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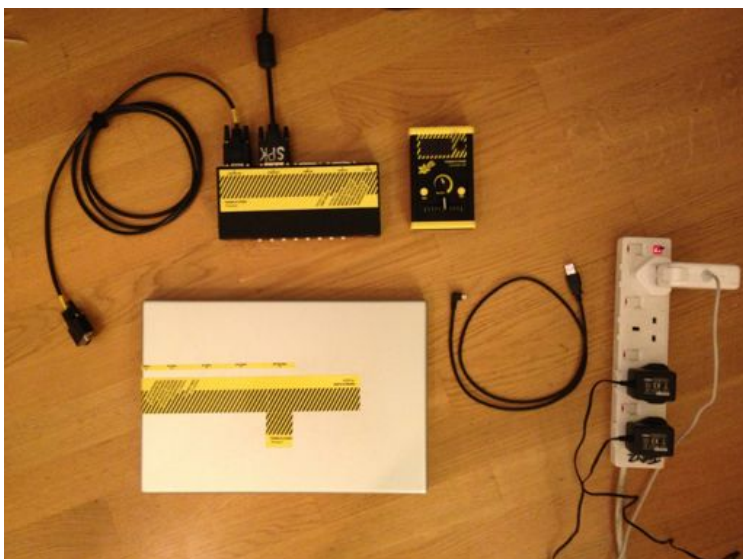
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**SPARK D-FUSER » v25 Software and Setup**

If you received a package of Controller and Processor, follow this procedure to set them to intended operation.

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**Equipment required**

- A computer with internet
  - D-Fuser Controller & Processor
  - 2x Power Supplies
  - 1x RS232 cable
  - USB to Right angle mini USB cable
  - Monitor with DVI cable
  - Crosshead Screwdriver
- 

**1 Get update**

Browse to "<http://files.sparkav.co.uk>"

Download "SPK-DVIMXR-v25-xx.zip"

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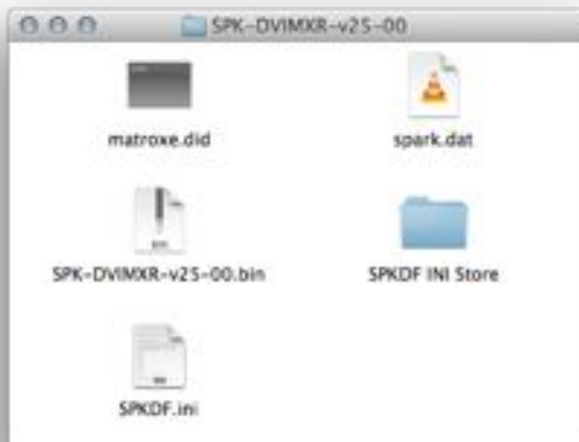
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**1.1 Get update**

Unzip the download to obtain a folder with contents like so.



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**2 Open Controller**

Remove the four screws holding the end-plate with the ports.



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**2.1 Open Controller**

Remove the two screws at the top of the end-plate without the ports.



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**2.2 Open Controller**

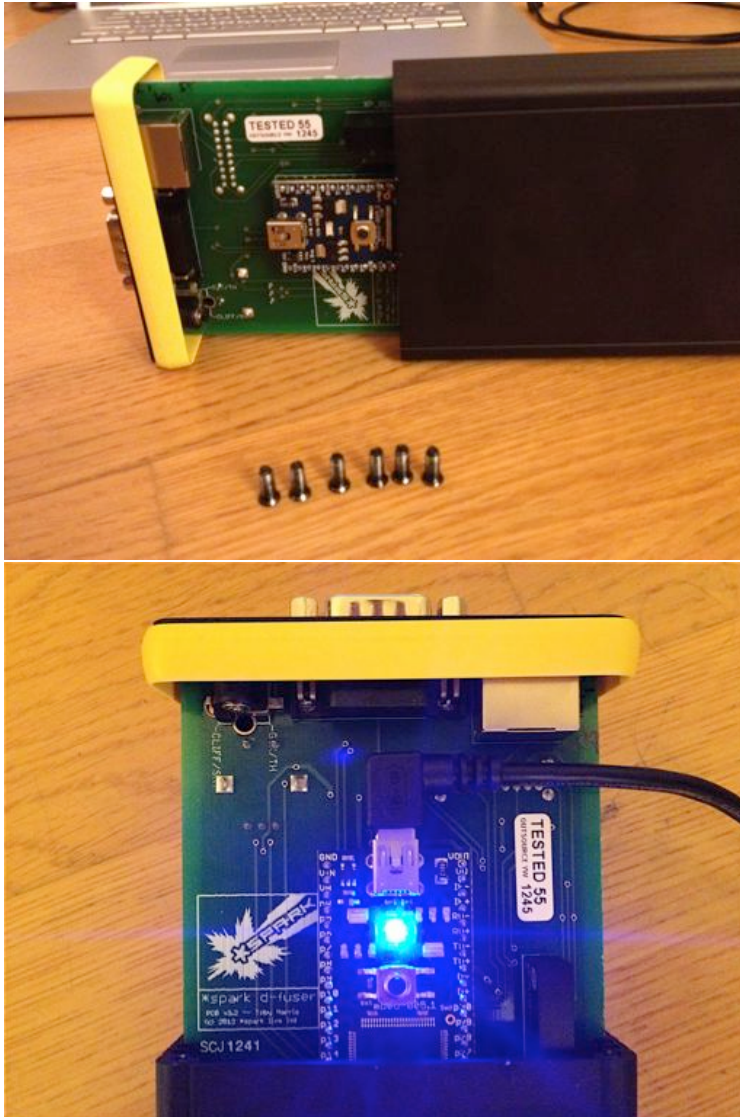
Holding the yellow bezel at each end, start to pull apart. The electronic assembly should easily start sliding out of the case.



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**2.2 Open Controller**

Open until you can see the spark logo on the underneath. Locate the mini-usb socket on the end of the blue board, this is where you will be connecting to the computer, as shown in the second photo.

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**3 Connect to computer**

Connect the USB cable from your computer to the mini-USB connector revealed inside the controller. A blue LED should light, and a USB drive called "MBED" should mount on your computer. If your computer displays a "New Network Interface Detected" dialog, you can hit cancel.

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#### 4 Copy folder contents to MBED

Copy the contents of the downloaded folder to the MBED drive. You can overwrite the existing files if prompted.

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**5 Check MBED drive**

Check the MBED drive to make sure the files are there. You need to have:

- SPK-DVIMXR-v25-xx.bin
- SPKDF.ini
- matrox.did
- spark.dat

The “SPKDF.ini” file is there for you to update the resolutions and keying parameters that the controller will load up. It’s plain text, you can open it in TextEdit / Notepad.

You will also have the configuration file backup folder ‘SPKDF INI Store’ which has a copy of the default .ini file for each version of the processor.

You will also have any previous version of the firmware program, such as SPK-DVIMXR-v23-01.bin.



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**6 Disconnect and close controller**

Remove the USB cable. Slide the controller back together. Screw back together.

If the screws aren’t working, the case hasn’t gone all the way back together - one end of the case will be caught on the bezel, move around until it releases and slides all the way.



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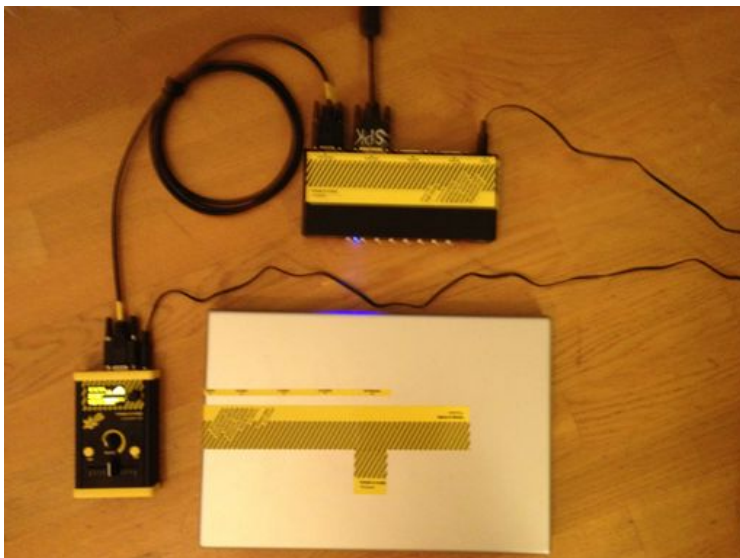
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**7 Power controller on**

The upgrade of the controller has been successful if the second line reads "SW25; ini OK"



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**8 Power on processor**

Power on processor.



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**9 Check Status Line**

The status line at the bottom of the controller's display should now be showing an actual status, changing from a blank

"TVOne: "

to

"TVOne: L: Logo R: Logo"



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**10 Select Troubleshooting**

Using the menu controller, select the troubleshooting options by spinning the dial clockwise and pressing in to select.



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**11 Conform Processor**

Select the last item in the troubleshooting menu: 'Advanced Commands' which will take to you a menu with 'Processor full conform'. This is a one-off operation to program the processor and will take ten minutes. You will see "Uploading..." for around six minutes, then "Conforming..." for a shorter period, and finally "Conform Success". The success message will hold for five seconds and the processor will beep. If you get an error message, use the menu control to try the conform process again.

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**12 Power Cycle Processor**

Remove the power from the processor, wait for a few seconds, and reconnect.



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**13 Verify Output**

The processor should now be outputting 640x480 at 60Hz, and you should see a white \*spark logo on a black screen.

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**14 Fade to black and back**

Fade the output to black and back up.  
You should see the logo fade out and  
back in. If so, you're done!



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### **Cutting out? Could be HDCP**

If you have seen output from the mixer but are having strange symptoms where the output seems to be abruptly cutting out or to going grey, the chances are evil, evil HDCP has kicked in somewhere.

A good test is to see whether the Processor's On-screen-menu is visible. If this menu is active and you can't see it, it's a strong sign the output isn't getting through. Press the Menu button on the processor, and the blue menu box will appear towards the top left of the output for around five seconds. If this cuts out along with the spark logo or your source, that's HDCP pretty much confirmed.

The first item in the troubleshooting menu is there to change the HDCP behaviour. Normally having it set to off 'just works', but sometimes setting it on is required. If you don't have immediate success when you are dealing with these kinds of setup issues, unplugging and replugging your video cables is always worth trying, as is power cycling the processor.

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**SPARK D-FUSER » Resolutions**

What you need to know about mixing with DVI

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**Connect a computer source**

Recommend using a DVI cable between source and processor. Video out from processor can be either VGA or DVI.

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### Select native resolution of display

I'm connected to a Full HD TV here, using DVI-HDMI lead, so I'm going to select 1080P.

If you get a "Send Error" message at the bottom of the screen, simply try again.



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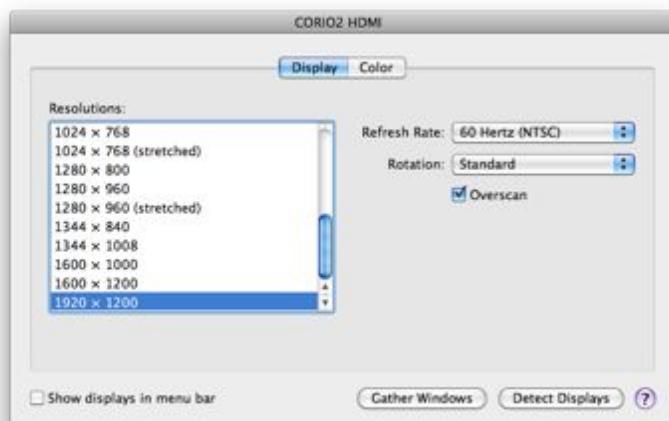
### Verify on display

The display has picked up the new resolution. The spark logo has shrunk and is now correctly proportioned. This is because the spark logo is displayed pixel for pixel. Before we were putting a 4:3 output on a 16:9 display, so the logo was stretched. With this you can always see if you're outputting.

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**But what of the computer?**

I discover the computer is not outputting 1080P, ie. 1920x1080, but rather 1920x1200. So whatever the processor is outputting isn't necessarily the same as what you're giving the processor. It is important to realise that it is the laptop that decides its own output, which then sends it down the cable to the processor, which then takes whatever you give it and conforms it to the output format.

How does the laptop know what the processor is outputting? Because that's what we want, right? The answer is it doesn't know. What it does know, because the processor advertises it through the DVI link, is a list of resolutions the processor can actually accept. You can see here that the processor has told OSX it is a "CORIO2 HDMI" device, and can do that list of resolutions. It's up to you to set your laptop to a resolution that makes sense. It's up to the processor to give you a sensible list of resolutions that you can pick from.

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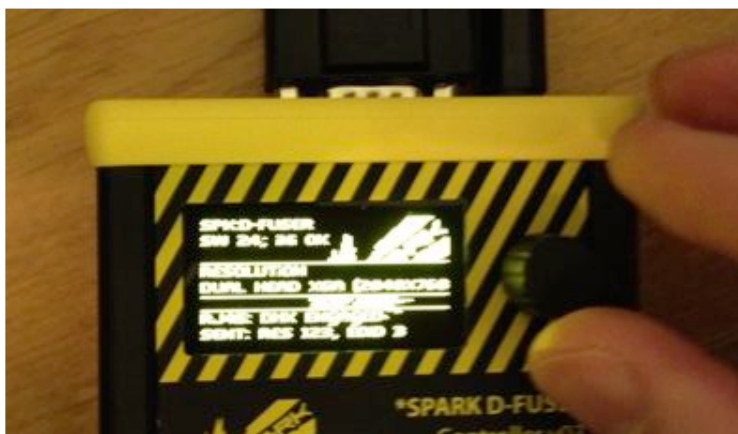
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**Match – or not – the resolution**

Its a simple matter to match the resolution here. Note I could also send ie. 720P, and the processor would automatically scale this up. If I chose a resolution with a different aspect ratio to the processor's, the D-Fuser spec is to set to maintain the aspect ratio while fitting the width in the output; the processor is capable of other options.



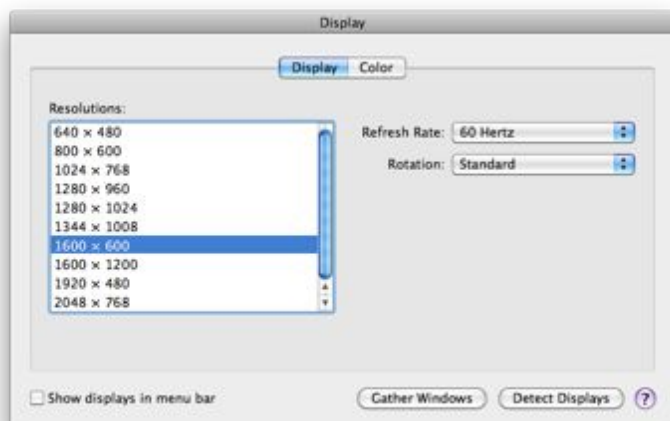
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**Connecting a TripleHead2Go?**

You will notice the TripleHead2Go resolutions were not available in OSX there. To make these appear, we need the processor to change the list of resolutions it sends to its sources. Effectively, we need it to pretend it is a TripleHead2Go. The controller sets all this up for you (its part of that one-minute conform), however there is one thing you need to know...

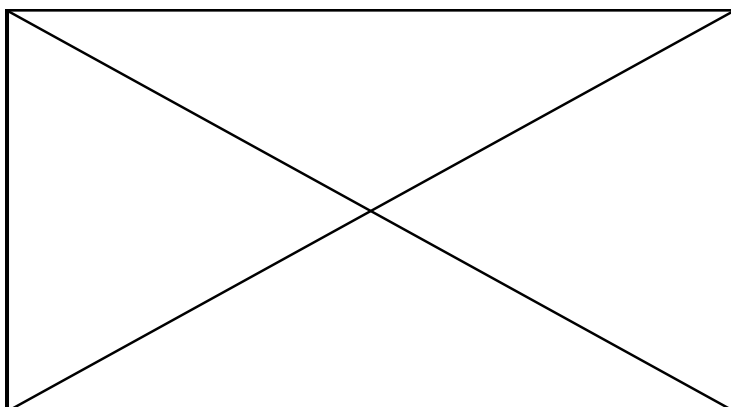


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### TH2Go? Power cycle the processor

Once you have set the resolution in the controller (with no 'Send Error', try again if so), if the resolutions are not appearing in your computer's options, then power cycle the processor. I did that, and boom: after loosing the external display on power down, on power up the OSX display dialog is no longer 'CORIO2...', and lists the TripleHead2Go resolutions. The technique here can be extended for other display hardware, I'd be interesting in trying out the DataPath X4.



### Hacker's Note

We're in EDID territory here. If anybody can work out how to dynamically generate EDID codes from resolution timing parameters, you would rock so hard: this whole thing could be made to truly 'just work' by the processor offering the source just the one option, its output resolution.