ClearVideo64

A brief explanation of C64 Video: The RFM combines two video signals from the VIC-II to produce a composite signal, and an RF signal which contains audio. The extra frequencies to produce RF are known to bleed into the other signals, including Luma+Chroma (S-Video). This results in a general fuzziness to the screen, as well as horizontal blurring and dreaded "jail bars." ClearVideo64 uses a video buffer and cross filtering system with four controls, without the need for the RFM. In fact, it must be removed to access the left four pads. There are simple schematics that replace the RFM, combined with other kits that cross blend signals. But we were not satisfied! And ClearVideo64 was born.

INSTALLATION:

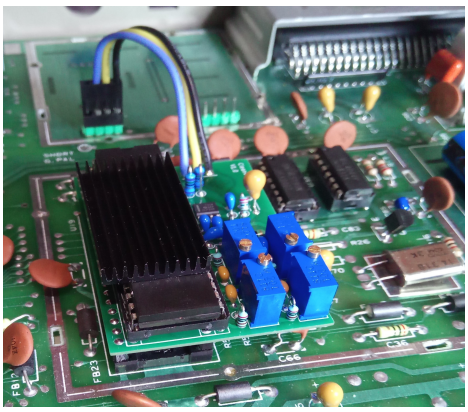
1) **Review** all instructions before starting.

2) **Be at a static-free workstation.** A grounded mat, grounded tools, and an exposed ground to touch frequently are required to guarantee safe touching of liberated semiconductors.

3) **Remove** anything connected to your C64 and open it up. Detach cables. Unscrew the circuit board and set aside everything else, placing the board on a static-free, grounded mat.

4) **Desolder** the RFM from target C64 (The square metal box). You may have to twist a few metal tabs until they are straight, to fit through the PCB slot for extraction. This is the most difficult step. There are eight connections within the metal shield to desolder (two sets of four 0.1" spaced pins), as well as all the shielding pins and tabs.

5) **Identify** the left four pads, which are the four furthest from the expansion port. Here is an image of an installed module for reference:



6) Solder wires or pin headers to the right three of the left four pads. The first from left to right is unused. The 2nd is Color (C), the 3rd is Luma (Y), the 4th is Composite, which is just grounded to the ground point on the ClearVideo64. You can rebuild Composite with capacitors from Y + C, should you need to. Composite this way should still be much clearer than using the RFM. Ground is only here to ground the unused composite pin.

7) Solder these wires to the three pads on the ClearVideo64, marked C, Y and GND.

8) Some capacitors on the C64 may be in the way, so you may need to bend them downward or to the side or resolder them slightly out of the way. Or replace with modern, smaller capacitors of the same value and similar or improved characteristics.

9) Remove your VIC-II chip if you have not already done so, keeping in mind which side has the "1st pin" notch. It is marked 6567, 6569, 8562, 8564, 8565 or 8566. Most C64s have a socketed VIC-II chip. If yours does not, you will need to carefully desolder the chip to remove it. And then select a 40DIP socket to solder in place. Be wary of the notch on the chip, indicating the 1st pin for orientation, that the notch on the socket is oriented correctly.

10) Place the ClearVideo64 on the socket in the correct orientation. Ensure the pins line up within the socket and not outside or too close front/back, but centered. With two fingers, press the front and back together downward with steady but firm pressure. It should slide into the socket quite firmly. If it does not, inspect for obstructions and alignment. Try not to bend pins, as they may break. It should slide in with relative ease, which may be more easily accomplished with the C64 board removed and on a flat static-free mat.

11) Install the VIC-II chip in the 40-pin socket on the ClearVideo64 board. The pins may need adjustment without an installation tool that helps pull the pins in. You can lay it on its side on a table and gently roll the chip against the surface until it is perpendicular, using the surface as a form. Flip it over and repeat. Your pins should be square and aligned, ready to insert easily. You may want to review some videos online to become accustomed to sockets if you are having trouble.

12) Connect your Luma+Chroma video cable, or S-Video cable, from your monitor. Connect power to your C64 and **turn on** your monitor and computer for video adjustment.

13) Adjust the four potentiometers. (1st is near middle, 4th is on the end by the 3 output pins) Turn all clockwise until they emit a faint clicking, which prevents further rotation and damage. From 1st, turn counter-clockwise until a 50% overlap in video artifacts is obtained. Adjust the 2nd until you find the best picture. Then adjust 3rd the same, then 4th. The 4th will start separating colors. Now go back to 1st and adjust +/- 2 turns, then 2nd the same, then 3rd and 4th. Continue this iteration multiple times if you need, as it will continue to improve as you make finer adjustments.