

A1200Tower

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Chapter 1

A1200Tower

1.1 Building Your Own A1200 Tower System

Building Your Own A1200 Tower System

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Thanks To: Carl Curtis for scanning the images.

WARNING

This project is designed to be as safe and easy as possible. If you follow the instructions carefully, you should have no problems. Unplug EVERYTHING before you open your A1200 casing. If you follow the instructions and use common sense, your computer will come to no harm. However, I take no responsibility if you blow up your computer yourself! Please ENSURE you take any necessary ESD precautions, by earthing yourself by touching a metallic object, such as a radiator, or even better, wear a wrist band earthing strip. Static electricity can cause serious damage to microchips if you do not do this...

Thing to bear in mind:

1. Older hard drives and some 2.5" hard drives will not work with a second device on the chain. If this is indeed the case, they will need to be replaced by a newer one.

2. If you are unsure a CD-ROM is 100 ATAPI compatible, ask the retailer, and explain that if it turns out not to be, you will have to return it. Refer to How To Connect an IDE CD-ROM Drive

3. You can only connect two devices to an IDE chain. There are however several devices on the market that allow you to split the IDE chain into two channels, such as the IDE-MUX from Ateo, Alfa Quatro and Eyetech's 4 way buffered IDE interface.

Introduction

When the A500 was released, single box/keyboard computers were standard in the home. Only serious business machines and expensive Amiga 1000s had desktop cases. Why bother when you could fit everything you needed in a single box? The floppy drive had a huge 880k capacity and fitted neatly in the side of the case. Very few people wanted a hard drive and Commodore seemingly were happy to let third-party manufacturers fulfil the needs to the small minority.

When the A1200 came out, there were mutterings of discontent. Hard drives were becoming common and Commodore were seen to have made a blunder by including a 44 pin IDE hard drive interface, which had the advantage of allowing hard drives within the old, successful single desktop box, but had the disadvantage of taking laptop style hard drives, which were slow and very expensive.

When Escom released the A1200, totally unchanged, the mutterings had become deep rumblings. Escom could have used their huge purchasing power to fin an Amiga 1200 into a tower case and given it an industry standard 40 way IDE connector. This would have meant that you wouldn't have any power supply problems. You could buy gigabyte hard drives for about £100 and £35 CD-ROM drives would plug straight in. It would have added almost nothing to the price. Unfortunately, they didn't do this, leaving Amiga users a whole host of expansion problems. Until now that it. Read all of this carefully and you could construct your own A1200 Tower System. Good luck!

Hardware Peripherals For Your A1200 Tower System:

Tower Case: A mini tower case should have enough drive bays, but get a larger on if you want more. Go for a tower case that is CE marked and looks good to you. A 200W power supply should be plenty.

Hard Drive: Watch carefully for pricing. Often a few extra pounds will get you masses more space. 3.5" IDE drives are very cheap these days.

CD-ROM drive: Four speed drives are good enough, but look for deals on faster ones. Make sure you buy a drive which is 100% ATAPI compatable.

Some compatable CD-ROM Drives include:

Chinon: CDS-5251, CDS-545,

Goldstar: GLD R5280B, R540B, R560, M

Mitsumi: FX001DE, FX300, FX400, FX600

NEC CDR273

Samsung 8x

Sony: 76E, CDU-55E

Toshiba: XM 5302, XM-5302B

The Options

There are several ways you can go about this. The easiest is to use a PC tower case as a drive holder, connected to your Amiga 600 or 1200. Harder is moving the motherboard (the main circuit board) of your computer into a case and disposing of your old Amiga case altogether. a 'full conversion', which in my few is much more neater. This can be a DIY job if you are prepared to do a bit of cutting and soldering, or if you want an easy life, you can opt for one of the commercial towers on the market, which will save you all the hassle of DIY.

An important point to take into consideration is future expansion. With the full tower option, the addition of a Zorro breakout board allows you to connect big box expansion cards to your A1200 effectively turning it into an A4000T. You can still add an accelerator such as a Blizzard 1240t/erc, an amazingly cheap 40MHz '040 card. The mini tower option gives less room for expansion, although there are still many options which I'll look into later in this article.

What's in it for me?

1. You can use standard 3.5" hard drives. You can get gigabyte drives for as little as £100.
2. You can plug in an ATAPI compatible CD-ROM drive. Two speed drives are perfectly useable and cost about £20, and even 16 speed drives are available for under £100.
3. Your drives will draw power from the tower case's PSU, leaving the Amiga power supply to cope with just the computer, disk drives and accelerators.
4. Looks good. Your PC owning friends will stop laughing at you.

The Problems of Building Your Own A1200 Tower System:

The biggest problems is the Amiga's non-standard IDE interface. Desktop PCs use a 40 pin IDE connector, whilst the Amiga sports a 44 pin connector, as used in laptops - the four extra pins are used to power a 2.5" hard drive.

Oddly, the 44 pin connector is smaller than the 40 pin version, requiring a different gauge of cable. This means that the obvious solution of putting a 40 way connector on one end of the cable and a 44 way connector on the other is not easy; the wires on the cable would have to be separated and carefully slotted into the connector. a tricky operation. The solution is to use a small circuit called a step down board which links a 44 pin to a 40 pin connector. Telephone your favourite Amiga stockists for this, since it's a specialized part. The stepdown board will then accept an industry standard 40 way IDE cable to be used to connect IDE devices in the tower. An alternative to this is Eyetech's 4 way buffered IDE interface which will give your A1200 2 extra IDE channels, one for an IDE CD-ROM drive, and the hard drives. It is also fully buffered, thus, is more safer than using a stepdown board. Contact Eyetech for details on: +44 01642 713185. Or, if you are good with soldering, [click here](#) to find out how you can make your own 4 way IDE interface!

Master or slave?

The IDE interface allows two peripherals to be plugged into it, usually two hard drives, or a hard drive and a CD-ROM drive. To do this, one components has to be specified as master, first in the chain, the other as slave. Your hard drive should come from the factory pre-jumpered as a master device.

If there are no jumpers on the hard drive there are two possibilities. The first is that the drive will work fine as a master. The second, which is only the case with older drives, particularly 2.5" drives is that it will not recognise a slave device. If this is the case, you will need a new drive. Use this opportunity to buy yourself a nice fast, high capacity 3.5" drive, at todays prices these are very cheap. The CD-ROM drive will have to be set as a slave device. This is usually a very simple process. Look at the back of your drive and you will see something like FIGURE 1. The jumper is a small metal clip, which when placed over one of the pairs of pins, tells the drive what to expect. In this case you can see that the jumper is placed over the SLAVE pin.

Making contact:

It is important that you connect the IDE interface the right way around. Locate which end of the IDE interface on the motherboard is marked with a "1" (clue - the bottom) and make sure that the edge of the cable which connects to that also connects to the end of the stepdown board with a "1" marked by it on the underside.

Follow the same principle for the 40 way connect from the stepdown board to your hard drive. If there isn't a number marked on your hard drive, hold it with the back facing you. The '1' is the right-hand side. Refer to FIGURE 1. Normally one edge of the cable is red (indicated by a red stripe), to indicate that this is the edge of the cable which connects to pin 1.

What software?

The second problem is the software one. Using multiple devices and connecting CD-ROM drives to your IDE interface will require installing some driver software into your system.

The best solution I have found for this is the shareware package Atapi Plug and Play, by Georg Gampana, which is a breeze to install - this software you can obtain from virtually any Amiga Public Domain Stockist.

Improvisation:

This task requires money, hard work and some improvisation to make the best of it. Please consider what's involved before undertaking the task. This isn't a step-by-step tutorial as the sheer variety of Amiga set ups, PC cases and your capabilities makes that impossible.

However, if you follow these tips and guidelines here and put the effort in, you will be rewarded with an extremely smart Amiga, the envy of any Amiga user not brave enough to go the way of the Tower.

We're going to need a PC full tower case and not a mini tower. The A1200 motherboard is annoyingly tall, and some cases will be unsuitable. Some may require metalwork, while others fit well. Take your Amiga motherboard to a computer supplier and see for yourself how it will fit before purchasing. Things to look out for are power supplies set too low, annoying braces in the way of the motherboard and overall good quality and design. Also, try to choose a tower that is CE approved. Prices vary from supplier to supplier, but I don't recommend buying a case blind via mail order.

Extracting your A1200 from it's original casing:

Disassembly of the A1200 isn't too difficult thankfully. Undo all of the screws on the bottom. The top of the case will lift off. There's a ribbon to the motherboard from the keyboard, be sure to pop up a sleeve around this before pulling out the ribbon or it will be damaged.

Lift out the keyboard and you'll see the motherboard encased in the RF shield. Remove the floppy drive and set it aside for later. There are screws around the RF shield which hold the motherboard to the bottom of the case, remove these. The entire motherboard should now lift up, forward and away from the bottom plastic case.

Depending on your keyboard solution, you may need to remove the RF shield. Doing so may make getting access to the plugs and sockets a little easier too. There's a number of metal lugs from the bottom half of the RF shield which poke through holes in the top shield. These need to be bent upwards with a flat blade screwdriver so that the top RF shield can be lifted off. Don't take the bottom RF shield off, it's difficult to do, and anyway, it insulates the bottom of the board.

The hard part of physically mounting the board inside a tower case needs to be performed now. There are many ways of doing this, here are some

suggestions:

Mounting your Amiga's motherboard in the tower:

Decide where the motherboard is going. Make the three forward mounting holes on the motherboard with a pencil on the case back. Drill through the marks with a drill bit slightly larger than some nuts and bolts. Bolt the motherboard in to those holes. Use some additional mounting towards the rear of the motherboard to fix it firmly. Cable ties or glue could do the job. Make sure you take into account space needed by an accelerator plugged into the trapdoor.

Another way is to get some contact glue and simply glue the RF shield to the back of the case. It's ugly and inelegant, but it works and takes only five minutes for a perfect mount. Naturally, be very sure where you want to mount the motherboard before doing this. Other solutions could be using wood inside the case. With a drill bit a tad smaller than some self tapping screws, wooden braces can be stuck to the PC case, drilled through and screwed in place from the outside of the case. Same again from the other side for the motherboard. Exactly what you do is up to you, these are the main suggestions I would recommend. You might like to ask any resident DIY expert how they would do it.

Now providing we have our motherboard fixed into a tower case, there are more problems to overcome. The first one is power, FIGURE 2 shows you how to overcome this hurdle.

The floppy drive is easy. Mount it in one of the drive bays. You'll need to remove the mounting arm on one side. A tip here is to glue the floppy eject button on, since it will fall off otherwise.

You'll also need a longer floppy cable to go from the floppy drive to the motherboard. Maplins can help you out here. Don't plug the drive power into the motherboard, snap on one of the floppy power cables from the power supply inside the case.

Some of the ports might be a pain being inside the case. A particular example is the mouse and joystick ports. A solution here is to obtain extension cables from Maplins. Once you have purchased your extension cable(s), you'll notice one end has thumb screws and coupled with two ext jack posts, the plug can be fixed to the rear of the case as useful back panel mounted sockets. If you need normal jack posts, don't forget you can cannibalise them from the sockets on the rear of the motherboard.

Serial and parallel cables tend to be expensive for extensions. See if your cables fit beforehand. If not, try making your own with ribbon cables and IDE headers. Maplins have the needed parts.

Only after you have the motherboard mounted, power wired up, LEDs connected and such forth, should you add drives. Before you come to this, tie back loose cables into bundles with either cables ties or spiral wrap. PC cases may either use drive brackets so that drives can be pulled out and inserted or fixed bays which the drives are directly screwed into.

If using several IDE devices Eyetech's four way IDE splitter is a good bet and it should be mounted close by the motherboard with a pair of standard IDE cables leading from the splitter to the master and slave drives on each of the two IDE channels. Contact Eyetech for details on: +44 01642 713185.

SCSI Towers:

So far I have dealt with IDE solutions in this article, because they are cheap and easy. But what if you want your tower – either a full conversion or a mini tower to use SCSI devices? You'll be glad to know that it is perfectly possible although a little expensive.

There are three main paths to SCSI on the A1200: the Squirrel, the Dataflyer and SCSI boards on accelerators. Using internal SCSI devices with any of these is tricky due to connection difficulties. Internal SCSI devices use 50 pin IDE connectors, whereas external devices use one of a variety of different connectors.

If you have a Squirrel, there will be a 50 way centronics cable on the end. You may have a CD-ROM in an external case. These are an internal SCSI drive mounted in a box with a small power supply and a converter cable. You can open up the case, remove the drive and fit it in the tower, powering it as you would an IDE drive, and use the converter connectors from the external case to link the drive to your cable. The pass through connector can be mounted on the back of the tower. Because there is such a wide variety of SCSI connectors, you'll have to figure out what your current hardware uses, and get a cable from your local computer dealer. Such connectors tend to cost a fair bit. If you are planning a full conversion with the Zorro slots, a Zorro SCSI controller board is definitely preferable.

Expansions:

There are many add-on boards that connect to the Amiga motherboard. If you want to do the full tower conversion, then a keyboard adapter and at least one of these will be necessary. The Ateo keyboard adapter is ideal, and will allow you to use any PC style keyboard. The other devices (listed below) are options which can add to the power and flexibility of your A1200T:

1. Portplus:

One of the things which hold back the Amiga when it comes to connecting yourself up to the modern world are I/O ports. They were specified a decade and a half ago, and are now showing their age. If you wondered why no-one sells the Zip drive parallel port version for the Amiga, it is because the Amiga's parallel port is too slow. Comms, audio and video sampling networking... the need for fast I/O ports is growing all the time, and PortPlus gives them for you. Port Plus is an innovative A1200 interface which gives you 2 460k baud serial ports and a 500k/sec parallel port. These ports can be connected directly to the back of your tower case for ultra simple I/O connections. Port Plus connects to your A1200 clock interface via your A1200's motherboard.

Price: £99.95. Contact: Eyetech on +44 01642 713185

2. Eyetech buffered IDE interface/splitter:

This neat little board allows the use of four IDE devices. It splits your IDE line into two chains, each of which can have one master and one slave device. You will need software such as IDE-fix or the full version of ASIMCDFS to use it. Having four IDE lines makes it possible to really fill those drive bays – two hard drives, a CD-ROM and an IDE zip drive, anyone. This Eyetech unit is buffered, which means that the line is electrically isolated. The dangers of using unbuffered interfaces are undoubtedly exaggerated, but equally buffered interfaces are undoubtedly more reliable, remove problems over IDE cable length and are a reassuring option for four

device connections. Ateo produce an unbuffered splitter, the IDE-MUX, which is cheaper at £29 (£23 for the 40 pin A4000 only version) and AlfaData's Alfa Quatro, available from Golden Image, costs £59, but comes with the registered IDE fixes. Eyetech's buffered IDE splitter certainly gets my recommendation, but then, I would say that 'cause I've got one in my tower at the moment!

Price £39.95. Contact: Eyetech on +44 01642 713185

Or, if you are good with soldering, [click here](#) to find out how you can make your own 4 way IDE interface!

3. Dataflyer

The Dataflyer is an internal SCSI controller. It slots into the IDE interface on the motherboard, and has a pass-through connector to allow IDE devices to be connected as normal. This is a cheap and effective way of getting a SCSI interface, but remember that IDE devices are treated as SCSI devices, so any SCSI device you connect to it MUST have a different ID to your IDE devices. I haven't tried using an IDE splitter (such as Eyetech buffered IDE interface/splitter and a dataflyer together, but there is no reason why there should be a problem.

The A4000 version could be an ideal tower solution as it has a 50-way header for internal SCSI devices. It is A4000 only because it plugs into a 40 pin not a 44 pin IDE connector, but this is no problem for the tower converter. Unfortunately, UK distributors Siren, don't do the A4000 version. You could hassle them into getting you one or buy one from the manufacturers.

Price £79.99. Contact: Siren on +44 0161 796 5279

4. Catweasel:

Some of you may have wondered why I haven't told you how to connect PC floppy drives to your Amiga - after all the internal floppy doesn't have a face plate and looks rather ugly in a tower case. The problem is that the Amiga high density floppy drives are non-standard devices, they spin at half speed. Amiga HD units either have a complex buffer a la Power Computing XL drives, or are rare half-speed HD mechanisms. Much better is the Catweasel from Blittersoft. It plugs into the IDE port with a pass-through socket, and provides a standard 34 pin floppy connector. Off the shelf full speed PC 1.44Mb floppies can then be inserted in your tower and plugged straight in. The cost of a Catweasel and a PC HD floppy drive is about the same as an Amiga HD floppy and a lot faster, plus it slots beautifully into the tower case.

Price £59.95. Contact: Blittersoft on +44 01908 261466

5. Ateo Keyboard Interface:

This little board has a PLCC socket which fits over the keyboard controller chip and takes power from a floppy power connector; your tower should have a spare. It can be mounted inside the tower case with sticky pads, aligned with the round keyboard socket hole punched into the back of the case. It will then take any PC AT style keyboard - very good ones can be bought for little more than a tenner. The Ateo interface scores highly on convenience and ease of use.

Price £44. Contact: Ateo Concepts on +44 01705 790211

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1.2 maplins

You will need the following for your A1200 tower project. All these parts are available via Maplin electronics. You can either pop into WH Smith's and pick up their latest catalogue and order the bit's listed below via mail order, or alternatively, give them a ring on: 01702-554000 (dial +44 first) if calling outside the UK.

Description	Product Code:	Cost:
Long Floppy Drive Cable	DG41	£4.99
3 Way long IDE cable	DG40	£3.99
9 Pin mouse/joy extention cable	VD73	£4.99
RS232 serial extension cable	JC17	£4.99
Ext Hex Jack Posts (you need two of these)	FP31	£0.79
Releaseable cable ties	JY74R	£0.09
1M spiral wrap	BL59P	£0.59
Electrical terminal blocks	RY23A	£0.79

If you intend on using an SCSI squirrel in your tower, in some case's there might not be enough room to plug it in. If this is the case, Blittersoft can help you out here with a PCMCIA right angle adapter. Blittersoft can be contacted on 01908-261466 (dial +44 first) if calling outside of the UK.