

Two Megabytes And More On The DSI-32

VI 002

By Gary Entsminger

Micro C Staff

If you bought Definicon's 32032 co-processor board/kit and want to add more memory, there's a cheap alternative. It'll only cost you some memory (about \$100 for a megabyte), \$49.95 for system software from Definicon, and a little soldering time.

What's The Story?

The 2 megabyte version of the DSI-32 (with 10MHz CPU) sells for \$2995 assembled and tested. Definicon doesn't sell a 2 megabyte kit, but you can purchase a 256K "slower" (6MHz) starter kit for \$995.

Trevor Marshall (a hardware designer at Definicon) says they don't sell untested 2 megabyte boards because of the problems they've encountered (using "special" sockets) in production. To get the arrays to work they have to trim the legs on the ICs, then insert the lower array, test it, and then insert the upper array. The arrays have to be tested separately because the lower one doesn't always make good contact.

But you don't need to use the "special" sockets, and we won't for our mod. We'll use standard dual in-line 256K packages like the RAM that comes on the 1 megabyte board. The 256K board uses 64K packages.

Definicon will likely use single in-line memory packages requiring "special sockets" similar to those used in PC Tech's Project X 80186-based PC compatible for future memory expansions. This RAM has staggered teeth and is very expensive, but will allow you to add a lot of memory (maybe 8 megabytes) to the DSI-32.

But for now, let's stick to standard dual in-line and 2 megabytes.

From 256K To 1 Megabyte

If you started with 256K, you'll have to upgrade first to 1 megabyte. Just reconfigure the JB1 jumper for 1 megabyte (see Figure 1) and replace those 64K RAMs with 256K RAMs. You can buy 256K (150ns) dynamic RAM for a little over \$3 each, a bargain, from Microprocessors Unlimited.

That's it. You should now have access to a megabyte.

From 1 To 2 Megabytes

To go from 1 to 2 megabytes, you'll need to work a little harder. First, buy another megabyte of RAM, and then solder your new 1 megabyte array of chips to the lower array. See Figure 2.

All the pins are common except for pin 4 — the RAS line. Bend out pin 4 and jumper (run a wire) from pin 4 down to the hole in the circuit board (next to pin 4) for the RAS for the upper array of RAM. That's all; without any other changes, your board will contain 2 megabytes.

From 6 To 8MHz

If you have the DSI-32 starter kit (256K RAM and slower, 6MHz clock), you'll be pleased to learn the 32032 CPU on board will probably run comfortably at 8MHz. The problem with speeding up your 6MHz board lies in the FPU (Floating Point Unit), not the CPU. If the FPU will run faster (many will), then you're off to

the races. Just change the 12MHz system crystal to 16 MHz and you have 8 MHz.

It's a cheap 2MHz upgrade, and most of the current 32032s rated at 6MHz will run faster (as high as 9MHz) according to the Definicon group. George Scolaro, who wrote the DSI-32 assembler and linker, says he's run the 10 MHz 32032 at 11MHz, but he doesn't depend on it.

Wrap Up

If all goes well, and you haven't soldered your fingernails together, you've got an 8 (or, of course, 10) MHz 32-bit CPU and 2 megabytes of memory — if you started out with 6 MHz, you've got 2MHz and 1.75 megabytes more power than you had when you started, and it only cost you about \$150, a lot less than list.

