

**VAX 6000 FAQ**

Originally found at <http://www.stmarks.pp.catholic.edu.au/vax/faq.html>

Originally written by [geoffrob@stmarks.pp.catholic.edu.au](mailto:geoffrob@stmarks.pp.catholic.edu.au)

Link is presently dead (12/17/2007)

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## **Frequently Asked Questions About VAX 6000's**

(Mainly ones I (tried) to ask when I got my first one)

This will be added to/edited as the site develops. Your input/corrections/additions are most welcome. Usual disclaimers apply. Work safely, be careful, and don't mess with the mains unless you know what you are doing. Etc, etc.

**NOTE: Site under construction**, some references are to other parts of the site that do not yet exist. I am doing my best to get them done, but there are only so many hours in a day and night.

Q: How big is this thing anyway?

A: Big. By current standards of computers, it's gigantic, by the standards of its day, pretty big.

A 6000 system unit weighs around 300Kg or 700lbs on its own. That's before you add any drives (assuming you can fit them in the same cabinet.)

### **Dimensions:**

<b>Height:</b>	154 Cm or 60.5inches. Call it 5 feet.
<b>Width:</b>	78Cm or 30.5 inches.
<b>Depth:</b>	76Cm or 30 inches. (Almost square, in other words.)
<b>Weight:</b>	318Kg or 700Lbs. (Just under a third of a metric ton.)

(Above is from the VAX 6000 Owner's Manual)

If you live in a block of flats (an 'apartment' in Yankspeak) you might want to discreetly check whether the floor can take anything that heavy first. I don't even want to think about how you'd get it up stairs. (I see stuff winched up through windows in movies, so as long as the winch and cable is up to it, that would be an option.

Q: Oh dear, how can I possibly handle anything that big?

A: Couple of ways.

1) Easiest. A forklift and operator that knows what he's doing. A light truck or a ute (pickup to you Yanks).

2) Hardest. About six guys and the same light truck or ute. (The more hands the better, but six seems to work well.)

If you need to move it over rough ground, (the wheels work fine for smooth floors) a very substantial handcart with biggish wheels is required.

Q: Wow! Does it dim the room lights?

A: No, oddly enough, it's no worse than 3 or 4 286 machines together. It varies depending on the card fit, but the ones here are all consuming fairly close to 600 watts. Disk drives etc can consume way more than the machine itself, so one should take care what type, how and how many to hook up to it.

The 5V supplies in a VAX 6000 will supply around 350 amps in total, so it would make a serious low voltage welder!

It's doubtful if a machine could be optioned up sufficiently to draw any significant percentage of this.

According to a Digital Field Service guy I spoke to early in the piece, it was designed so that no combination of adapter fit out could possibly overload the power supplies. I believe him.

The phrase 'built like a Turkish battleship' is a good description of big VAXen

Q: Does it make a lot of heat, and need really good air conditioning?

A: Not that much, as I indicated, around 500-600w of consumption, much of which ends up as heat. It has a couple of huge blower fans inside, and this is sufficient to keep the innards at ambient. The official recommendation is for a 22c computer room, dust filtering etc. and whilst this is the ideal, the machine will cope with far worse conditions, particularly if it is in hobbyist (i.e. intermittent) usage. The operating temperature range for the 6000 series is 10C-40C (15C-32C if you want to use the TK70) Humidity is not as critical, 'non-condensing' is the operative word, but 20% -80% if you want to use the TK70 and 10% - 90% if you don't. This means it's comfortable even when you aren't, but it's happiest and will be most reliable if the temperature is more or less a constant somewhere in this range. A constant temp is the key to long term reliability. It can be a constant 22C or a constant 32C and the machine would still work ok, (though the operator might object at 32C!) In a home environment, for occasional use, say a few hours a day, most domestic air cons will cope. It's worse for us in Oz where summer temps routinely exceed 40c but I've not had temperature related problems with mine even in very hot conditions. For most people, you wouldn't need to worry about it on an average day, unless it was on for a prolonged period. If you live in some other parts of the world, or here when it's cold, it makes a lousy heater.

I have personally seen a VAX 6000 still spinning away happily in a room where it had been 45C for at least 2 days following an A/C failure over a long weekend. The brand new, brand name, Netware file server had died of heat stroke early in the piece, but the VAX was (and is) still just fine.

Q: Hey, it's 3 phase power, is there some way can I make this work on single phase?

A: Covered in detail, with pictures, by 2 sections elsewhere in this site, but basically it is fairly trivial to convert the 415v (Aust/Brit) version to 240VAC single phase, and it should be about the same for our 115V brethren. I would like some details from someone that has done a 318v-220v conversion though.

I've done the 415V-240v one to several now, with no major problems.

Q: Where does the monitor and keyboard plug in to it?

A: It doesn't. ☺. 6000's use a VT-xxx terminal as the CONSOLE, which is the main control panel/operators terminal.

There is a DB25 on the rear panel marked "Console" that will accept an RS232 compatible cable, only RXD, TXD and SIG GND exist.

The console can be anything that will do VT100 or better emulation. I use a VT320 on mine, and an ancient IBM P/S2 286 PC running a shareware terminal program called Telemate (80's stuff - older than the 6000!) on the one at work. Both are quite adequate. The machine can only be booted and have configuration changes to boot etc made from this terminal. It's a valid use for an obsolete pc (or a Mac I suppose if you have the right cable and terminal software) Breaking in to a VMS system to which you don't have the password is only possible from here. (This is a documented procedure, but only works from the console, it's not as big a security hole as it sounds, since it requires physical access to the machine, which would have been in a fairly secure environment in its working life. The procedure for this is detailed elsewhere on this site, and is also available in the VMS FAQ found at several sites and mirrors. This link will take you to one of them.

[Click Here to go to the VMS FAQ.](#)

Q: What's this VMS thingy that seems to be on it? Will it run Windows instead?

A: Not the type you mean. DECWindows (A DEC variant of X-Windows) under VMS or X-Windows with Ultrix works with an X-terminal or X-term emulation on a pc. It does not speak DOS or anything else designed for Intel CPUS. Period. It has a proprietary chip/instruction set and Bill Gates didn't want to know about it. Fortunately, ☺ O/S licensing and options are covered in more detail elsewhere, but it runs VMS or Ultrix only at this time. NetBSD is being worked on, but is probably some distance away

from being useable. (Difficulties getting necessary documentation on the XMI buss.) If you can help, [email](#) me.

VMS is a proprietary operating system created by Digital Equipment Corporation (Now part of Compaq).

[Click Here to go to the VMS FAQ.](#)

Q: It doesn't have any disk drives or even a disk controller I can find, how did it boot?

A: You probably have a 6000 that was part of a VaxCluster, where the system(s) used drives attached to a Hierarchical Storage Controller or HSC. These came as HSC50's, 70's or 90's, varying only in the number of drives they could address. (There is an entire section on HSC's, they are obsolete and fairly easy/cheap to get, so worth considering, however be warned that they also draw around 500-1000W depending on the version, and you need the discs/tapes with their O/S on it, plus the cables and other bits and pieces..

The drives attach to these and the HSC's attach to the computers proper via a dedicated high speed (by 80's standards ~70-80Mbps Full duplex, with duplex paths!) network called the CI or Computer Interconnect. It uses a blue semi-rigid coax cable which is a bugger to handle. To further complicate matters, you can't connect the HSC directly to the computer, (don't try it, you will do damage and/or it won't work) you must use an intermediate, passive gadget called a Star Coupler.

This is just a fancy transformer near as I can figure, but it makes it possible to connect multiple machines and HSC's together in a redundant manner.

If you don't have a HSC, don't despair. There are standalone disk controllers available for VAX like these, though you might have to scratch around a bit to find one. The commonest is the KDB-50 which is a 4 x SDI/STI controller, that works with RAXx/TA series disk/tape drives. There also exist DSSI (Digital's proprietary almost SCSI) (use RFxx drives) and true SCSI (CMD make several, sometimes they are available S/H) (use RZxx drives.) If you can't scrounge anything, it's possible to net-boot it using MOP from another VAX (even a Microvax or Vaxstation - though the 6000 might cringe in shame) over standard ethernet. You will need a 10Base2 or 10BaseTtransceiver to connect to your network topology as all the 6000's I have ever seen have only AUI network connectors. If you are running VMS on your 6000 (best choice for these, realistically) you can cluster over ethernet as well.