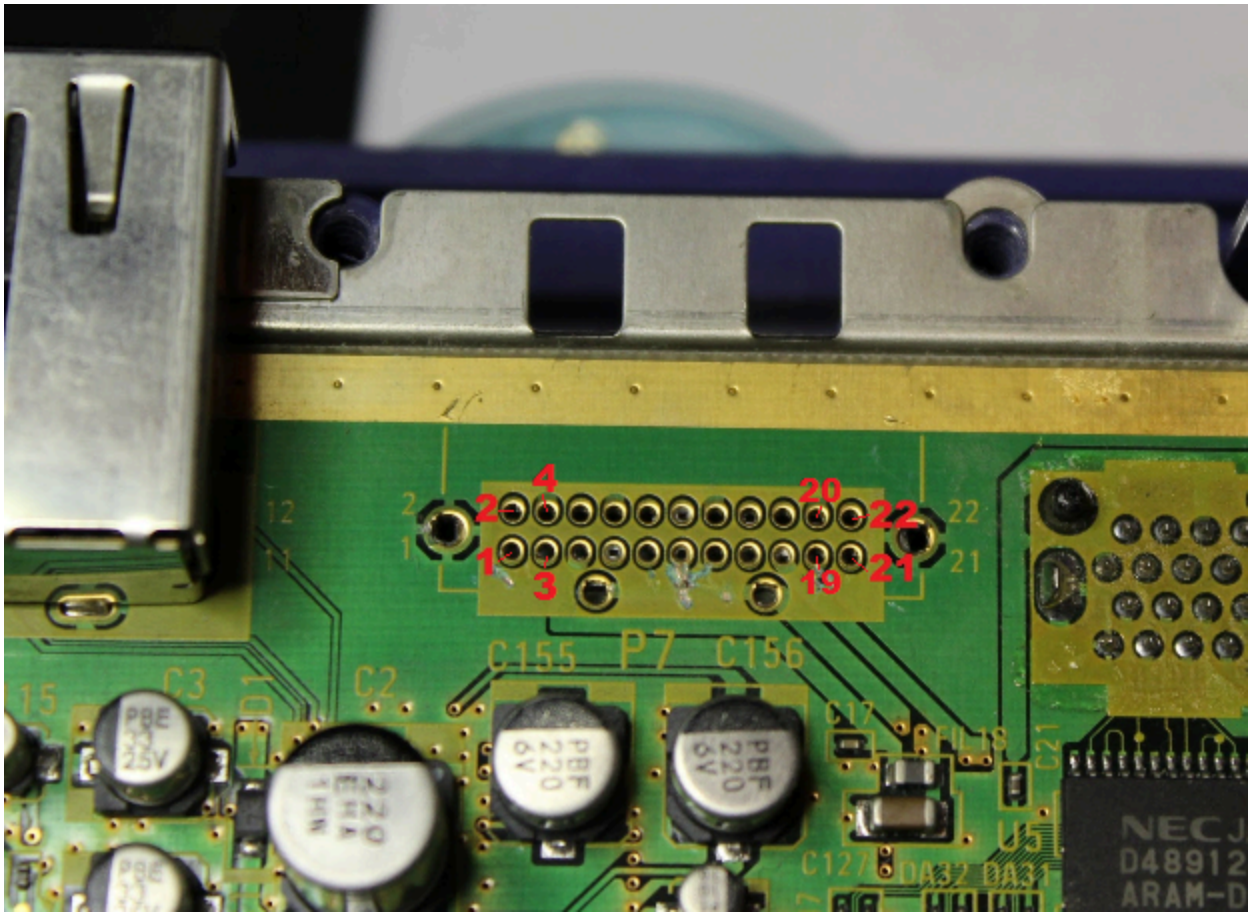
If you are thinking: “I don’t care I just want to know where to solder things” take a look at this image

Otherwise, enjoy this guide on installing the GameCube HDMI board.

Gamecube digital port

Most of the connections from the Gamecube's digital video port are made to the contact row opposite of the HDMI connector. Since connectors for the digital video port are unfortunately not available, the connections need to be made by soldering to the Gamecube's main board. The image below shows the pin numbering of the digital video connector as viewed from the bottom(!) of the board. If you have decided to desolder that connector and connect the signals from the top instead, you should find the numbers "1", "2", "21" and "22" in the silkscreen near the connector which can be used as a guide instead.



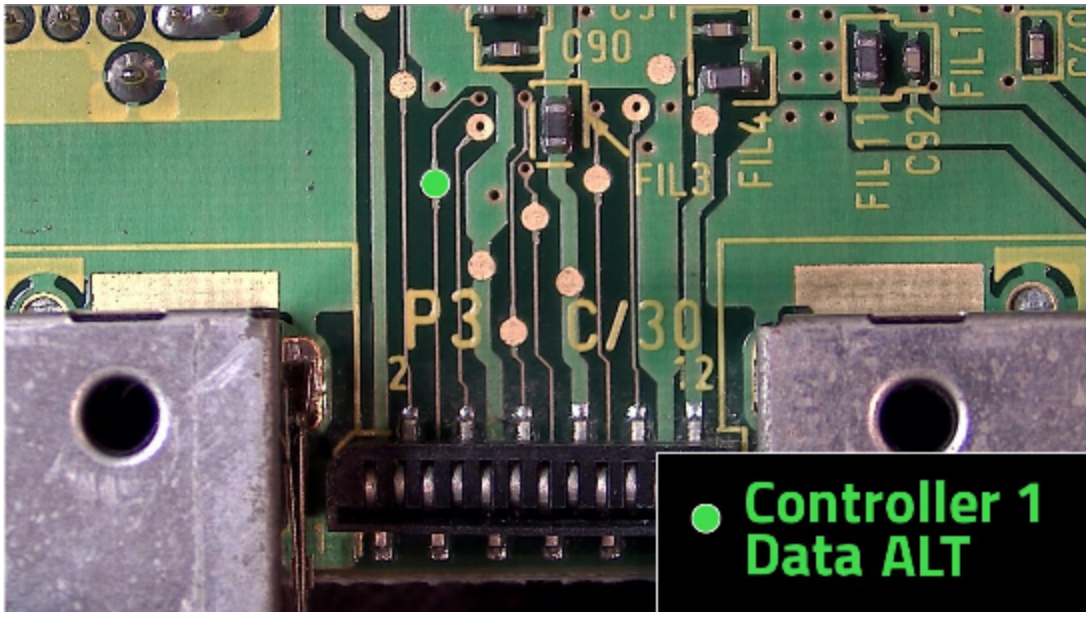
13 signals need to be connected from the digital video port to the Pluto board. Please make sure that the wires are kept short as you are dealing with high-speed digital signals here. The pins on the Pluto board are labelled on both the top and bottom sides.

Connect each pin accordingly:

Gamecube DV	Pluto	Signal
1	20	Cable detect
3	19	Color select
4	GND	Ground (recommended point: next to VUNREG/VCC)
7	16	VData 0
9	15	VData 1
10	13	VData 2
12	12	VData 3
13	10	VData 4
15	9	VData 5
16	6	VData 6
18	5	VData 7
19	98	LRCK
20	GND	Ground (recommended point: next to 89)
21	3	AData
22	4	BCLK
2	89	54 MHz

Please note that the last signal in that table is not on the same edge of the Pluto board as the others. It is a rather fast clock signal and it is strongly recommended to route it separately from the other wires as bundling them up can lead to flickering pixels.

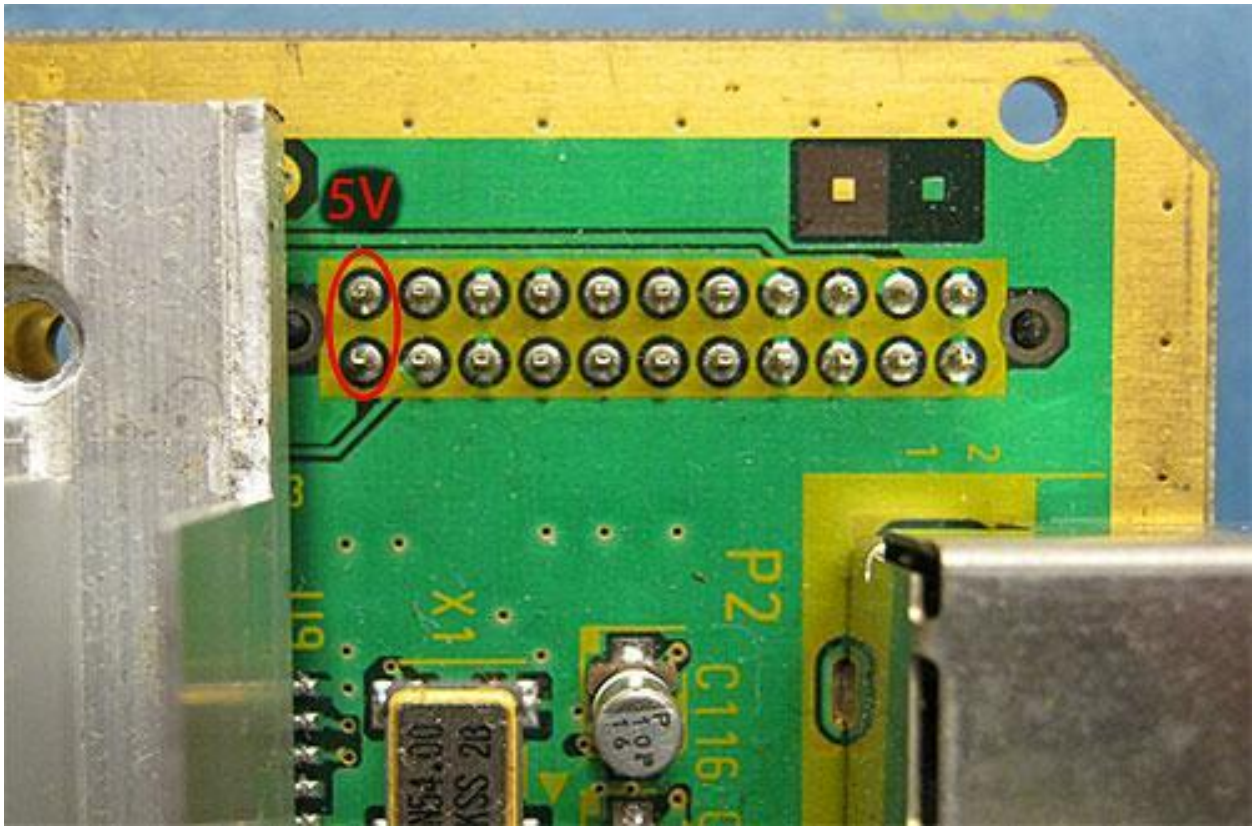
Controller



To read the controller buttons, another wire must be connected from the FPGA board to the Gamecube. The recommended connection point for this is on the bottom of the Cube's PCB, it must be connected to pin 94 on the Pluto FPGA board.

If for some reason you decide that you do not want to wire the controller signal, please connect pin 94 of the Pluto board to the GND pad beside it to ensure that the OSD is not accidentally triggered.

Power



Either of the marked pins (they are already connected together on the Cube's board) must be connected to the VUNREG solder pad on the Pluto board. If the image is unclear, the two 5V pins of the power connector are the two pins closest to the heat sink.

DDC resistor

Connect a 100 ohm resistor from the solder pad behind the HDMI connector labelled "DDC +5V" on the bottom, to the VUNREG pin at the side of the board. Please make absolutely sure that you do not create a short between VUNREG and VCC when you do this as this will likely destroy both the FPGA board and the Gamecube it is attached to.
Without this resistor, most of my monitors and other devices with an HDMI input claimed that they were receiving no signal from the Pluto board, even though it was actually generating a valid video signal.
Some people have reported that most of their TVs did not recognize the signal from the Pluto board with the 100 ohm resistor installed. If you also suffer from this problem, first check that the resistor you installed is really a 100 ohm resistor and not a 100 kiloohm resistor. You can also try to use a direct wire connection from VUNREG to DDV +5V instead of a resistor, but this is not recommended.
When testing, I also recommend trying a standard computer monitor at first, as there should be no compatibility issues.

[*Optional*] Once the mod is completed and you are satisfied with the results, remember to hold down the B button at the start up of games to enter progressive scan mode! Although this step is optional at each boot, it does add additional picture clarity and removes flickering in objects like text.

Sound

By default there will be no sound through the HDMI cable. Enable Enhanced DVI mode through the menu using L+R+X+Y+Start. Use the D-pad to navigate, and the X & Y to select/go back. Once you turn this option on, be sure to “Store Settings”. This will enable sound over HDMI.

Summary of Steps:

1. Connect all 16 pins from the GameCube digital output to their corresponding pin on the Pluto board (Labelled table on page 2)
2. Connect the controller port on the underside of the GameCube main board to point 94 on the Pluto board (See page 3)
3. Use either of the two power pins (closest to the heat sink) shown on page 4 to power the Pluto board’s VUNREG pin
4. Bridge pins “DDC +5” to “VUNREG” with a 100 ohm resistor
5. Enable Enhanced DVI mode through the menu using L+R+X+Y+Start. This will enable sound over HDMI

If you simply want an image for all of the connections, use the following image:
https://drive.google.com/file/d/1mTW3C0UQoiaa0B43qtbWj6go7RphPaVX/view?usp=sharing

For further information on troubleshooting and using the display settings menu, check the link in the header