HCA can have up to eight interfaces connected simultaneously. Select the type of interface from the dropdown and the port it is connected to. Press the *Connect* button to test if HCA can communicate with the interface. A popup shows if the connection is successful or not.



Some interfaces have options and the *Configure* button for the interface shows you those options.



## Creating a new design file

There are two ways to begin creating your automation design. You can start with an empty file or you can use a pre-made design you can add to.

An empty file is available as soon as you start HCA and you can immediately start adding devices using the various HCA tools as described below.

The pre-made design contains several items that you may find useful. It contains no devices yet – the type, quantity, and location of them are different for each installation - but it does contain pre-defined rooms and user interface elements to start you off.

If you want to go this route, load the file “Starter Design.hca” from the HCA documents area. The starter design has rooms already defined into which you can add your devices, programs, and groups. These rooms can be used as is, renamed, deleted, or new rooms added.

The starter design has several pre-defined rooms and many pre-built user interface facilities – [described in a technical note](#). The advantage of using the starter design is that it contains many facilities that you may want to use – a nice multi-panel display, power usage charts, and weather data integration.

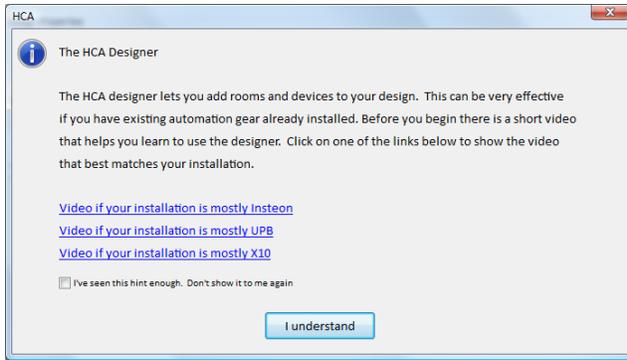
If you do begin with the starter design, the first step is to save this file with a filename that makes it yours. For example, "House on hill.hca", or "14 Palm Court.hca". Make sure you save it in the HCA documents folder. That's the folder you get to when you start Windows Explore and go to “documents” and then into the “HCA” folder. **If you don't store it in that folder, some of what it displays will not appear correctly.**

## Adding devices using the HCA Designer

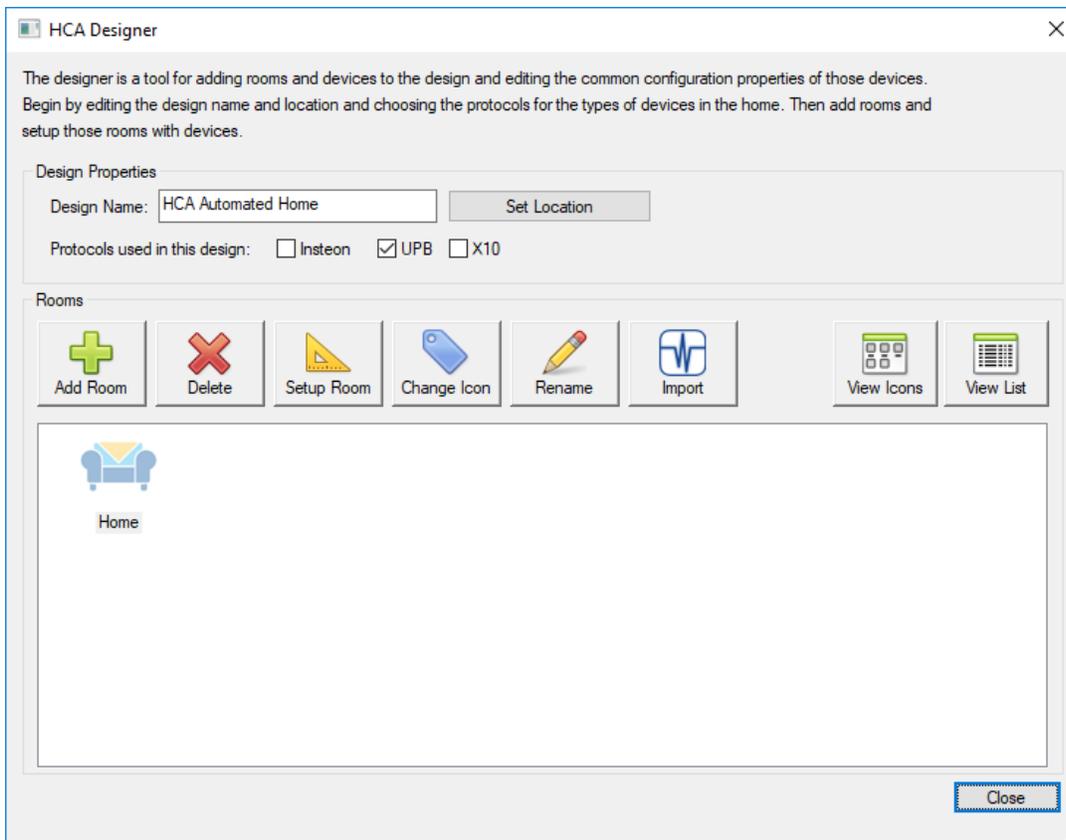
What follows, assumes that you already have UPB hardware installed in your home and they have been configured using the UPB setup program called UPStart.

If you are starting with an empty file or if you loaded the starter design, the best way to begin adding your devices is by using the **HCA Designer**. When it first starts, you are offered a link to a video that shows how it works depending upon the automation protocol you have. We urge you to watch the video for the kind of automation devices installed in your home.

Start the designer from the *HCA Designer* button from the ribbon *Design* category.



The first step in using the designer is to enter a name for your design, specify the location and select which automation protocols you are using.



Type in a name for your design, tick the appropriate boxes for which automation protocols you are using, then select your location after you press the "Set Location" button.

Location
✕

For sunrise and sunset times to be determined it is necessary to provide the location of your home by latitude and longitude. For US locations enter your zip code and press the lookup button. For non-US locations use the manual location setup button.

Location

Zip Code:

Manual Setup

This Location

City:	<input type="text" value="Palm Springs"/>	Computed Astronomical Sunrise today	<input type="text" value="6:11 AM"/>
State:	<input type="text" value="CA"/>	Computed Astronomical Sunset today	<input type="text" value="7:20 PM"/>
Latitude:	<input type="text" value="33.842984"/>		
Longitude:	<input type="text" value="-116.543440"/>		
Time zone:	<input type="text" value="Pacific"/>		
DST:	<input type="text" value="Observed"/>		

Local Sunrise and Sunset

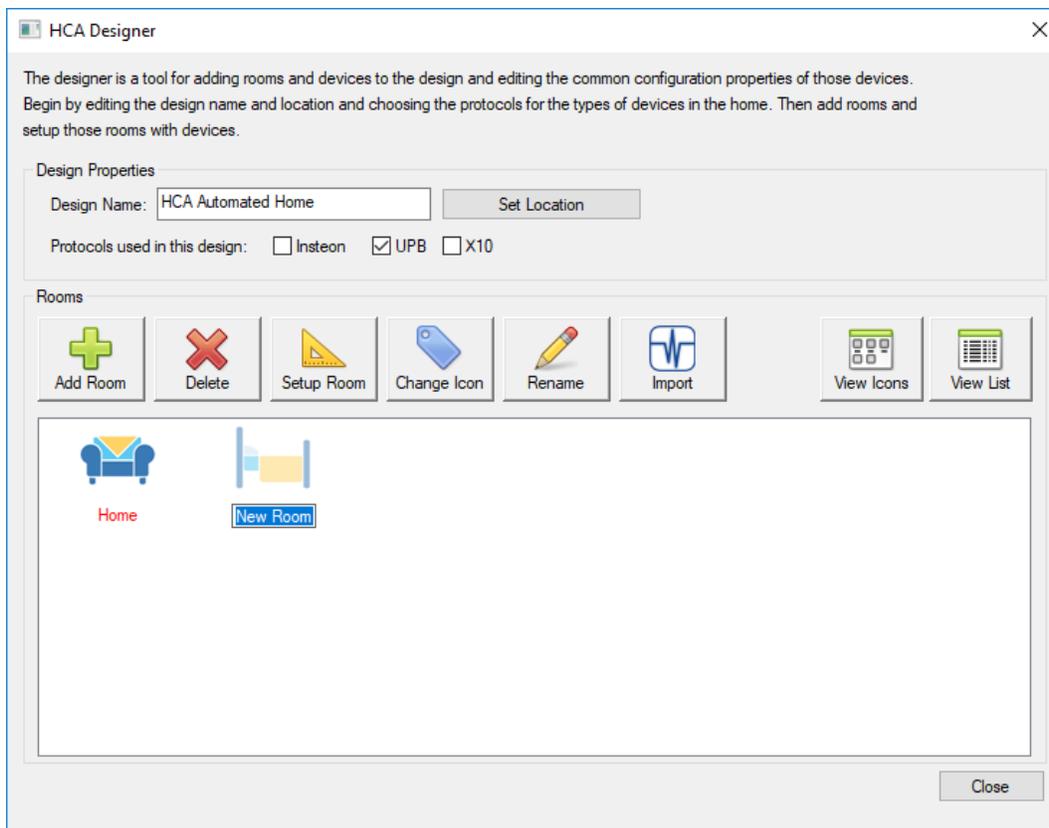
For this home sunrise is  minutes  the computed sunrise

For this home sunset is  minutes  the computed sunset

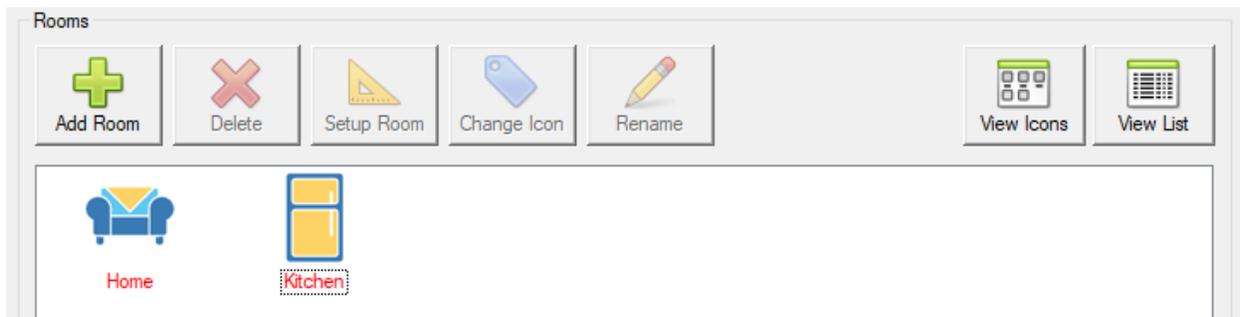
## Adding Rooms

When working with UPB devices, much of what you have already created using the UPB configuration program called UPStart Icons, device and room names come along when you import your UPB network. But you should know how to use the designer to create and modify rooms. Also, if you loaded the starter design which contains several pre-defined rooms, the designer shows those rooms, but you may want to add others or delete the ones not appropriate to your home.

To add a room, press the *Add Room* button. Each time it is pressed a new room icon is added to the display:



Once the room icons appear, it is all set for you to type in the name you want for the room. When you complete entering the room name and have pressed the enter key, then HCA guesses an appropriate icon.



In this example, "Kitchen" was entered as the room name and an icon representing a refrigerator (Kitchens have refrigerators so that's the icon) was chosen.

If at any time you want to change the icon of a room, just select it and press the "Change Icon" button. To change the room name, select it and press the "Rename" button. And to delete the room, select it and press the "Delete" button.

**Tip:** You can also right-click on the room icon and the popup menu contains these actions as well.

The text below the icon gives the room name. The icon label displays in red if there are no devices yet added to the room.

The design also lets you show the rooms by icon or by a list. The buttons at the right control this. You may prefer to see things by icons or you may prefer a list. It's up to you.

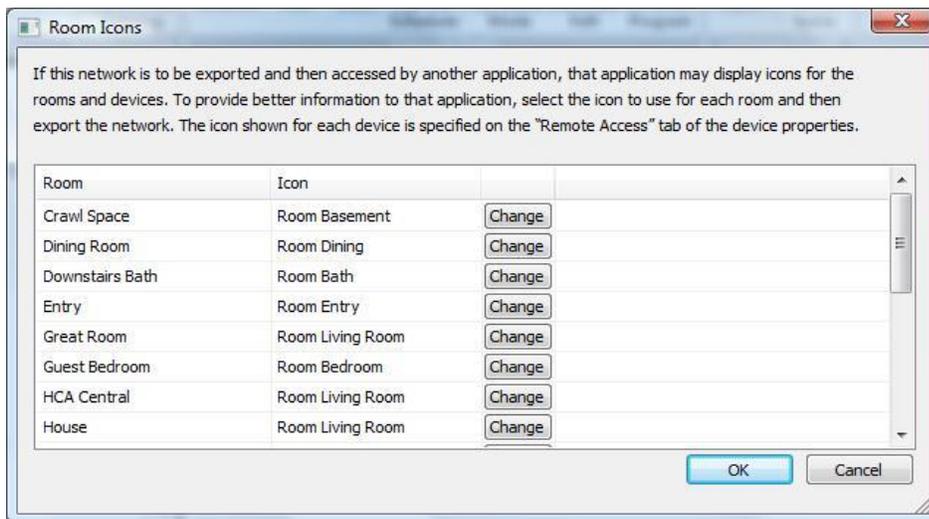
## Adding UPB devices

Adding UPB devices to your design proceeds differently than other protocols where devices are added at one time. HCA contains a method to import all your UPB devices at one time. In order to do that you must work with a different program to create the export file.

UPB devices are configured by a separate program called UPStart and transferred to HCA using an export file which has a file type of UPE. Before creating the UPE file in UPStart, you should take a few minutes to configure how icons appear in HCA for rooms and devices.

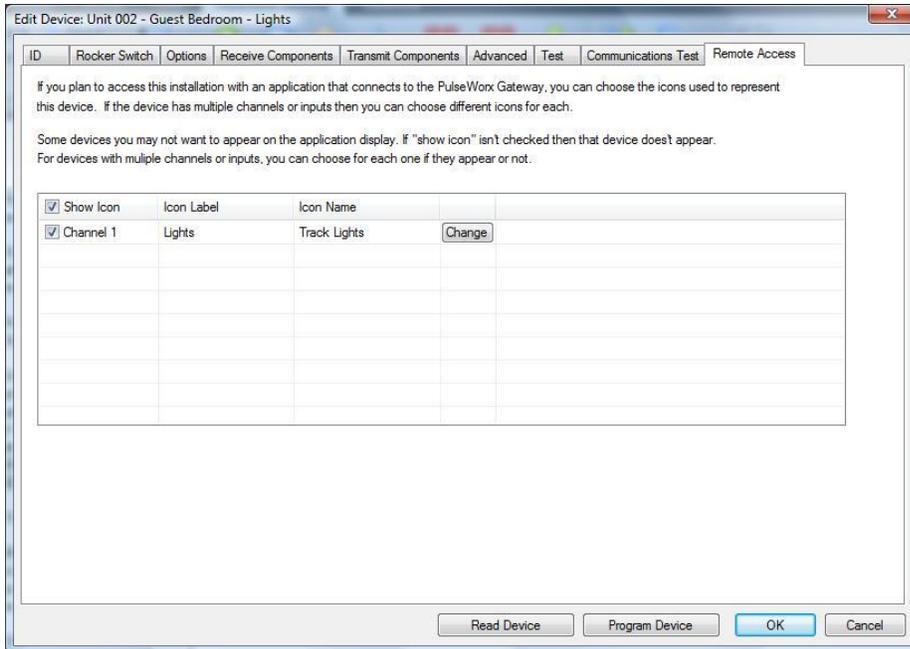
**Tip:** If you are using UPB you probably are familiar with UPStart. The latest version of this program can be downloaded from the UPB device manufacturer's web site.

When running UPStart with your UPB file loaded, in the "Gateway Export" ribbon category there is a button labeled "Room Icons". Press that to open the room icon selection tool. It shows each room in your UPB network and what icon is used for that room. You can change the icon selected by pressing the "Change" button on the line for the room. This opens the icon selection tool. The currently selected icon is shown in the upper left. Just select the icon you want and then close the icon selection tool with OK.



For device icons, you need to open the properties of the device. In the properties for a device is a tab labeled "Remote Access". For simple devices like switches and one-channel modules there is only a single icon to select. The icon choice is displayed and can be changed in the same manner as room icons. From this tab, you can also change the text that shows below the icon – the "label". Normally this is just the device name, but you can change it if you want. In the icon selection tool, the icon label is shown at the top of the dialog for editing.

Additionally, if you don't want this device to be imported into HCA – maybe it is something you never want to work with in HCA - you can disable the "Show Icon" option by "un-ticking" the checkbox.



For a two-channel device like the PulseWorx Output Control Module you can select an icon and icon label for each channel. If you are only using a single channel of the device, you can un-tick the unused channel so it doesn't appear in your HCA design.

For an Input module (ICM, TCM, DBM) you can name each input and those appear on the application display to show the state of the input. Again, you can choose to show 1 input, both inputs, or no inputs.

<input type="checkbox"/> Show Icon	Icon Label	Icon Name	
<input checked="" type="checkbox"/> Input 1	Driveway Sensor	Appliance	Change
<input type="checkbox"/> Input 2	Driveway Sensor	Appliance	Change

Small Buttons

Font Style:

Font Size:

Text:

Large Buttons

Font Style:

Font Size:

Text:

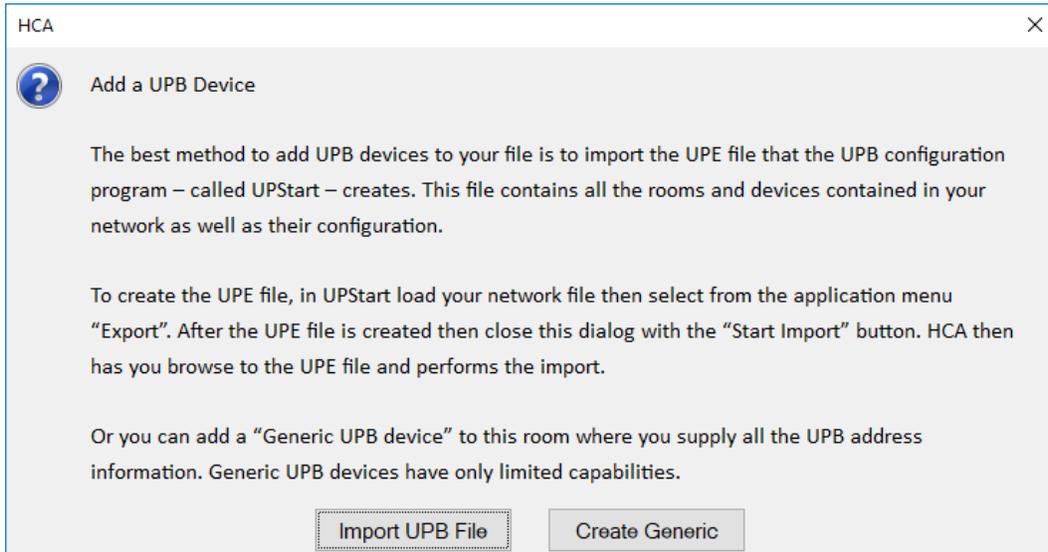
- ON
- A
- B
- C
- D
- OFF

Also, make sure that any keypads in your design have engraving info specified that gives the name for each button. This text is exported into the UPE file and HCA uses it in popup keypads where you can virtually "push" keypad buttons. For this purpose, the button size and font choices don't matter.

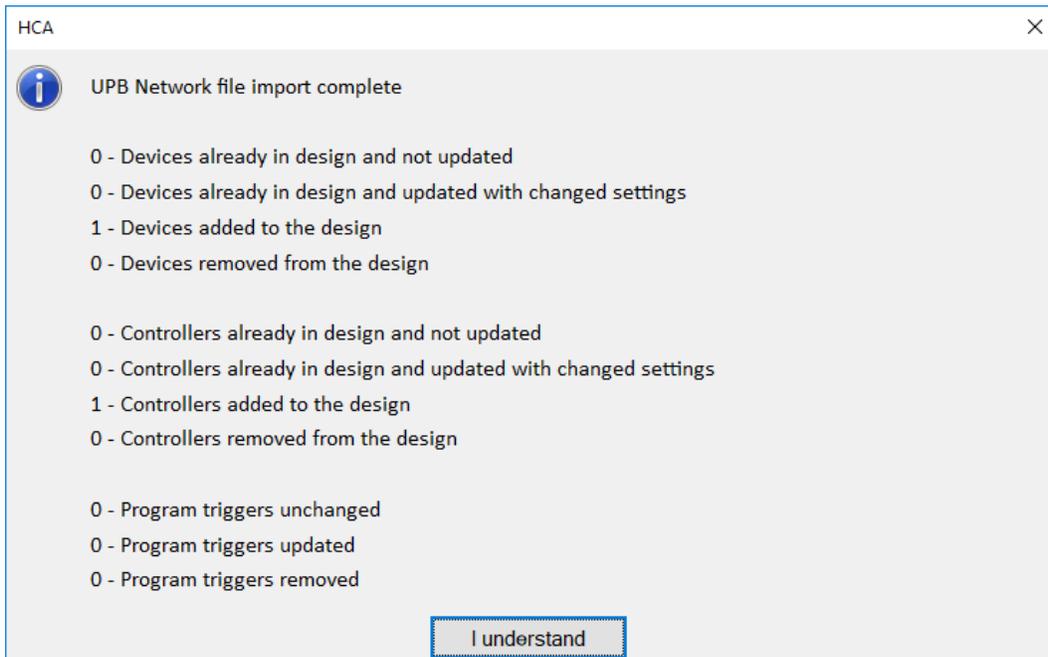
Once you have all the devices configured in UPStart, to create the UPE file select from the UPStart application menu, "Export" and then "Export to file".

## Adding devices by importing the UPE file

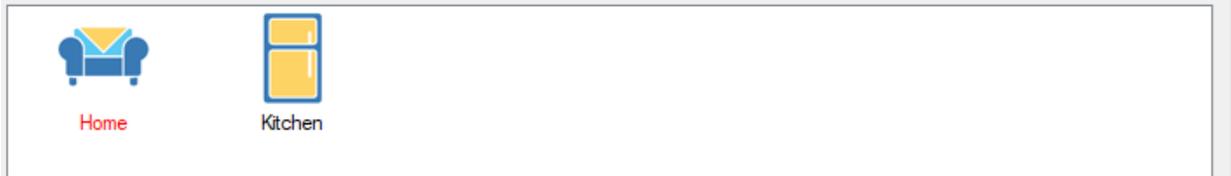
When the "Add Device" button is pressed on the UPB tab the import process is explained:



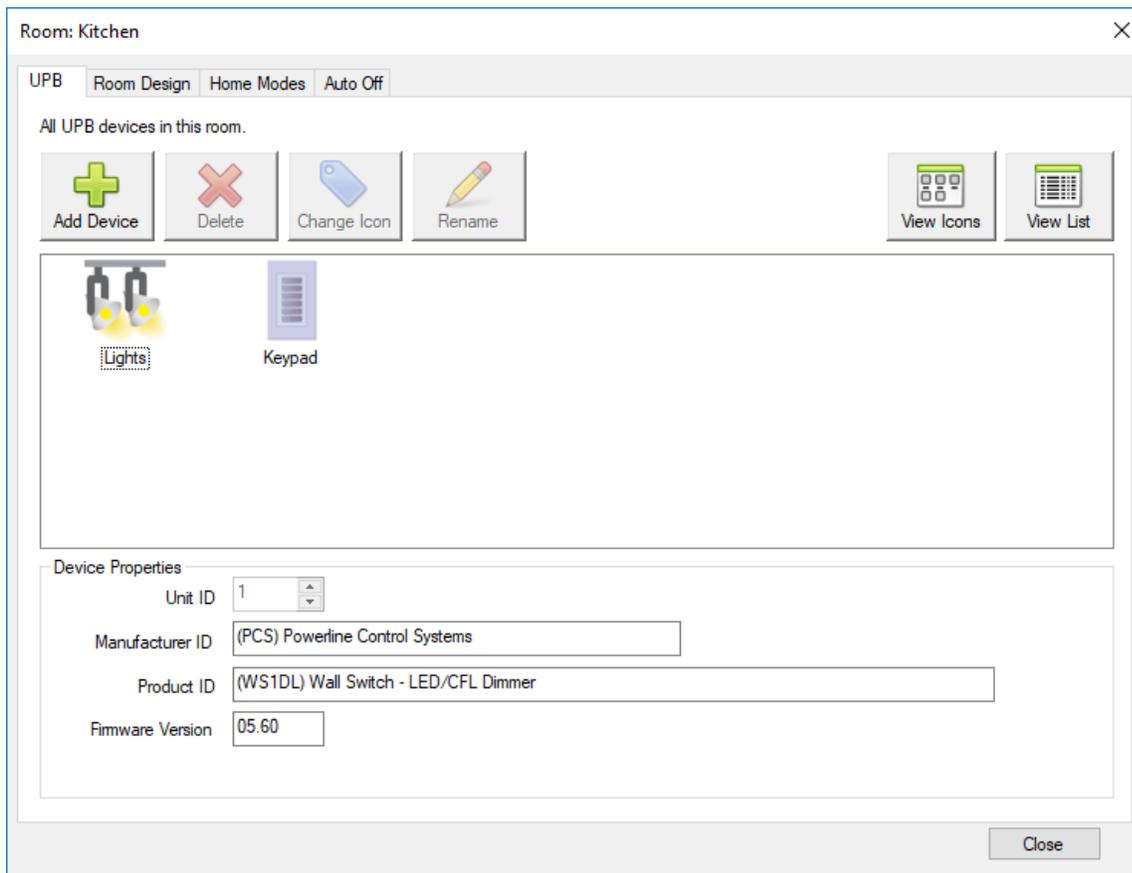
After you press the "Import UPB File" button, a File-Open dialog lets you select the UPStart Export File (UPE) and then the devices in that file are added to your design. When complete a popup shows you what has been imported:



In this example, the designer now shows these devices:



Opening the Kitchen room shows this:



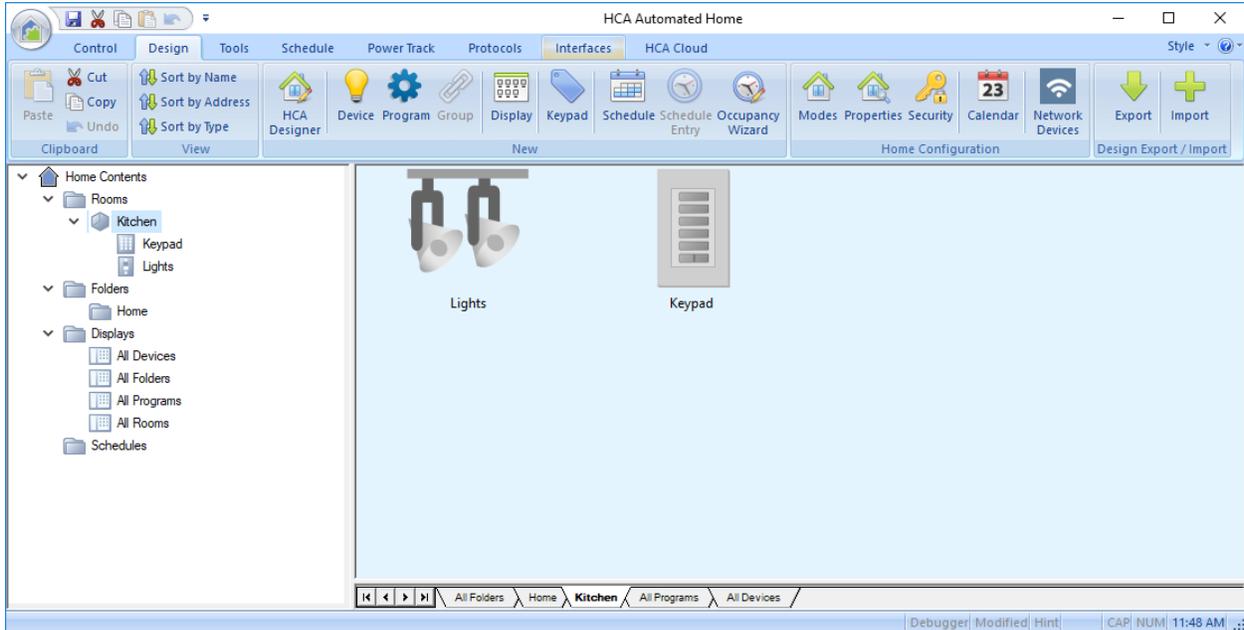
Note that at the top of this dialog there are several tabs. These are:

- UPB: For adding UPB devices
- Room Design: How devices interact with the room they are in
- Home Modes: How devices act depending upon the mode the home is currently in
- Auto Off: If the device automatically goes off a specified number of minutes after it is turned on

Depending upon the checkboxes on the main Designer dialog, other tabs for the protocols you selected may appear. At this point you can ignore the last three tabs as they are covered in the next Getting Started Guide.

Like working with rooms, you can delete a device, change the icon for it, or rename it. All these actions are carried out by selecting the device and pressing the appropriate button. Again, as in working with rooms, a right click on the device gives you a popup menu of these actions.

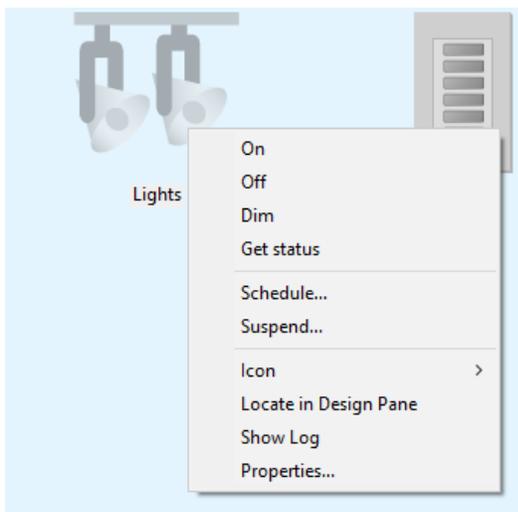
After you have added your devices, close the designer and your devices appear in the main HCA window with the names of the devices in the design pane (left pane) and icons for them in the display pane (right pane).



This is a good time to save your work in a HCA design file. Use File-Save from the application menu or press the Save button in the Quick Access Toolbar at the top of the ribbon.

## Controlling devices from the HCA user interface

In this step, we use the design just created and do some basic testing to see how controlling devices works. Some troubleshooting tips are presented that may help you understand potential problems.



To control a device all you need do is to right-click on the device – its icon or name - and in the popup menu pick On, Off, or Dim. If you pick Dim a popup window with a slider lets you set the level.

Hopefully when you tell HCA to control the device On it actually comes on. But what happens if the device doesn't come on?

In cases like these it is best to double check everything to eliminate the simplest things before looking for complex reasons. For UPB, is the address that HCA has the correct one? It should be since you imported them from your UPStart file.

You should also check that the interface for controlling the device is connected to the computer, identified to HCA, and working correctly. If you can't control any devices this is the first place to start.

On the HCA *Interfaces* ribbon category, press the *configure* button to open the interface setup panel. The connect button for each interface verifies that HCA can communicate with it. Also press the configure button to open the configuration for the interface. If the interfaces support multiple protocols, HCA needs to know what ones to use with that interface, so check that you have that configured correctly.

If HCA can communicate with the interface, and you believe that all your configuration for the devices is correct, but you still can't reliably control them, then unfortunately there could be a signaling problem in your home.

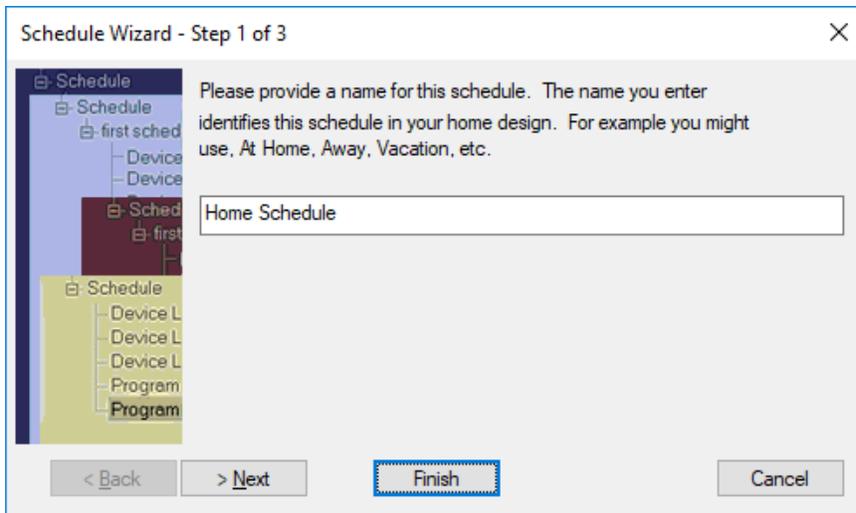
All signals on the power line are different from each other. Suppose you have a keypad linked to a module and every time the button is pressed on the keypad the module always responds, but when controlled from HCA the module doesn't come on. That could be because the PowerLinc sends commands at different signal levels and it may be on a different branch circuit. If there are signaling problems, there are couplers and repeaters that are installed in your power panel that help correct these problems. Refer to the manufacturers of the gear you are using.

## Scheduling a device to come on at sunset

Now that you have a design with two devices, let's schedule the lights to come on at sunset. To do that you must first create a *schedule* and add a *schedule entry* to it for controlling the device.

A *schedule* is a list of one or more *schedule entries*. A *schedule entry* contains the time and date when a device is controlled. Think of a schedule like a ferry time table: a list of times when the ferry arrives and departs. Each schedule entry specifies a time and what happens at that time.

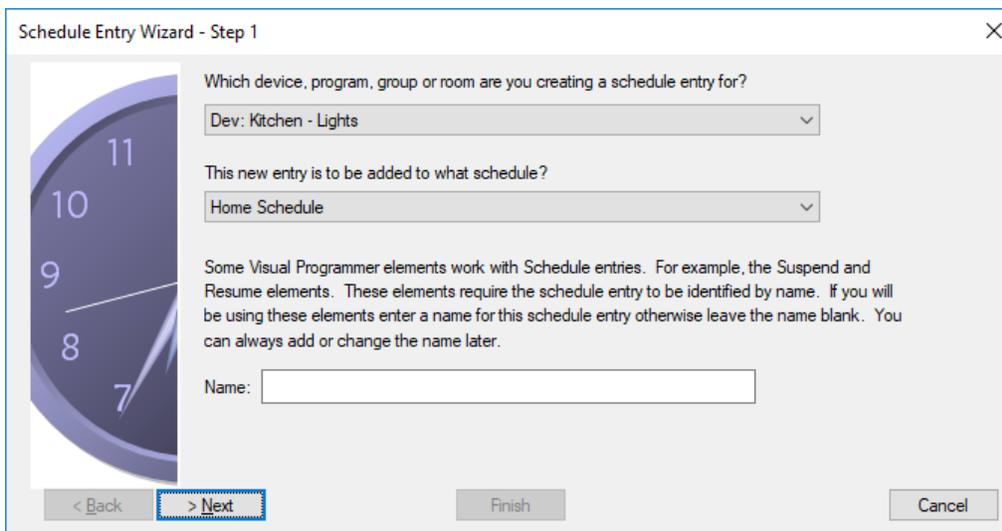
To create a new schedule, press the *Schedule* button in the *New* panel in the *Design* ribbon category. The New Schedule wizard starts.



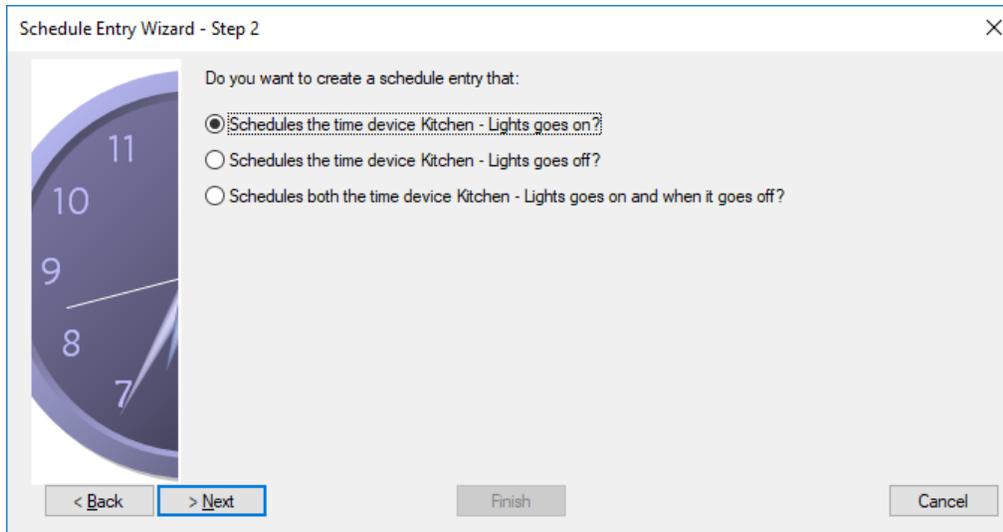
Once you give the schedule a name, you can press Finish to accept the default values in the next two steps and complete the wizard.

To add the schedule entry to it, press the *Schedule Entry* button in the *New* panel of the *Design* ribbon category. The New Schedule Entry wizard starts.

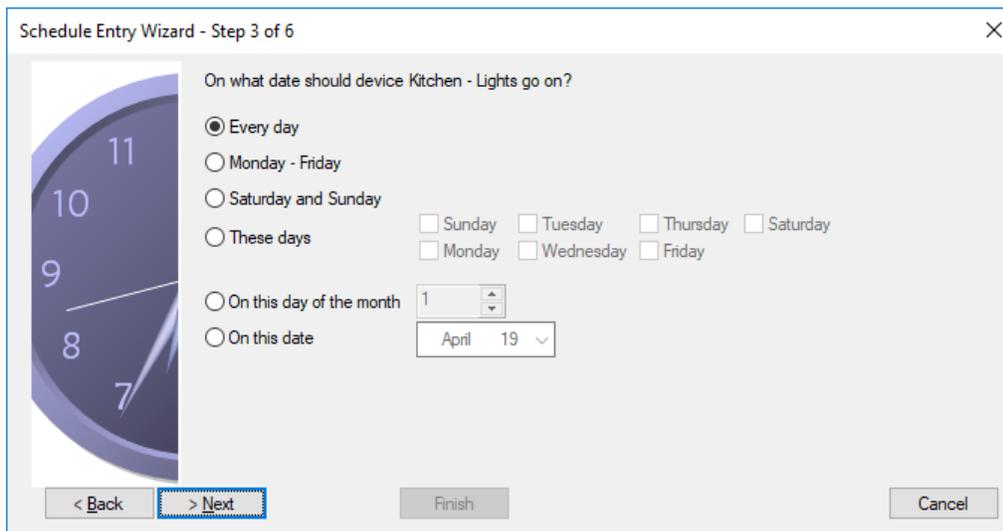
In the first step you choose the device to schedule and which schedule to add the entry to. In this example the kitchen lights are used.



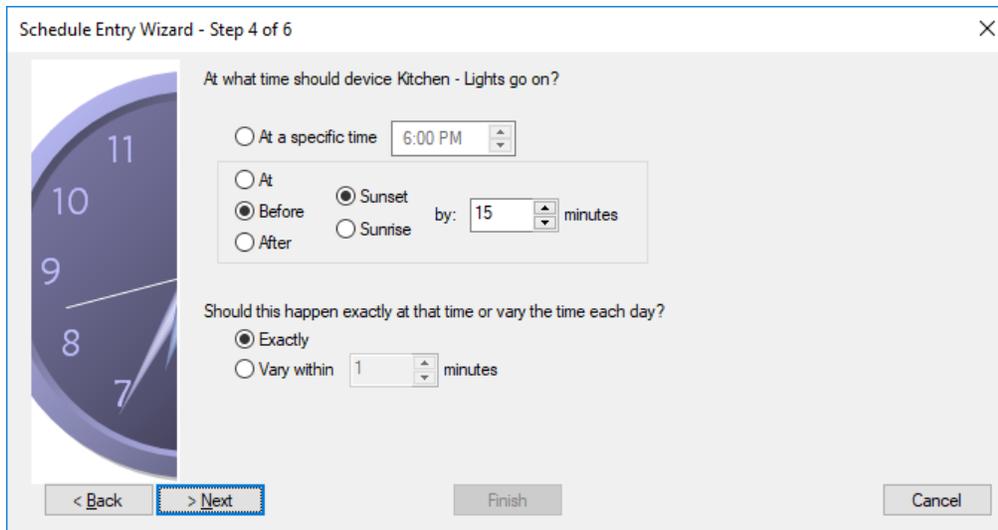
Step 2, lets you choose what kind of schedule you are creating: An ON at a selected time, an OFF at a selected time, or an ON and OFF time in a single entry.



In this example, we will just create an ON entry.

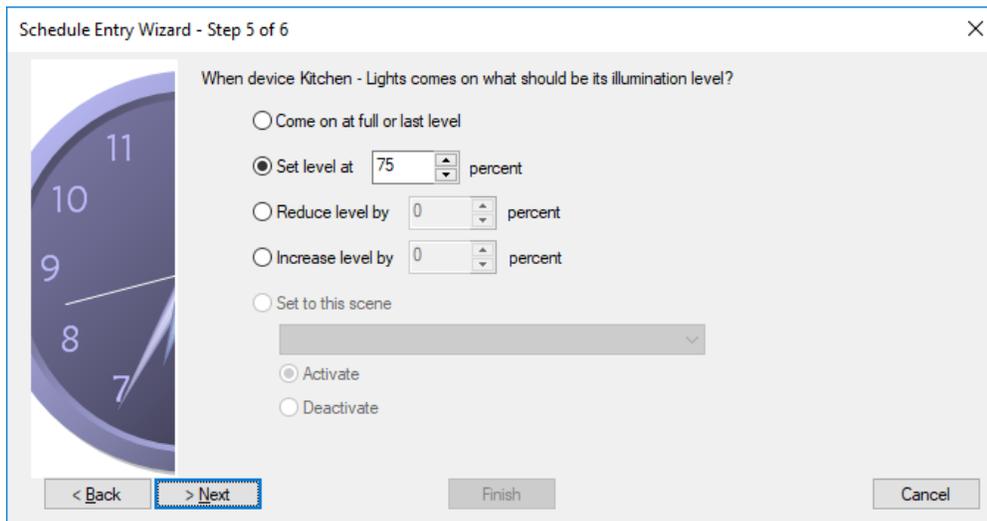


In step 3, the date is specified. This example controls the lights every day.

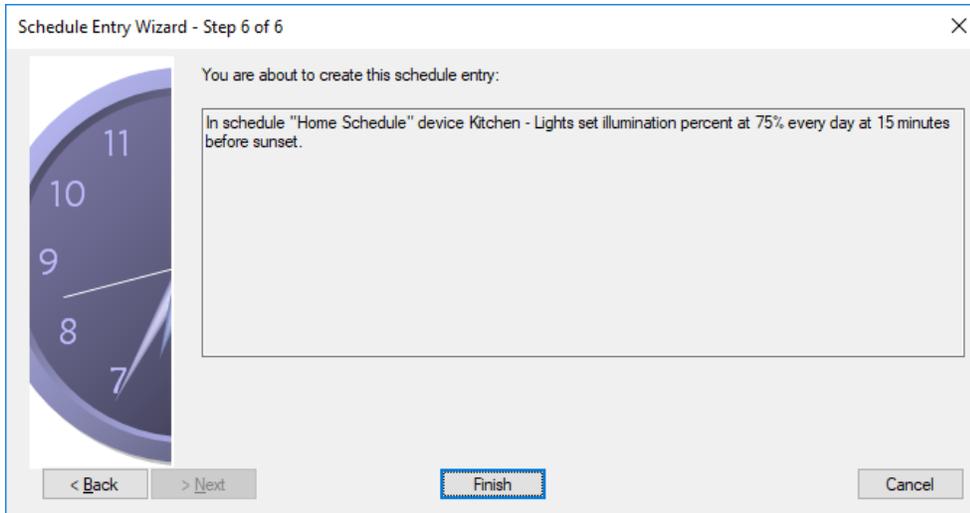


In step 4, the time that you want to control the lights is specified. In this example we want the lights to come on at 15 minutes before sunset.

**Tip:** How does HCA know when sunset is? It calculates it based upon your location. If your actual sunset time is earlier or later – if you house is in a valley or on a hill – you can adjust the calculated time to be a bit earlier or later. This is done in the location dialog.

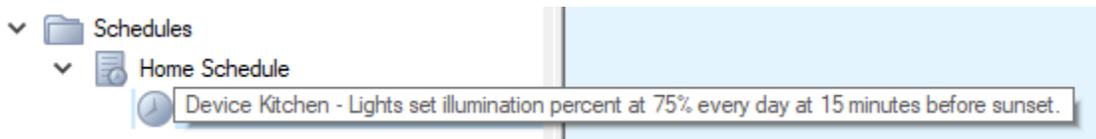


In step 5, the percentage that the light is set to is specified. In this example, 75%.



The last step lets you check your work by taking the settings from all the steps and showing the full entry in a text format. If it all looks correct, press Finish or use Back to move back to a previous step.

When you have completed the wizard, the schedule is updated and shows it in the design pane of the HCA display.

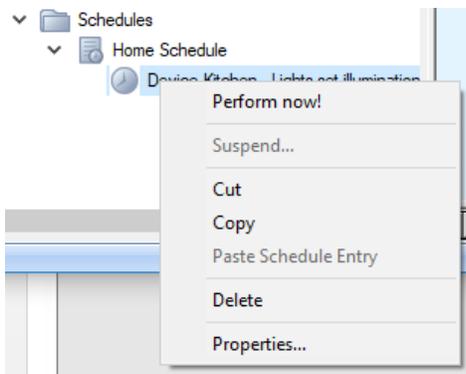


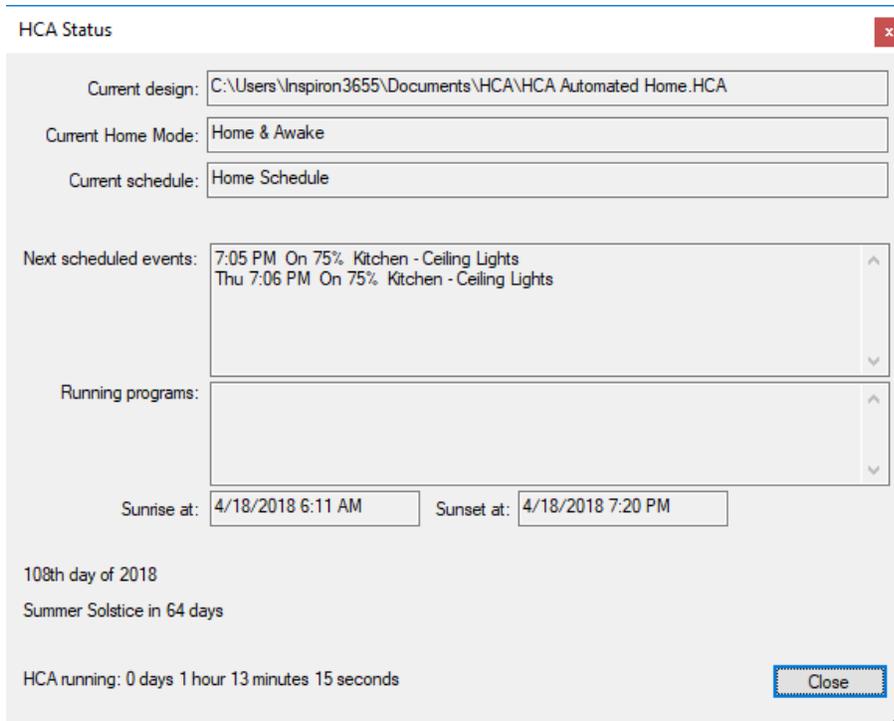
### Checking your work

To see when your light comes on today – sunset varies each day – open the HCA status dialog from the *Control* ribbon category, *HCA Status* button.

In the “Next Schedule Events” section of the HCA Status dialog, you can see the time that the lights come on today – assuming you open this dialog before sunset – and also tomorrow.

You can also cause the schedule entry to happen immediately by a right-click on the schedule entry and select “Perform Now!” from the popup menu.





## Responding to a button press on a keypad

Now that you have added devices, can control them from HCA, and created a schedule, you can start with the kind of actions that really show what HCA can do for you.

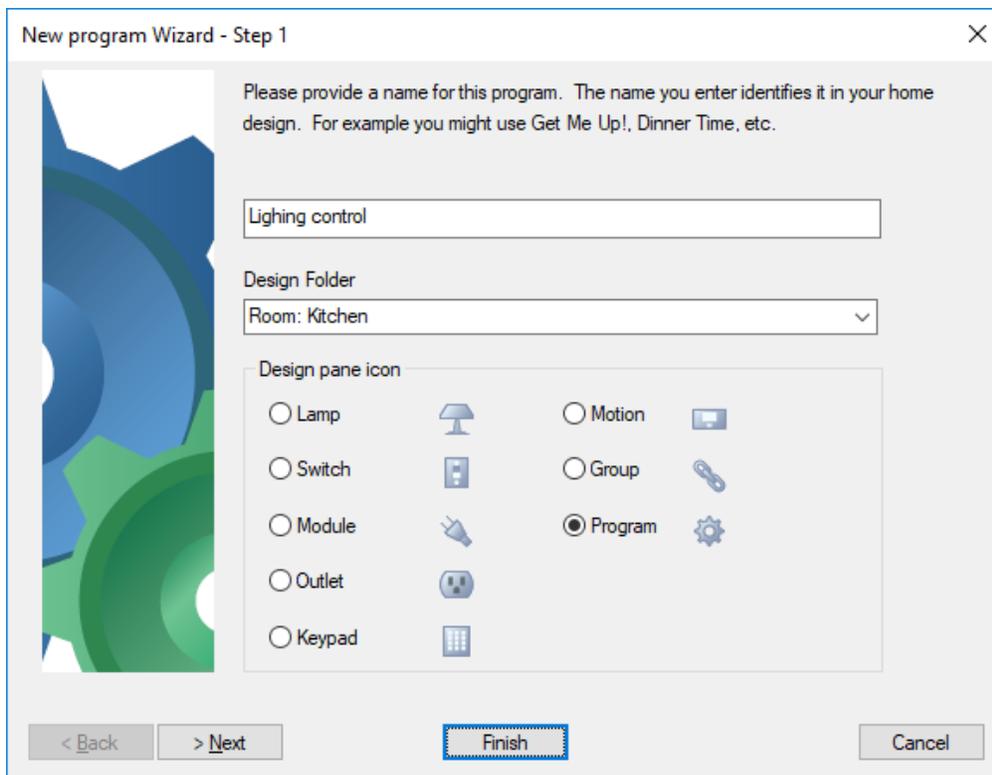
The task we will explore is having a button on a keypad control a light, but unlike doing this with a simple UPB scene, we want the light to come on at 100% during the day but only at 40% at night.

To do this there are two HCA concepts to understand: Programs and Triggers.

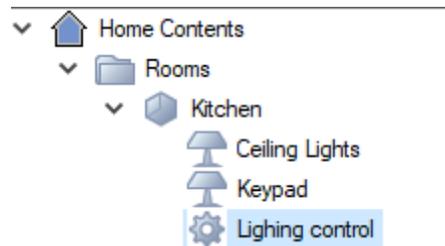
A *Program* is a set of actions that happen when something *triggers* it to happen. That set of actions can be composed of over 50 different possible types and created in a graphical manner using a tool called the Visual Programmer.

A *Trigger* can be any of many different types and in this example we will use one type: receipt of a message from an interface. In this example, the press of a keypad button.

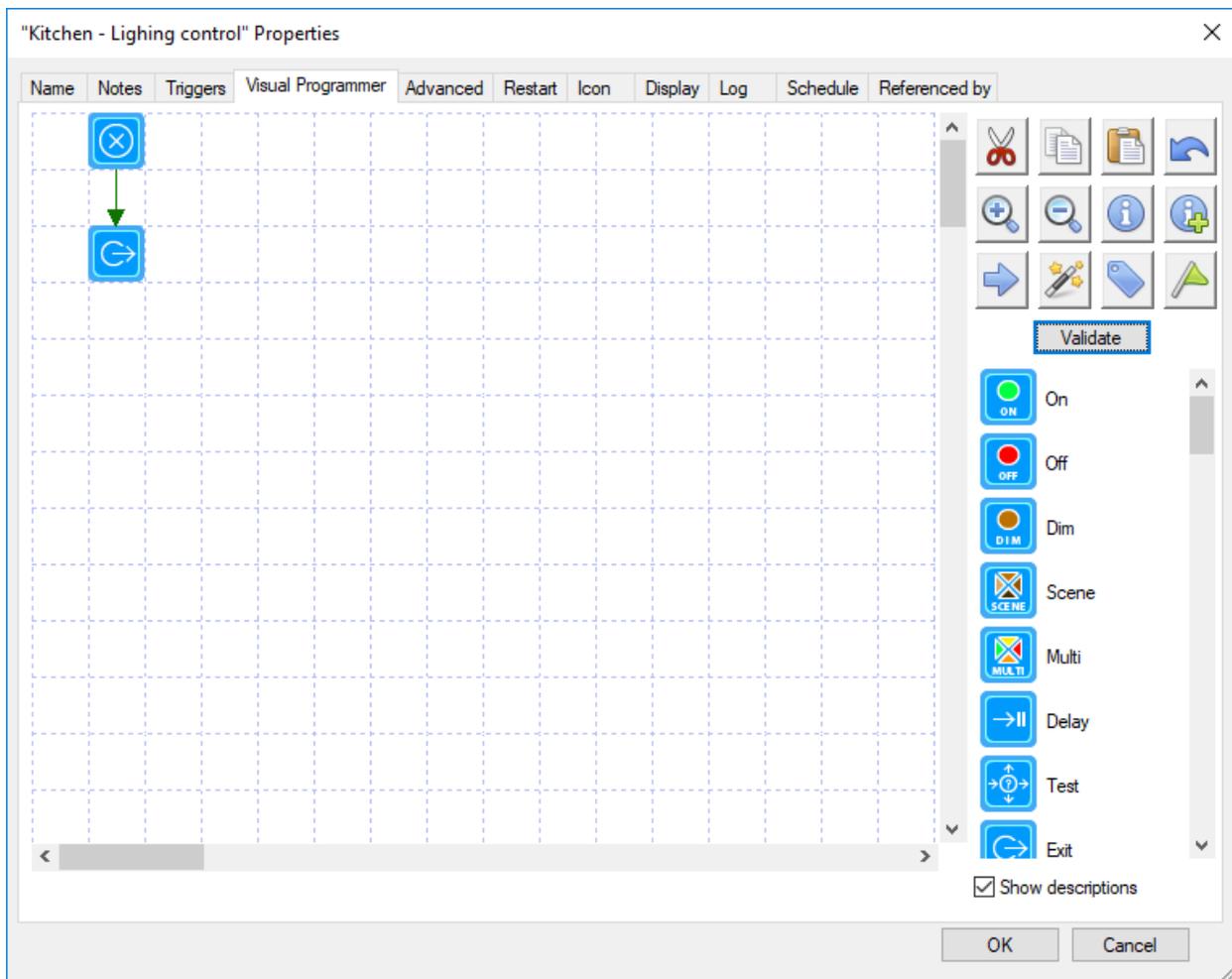
Create a new program by pressing the *Program* button in the *New* panel in the *Design* ribbon category.



After entering the program name use the Finish button to accept the defaults in the next steps and complete the wizard. The program is added to your design.



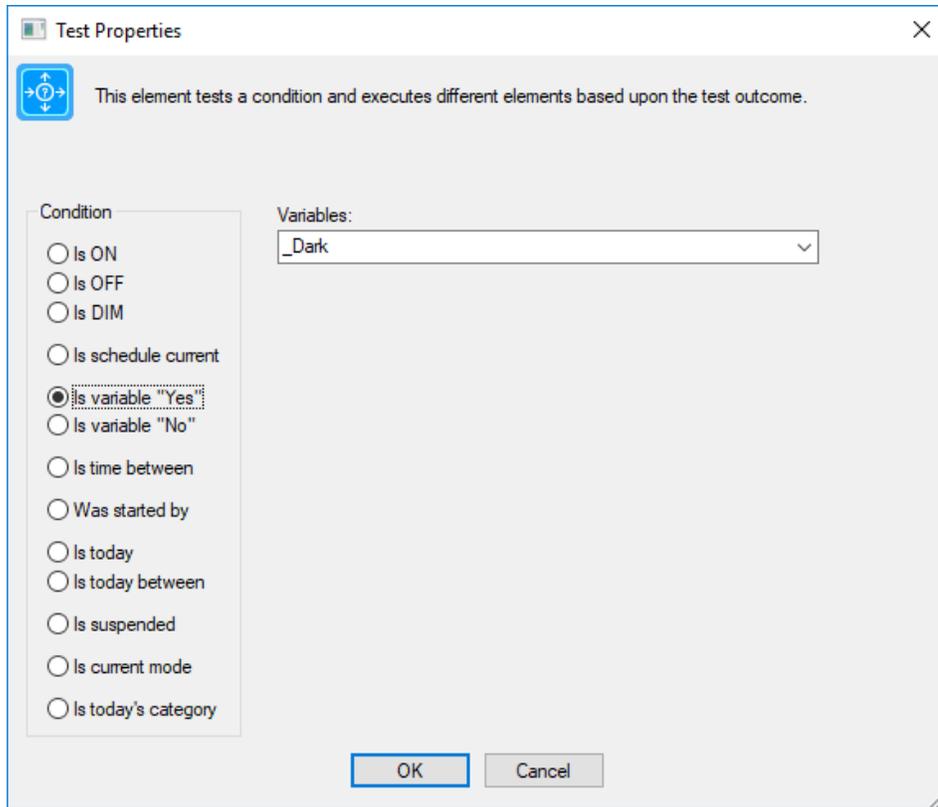
Next, open the properties for the program in the same way you opened the properties of a device – right click on it or double-click on it and then choose the Visual Programmer tab.



There are a lot of pieces to this! The key points are that a program is a set of elements where each element is represented by a block on the programming canvas. The program starts at the Begin-Here element – the top most one in the above picture – and processed element by element following the arrows. Here are the steps to build the program that we want:

Select the second element in the canvas and press Delete on the keyboard to delete it. It's just an Exit element that all new programs have. We need to replace it by the elements that do something useful.

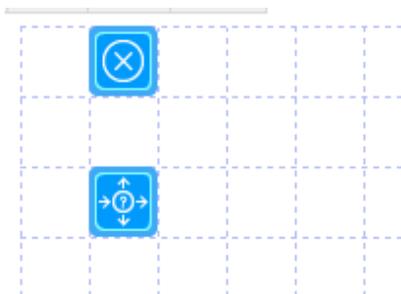
Drag the Test element on to the canvas from the element list and drop it someplace. Its properties open like this:



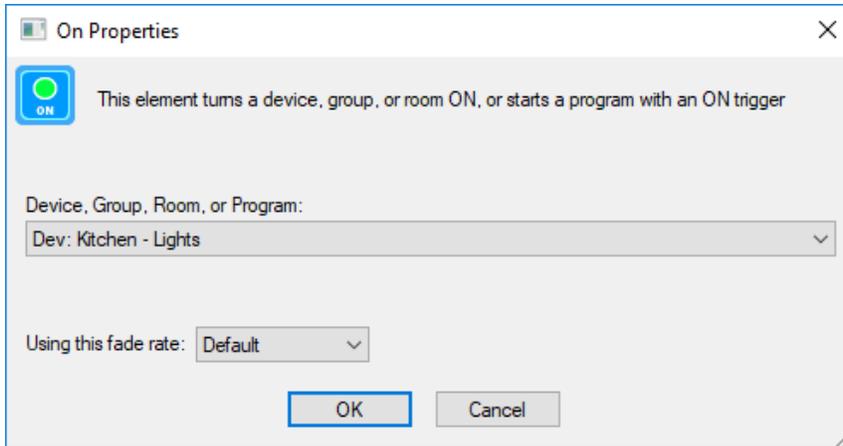
The settings to make are these: choose as the condition “Is variable Yes” and from the dropdown of the variables choose “\_Dark”.

\_Dark is a piece of state that comes built-in and is set to “Yes” when it is dark and “No” when it isn’t. How does HCA know when it is dark or not? Many ways, but the simplest it that it knows when sunrise and sunset happen. HCA can also take into account the light/dark settings from most motion sensors and other methods to determine light vs dark. To see all the possibilities, press the *Properties* button in the *Design* ribbon category, *Home Configuration* panel. It’s all on the Light and Dark tabs.

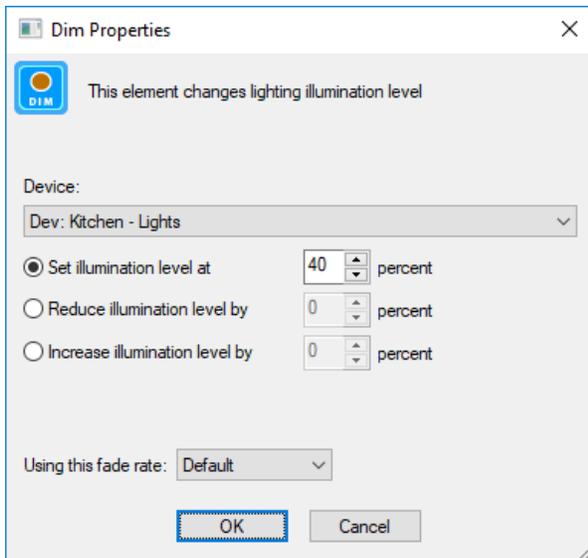
After choosing the “Is variable yes” and “\_Dark” close the dialog with OK. Your program should now look like this:



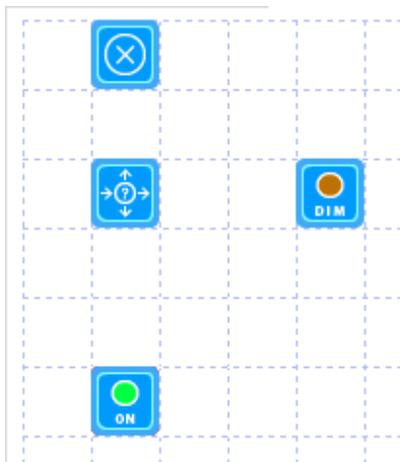
Next, select the ON element in the element list and drag it on to the canvas. When the properties dialog opens choose the ceiling lights, like this:



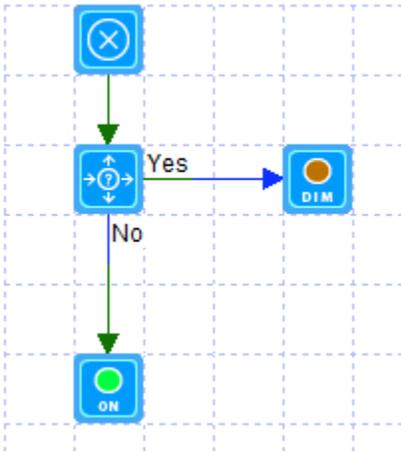
Next, select the DIM element in the element list and drag it on to the canvas. When the properties dialog opens choose the ceiling lights and 40%. Like this:



The program now looks like this:



The last part of configuring this program is to connect the elements. There are many ways to do this but the simplest is to move the mouse right to the edge of an element and the mouse cursor changes to a circle with a dot in the center. When this happens press and hold the left mouse button down and drag a line to the element to connect to. Release the left mouse button and the line connecting them is drawn. Connect the elements like this:

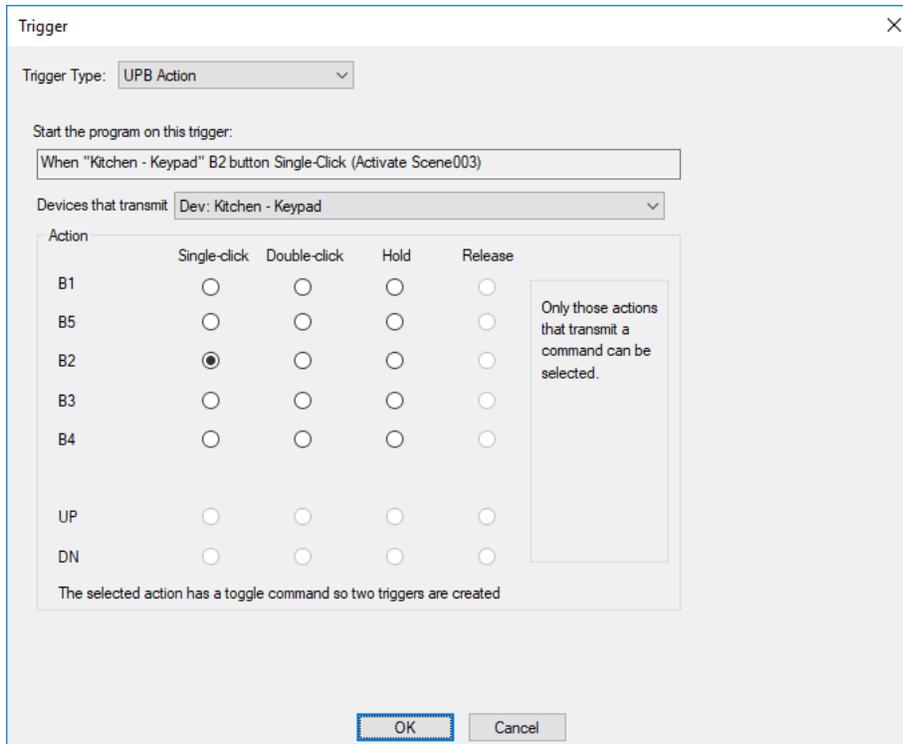


If the arrow from the Test element to the Dim element says “No”, then right-click on the DIM element and choose “Do when Test succeeds”.

The key point about the Test element is that it asks a question – “Is it Dark?” in this example – and if the answer is “yes” it follows the arrow labeled “yes”, otherwise it follows the arrow labeled “no”.

And that’s the program. It begins at the Begin-Here element, asks the question if it is dark, if it is then it sets the ceiling lights at 40%, and if not dark it sets the ceiling lights to 100%.

Almost done but the trigger that starts the program is yet to be created. To do that, switch to the “Triggers” tab and press the “Add Trigger” button at the bottom. The new trigger dialog opens.



The type of trigger to create is a UPB message from the Kitchen keypad when the second button from the top (the button names on UPB keypads are a bit odd) is single-clicked. Note the message at the bottom where it says that the button toggles so two triggers are created. One trigger for the button doing a scene activate and a second when doing a scene deactivate.

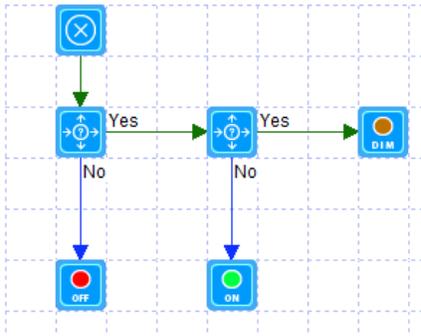
Trigger	Edit	Delete
▶ When "Kitchen - Keypad" B2 button Single-Click (Activate Scene003)	Edit	Delete
▶ When "Kitchen - Keypad" B2 button Single-Click Toggle (Deactivate Scene003)	Edit	Delete

To save the program and its triggers, close the Program Properties dialog with OK. This task is now complete. You should test this by pressing the A button on the keypad and see that the light comes on appropriate for the time of day.

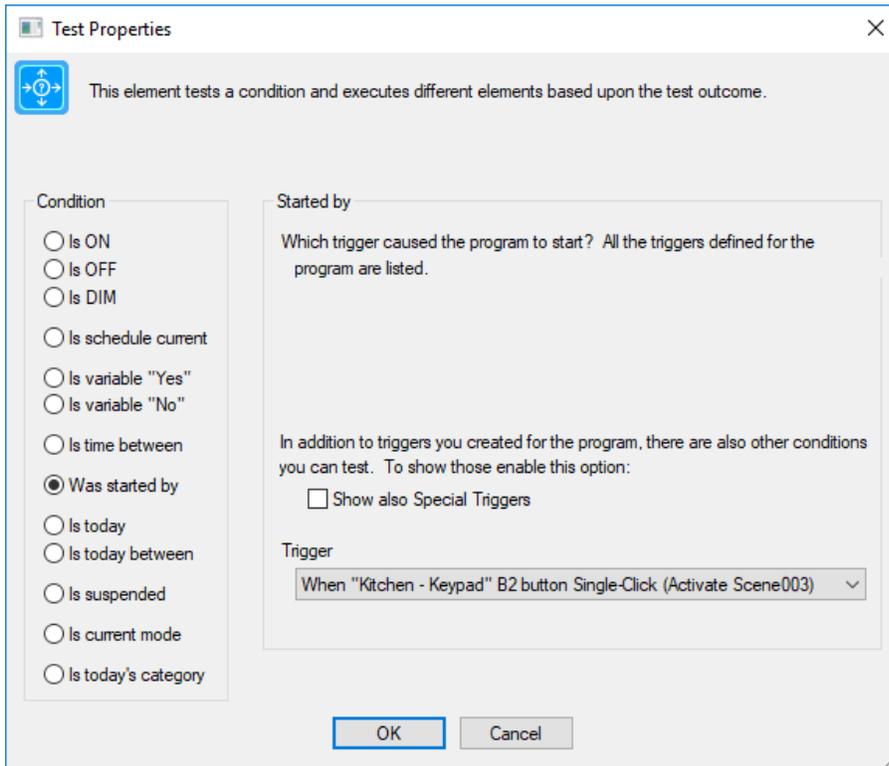
### Improving this program

The program created is triggered by both the Activate and the Deactivate sent by the keypad button. If you want to improve the program to handle both triggers and perform different actions.

And change the program to look like this:



The first Test element tests the starting trigger and if that trigger was the “ON” from the keypad button it goes to the section of the program that was created before, and if it wasn’t – must have been the OFF command from the keypad button – goes to an OFF element to control the lights OFF.



Here are the properties of that new Test element. Instead of the “Is variable On” condition, it is testing for what the starting trigger was now that the program has two triggers.

## OK, got it. What's next?

Now that you can add devices, control, schedule, and respond to events, what's next? The best place to go is to explore what HCA calls *Checkbox Control* which shows you many ways to work with your devices that require little effort to achieve much function: [Getting Started with HCA and Checkbox Control](#).

Don't think that all HCA can do is to control UPB devices! HCA lets you integrate with [Insteon](#), [X10](#), [Phillips Hue](#), [TP-Link](#), [Nest thermostat](#), [Ecobee thermostats](#), [Venstar Thermostat](#), [Ring doorbell](#), and others are being added all the time.

If you began with the starter design, there are two technical notes you might want to look at:

- [Notes on the HCA Starter design](#)
- [Control UI Configuration](#)

And then finally, if you want to start working with Amazon Alexa or Google-Home your next steps will be these:

- [Getting started with HCA and Client Server](#)
- [Getting Started with HCA and Amazon Alexa](#) or [Getting Started with HCA and Google Assistant](#)

In addition to this series of Getting Started guides, there is also a "HCA 101" course on the [HCA YouTube channel](#) and a large [Frequently Asked Question list](#) on the HCA web site.

##end##