

Using a Normal Floppy Drive on the Amstrad PC4386SX

Introduction

Okay, first things first, why on earth would I do something like this? The 4386SX is an ancient machine which is an absolute nightmare to maintain due to its non-standard design and myriad of proprietary components. With this in mind you might be wondering why I put myself through the ordeal of trying to make it useful again. Which is a fair question, the answer being I like older machines and I love playing with old operating systems and software. Which means that, in theory, this machine should be ideal.

Sadly, the floppy drive has failed completely (broken drive belt and the upper read/write head is damaged). As a result of this the machine is going to need some surgery if I am every going to install an operating system let alone anything else.

As I already mentioned the machine is completely non-standard. For example neither the hard or floppy drives use conventional power connectors. In fact the floppy drive has no power connector at all! So, replacing the dead floppy drive is going to be a little, problematic.

Necessity being the mother of invention and all that I had to improvise and come up with the temporary work around documented here. I'll be the first to admit that this isn't an elegant or long term solution, but it worked well enough to get the machine running.



Parts and Tools

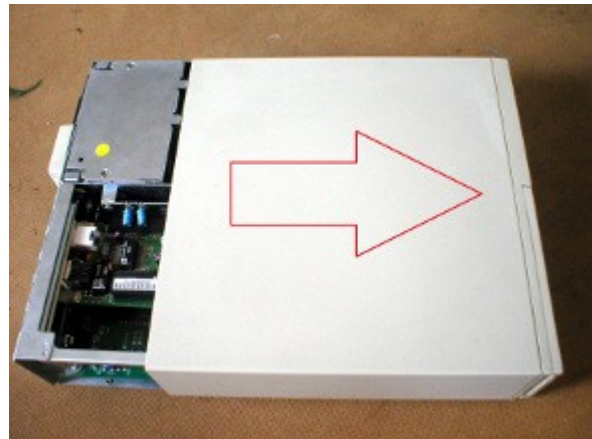
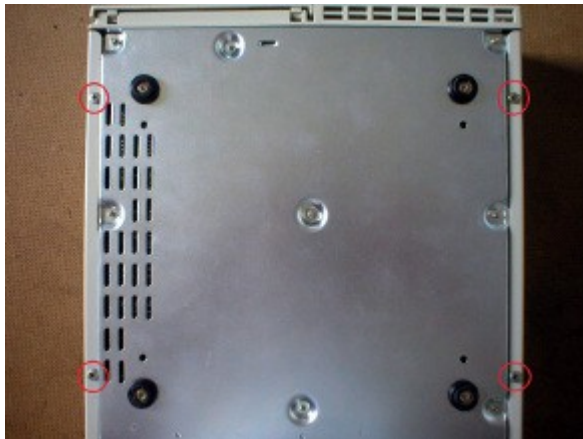
Here is what you need to be able to use a normal floppy drive with one of these machines. There is nothing special about any of this but I think it will be useful for the novices reading this who may not know what they will need:

- Amstrad 4386SX hardware manual (the one that shipped with the machine). You will need this to work out which jumper disables the built in floppy drive controller.
- A standard floppy disk drive.
- ISA I/O board which has a built in floppy drive controller. I used a Prime 2C Mark III, but feel free to use whatever you have handy.
- Screwdriver (Philips head, non-magnetic).
- ESD Wrist Strap.
- Data cable to connect the floppy drive to the controller.
- Standard AT PSU.
- Pliers.
- Sticking plasters (getting at some parts can result in a little blood loss due to tight working



- conditions).
- Plenty of time (this is going to take a while, especially on your first attempt).
 - A circuit breaker, just to be on the safe side.

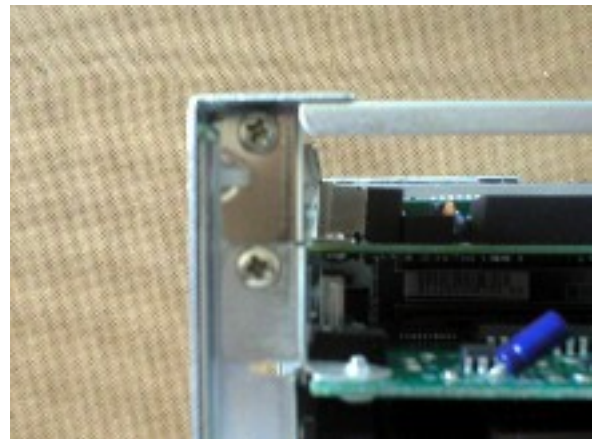
Opening the Case



This is the easy bit. Switch off the machine and disconnect everything. Flip the machine over and remove the four screws which I have circled in the picture above. Then turn the machine back the right way up and slide the casing towards the front of the machine to remove it.

Remove the Expansion Cards

Put on your ESD Wrist Strap and remove the screws that are holding the cards in place. You can then remove the cards by pulling them out of their slots.



Disable the Floppy Drive Controller on the Motherboard

In the middle of the motherboard you will see a row of jumpers. You need to remove jumper **18** to disable the on board floppy drive controller.



In the picture above you can see the jumpers (circled) just below the expansion bus slots. On my machine I've replaced the original jumper for the floppy drive controller with a slightly taller one in a different colour to make it easier to identify and remove should I need to go through all this again.

Note: The manual refers to jumpers as *option links*.

Disable Everything Except the Floppy Drive Controller on the MIO

This is important. Refer to the MIO's manual and disable everything *except* the floppy drive controller. The rest of the stuff on the MIO is not required as we are only trying to replace the floppy drive controller and nothing else.

Connecting Everything Up

Connect the data cable to the MIO and then insert the MIO into one of the vacant bus slots. Once inserted secure the board with a screw to prevent it moving about. I suggest that you connect the data cable before you install the card into the machine as I found it easier to do it that way around, but its up to you.

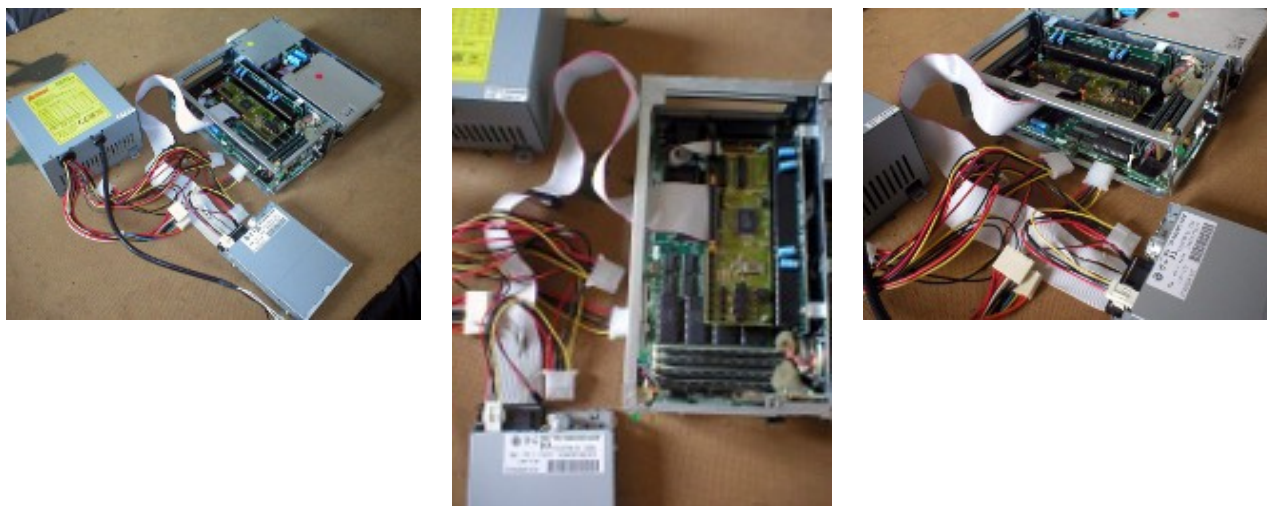
Connect the data cable to the floppy drive and then connect the floppy drive to one of the 3.5" power connectors on the standard AT PSU in the usual manner.

Now reinstall the keyboard, mouse and monitor. Without which you are not going to get very far.

The Moment of Truth

Now we have everything assembled its time to power up the machine. I strongly recommend that you install a circuit breaker on both the 4386 and the AT PSU. This will act as a safeguard to both you and your mains power.

Switch on the standard AT PSU *first* so the floppy drive has power. If you don't the BIOS wont believe that the drive is present. Then power up the 4386 itself. If all goes according to plan the machine should fire up as normal.



Here are some images of the finished job. The VDU, keyboard and mouse are omitted because they wouldn't fit in shot. Like I said, it isn't pretty or practical but it works. And I recommend you tidy up the unused power cables to keep them out of the way. The rats nest of wiring you see above is not exactly conducive to a safe working environment. I really should have thought of that before taking the pictures but I didn't.

Future Proofing

A few things to consider before you disconnect the external drive and put the case back on:

1. Copy the contents of the Windows disks to the hard drive. If you don't you will probably end up being prompted for disk after disk which you cannot access because the internal floppy drive does not work. Resulting in you having to go through this again and again. Which is no ones idea of fun.
2. Once the machine is up and running I suggest you install a Network Interface Card (NIC). With one in place you can connect to another machine to add more software later without all of this carry on. Oh, and if you are adding a NIC. Remember to copy the NIC drivers and TCP/IP software onto the hard drive before reassembling the machine.

Having said that, if you are running MS-DOS 6.x you could always use interlink to copy files to and from the machine over a serial connection. But personally I would prefer to use a NIC because it's quicker and more flexible.



Final Note on Reassembly

Remember to reinstall the jumper for the built in floppy drive controller before you button up the case. If you don't the BIOS will have an almighty hissy fit and you will need to take the machine to bits again to reinstall the errant little piece of plastic before it will work again. How do I know this, well, I made that mistake so you don't have to.