THE ATARI 256K 600XL

130XE COMPATIBLE
600XL VERSION
BY
JEFF POPP

130XE COMPATIBLE 256K UPGRADE
FOR THE 600XL

By Jeff Popp

I remember a while back seeing a survey that showed the percentage of the 8-bit Atari market that each model held. The 600XL held a lowly 2%. Ok, it was a low 'end machine, made for the folks that weren't able to drop the bucks to get something more powerful. Some mail order houses are now offering 600s for $29.99, and many units are being sold. Should these Atarians remain locked into a 16K, TV hook-up only world? No, I say! They should be able to hack and torture their computers just like the rest of us. It was in this light that the 256K upgrade for the 600XL was born. When this mod is installed in conjunction with the monitor mod, it will make your 600 everything a 130XE is and more, in a smaller package! Kits for both of these mods are available from Best Electronics in San Jose, CA. (408) 243-6950.

Claus Bucholz designed the first 256K upgrade for the 800XL and later modified it to be 130XE compatible. This circuit for the 600XL is an adaptation of Claus' 800XL mod, and will operate with the ramdisk autoboot program written by him. Anyone interested in the internal workings of this mod should get Claus' article where he describes the circuit in detail.

The 800XL uses 64K x 1 memory chips, and the 41256 memory chips used in the upgrade are directly pin compatible. No such luck with the 600XL. However, the 256K chips can be utilized with only minor modificatons. The address lines of the 256K chips (A0-A8) do not match up with the address lines of the 16K x 4 chips used in the 600, but this doesn't matter, since the computer won't care where it puts something as long as it can find it there later.

On to the meat of the mod...

This is a fairly complicated mod, and good soldering skills are a must. Please do not attempt this mod unless you are experienced in this kind of procedure. Take your time and double check your work as you go, since troubleshooting this thing can be a real pain! The parts needed for this mod are:

    1. 8 ea. 41256-15 Memory chips
    2. 1 ea. 74LS153   Dual 4 to 1 multiplexer
    3. 1 ea. 74LS139   2 to 4 decoder
    4. 1 ea.   33 ohm 1/4 watt resistor
    5.   A foot or 3 of 30 gauge insulated wire

If U9 has a part # of C012296, you will also need:

    6. 1 ea. 74LS158   Quad inverting 2 to 1 multiplexer
    7. 1 ea. 74LS393   Dual 4-bit counter

The first step is to open up the 600 and pull the RF shield. Remove the chips and sockets at U11 and U12. Bend up the following pins so that they do not enter the sockets and hang out in free space.

```
U 5 pin  3
U 6 pins 9, 10, 11, 12, 13, 14
U18 pins 8, 9, 10
U21 pins 12, 13, 14, 15, 16
```

Piggyback 4 of the 41256 chips, soldering all of the pins together except for 2 and 14. Bend these straight out and clip off the thin part as shown in figure 1. Repeat the process for the second set of 4 chips. U11 and U12 will now refer to the spot on the board where the chips are placed, while U11A, B, C, D and U12A, B, C, D will refer to the two stacks of chips, A being at the bottom and D at the top. Solder a piece of wire about 2 inches long into each of the following holes:

```
U11 pins 2, 3, 15, 17
U12 pins 2, 3, 15, 17
```

These will be used later.

Now, vewy, vewy, carefuwwy, solder in place the two stacks of memory chips into U11 and U12 so that pin 8 of the stacks goes into the spot on the circuit board allowed for pin 9 of the original memory chips, bending up pins 1 and 16 of the stacks so that they do not enter the holes below them. Jumper U11A-D pin 16 into U11 pin 18. Do the same with U12A-D. Now the rough part...follow the wiring hook-up shown in the schematic of figure 2.

Got all that done? Take a break! You deserve it!

The address lines feeding U5 and U6 on the 600 are different than those on the 800XL so we have to make them match up. Carefully cut the traces going to the following pins:

```
U 5 pins 6, 10, 13
U 6 pins 3, 6
```

You're coming down the home stretch!! Don't quit now or you'll have a 600XL doorstop. (No, you didn't start with one!) Jumper between these places on the solder side of the circuit board:

```
U 3 pin 24 to U 5 pin  6
U 3 pin 21 to U 5 pin 13
U 2 pin  1 to U 5 pin 10
U 2 pin  2 to U 6 pin  3
U 2 pin  3 to U 6 pin  6
U18 pin  8 to U18 pin 10
```

Lastly, on the part side of the board, jumper the bent up pin 3 of U5 to the non-bent up pin 25 of U3. Cover the ram stacks and any exposed connections with strips of electrical tape to avoid shorting to the RF shield.

Hook up the board to your TV (or monitor if you have the monitor upgrade), plug in the power supply, hold your breath, turn on the power switch and run! Really, don't worry, chances are very small that something will even get warm. See if the unit will boot up. If it does, then run the on-board memory

test. You should see 3 lines of memory test blocks instead of the single line you're used to. Be sure to boot while holding down the option key because with BASIC enabled, you'll only see two and a half lines of blocks.

To fully test the extended memory, you will need to load the ramdisk program, or a 130XE program that uses the extra bank of memory.

Believe it or not, you're done! Go get some sleep!
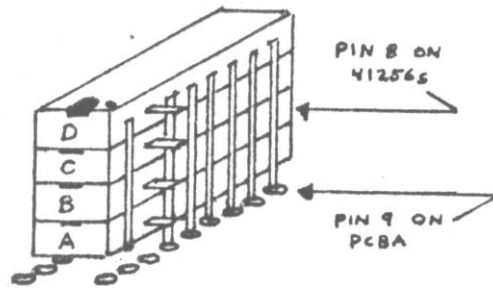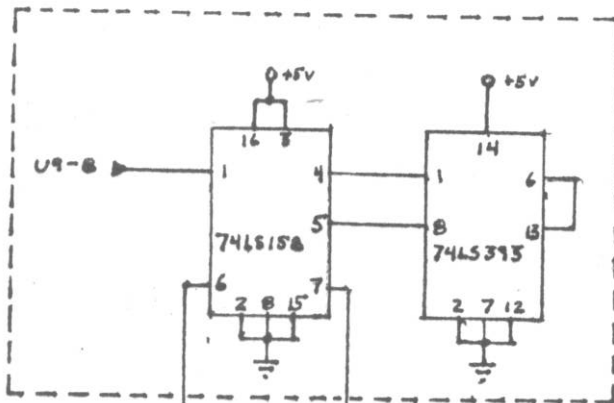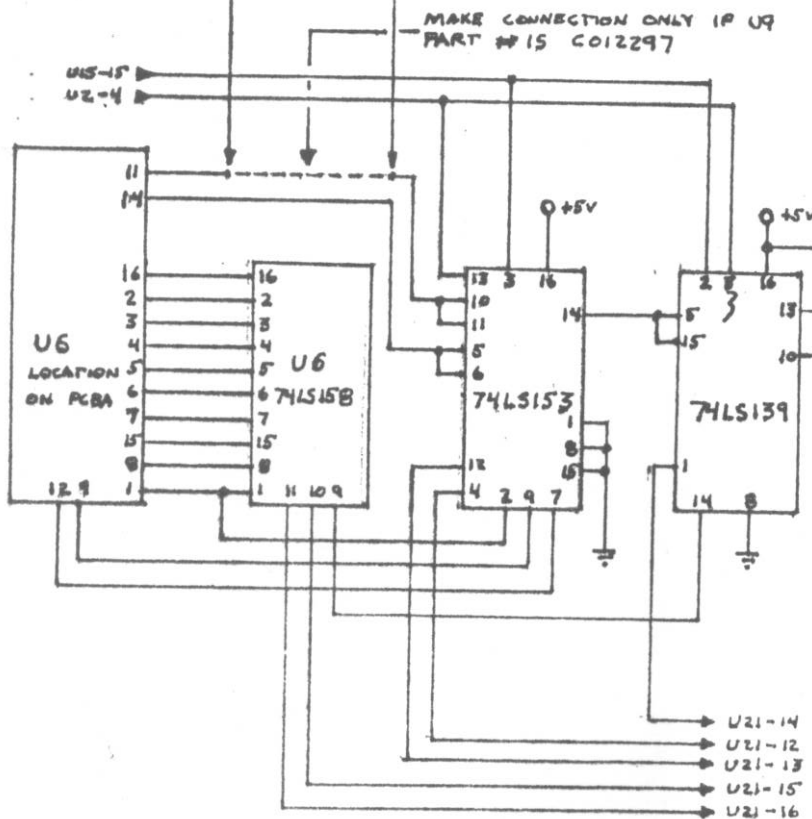
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PIN 8 ON 41256s

PIN 9 ON PCBA

D
C
B
A

FIGURE 1.

+5V

16 8

1   4

5

6   2 8 15   7

74LS158

U9-8

+5V

14

1   6

8   13

2 7 12

74LS395

ADD CIRCUIT IF U9 PART # IS C012296

MAKE CONNECTION ONLY IF U9 PART # IS C012297

U15-15
U2-4

11
14

16
2
3
4
5
6
7
15
8

12 9   1

U6
LOCATION
ON PCBA

16
2
3
4
5
6
7
15
8

1 11 10 9

U6
74LS15B

13 3 16
10
11
5
6

14

12

4 2 9 7

8

15

74LS153

+5V

2 6
5
15

3

10

1

14   8

13

74LS139

+5V

83 Ω

U21-14
U21-12
U21-13
U21-15
U21-16

2   16
14
U11
A   1

2   16
14
U11
B   1

18
2
3
15
17
U11

2   16
14
U11
C   1

2   16
14
U11
D   1

2   16
14
U12
A   1

2   16
14
U12
B   1

18
2
3
15
17
U12

2   16
14
U12
C   1

2   16
14
U12
D   1