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## Control4® – Philips Hue® Lighting Driver Version 8

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## Introduction

This driver is for the Philips Hue LED lighting system. The Hue system consists of individual LED lamps that are direct replacements for standard lamps. The Hue lamps are color changing and each lamp is individually addressable.

Although the Hue system uses a Zigbee mesh this is not directly compatible with Control4. However by using the Hue bridge included with the Hue Starter pack and this driver it is possible to control the Hue system from Control4.

We have provided different drivers in the package. These enable different levels of UI control and enable you to choose the driver that best meets your customers' requirements.

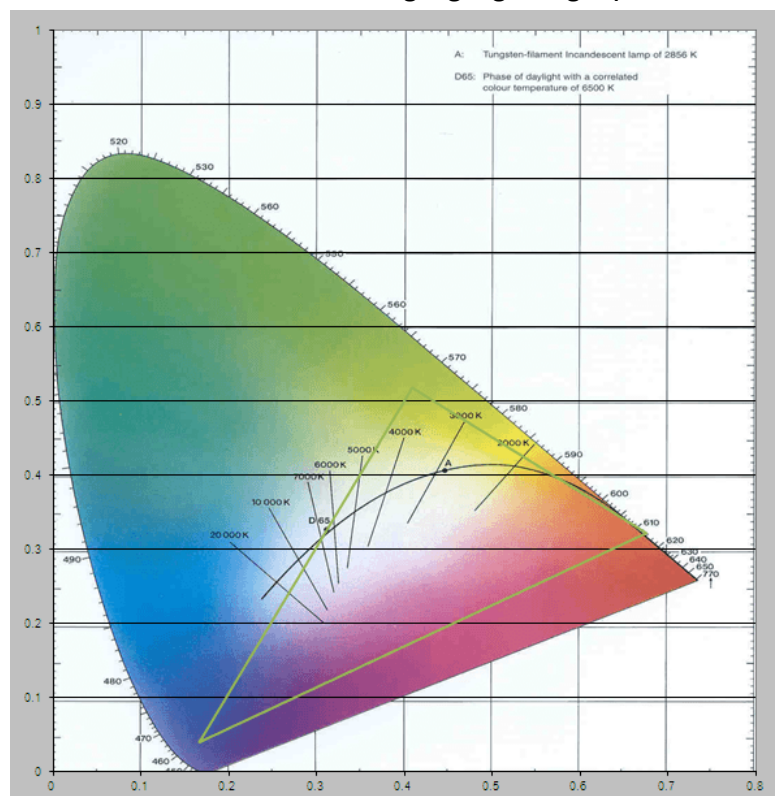
The Hue system is different from other color changing lighting systems that you may be familiar with and it is important that you understand these differences and follow the best practice integration methodology.

## What's Special about Hue?

The Philips Hue system is special (different) from other color changing lighting systems in a number of ways.

The graph on the right shows a chart of all visible colors. The green triangle within this shows the colors that the Hue is capable of producing. As you can see it is designed to produce a wide range of white colors with a good range of reds and blues but not deep greens. This gives rise to the following

- It can be subtle  
Many color changing lighting systems such as RGB lighting strips are good at producing vibrant and dramatic colors. The Hue system is designed for more subtle lighting.
- It is not RGB  
Most color changing strips use Red, Green and Blue LEDs (sometimes augmented with white); Hue does not. It uses LEDs that are designed to mix the range shown. Although our driver provides RGB sliders these are then converted to the color space shown above.



## Designing a Hue Installation

When designing a Hue system for a customer there are a number of factors you should consider.

- Ensure the Hue Bridge is installed within range of the Hue lamps.  
Although the lamps form a Zigbee mesh the bridge must be in range of the lamps.
- Master On/Off control  
If your customer requires a physical wall switch to turn the lamps On and Off then you should ensure that this is also controllable via Control4. A Zigbee wall switch (if appropriate in your region) is the easiest way to provide this.
- Consider the customer's control requirements  
We provide two distinct styles of driver. One provides the customer with Control4 light elements for Red, Green, Blue and Brightness with an optional On/Off control. This would show 15 light elements on the Control4 UI with the standard Hue 3 lamp starter pack.

We also provide a driver which just enables a combined On/Off/Brightness light element on the UI and enables color changing via scenes. So with the starter pack of three lamps you would have one light UI element for each lamp. We imagine that this is preferable for most customers.

- Hue App Scenes must be copied to Control4  
The scenes that are created by the Hue mobile Apps are stored within the App; not the Bridge or the Lamps. This means that if your customer wants to be able to recall one of the iOS scenes from Control4 you will need to define that scene in Control4. We make this as simple as possible and is much easier in version 7.1.
- Lights power on white  
When power is removed and re-applied to a Hue lamp it will always come back on as white – regardless of what color it was previously set to. If you want lights to come back on at a specific color you will need to add programming to do so.
- Use in 'White Light' applications  
One of the attributes of Hue is its ability to produce a wide range of 'white' light from cool blue whites through to warm yellow whites. So a Hue installation could just be for white light. The cost of automating three table lamps with the variety of white colors is low compared with other solutions.

## Auto Color Changing

Our Hue lighting drivers include functions to automatically change the colors on the lamps. The good news with the Hue system is that these automatic color changing programs have a **very low** Control4 processor load. Setting up color changing that fades from one color to another over a minute has no more overload than fading over a second.

The driver includes the following programs

## **Relatively Random™**

More random than with our DMX driver, this program randomly selects one of 65,000 colors.

## **Bathe in Blue™**

A subtle mix of cool blue colors. Ideal for pools and other water areas.

## **Graceful Greens™**

An ideal way to start the day. Graceful greens to sooth the soul and provide a gentle awakening.

## **Raging Reds™**

A fireside companion. Hot, reds oranges and yellows.

## **Purple Parade™**

Girls may not always like pink; they usually prefer purple! A selection of the finest purples a set of LEDs can produce.

## **Mellow Yellow™**

Especially for the Hue system to make use of its subtle warm pallet of yellows.

## **New in Version 7.1**

We have made a number of improvements to the drivers in version 7.1 which make installation faster and add additional features.

## **Lighting Groups**

Previously Hue lamps could either be controlled individually or all the lamps on a bridge could be controlled together. Now it is possible to create groups of Hue lamps and control these together without a popcorn effect. So if you have lamps in different rooms then this enables you to control them together. The previous All Lamps drivers now enable you to select a group or use 0 as the All Lamps group.

## **Predefined Colors**

We have introduced the ability to quickly set some basic colors and white light presets. This enables some colors to be set without needing to define co-ordinates.

## **Presets**

This is the real time saver. Presets make it easy to save and recall Hue scenes defined on the Hue app. Now you set the Hue scene, press Store Preset and all the lamps will save their current state. No more writing down numbers and transcribing them. This also enables you to provide custom save buttons so if the customer edits a Hue scene on the App they can save the changes to the Control4 system themselves.

## **Test before you install**

You should test deploy using this driver with Control4 and Hue in your office or shop before you should attempt to install on site. We strongly recommend that you follow the examples presented here in a demo environment to gain confidence with the system.

Remember if the lighting does not work standalone then it won't work with Control4!

Please create a support ticket on our helpdesk at [www.extravegetables.com/helpdesk](http://www.extravegetables.com/helpdesk) if you are having any problems with this driver.

## Limitations

### 1. Color Limitations

The Hue system is capable of over 65,000 different colors. Control4 lighting enables 0-100% variability and on the touch panels this is only available in 5% steps. In order to provide the widest choice of colors from the UI we provide RGB faders together with brightness. However this can only ever provide a more limited selection of colors. The drivers however do enable an exact color to be selected via custom programming.

### 2. Brightness Varies with Color

One driver style provides RGB faders together with brightness on the Control4 UI. A selected RGB color needs to be translated by the driver into an approximation on the Hue system. This involves automatically adjusting the brightness. This is not an error but is something you need to explain to your customer.

### 3. Hue Scenes do not automatically sync

Scenes created by the Philips Hue Apps are local to the App. Changes to scenes will not automatically sync but you can add custom programming to enable the user to save scenes from Control4 UIs.

## Interface

This driver has been tested with the standard Philips Hue Bridge. It is not designed, tested or supported with any other interface.

## Friends of Hue Lightstrips & Bloom

Philips has introduced LED lightstrips that are compatible with the Hue system. These are known as 'friends of Hue' as they do not have all the features of a Hue lamp. In particular they do not support color temperature. If you open the Philips Hue App on the iPhone or Android you will see that it is not possible to move these to the color temperature area when defining a scene and they cannot be included in the Philips white light 'recipes'.

Consequently these lamps will not react to the color temperature drivers either. These can be controlled either using the full color driver or the brightness driver. For simplicity we would recommend the brightness driver with colors being set via lighting scenes.

These lamps always set light color via the xy method and the drivers will report these coordinates via the Action in the same way as the Hue lamps.

## Add the drivers to your project

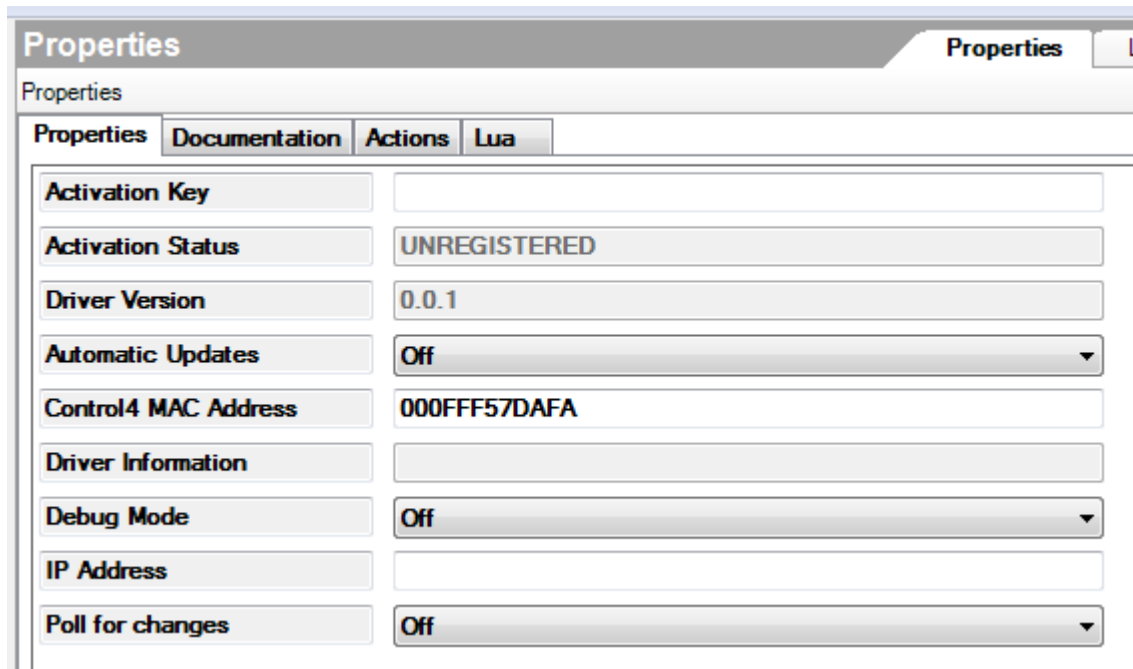
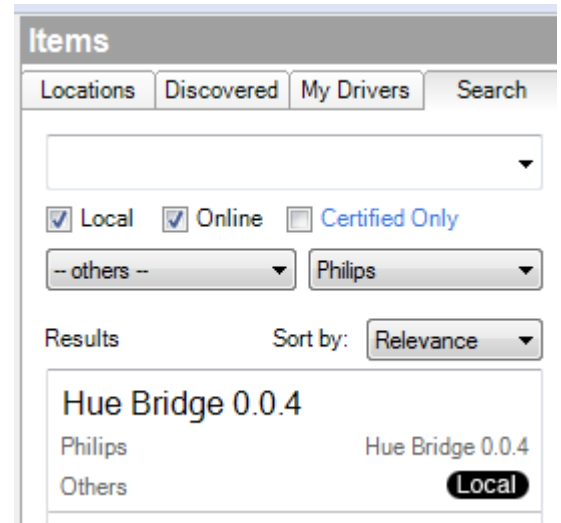
### Bridge Driver

There are a number of drivers included in the zip package. Copy all of these to your My Documents – Control4 – Drivers folder.

The main element of the driver is found under -- others -- manufacturer **Philips**.

You should only bring one copy of this into your project per bridge. If you have more than one bridge add multiple copies of the driver.

The driver has a number of properties that need to be set up for your individual project



Please note that from Version 8 onwards you will not see Activation Key fields as there is no longer a requirement for an Activation Key.

Automatic Updates is set to Off by default. However we recommend that you turn this On so that your drivers automatically update if a new version is available.

You should then type in the IP address that you set for your Philips Hue Bridge. You can find this from your routers DHCP table or by typing [www.meethue.com/api/nupnp](http://www.meethue.com/api/nupnp) when your computer is connected to the same network as the Hue. It is important that you set up a MAC address based reservation on the router for your Hue Bridge. This will ensure it always receives the same IP address if the router is rebooted or there is a power outage.

Polling for changes enables you to keep the Control4 system in sync with scene selections made from the Philips Hue Apps. If you enable this then the driver will seek the status of the Hue lamps every two minutes.

Debug mode is only used if we request you to switch this on when diagnosing any problems you may be having.

## Linking the Control4 System

You then need to link the Control4 system to the Bridge. This is a one off procedure per bridge that would only need to be repeated if the Bridge is changed. It does not need to be redone if the Control4 system is updated, nor if the controller is changed.

When you first type in the IP address of the bridge you will receive a message in the Driver Information box that the bridge has been found but not linked. If you don't see this message then the IP address you have entered for the Bridge is incorrect.

To link the Control4 system to the Bridge, switch to the Actions tab and press the 'Link with Bridge' button.

Switch back to the Properties page and the Driver Information box will now ask you to press the Link Button on the Bridge. Go to the Hue Bridge and press the Link button.

Now switch back to the Actions tab and press the 'Confirm Link' button. Switch back to the Properties tab and the driver will report that the two systems have been linked correctly.



IF NOT REPEAT THE PROCESS. THE DRIVER WILL NOT WORK UNTIL IT IS LINKED WITH THE BRIDGE.

## Discovering the Lights

Each Hue Lamp has an address and a name. Use the Philips Hue iOS or Android App to set the names of each of the lamps in your system. If you have many lights naming them makes it easier to set up and maintain the system. Make sure you have named the lights before setting up the lighting drivers!

Select the Actions tab again and press the Show Lights Available button. Now switch to the Lua tab and you will see all the available lamps and their addresses. Copy and paste this to a text editor as you will need this information to set up the lighting drivers.

```
Hue Lights Available are (in no particular order)
Left Front Address: 1
Right Front Address: 3
Back Address: 2
```

## Setting Lighting Groups

If you want to control lamps as a group then you must define these groups on this driver first.

Poll for changes	Off
Group 1 Lights	1,3
Group 2 Lights	4,5
Group 3 Lights	
Group 4 Lights	
Group 5 Lights	
Group 6 Lights	
Group 7 Lights	
Group 8 Lights	
Group 9 Lights	
Group 10 Lights	
Group 12 Lights	
Group 13 Lights	

There are 13 groups that you can define. There is also a Group 0 which will control all of the lights attached to a bridge.

To define a group, type the addresses of the lights into the property for each group separated by a comma. You can then use these groups in the Lamp Group Brightness and Lamp Group White Warmth drivers.

## Adding the lighting drivers

You now can add the lighting drivers to the project. If you are using Hue for colored light applications then there are two distinct style of driver available and you should discuss the most appropriate choice for your customer before proceeding.

For 'White Light' applications you can use the color temperature drivers which have the same attributes as the Lamp Brightness except they provide color temperature rather than brightness control.

Feature	Lamp Brightness	Full Color
Brightness Control	Y	Y
Pseudo RGB color setting on UI	N	Y
Exact color setting for x,y scenes	Y	Y
Exact color setting for Hue and Saturation Scenes	Y	N
Exact color setting for Color Temperature scenes	Y	N
Can replicate all scenes created by Hue Apps	Y	N
'Mellow Yellow' auto color change	Y	N
On/Off function built into driver	Y	N
Light V2 Proxy (Advanced Lighting, Groups)	Y	N
Ramp Up and Down from Keypad or Remote	Y	N

## Single Lamp Brightness

We think this is the best choice for most customers. It provides a simple single fader on the Control4 UIs for each Hue lamp which controls the Brightness and the On/Off function. Colors can be set in programming.

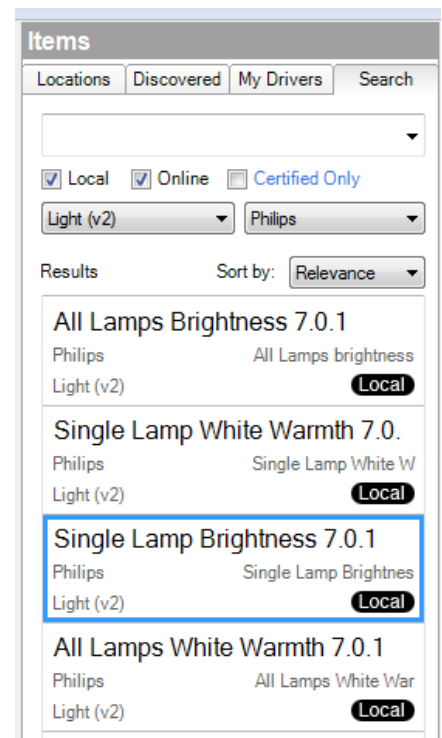
This driver also enables any lighting scenes that have been set up on the Hue App to be re-created exactly in Control4 with simple custom programming.

You will find this under **Light V2**, manufacturer **Philips**

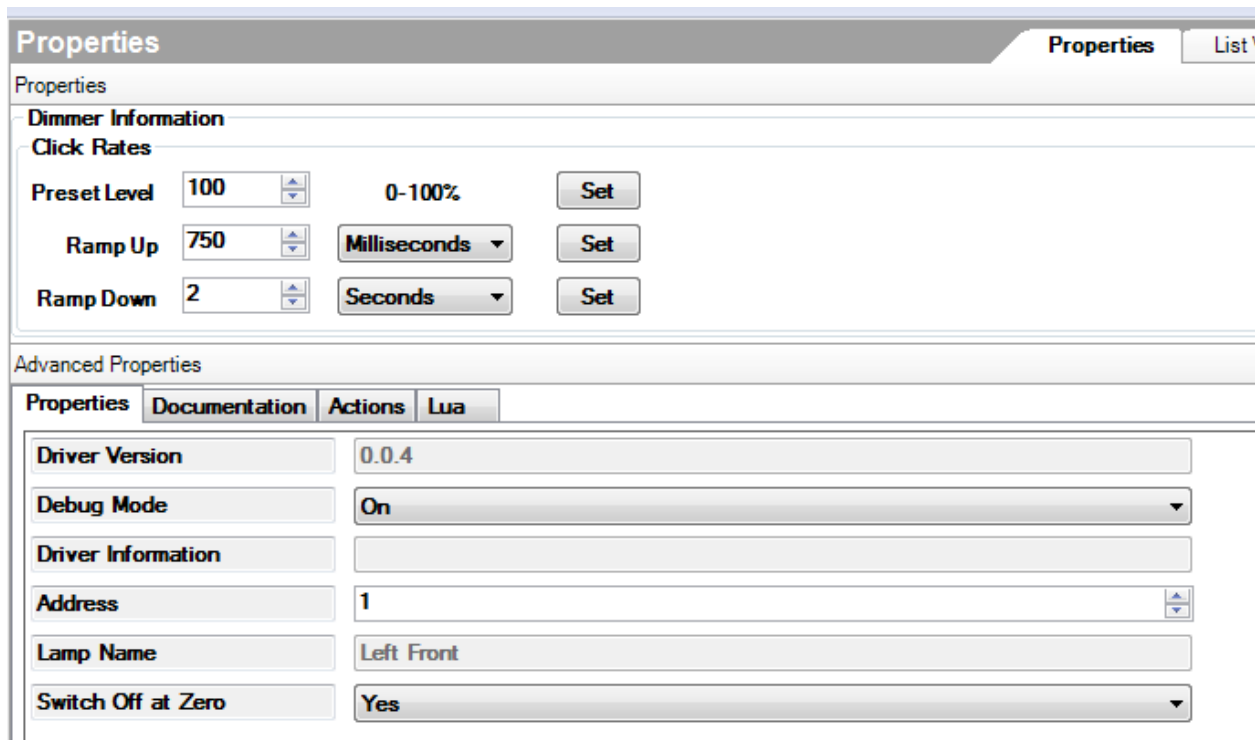
It will appear in your project as a single light.

You now need to provide the address for this Hue lamp in the box provided.

Once you have pressed 'Set' to confirm the address then you should see the name of the Lamp shown below the address.



Check that the name of the lamp is what you expect – otherwise you may have typed and incorrect address.



The Switch Off at Zero function enables you to decide if you want the Hue lamp to switch off when it is at Zero Brightness. With the Hue system 0% brightness does not mean Off, however by setting this option to Yes the driver will turn the lamp off at 0% Brightness which is what many customers will expect.

There are also standard Control4 properties for the initial Preset Level of the lamp and the Ramp Up and Down rates associated with On and Off.

Now when you refresh the Navigators you will see the light on your Control4 UIs. You should test by setting a scene using the Philips App and then using the Control4 fader to adjust the brightness of the light.

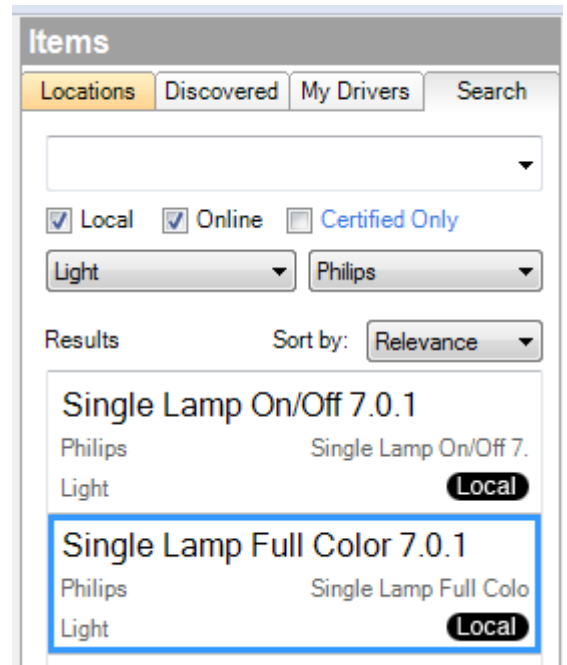
Scene setting is discussed in the next section and this driver can be used in advanced lighting scenes.

You can ramp this light up or down from a keypad or remote control. It can also be ramped in a Lighting Group. Hue does not have a dedicated ramp command so these are sent as a series of commands to the Hue system. Ramping may not be as smooth as you might like. Setting a level for a group from a touch panel or mobile app sends the new level in turn to each lamp.

## Single Lamp Full Color

We also supply a driver in the package that enables the customer to have control over the color of the light from the C4 UI. This will provide the customer with easy to understand faders for Red, Green, Blue as well as brightness. We suggest that you discuss the use of this driver with your customer as there are a number of points that should be explained.

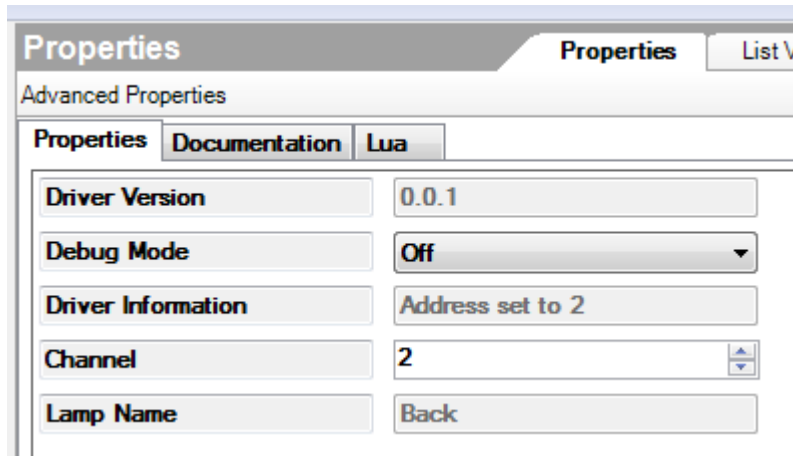
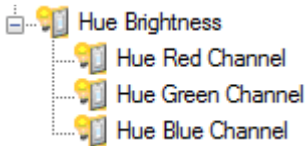
- **Color affects Brightness**  
Because the Hue lights don't use Red, Green and Blue LEDs when translating from the RGB settings on the C4 UI there will also automatically be a change in the Brightness fader. This is not an error but may seem confusing.
- **Only xy scenes can be monitored and set**  
Colors on Hue can be set by a xy co-ordinate in CIE color space, via Hue and Saturation levels or by a Color Temperature. When the driver monitors the Hue system the RGB faders will only update if the scene currently set was via an xy co-ordinate. A number of the built in scenes on the Hue App are not defined as xy co-ordinates.
- **Brightness 0 is not Off**  
A brightness of 0 does not mean the light is turned off. If you want to have individual Hue lamp On/Off control you need to add the optional On/Off driver to the project. This means you have five Control4 UI faders per lamp.



We suggest that this driver is only used for customers who insist they need color control on their C4 interfaces. Even so be prepared to swap to the Single Lamp Brightness Driver if they get confused.

This driver is also found under Light, Manufacturer Philips and is the Philips Hue Lamp driver.

When you add it to your project it will appear as four items as shown below.



You need to set the channel number of the light on the Properties tab. Shortly afterwards the name of the lamp will appear in the Lamp Name box. Check that this is the name you are expecting for this address.

When you refresh the Navigators you will see four Control4 UI elements for each of the RGB and Brightness levels. As you adjust

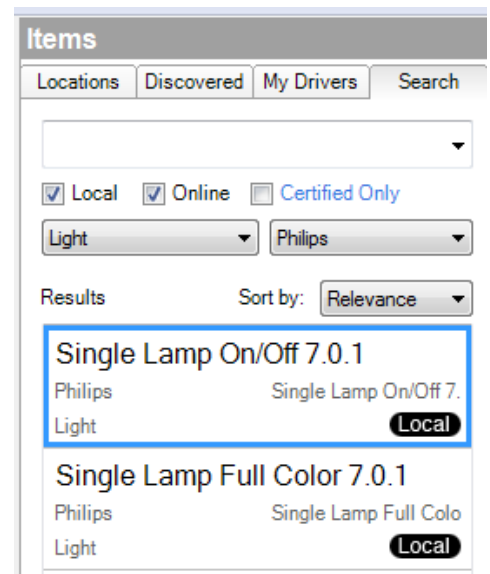
the R, G or B level you will see the brightness element change to provide the closest possible match to the RGB color requested.

### Single Lamp On/Off Driver

If you are using the Single Lamp Full Color Driver, then remember that a brightness of 0 does not mean the lamp turns off.

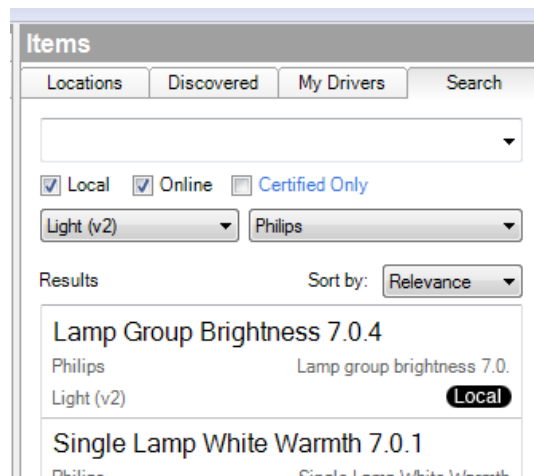
If you want to be able to switch each individual Hue lamp On and Off you can also add the optional On/Off driver to the project for each lamp.

You assign this a channel number as before and it provides a switched light on the Control4 interface. This allows the lamp to be switched On and Off. As power is not being physically removed from the lamp it will switch back on to its previously set color.



## Lamp Group Brightness (was All Lamps Brightness)

This driver enables you to control the brightness of all or a group of lights connected to the Hue bridge simultaneously. Whilst this functionality is also achievable with the Control4 dimmer group driver that solution will produce a popcorn effect; whilst this will not. You can also use this driver for auto color changing applications where you want all the lamps to change to the same color. In fact this driver has all the functionality of the single channel brightness driver; except that it will alter all or a group of the lamps connected to the bridge.



You will find this under **Light V2**, manufacturer **Philips** and will come into the project as a single lamp.

You need to set the number of the group that this driver will control. 0 is All Lights and the other numbers refer to the groups defined on the main driver.

Custom Programming commands are available to set the exact color in all possible ways and to start the auto color changing programs. See the Single Lamp Brightness Driver for more details on how these work.

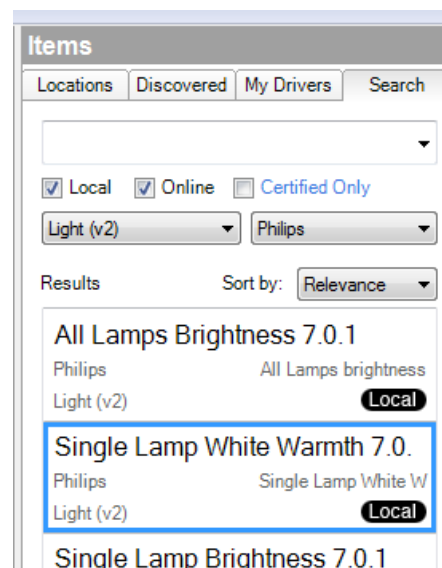
## Single Lamp White Warmth

This driver is designed for applications where you are using the Hue lamps primarily for 'white light' applications. It provides a fader on the Control4 UI which allows the customer to select the white 'color' from cool to warm. You can combine this with the Single Lamp Brightness driver so that the customer has control of both of the color and brightness of the lamp. This is a light V2 driver and can be found under **Light V2**, manufacturer **Philips**.

The channel number of the light needs to be entered into the Properties of the driver and then the name of the lamp will be shown.

On the Control4 UI 0% (or Off) is the coolest white and 100% (or On) is the warmest white. You can also set an exact color temperature in custom programming.

This driver doesn't turn the light On or Off it just adjusts the white 'color'. To control the brightness of the light and to turn it on or off then add the Single Lamp Brightness Driver to the project.



Lamp Group White Warm – (was All Lamps White Warmth)

This driver provides a single UI element that will simultaneously adjust the color temperature of all or a group of the lamps connected to the bridge without a popcorn effect.

You can add this driver and the Lamp Group Brightness driver to provide full simultaneous control of the color temperature and brightness of all or a group of lamps connected to the bridge.

You can also set an exact color temperature in custom programming.

You must provide the group address, 0 is all lights and other numbers refer to the groups you define on the master driver.

## Scene setting

As the Hue system is all about different colors, lighting scenes are an important part of the integration.

## Lighting Presets

The most common use of scenes with the Hue drivers is to copy the scenes defined using the Hue App. In version 7.1 we have introduced the Lighting Preset concept into the driver which makes this process very simple.

It is possible to save and recall up to ten lighting presets using the driver. These can be saved and recalled either for each lamp or across the whole system.

## Saving Hue Scenes

Saving a Hue scene is easy:

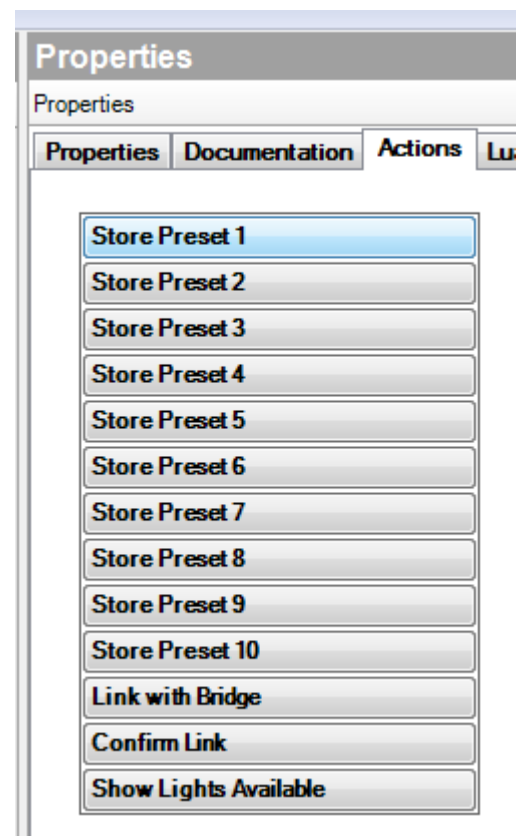
- Set the lighting Scene on the Hue App
- Save the scene using the Store Preset Action on the master driver.

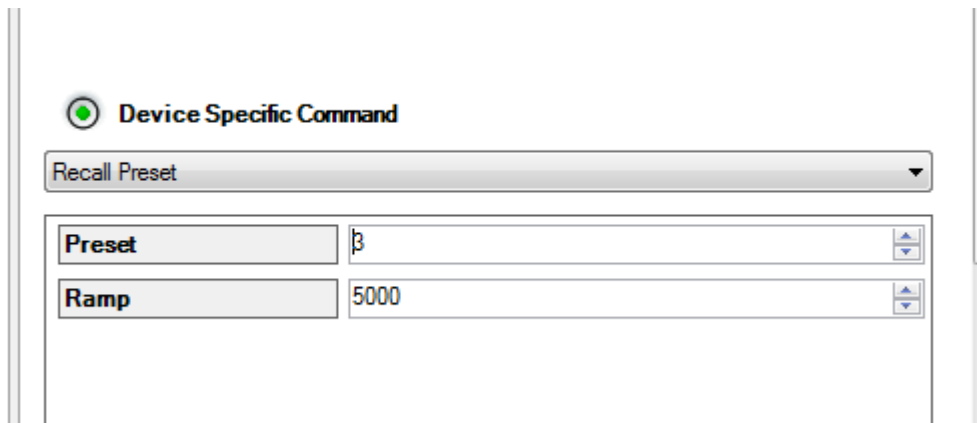
All Hue drivers in the project will now store their current levels in the preset you have selected.

These Store preset actions are also available on the individual light drivers in case you only want to store the levels of selected lights in the preset.

## Recalling Hue Scenes

Once you have saved a preset it is possible to recall this in custom programming. This ability is provided in the master driver and for the individual lights.





You can define the ramp speed to the new scene in milliseconds.

Note these lighting presets do not automatically appear on the Control4 UI as lighting scenes.

You can link a preset to a Control4 scene by adding in some programming when the Control4 scene is invoked.

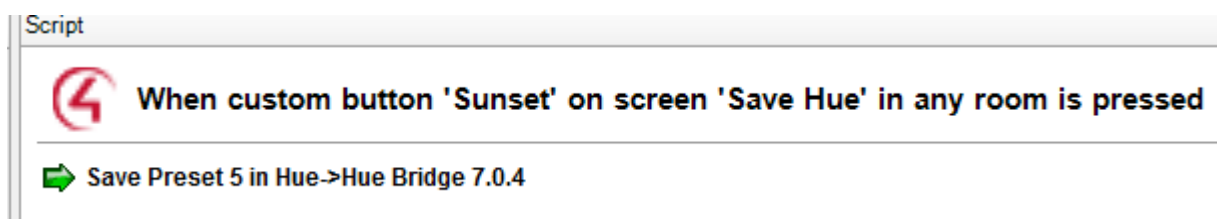


In the example above we have created a macro that would stop any color changing that was running on the Hue system and then recalled a Hue preset.

### Enabling Customers to Store Scenes

If a customer changes a Hue scene on their Hue app you can provide a custom button that saves the new levels to the Control4 system.

The customer needs to set the revised Hue scene using the Hue App and then press the custom button you provide.



## Custom Scenes

You can use the methods below if you want to create custom lighting scenes which are not equivalent to scenes created with the Hue App.

### Scenes with Single Lamp Full Color Driver

With this driver you have two options for setting up the lighting scenes. You can either use a setting of the each of the Red, Green and Blue channels or you can use custom programming to set an exact Philips Hue color.

If you set the scene using the standard faders you can use the standard Control4 Lighting Scenes Agent. If you want to include channels in an Advanced Lighting Scene you should first create the scene as a normal Lighting Scene and then convert it to an advanced lighting scene. Note you cannot use advanced properties like delays or repeats.

You also have the opportunity to set an exact color for each channel using the xy coordinates.

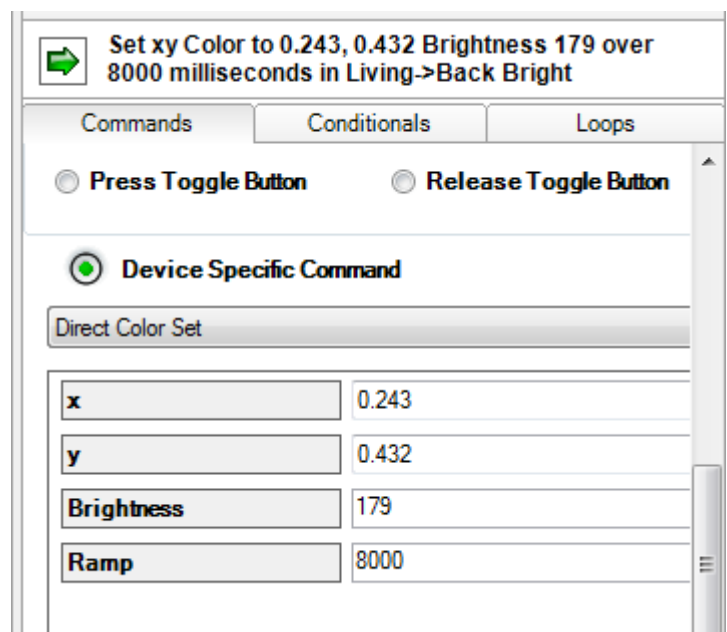
There is a device specific command for this function.

You select the x, y co-ordinates as a number between 0 and 1.

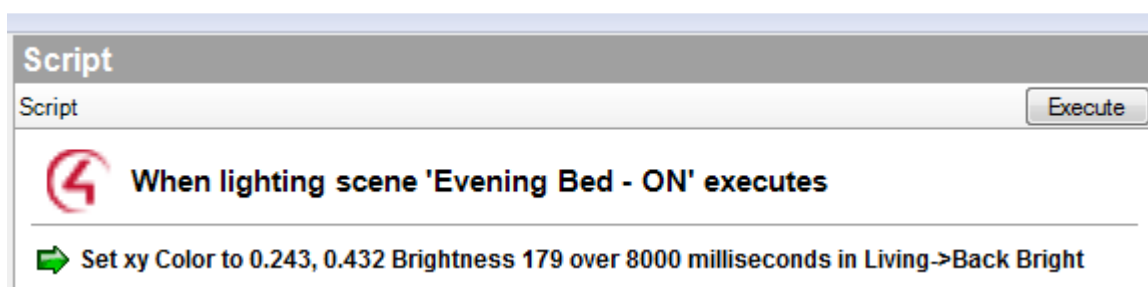
The Brightness is a number between 0 and 255.

The Ramp time is in milliseconds so in the example on the right the ramp is 8 seconds long.

See the section below on retrieving the xy co-ordinates of a current color set on a Hue lamp.



To then set an exact scene you can set the scene up on the Control4 agent so that it only includes the Brightness channel of the Hue lamp. Then add in additional programming when the scene is activated/executed.



## Custom Scenes with Single Lamp Brightness driver

With the Single Lamp Brightness Driver you can use the standard Control4 lighting scenes agent to set the brightness part of the scene. Then you can add in the color changing part via custom programming.

With this driver you have three different ways to set the color on the Hue lamp which enables you to mimic any of the scenes set up on the Hue Apps.

### xy co-ordinates

This is as per the setting on the Single Lamp Full Color Driver.

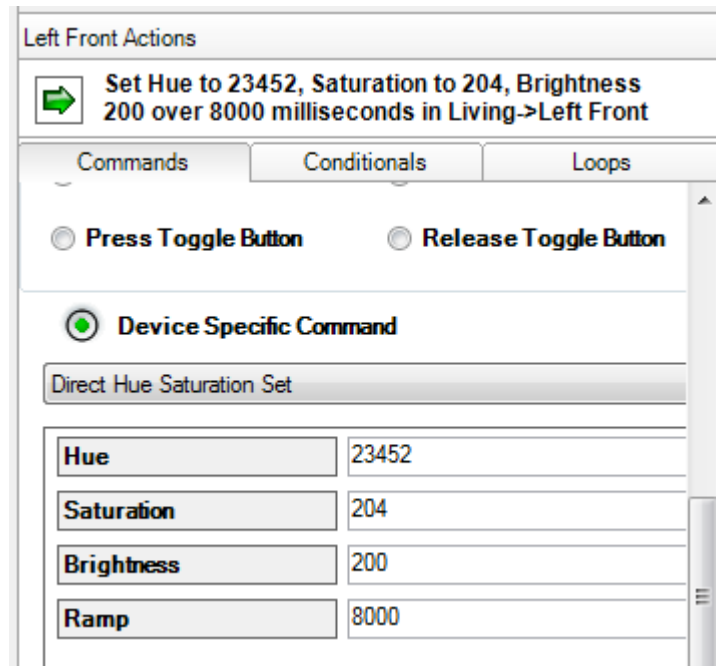
### Hue, Saturation and Brightness

The Hue is a setting between 0 and 65535. Both 0 and 65535 are Red, 25500 is the purest Green the lamp can produce and 46920 is Blue.

The Saturation is a number between 0 and 255 where 255 is the most saturated (colored) and 0 is the least saturated (white).

Brightness is set between 0 and 255 – remembering that 0 does not mean Off.

The ramp is in milliseconds.

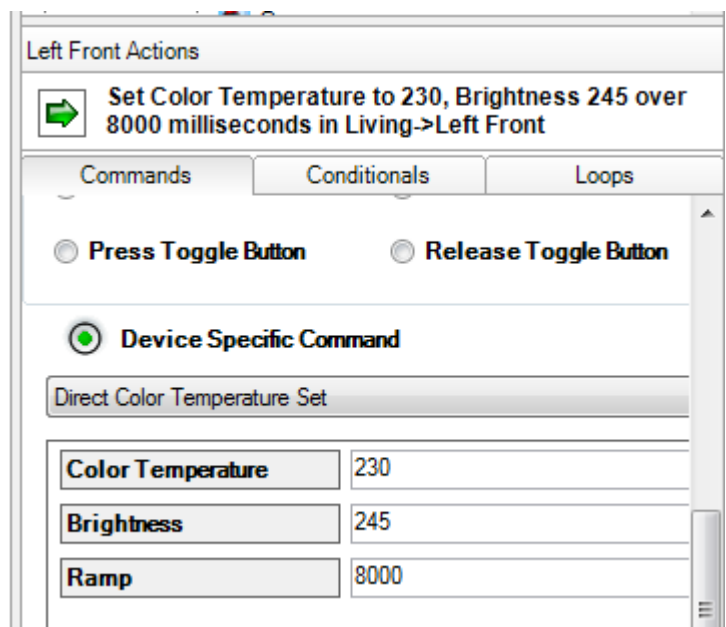


### Color Temperature

This setting is for setting a white color from cool to warm (effectively blueish, white and yellowish). This is the Mired Color temperature of the light. 2012 Hue lights are capable of 153 (6500K) to 500 (2000K).

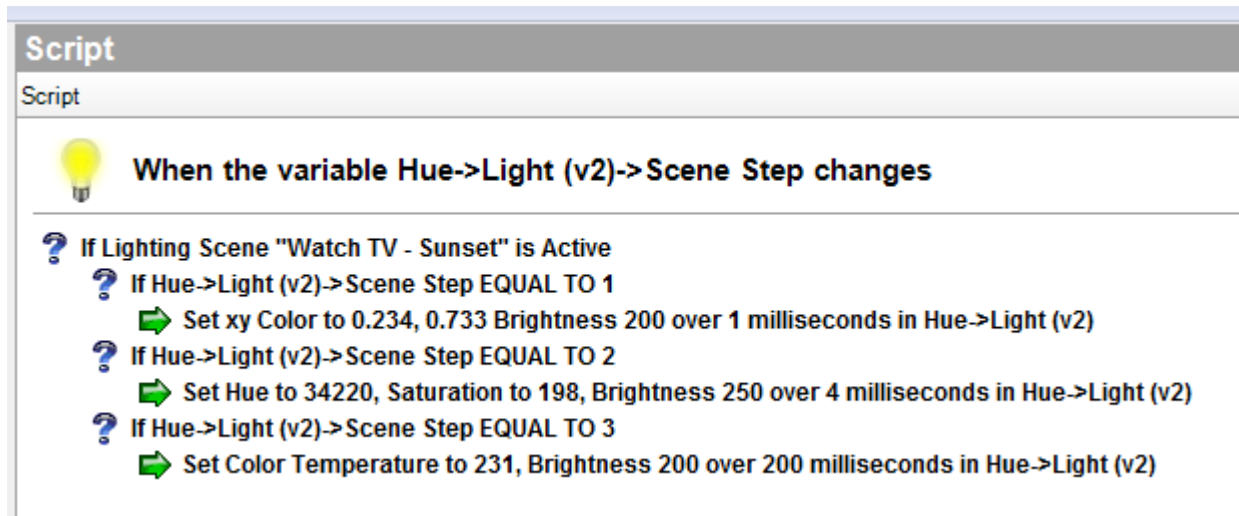
Again you are also able to set the Brightness and the Ramp Rate in custom programming.

This enables you to set an accurate color temperature to match any regular 'white' lamp you can purchase.



## Multi Step Advanced Lighting Scenes

With multi step Advanced Lighting Scenes you may want to change the color at each step of the scene. To enable you to do this there is a variable in custom programming that is updated at each step of the scene. So you can add programming when this variable changes.



The screenshot shows a 'Script' editor window. At the top, there's a title bar 'Script' and a sub-header 'Script'. Below that, a lightbulb icon is followed by the title 'When the variable Hue->Light (v2)-> Scene Step changes'. The main content area contains a list of actions:

- ? If Lighting Scene "Watch TV - Sunset" is Active
  - ? If Hue->Light (v2)-> Scene Step EQUAL TO 1
    - ➡ Set xy Color to 0.234, 0.733 Brightness 200 over 1 milliseconds in Hue->Light (v2)
  - ? If Hue->Light (v2)-> Scene Step EQUAL TO 2
    - ➡ Set Hue to 34220, Saturation to 198, Brightness 250 over 4 milliseconds in Hue->Light (v2)
  - ? If Hue->Light (v2)-> Scene Step EQUAL TO 3
    - ➡ Set Color Temperature to 231, Brightness 200 over 200 milliseconds in Hue->Light (v2)

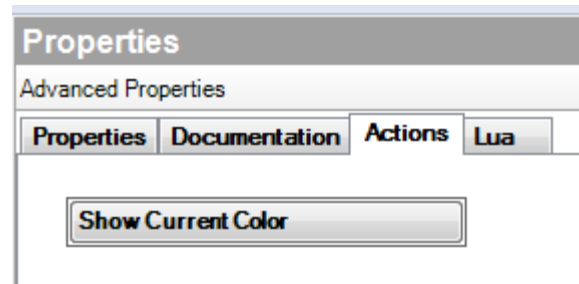
The logic is to add this programming when the variable Scene Step changes. Then check which step of the scene is active and from there select the exact color you require by any one of the methods available.

## Showing the current lamp color

In order to accurately set a scene to match one defined on the Philips Hue App you need to know how that scene is set for each lamp and what color they are displaying.

First set the scene using one of the Hue Apps and ensure that it has settled into its final color and brightness.

On the Actions tab for the lamp driver press the 'Show Current Color' button.



The screenshot shows a 'Properties' window with a sub-header 'Advanced Properties'. There are four tabs: 'Properties', 'Documentation', 'Actions', and 'Lua'. The 'Actions' tab is selected, and a button labeled 'Show Current Color' is visible.

Now switch to the Lua tab to see the result.

Color X is 0.5522 Color Y is 0.3773  
Brightness real value is 211  
Brightness is 83% Red is 100% Green is 77% Blue is 38%

For the Single Lamp Full Color Driver the color can only be displayed if the scene was set as an xy co-ordinate. In this case it will show the exact co-ordinates and brightness and the closest possible 4 Fader percentages. You can then use these figures to set the Control4 scene using the Lighting agent and then the exact color using custom programming.

If using the Single Lamp Brightness Driver then if the setting was via xy you will see the exact co-ordinates and brightness figures.

Color X is 0.5522 Color Y is 0.3773

Brightness real value is 211

If the setting was made using Color Temperature then that will be shown along with the Brightness

Color temperature is 462  
Brightness real value is 207

If the color was set using Hue and Saturation settings then those levels will be displayed on the Lua tab.

You can then use the appropriate custom programming command to match the colors.

## Automatic Color Changing Programs

One of the most popular requests with color changing lighting is for it to automatically sequence between colors.

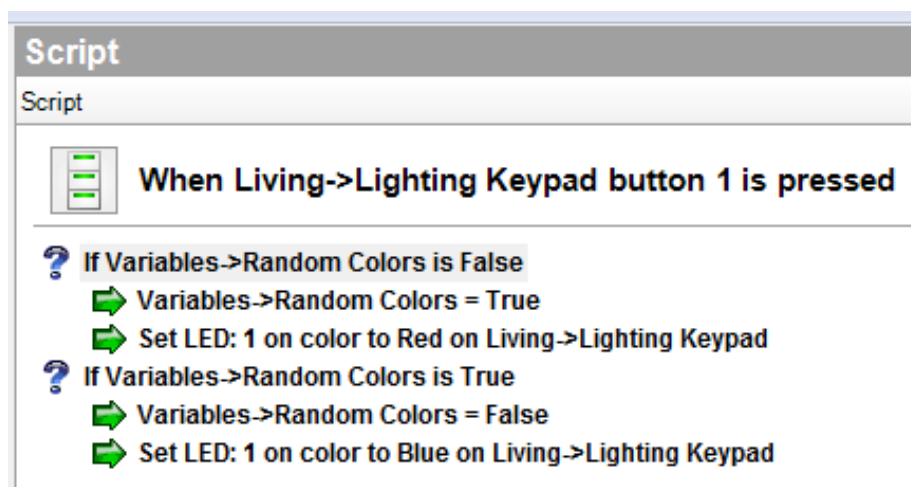
The Hue system lends itself to this application and on this system running automatic color changing from Control4 has a very slow system overhead. You can run long slow fades between colors as all the fade processing is handled by each lamp.

These random color changing programs are available on both the 4 Fader and Single Lamp Brightness Drivers. The Mellow Yellow effect is only available on the Single Lamp Brightness Driver.

## Starting Random Colors through Programming

Setting up random color changing is selected in the Programming area of Composer and can easily be programmed to a keypad button.

As an example we will use a Control4 three button keypad and will use the top button to switch the Relatively Random color changing on and off. We will also need a Control4 Boolean variable that we have called 'Random Colors'. So the basic programming of the button when it is pressed would be as shown below.



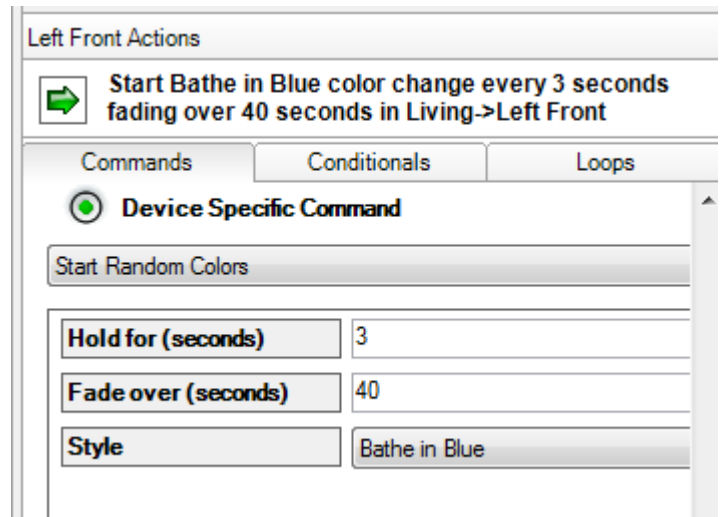
So if when Key 1 is pressed if Random Colors is false it is set to true and the LED button color is set to Red. If Key 1 is pressed again Random Colors will be true so the LED will be set to Blue and Random Colors set to false again.

Now we need to add the auto color fading commands to the program. If you select one of the RGB fittings on the right hand side in the Actions pane you will see the usual commands associated with a light plus some specific commands for this device. Note it doesn't matter whether you select the Red, Green, Blue or Master Channel.

The command we need to use is Start Random Colors.

This has three parameters that need to be set. The Hold for field allows you to set how long in seconds a color will remain static in seconds. The Fade Over field allows you to select how long it will take for each color to change to the next color.

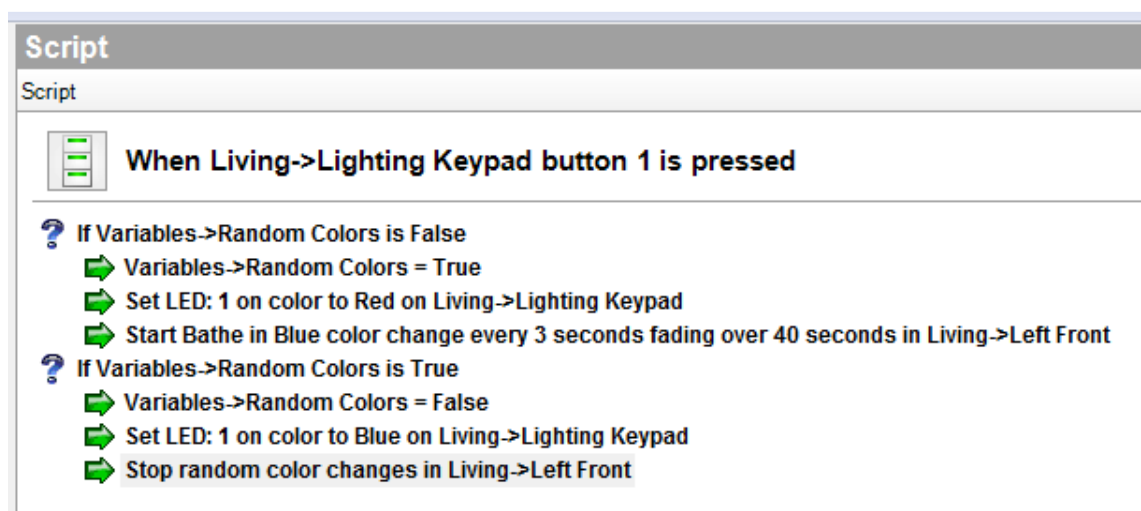
So if you set Hold for to 3 and Fade over to 40 then a color will be displayed for 3 seconds, then it will fade to the next color in 40 seconds. This new color will be displayed for 3 seconds before fading to the next color over 40 seconds and so on.



The Style drop down box allows you to choose one of the available effects.

Once you have chosen the fade and hold times for the effect add this to the programming. Then add the Stop Random Colors code to the 'off' click of the switch.

So an example of completed programming would be as follows:



## Selecting Color Changing Programs as Scenes on Touchpanels etc

If you would like to offer the color changing programs as a lighting scene proceed as follows: Create a scene – but don't add any lights to the scene. In programming

program so that when the scene is recalled you start the appropriate color changing program. Don't forget to create a scene to switch the color changing off!

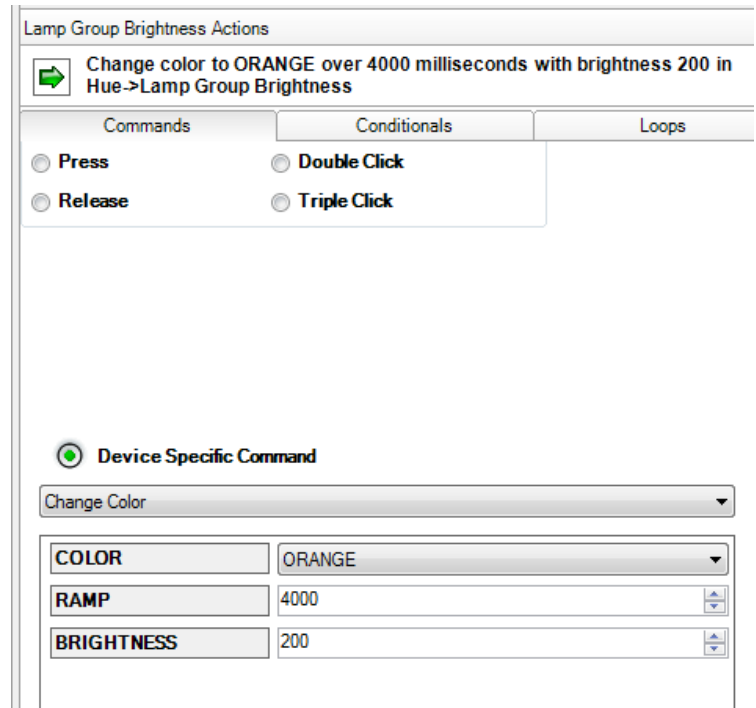
You will then need to make sure these lighting scenes are 'visible' in the room on the Navigators. By default Control4 will hide these as they have no real lights in them.

## Simple 'Standard' Colors

It is now also possible to set Hue lamps to a number of simple standard colors. These function are available in custom programming for the Individual and Lamp Group Drivers.

A number of standard colors are defined. There are four 'White' colors. WHITE is available for all lamps and will set the Friends of Hue lights to the closest they can provide to white. WARM\_WHITE, COOL\_WHITE and MID-WHITE will only function with the true Hue lamps and will set a color temperature.

The Brightness is a Hue brightness figure from 0 to 255 and the Ramp is in milliseconds.



## Combining with a Physical On/Off Switch

One of the advantages of a Control4 integration with Philips Hue is the ability to integrate and control the Physical On/Off switch in conjunction with the Hue lamps.

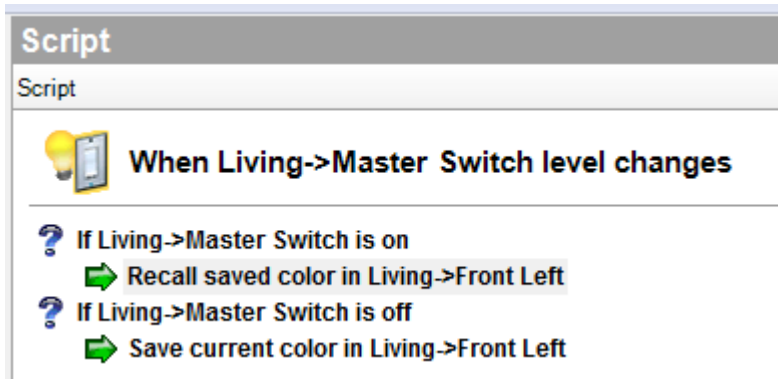
Consider a Living Room which has a single circuit of light for table lamps which are controlled by a wall switch. If you simply replaced the lamps in the table lights with Hue lights you would still need to make sure that the master wall switch was on. Horror of horrors this may involve getting off the couch!

Integrating with Control4 enables you to replace that wall switch with a Control4 wall switch as well as changing the lamps to Hue Lamps. This now enables complete control whilst retaining the ability to manually switch the circuit On and Off at the wall.

When setting up any of the lighting scenes for the room make sure that you include the master wall switch in them and set it On. This means that whenever the scene is set the table lamp circuit is energized. You can include the master wall switch in any 'Room Off' scene too.

You need to remember that the Hue lamps do not retain their color state when they are power cycled; they will power as white.

If you use the 1 Fader version of the driver we also enable you to save and recall the last color. So when the switch is turned 'Off' you can save the color and when it is switched on you can recall the color.



Alternatively you could get more involved and depending on the time of day set one of the lighting scenes. So if the customer switches on the lamps in the morning they get a bright wake up scene, whilst if they switch it on in the evening they get a relaxing warm lighting scene – all from their Control4 switch.

Remember you must NEVER connect the Hue lamps to a dimmer or dimmer switch.

## **Activating the Driver**

From Version 8 it is no longer necessary to purchase a license key in order to activate the driver.

## **Troubleshooting**

There are three main causes of most problems with the operation of the interface.

### **Connections**

Check also you connected the driver both physically and in Composer to the correct IP address.

Can you control the lights using the Philips Hue software? If not check your Hue bridge and installation.

Now check by double clicking on one of the Lights in system design to see if it can be switched on and off.

If the lights switch On and Off from the Composer interface the problem lies with the programming of the keypad. Work through the examples again.