

# techtalk – Christian Moser

*It's all about technology*

## How to build an Ambilight for every HDMI input source

🕒 May 13, 2014    📁 howto, Raspberry Pi

In this post I'm going to show how you can configure your Hyperion Ambilight for every HDMI source. If you don't have an Ambilight setup yet, I kindly refer you to my previous [guide](#), which will give you an initial ambilight effect for the media center running on the Rpi.

This guide will then go one step further and enable the ambilight effect for all kind of HDMI input sources like PS3, XBOX, Chromecast etc.

We need to get the color information from an HDMI input signal. For this purpose, it's necessary to transform the digital HDMI signal to an analog composite one with a converter. After this, we can grab the composite signal with an USB video grabber connected to the Raspberry Pi. Now we're able to feed Hyperion with the color information by the video grabber.

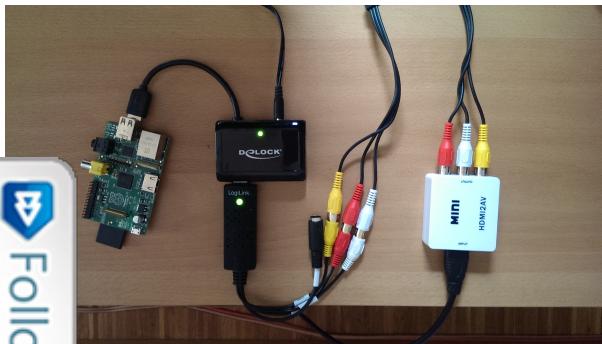
## Parts list

AVR Receiver	It's essential. Most TVs don't offer an HDMI output
HDMI to Analog converter	Speaka Professional HDMI / Composite Converter. There are several others on the market
2 port HDMI splitter	My AVR features two HDMI outputs. Otherwise make sure you'll get one!
USB Video Grabber (Easycap)	Make sure you got a grabber with the <b>STK1160</b> chipset, because it's fully supported on Linux! Check here for <a href="#">detailed instructions</a> , this can be tricky...
Composite cabel	Just a standard video cinch cabel
Active USB Hub	The Raspberry won't be able to power most of the devices directly from it's USB port.

Let's wire it up. Connect the HDMI output from your AVR or from your HDMI splitter to the HDMI / Composite converter input. Use the composite cable for connecting the USB video grabber with the Composite converter analog output. Plug the USB video grabber into the active USB hub, connect the hub to the Raspberry Pi.

If you already have a running media center then you might already have an analog video output on this machine. In this case, connect the analog output to the grabber, directly. Another possibility would be to go for an DisplayPort to composite converter that connects to the USB grabber. For both solutions, make sure that your existing media center is capable of playing your media to both outputs, simultaneously otherwise you'll need to go for a 2 port HDMI splitter (without AVR) and HDMI to composite converter.

Here's my setup connected, ready for video capturing from any HDMI input.



## 1. USB Video Grabber setup

Connect the USB Video Grabber to the Raspberry and type

```
// List all connected USB devices
lsusb
// If you're lucky and got a supported STK1160 chipset device, it should list follow
ID 05e1:0408 Syntek Semiconductor Co., Ltd STK1160 Video Capture Device
// If successfully loaded, your grabber's video input should be found under /dev.
ls /dev/video*
// Remember the output, we'll need it later
```

Unfortunately, my device with "ID 1b71:3002" features a Fushicai UTV007 chip, which is only ~~initial supported~~ with kernel 3.11. This forced me to compile the kernel module myself. If you got the same problem, here's my precompiled module "[usbtv.ko](#)" for Raspbmc with kernel 3.10.36. Make sure you first load the modules "~~videobuf2-vmalloc~~" and "~~videobuf2-core~~", than load the module with `insmod usbtv.ko`.

OpenElec (>=4.2.1) has the driver for Fushicai UTV007 already included, therefore it will work out of the box. Remember, to enable ssh you have to boot OpenElec with TV connected. After that, you won't need the installed XBMC/KODI anymore. It seems like the current Raspbmc release has the driver not included. SSH to

openelec and install hyperion:


```
curl -L --output install_hyperion.sh --get https://raw.githubusercontent.com/tvdzwo
sh ./install_hyperion.sh
```

Then copy your hyperion.config.json to the shared SMB “Configfiles” folder from your host system. The shared “Configfiles” folder is actually mapped to /storage/.config on the Rpi filesystem. After a Rpi reboot, Hyperion should autostart and load the config from /storage/.config/hyperion.config.json automatically, though.

Remember that you have to set the library path for OpenElec setups before you can execute any hyperion command:

```
cd /storage/hyperion/bin
```

Stop / Restart hyperion manually:

Follow Me

```
all hyperiond
IBRARY_PATH=/storage/hyperion/bin /storage/hyperion/bin/hyperiond /storage/.con
```

screenshot from the grabber with following command. Remember to kill hyperiond before you can ex-  
this command properly!

```
IBRARY_PATH=/storage/hyperion/bin /storage/hyperion/bin/hyperion-v4l2 /storage/
```

For further instructions, make sure to checkout the [documentation](#).

## 2. Hyperion configuration

Hyperion already features capturing color information from a USB video grabber. Add following configura-  
tion to your hyperion.config.json file to enable it.

```
/// Configuration for the embedded V4L2 grabber
/// * device      : V4L2 Device to use [default="/dev/video0"]
/// * input       : V4L2 input to use [default=0]
/// * standard    : Video standard (no-change/PAL/NTSC) [default="no-c
/// * width       : V4L2 width to set [default=-1]
/// * height      : V4L2 height to set [default=-1]
/// * frameDecimation : Frame decimation factor [default=2]
/// * sizeDecimation : Size decimation factor [default=8]
/// * priority    : Hyperion priority channel [default=800]
/// * mode        : 3D mode to use 2D/3DSBS/3DTAB (note: no autoc
/// * cropLeft    : Cropping from the left [default=0]
/// * cropRight   : Cropping from the right [default=0]
/// * cropTop     : Cropping from the top [default=0]
/// * cropBottom  : Cropping from the bottom [default=0]
```

```

/// * redSignalThreshold : Signal threshold for the red channel between
/// * greenSignalThreshold : Signal threshold for the green channel between
/// * blueSignalThreshold : Signal threshold for the blue channel between
"grabber-v4l2" :
{
    "device" : "/dev/video0",
    "input" : 0,
    "standard" : "no-change",
    "width" : 1,
    "height" : 1,
    "frameDecimation" : 2,
    "sizeDecimation" : 4,
    "priority" : 800,
    "mode" : "2D",
    "cropLeft" : 10,
    "cropRight" : 8,
    "cropTop" : 12,
    "cropBottom" : 19,
    "redSignalThreshold" : 0.4,
    "greenSignalThreshold" : 0.2,
    "blueSignalThreshold" : 1.0
},

```



Just the cropping for your setup, you have to change the values “cropLeft, cropRight, cropTop, cropBottom” and make sure “device” matches with your ls /dev/video\* output!

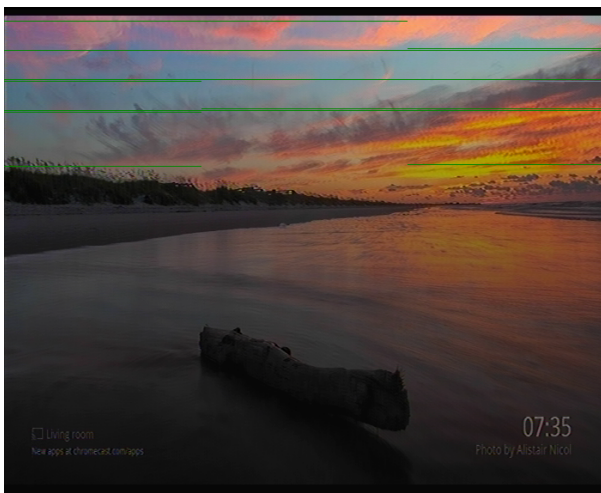
```

top hyperion
initctl stop hyperion
start any HDMI video source and make a screenshot from the grabber input. This
hyperion-v4l2 --crop-top 0 --crop-bottom 0 --crop-left 0 --crop-right 0 --size-deci

```

From the created screenshot.png, adjust the crop-\* values till the grabbed input has no black borders left. Then put the calibrated values into your /etc/hyperion.config.json file.

Screenshot from my USB grabber input, I was able to get rid of the upper and lower borders by adjusting the cropTop and cropBottom values. The green lines are most likely from the incomplete driver for my grabber.



```
// After you have checked the screenshots and configured your cropping values, start  
sudo initctl start hyperion
```

Let's test some videos! If you don't like the results, try to fine tune your setup with different SignalThresholds or try to adjust the hsv settings.

When you switch the HDMI source on your AVR to non HDMI sources, like for example audio only devices, the LED's will light up in blue. Blue is the default color if no video source was detected for many AVRs. You can disable the LED's in this situation by setting the blue-threshold value to 1.0.

## 3. Conclusion

Now you should be able to use your Ambilight for any HDMI input you have connected to your AVR. If you have any question, feel free to ask in the comments section. Enjoy your unleashed Ambilight!



3 thoughts on “How to build an Ambilight for every HDMI input source”



November 1, 2014 at 20:33

Hi Chris,

Mark Manan

Do you think if i just use a RpiB do you think that would help?



November 4, 2014 at 22:52

No, I'd try to replace the grabber instead. Since there are currently some issues with the STK1160 grabbers in combination with the newer Linux kernels, I'd go for a Fushicai UTV007. They work pretty good with OpenElec >= 4.2.1.

★ Christian  
Moser



October  
28, 2014  
at 02:55

Chris



Hi Christian,

I found your article very handy for setting up and configuring hyperion in openelec, however i have two issues that i can't seem to resolve. The first is hyperion seems to crash within 30-60 seconds.

```
/storage/hyperion/bin/hyperiond.sh /storage/.config/hyperion.config.js  
on /dev/null  
Effect directory can not be loaded: /opt/hyperion/effects  
effect Rainbow swirl fast not found  
terminate called after throwing an instance of 'std::runtime_error'  
what(): VIDIOC_DQBUF error 19, No such device  
Aborted  
XBMC:~ #
```

i seem to have to restart hyperion before it will pick up the usb video grabber.

Any help would be appreciated.

Cheers,

Chris



November 4, 2014 at 23:00

★ Christian  
Moser

Hi Chris, /dev/null seems wrong to me. Did you configure your video grabber correctly in the "grabber-v4l2" section in hyperion.config.json?  
e.g

```
"grabber-v4l2" :  
{  
  "device" : "/dev/video0",  
  "input" : 0,  
  ...  
}
```



Quentin

October 27, 2014 at 20:01

Hi Chris,

First of all thank you very much for taking the time to share (and update) this great tutorial ! Extremely clear and very accessible even for beginners like me 😊 The end result looks fantastic and is definitely motivating !

I already spent few weekends trying to set this up... but I am not quite there yet 😞 I am using a Raspberry PI running latest version of RaspBMC as well as a Sabrent USB-AVCPT A/V-to-USB 2.0 Digital Video Adapter (which I double checked to be an STK 1160 – 48000 chip – as shown in output of lsusb below) plugged to a powered USB hub. I had to downgrade from Kernel 3.12 to 3.10 in order to get it recognized as /dev/video0. I was also able to successfully install Hyperion and light up my LEDs using hyperion-remote.

I am currently stuck on capturing a screenshot via my USB grabber: after stopping Hyperion, I tried to run `sudo hyperion-v4l2 --screenshot` but it remains stuck on V4L2 grabber started (please see command output below) and does not capture a screenshot in my home folder. At this point I don't really know what else I can try...

Could you please let me know if that sounds like a familiar error / behavior to you ?

Of course please let me know if there is anything else I should provide to further clarify my issue or setup ! Thank you !

```
pi@raspbmc:~$ lsusb
Bus 001 Device 002: ID 0424:9514 Standard Microsystems Corp.
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 001 Device 003: ID 0424:ec00 Standard Microsystems Corp.
Bus 001 Device 004: ID 1a40:0101 Terminus Technology Inc. 4-Port HUB
Bus 001 Device 005: ID 05e1:0408 Syntek Semiconductor Co., Ltd STK1160 Video Capture Device
```

```
pi@raspbmc:~$ lsusb -v -d 05e1:0408 | grep tSamFreq | sed
-e "s,^.* ,,"
Couldn't open device, some information will be missing
48000
```

```
pi@raspbmc:~$ sudo hyperion-v4l2 --screenshot
```

```
V4L2 width=720 height=480
```

```
V4L2 pixel format=UYVY
```

```
V4L2 grabber signal threshold set to: {0,0,0}
```

```
V4L2 grabber started
```

```
pi@raspbmc:~$ sudo hyperiond /etc/hyperion.config.json
```

```
Application build time: Sep 22 2014 20:48:42
```

```
QCoreApplication initialised
```

```
Selected configuration file: /etc/hyperion.config.json
```

```
ColorTransform 'default' => [0; 49]
```

```
Device configuration:
```





```
{  
  
"colorOrder" : "rgb",  
  
"name" : "MyPi",  
  
"output" : "/dev/spidev0.0",  
  
"rate" : 250000,  
  
"type" : "ws2801"  
  
}
```



★ Christian  
Moser

November 4, 2014 at 23:10

Hi Quentin, I don't have a STK1160 to test. Could you try to grab the screenshot with an additional command: `hyperion-v4l2 -d /dev/video0 -screenshot`.

Regards Chris



Mark Manan

October 27, 2014 at 01:09

Hi Chris,

I have tried to do some more fault finding. I have tried a few things but i think the main thing is that I just have the frame grabber plugged into my Rpi but have not connected the other end and tried to take a screenshot and got the same screen as a usually do.

So this would mean my framegrabber isn't working. I did use an old TV with a composite out and tried that going straight to the Rpi but that still gave the same screenshot.

Is there another way I can test the framegrabber? Maybe using my laptop?



Mark Manan

October 22, 2014 at 20:47

My TV has no analog input for the RCA cables so i can't test that.

My system is connected as follow:

Blu-ray & Sky Box connected to HDMI Switcher input  
Switcher output goes to HDMI Splitter input  
Splitter output 1 is to the TV & output 2 goes to Analog converter  
Analog Converter goes to Frame grabber  
Frame grabber goes to Rpi

When i type:

```
LD_LIBRARY_PATH=/storage/hyperion/bin /storage/hyperion/bin/hyperiond /storage  
/.config/hyperion.config.json
```

I get the following;

```
XBMC video checker created and started  
Display opened with resolution: 720x480  
Frame grabber created and started  
V4L2 width=720 height=480  
V4L2 pixel format=YUYV  
V4L2 grabber signal threshold set to: {255,255,255}  
V4L2 grabber started  
V4l2 grabber created and started  
Json server created and started on port 19444  
Proto server created and started on port 19445  
XBMC Connected  
BORDER SWITCH REQUIRED!!  
CURRENT BORDER TYPE: unknown=0 hor.size=0 vert.size=0  
Message from XBMC: {"id":666,"jsonrpc":"2.0","result":[]}  
XBMC checker: switching to OFF mode  
BORDER SWITCH REQUIRED!!  
CURRENT BORDER TYPE: unknown=0 hor.size=5 vert.size=0  
Message from XBMC: {"id":668,"jsonrpc":"2.0","result":  
{"System.ScreenSaverActive":true}}  
Message from XBMC: {"id":670,"jsonrpc":"2.0","result":{"version":  
{"major":13,"minor":2,"revision":"0f3db05","tag":"stable"}}}  
V4L2 grabber stopped  
effect finished  
V4L2 grabber started  
V4L2 Grabber: Signal lost
```

Does this give any more clues to whats wrong?



October 25, 2014 at 01:46



Jeff Snow

First of all thanks Chris for this great tutorial! I can't wait to get everything going.

To Mark and whoever else may be having similar problems: I'm trying to process my Mitsubishi DLP's analog out (no hdmi splitter or digital to analog converter). After much finagling I finally read the TV's manual and found out its analog out doesn't work with the HDMI inputs. And all I was getting from the video capture was black and green lines. As Chris mentioned the black and green screenshots are likely caused by no input signal. Might be relevant..something to look into anyways.



October 18, 2014 at 19:30

Hi Chris,

Batmanan

I making progress but it is all baby steps. I know have all my LEDS working and i am using a 2m cable to my Rpi and also managing to run it of a 3a micro USB supply. But when I have my system all connected up the amblight doesn't work with the TV. If i play a movie through OpenELEC it works fine. So i'm guessing its to do with the frame grabber, what can i do to check this?



October 20, 2014 at 07:05

Christian Moser

Try to capture a grabber screenshot with hyperion. This allows you to analyse the captured analog video signal that hyperion uses to color up the leds. When this seems ok, check the frame grabber config and its priority. Regards



October 20, 2014 at 22:57

How do i take a screenshot with hyperion/openelec?

Mark Manan

I tried to use the command in your guide but it doesn't work with OE.



October 21, 2014 at 20:48



★ Christian  
Moser

Connect to openelec and switch to dir “/storage/hyperion/bin” and execute hyperion-v4l2 with your settings. “LD\_LIBRARY\_PATH=/storage/hyperion/bin /storage/hyperion/bin/hyperion-v4l2 /storage/.config/hyperion.config.json --screenshot” as described in the guide. Remember to kill hyperiond first.



Mark Manan

October 22, 2014 at 02:01

I login in to OE and type:  
killall hyperiond

This all works fine. I then change directory to hyperion/bin and type:  
LD\_LIBRARY\_PATH=/storage/hyperion/bin /storage/hyperion/bin/hyperion-v4l2 /storage/.config/hyperion.config.json --screenshot

From this i get the following read out and a screenshot in the bin folder of a black screen with lots of horizontal green lines.

V4L2 width=720 height=480  
V4L2 pixel format=YUYV  
V4L2 grabber signal threshold set to: {0,0,0}  
V4l2 grabber started  
V4l2 grabber stopped

If i type hyperion-v4l2 first as the start of a command it just says  
-sh: hyperion-v4l2: not found

Does any of this make sense?



★ Christian  
Moser

October 22, 2014 at 07:12

Well, if you have got a screenshot, than the grabber should work with hyperion. The green lines are ok, I got them as well. But it seems like you don't have any input signal or otherwise an input signal which shows a black image from your source. What and how did you connect to the splitter, grabber? Did you try out to connect the analog signal directly to the TV, most TVs still have got an analog input. This way we can make sure that your analog signal is fine.





October 17, 2014 at 21:55

Instead of converting the HDMI stream to composite, would it be possible to utilize the composite video monitor out on a receiver?

Chad  
Howsden



October 17, 2014 at 23:46

Hi Chad, yes this should be technically possible but you have to test if the avr is really capable of converting an hdmi input signal to hdmi and composite in parallel. You will still need an usb grabber, though  
Let me know your results. Regards, Chris

★ Christian  
Moser



October 17, 2014 at 19:17

When I do my lsusb, I get the following info:

```
pi@raspbmc:~$ lsusb
Bus 001 Device 002: ID 0424:9512 Standard Microsystems Corp.
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 001 Device 003: ID 0424:ec00 Standard Microsystems Corp.
Bus 001 Device 004: ID 1a40:0101 Terminus Technology Inc. 4-Port HUB
Bus 001 Device 005: ID 05e1:0408 Syntek Semiconductor Co., Ltd STK1160 Video
Capture Device
Bus 001 Device 006: ID 0bda:8178 Realtek Semiconductor Corp. RTL8192CU 802.11n
WLAN Adapter
```

but when I do the ls /dev/video\* command I see the following:

```
pi@raspbmc:~$ ls /dev/video*
ls: cannot access /dev/video*: No such file or directory
```

Any ideas to try to get past this point ?  
Thanks !



October 9, 2014 at 13:52

Batmanan

Hi Chris, I got it to work!!! Well sort of, the issue i had was that my data leads had come of the strip but as i had heat sunk them in i couldn't see.

However my next issue is that not all the LED's are working. I have 21 up the sides and 33 at the top & bottom. At the moment it stops at around the 73 LED, so it works up the first side and all along the top but as it starts coming down teh other side only the first few LED's work.

Any Idea's?



October 13, 2014 at 21:31

good job! 😊

★ Christian Moser

Well, this must be a problem with your hyperion.config.json. Doublecheck your **hypercon** config. Does the number on the bottom right represent your total LED count?

– Does your power supply offer enough power to power up all your LEDs?



Batmanan

October 14, 2014 at 14:08

I thought that, so I have been playing around with it so that if I choose a lower amount of LEDS it will stop but then when I increase the number to get past that 57 one it stops. I thought it could be the next LED in the row so added different ones and that didn't work. I get 5v at the end of the string and my power supply is rated for 8 amps so that can't be the problem. I even used a 3a micro USB power supply and that worked fine for the 57 LEDS.

Could it be that the 57th is preventing data going any further?

Maybe I need to make up another string of LEDs and test that and see what happens.



October 8, 2014 at 21:12

Unfortunately I have had no success getting the Somagic SMI-2021CBE Video grabber to work (Comes up with (no firmware) under the lsusb command.

Dave

Can someone verify that the chipsets that should work ?

I know STK1160 is mentioned in the article but I am having no luck finding that chipset to order. I also see the Fushicai UTV007 mentioned. Can someone clarify if these chipsets work properly in the Raspberry Pi/Raspbmc/Hyperion config from the article or so I need to ditch that configuration to look at the OpenElec that is mentioned on here (Is OpenElec analogous with the Raspbmc ?

Thanks for any clarification.



October 9, 2014 at 19:23

Update: I have found one with the STK1160 Chipset (If I get the solution working I'll post a link of where to get it).

Dave



A couple of questions about updating the Hyperion Config step

1. Where do I add the snippet (I am thinking it would go right before "endOfJson" : "endOfJson")
2. When I add this code, will the Hyperion Remote still work or will it be only driven by the HDMI source ?

Thanks !



October 13, 2014 at 21:23

★ Christian  
Moser

1. Doesn't really matter as long as you put it before "endOfJson ..." and syntactically correct separated with a ",". For a sample config, check this [link](#).
2. It will still work



October 10, 2014 at 01:48

Guillaume

There is one you can order on CuteDigi website (<http://www.cutedigi.com/video/easycap-1-channel-usb-20-video-capture-stk1160-chipset.html>)

I've just received mine and it has the STK1160 Driver in it.

Good Luck



October 6, 2014 at 19:53

Batmanan

Hi Chris,

Really sorry about the ambush of messages but i do think i am close now.

For now ignore all my other comments and lets try and start again.

So I had another play with those 2 commands you gave and as far as i can tell from the command window in Putty they seem to work but nothing happens with my LED's.

What I also noticed is that i can seem the command line registering commands when I use the Hyperion APP but still nothing happens with the LED's.

How can I check my LED's?



★ Christian Moser

October 6, 2014 at 20:17

Well, that's good to hear.

There are a lot of different things to check:

- Check the device section in hyperion.config.json. Is the output set to `"/dev/spidev0.0"`? What is the output of `"ls /dev/spidev*"`? You could try setting it to `"/dev/spidev0.1"` and reboot.
- Doublecheck the spi bus connectors (DI,CI on the diagram), are they connected to the correct GPIO pin? Do you have a Revision 2 Rpi? Maybe check the pinout, it has slightly changed to the version shown in the post, which is for rev 1.0
- Did you connect the power supply directly to the +5V/GND connectors of the first LED strip's input side and left the last LED strip's output empty? Do you use a sufficient power supply? Try to power a shorter strip if all is connected properly.

HTH, Chris



October 6, 2014 at 21:02

Batmanan

Thanks for that I will try those things now but something else i read was that the length of my cables could cause an issue, my cables are about 2m?



October 6, 2014 at 21:26





You should test with much shorter cables first till it works.

Christian  
Moser



October 7, 2014 at 00:48

Batmanan

Shorter cables didn't work.

When i type ls /dev/spidev I get the response:  
ls: /dev/spidev: No such file or directory

I got the pinouts from the drawing for Rpi B+

I have only made connections to 1 end of the strip. When i do plug in the power all the LED's give a very quick and feint flash of red/green/blue.

I have a 5v 8A supply, I can measure 5v on the strip so its getting power.

I did notice that there are 2 config files, one located in /storage/.config and another in /storage/hyperion/config so i copied my new file to both locations. Shoud i delete 1?

Please Chris give me another life line!



October 4, 2014 at 13:39

Batmanan

AAHHHH This is sooo frustrating as i believe i am so close but it still isn't working!?!?!?

Ok, i don't have everything hooked up as i am just trying to check the main parts. I just have the LED's and a TV connected to my Pi and thought I can use the Android App to test my LED's and it says that it is unable to connect. I have also tried running the test script for the LED's to go RED for 5000 but that also says 'unable to connect to host'

I though this might be the OUTPUT setting on the config tool as in another of the test scripts for Openelec install i noticed it ended with /dev/null and the default in the config tool is spidev??

Please tell me what i'm doing wrong as this is beginning to longer be fun and i'm losing sight of my end result :0(



Batmanan

October 4, 2014 at 13:50

Ok a quick update, i turned off the PI and re-connncted with Putty and tried to do the LED test again using the command:  
storage/hyperion/bin/hyperion-remote.sh -priority 50 — color red — duration 5000

Now i get the response:

-sh: storage/hyperion/bin/hyperion-remote.sh: not found

But if i connect with WinSCP i can scroll to the file, does this make any sense?



★ Christian Moser

October 5, 2014 at 07:23

try connect with putty and type: LD\_LIBRARY\_PATH=/storage  
/hyperion/bin /storage/hyperio  
n/bin/hyperion-remote -c red

If this doesn't work, doublecheck your hyperion.config.json file:  
vi /storage/hyperion/config/hyperion.config.json  
your device section should look like that:

```
"device" :  
{  
  "name" : "MyPi",  
  "type" : "ws2801",  
  "output" : "/dev/spidev0.0",  
  "rate" : 250000,  
  "colorOrder" : "rgb"  
},
```

output and type is essential, output must point to the spi bus device hook, type must match the LED chip type. After every change in the config file, you have to restart hyperion or reboot the Rpi.

```
killall hyperiond
```

```
LD_LIBRARY_PATH=/storage/hyperion/bin /storage  
/hyperion/bin/hyperiond /storage/.config  
/hyperion.config.json
```

This will show you the output of hyperion as well. This could come in handy for further investigations..

regards





October 5, 2014 at 13:03

Batmanan

Thanks again for your support, if you wasn't doing this my project would have long been scrapped!

So, after typing: LD\_LIBRARY\_PATH=/storage/hyperion/bin /storage/hyperion  
n/bin/hyperion-remote -c red

I get the response:

/storage/hyperion/bin/hyperion-remote: error while loading shared libraries: libQtGui.so.4: cannot open shared object file: No such file or directory

Then when i typed:

LD\_LIBRARY\_PATH=/storage/hyperion/bin /storage/hyperion  
/bin/hyperiond /storage/.config/hyperion.config.json

I get the response that it starts loading all the effects but then ends with the following:

Hyperion created and initialised  
run effect Rainbow swirl fast on channel 0  
Boot sequence(Rainbow swirl fast) created and started  
XBMC video checker created and started  
Display opened with resolution: 1920×1080  
Frame grabber created and started  
terminate called after throwing an instance of 'std::runtime\_error'  
what(): Json server could not bind to port  
Aborted

Do i need to have the system fully connected or can i get away with just having the LED's and my TV connected to the HDMI of the Rpi?



October 6, 2014 at 19:32

Batmanan

Another update is that i tried the first command again after the second and the response is:

Connected to localhost:19444  
Set color to 255 0 0

But nothing happens with the LED's?

Any Ideas?



October 3, 2014 at 18:22

Batmanan

Hi Chris,

I finally finished my setup but wanted to do some checks before i mount it back on the wall. My concerns to start is that there isn't enough Amps, i have a 5v 3a (a guess) supply which I have just plugged into the micro USB. So first what did you mean when you said to Thomas to ground the GPIO pin? But secondly after using your method it seems I would need 6a in total. Is it best then not to use the micro usb port? Finally should i be able to use the Hyperion Android app with just my LED's connected as a test?

Thanks again for your help



★ Christian  
Moser

October 3, 2014 at 19:21

Hi, glad you could follow. Generally, you'll need 1 A per meter LED strip and 1 A for the Rpi. As described in the diagram, you have to power up the LED directly by a power supply and not through the Rpi. Basically, you don't connect any +/- of the LED strip to the GPIO of the Rpi instead you connect them to the PS. If you go for the micro usb port variant, than you connect only the GND (-) of the PS/LED strip to the GND of the GPIO and power the Rpi by a plain cell phone charger. This will reduce any interference on the SPI bus.

Hope this helps.  
Regards Chris



October 2, 2014 at 12:45

jep

STK1160 do not work with current kernel of Raspbmc, it need to be downgraded:  
<http://sourceforge.net/p/raspbmcusbtv/wiki/Installation/>



October 2, 2014 at 21:00



★ Christian  
Moser

Hi, are you sure? Looks like the link you posted is about the Fushicai UTV007 chipset grabber and not STK1160 grabbers but thanks for the hint.



jep

October 3, 2014 at 09:16

Yeah link is about UTV007, but it does work with STK1160 as well. Just installed raspbmc yesterday with Network image (newest) and `/dev/video*` didnt show up, after kernel change it was there.

Here is more information about this:

<https://github.com/raspberrypi/linux/issues/660>

It seem that it wont work directly with 3.12+ kernels.

Disclaimer: Didn't test grabber yet with Video signal, still waiting HDMI2AV adapter.



Dave

October 1, 2014 at 16:50

Anyone have the inside track on where to buy the EasyCap clone with the proper Chipset??? Thanks to Christian's help I made it through part one of this tutorial and now I am trying to tackle part 2. The first EasyCap one I got from Amazon and it came with the Somagic SMI Grabber SMI-2021CBE which my Raspbmc didn't see automatically.

I have looked at some of the web sites on here that explain how you are supposed to be able to compile the driver but none of them have given me that "a ha" moment to get it to work, so I am trying to find one of the EasyCaps that can be detected automatically like the STK1160. Thanks for any help you can provide on finding this elusive part !



Batmanan

September 22, 2014 at 22:58

That text above for the configuration for the embedded V4L2 grabber?





September 22, 2014 at 22:49

Batmanan

Hi,

Thanks alot for the help I really appreciate it. I was running 4.0.6 of OpenELEC so i will try the new beta. If this has teh driver do i need to still paste in that extra stuff in the config file?

Best Regards



September 22, 2014 at 22:53

What extra stuff do you mean? You will still need to configure hyperion with hypercon.

★ Christian  
Moser



Batmanan

September 22, 2014 at 21:15

Hi Chris,  
i have switched to openelec and now trying to install hyperion using on that. When i do the 'lsusb' i get ID 1b71:3002 and when I ask for 'ls /dev/video' i get 'no such file or directory'. This isn't going well is it?

What else can i try? I don't we could skype or facetime if that isn't too much of an invasion? I'm really excited about getting this install going but fear it could take me a while to get the programming part right :0(

Best Regards – Dumbass



September 22, 2014 at 21:36

★ Christian  
Moser

Hi, it doesn't look too bad, just read carefully, I wrote: "ls /dev/video\*" with a \*, which should result in "/dev/video0" and lsusb should result in: "Bus 001 Device 005: ID 1b71:3002 Fushicai USBTV007 Video Grabber [EasyCAP]".

Make sure, you use the latest Beta OpenElec. I tried with 4.1.6, which includes the driver. You can easily upgrade openelec by copying the \*.tar file to the update folder and then reboot.

After that, follow this installation guide for hyperion for OpenElec:  
<https://github.com/tvdzwan/hyperion/wiki/Installation-on-RPi-with-OpenELEC>  
For the hyperion LED configuration, check my previous [guide](#).  
Regards Chris



September 20, 2014 at 15:17

Batmanan

Hi Chris,

Thanks for the tutorial, following yours has got me the closest so far and I have tried about 4!!

I always get really stuck on the programming part and I am so close to finishing that I'm getting really frustrated so please help. I have RaspBMC and I have the Fushicai USB grabber and I'm lost on how to install the extra modules, how do I do it?

I'm sure it's really easy and feel free to start your reply with "Hey Dumbass", looking forward to your reply.

thanks



September 21, 2014 at 17:18

★ Christian  
Moser

Hi, I'm glad to help. Simply switch to openelec, it already includes the necessary kernel modules for the Fushicai grabber to work without loading modules.  
Anyway, what is the output of "lsusb" and "ls /dev/video\*"?

You can load the kernel driver with:

```
modprobe spi-bcm2708  
modprobe videobuf2-vmalloc  
modprobe videobuf2-core  
insmod usbtv.ko
```

You can download a precompiled usbtv.ko from the blog post, but I'm not sure if it will work with the recent RaspBMC builds.

Regards Chris



Gee

September 12, 2014 at  
16:18

Hi,

This is a great guide. I've followed the first half and through xbmc it's all looking great. I have the parts for this on order.

Do you still need a raspbmc build or can you just do it via raspbian as the input is now the usb grabber?

Is there a setting to switch Hyperion between the USB grabber and XMBC (if you keep that build on)

Thanks for any help and for a really brilliant guide!

G



September 12, 2014 at 16:32

Hi, thanks a lot.

★ Christian  
Moser

Basically, you can use any linux distribution that supports your USB grabber. Just make sure that your Rpi has still enough resources for running the grabber. You can switch between different hyperion clients (Hyperion app, grabber, xbmc grabber) by using the priority setting for each grabber in hyperion.config.json.

Regards Chris



September 11, 2014 at 04:47

Hi Christian. Thanks for your response. I'm sorry I haven't been as quick to reply, but things have been a little hectic.

Freddy

After further reading, I agree that a USB bandwidth issue could be the source of the



problem, although changing frameDecimation and sizeDecimation parameters did not manage to fix the problem. (I believe I read somewhere that frame decimation and size decimation only take place after the image has been captured by the pi (after moving through USB)).

My lights also all occasionally flash Blue (matching the background of the XMBC) regardless of what is playing.

I also noticed that changing “Standard” from “no-change” to “PAL” reduced the number of errors displayed before a frame was captured (even though my converter was set to “NTSC”), but in doing so the image turned to black and white again. Changing the value on the HDMI2AV converter and the config file to PAL increased the number of errors again, but made the image color.

Do you think adjusting the configuration in framegrabber may help? Mine is currently set to defaults at:

```
/// The configuration for the frame-grabber, contains the following items:
/// * width : The width of the grabbed frames [pixels]
/// * height : The height of the grabbed frames [pixels]
/// * frequency_Hz : The frequency of the frame grab [Hz]
“framegrabber” :
{
“width” : 64,
“height” : 64,
“frequency_Hz” : 10.0
},
```

I’ve also read that the SD card speed may affect results. I’m currently using a Class 4 8GB card. Do you think moving my image to a class 10 will help?

Thank you again for your help.



September 12, 2014 at 16:21

★ Christian  
Moser

Hi Freddy, well I don’t think moving to a class 10 will help that much. I’m using an first generation Rpi, 256 MB Ram and a class 6 SD card. Well the setting of the converter and the hyperion config should be equal.

I’m not sure what causes the problem, you could try another usb hub or grabber.

my settings:



"standard" : "no-change",  
"width" : -1,  
"height" : -1,

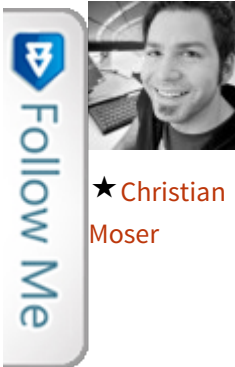
Regards Chris



September 10, 2014 at 06:51

Chase

Is it possible to run the screenshot in command in OpenELEC? When I try "hyperion-v4l2 -screenshot" it says "hyperion-v4l2 not found" and "./ hyperion-v4l2 -screenshot" results in "permission denied"



★ Christian  
Moser

September 12, 2014 at 16:25

Hi Chase, I have to look into it, since I didn't adjust the settings after switching to openelec.

Connect to openelec and switch to dir "/storage/hyperion/bin" and execute hyperion-v4l2 with your settings. "LD\_LIBRARY\_PATH=/storage/hyperion/bin /storage/hyperion/bin/hyperion-v4l2 /storage/.config/hyperion.config.json -screenshot".

Regards Chris



September 4, 2014 at 07:01

Freddy

Hello!

I'm trying out your commands on my raspi running Hyperion but am getting the following errors:

Frame too small: 824656 != 829440  
Frame too small: 823284 != 829440  
Frame too small: 818602 != 829440  
Frame too small: 821906 != 829440  
Frame too small: 817630 != 829440

etc, where the first number constantly changes, but is always below 829440

I am using a stk1160 and I am using the same hyperion configuration file as you and getting the same results when I do `lsusb` and `ls/dev/video*` (I also remembered to kill hyperion)

do you have any idea what is going on? I'm having trouble understanding what could be causing this error message.

Any help would be greatly appreciated. Thank you for creating this guide.



September 5, 2014 at 22:57

★ Christian Moser

Hi Freddy,

It seems like hyperion receives too little information from the grabber. This could be an USB hub bandwidth issue. You could also try to increase the "frameDecimation" and "sizeDecimation" parameters in the hyperion.config.json file.

Hope this helps, regards Chris



August 19, 2014 at 10:15

Guy

Hi,

I followed your guide – it helped a lot.

I am trying to get the screenshot from my grabber but I keep getting an error: "VIDIOC\_S\_FMT error 16, Device or resource busy"

What does this mean?

Thanks!



August 25, 2014 at 21:07

★ Christian Moser

Hi, it seems like another process is using your grabber. Make sure hyperion is not already running at the time you're trying to grab the screenshot.

Regards Chris



August 17, 2014 at 23:15

Tomasz

I will also go with one more question. As I would like to connect 4 HDMI's (TV, XBMC, PS4 and blu-ray) to the ambilight – what kind of splitter should I go with? Should I simply have 4 splitters?



August 17, 2014 at 15:01

Tomasz

Dear Christian,  
Indeed great guide. I will probably follow it step by step. The only thing which bothers me is the efficiency/latency. Have you observed any delays between the screen and ambilight colours?  
Thanks,  
Tomasz



★ Christian  
Moser

August 18, 2014 at 21:48

Hi Tomasz,  
I didn't observe any noteworthy delays with my USB grabber, yet. If you have 4 HDMI inputs, you probably want to connect them to an AVR and then the single output of the AVR to one single splitter. Perhaps there is a cheaper HDMI switch, to reach a similar solution.  
Regards, Chris



July 28, 2014 at 18:14

Aaron

Great guide. I've followed all of the instructions but I'm having an issue with the HDMI2AV converter. When I connect my HDMI source, it detects the 480p composite connection output and changes the output resolution to match, thus I see my PS4 on the TV and via the USB video grabber, but the resolution is no longer 1080p, it's changed to 480. Does this happen on yours? Could it be an issue with the HDMI2AV converter?



August 15, 2014 at 08:59



★ Christian  
Moser

Hi Aaron,

Yes, this is as it should be. **Composite**, analog video does not support 1080p (max 480i or 576i). So, Hyperion will capture color information from the USB video grabber with a lower resolution than the original HDMI input signal. But this doesn't matter at all, because we just extract the color information from the signal and don't show any images. Furthermore, your Rpi will thank you for the less work load 😊

Regards Chris



July 13, 2014 at 21:20

Would it be possible for me to use this [http://octavainc.com/HDMI%20switch%204x1%20ARC%20port\\_pro.html](http://octavainc.com/HDMI%20switch%204x1%20ARC%20port_pro.html) with this setup?

Alex



July 14, 2014 at 17:40

If you use an HDMI splitter connected to the output and with this **solution**, it should work

★ Christian  
Moser



June 22, 2014 at 09:43

How long is the delay with this solution compared to the XBMC-solution? You don't happen to have a video showing the colors changes with this setup?

Marcus  
Willberg



June 25, 2014 at 08:37

Hi Marcus

Well, In my opinion the delay is not really noticeable compared to the XBMC solution. I don't have a video to show yet, but will made one soon. Will upgrade my Rpi xbmc build to the current openelec one, so I'll be able to test with a more up to date kernel driver for my USB grabber.

★ Christian  
Moser



June 20, 2014 at 10:51

Typhoe

Hi,

latest OpenElec testbuilds for Raspberry Pi have the usbtv module included for now on (as of 19-Jun-2014 #0619)!

<https://github.com/OpenELEC/OpenELEC.tv/issues/3140>

<http://forum.xbmc.org/showthread.php?tid=192380>

So after that, it's just a matter of installing Hyperion on Openlec (it also works for the testbuilds following the instructions from <https://github.com/tvdzwan/hyperion/wiki/Installation-on-RPi-with-OpenELEC> )

I'm also using a Fushicai UTV007 (ID 1b71:3002) and it now works perfectly.

It's now really simple to install and simplify your how to.

Anyway thank you very much, my ambilight is really awesome thanks to you 😊

Regards.



June 20, 2014 at 11:38

★ Christian  
Moser

Hi, you're welcome and I'm glad that you enjoy your ambilight experience!

Yes, it seems they have closed my opened issue but I didn't have the time to retest it, so thanks for your testing feedback! 😊

Regards, Chris



June 6, 2014 at 20:15

Matthias

Hi,

any ideas about what to do if you get an all gray image with green stripes from "hyperion-v4l2 -screenshot"? I have absolutly no idea what to do 😞

<http://imgur.com/ezp0nmW>

Cheers,  
Matthias



June 12, 2014 at 15:15

Well, what kind of usb grabber do you have? try “sudo apt-get install v4l-utils, than v4l2-ctl –all”, it should give you detailed output about your grabber.

★ Christian  
Moser



May 29, 2014 at 10:56

Hi there Christian,  
Interesting post and I am going to set up the ambilight.  
1 question, my I use my old PC as my HTPC. It uses a VGA output to my television.  
Would this be compatible? And what changes would I have to make?



June 6, 2014 at 12:52

Well, you have to feed the USB grabber connected to the Rpi with an analog signal from the HTPC. Perhaps your old PC supports simultaneous output of two analog video signals? You could test this with a second analog monitor connected to your HTPC.

★ Christian  
Moser



May 22, 2014 at 04:04

Hi Christian. Thank you very much for these instructional posts. I intend to try this out as soon as possible but I was wondering, would it suffice to use an xbox one with a HDMI splitter instead of an AVR. The xbox one has both an HDMI input and output. Thanks once again.

Abbas

May 22, 2014 at 07:57



★ Christian  
Moser

Hi Abbas, well I don't have a xbox one to test but it should work when you connect the xbox one HDMI output to the HDMI splitter. Then from the splitter directly to the the TV and to the HDMI to composite converter/ USB grabber which will finally lead to the Raspberry Pi.

This way you should got ambient light for the xbox media as well for the devices connected to the xbox HDMI input.

Regards



Arnold  
Sitseri

May 21, 2014 at 10:11

Looks like it was a driver problem, I was able to get it working pretty well using an old kernel 3.6.11+ which had an easycap driver instead of a STK1160 driver. That worked fairly well, was down to about a .25 second delay. It also didn't crash or randomly flash LEDs. I then tried the opposite and used a bleeding edge kernel build of Raspbian, 3.12.19+. It apparently updated the STK1160 driver and now I'm down to a .1 delay which pretty much looks good.

I'm still looking to see if it can go any lower though. Compared to AmbiBox which I used before and running on the same computer it's still noticeably slower. There's almost 0 delay when it's being generated on the same computer.

I've ordered a couple more random easycap devices on Amazon to see if I can't get a UTV007 in the mix and see if there's a noticeable increase.



Arnold  
Sitseri

May 20, 2014 at 06:04

You may actually have been lucky you got the Fushicai UTV007 instead of STK1160. I just got all my parts and been trying to get the STK1160 working decently, but there's been many issues such as randomly Flashing LED and when it does work there's about .75 second delay which for the lights is unusable.

Reading some of the comments on Hyperion's forum it seems the Fushicai is actually the way to go.





May 21, 2014 at 08:35

Hi Arnold, I wasn't aware of that, thanks a lot for the hint! Do you think it's a driver problem of STK1160 or is it related to Hyperion?

★ Christian  
Moser

