

Sony PSOne C-Sync Mod, A Guide by Four X

In this guide I'm going to teach you how to disable the V-Sync Signal going to the PSOne's AV Port on your Slim PSOne and replace it with the much better C-Sync Signal, but first.

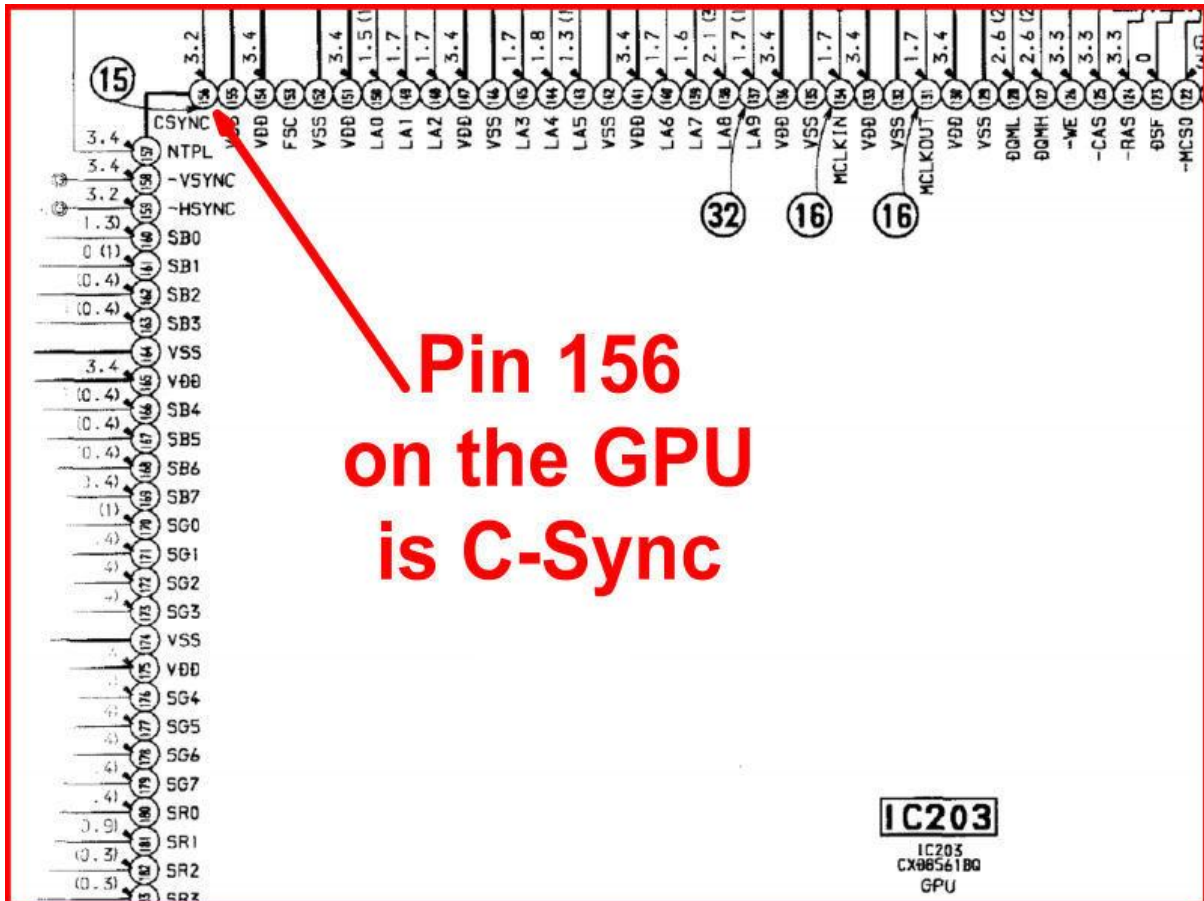
Important Notice

All modifications are carried out at your own risk, I cannot be held responsible for any damage that may occur to your console, TV, house, wife, children, dogs, cats, hamster, goldfish, that hedgehog that lives in the garden and that weird guy across the street with the mad arm and the one eye that's always looking up, NO but seriously if you're in any doubt please seek help from someone with experience in electronics or modding. Always work safely, make sure you use appropriate anti-static precautions and always read all the way through the guide and fully understand it before you attempt any of it. It's always a good idea to print the guide so you don't have to keep coming back to your PC for a reference.

A little background on the PSOne C-Sync mod.

I've known about this type of mod for about a year after performing a C-Sync mod on my old large grey Playstation Modal SCPH-7502, I know from experience, pin 156 on the GPU "IC203" is RAW C-Sync. I can verify this because I have a Service Manual for the SCPH-7502 model playstation.

Here's a snapshot of the schematic for the SCPH-7502 modal playstation showing its GPU "IC203" Pinouts

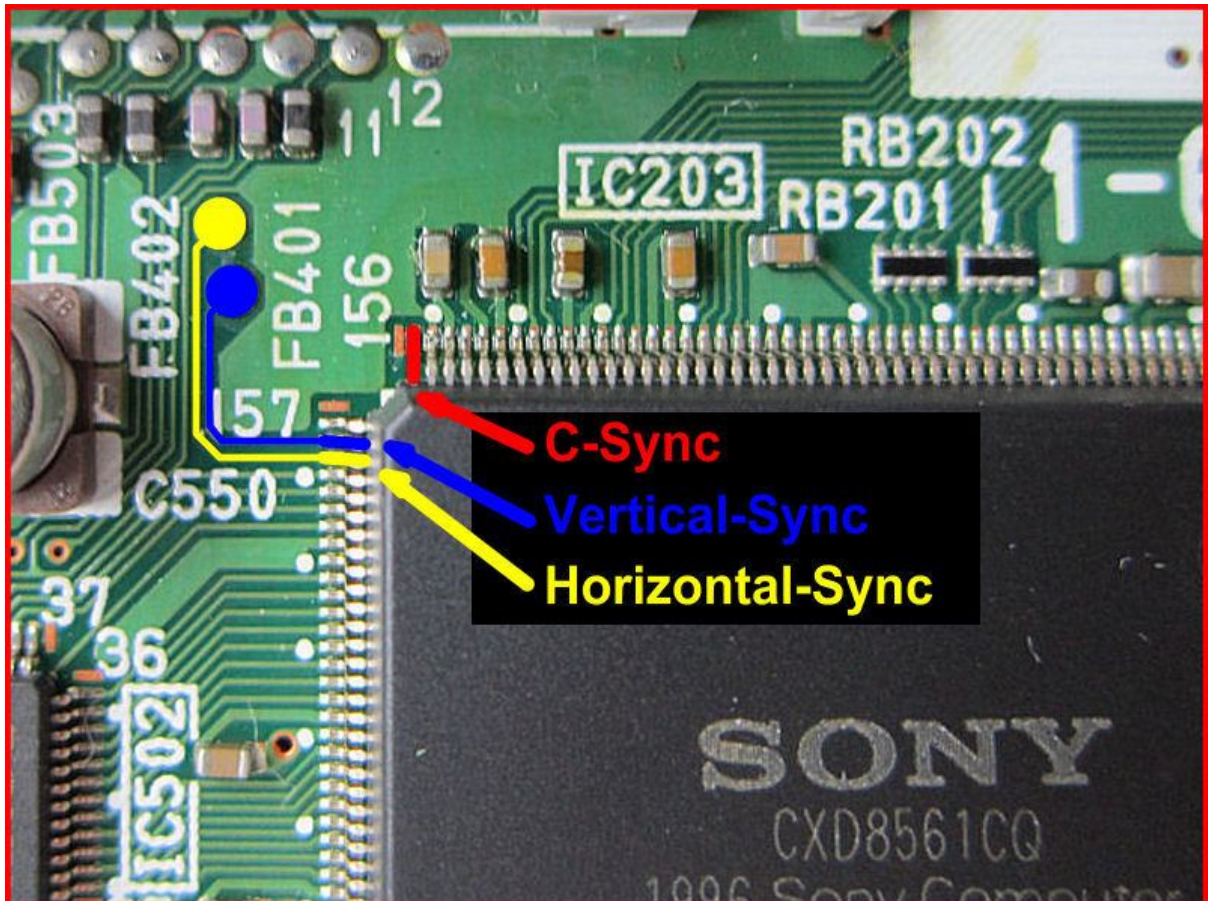


TIP, if you look closely at the schematic above you will notice **Vertical Sync on Pin 158** and **Horizontal Sync on pin 159**, Good news for all you who want to connect a Playstation to 15Khz Arcade Monitor.

Recently I picked up a Slim PSOne from a car boot and while I was installing a PSOne Modchip I noticed how similar the PSOne's GPU was to the one in its bigger brother, the SCPH-7502.

After a little testing using a Breakout RGB Scart and an old 14 Inch TV that I use to test all my video mods on I found out that the GPU "IC203" inside the PSOne does indeed have RAW C-Sync on pin 156 like the model SCPH-7502.

Here's what the PSOne's GPU "IC203" chip looks like in real life showing the RAW C-Sync, Vertical Sync and Horizontal Sync.



I now knew I could do the C-Sync mod on my PSOne, **BUT** I had a big Problem.

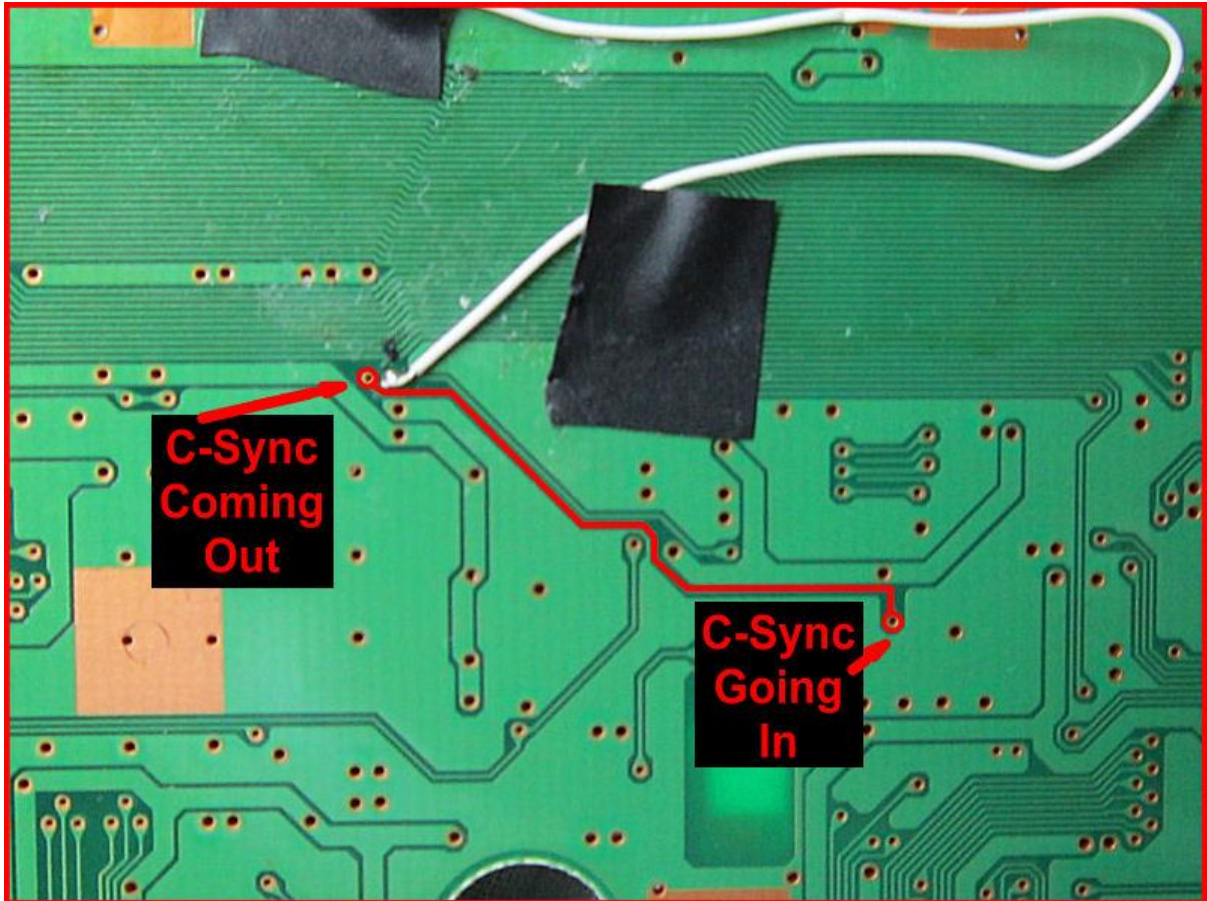
I know where to get C-Sync Signal from, **BUT** soldering to that pin would be a real pain, I knew I could do it but it's would be very tricky.

So I had an idea! Where is it going to ?, Maybe there are some better places I can solder to, to tap into RAW C-Sync.

So I decided to trace pin 156 using a multimeter set on continuity mode (I.E. Bleep if the 2 points on a circuit are linked).

AND BINGO, I found 3 very nice places that you will see later on.

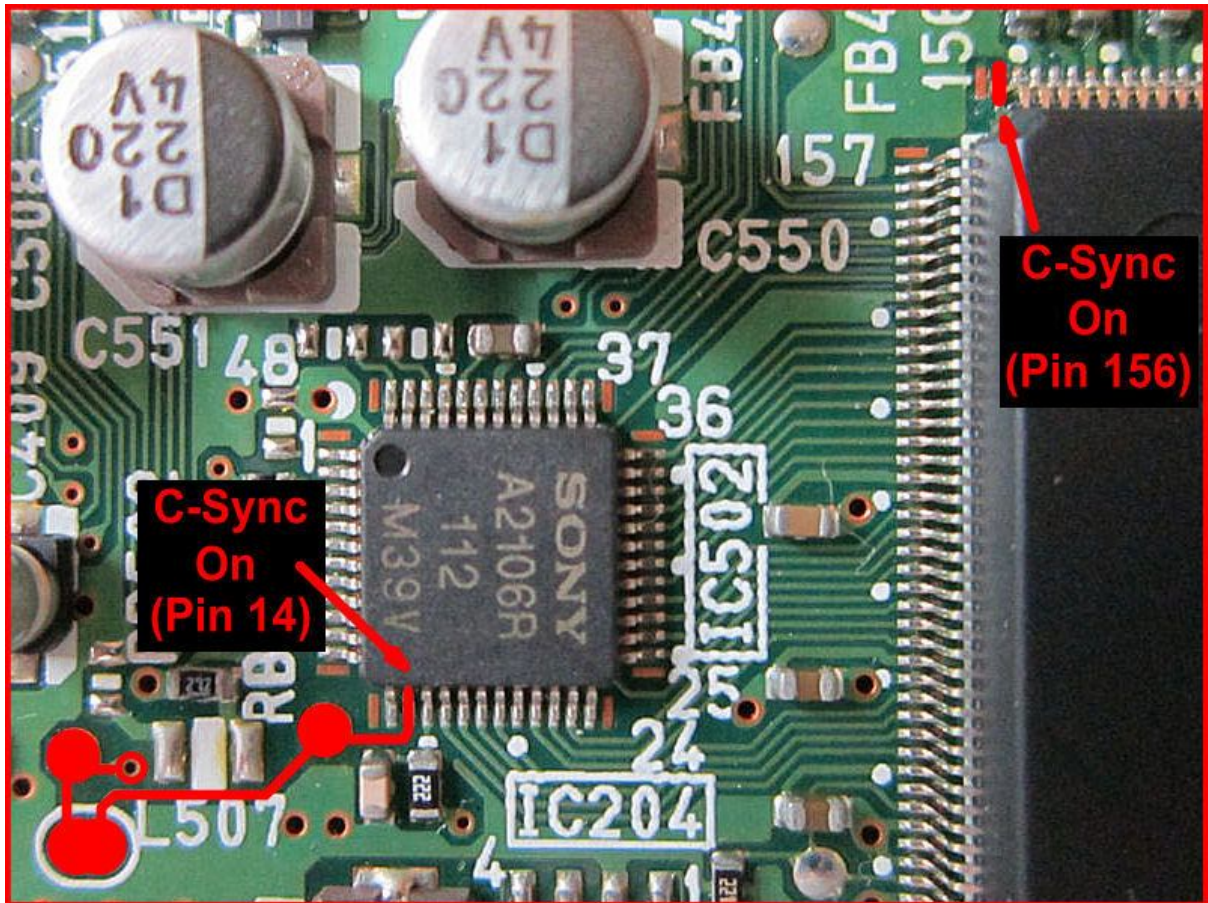
Below is a picture showing the back of the PSOne's PCB, you can clearly see were the RAW C-Sync trace came out from behind the PSOne's GPU "IC203" and goes back in further down the PCB.



The white wire in the picture above has nothing to do with the C-Sync mod, it's a colour correction mod you do when you install a modchip so just ignore it.

I could tap into the RAW C-Sync Signal from one of the two points above but I decided to trace it further.

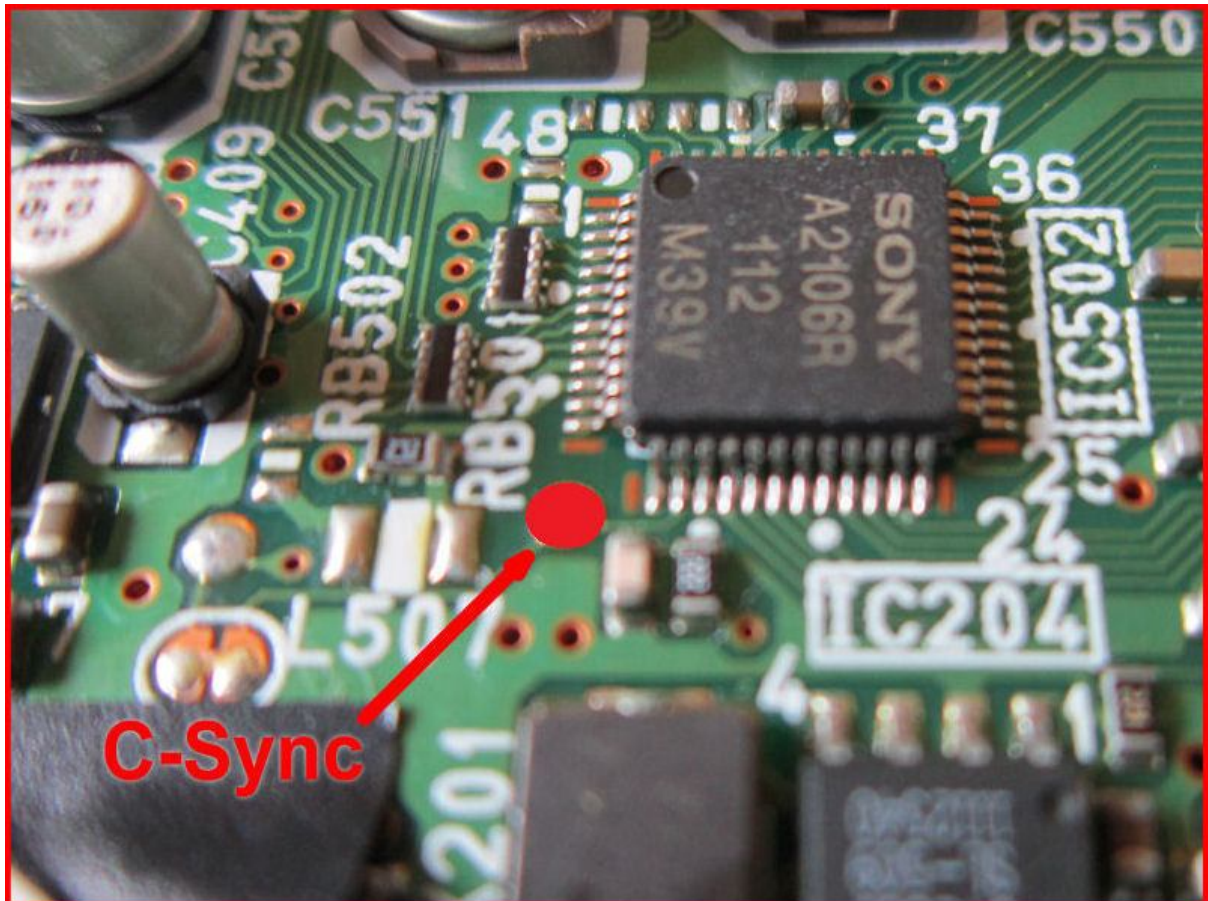
In the picture below you can see where the RAW C-Sync Signal comes back in and goes to the A2106R Chip, I later found out the A2106R is the PSOne's Video Encoder Chip, You will notice there are 3 nice big pads where I can tap into the RAW C-Sync Signal.



Above is a picture showing the PSOne's Video Encode Chip the A2106R, I now know RAW C-Sync is going to the A2106R chip on pin 14, luckily with some nice big pads very close to the A2106R chip to tap into RAW C-Sync.

However because this is a RAW C-Sync Signal I needed to add some internal components before I got a Stable\Clean C-Sync Signal, a resistor and a electrolytic capacitor did the trick perfectly.

Once I disabled the V-Sync Signal going to the PSOne's AV Port and replaced it with the now clean and stable C-Sync Signal the picture on my 32 Inch LG HD TV over RGB Scart was awesome, C-Sync gives me a beautiful picture, Don't get me wrong V-Sync was good, but C-Sync is outstanding, the whole picture seems to be more sharp and crisp and better defined.



Above you can see where I decided to tap into the RAW C-Sync Signal, very close to the A2106R Video Encode Chip.

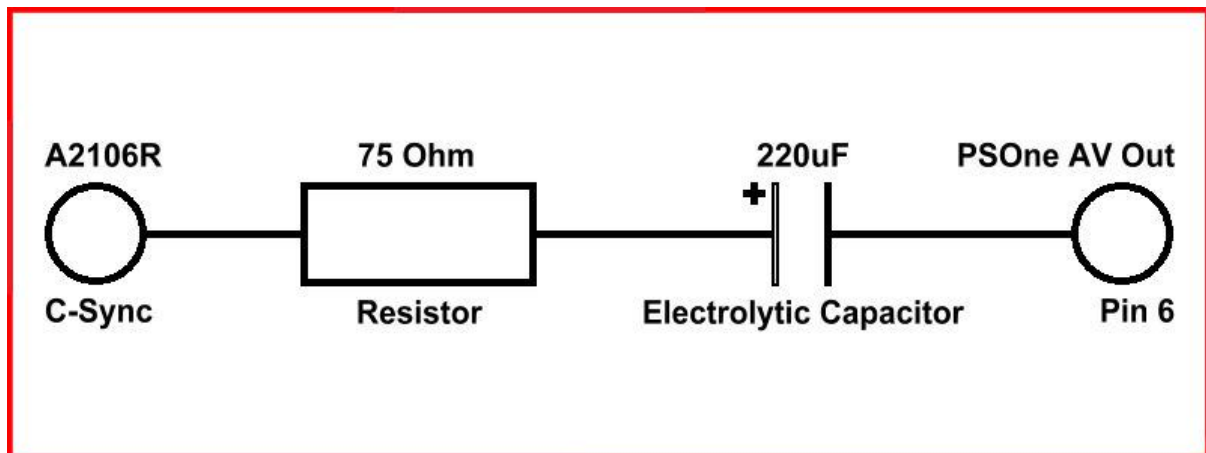
So, here's how to do it.

Let the Modification begin....

Here's the steps we were going to do to perform this modification.

- 1) Cut the trace going to Pin 6 (V-Sync) on the PSOne's AV Port this will disable the V-Sync Signal.
- 2) Tap into the RAW C-Sync Signal close to the A2106R Video Encode Chip.
- 3) Send the RAW C-Sync Signal through a 75 Ohm Resistor and 220uF Electrolytic Capacitor to Clean and Stabilize the Signal.
- 4) Connect the now Stable\Clean C-Sync Signal to Pin 6 on the underside of the PSOne's AV Port.

Below in the circuit diagram, you will see what we need to do to get a Stable\Clean C-Sync Signal.



Why do we need to send the RAW C-Sync through a resistor and a capacitor I hear you ask?

Simple, I will try to explain it without getting too technical.

Tapping the RAW C-Sync straight to Pin 6 on the back of PSOne's AV Port would be a **BAD** idea, the C-Sync Signal is what's called RAW C-Sync, if you look at the V-Sync or RGB and sometimes the Audio lines inside other consoles including the playstation you will notice that they all go through a circuit similar to this before making there's way to the AV out Port, it's a cheap but very effective way of stabilize and cleaning a signal before to it leaves the console.

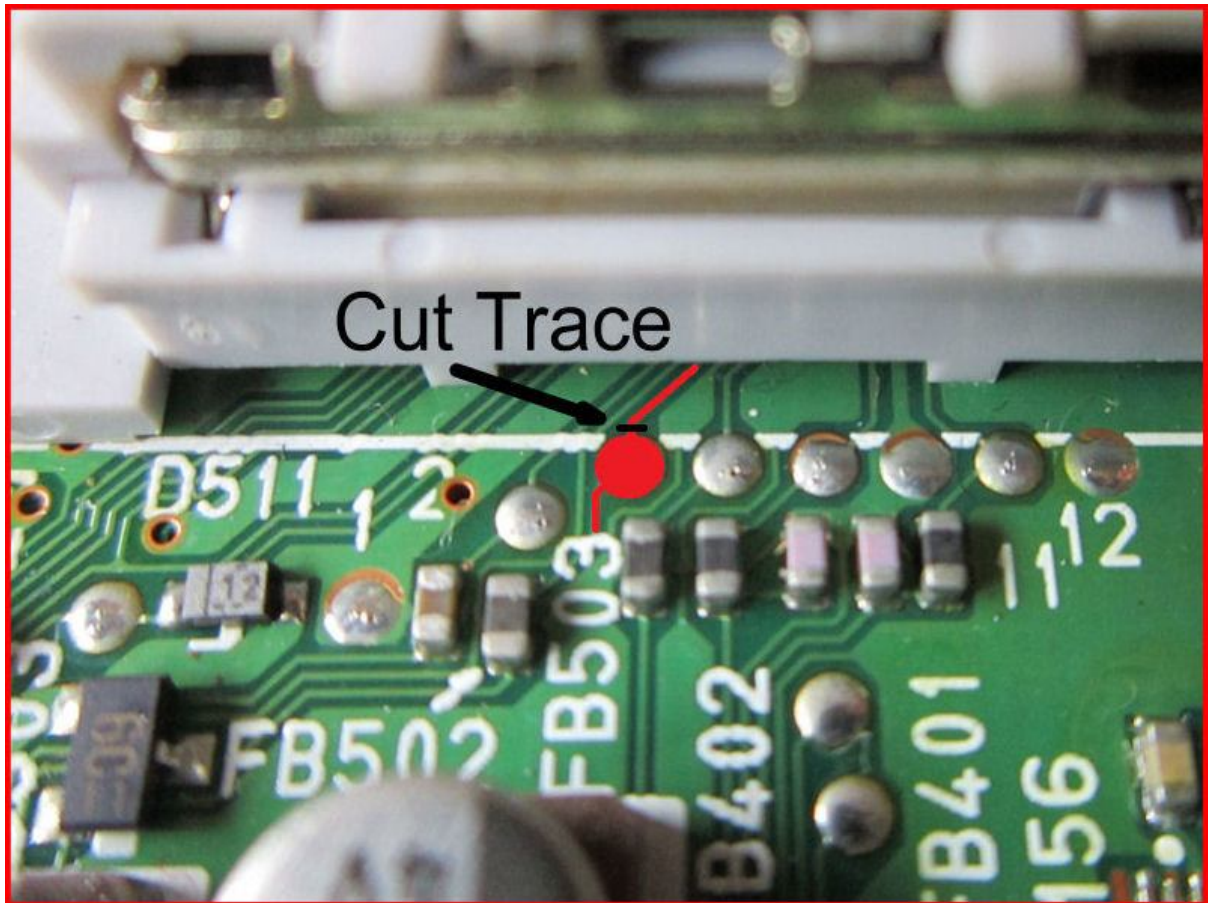
Here's what we need.

- 1) Wire (doesn't matter what colour, I just had some spare red so I use that)
- 2) 75 Ohm Resistor (carbon or metal film is fine)
- 3) 220uF Electrolytic Capacitor (I used a 10v but a 16v will be fine)
- 4) Some electrical tape (I used shrink tubing, I love that stuff, makes a nice neat job of things)

OK, Let's get the hard part over with first, we need to cut a trace that's going to pin 6 (V-Sync) on the PSOne's AV Port.

Towards the back and to the right of the PSOne's PCB is the PSOne's AV Port, Here you're going to need to cut a trace that goes to Pin 6 (V-Sync) it's not hard to cut with a Stanley knife or better scalpel **but please be careful you don't cut yourself or any other traces by mistake.**

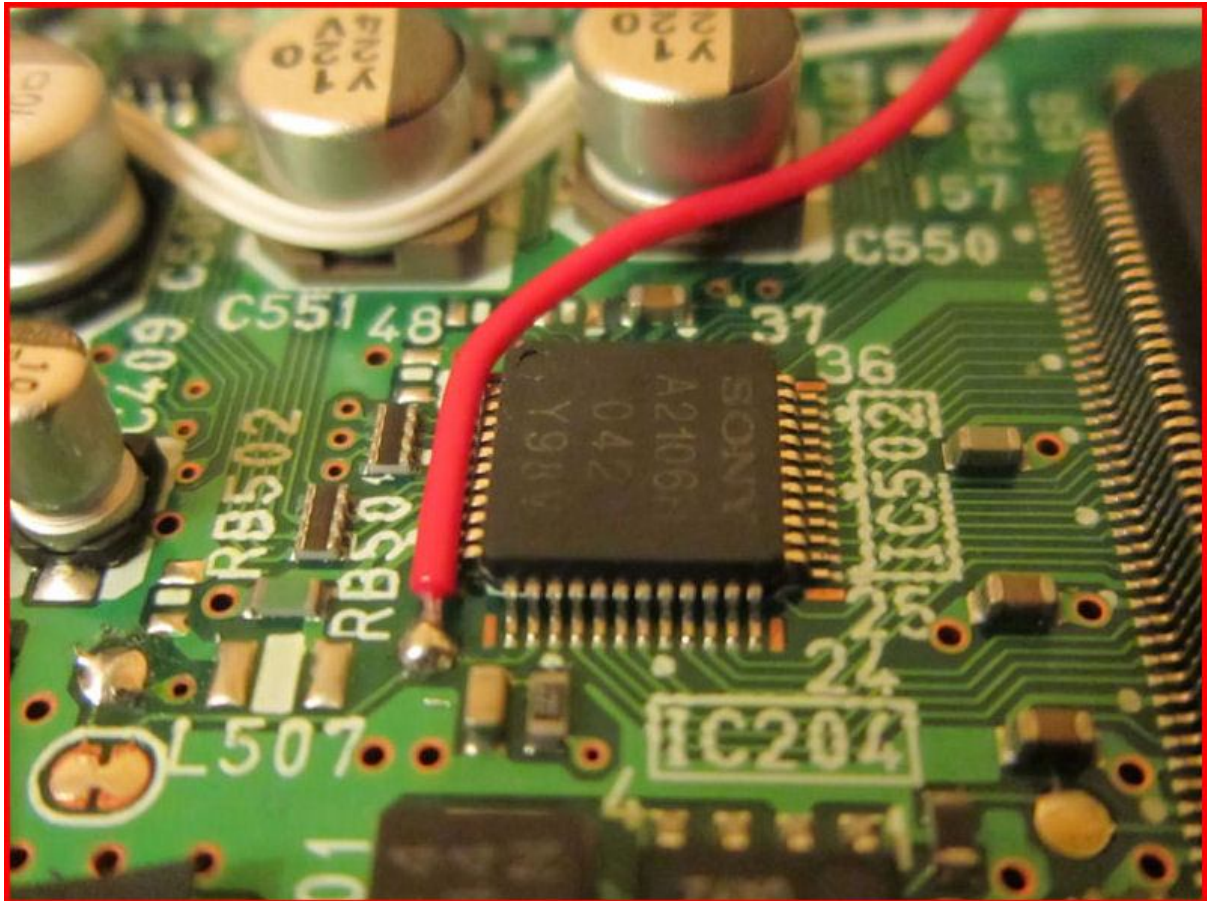
TIP, I found it best to cut from left to right. This way if I slipped I wouldn't take out the two traces on the left, also the trace on the right has a larger surface area, if I slipped I could easily fix the trace compared to the ones on the left.



OK, hard part over, now to tap into our RAW C-Sync

First cut a piece of wire about 5 inches long, strip the two ends and tin them with a soldering iron and solder.

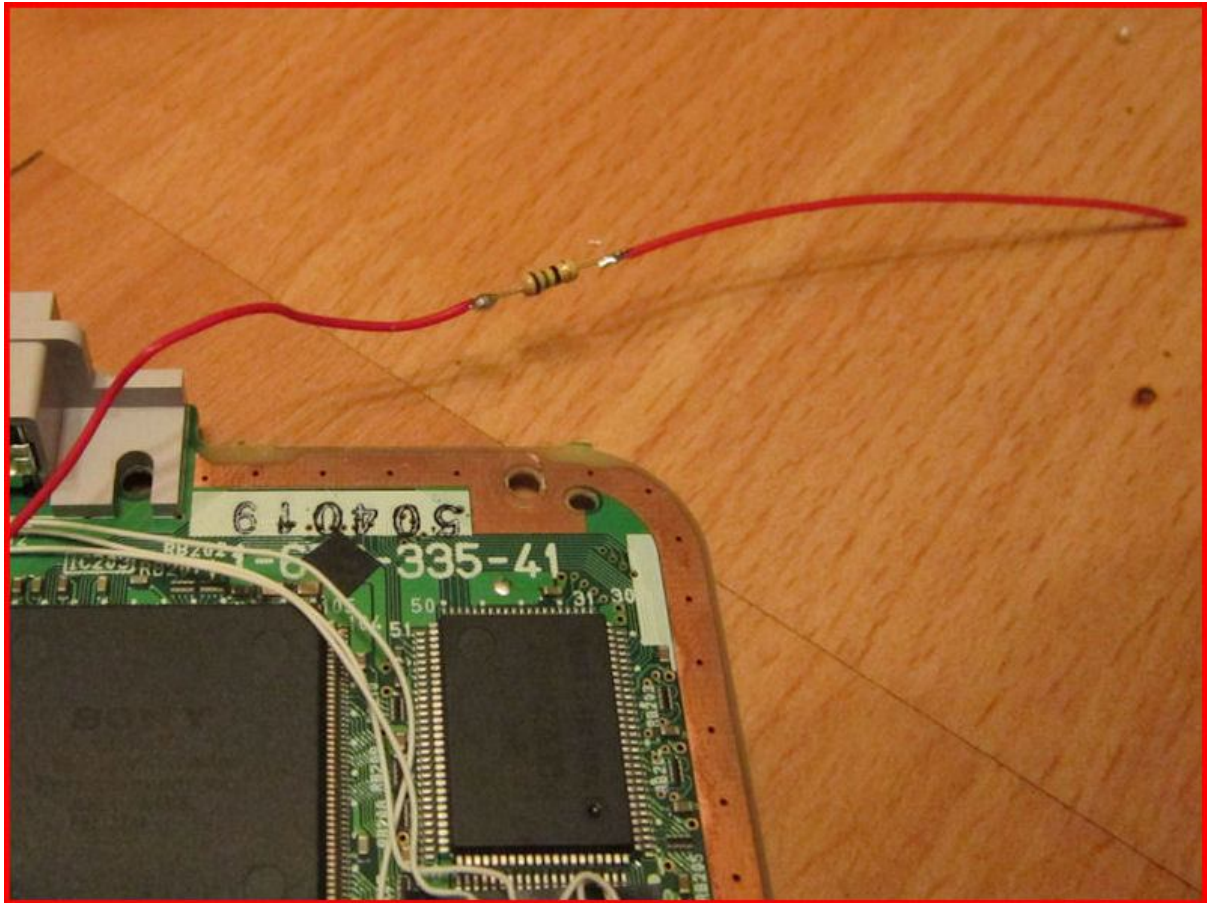
Now solder one end of the wire to the place were going to tap our RAW C-Sync Signal from, like in the picture below.



It's Time to add the 75 Ohm Resistor.

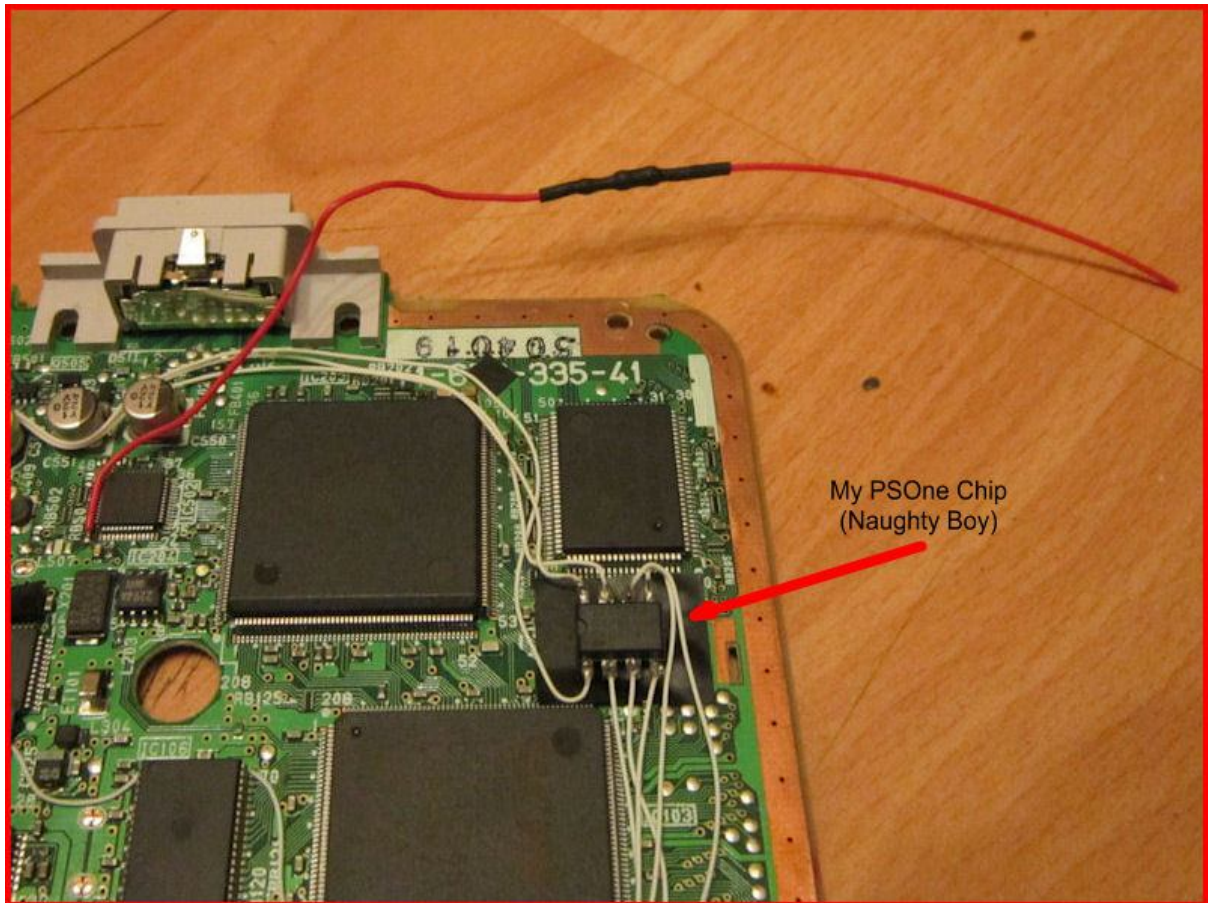
OK, solder the 75 Ohm resistor to the other end of the wire now coming from the RAW C-Sync

Now cut another piece of wire about 2 inches long, strip and tin both end then solder this to the other end of the resistor, like below.



Now tape or add shrink tubing to the resistor to insulate it, like below,

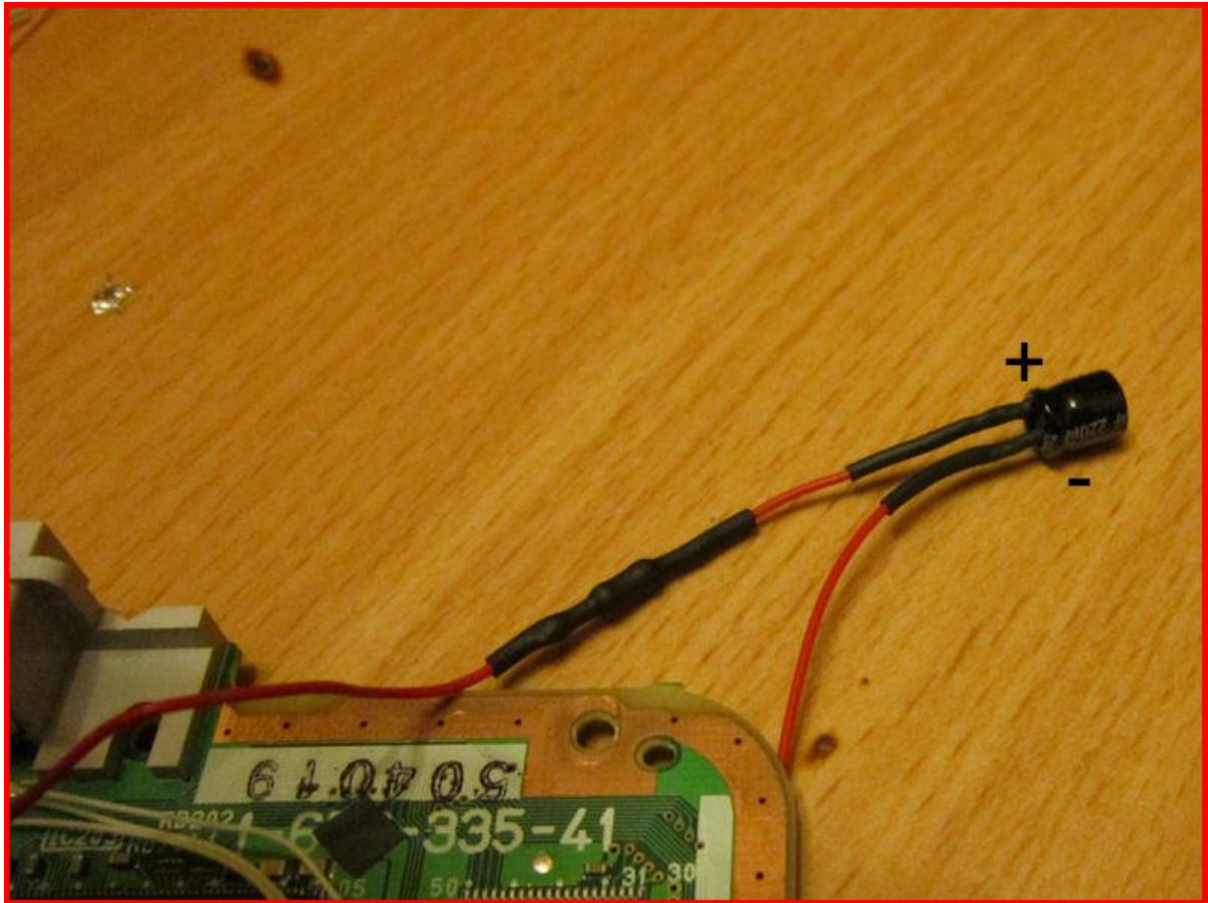
TIP, (If you're using shrink tubing it's best to add a little in advance to the wire you just soldered the resistor to as were going to solder it to one of the Electrolytic Capacitor legs and you can't add it afterwards)



OK, time to add the 220uF Electrolytic Capacitor.

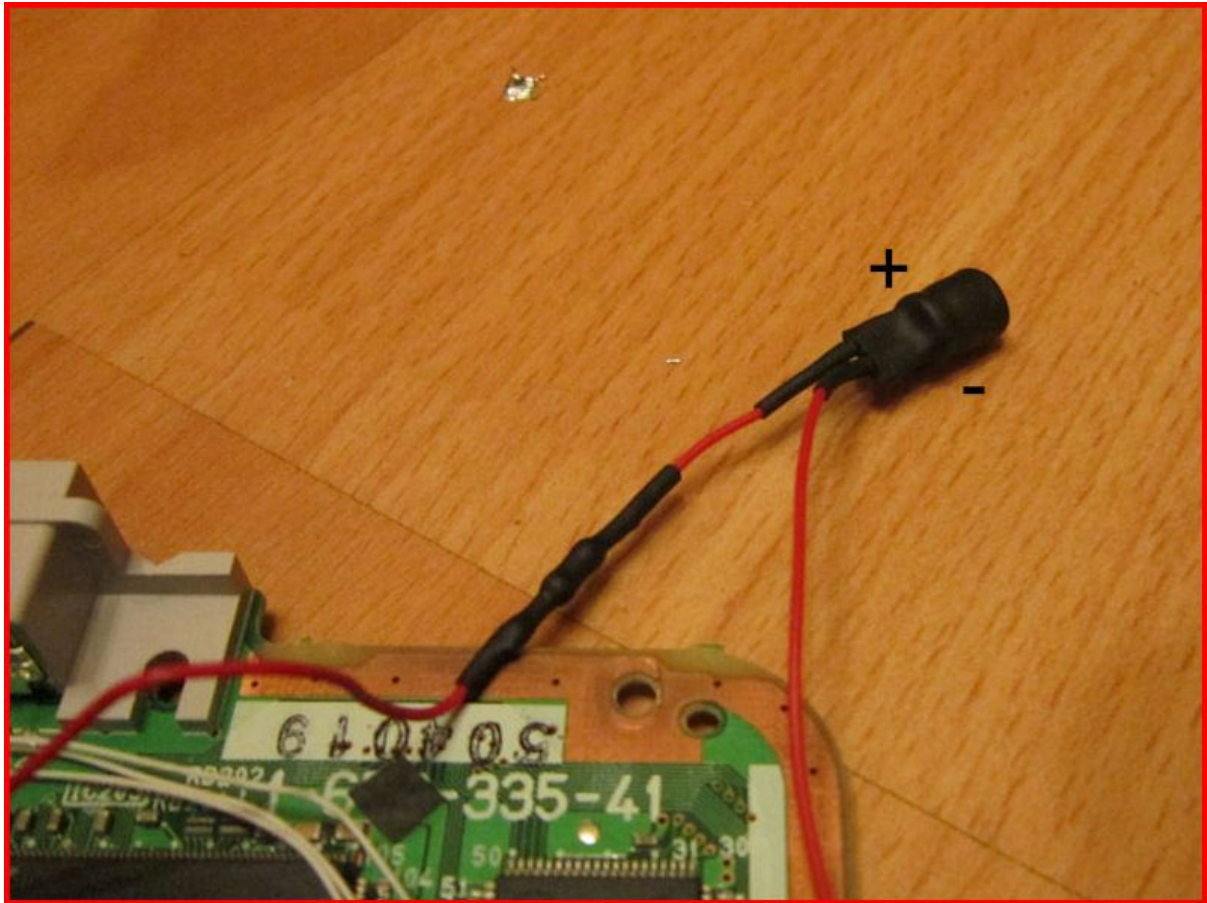
You will need to get the polarity right, the wire with the resistor now carrying the RAW C-Sync Signal needs to be soldered onto the + leg on the 220uF Electrolytic Capacitor.

TIP, (You can easily tell the polarity of an Electrolytic Capacitor, it will have a stripe running down the outer plastic covering with a - symbol printed on it).



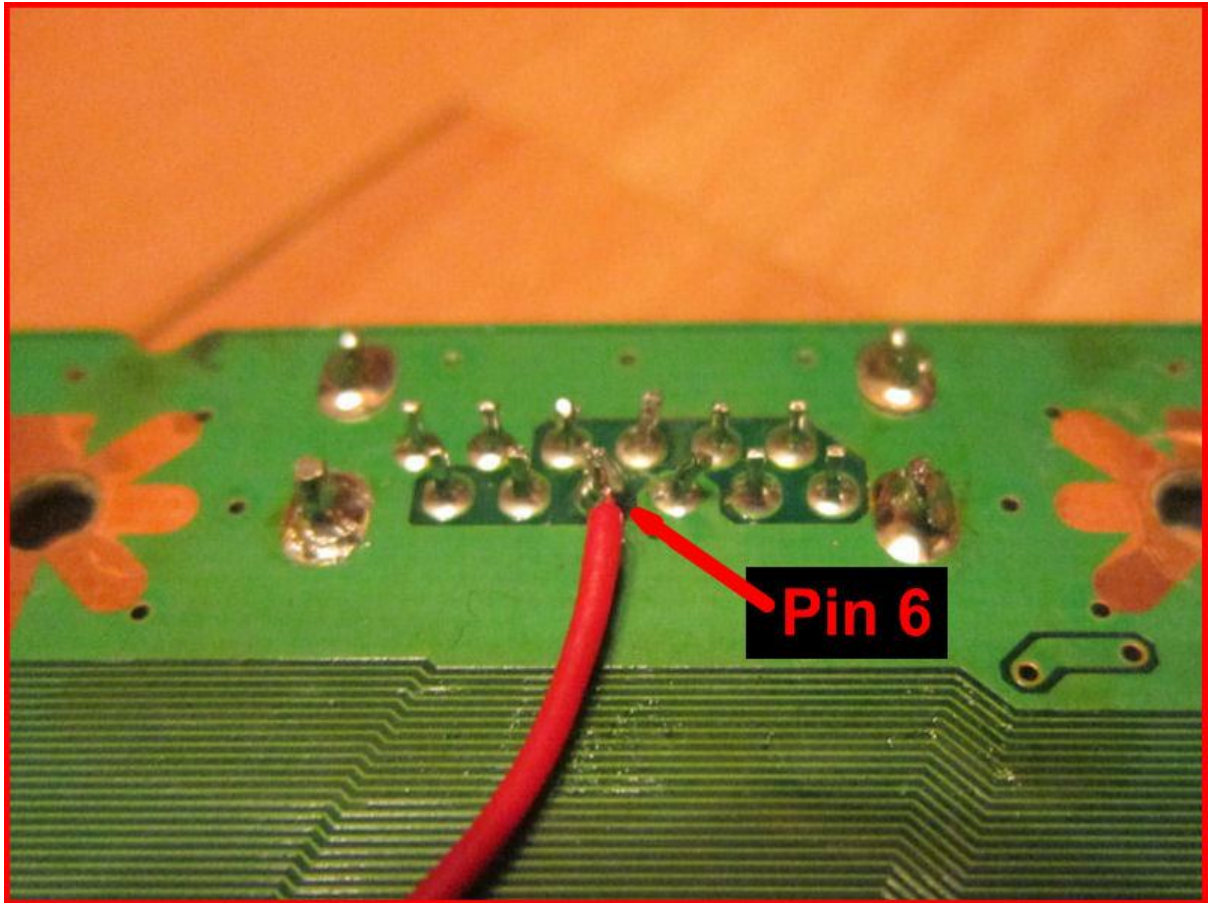
Now take another piece of wire about 5 inches long, strip and tin it, then solder this wire to the - leg on the Electrolytic Capacitor, like above.

OK, tape both legs or use shrink tubing to isolate the Electrolytic Capacitor, like below.

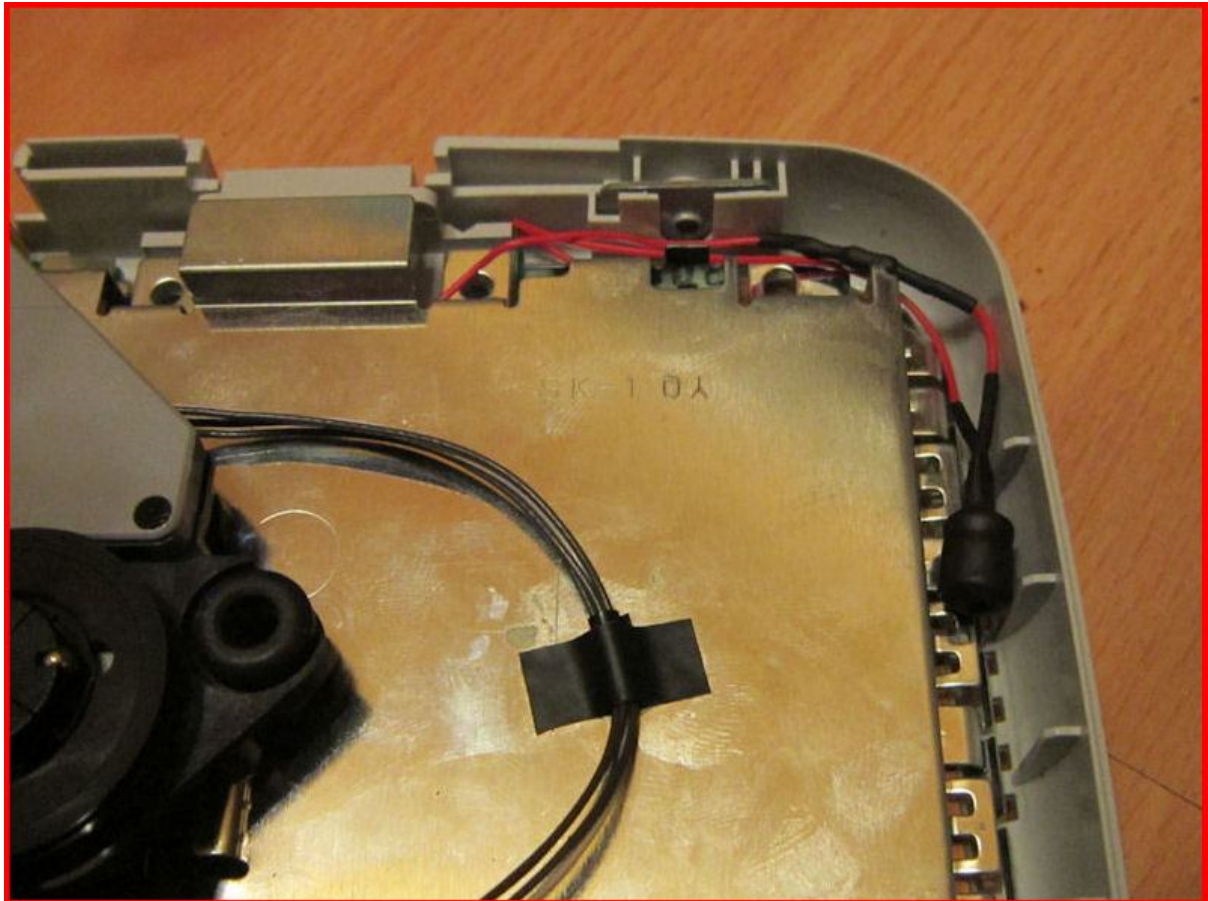


OK, were almost finished, time to solder the wire to the back of the PSOne's AV Port.

Turn the PSOne's PCB over, take the wire carrying the now clean and stable C-Sync Signal with our Resistor and Electrolytic Capacitor and Solder it to Pin 6 on the back of the PSOne's AV Port, Like Below, it's the third pin from the left on the bottom row.



All you need to do now is tidy up, like below.



Now is a very good time to test to see if everything is good and working and smile when you see how good the picture is for the first time.

JOB DONE.

Just a thought Guys and Gals.

Seeing as **ALL** Playstations 1's (Large and Slim) have almost Identical GPU's (I.E. Pin for Pin Function to Function) There's no reason why this C-Sync Mod wouldn't work on other Playstations.

All we would have to do is

- 1) Confirm pin 156 from the Playstation's GPU is indeed RAW C-Sync, (This could be easily done using a Scart **RGB** breakout cable and a crappy old TV).
- 2) Trace pin 156 to find a better solder point to tap into the RAW C-Sync.
- 3) Cut the trace going to Pin 6 (V-Sync) on the Playstation's AV Port.
- 4) Tap into the RAW C-Sync.
- 5) Send the RAW C-Sync Signal through a 75 Ohm Resistor and 220uF Electrolytic Capacitor to clean and stabilize the Signal.
- 6) Connect the now Stable\Clean C-Sync Signal to Pin 6 on the underside of the Playstation's AV Port.

JOB DONE.

Anyway, hope you've enjoy this guide as much as I have making it.

All the Best, in life and future mods you may attempt.

Four X