

COMPOSITE VIDEO & SOUND FOR THE '400
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With the last of the '400's selling for prices that rival the pocket calculators of just a few years ago, many of us "hackers" have added one or more to our computer collection. The addition of 48/64K ram boards and real keyboards have created a pseudo '800 with the exception of the video port to drive a high resolution monitor or attach an external audio amplifier.

When ATARI built the '400 they used a slightly different method of summing the luminance, color and sync signals from the '800 (G)CTIA chip that makes it difficult to just go in and tap the video lines. In trying to come up with an acceptable solution I set up a series of test equipment that included a BMC-9191U color monitor, a Panasonic monochrome monitor, a Sencore VA48 video analyzer and a Sencore PS29 video scope. The SALT2 test cartridge was used as a signal reference in the '400.

The initial attempts of attaching an amplifier to the existing video line prior to the RF modulator did not provide sufficient contrast to please me. I realized that I could come up with an acceptable conversion by changing some of the summing resistors on the '400 and making some foil cuts, but I considered that a no-no.

The end result was to make a new video-sound board for the '400 and attach these leads to the '400's mother board. This method allowed the entire modification to be easily reversed and the original RF modulator to work as well.

I am not going into detail on how to disassemble the '400. Quite frankly, if you don't know how to accomplish that you have no business making the modification.

The accompanying schematic should be sufficient for those into hardware modification to complete the change. I constructed the new video board on a section

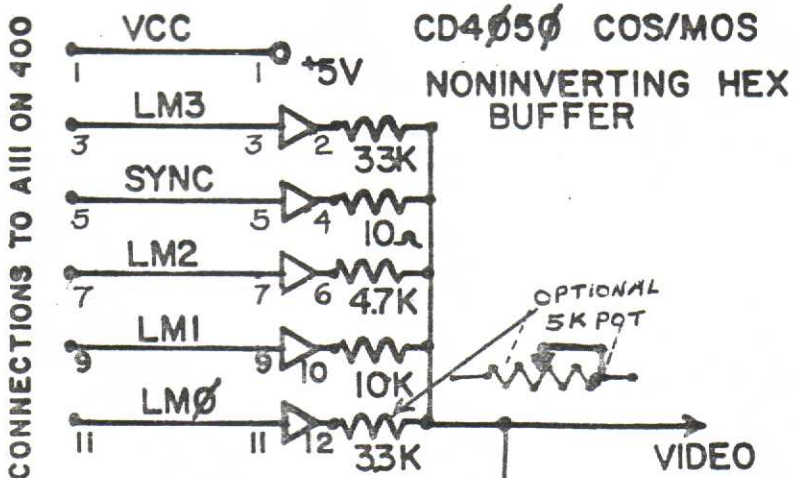
of Radio Shack 276-159 Experimenter's Dual IC Board and used some nine conductor ribbon cable, run under the lip of the shield, to attach to the bottom of the '400's mother board. The new video board was mounted on the left rear ledge of the '400's case using the existing slots for mounting screws. Rather than mounting a DIN socket as on the '800 I chose to mount three RCA phono jacks on the rear of the '400. One each for sound, video and color. You will note on the schematic an "X" going from the color line to the video line. I keep these separate and make attachment with a "Y" type RCA adapter external to the '400 for a color monitor. If you are using a monochrome monitor you do not want the color information as it will cause ringing in the letters! The schematic references C185, A111 and R160. These are all clearly marked on the mother board and can be found by just looking around. Where I make reference to front and rear, the joystick connectors are the front. The CD4050 buffer was just recently dropped from Radio Shack's experimenter IC line, but you may still be able to find one on the store racks. If not, try any Jim Pack dealer, JDR or someone who carries ECG, GE, etc. semiconductors. The color transistor I used was an ECG123AP. If you don't have an ECG dealer close by try a 2N2222, it should work fine.

Since I have no control over your construction methods or the quality of the parts you use I can make you no promises as to your results. The final product is not as "pure" as the '800 but is more than satisfactory in my estimation. The value of the summing resistors used will provide a 1 volt P-P video signal required by most monitors and the additional hex buffer will not alter your original modulated circuits.

Before I close I want to make one final warning. If you are contemplating modifying a conventional television receiver for direct video input, the television power supply MUST BE TOTALLY ISOLATED from the power lines. Any other method, including polarized cords on "hot chassis" sets is both foolish and dangerous. I sincerely hope that if you don't value your life enough to avoid such a set up that you will value your ATARI enough not to try it!

SCHEMATIC OF NEW VIDEO~SOUND BOARD FOR ATARI 400

MC14050



ALL RESISTORS ARE 1/4 WATT
5% CARBON