XboxHDMI Installation Guide

(Xbox Revision 1.0 - 1.5)

Brief Overview

For a brief overview, please refer to the YouTube video below.

https://bit.ly/339G98T

Preparation

Before your adventure begins, it's imperative to ensure that you have a fully working, tested, and modified Xbox. Please thoroughly test your system before attempting to install the XboxHDMI kit. This guide also assumes that you watched the installation video linked above.

This guide is for Xbox motherboard revisions 1.0 - 1.5 with a Conexant or Focus encoder.

Apply the kernel patches and verify it's activated by running the XboxHDMI application on the Xbox before teardown, as this will fix certain kernel bugs in some games!
https://bit.ly/3nUfcOJ

Kit Contents

Check your kit for missing or damaged pieces before moving forwards.

* XboxHDMI Main Board
* XboxHDMI Flex PCB
* 26AWG Stranded Red Wire for the 5V and 1.8V connections.
* 26AWG Stranded Orange Wire for the SPDIF connection.
* 26AWG Stranded Black Wire for the ground connections.
* 22AWG Paired Wire for the SMBus connection.
* 3D printed board spacer
* 3D printed HDMI port cover
* 2 replacement screws

Wire Prep

It's imperative to cut each wire as close as possible to our recommendations, but not shorter. If additional wire is needed then make sure to use wire of similar quality and gauge.

After cutting each wire, strip each side of the wires. It’s recommended for the cleanest install to strip about 2mm from one side (for the connections to the Xbox motherboard) and about 3mm on the other side (for connections to the XboxHDMI board). Make sure to twist the stranded wires and pre-tin each one.

Cut List and Lengths (end to end, before stripping)

Black Wire	25mm	GND 2 Connection *Near the SDA/SCL pads*
Black Wire	28mm	GND 1 Connection *Near the SPDIF pad*
Red Wire	35mm	1.8V Connection
Red Wire	48mm	5V Connection
Orange Wire	45mm	SPDIF Connection
Paired Wire	90mm	SMBus Connection

XboxHDMI Board Prep

Begin by adding solder to all of the connection pads. (GND, SDA, SCL, SPDIF, 1V8, 5V). This is important as there's little room once everything is installed.

Step 1 - Motherboard Prep

The first step is to remove the motherboard from the Xbox. There are plenty of guides on the internet on how to do so and won't be repeated here as it's pretty straight-forward.

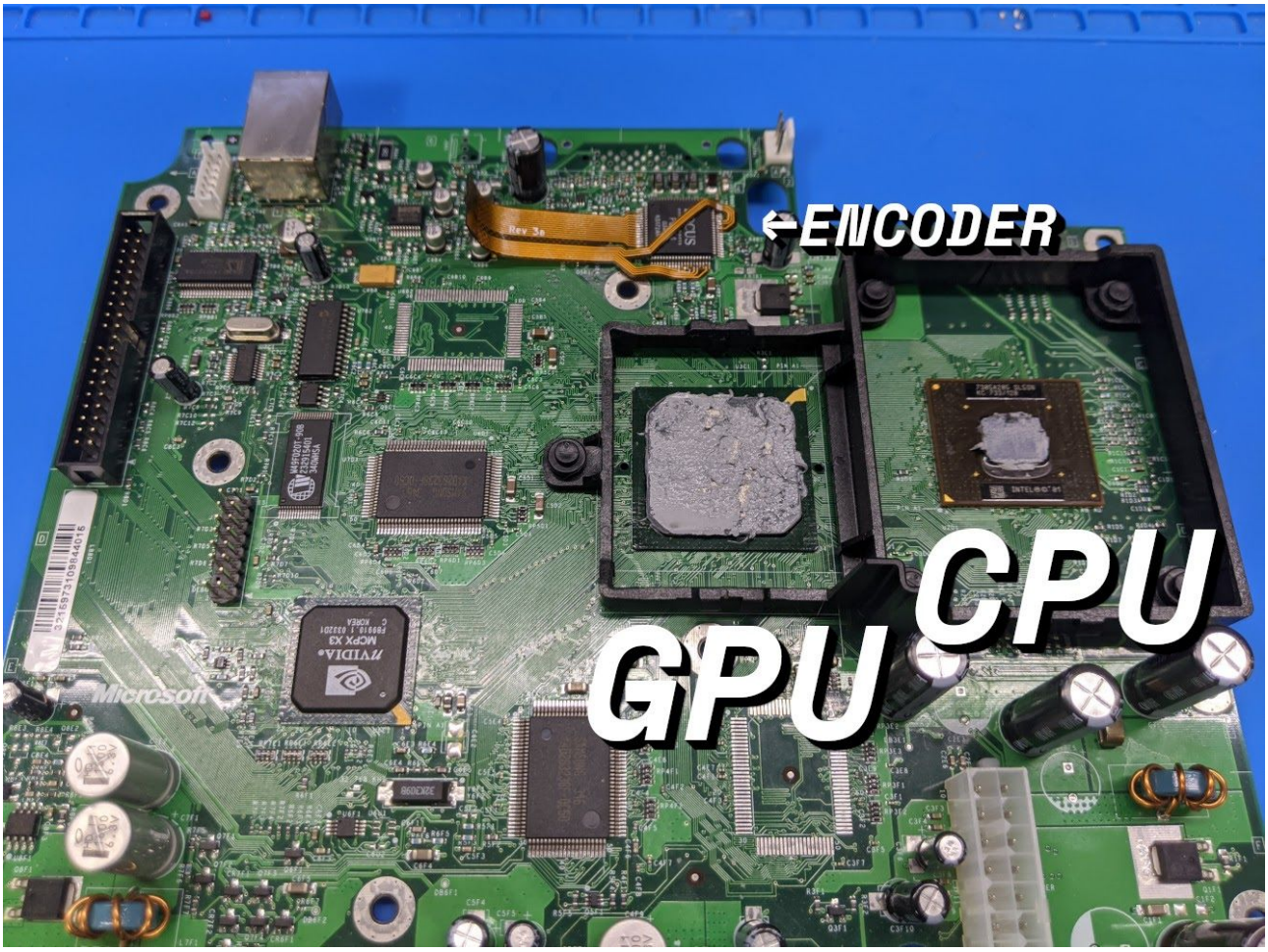
It's recommended that you remove the GPU heatsink since there's very little room between it and where the flex cable will be installed. We've found that the best approach is to apply very low heat to the heatsink, around 100ºC / 212ºF, while applying a very light force twisting to the heatsink.

It's very important not to force the heat sink off by attempting to pull it straight up as this could damage the GPU. *(There's at least one person who's managed to do this in the past, unrelated to the project, and even though it's very unlikely, it's noted here to let others know to be careful!)*

The thermal compound on the GPU can be cleaned off with a basic solvent such as Arctic Silver Arcticlean Thermal Cooling Material Remover or with WD40. When re-applying the heatsink, make sure to add **ample** PC thermal paste. *(In this case, more is better as a bit too much should not effect thermals and is ultimately safer as the GPU does not have an embedded thermal sensor for overheating protection)*

After this, you can remove the AV port. Please refer to the installation video for more information on the different ways to accomplish this.

And finally, make sure to clean the area where the flex will be installed with IPA.

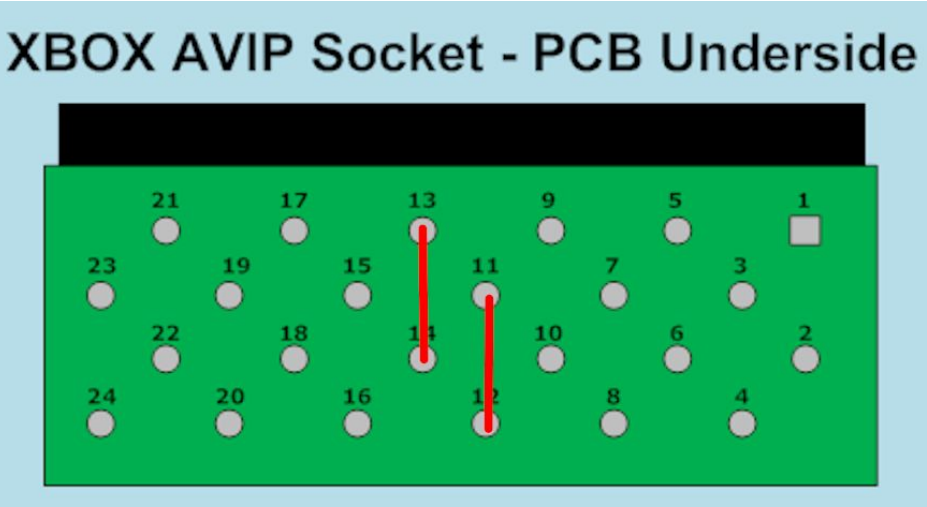


Note that removing the CPU heatsink is not required.

Step 2 - Jumper Wires

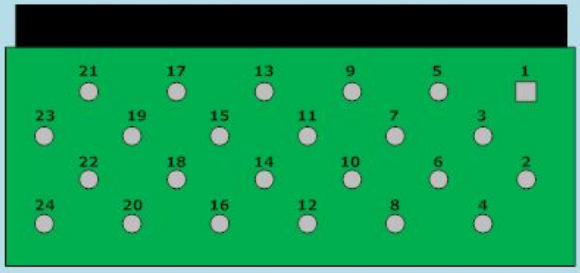
This step gets its own section as it's very easy to forget, and can be a pain if forgotten since the pins are located on the bottom of the board.

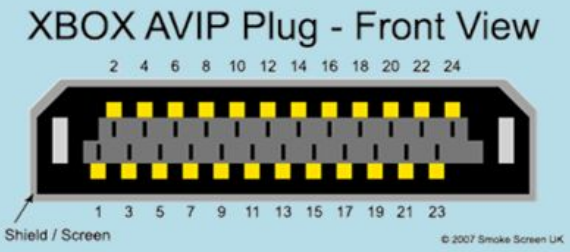
We need to make two connections on the bottom of where the AV port used to be so that the Xbox thinks that an HD AV cable is plugged in. Use a scrap piece of wire to make these connections.

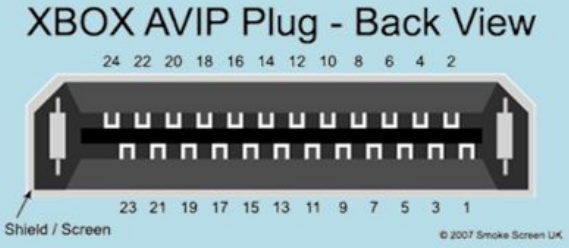


AVIP PINOUT

Pin	Function
1	DC Out (5V)
2	Right Audio Out
3	Left Audio Out
4	Right Audio Ground
5	Left Audio Ground
6	Digital Audio Out
7	NC
8	SCART Blanking
9	Mode 1
10	Ground
11	Mode 2
12	Ground
13	Mode 3
14	Ground
15	SCART Status
16	Blue / Pb Ground
17	Red / Pr / Chroma (C) Ground
18	Blue / Pb Out
19	Red / Pr / Chroma (C) Out
20	Green / Y / Luma (Y) Ground
21	Composite (CVBS) Ground
22	Green / Y / Luma (Y) Out
23	Composite (CVBS) Out
24	DC Return







Step 3 - Flex Installation

This section will be mostly screenshots of the Xbox video encoder and where the flex connects. Pay close attention to the alignment of the flex cable and **take your time while installing**!

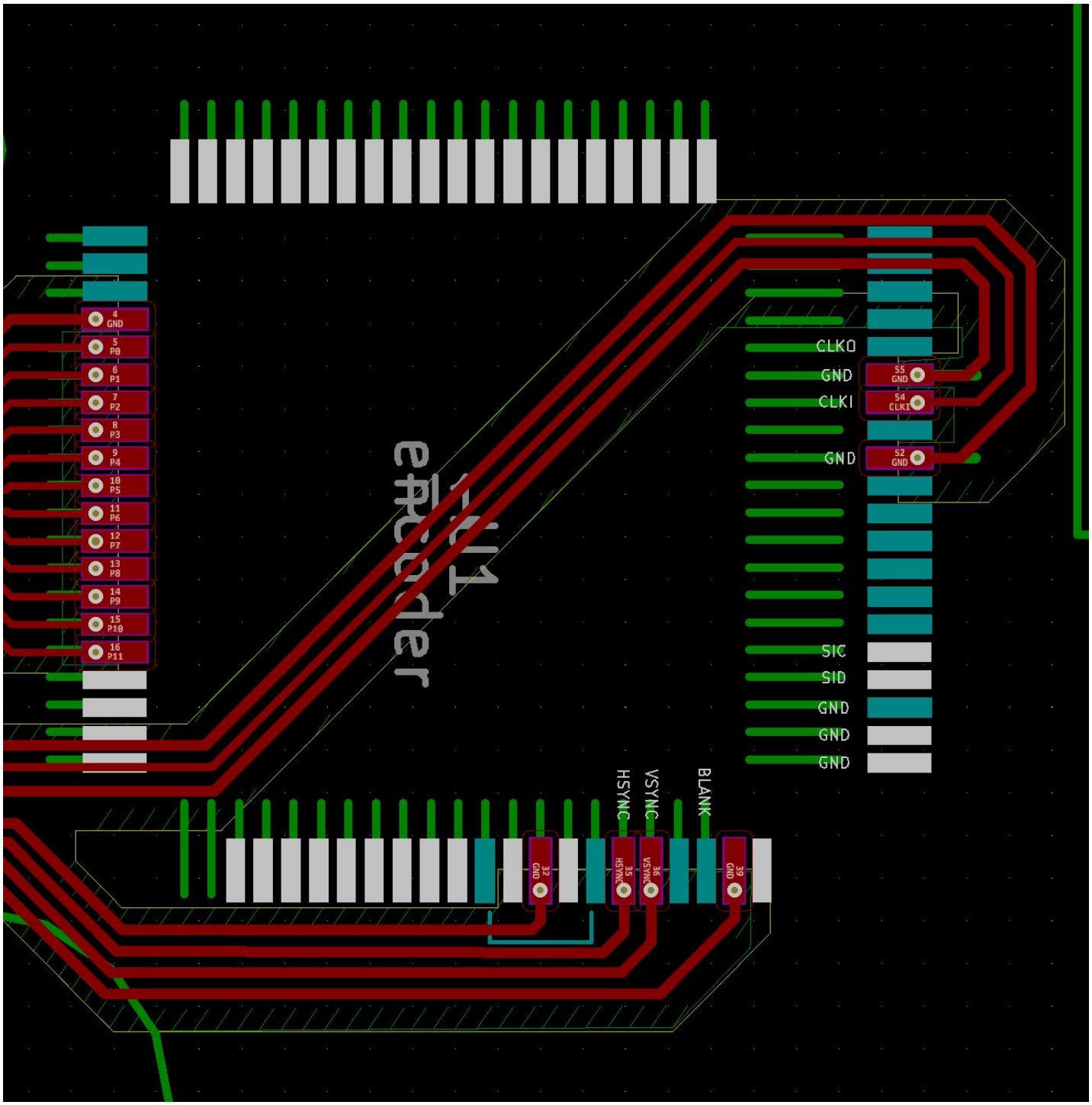
After the flex is installed, the Xbox should still be bootable.

Best Practices

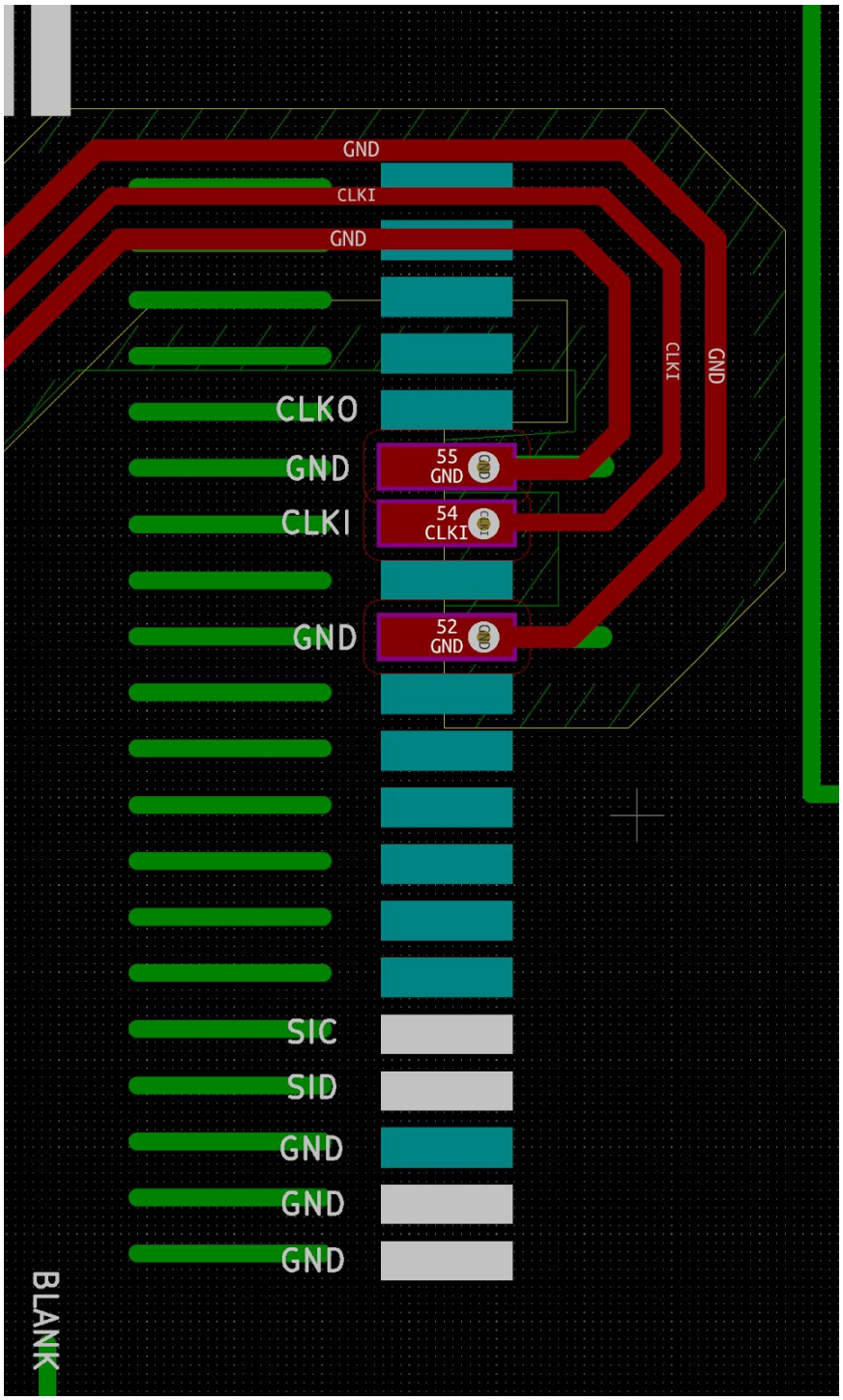
- Pre-tin both sides of the flex by applying ample flux and running solder across each pad before soldering to the Xbox motherboard.
- Take your time!

Completed Install

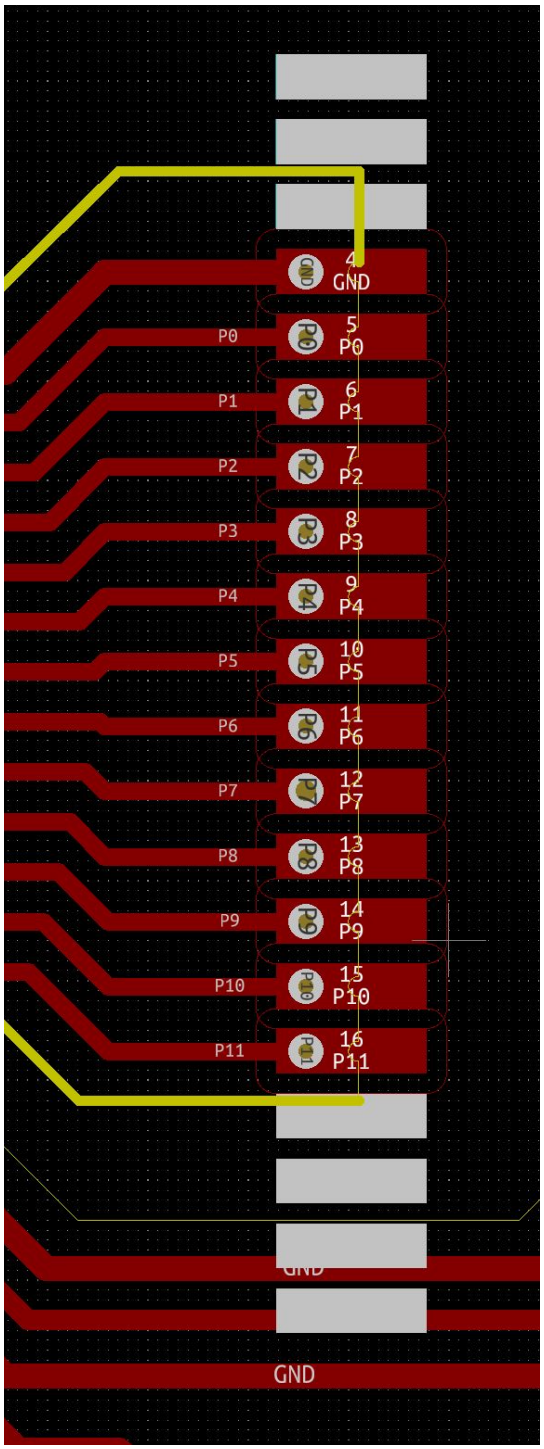
Overview View



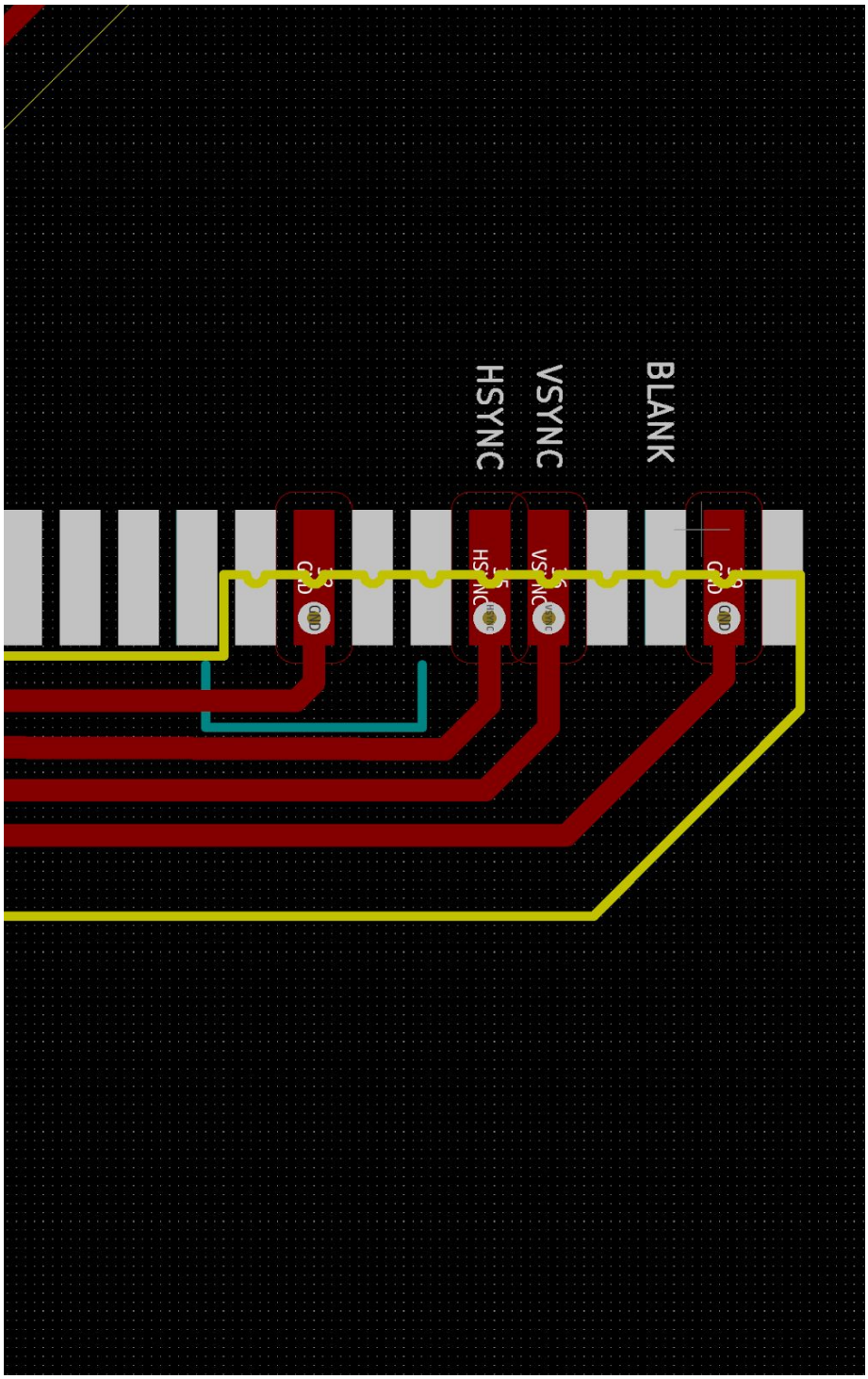
Right Connections



Left Connections



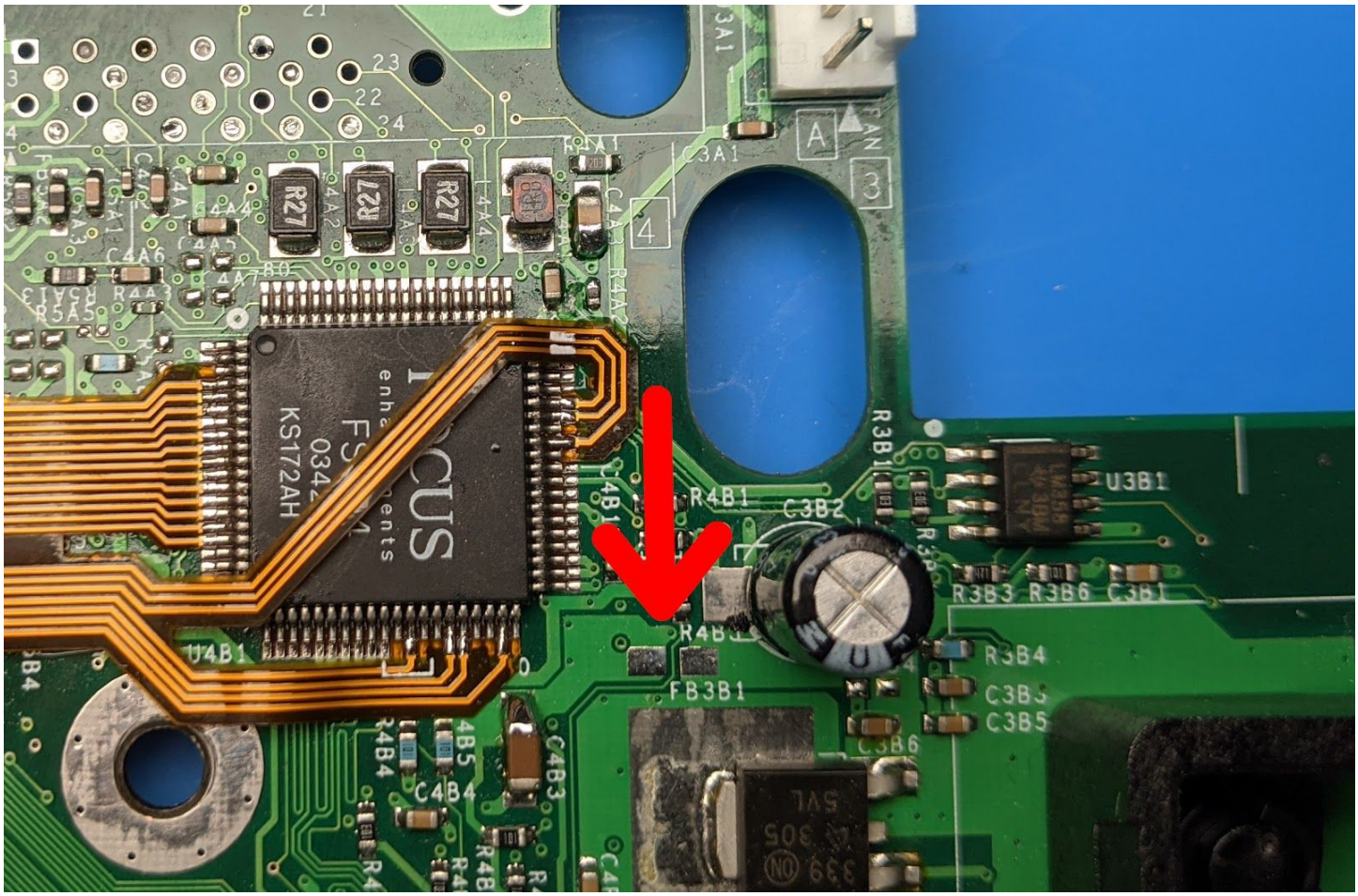
Bottom Connections



Step 4 - Aux Wires

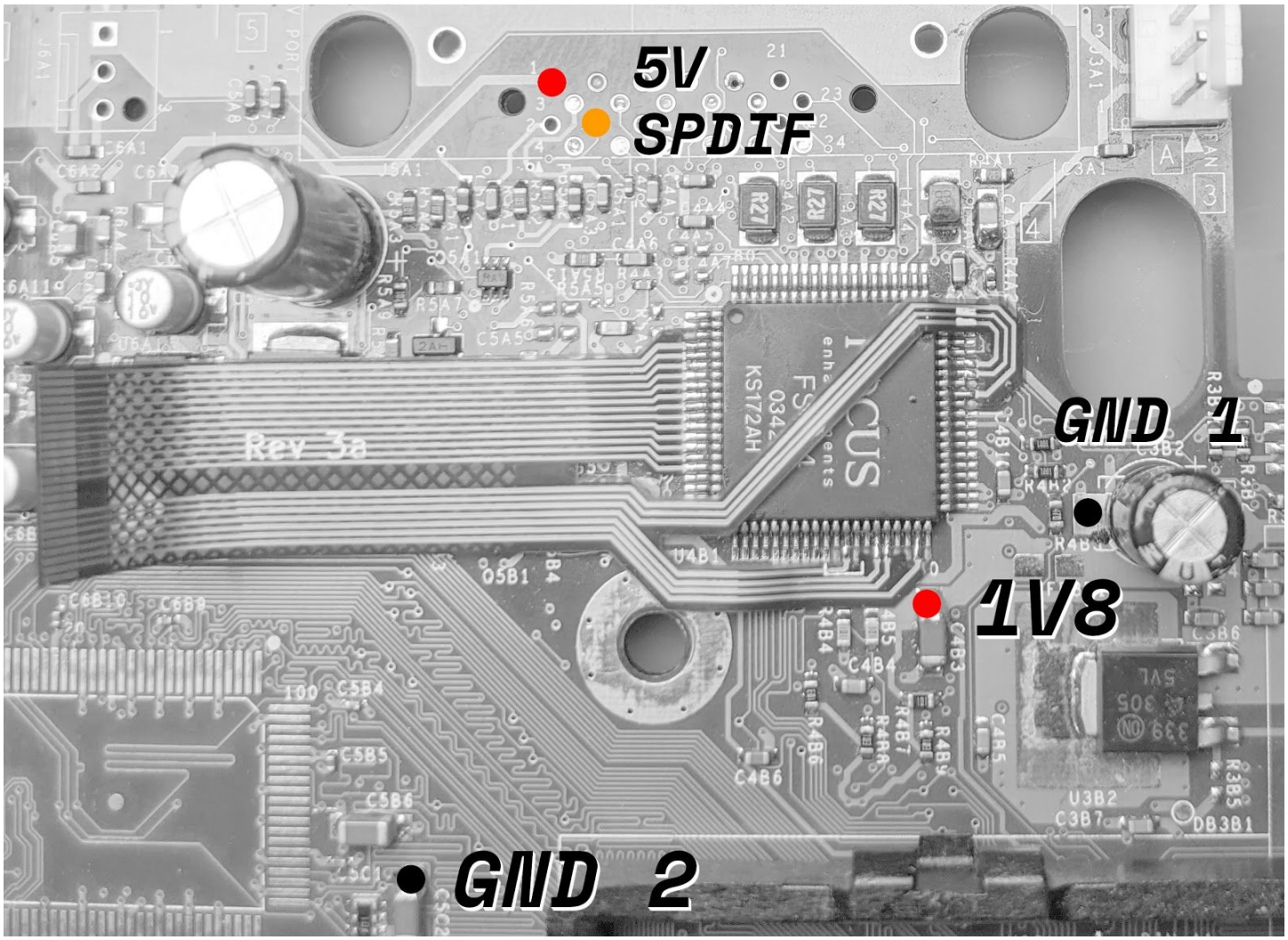
Start with connecting each of the pre-cut wires. The wires for 5V and SPDIF should lay flat across the motherboard running towards the right.

Ferrite Bead Removal
Next to the video encoder is a ferrite bead, labeled FB3B1, that needs to be removed. This can be easily done by heating it up with a soldering iron and a bit of solder.

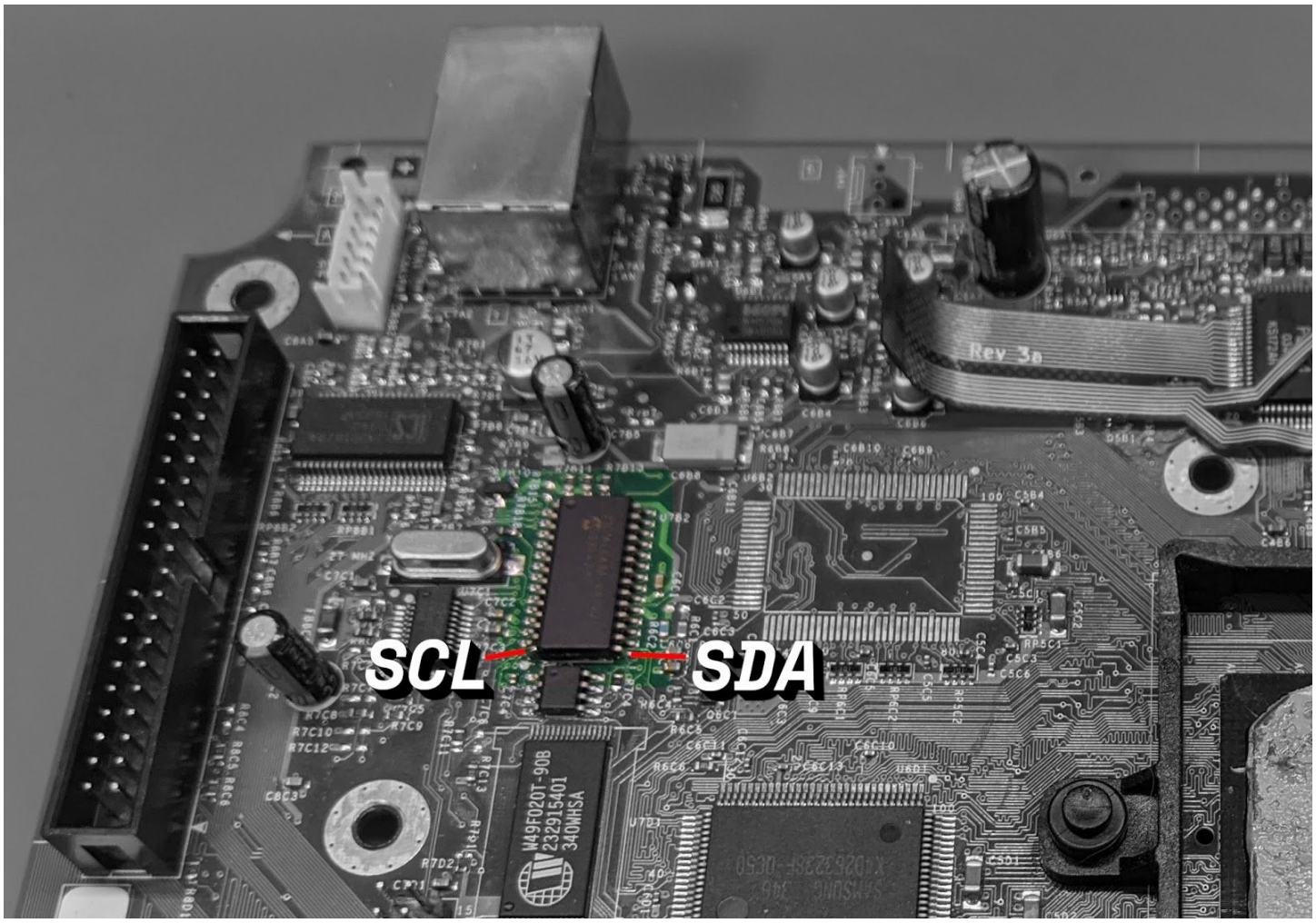


AV Port / Encoder Connections

Connect each of the pre-cut wires according to the wire cut chart above. The wires for 5V and SPDIF should lay flat across the motherboard running towards the right.



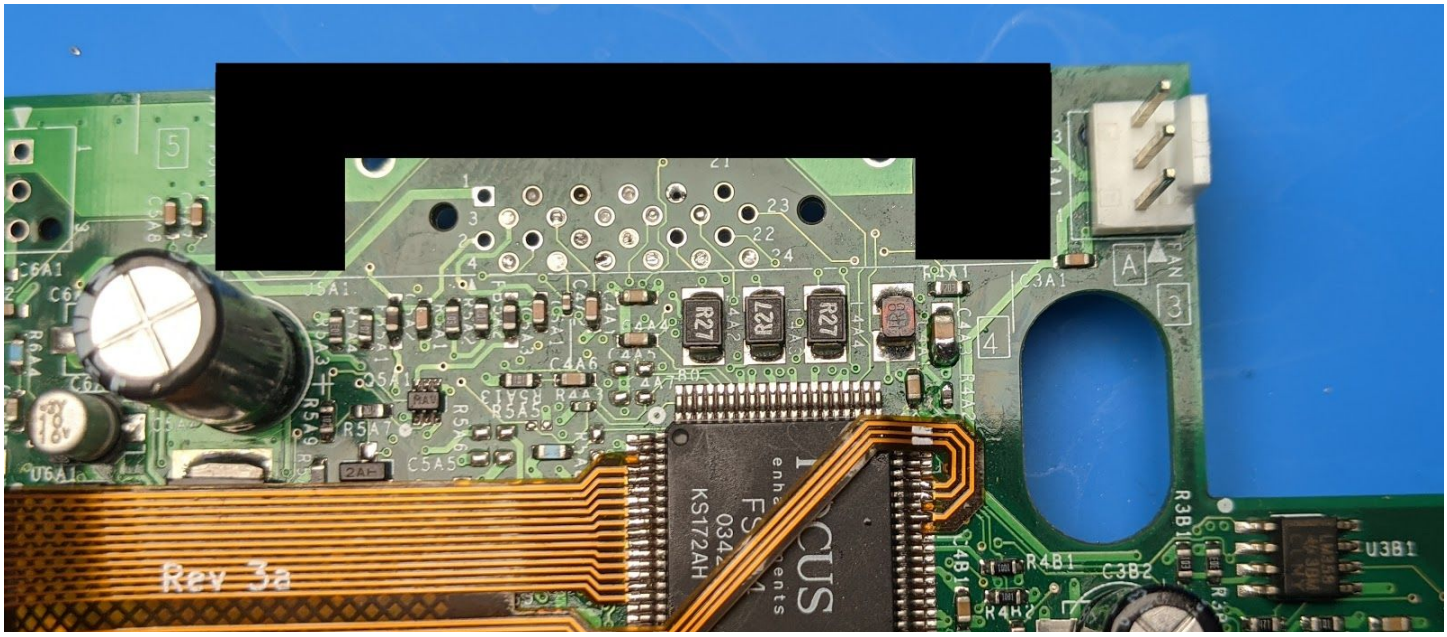
SMBus Connections (SDA and SCL)
Using the paired wire connect one wire to each side of the PIC16.



Step 5 - Wrapping up

3D Printed HDMI Panel
Insert the 3D printed HDMI part in between the metal shielding and the Xbox case.

3D Printed Spacer
Place the spacer as shown below in black.



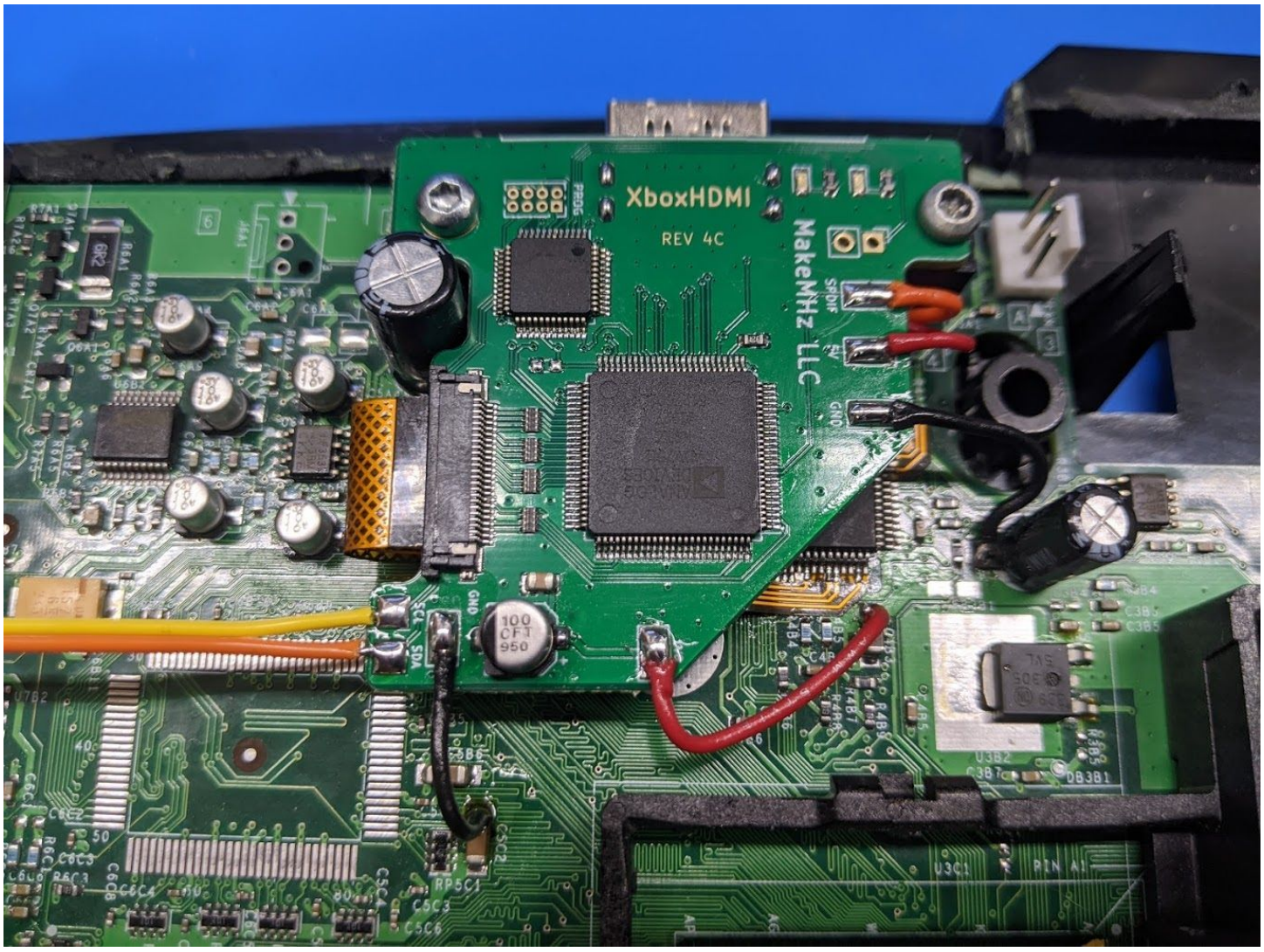
I forgot to take a photo for the manual… MSPaint works though.

Re-install the Xbox Motherboard
Place the Xbox motherboard back into the case. Make sure to screw the motherboard back in. There's one screw located under where the XboxHDMI will be installed.

Install the XboxHDMI Board
Place the XboxHDMI in the system and screw it down with the two provided screws.

Connect each wire to their corresponding pads on the XboxHDMI board.

Carefully connect the flex cable to the FPC connector. Be very careful. It may take a couple of tries as sometimes the flex will want to go in at an angle. If this happens, then pull it out and gently push it back in. **Do not force it in. Make sure the flex is not inserted at an angle!**



This is a photo of a test system. Ignore the missing parts of the case...