CHECKMATE
A1500 cases

KICKSTARTER

User manual

For Mini and Plus cases
Version 2.0 from iMica Ltd.

Contents

Serial numbers included

Cloanto Amiga Forever
This is on the actual CD supplied but you can write it here:

Hyperion OS3.1.4 if supplied:

Amikit XE:

A thank you message to the original team

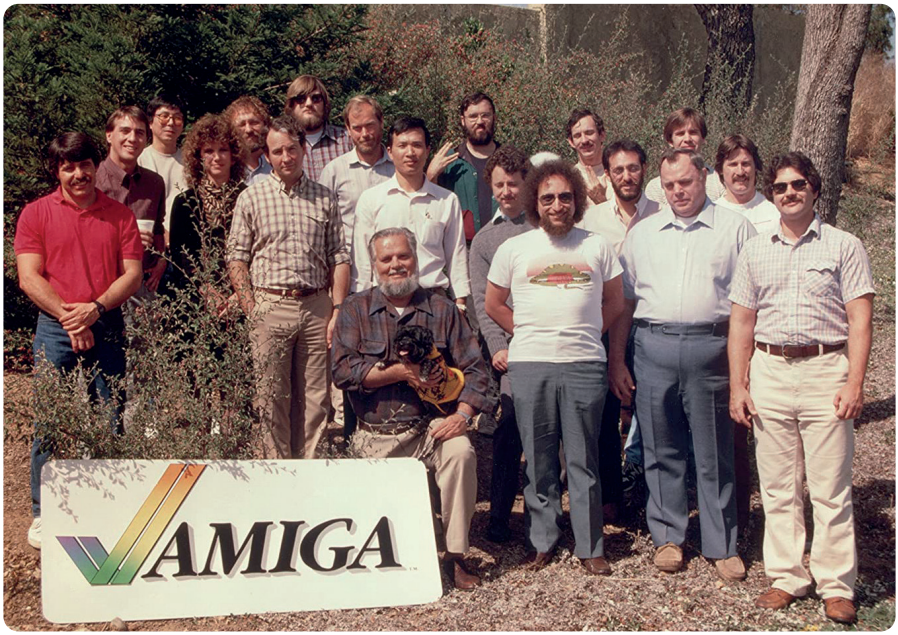
Here's to the original Amiga team, Jay Miner (our father), Dave Morse, Dave Needle, RJ Mical, Dale Luck, Carl Sassenrath and the other 47 names inscribed on the inside of an Amiga 1000 and yes even Mitchie the cockapoo.

To those we have already lost like Jay and the two Dave's, Jay Miner in 1994 and Dave Morse in 2007 and most recently and poignantly Dave Needle in 2016. To all those who populate this photo, those happy smiling and hopeful young faces whose passion for creating the future of computing gave us the Amiga.

Without the hard work and dedication of this team we'd never between us have had that memory of the first time we saw a computer we owned doing something incredible. We'd have had to wait a lot longer for VR, 3D graphics, computer music, video editing or decent computer games. Without the Amiga life would have had a lot less flavour.

To those who made a dream we didn't even know we wanted come true. Thank you.

Written by Phil, sincerely felt by all Amigan's



ABOVE: Jay Miner (our father), Dave Morse, Dave Needle, RJ Mical, Dale Luck, Carl Sassenrath and the other 47 names inscribed on the inside of an Amiga 1000 and yes even Mitchie the cockapoo.

Introduction and thanks

Written by Steve Jones, iMica Ltd

Firstly thank you for the faith you have shown in us in purchasing one of our cases. We hope it will give you a lot of pleasure and more importantly reliable and functional service for many years to come.

Some of you may realise the history of this case's origins go back 30 years to the original Checkmate Digital A1500 case for the A500 computer which had an interesting history in relation to Commodore. The story was recently published in David Pleasance's (Commodore UK manager in the late 80's to early 90's) amazing book Commodore the Inside Story. I am grateful to David for publishing the actual truth about this story even though he was in Switzerland at the time it all went down. Great book, highly recommended.

After discovering that the book would reveal the truth about the story of the Checkmate (and later Commodore A1500 version) saga, it inspired me to design a new version of the case for the 21st Century that hopefully lasts as long as the original from 30 years ago. Get back to me in 30 years and we'll see.

Obviously I want to thank all those who supported me through this process especially the nearly 800 Kickstarter backers named at the rear of this manual without whom I could not have started this adventure again. So, without further delay, please enjoy this product, this labour of love and of course we'd love to hear from you and feedback is always welcome.

Thanks to Caroline, Barrie, Phil, Rob, Paul, Vasilis, Erwin, Edu and many others for their help.

Also, thanks to Jay Miner and his amazing team who created this wonderful machine.

Steve Jones
iMica Ltd

Foreword: Confessions of a Checkmate addict

Foreword by Phil South

When Steve asked me to write a few words for the manual I agreed instantly for a few personal reasons. Firstly he did me the courtesy of slipping me a few shillings for my time, which always goes down well. Secondly, I hold Steve in high regard for his long service to the Amiga community and to me personally as a friend and colleague. He's a good egg and a safe pair of hands.

Thirdly and most importantly I loved and have very fond memories of my original A1500 case which enclosed my Amiga 500 for about 10 years till it died of natural causes. (Bites knuckle and emits tiny squeak) The original A1500 was one of the most popular and important accessories for me because I always got the really strong impression it was made for fans rather than purely for commerce.

Plus Steve always took a keen interest in users of his products, always has and I think always will. His customer service is always terrific because he cares. He cares about the computer, he cares about open source, he cares about his products and he cares about the fans. He wants them to take what he makes and go on to use those products to make products and innovations of their own.

The Checkmate A1500 original model was a big part of my Amiga journey, while writing for all the Amiga magazines and especially my 12 year long residency on Computer Shopper as the Amiga guy. The case

somehow took the humble A500 and made it legit, something hobbyists and professionals would take seriously. But having a robust and expandable platform for my Amiga was the foundation of how I earned my living on the machine for 15 years. For a start it put off my needing an A2000 for a longish while which saved me a quite few bob.

I was delighted to hear that Steve had finally gotten some closure over the whole distasteful Commodore debacle and was thus inspired to do a long overdue sequel to the A1500. I mean who knew that the Amiga would have such a rich and vibrant community all these decades later? I'll tell you who. Steve Jones. And to say I'm chuffed that the A1500+ has been such a success is a massive understatement. My joy is unalloyed.

I hope you are thrilled with your A1500+, I hope it serves you for many years and is the crucible in which you forge the next 30 years of innovation.

Now, you crazy kids, go out there and make great stuff.

Phil South
Author

Important information

ABOVE: Power supply unit

Power supply

If you ordered one of the Checkmate 200w PSU's it is important to be aware of the following.

Firstly and most importantly, the voltage red switch changes between 230v and 110v. When we ship we will try and switch to the correct voltage but IT IS YOUR responsibility to ensure it is set for your countries voltage system. For example Europe and UK are 230v, USA is 110v but others you need to check this.

Secondly, this PSU is only 200w and as such is only suitable for PCs with CPUs with graphics on board and under 65w TDP. It is NOT meant for high-end PCs and is meant for powering Amiga's and our own systems, and in such an environment it is over-specified. But will run with systems that drawer little power.

Powering down the MiSTix

The MiSTix board needs you to hold the power switch for 3 seconds to shut down.

Powering down the Pi4

In its present form the ATX power adapter cannot control the Linux OS on the Pi4, so when you press the power switch on the front it turns of the power to the Pi instantly which Linux unfortunately will not like.

It is important that you shut down the Pi4 OS before pressing the power switch to save disk corruption.

Using MicroSD card extender cable with Pi4

Whilst your mileage may vary, I have found that using a MicroSD card extender works great with the UnAmiga ITX and the MiSTix but is not as reliable with the Pi4. I assume this is due to high speed data transfer but please be aware that I noticed data issues when I was using one. It is a pain not to be able to use it but I want you to know up front.

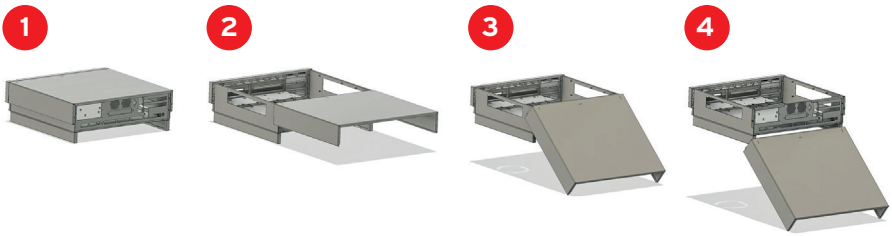
Back up your SD card before you use it

I would suggest you back up the SD card before you use it because I may struggle in the future to maintain a download function for users. I will alway be able to post a replacement for a small fee but I am unsure on keeping as a permanent download. Anyway this is just common sense.

Checkmate 1500 Plus only

PLEASE READ before opening the case

Due to the design of the case you need to follow this process carefully to remove the lid and reverse it to put back on. If you don't the tangs that locate the lid in the front will hit the rear of the case. This feature is a product of the modular design so please bear it in mind when removing the lid.



1. Put case on a raised surface or desk with rear of the case at the end of the table or surface.
2. Pull lid until the tangs touch the rear then tip the lid downwards by 45 degrees. This will allow the lid to slide off easily
3. To fit lid do this in reverse.
4. If you are not fitting the risers ensure you have the stick on feet fitted before fitting the drive tray screws or you may scratch the desk.

Introduction to Checkmate 1500 Mini

The new Checkmate A1500 Mini computer case system which initially launched in 2019 as the Plus version and has been re-imagined for the Mini ITX form factor and next generation of FPGA Amiga builds. Now that the Kickstarter is complete and you have purchased your FPGA, Pi4 and x86 parts, now is the time to build, and hopefully this manual will help.

With the new Mini case I decided to commission two brand new FPGA systems boards the UnAmiga ITX FPGA board and the MiSTix which converts the DE10 Nano to work beautifully in a Mini ITX case. These two amazing boards were designed by Edu Arana and I am grateful to him for his skill and dedication to the Amiga community.

As before we could not have created this new case without the support of our Kickstarter backers and I truly appreciate your support.


ChipMem 8,139,424 Bytes free
FastMem 358,395,480 Bytes free
Ram
AmiKit
Favourites
OS
storage
RabbitHole
Dropbox
Games
Chrome
LibreOffice
Steam
Firefox
Notepad
VLC
Host Prefs
Skype
An Oculus Rift
Utilities
Internet
Games
Demos
Prefs
Welcome to AmiKit X
WBStartup
Tools
System
Devs
Storage
AmiKit
Cache
RAM
AmiKit
Dwload
Dropbox
Aminet
Rabbit Hole
RabbitHole, 3.9G free.
OK
AmiKit, 1.8G free, 2.1
22:30:24
March 2019
DELL
CHECKMATE
A1500 mini
POWER
DRIVE


HIGH SCORE
100000
350
2UP
00
1
CHECKMATE
Argoo plus

Parts included in Basic and Deluxe Mini case

Whilst the case will be partly assembled when you receive it, it should contain at a minimum the following. Note the Basic package has the same cardboard box but not printed and the manual is a downloadable PDF version.

Included with Basic case

- 1 x Plain cardboard box with inserts
- Downloadable electronic manual (this one)
- 1 x base tray with rear panel welded in
- 1 x main drive tray
- 1 x lid
- 1 x front panel with blank
- 1 x power switch cover button and cable
- 1 x led board
- 1 x power and HDD led cable
- 1 x fitting screw pack

Included with Deluxe case

- 1 x colour cardboard box and inserts
- 1 x this manual in printed form
- 1 x DVD panel and mount frame for LG slot load DVD drive GS40N
- 1 x standard 3.5" drive panel

- 1 x PSU support bracket with SD card extender and USB mount points
- 1 x card bay top blank plate

(It is important to note that the power supply is never included in the cases unless you order one as an extra).

Fittings pack includes

- 6 x M3 – 4mm screws
- 4 x M3 – 4mm Hex stand-offs
- 10 x M3 – 6mm screws
- 14 x M3 – self tapping screws

(May already have some fitted in case)

Tools required

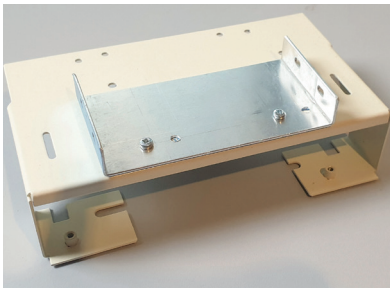
- A cross head screwdriver (what we used to call posidrive)
- A spanner or socket for the hex studs

Also please take my advice and use patience – rushing is a bad idea unless you have built a lot of cases. Common sense really, but I feel you can't say this too much even if RMC Neil makes fun of me over it LOL.

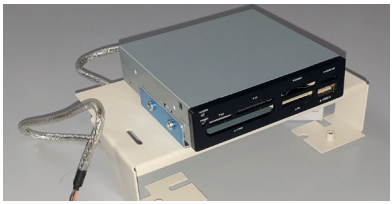
Mini case drive trays

These two trays are both available in the deluxe case, the basic has the main large drive tray only.

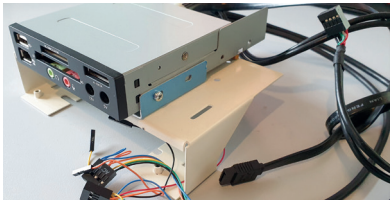
1 As you can see this is the main drive tray and it will fix in either side of the front of the case as you can see later in the manual. The silver part is for mounting 3.5" devices like the following.

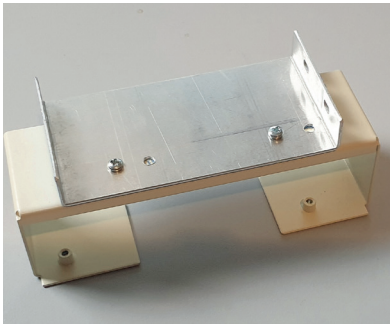


2 Obviously you need something like the MiSTix or a PC to connect this too but it could be used to mount a floppy disk drive.



3 You could mount one of these more advanced units if you have the system board that can accept it.

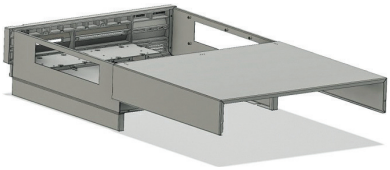


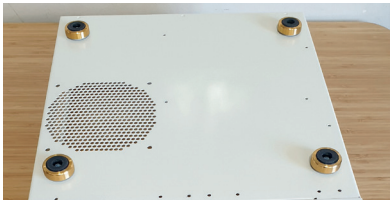
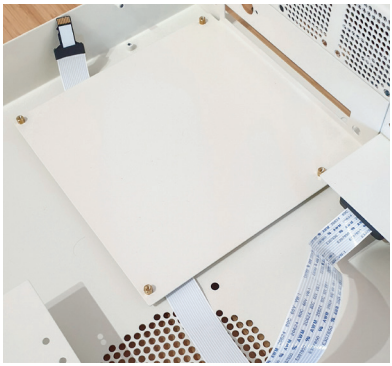
4 However, what if there is no room to fit the normal drive tray, for example if you have a water cooling unit fitted. Then this skinny drive tray can fit along side or instead of the larger one.	
5 Yes, you can also fit the silver adapter for 3.5" devices. Important to note there are 4 screw holes in the silver part. This is because to center in the front 3.5" panel is different on each tray so we allow for this.	
So you can use your imagination, but note the reason the case is now 25mm deeper is to allow more room when building a PC based system.	

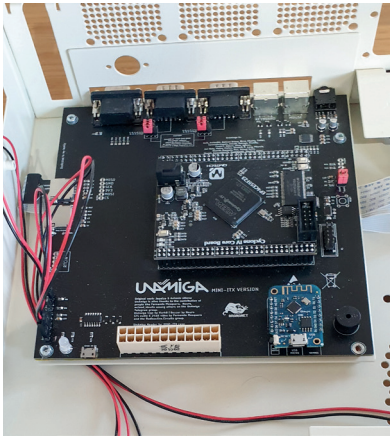
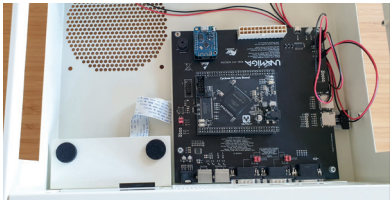
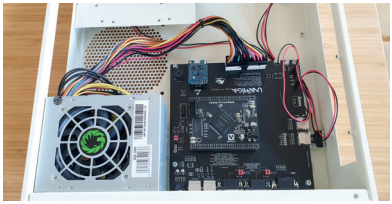
Assembling UnAmiga ITX

The UnAmiga ITX is a custom board from the same stable of fantastic FPGA based Amiga clones by Edu Arana and a great supporting team. I asked Edu to create a fully Mini-ITX version of the board with the latest FPGA dev board which is big enough in its scope to run over 2 x the speed of an A3000 and have wonderful RTG functionality.

Anyway, this is my favourite and whilst it may seem limiting in some way it is in my opinion a true hard core Amiga fans system and it takes pride of place as being my go to Amiga replacement.

1 Unlike the Plus case the Mini lid slides off nice and smoothly not having the design issues of the first case to contend with.	
2 If the tray feet have not been fitted then fit them on now, this is because without them the drive tray screws underneath may scratch your desk.	

3 If you have the expensive metal feet please screw these on now.	
4 If you have a Micro SD extender cable, fit it as shown here in the PSU support bracket using the clamp provided ensuring it holds the big black SD holder firmly.	
5 Screw the PSU support in like this with two M3 6mm screws at the rear. You can fit a couple of soft pads here to rest PSU onto later in the build.	
6 Next after laying the SD extender cable under the UnAmiga ITX mount frame, use 4 of the Hex spacers to screw into place with the spanner or socket set recommended. This will then plug into the UnAmiga ITX's MicroSD slot closest to the rear of the case.	

7 Fix the UnAmiga ITX board in using 4 of the M3 4mm screws provided after plugging in the MicroSD card extender plug. Now you can fit the LED cable and power switch where labelled. Note the PWR switch uses the switch connector closest to the rear of the case. The other LED positions are labelled.	
8 Now you can see the PSU support in place with a couple of pads that are not supplied unless we assembled the case.	
9 Next screw the PSU in using the screws that came WITH the power supply. We do not supply them unless building the case.	
10 Now put the lid on and screw in place.	

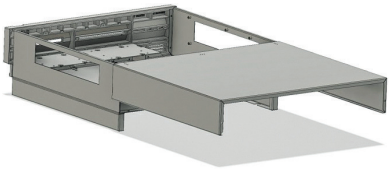
11 Plug in your keyboard and mouse and have fun.

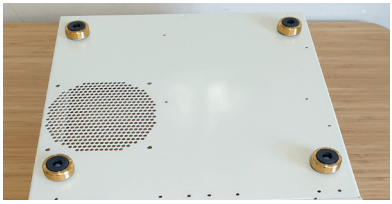
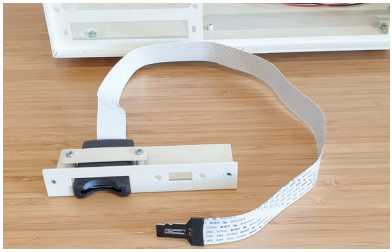
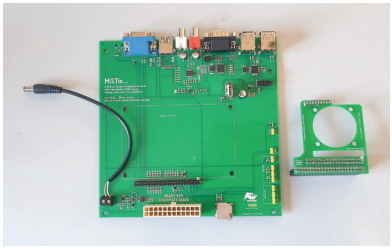
Assembling MiSTix

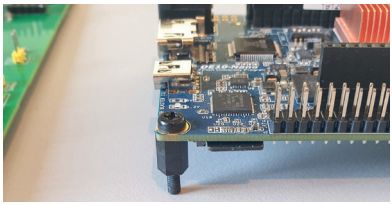
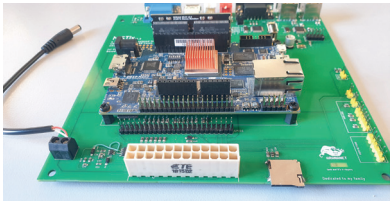
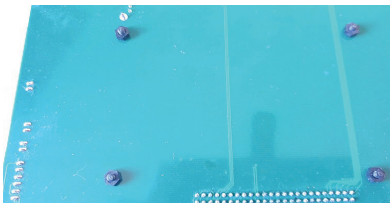
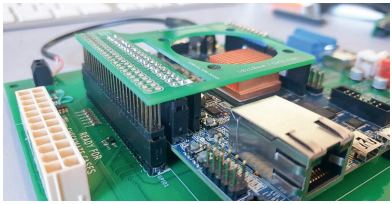
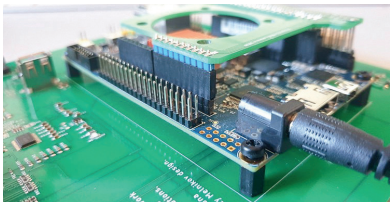
The MiSTix designed by Edu Arana is pretty much the sweet spot for the retro fan who wants to build a great Amiga experience but also have access to a huge amount of community created FPGA cores for multiple Computer, Arcade and Console simulations.

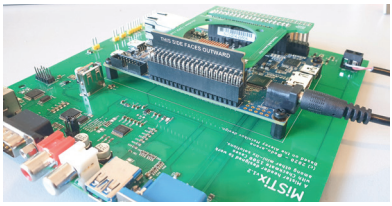
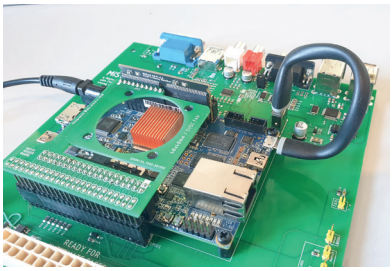
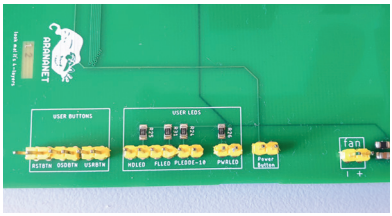
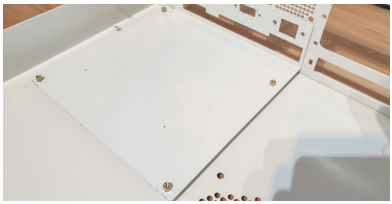
However, due to the fact that the DE10 nano which is the basis for this system has an ARM core that takes care of USB, Network, HDMI, VGA etc giving the ultimate retro computer and gaming system.

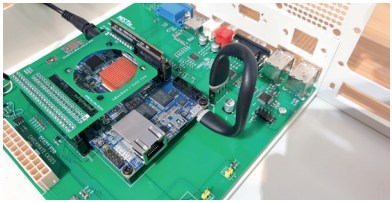
When powering down the MiSTix please note you have to hold button for 3 seconds.

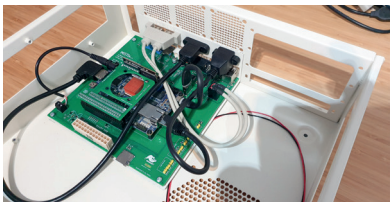
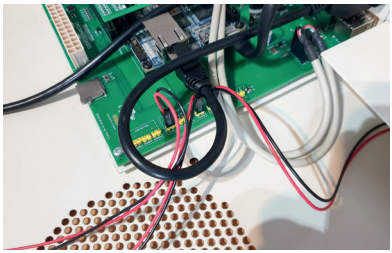
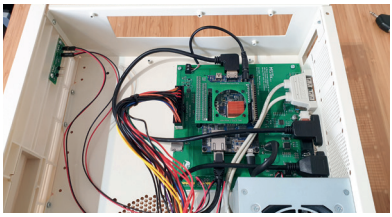
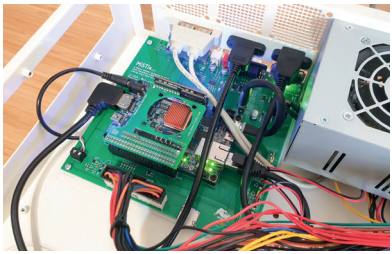
1 Unlike the Plus case the Mini lid slides off nice and smoothly not having the design issues of the first case to contend with.	
2 If the tray feet have not been fitted then fit them on now, this is because without them the drive tray screws underneath may scratch your desk.	

3 If you have the expensive metal feet please screw these on now.	
4 If you have a Micro SD extender cable, fit it as shown here in the PSU support bracket using the clamp provided ensuring it holds the big black SD holder firmly.	
5 Screw the PSU support in like this with two M3 6mm screws at the rear. You can fit a couple of soft pads here to rest PSU onto later in the build.	
6 Assembling the MiSTix board before fitting into the case. Here are the main board components. Please note change to final board will mean a ribbon cable connection between fan board and main board. May not have updated manual by then.	

7 Fit the spacers and screws to the DE10 Nano board.	
8 Drop into the board as shown.	
9 Turnover and add the nuts to hold in place.	
10 Fit the top board with the fan hole, ensuring you fit the pins correctly.	
11 Including the single line of pines on the other side of the board. Now plug in the power cord.	

12 You can now fit your SDRam board.	
13 Connect the Micro USB to USB cable as shown. Your cable may be longer depending on supply. Important to note, this is the prototype and show the old fan board which cannot access the MicroSD card. If this is still here it will not be on your card.	
14 Here are you connectors for Drive and PWR Led, fan power and on the left are the three DE10 nano button headers. Note the fan is a 5v variety.	
15 Screw the mount frame into the base tray using the 4 hex studs.	

16 Now screw the completed board to the top of the hex studs with the ports at the rear matching the cutouts.	
17 Connect the micro usb to standard usb short cable as shown to join DE10 nano to the MiSTix board.	
18 Connect the angled HDMI to the side of the DE10 Nano and screw to the rear of the mount frame.	
19 Now fix the USB extension mount to the MiSTix board and the rear mount by unscrewing the card bay mount. Alternatively you can use the card bay mount option.	

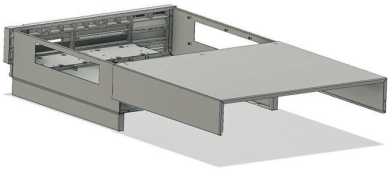
20 Now screw the RJ45 to the rear panel and connect to the DE10 Nano. Note the LED cable fit snuggly either side of it.	
21 Now connect the power switch, and the PWR and HDD led's to the position marked in the picture higher up. You will find they are not the same orientation.	
22 Now fit the power supply and connect the ATX power lead then the HDD and Power led's to the PC section of the front LED panel.	
23 You can power up test now if you wish. It is important to note that turning off the system requires holding the front power button for about 3 seconds to turn the system off.	

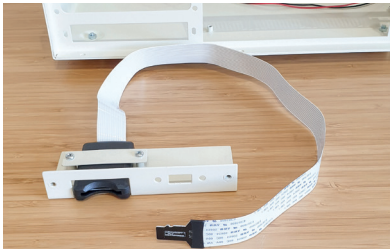
24 All ports mounted to the frame.	
25 Alternate USB mounting point.	
26 Connect your USB matching keyboard and mouse for the finished system.	

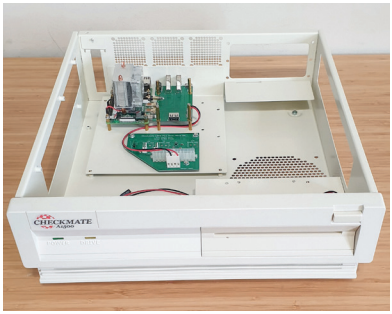
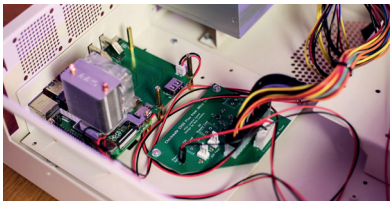
Assembling Raspberry Pi4 Ami-Hybrid system

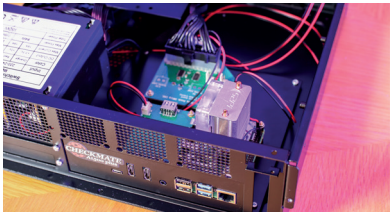
The Raspberry Pi4 is a fantastic option for retro fans who accept that emulation is the sincerest form of flattery and not a reason for beheading. It gives the retro fan huge performance at an incredibly low price and emulation software in my opinion is absolutely amazing and way more advanced than virtual machines which are accepted and used widely.

So, the main reason is that having a full blown and around 1,000 MIPS for an Amiga also means having access to Linux software via our Amiga Hybrid system. This is simple communication between the emulator and the host and it seamlessly integrates the two systems to give the best of both worlds. For example, the best Amiga experience with ability to run Chrome and modern office apps like Libre Office. Hope you enjoy the experience.

1 Unlike the Plus case the Mini lid slides off nice and smoothly not having the design issues of the first case to contend with.	
2 If the tray feet have not been fitted then fit them on now, this is because without them the drive tray screws underneath may scratch your desk.	

3 If you have the expensive metal feet please screw these on now.	
4 If you have a Micro SD extender cable, fit it as shown here in the PSU support bracket using the clamp provided ensuring it holds the big black SD holder firmly.	
5 Screw the PSU support in like this with two M3 6mm screws at the rear. You can fit a couple of soft pads here to rest PSU onto later in the build.	

6 Assuming you purchased the AmiHybrid setup from iMica ltd you will have a mount frame and our ATX adapter board and the Pi4 port adapter board. Just screw this complete into the Mini ITX mount holes without any hex spacers and connect the PWR led cable from the case to the PWR led pins on the ATX adapter. See online or addendums on how to connect HDD activity light to Pi4.	
7 Now fit the power supply and connect to the ATX adapter board using the 24 pin ATX cable block.	
8 Because the Pi4 has USB you can use one of our matching and styled USB keyboard cases with audio jog dial and controls but with Amiga designed key caps.	

9 At the back of the Pi4 you have all the ports neatly positioned and if you have an Ice Tower like this then you can over clock like a champion.	

Assembling a water cooled Mini ITX PC

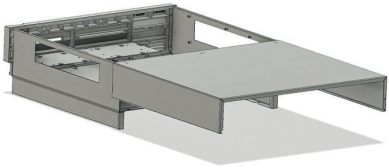
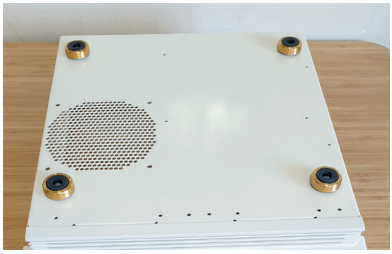
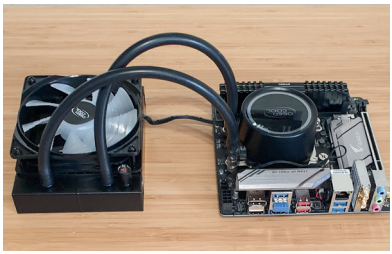
Whilst it is fantastic building a Retro FPGA system or a Raspberry Pi4 powered system, but sometimes you just want to build a powerful X86 PC to run Linux, Windows or another OS. Well here is my system that I built as an example, but please read the next paragraph.

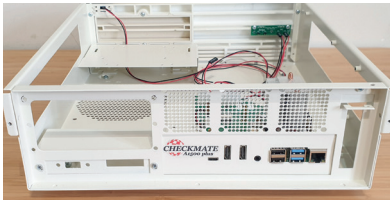
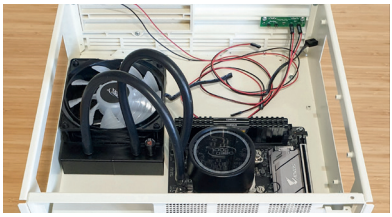
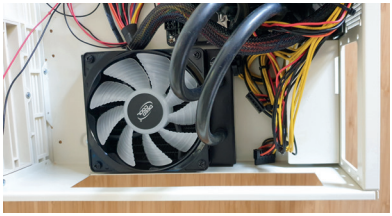
Whilst you can fit a very powerful Mini ITX PC, sadly there is no full height GPU support but you can fit a low profile one.

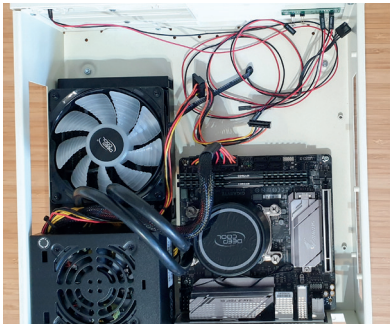
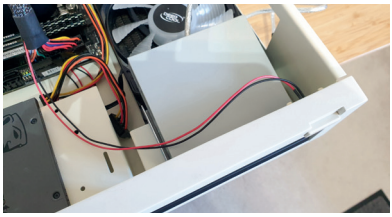
However, I recommend you invest in one of the new APU's from AMD or maybe an Intel CPU with onboard graphics, both of which are becoming so powerful that they are beginning to do away with discrete GPU's for 1080p gaming.

However, you still have to be mindful of the heat that can build up. This is a very small case and not really the right shape for great cooling, but the front vents can pull through a good flow of air that can be pulled through the 3x50mm fans in the rear.

On top of this and really the best choice is an AIO water cooler with a 120mm rad and fan screwed to the base. With for example a 65w CPU/GPU combo you can clock these well and keep nice and cool no matter how intense the gaming gets.

1 Unlike the Plus case the Mini lid slides off nice and smoothly not having the design issues of the first case to contend with.	
2 If the tray feet have not been fitted then fit them on now, this is because without them the drive tray screws underneath may scratch your desk.	
3 If you have the expensive metal feet please screw these on now. This is important on this setup to let the air be blown through the 120mm base vent you can see here.	
4 Ok, so you have your Mini ITX board ready and the AIO fixed to the CPU and ready to install. This manual does not cover that as it is your responsibility to know all about this part.	

5 Fit the 4 brass hex spacers into the 4 Mini ITX screw holes.	
6 Fit the rear panel plate for your particular board first.	
7 Screw the motherboard into place. Next find the screw holes under the fan mount to fix the radiator in place. Please have patience while doing this.	
8 Here you see me hiding most of the unused PSU cables under the PSU support bracket. It is a good way of tidying them up with this lack of space.	

9 Now screw the PSU into place. The fan can go above or below. I like above to catch warm air and remove it but I am sure others may disagree. However, having the other way will mean a third of hole blocked by PSU support.	
10 Because you have the AIO water cooler there is obviously no room for the drive tray. However, the tray is designed to fit either side. You will also notice there is the optional Skinny drive tray that I have mounted the optional 3.5"device mount frame.	
11 If you want to experiment you can fit a small Multi card reader although you may have to be a bit imaginative when fitting with an AIO.	

12 Should you want to you can fit three 50mm fans. I recommend getting high quality and quiet fans obviously.	
13 If you built your system without an APU or just want to add a discrete one, then this is as big as you can get. It will fit but do not expect miracles with them.	
14 They are a tight fit but with a slim screw driver you can fix in from above. There is a small blank plate to tidy the top up as well in the Mini case now.	
15 They can look very cool as well with RGB lighting.	

Fitting a Vampire V4 Standalone

Fitting is pretty much the same for the UnAmiga and MiSTix but you need one of our ATX adapter boards screwed on the left hand side and using the adapter cable to power the Vampire.

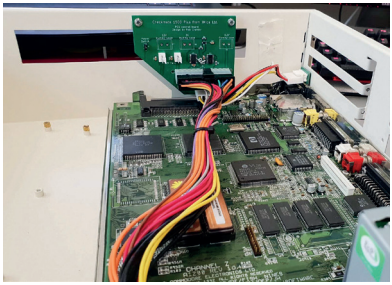
Please be aware the Apollo team have publically stated that removing the Vampire from the box voids your warranty which is a little disappointing but this is why we mount the whole box.

1 As you can see all ports are replicated on the rear of the case by a simple extension cable.	
2 Here is a better view.	

3 The ATX board screws into the base tray on the side like the Plus case in later sections. However when screwing the Vampire frame in, one of the mount screws is not available but the 3 will do the job fine.

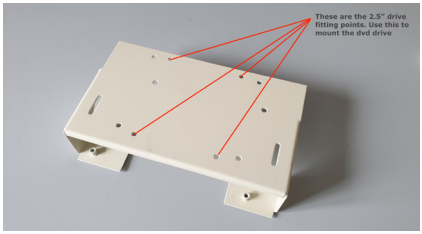
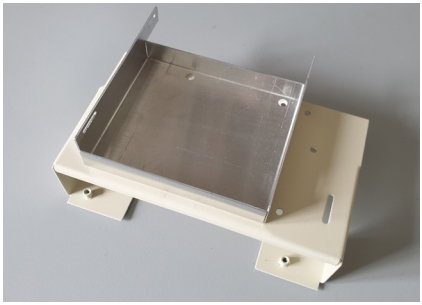
4 You can, if you wish, screw the mount plate in first with four small M3x4mm directly into the tray studs, then using the screws from the rear of the vampire holding the lid on, screw the vampire into the tray. Either way is fine.

5 This picture shows how the ATX adapter fits in the case, sadly I did not have the V4 long enough to show installed with the finished tray. So the power supply connects as shown, but under the ATX connector on our adapter board is a white connector that takes our power lead that connects to the mini USB socket on the back of the Vampire V4 (not shown).



6 The ATX board also has a power LED connector that can be attached to our main LED board on the front of the case. This will at least show the machine is on. Finally, connect the case power switch cable to the jumper on our ATX adapter board.

Fitting the DVD drive frame

1 This is the main drive tray, the DVD mount frame can be mounted using the holes shown.	
2 The DVD mount tray fixes to the 2.5" drive mount holes using 4 x screw and nuts. If you have a 2.5" drive you can screw straight through the mount frame into the drive and hold both at the same time.	

3 The DVD drive fits on the mount frame and you need to test the fitting position in place so that the front of the drive just misses the DVD front panel.	
4 Either side of the frame are four slots to allow you to screw the drive to the frame. You may have to drill different holes but these slots should fit most. Note we do not supply the screws for your DVD drive.	

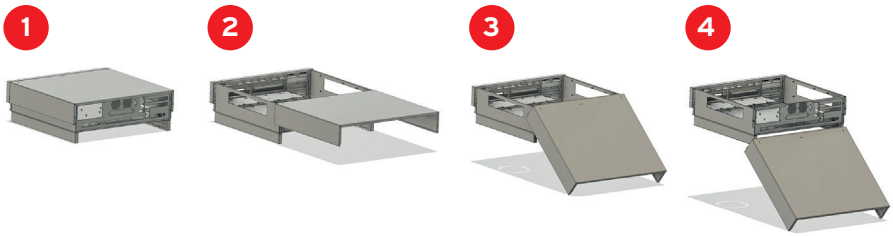

KIT
Cache
RAM
AmiKit
Dwload
Dropbox
CHECKMATE
A1500 plus
POWER
HARD DISK


VLC
Aminet
Rabbit Hole
OK
EaglePlayer V2.05 Registered
DELL

Checkmate 1500 Plus only

PLEASE READ before opening the case

Due to the design of the case you need to follow this process carefully to remove the lid and reverse it to put back on. If you don't the tangs that locate the lid in the front will hit the rear of the case. This feature is a product of the modular design so please bear it in mind when removing the lid.



1. Put case on a raised surface or desk with rear of the case at the end of the table or surface.
2. Pull lid until the tangs touch the rear then tip the lid downwards by 45 degrees. This will allow the lid to slide off easily.
3. To fit lid do this in reverse.
4. If you are not fitting the risers ensure you have the stick on feet fitted before fitting the drive tray screws or you may scratch the desk.

Warning

No responsibility for damage or injury incurred during the assembly of this system is accepted by iMica Ltd. You accept your responsibility as being qualified to build this case and any damages or injury is your responsibility.

This case is designed for people who have a working knowledge of computer assembly and not for those who have no experience assembling a computer. If you need help please contact us to locate somebody to assist you. This was made clear in all advertising and the Kickstarter, so you have been warned.

We have video tutorials to bring you up to speed but please be aware we cannot teach everyone the entire topic of computer setup, configuration and system design. That being said, we will try and support you as much as possible but before you ask please watch the videos and other material before contacting us. We want to help but we don't want to be buried by enquiries.

Advice on screw threads if stiff

When fixing screws or brass extender studs, please be aware this metal work is plated with a strong powder coating and sometimes this can cause problems with fitting the threads. Do not rush ahead, you can spin a cross head screw driver in the top of the thread to remove some paint and maybe try screwing in the normal screw first to test the hole before you fix motherboards and cause unexpected damage by forcing a stiff thread. We tried to get the best build quality but the down side of that is sometimes stiff threads in places.

Note: this version of manual includes pictures of pre production cases and simulated build situations for guidance only.

Parts included in base case

Whilst the case will be partly assembled when you receive it, it should contain at a minimum the following:

- 1 x base tray
- 1 x drive tray
- 1 x lid
- 1 x rear panel, four versions (choose one)
- 1 x front Panel
- 1 x power switch cover button
- 1 x led board
- 1 x power and HDD led cable
- 1 x power switch and cable
- 1 x cardboard box
- 1 x case protection pieces
- 1 x this manual
- 1 x plastic case bag
- 1 x fitting pack

(It is important to note that the power supply is never included in the basic case unless you order one as an extra.)

Fittings pack includes

- 7 x M3 – 4mm screws
- 7 x M3 – 4mm Hex stand-offs
- 10 x M3 – 6mm screws
- 4 x M4 – 8mm screws
- 14 x M3 – self tapping screws

(May already have some fitted in case)

Tools required

- A Cross head screwdriver (what we used to call Posidrive)
- A Spanner or Socket for the Hex studs

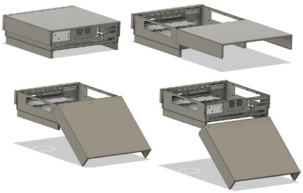
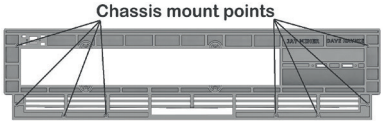
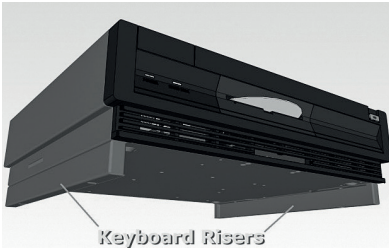
Also take my advice and use patience – rushing is a bad idea unless you have built alot of cases. Common sense really, but I feel you can't say this too much.

Amiga: Quick start guide

Whilst the Zorro board for the A500 and the power adaptor boards are optional we will assume you have purchased them for your Amiga case construction. If you have not purchased either the Zorro or power adaptor boards then you need to use the original Amiga power supply as the SFX PSU will not work without these boards.

Assembling the Amiga 500, 600 and 1200 motherboards is pretty similar. The only difference is the rear plate option you have chosen or the fact that the A500 has theoptional Zorro adaptor board that holds the ATX power socket. The A600 and A1200 need the smaller power adaptor board. The small power adaptor can be used on the A500 if the Zorro is not needed.

When fitting the A500 board you need to plug the Zorro card into the board before you fit into the case, but the A600 and A1200 just get fitted alone. It may help you to read section 8 as well.

1 Remove the lid and drive tray from the case, taking care to read and apply the warnings in the note in section 11.	
2 If the tray feet have not been fitted then fit them on now.	
3 If the front panel has not had all the screws fitted, please use the 9mm self tapping screws.	
4 If you are using the risers, screw them on now using the M4-6mm screws provided on the riser studs on each side of the case. Fit the soft feet to the underside of the risers.	

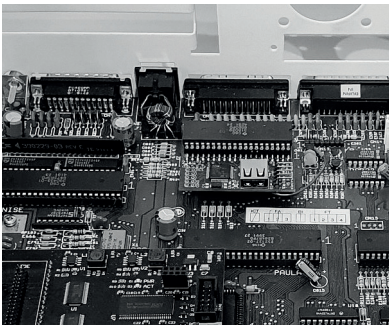
5 Using the motherboard, locate the base studs that match the holes in the motherboard you are going to use. The Amiga motherboards push right into the corner obviously, so the ports exit the rear of the case. Make a note of which studs are to be screwed into.

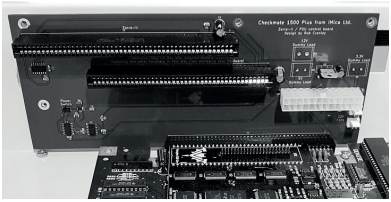
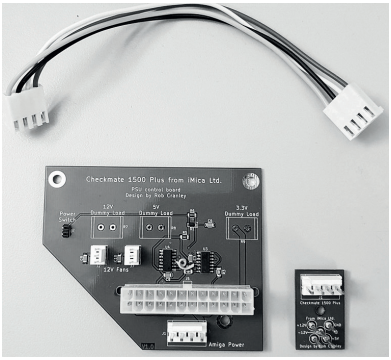
6 IMPORTANT – Ensure the threads in the studs that you are going to use are clean and the screw will fit easily, as per the note in section 1 about powder coating issues. This will make fitting easier!

7 Remove motherboard.

8 Fix the brass M3-4mm stud extenders into the base tray studs to raise the height and stop the other studs touching the motherboard.

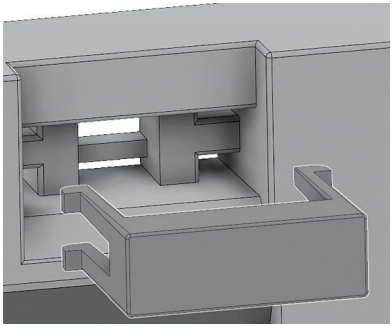
9 If you have an Amiga 500 and the Zorro board, plug the Zorro board into the Amiga 500 motherboard then screw both into the base tray. If you have an A1200 or A600 then just screw the motherboard into the base tray.



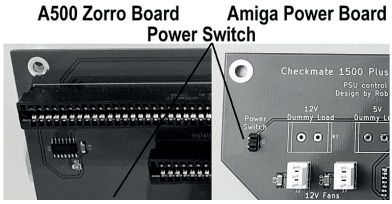
10 If you have the Zorro board, screw it to the side of the tray in the studs provided to hold firm.	
11 Fit the SFX power supply to the rear of the case on the right hand side with the fan facing the motherboard, and screw to rear of the case.	
12 If you have the small power adaptor, the big board screws to the rear using the same holes as the Zorro board but this time with the mounting studs on the right hand side. The small board plugs into the Amiga's normal power plug outside of the case. (If you have the 3D printed cover this will protect the pins at the back but may not be available.) Using the 4 way cable with the white connectors join the two boards together.	

13 Connect the 24 pin ATX power supply plug to the Zorro board or power adaptor.

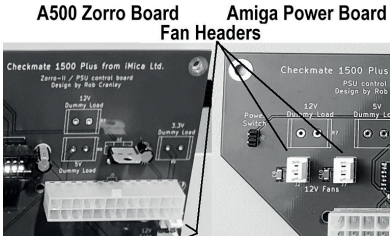
14 If the switch and button is not assembled, the cable goes through from the front top middle hole and when you pull it through the switch sticks into position. The button then pushes through and clips into place.

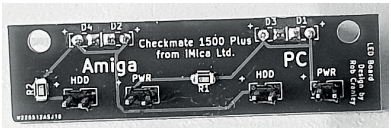
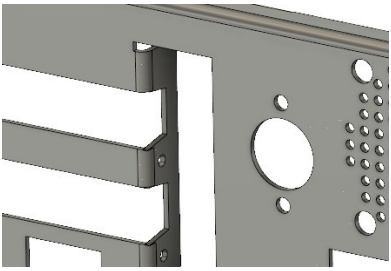


15 Connect the front power switch cable to the Zorro or power adaptor board where shown on the board. It does not matter which way round they go.

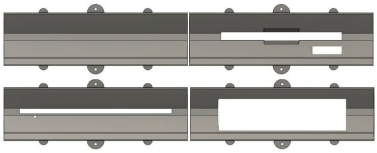


16 Both the boards have fan power headers. You probably won't need them, but they are there if you do. If you need more, then purchase a fan power splitter.

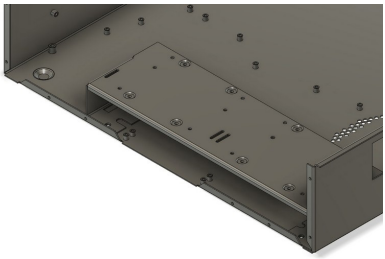


17 The LED board connects to the appropriate mother board headers shown. (See LED cable section below.)	
18 Connecting the keyboard depends on the method you have chosen and is beyond the scope of this manual. Please refer to the keyboard case manual. However, if you have the A500 keyboard kit then screw the internal connector to the rear panel of the case and plug in to the motherboard.	
19 The drive tray is complicated and fitting it depends on your configuration. For an Amiga I would suggest having a floppy drive in the middle, with the spare blanked off or fit a DVD etc. Hard drives and other items can all be fitted. Please see the section devoted to this later in this manual.	

20 Once the drives are fitted, ensure you have screwed the appropriate front drive panels into the case front before you fit the tray in place.



21 The drive tray is designed to easily locate into the case by pushing the tray assembly to the front of the case. Once located in the bottom of the tray, push to the front right hand side of the case if looking from the front. This will line up the holes underneath for easy fitting of the screws.



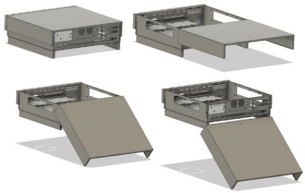
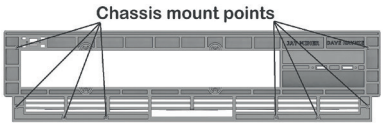
22 Connect all necessary cables, remember you need to know this stuff and once again I cannot advise you on your specific system.

23 Finally fit the lid and screw it on.

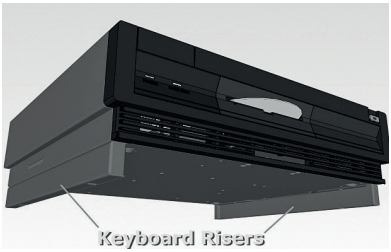
Mini-ITX / Micro-ATX build: Quick start guide

The only difference between these are the sizes of the board. Read section 9 first if it helps.

IMPORTANT – Read your motherboard guide in conjunction with this guide as there are differences between boards.

1 Remove the lid and drive tray from the case, taking care to pay attention to the caution note in section 1.	
2 If the tray feet have not been fitted then put them on now.	
3 If the front panel has not had all screws fitted, please use the 9mm countersunk screws.	

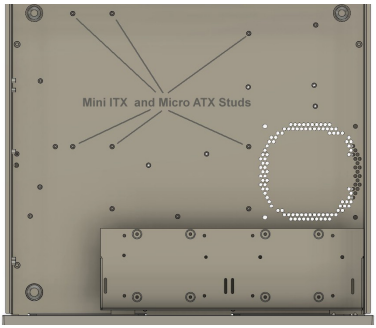
4 If you are using the risers, screw them on now using the M4-6mm screws provided to the riser studs on each side of the case. Fit the soft feet to the underside of the risers.



5 IMPORTANT – Ensure the threads in the studs that you are going to use are clean and the screw will fit easily, as per the note in section 1 about powder coating issues. This will make fitting easier!

6 Fit the port backplate panel that came with your motherboard if it is not already attached.

7 Locate the base studs that match the holes in the motherboard you are going to use. Various Mini-ITX and Micro-ATX form factor boards use different holes. The Tabor A1222 from AEON uses the Mini-ITX form factor.



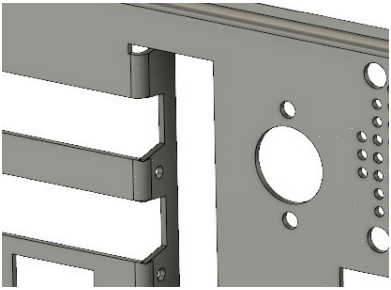
8 Fix the brass M3-4mm stud extenders into the base tray studs to raise the height and stop the other studs touching the motherboard. Pinch screws reasonably tight, do not overtighten.

9 Refit the motherboard and screw into the tray ensuring the ports fits the rear port panel correctly.

10 Fit the SFX power supply to the rear of the case on the right hand side, with the fan facing the motherboard and screw to rear of the case.

11 Connect the 24 pin ATX plug from the power supply onto the motherboard and if necessary the extra 4 pin CPU block.

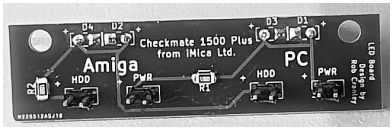
12 If the switch and button is not assembled, the cable goes through from the front and when you pull it through the switch sticks into position. The button then pushes through and clips into place.



13 Connect the front switch cable to the power switch connector on the motherboard.

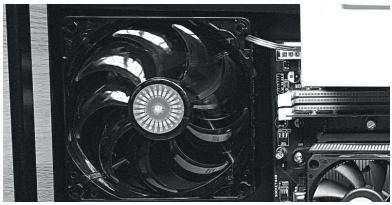
14 Fit any fans to the rear 50mm fan cut outs and connect to the motherboard.

15 The LED board connects to the appropriate mother board headers shown for power and HDD.



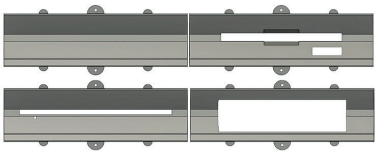
16 If you are using a water cooling block, this fits into the 120mm fitting in the base of the tray in front of the PSU. Space is tight so fit it with care and ensure the pipes will lay flat when the lid goes on.

17 If you are just fitting a 120mm fan then do this now.

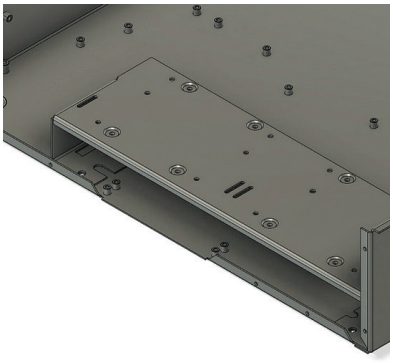


18 The drive tray is complicated and fitting it depends on your configuration. Please see the section devoted to this later in this manual.

19 Once the drives are fitted, ensure you have screwed the front drive panels into the case front before fitting the tray.



20 The drive tray is designed to easily locate the fitting by pushing the tray assembly to the front of the case. Once located in the bottom of the tray then push to the front right of the case. This will line up the holes underneath for easy fitting of the screws.

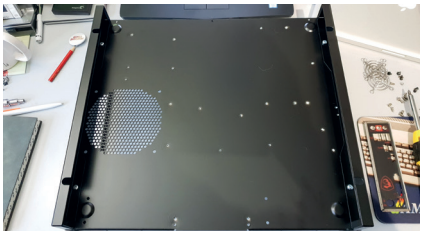
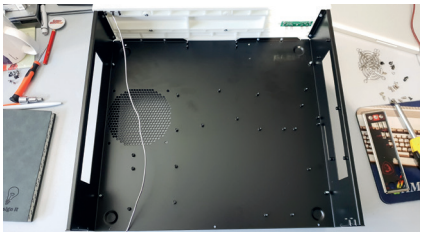
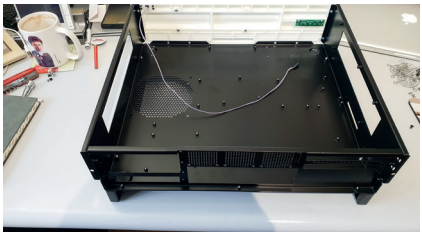


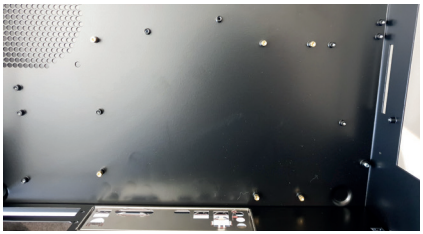
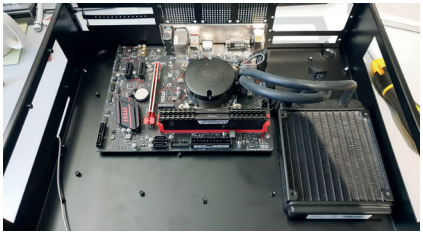
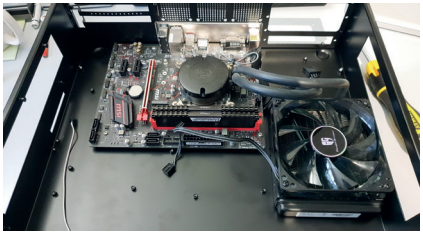
21 Connect all necessary cables, if you've done this kind of thing before you will know what to do.

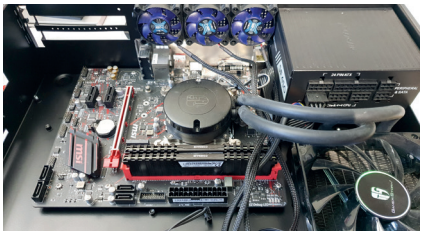
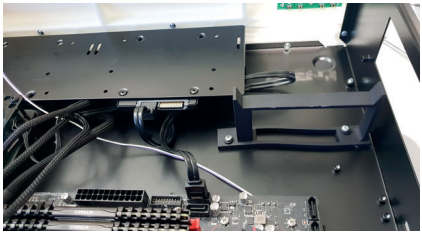
22 Finally fit the lid and screw it on.

Building my VR system

Hopefully you read section 6a, but this is just to show my system and the water cooling fitment. You may find when your case arrives the case assembly may be done.

1 Base tray ready for assembling.	
2 Fitting of the plastic front panel, yours will match tray colour. Note LED board and power switch cable.	
3 Mounting of rear modular panel in this case the PC Horizontal slot version to fit a GPU.	

4 This shows the Motherboard rear port panel fitted into the case rear panel.	
5 Once you know what screw holes you need, mount the brass stand-offs.	
6 Here you see the assembled MATX motherboard, with the 120mm radiator fixed into place.	
7 Screwing the 120mm fan to the top of the radiator.	

8 Drive tray only has one 2.5" drive underneath, see section later about this.	
9 SFX Power supply fitted, note tubes for water cooler and ensure they can bend down without trapping.	
10 Rear shot with motherboard ports visible and fans fitted.	
11 Here you can see the optional 3D printed GPU support, note this is a little warped, a new design is coming.	
12 Finished build with GPU fitted, now just mount the lid.	

Case form factors overview

Classic Amiga or Mini-ITX/Micro-ATX

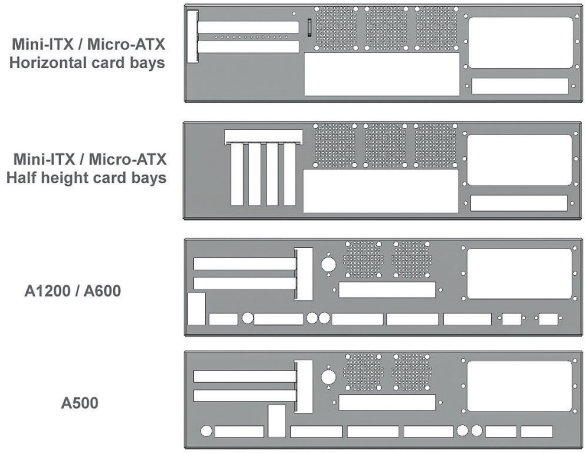
A key design feature of these cases is the modular design that enables it to enclose multiple types of computer systems or even two at once. While the tray has mounting studs for all supported motherboards, it is the modular rear tray that makes it powerful and flexible.

Supported motherboards:

- Commodore Amiga A500
- Commodore Amiga A600
- Commodore Amiga A1200
- Mini ITX motherboards
- Micro ATX motherboards

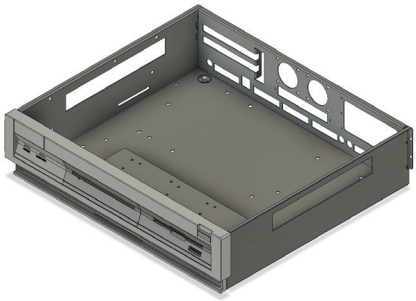
(Over time we may add more to this list)

When you ordered your case you will have chosen one or more of these rear panels that will be screwed to the base tray with the screws supplied.

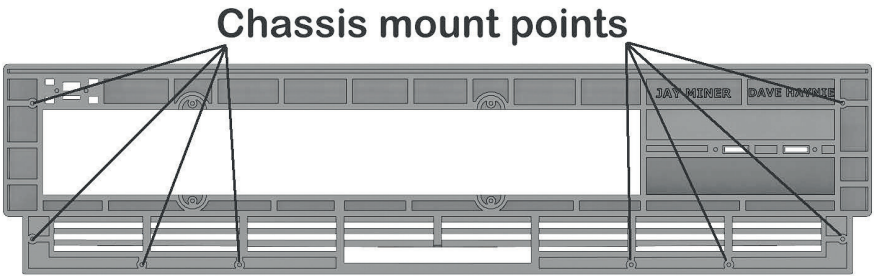


Assembly of case front and rear panels to the base tray

Your case is probably mostly assembled for you ready to go but just for clarity here is how it is fixed together, if it is either not assembled or you want to make some changes.



ABOVE: Picture of tray, front and rear panels.



ABOVE: Picture of the front panel with screw fixing points.

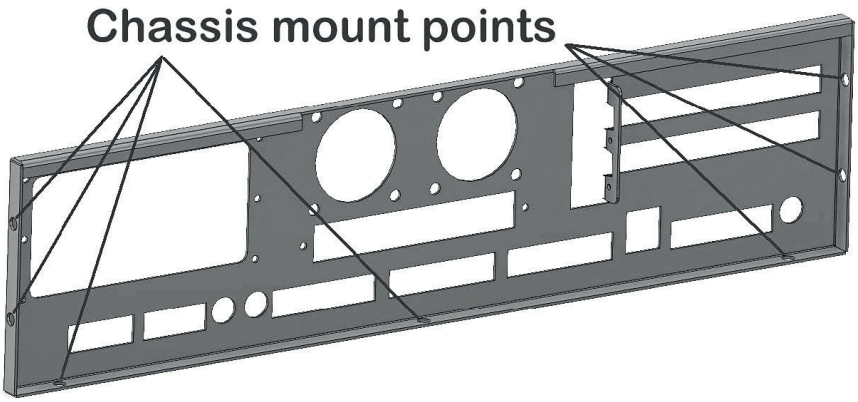
Front Panel

You should use the 7 x M3 self tapping screws to fix the front to the base tray. Once this is fitted it should not ever need removing, which is why we

do not have the brass screw fixings. This also helps keep the cost down The A1200/600/500 lids can be removed and refitted many times.

Rear Panel

As you can see the A500 and PC rear panels have 7 x M3 screws to hold it in place and the A1200/A600 rear panel does not. This was removed due to the power port position which would be blocked by the right hand lower stud. This does not weaken the rear panel.



ABOVE: Picture of rear panel screw fixings show both types.

Card bay fixing

When you fix the cards you may find it tricky to hold the screws and fix in, this is a by product of making the design suit a lot of systems. However, using patience they are actually easy to fit with a small cross thread screw driver.

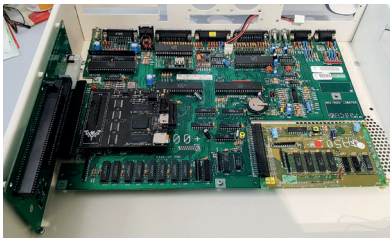
This is a bit more acute with the GPU fitting but once installed you can forget about it. Remember patience is the answer here.

Building Amiga motherboards into the case

Assuming you have ordered the correct rear ports panel and fitted it to the rear of the tray using the 7 x M3 – 6mm screws (in the case of the A500 rear panel) or 6 x M3 – 6mm screws (in the A1200/A600 version). The reason for the difference is that the A1200/A600 motherboard power connector is very close to the edge and unless modified the stud would block the adaptor board. In any case, the careful design means that 6 screws is more than enough to hold it in place.

1 A500 motherboard fitting, no drive tray or PSU in place.

2 If you have the A500 Zorro adaptor board, fit it onto the A500 motherboard and lay the whole assembly gently in the case and offer up to the rear ports. Now look through the motherboard fixing holes and find the matching studs underneath.



ABOVE: Picture of Zorro board and A500 board in tray and screw locations

3 Fix the brass stud extenders into only the tray studs that are under the holes.

IMPORTANT – if you use metal studs elsewhere you will short out the motherboard and power supply. If you feel the need for more support then purchase identical size plastic extenders and fit them instead.

4 Now screw the motherboard, gently at first, to the stud extenders and once all are in you can tighten them up, pinch tight only please.

5 Now fix the screws through the Zorro board into the tray sides to support it for fitting cards.

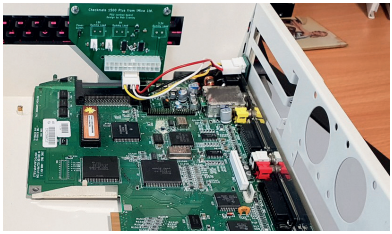
6 A1200/A600 motherboard fitting, no drive tray or PSU in place

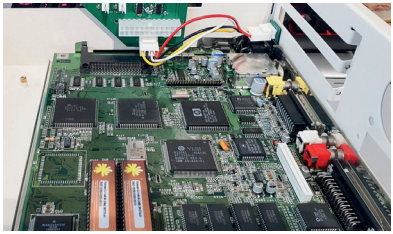
ABOVE: Picture of A500 and Zorro board fixed in place.

7 Assuming you have the drive tray and PSU removed from the base tray, lay the motherboard into place butting up to the corner with ports through the rear panel. Look through the screw holes and locate the studs underneath. Remove motherboard and fix the brass stud extenders to these holes located.

IMPORTANT – if you use metal studs elsewhere you will short out the motherboard and power supply. If you feel the need for more support then purchase identical size plastic extenders and fit them instead.

8 Now screw the motherboard, gently at first, to the stud extenders and once all are in you can tighten them up, pinch tight only please.





ABOVE: Pictures of A1200 and A600 board's place, note shield should be removed.

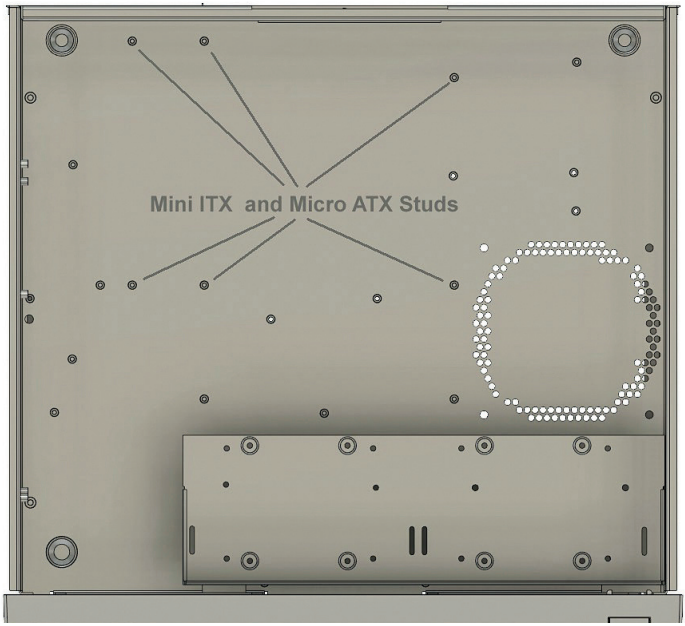
Building a Mini-ITX or Micro-ATX motherboard into the case

Firstly we will assume you have ordered the correct rear ports panel and screwed it to the rear of the tray using the 7 x M3 – 6mm screws in the case of both boards.

IMPORTANT – However, some motherboards do not have a corresponding screw hole and have circuitry above the stud. Therefore, you must NOT fix an extender unless there is the appropriate mount hole in the board.

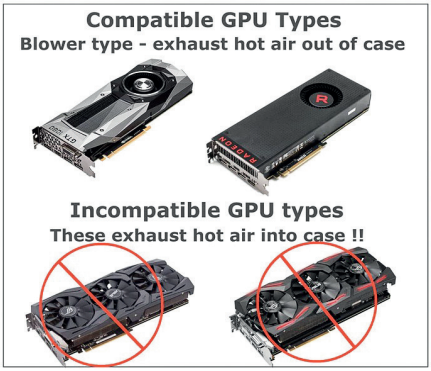
Get your rear panel rectangular plate and push it into the rear cut outs on the rear ports panel. Next lay the motherboard into position and note the holes that need mounting stud brass extenders and fix accordingly.

Lay the motherboard in place with the ports on the board fitting into the rear port plate that came with the board and then screw the motherboard into position finger tight at first and then pinch tighten the board down. This is the same with either Mini-ITX or Micro-ATX board, noting that the Micro-ATX boards are just a little bit wider.



ABOVE: Tray showing Mini-ITX and Micro-ATX studs. The above picture shows you where to fix the brass stud extenders for the two different type of PC motherboards.

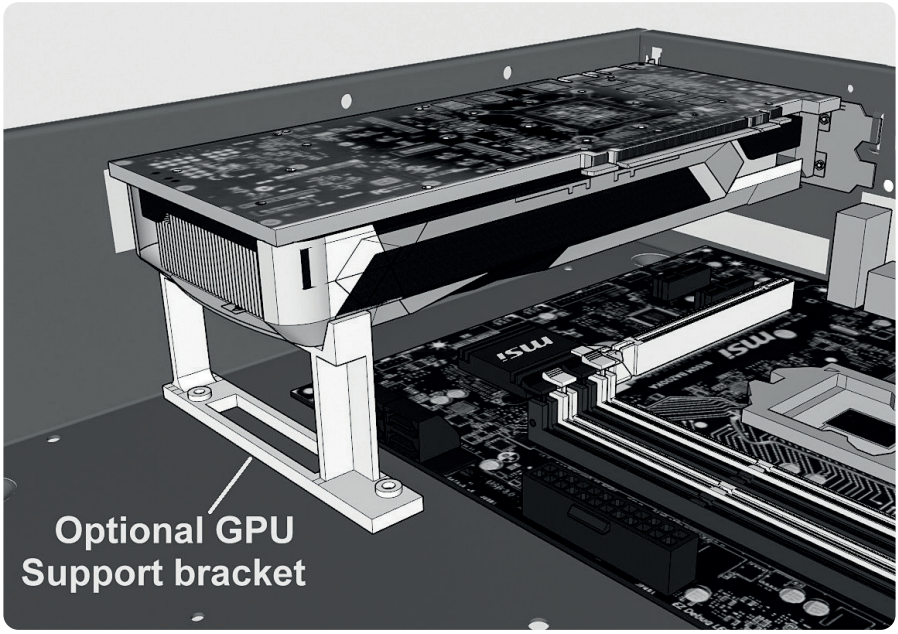
Important GPU fitting information



We have worked hard in building this case to ensure that the design gives you the best experience. However, something which you have to watch out for is heavy overclocking, as was mentioned in the Kickstarter. To get the best from this system you must select a blower style GPU from either NVidia or AMD. The case is designed to take air from the front of the case into the fan and then exhaust at the rear of the case. Any residual heat in the case is removed by the rear panel trio of quiet fans, but these cannot cope with excessive heat from an incompatible GPU type. GPU Choice, warning, blower type only

Optional GPU support bracket

We offer this as an option on our Shapeways.com 3D printing service or you can get the design from us to print yourself. This screws into two of the A500 mount holes and holds the GPU in place without actually being fixed to it. It is fixed at the rear of the case.


Optional GPU
Support bracket

Fitting the power supply

This case is considered a small form factor case and as such needs a small form factor power supply. In the past they were also not very powerful but with the rise of these small systems the SFX power supply standard was created and is serviced with a range of options.

For the Amiga whilst you can buy a more expensive and almost silent SFX power supply, you can pick up a basic 300w version for around £30/$40 that will supply all an Amiga would ever need.

However, if building a PC then you really should be looking at a 450w or higher SFX power supply. If running a high end GPU then 600w should be a minimum.

IMPORTANT – It is YOUR responsibility to know what you are doing and pick. the correct parts to go with this system and not the responsibility of the case designers or iMica Ltd.

There are four fixing holes in the rear of the tray to mount the power supply. The screws for the power supply are not included in the case, these are supplied by the PSU manufacturer.

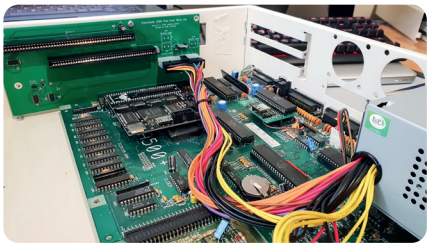
Once you have fitted the power supply you can connect the main ATX power connector to the motherboards, as per the instructions in the manual for the PC Mini- ITX or Micro-ATX motherboards.

ABOVE: Picture of an SFX power supply.

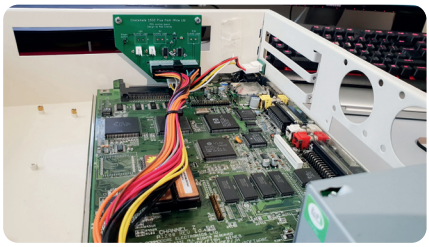
Connecting power supply to Amiga boards

For the Amiga 500, if you have the Zorro adaptor, fit the 24 pin ATX connector to the Zorro board power connector. For the A1200/600 (or the A500 if you did not want the Zorro board option) fit the 24 pin ATX connector to the power adaptor card shown below.

IMPORTANT – These pictures show the shield still attached, these MUST be removed or they will not fit, this was to save time in preparing manual.



ABOVE: Zorro board with power cable connected.



ABOVE: Power adaptor board setup and connected to PSU.

Fitting of the power to whatever drives etc. you have is outside the scope of this manual and you need to research this yourself. However, you may need additional adaptors to suit the drives that you fit and this is always "fun" on the Amiga, but in general the PC should be fine with the leads you have.

Setting up the drive bay

The drive bay will undoubtedly be a source of frustration because while it technically can hold 4 drives, this is dependant on what else you are fitting into the case. If all you had was a power supply and maybe a small Raspberry Pi then the area around the drive tray is relatively free. So for example you could mount 2 x 2.5" SSD or magnetic drives under the tray with a 3.5" floppy and 5.25" DVD drive above. You can fit 3.5" hard disks above and below. In most PC's you will probably only want one or maybe two 2.5" drives, say an SSD and a magnetic drive.

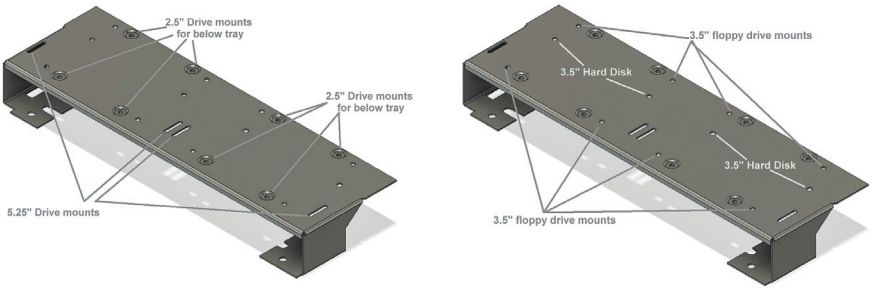
For example if you fit a water cooling system in the 120mm fan bay then you may not be able to fit a drive on that side either under or over it. However, there is still room inside the system and at some point we will make mounting plates to extend this.

Basically what we are saying is that we provide you four potential bays but depending on your configuration you may not be able to use them all without some clever thinking. For example, turning the internal drives through 90 degrees and fixing with two screws, something like that. The key to all this is a bit of forward planning.

Feel free to drill new holes in the tray for internal fitting of extra drives. Your choice.

Fitting the tray

We have designed the tray so that when you fit the tray, it will automatically align with the screw holes. To do this, just push the tray to the front and right hand corner. Now the screws are easily accessible underneath.

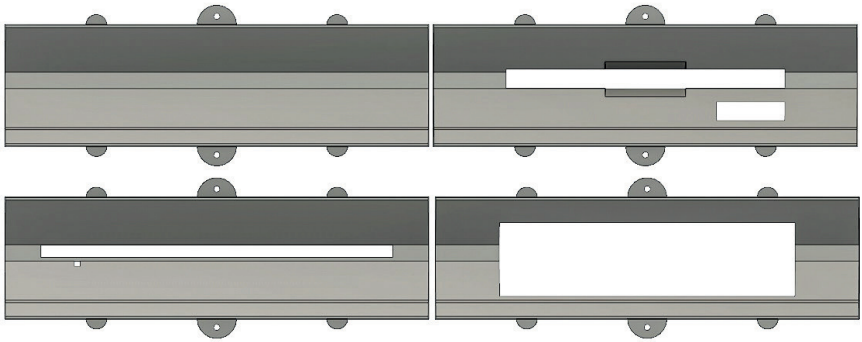


ABOVE: Screw hole positions and potential drive fixing.

Front panel insert plates

You will see that your case comes with a couple of drive insert plates that mount into the front main panel, with two screws in the rear holding them in place. If you remove one then a full size 5.25" device can be fitted. Four plates are available and can be added as options.

1. Blanking plate
2. 3.5" Amiga floppy plate
3. 5.25" slot CD/DVD/BluRay device plate
4. 3.5" drive bay hole plate



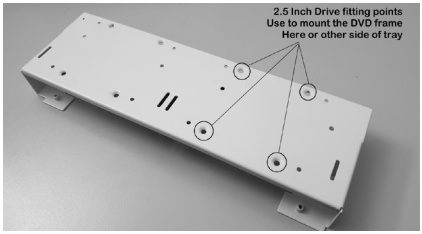
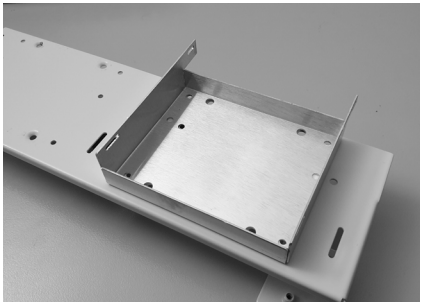
ABOVE: Front panel insert plates.

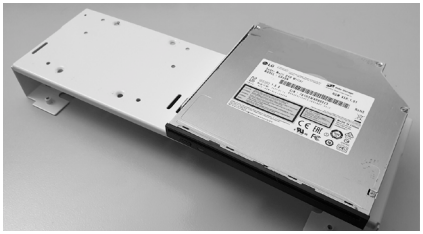
Example drive fitting positions

Here are some example fitting positions, and as usual your mileage may vary, which basically means you can build a system how you want and with the constraints you have. Basically the options are so varied we cannot really advise you because we don't know what you personally are working with.

ABOVE: Various drive fixing on tray.

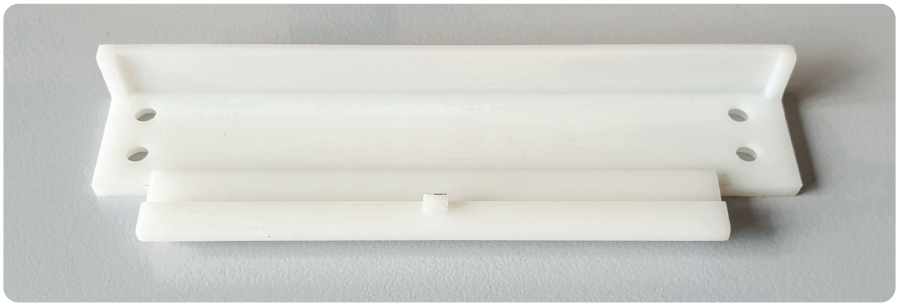
Fitting the DVD drive frame

1 This is the main drive tray, the DVD mount frame can be mounted using the holes shown.	
2 The DVD mount tray fixes to the 2.5" drive mount holes using 4 x screw and nuts. If you have a 2.5" drive you can screw straight through the mount frame into the drive and hold both at the same time.	

3 The DVD drive fits on the mount frame and you need to test the fitting position in place so that the front of the drive just misses the DVD front panel.	
4 Either side of the frame are four slots to allow you to screw the drive to the frame. You may have to drill different holes but these slots should fit most. Note we do not supply the screws for your DVD drive.	

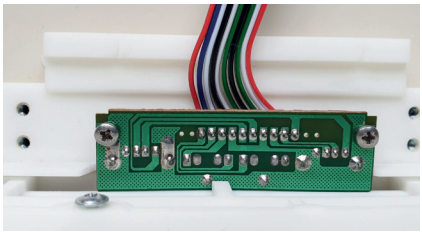
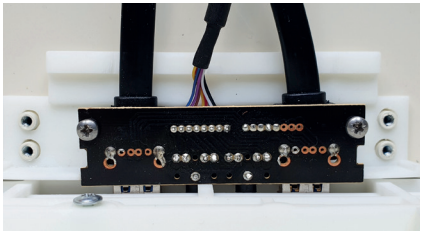
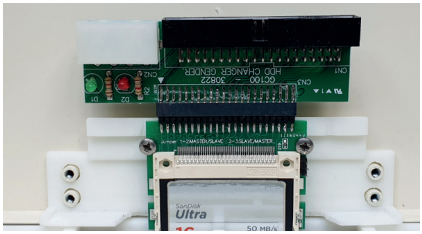
Fitting the front panel blank/utility bar

Matching case colour



ABOVE: This is a prototype so not final, hence rough cuts.

1 If you just screw the part in the front like this...	
2 It tidies up the front, the gaps are there due to the moulding process and having to have a draft angle.	

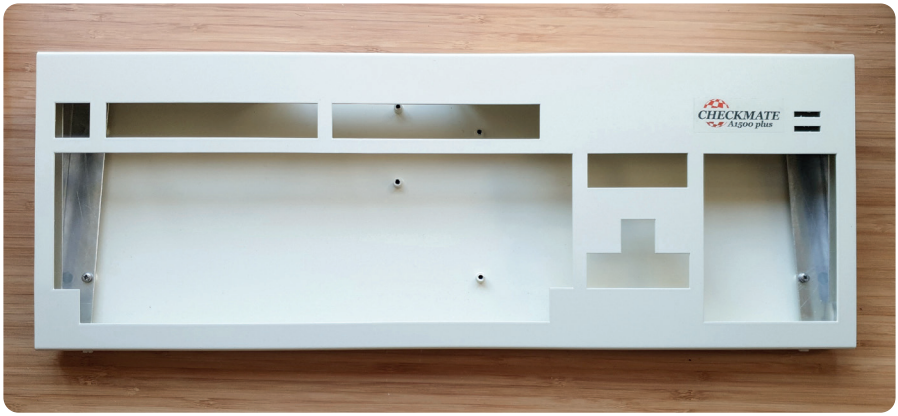
3 However, this is a way of fitting a USB2/Audio parts. You need to chop some of the up stand away and adjust to fit your adaptor but with a little tweaking...	
4 You end up with this.	
5 Here is a USB3 version, note this one is a bit more tricky and I had to drill holes out to go flat.	
6 Again with a little work you get this.	
7 Or you can fit one of these just adjust the bracket to fit and then you get...	

8 And this is what you get.	

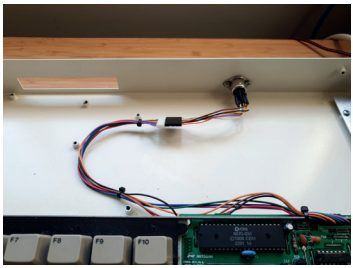
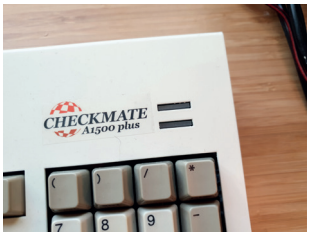
It is important to understand this is not perfect for everything but it is a start and you could 3D print from the design and modify to suit if you wished.

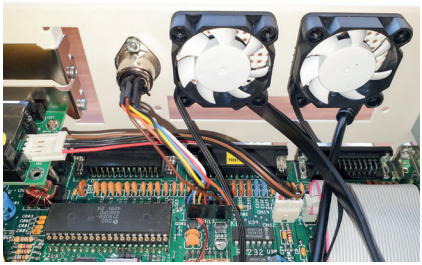
Assembling Amiga 500/1200 keyboard case

This case is designed to hold the Amiga 500 and 1200 keyboards, and also the new Kipper2K variants as well. However, fitting and setting up is very different and in the case of the 1200 needs extra components not supplied. You can see the left and right keyboard supports, so they slot in the bottom in the U bend and screw at the top by pinching with M3 screw and washer.



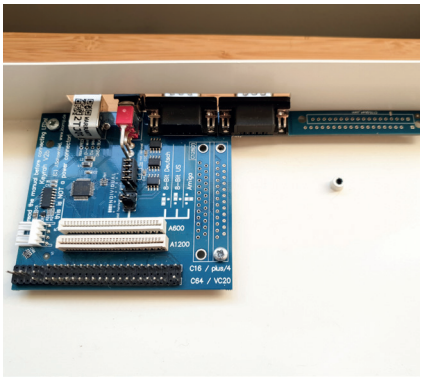
Amiga 500 keyboard assembly

1 You need the A500 keyboard cable kit for this. So screw the cable without the LED fly lead into the rear of the case as shown. Then connect to the keyboard cable.	
2 Now drop keyboard into the lower supports.	
3 With the M3 screw and washer, pinch the top of the keyboard into place on both sides.	
4 Put the lid on ensuring the LED's meet the holes, as they are on bendable stalks just adjust them so they fit correctly.	

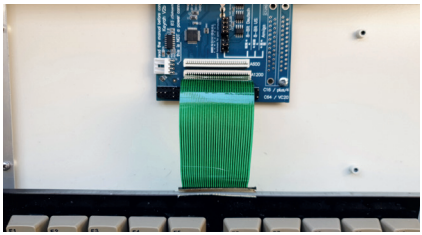
5 Use the included white Nylon screws to screw lid onto the base.	
6 The other cable with the LED fly lead screws into the back of the main case and connects to the keyboard connector. Make sure the empty hole matches the missing slot.	
7 Now use the main cable to connect the two and you are done.	

Amiga 1200 keyboard assembly

1 You need to purchase a Keyrah2 from Individual computer at icomp.de, this is then screwed into place. Note there is an LED board coming at some point in the future but note it will only have power LED working as it is not possible to get the floppy access light working.

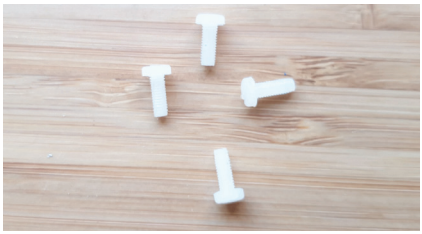


2 Now connect the A1200 ribbon cable as shown into the bottom white connector. It is a little stiff but be gentle and it will go in fine.



3 Now locate the keyboard as such.

4 As you can see it is held in place at the bottom and using an M3 screw and washer, you can pinch it into place on both side.

5 Put the lid on and using the white nylon M3 screws fix it tight.	
6 Finally you need a printer cable type USB to connect the keyboard via USB. However, to do this you need to purchase something like a SUM keyboard adaptor for the A1200 that gives a USB keyboard connector.	

Boards overview

Written by Rob Cranley

Technical information

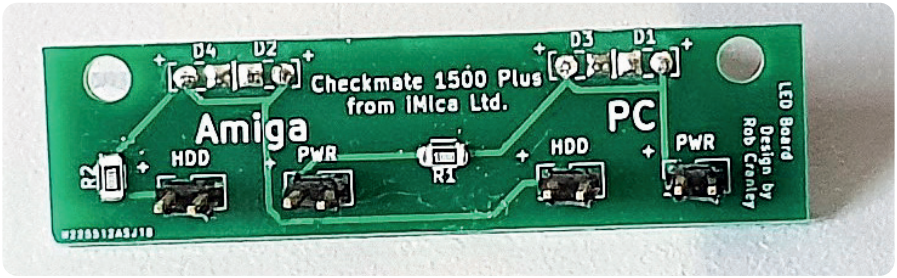
The Checkmate 1500+ case can use a number of additional electronic parts, depending on the intended configuration. Some of these are supplied with all cases, others are specific to particular configurations. Technical details on these can be found below.

Power Switch

The power switch used in the Checkmate 1500+ case is a momentary switch, that is, it only makes an electrical connection while pressed and breaks the connection as soon as the applied force is removed. This is the standard type of switch used in modern PCs, so it will work directly with PC motherboards and other devices supporting the ATX power supply standard. Amigas as standard do not have this capability, typically using an on/off switch to control the mains power to the computer. For this reason, Amiga motherboards used in the Checkmate 1500+ case will require additional hardware to properly use an ATX power supply. Compatible solutions for the Amiga 500, 600 and 1200 are available as optional accessories for the case. These are detailed below.

LED PCB

The Checkmate 1500+ case is provided with an LED PCB which provides two double-LED indicators on the front panel, one for power and one for hard drive access. The same board is used for both PC and Amiga use, and provides connectors for either use case. This is because Amiga



motherboards require resistors in series with the LEDs, whereas PCs typically incorporate the resistors on their motherboards.

The connectors are labelled for PC or Amiga use, indicating whether the connection includes the resistor in the circuit (Amiga) or not (PC). The connections for all functions are a standard 2-pin, 2.54mm header. This means that the an alternative connection configuration is possible, for example using the power LED from the Amiga motherboard but using the hard drive LED from a SCSI controller card, which may incorporate its own resistor like PCs.

LED Cables

A number of cables are available for the LED PCB to accommodate the different possible motherboard options. The Amiga 500 cable connects to the rightmost three pins of the keyboard connector, which are separated from the rest of the connector by a missing pin position and

provide power and floppy drive activity signals. This allows the hard drive LED to be used for indicating floppy disk access, although the HDD LED connector can be left unconnected from the LED PCB should this option not be required. Since the A500 does not support a hard drive activity LED, any such indication would be required to come from any additional hard drive controller hardware, possibly using the PC hard drive LED connection instead. It's possible to connect this connector backwards; pin 1 is marked on the connector with a small embossed triangle, and should be fitted such that pin 1 is to the left, next to the empty pin position.

The Amiga 600 cable connects directly to the A600 motherboard LED connector and provides power LED and hard drive signals. This connector can only be fitted one way.

The Amiga 1200 cable connects directly to the motherboard LED connector and provides power LED and hard drive signals. This connector can be connected backwards; pin 1 is marked on the connector with a small embossed triangle, and should be fitted such that pin 1 is to the left of the connector, towards the RAM chips in the centre of the motherboard.

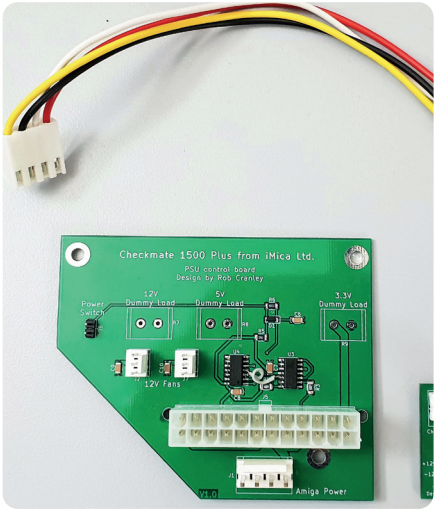
PC motherboard cables are simply straight through 2-pin connectors at both ends. Your motherboard manual may need to be consulted for proper connection.

Polarity of all cables is reversible at the LED PCB. PC cable users will need to make use of the colours of the cables to track the correct orientation. The positive signal input is indicated on the LED PCB. Pin 1 of the connectors on the Amiga cables is the negative input.

Power Control PCB / Power Link PCB

This PCB provides the functionality required to interface a standard ATX-compliant power supply with an Amiga 500, 600 or 1200. It

provides circuitry to translate the momentary push-button action of the standard power switch into the latching, debounced control signal the power supply expects, allowing the supplied power switch to turn on and off the Amiga as expected. A standard 24-pin ATX connector is provided for the power supply; a 20-pin connector will also fit and work fine. This is a purely hardware control system – no software control of the power supply is currently possible.



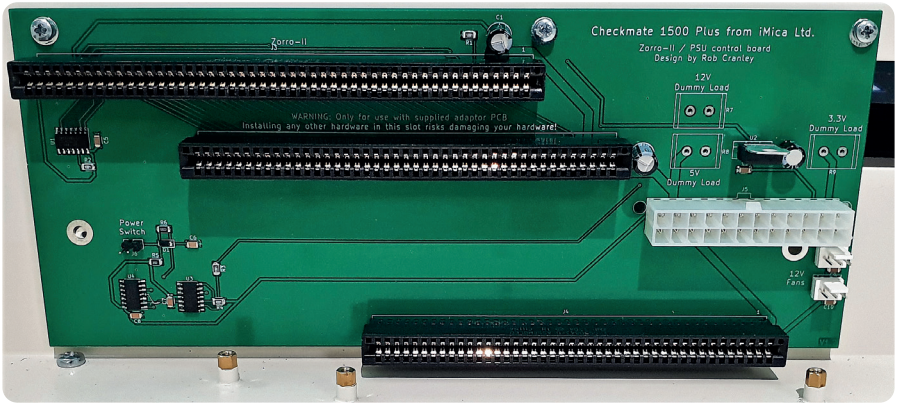
In addition to the standard 2-pin header on the board to which the switch is connected, there are also two 3-pin headers available for connecting fans. These are simple 12V supplies which will allow any standard 12V fan connected to run at full speed. No speed control or monitoring is done.

The 4-pin Amiga Power connector provides the voltages the Amiga needs (+5V, +12V and -12V), which can be used with the accompanying Power Link PCB to provide power to an Amiga 500, 600 or 1200. This small board contains five pins which replicate the function of the original power supply plug, and will only fit in one orientation. A short cable connects the Power Link PCB to the Power Control PCB.

Pads on the PCB are provided for dummy loads on the 3.3V, 5V and 12V rails of the power supply. Ordinarily these should not be required – see the note below regarding power supplies for details.

Zorro-II / Power Control PCB

This board provides all of the power supply functionality of the Power Control PCB described above, but also provides additional expansion



options for the Amiga 500/500+. It connects to the Amiga 500/500+ sidecar expansion connector and provides power to the computer through this, so the extra Power Link PCB and cable are not required. This connection method allows the board to also provide both a Zorro-II slot for standard Zorro-II expansion boards, and an internal copy of the Amiga 500/500+ slot for use with such expansions as the ACA500+.

The Amiga 500/500+ sidecar expansion slot contains most of the Zorro-II signals already – the Zorro-II / Power Control PCB adds a couple of missing lines and rearranges them to suit. In particular, a second 7MHz clock signal is missing and is regenerated from the available clocks, and the -5V supply is missing and regenerated from the -12V supply. Older ATX power supplies also provide -5V, but this has been phased out so that it is missing entirely in newer supplies, therefore the -12V supply is used to generate this rail instead.

The Zorro-II slot is very similar in most ways to those inside an Amiga 2000, except that does not provide any buffering or DMA control. The lack of buffering should not be a problem for the vast majority of cards since buffering generally only becomes necessary when using a number of Zorro-II cards together. Similarly, the lack of DMA control (as provided by the Buster custom chip in the Amiga 2000, 3000 and 4000)

shouldn't cause any problems as most cards don't use DMA, and even those that do will still work fine provided they're the only device on the bus that uses it.

This board is specific to the Amiga 500/500+, and cannot be used with any other motherboard.

Some notes on power supplies

Compared to a typical PC, Amigas use very little power. An unexpanded Amiga 1200 uses less than 10W for example, and with an '030 CPU and hard drive added to the system the power consumption is still most likely less than 15W. PC power supplies tend to be marketed on their maximum power output capacity, as this is critical for today's power-hungry CPUs and GPUs. However, their design typically also has a minimum power draw requirement, which is a minimum amount of current that is needed to flow in order to properly regulate their output. Many power supplies will shut down if they try to start without the minimum required load (in this case, the PSU will run for a second or two before shutting itself down), but some – especially cheaper models – will allow their output to vary and drift, potentially damaging the Amiga.

Minimum load conditions aren't often published in the specifications of a PSU, but they can sometimes be found in the technical data sheet if one is provided. As a rule of thumb, the minimum load requirement is lower for power supplies with a lower maximum output – 100W is likely to be more than enough for any Amiga setup. Good quality PSUs will also tend to have a lower minimum load requirement than poor quality units. A PSU should be selected that has a minimum load requirement which can be met by the Amiga and its peripherals.

In addition, the PSU picture is further complicated by the fact that PSUs generally have a main output rail, to which all the other rails are secondary, and which is the rail for which the minimum load is most important. This used to be the 5V rail, which was the most heavily used

rail in the past, and is the most heavily used rail in the Amiga. But in more recent times, PSUs instead have used the 3.3V rail as their main output, which the Amiga doesn't use and therefore doesn't provide any load at all to meet the minimum loading requirements. Even more recently, to cope with the huge concentrations of power required in CPUs and GPUs, the 12V rail has become the main output, with PCs then converting this supply to lower voltages locally for whatever parts need it. The Amiga uses small amounts of 12V power, which in combination with extra peripherals like mechanical hard drives and fans may or may not meet the supply's minimum load requirements. Using the 12V rail as the main power source for the computer has meant that the 5V rail has been relegated to much lesser duties, and as a result its capacity has been reduced in modern supplies. There should still be plenty available for Amiga use, but it's something to bear in mind – any PSU that offers less than 4 or 5A on the 5V rail might cause problems on a heavily expanded setup.

In order to help deal with these power supply concerns, solder pads have been provided on both of the Power Control boards to allow dummy load resistors to be added to the 3.3V, 5V and 12V rails. This should be considered a last resort and only used if no suitable power supply can be found. The exact values of the resistors required would need to be calculated depending on the individual supply's minimum load requirements, but for reference, the following table shows the dummy load (current in amps, power in watts) provided by certain resistors on each rail:

Rail	15 Ohm	10 Ohm	5 Ohm	2 Ohm
3.3V	0.22A / 0.73W	0.33A / 1.1W	0.66A / 2.2W	1.65A / 5.4W
5V	0.33A / 1.67W	0.5A / 2.5W	1A / 5W	2.5A / 12.5W
12V	0.8A / 9.6W	1.2A / 14W	2.4A / 28.8W	6A / 72W

Current and power dissipation of dummy loads can easily be calculated for any desired values of current or resistance. First, we need to figure out either the current flow for a given resistor, or the value of resistor required to pass a given current. From Ohm's Law:

Current (A) = Voltage (V) ÷ Resistance (Ω)

Therefore:

Resistance (Ω) = Voltage (V) ÷ Current (A)

Once we know the current, the power dissipated by the resistor is simply:

Power (W) = Voltage (V) x Current (A)

The power dissipated in watts is turned into heat by the resistor, so the higher the number of watts, the more heat that dummy load will add inside the case.

Also, be sure to use resistors that are rated to handle that load. A generous safety factor of 2 is a good idea if possible, so for a 5.4W dissipation, a 10W resistor would be suitable. As power rating increases, so does the physical size of the resistor – a 100W resistor can be 8cm long, 4cm wide and designed to bolt onto a metal chassis instead of being soldered to a PCB for example. Also, note whether the resistor needs a heat sink fitted – some resistors are designed to be used in conjunction with a heat sink above certain levels of power dissipation. Finally, it's unlikely that you'll need dummy loads on all rails, typically adding a load to the primary output rail should be enough.

Rob Cranley
Engineer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Graham Sivill
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Jens Bagh
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Peter Membrey
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Ricardo Sardo
Richard Brayshaw
richard brayshaw
Richard Hunter
Richard Sheller
Richard Wilson
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Robert Ellis
Robert Neil
Roberto Crespo-Joglar
Robin van der Hoeven
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Ronald
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s.kameyama
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Sascha Hesse

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Sigbjorn holmvik

Silke Block

Simon Ward

snz138

Socrate20000

Space Commander Travis

Starius

Stephen Gerzack

Stephen Marshall

Stephen Orlando

Stephen Palmer

Steve De George JR

Steve Hodson

Steve Openshaw

Steven Baker

Stuart

Stuart Payne

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Toby Morrison

tristan.asv.harman@gmail.com

Twinkle Pop

twixn

Üllar Soon

Vincent Taylor

Vit Sindlar

vonDorffy

WavemStudios

Wayne Starr

Werner Brennecke

Willem Drijver

William Manganaro

William Ruzicka

Xavier CAPERAN

三浦茂樹

Patreon backers

This is a very important list because these people support me with no offer of anything in return. Therefore this money allows me to really experiment and buy lots of parts to find the best like Keyboards, Keycaps and other items. Also I can support hardware and software developers know this money is coming. Thank you.

Special high support backers

Nathen

Matthew McGee

malfunct

Alan Haynes

Larry Garlock

Christian Dannie Storgaard

maryoosh_k

Chris Forrester

Robsoft

Roy Gillotti

Mattie Whittle

Mark Walker

Tarjei S. Tjonn

Al Stremming

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Paul Chambers

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Tom Kiddy

Robert Downs

Guy Black

Kim Jensen

Miroslaw Zurek

Christopher Stokes

Justin Cremin

Carsten Lervad

Richard Nicholls

Steve Korell

More backers including those who previously backed me

10 MinuteAmigaRetroCast
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Aaron Wald
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Alain Riou
Alan Anthony
Alan Turner
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Alex Knapik
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andreas wheeler
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Gunnar Wretlind
Ian Cross
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Lemaru
Leon Seremelis
litwarski
LIV2
Lukas Peruzovic
Magne Karlsen
malcolm harvey
Marco Rolappe
Marek Grabowski
Maria Engstrom
Mark
Mark 'Kurbeco' Simpson
Mark Adams
Mark Anthony Breckell
Mark Casteleijn
Mark Wright
Markus Eilers
Markus Siegemund
Marshall Kiker
Martin Erhardsen
Martin Lindholm
Martin White
Martin Wilkinson
Mathieu
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Petri Kapyla
Phil Clark
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Tor E Hansen
Vincent Taylor
Virtual Dimension
vonDorffy
Wai Tao
Walter Smart
Wayne Booker

EDU Arana – UnAmiga dedication

The UnAmiga ITX board is the sum of all the knowledge that I've learned with the UnAmiga a500 and reloaded versions.

I'm very proud of all of the UnAmiga headers that i've released because they are made with all the care and love to the Amiga platform.

I always say that the most important thing about the UnAmiga's project is the people involved in it, especially on the core part.

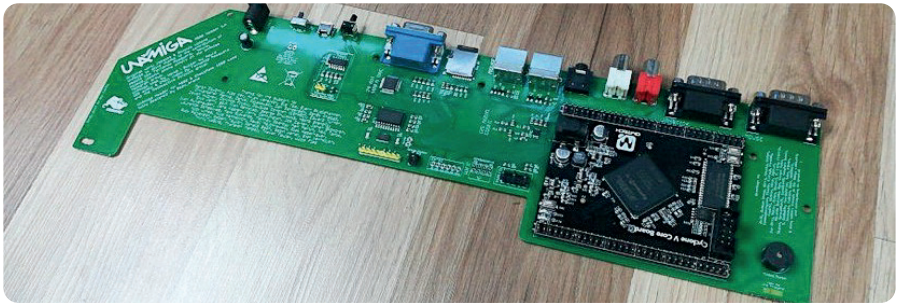
Thanks go to:

- Fernando Mosquera a.k.a. Benitoss
- Aitor a.k.a. NeuroRulez
- Ramón a.k.a. Rampa069
- Ricardo a.k.a Kyppp
- Miguel a.k.a mfides on the usb part and many others

Finally but not for that less important is the user's feedback, all the support that we received is what gives us the chance to keep making more UnAmiga versions, without them, the project won't go far as is right now.

Regards,

Edu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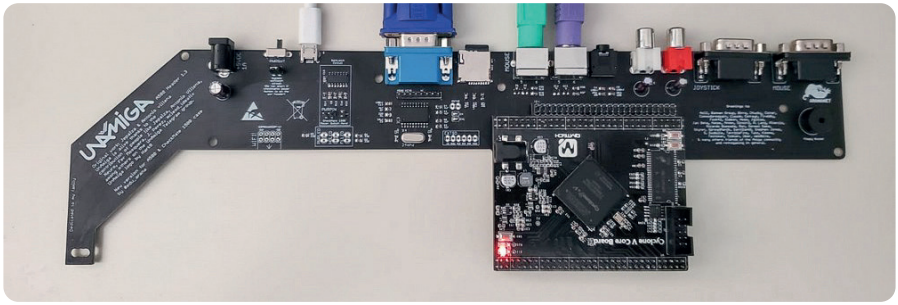
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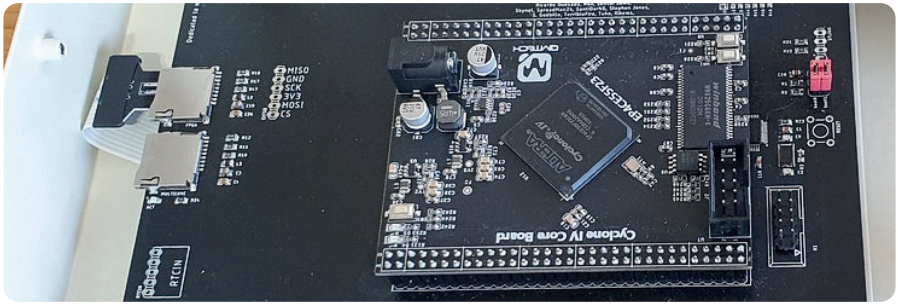

MISO
GND
SCK
3V3
MOSI
CS
RTCIN
Cyclone IV Core Board


UAEMIGA
RELOADED STANDALONE

USB keyboard operation manual

Firstly I think it is worth explaining my choice with this setup because I know it will be hated and loved in equal measure. So what is an Amiga keyboard, I have no time to explain because we will all disagree. However, this is a balance between what is perfect and what is achievable at a reasonable cost using clone Cherry red switches which are my favourite. I know it lacks ISO, but I could not get them unless I ordered 1000's so maybe later.

Keyboard FN combination functions

- FN + F1 = Computer
- FN + F7 = Play/Pause
- FN + F2 = Search
- FN + F8 = Play Stop
- FN + F3 = Calculator
- FN + F9 = Mute
- FN + F4 = Play
- FN + F10 = Volume -
- FN + F5 = Previous Track
- FN + F11 = Volume +
- FN _ F6 = Next Track
- FN + F12 = Lock Type

Button function introduction

- FN+"INS" = Light effect mode switching, total 10 mode
- FN+(left arrow) = Speed up light movement
- FN+(right arrow) = slow down light movement
- FN+(up arrow) = Light intensity enhanced
- FN+(down arrow) = Light brightness weaker


PrtSc
Scrl
Pause
Home
PgUp
Ins
Del
End
PgDn
Num
F12
F11
F10
F9
F8

Amikit XE for Raspberry Pi 4/400

What do you need?

			
Raspberry Pi 400 or Pi 4 (with a fan!)	FullHD 1920x1080 (or at least 1366x768)	Micro SD card (16GB or larger) or SSD	AmigaOS ISO (on an USB Flash Stick)

1 **Write Amikit image to 16gb (or larger) micro-SD card (or SSD).** Use balenaEtcher (or Raspberry Pi Imager) on Windows, Mac or Linux to flash the .xz archive file you purchased (don't unpack it) to your 16GB or larger SD card or SSD.

2 **Boot your micro-SD card (or SSD).** Your Pi will boot into a lightweight 64-bit Linux distro called Manjaro XFCE. It's not AmiKit yet. Be advised that it uses native resolution of your monitor automatically...and resize it to its full size. Run GParted (password is amikit) located in the "START HERE" folder. To resize your disk to its full size, right-click the partition located just next to the "unallocated" one, select "Resize/Move" and stretch the bar to the right edge. Then click the "Resize" button. The "unallocated" partition should be gone now. Now click the "Check" icon to apply the changes (or click the "Undo" icon to revert them).

3 **Connect to the internet.** Connect Linux to Wi-Fi by moving your mouse to the bottom of the screen (until the taskbar appears) and clicking the network icon on the right side of the taskbar. (for LAN connect, simply plug in the LAN cable).

4 **Use you USB flash stick to deliver Amiga OS.** If you have Amiga Forever ISO (RECOMMENDED) if you have Amiga Forever ISO (RECOMMENDED) or older AmigaOS 3.1 (located on AmigaOS 4.1FE ISO). Copy your preferred ISO image to the "START HERE RequiredFiles" folder located on the Linux desktop (btw. to build an ISO image out of your Amiga Forever installation, run Amiga Forever on your Windows and use its 'Tools' > 'Build Image' option, and tick 'Systems' from the Content menu). Then run AmiKit, in the Amiberry config go to the 'Hard drives/CD' section, enable 'CD drive', select your ISO image file (by clicking those three dots) and start the emulation. It will start with AROS ROM first but that's absolutely fine. Just follow the prompts.

5	**If you have AmigaOS 3.1.4 (A1200) ZIP archive.** Simply copy your original ZIP archive for A1200 (including the 3.1.4.1 update archive) to the "START HERE RequiredFiles" folder located on the Linux desktop and run AmiKit. It will start with AROS ROM first but that's absolutely fine. Just follow the prompts.
6	**If you have other AmigaOS version such as XL / 3.9 / 3.5.** First copy your Commodore Amiga Kickstart ROM 3.1 (v40.68) file to the "START HERE RequiredFiles" folder located on the Linux desktop and name the file 'kick.rom' Copy the given AmigaOS ISO image file there as well. Then run AmiKit, in the Amiberry config go to the 'Hard drives/CD' section, enable 'CD drive', select your ISO image file (by clicking those three dots) and start the emulation.
7	**A screenmode requested.** Once the installation of AmigaOS is finished, AmiKit asks for a screen mode. A FullHD resolution of 1920x1080x32 is recommended (which is the max. resolution currently) – providing your monitor is able to display it, of course (if you select a lower resolution, eg. 1366x768x32, don't forget to use AmiKit MorpheuZ to switch to the smaller visual elements later). Also it is recommended to set the same resolution for your Linux host system too.
8	**Additional software**. As soon as AmiKit is ready, it asks you to download some additional software (recommended).
9	**Have fun!** You can boost your experience by enabling BOOT MODE It makes your Raspberry Pi boot "straight" into AmiKit. For more useful information check our Quick Guide.

Tips and tricks

Overclocking

By default, AmiKit does NOT overclock your Raspberry, but you can do that by yourself. Just make sure you know what you're doing. Here's how to overclock safely:

- First click the "Update Linux" entry in the Linux start menu (password is amikit)
- Then click "Overclock Pi" entry in the same start menu (password is amikit), scroll down and enable ONE of the following settings
- If you have Raspberry Pi 4 with a CPU fan and heatsinks, enable the following settings by removing the hashes from the beginning of each line so they look like this:

  Over_voltage=6
  Arm_freq=2000

- If you have Raspberry Pi 400, enable the following settings by Removing the hashes from the beginning of each line so they look like this:

  Over_voltage=6
  Arm_freq=2100

Then save the settings (press Ctrl+X, confirm with Y key and press Enter) and reboot. For more information about safe overclocking refer to Q-engeneering, for instance.

Boot "straight" to amikit

You can enable/disable it either in Linux (look for BootMode icon on desktop, in start menu or taskbar) or in AmiKit too (look for BootMode in AmiStart menu or right-click AmiKit menu). Btw. Linux and

AmiKit are synchronised so if you enable/disable it in Linux, AmiKit will know about it (and vice versa). Cool, isn't it?

Use USB flash sticks and other media in amikit

To access any external media plugged to your Raspberry Pi, simply double-click anywhere on AmiKit desktop area and select Media.

Display amiberry config panel

To display Amiberry config panel while AmiKit is running, press F12 (or Fn+F2 on Pi400).

Locale and timezone

Open Manjaro Settings Manager from the start menu and adjust your preferences there. Don't forget to set the timezone of the analog clock too – right-click it and select Properties.

Reset / reboot / shutdown / quit

Use the start menu in AmiKit to reset (reboot) AmiKit, or reboot Raspberry Pi machine or even to shut it down completely. Or if you want to just quit AmiKit and return to Linux host, use the right-click menu > AmiKit > Quit (or just Alt-Tab.

Switch between amikit and host linux instantly

In AmiKit click the "ShowPi" icon located on the taskbar to switch to host Linux desktop instantly (and move mouse to its lower edge to display its taskbar). In Linux, double-click the same looking icon named "Show AmiKit" to switch to the AmiKit desktop instantly (providing it's running, of course. If not, run AmiKit.

Alternatively, in Amiberry Misc settings, you can set up your own hotkey for minimizing the AmiKit desktop. Then you can use Alt-Tab to display it again.

Launch host linux apps from amikit (rabbit hole)

Open the RabbitHole folder located on the AmiKit desktop to launch any host Linux app that is pre-defined there. In fact, you can launch any host Linux app from AmiKit, simply add host-run command before calling its name, for example in Shell: host-run chromium Directory Opus Magellan II (used as a Workbench replacement) is configured to open certain file types (such as document, video, mp3, etc.) with host Linux apps. You can add/modify more such file types (right-click > Settings > File Types...)

Bring host linux apps on amikit desktop again

Long story short, clicking on the AmiKit desktop makes your host Linux apps disappear. You need to press Alt-Tab to bring them back again. Interested in a long story? Okay! Any host Linux app displayed on the AmiKit desktop is actually not really there. Remember the Matrix spoon? The AmiKit desktop behaves as a regular Linux window – it's just it takes the whole screen (it's called Full-Window mode). Any host Linux app is just another window displayed on top of it. And since a mouse-click brings any window to front, in case of clicking on AmiKit, the whole desktop is brought to front covering any host Linux apps previously displayed. Alt-Tab is your friend here.

Whdload games and demos

For games & demos installed with WHDLoad you will need some additional Amiga Kickstart ROM files. If AmiKit didn't install them for you automatically (it did if you used Amiga Forever), copy your Kickstart ROM files to AmiKit:Devs/Kickstarts folder and name them according to WHDLoad requirements (note that you don't need any extra .RTB files as they are already included). Btw. to quit any WHDLoad game or demo, press F10.

Virtual mouse pointer

AmiKit takes advantage of Amiberry's Virtual Mouse Driver which (together with the Magic Mouse feature) enables smooth experience when switching between Amiga and Linux apps. Some Amiga programs (like AmiStart or DOpus) might not fully register such mouse pointer, though. In that case disable Virtual Mouse in Amiberry's Input settings.

More tricks and tips

Check our online Quick Guide document for more (recent) information.

To do

Thanks to your continuous support of AmiKit we will be able to focus on the following areas:

- New amikit features and updates (and bugfixes too).
- Regular updates of included amiga software.
- Better rabbit hole functionality for even smoother modern retro experience.

For AmiKit support and bug report please visit AmiKit Support Forum

Thanks to your support of Amiberry on Patreon the following areas will be added/improved:

- AHI (AHI audio system) support (currently only Paula audio is supported).
- Better networking support.
- Better host-run functionality for smoother Linux integration with Amiga.
- Better filesystem support for Amiga files, their specific attributes, etc.
- Higher emulation accuracy (e.g. cycle-accurate 68000).
- Better Amiga compatibility by improving JIT (just-in-time compilation (eg. vertical window scrollers might disappear sometimes – use mouse wheel instead).
- Implementation of more features coming from WinUAE (such as VHD/CHD disks, Accelerator boards, etc).

For Amiberry support and bug report please visit Amiberry website, GitHub or Wiki.

Amiga community useful contacts – not comprehensive

Please do not be upset if you or someone you know are not in this list, it was just a little idea but seems to have already got out of control. I will increase list over time.

Personally recommended

- Edu Arana – hardware designer – Spain
  https://www.arananet.net/pedidos/
- John Hertell – Hardware Dude, ReAmiga and Diagrom – Sweden
  chucky@thegang.nu
- Rob Cranley – Hardware guy and designer on project – Glasgow, UK
  robcranley@gmail.com

Community recommendations – this list will grow

- Giorgioggì SukkoPera – Hardware projects
  https://github.com/SukkoPera
- Steve Clifford – Retro Passion
  https://www.retropassion.co.uk/
- Paul Rezendes – Classic computer and consoles repair – USA
  info@acill.com
- Russell Cowell – Troubleshoots, renovates, recaps, maintains, repairs UK
  russell.cowell@blueyonder.co.uk

- Keir Fraser – Amiga Test Kit, FlashFloppy, Greaseweazle
  https://github.com/keirf/Greaseweazle
- Andrew Hutchings – Designs various PCB's for Amiga – UK
  andrew@linuxjedi.co.uk
- Tristan Zondag – Netherlands Amiga repair
  triszon@gmail.com
- Tomasz Marcinkowski – Amiga hardware work – Poland
  alt@ppa.pl
- Alen H. Marks –Amiga recaps+Terrible Fire+board build – Canada
  alenppc@gmail.com
- Martijn Wieland – Repairs retro gear
  https://tsb.spave – retro@tsb.space
- Derek Fellowes – Gotek, 3D-Design/Printing, RGB2HDMI, Recapping
  https://amigaspirit.com/
- Peter Mulholland – "I can fix Amiga's" – Norwich UK
  amiga@darkmatter.me.uk

Stand out hardware teams – accelerators

- Warp board creators – http://www.amigawarp.eu/
- Terrible fire – Stephen Leary
  https://www.exxoshost.co.uk/forum/viewtopic.php?t=1348
- Vampire team
  https://www.apollo-accelerators.com/

User groups

- South West Amiga Group – Based near Bristol
  https://www.southwestamiga.org.uk/
- Lincolnshire Amiga Group – Based in Lincoln
  https://lincsamiga.org.uk/

- North West Amiga Group – Based in Runcorn
  http://www.bambi-amiga.co.uk/spudmiga/nwag/
- Amiga North Thames – Based in Enfield
  http://www.amiganorththames.co.uk/
- Norwich Amiga Group
  https://www.facebook.com/NorwichAmigaGroup/
- Birmingham Amiga Group
  https://www.facebook.com/groups/BhamAmigaGroup/
- Scottish Amiga User Group – Based in Glasgow
  https://www.facebook.com/groups/626138110921245/
- Amiga Users Ireland – Annual Show in Athlone
  http://amigausers.ie/
- Greenford Computer Club – Near Ealing in London
  https://www.facebook.com/groups/1091373200876189
- Stamford and Peterborough Amiga Group
  https://www.facebook.com/groups/spaguk
- Belgium Amiga club
  http://www.amigaclub.be/
- Amiga Users Group Melbourne Australia
  https://www.amiga.net.au/
- The Westchester Amiga User Group
  http://www.westchesteramigausergroup.org/

Just nice Amigan's

There are such a lot of lovely people in this community so I will highlight one and the story why from James Zeun.

Michael "Rockape" Domoney

I'd like to nominate our former chairman of the Lincolnshire Amiga group, Michael "Rockape" Domoney. By far the nicest bloke you'll meet and my god what a passion for the Amiga. He's the sort of chap that will lend kit out to people, not just club members. I think he'd give the shirt off his back if pressed. Over the past 12+ years I've had the pleasure to know him, he's helped myself and others more times than I'd care to count.

On one such occasion he gave me a rare external flicker fixer, I asked him how much he wanted for it, as I knew they went for a bomb. He looked at me offended and said,it's yours. He catchphrase is "Spread the wealth". If you have more than you need, help someone who has less. I personally think this is a beautiful attitude to life and I'm not ashamed to say his generous spirit has left its mark on me.

Sadly Michael has fallen in to ill health over the last few years, with a tumour discovered in his head which causes him constant headaches.

I think having his name on the inside of a case along side others. Would be a wonderful and lasting testament. He's in his 70s and we really don't know what's lies ahead. As the tumour is inoperable from what I gather. I'm really sorry this was a long email, but he's a lovely man and I'd truly like to do something nice for him.

Kindest regards,

James Zeun

P.s the name Rockape comes from his days in the RAF infantry. A term which came around in the 50s.

BONUS: My Amiga story "A love letter to AROS"

My history as a developer with the Amiga 1987-2000 video, from David Pleasance's book "Commodore – The Inside Story"

Okay just a couple of notes: some of the dates noted here may well be wrong, as my memory is not what it used to be. I will try and check the information and be as accurate as possible but bear with me on this. It's a long time ago. Also fair warning, during this video I may get a bit emotional as some parts of this story caused me a lot of pain and suffering personally, so I'll apologise in advance and leave it at that.

How did all this start?

Well it all started around 1986 when I was working on a job over Twickenham, just outside of London. At that time I was a roofer and had been for 12 years after giving up computing at school to earn money, mainly to buy a motorcycle and impress the girls, which of course didn't really work. It was lunch time. I went down the road and had a look in a small computer shop that just happened to have an Amiga 1000 in the window playing the Juggler demo. I was transfixed and could not believe what I was seeing, especially as at the time I had an Amstrad PCW 8256 and a ZX Spectrum in the cupboard. The PCW did my accounts and letters and I could experiment on it, especially as I was not really into games. Anyway, returning home I knew I wanted one but I also knew I could not afford it, so put it to the back of my mind.

A little while later I went to a computer show in London and saw a company demoing the Amiga 1000, and again I was in awe as I saw Workbench in action and heard the mysterious bouncing noise. Of course when the workbench screen was pulled down to reveal the Boing Ball I got quite emotional, as this was quite amazing for the times. I was totally hooked. I still could not afford one though, as I had a young family, but fortunately for me not long after the A500 was released and I got one pretty quick.

A couple of months later a software developer in the local shop I purchased the A500 from offered me his A1000 as he knew I always wanted one. So we made a deal, and I purchased it with a 40mb SCSI drive and I have that same A1000 to this day. The A500 ended up being used in the promotion of one of my products then got lost in time.

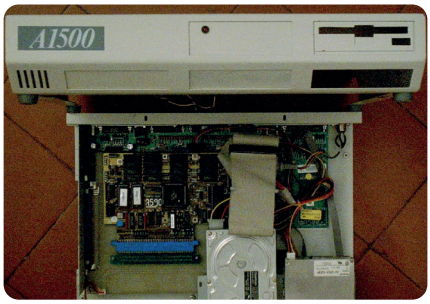
Checkmate Digital A1500 1988/9

The A500 gave its life in the cause of my first real product, The Checkmate Digital A1500.

The same developer who sold me the A1000 introduced me to a guy called James Campbell, as they were working on a 16bit sampler for the high end Amiga market, and James needed a partner to help launch it. Co-incidentally around this time the doctor told me I needed knee surgery and would be off for 6 months from the roofing job, so in that way fate decided that I should drop the roofing game and move into computers. At last. Computing was my first love since school so I didn't need too much persuading.

James had an office in Stoke Newington and although sadly the 16 bit sampler did not make it to market, another product was being developed which became the Checkmate Digital A1500 for the Amiga 500 computer. Although I did not design the case, I talked James into creating a Zorro 2 and Video slot because the original designer had

just made an adaptor for the A590, (see the image), which prevented accelerators being fitted. So we added a left mounted Zorro 2 slot for the A2000 GVP HC8+ RAM/SCSI card which we would cut in half and fit internally. Scary eh?
Added to this was a video slot on the right that connected to the Denise chip so you could fit a flicker fixer. We also had the Mega Midget Racer 030 cards fitted so what you had was an incredibly powerful upgrade for the humble Amiga 500. In the end the system had a 40mhz 030/8882



Amiga 500 with 16Mb RAM, a 512mb SCSI drive, a flicker fixer and two floppy drives. In addition we made a boosted power supply based on a PC power supply unit, so as you can see this was the Amiga to die for until the A3000 came along.

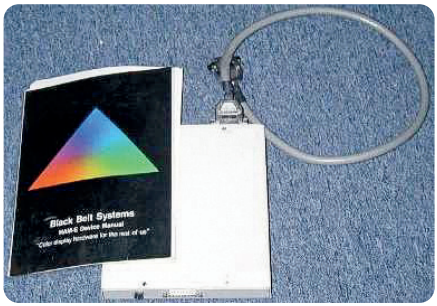
Amiga products sold under Checkmate Digital

Around this time we sold lots of Amiga products but we were also the distributors for a number of third party ground breaking products as well.

Cando from Innovatronics

One of these was the jewel in the Innovatronics crown of Cando. This was Visual Basic long before even Microsoft knew what that meant and was incredible. It grew out of a developer tool that allowed you to lay out windows and then generate all the source code for you and

was an amazing self contained programming tool. It is a shame that they went bust before AGA because if it had supported AGA and WB3.0 it would still be the ultimate development platform from the beginner to the serious programmer.



HAM-E from Black Belt Systems

This amazing device gave Amiga users 256 colours and 24 bit colour Ham8 modes, and remember this was long before AGA arrived. It worked like a DCTV (remember those?) But instead of outputting just composite video it was a true RGB video output that could be genlocked. It did this by converting two hi-res interlace 16 colour images encoded in a special way to give you 8 bit planes instead of the usual 4. They had some great software to go with it as well.

Archos Avideo 12/24 bit graphics cards

Before Archos turned into a big company in France we distributed some of their great early Amiga products. They had a hard drive system for the A1200 called Overdrive, which was fab, but more importantly they developed these amazing 12 and 24 bit graphics cards which fit onto the Denise chip in the Amiga. Later on these fitted in the video slot and gave a genlockable hires 4096 colour mode with animation or a full 24 bit frame buffer with 12 bit animation. Great products that sadly did not find a big audience in the UK at the time as most users were just playing

games. As a side note at the time I also saw the first ever A3500 at Archos which had the early version of the AGA chip set.

Well these products were received very well and we tried to sell into the professional market for CAD, graphics and animation etc. However, the problem was always the same: as soon as people discovered it was an A500 Amiga the comments of "Oh that's a games machine" surfaced, ironic now that these days what you would call office machines are the most popular games machines. The good news was we sold loads to Amiga 500 owners who wanted a neat way to upgrade and make their computer look like a big box machine. So much so that it caught some unwanted attention, as it turned out.

Commodore meeting 1990

Oh boy. Okay, so I had managed to get a lot of good PR through the thriving Amiga magazines like Amiga User International with the wonderful Anthony Jacobson, CU Amiga and Amiga Future etc and people liked what we were trying to do, so much so that we got an invite to meet Commodore in their Maidenhead offices.

This seemed like it was going to be something good...how naive we were! Anyway, we wanted to make a good impression and so off to buy a new suit for the meeting and to set the right tone, James insured his black Porsche Turbo in my name for the day so I could turn up in style and so we looked more impressive than we actually were, obviously I made a little noise on arrival.

To this day I cannot remember which of the Sumner brothers I met, but I was invited into the office and in a very short meeting was told that what I was doing was hurting Commodore and that they were going to wipe us out with a few unrepeatable words to emphasize the point.

Oh, I thought as I sat back in the Porsche, that could have gone better. But it would not be the last time somebody in charge of an Amiga

company disappointed me, and you neither I don't doubt. So after a couple of months and once the A1500 stickers were ready from the printers Commodore released the Amiga 1500, which was an A2000 with just two floppy disk drives and nothing else except the tacky sticker on the front of the case. More importantly, and most damaging to us, they slashed the price and of course the rest is history on that product. They made good on their threat. And so begins the history of Commodore being their own worst enemy.

HiQ Tower 500 around 1991

Stinging from the defeat over the A1500, James and I decided to go more high end and developed the Amiga 500 Tower with bus board. This had six slot lines which could be a mixture of CPU, Zorro2, ISA and Video slot. This was to be distributed by Innovatronics in the US for the Toaster market but sadly just before this came off Innovatronics went bust and the product did not get shipped. This was very sad really as we had about five prototypes built and they worked brilliantly. Also more sadly this last straw ended my fruitful partnership with James. But he did create one more thing for me. More about that shortly.

I took this HiQ 500 Tower to a New York show with a Video Toaster in it and it went down very well, so much so that NewTek's Tim Jenison gave me a copy of Lightwave and we still keep in touch now and then. But that was not the most memorable part. Funny but true story:

We had spent ages preparing the machine for the show and the case was huge as you can see if you click the link below. We boxed it up and I got on a flight to New York and put this in cargo hold luggage. On arrival I was told by security to go into a room and wait, well I do not have to tell you I was a little nervous.

When the cop walked in while putting on surgical rubber gloves with a snap, it got worse. Any way they took the machine to pieces with me begging them to be careful as it was a prototype and then once happy

that there was no drugs (bombs were not the issue back then) they told me why there was a problem. It turned out I had not filled in a special import form for the computer and therefore it was technology being imported without the right paperwork, and me saying it was an Amiga made them trust me even less. Scary new fangled tech from space.

In any case, despite my uncomfortable journey the eventual show was great and those were the heady days of the Amiga and all the greats were all there, Newtek, Digital Creations etc, I even went to one of the fabled Newtek parties which was amazing but I was very shy and sat in the corner like a lonely nerd, but Kiki did look amazing of course.

http://www.bigbookofamigahardware.com/bboah/product.aspx?id=1335

HiQ Power Station Circa 1993

So as a hardware and software developer I was now pretty much on my own but I had to get some income so I had the idea of the Amiga 1200 Power Station. This was a very simple idea as it was based around an OEM PC case, desktop or Tower. I managed to get a load of Amiga power connectors and so I wired the PC Case Power supply unit with a custom lead and these connectors to power the Amiga.
As these were off the shelf cases I could fit SCSI Cdrom's and hard drives etc. This was great business and people would order a SCSI controller, Ram and a Power Station to upgrade their A500/1200/600 with RAM

and accelerators. This carried on happily for a while but the A1200 had more potential for the next product due to the inclusion of the great Amiga OS3.

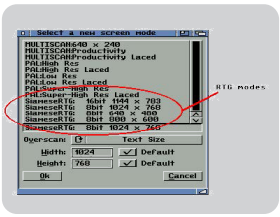
Siamese System 1996

As I was selling these systems I thought about putting PC motherboards into the Power Station and sharing the components with the Amiga. This was because with Windows 95 the PC was now becoming a serious threat to the Amiga but we could allow users the best of all possible worlds: Amiga, Windows and Macintosh all on one machine. James kindly developed a video switcher card that could be controlled by the Serial port and plugged into the PC, and I contacted Paul Nolan (of Photogenics fame) to develop the control software and drive sharing etc. This took the Amiga and PC video outputs and using software control would switch between the two video outputs on an Amiga M keyboards combination so that the PC display acted like another Amiga screen. We also supplied a Parallel cable that enabled the PC drives to mount on the Amiga so file transfer was very simple. There was also code to share the keyboard and mouse and we had code that allowed sound to be routed to the PC's 16 bit sound card as well.

http://www.dynamix.plus.com/siamese/main.htm

http://cd.textfiles.com/amigaformat/aformat-17-19970808/-Look_here_1st!-/AF_on_the_web/Websites/Blittersoft/orig/siamese.htm

This sold really well especially through our German distributors called Eagle computers but I wanted more. Why do I do that?



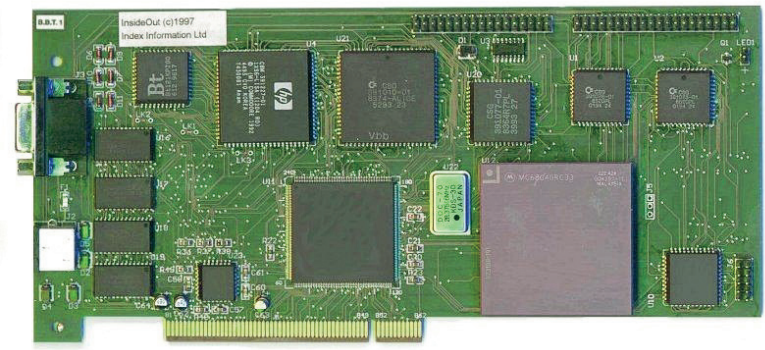
Siamese RTG Graphics 1997

During this time I asked Paul if it was possible to create Amiga windows on the PC to display Amiga programs over the serial cable. Well Paul went so much further than I could ever have hoped for and over the next few months we managed to get Siamese RTG to market as a Siamese 2.5 upgrade which again sold very well. Siamese RTG (the first efficient Remote Desktop ever?) worked by using the PC graphics card to act like an Amiga graphics card and it was so efficient it even worked using the serial interface speeds. As it was TCP/IP based it could be run over a network too, so with an Ethernet card we were getting speeds to compare with the best Amiga graphics card on a Zorro 2 bus.

Mick Tinker and the PCI Amiga

So I visited an Amiga show (around the Gateway buyout, maybe just before) not sure which show but in any case I met up with Mick Tinker from Index Innovation and of Boxer fame at a developer meeting. He walked up and said I have something to show you, opened his brief case and pulled out a PCI card with a Motorola 68040 on-board.

Instantly I got it and I knew that if we put this into a Windows PC, with our Siamese RTG, drive sharing, clipboard sharing and sound retargeting software we had the start of a next generation Amiga project. It may not have the AGA chipset in this version but the serious market was moving to RTG based applications on 24 bit graphics and we knew that was the future for the Amiga. Here is the key thing to understand, in my mind, you put this card into a Windows 95 PC, fully integrate it and

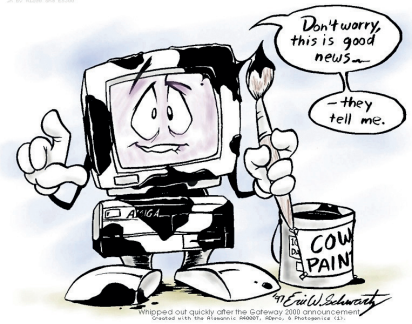


make it crucial for running Macintosh, Windows 95 and Amiga software. However, over time you port the Amiga OS over to the X86 so you can remove this card except for running classic Amiga software, remember there were no emulators then. Once you have ported to X86 then Amiga is free again but on a far more cost effective and performance platform if not the most elegant. This was the vision, sadly that did not transpire, or did it?

Oh and here's the other Amiga person who disappointed me. I was in Stockholm, Sweden around this time and Petro Tyschtschenko had just finished his little speech about how things were great and trying to get the crowd to buy an Amiga Boing Ball mouse mat and music CD. I then got on stage, explained he was talking rubbish and showed people the PCI Amiga card and explained the potential with Siamese RTG, the crowd loved the concept, especially as some were already Siamese System owners and were really positive and yet Petro had no interest in progressing the Amiga through this route, which was his right, but he did not even want to discuss its potential. Such a shame.

PCI Amiga Card and Gateway 2000 Purchase of Amiga 1998

Not long after we got invited by Gateway 2000 to visit their headquarters in South Dakota, they sent three tickets for myself, Paul Nolan and Mick Tinker to visit as they now owned the Amiga. The Gateway team very kindly entertained us at a local lap dance bar (of all places) which we got to by passing a very smelly meat processing plant in the middle of nowhere. Obviously what happens in South Dakota etc... no just kidding, but they were very pretty girls and Paul did get his first lap dance.



The next day discussions were had with the heads of Gateway 2000's new Amiga team and they planned to put the PCI Amiga card into their high end Gateway PC's to be able to run Windows and Macintosh software with the added benefit of having Amiga software as well, remember at that time Amiga was nowhere in the business world, and to be fair never was so to get it included on all machines would have been amazing.

At that time you could still emulate the Macintosh legally as the Roms were available and Gateway realised we were doing this with the Siamese RTG system. By putting a fast 040, maybe later an 060 into the PC and running our Siamese RTG, control and drive mounting software the PC's

would outperform the latest Macintosh 040 machines due to the great speed of Windows 2D cards of the time and you would have cut and paste between the platforms as you did with Siamese System.

Obviously we could also then run Amiga software with the great Amiga software library that was available and over time I believed we could port the Amiga operating system fully over to X86 and get access to all of this great low cost commodity hardware. We signed a letter of intent with Gateway 2000, received tens of thousands of dollars split between us and returned to the UK feeling triumphant. During the following weeks we waited and looked forward to starting on this project with a big American backer in Gateway but all we got after being out on a limb for a while was a cancellation letter saying this project was not going to happen.

Interesting side note: Of course I do this all the time now, having a big box machine running different operating systems and sharing data between them seamlessly. However, this would have bought that concept out a lot earlier and the Amiga would have been the driving force behind it. So many missed opportunities.

So this was the end of my Amiga adventure, which at that point had lasted twelve years and been some of the happiest days of my life until this point. Now the downside and biggest mistake of my life.

http://www.cucug.org/amiga/aminews/1998/980304-siamese.html

Because of the letter of intent received from Gateway 2000 I believed that was as solid as a contract and felt confident to start investing all my time in this project and I made the bad decision to start taking deposits to enable those who wanted them first to be able to get them and ensure demand, remember there was no Kickstarter.com then.

However after receiving around 25 deposits and putting safely away in a company savings account it became clear that things were not

happening as planned and this caused a whole chain of events. I had already stopped accepting deposits, but by then the damage was done. The outcome of the cancellation of the project (and the fact I over extended financially believing it would happen) was losing my house, my company going bust and eventually, inevitably, the end of my marriage.

In the midst of this was my greatest regret that I had taken a number of fifty pound deposits and lost the money through all of this when the auditors stepped in and took this saved money. Over time I have managed to track a handful of these early investors down and personally refunded them but there are still 10-15 outstanding. So if you are watching this and can prove you were one of them, then I will honour the refund, for what it is worth now.

The wilderness years

I suffered depression for a while and most of my Amiga's were thrown out including an Amiga 4000 Tower from Commodore (which looking back was such a shame). The only Amiga I kept was my A1000 but that was put in a box and locked in the garage for over ten years. A good friend in the Amiga business Tony Ianierie from Power Computing talked sense into me and told me to go and get a proper job. This was the best advice I had ever been given and so I walked into an Internet system developer job immediately, a role which I do to this day.

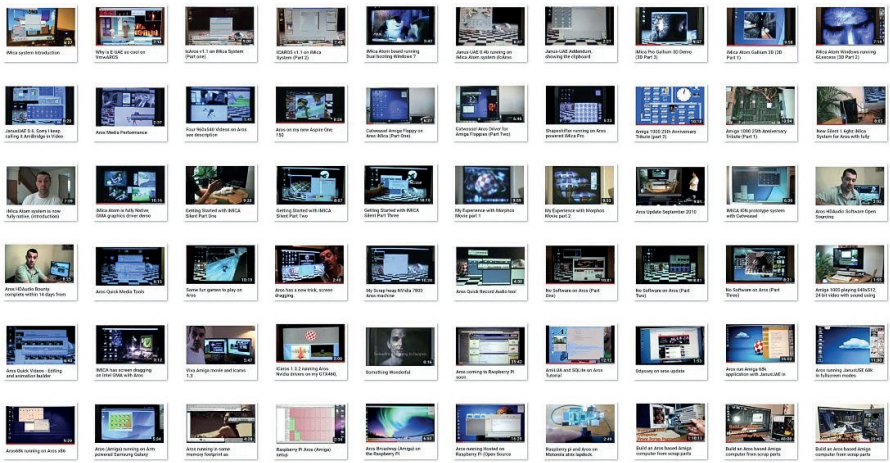
AROS in 2008

Finally, I got myself back together, sorted out the financial problems, got my own place with equal shared custody of my wonderful kids (who are now university graduates and working). However, my love for Amigas was going to resurface when I discovered that while I'd been away my dream of the Amiga on X86 was a reality. I had missed the red and blue wars fighting over the Power Pc architecture, not sure what that was all about as it was obvious to me and others a long time ago that X86 will win the CPU battle, now however I believe it should be Arm that we focus on as a platform.

Anyway, here was this open source Amiga operating system called Amiga Research Operating System running on X86 and it was amazing, far from perfect, but amazing none the less. That said I still had this terrible feeling of lingering guilt over the PCI Amiga card deposits and as somebody who believes in Karma, I felt had to try and balance things in some way. So, I could see that what was needed was a low cost AROS computer that could run on the Intel Atom processors and could be built for a couple of hundred pounds.

AROS YouTube videos

As a way forward I started doing videos on YouTube to show how good the AROS operating system was and why I believed it was the future, something that was becoming to me more obvious as time passed.



All Amiga developers are angels

Anyway, I knew I needed custom drivers for my project so I figured I owed the Amiga community about £1500 of deposits which was what got swallowed up in my company crash, this was not enough however.

So firstly I contacted Nick Andrews (Kalamatee) to write the network driver I needed, which he did. Next it was David Wentzler to write the AHI sound driver for the HDAudio chips, and he actually over delivered and expanded on the brief to cover most of the Intel HD Audio sub systems of the time. Finally, I approached the great Michal Schulz to write a brand new graphics driver from scratch for the Intel GMA 950 chipset. This was the biggest undertaking but over quite a few months he finally finished it and what an amazing driver it was.

Once this was complete, because we had the OpenGL system in AROS it meant that Intel GMA chips were 3D ready. The final piece of the puzzle was that Neil Cafferky had written a driver for the Atheros 5000 Wi-Fi network chip.

Armed with this toolbox I launched the iMica computer which sold a few dozen machines but also meant that anybody who purchased an Atom board or netbook with these chipsets could build and run a great AROS experience and use a nicely emulated ECS Amiga emulator, that was built in. A good example is the Acer Aspire D150 netbooks that were and still are fully supported and work beautifully even now with the latest Icaros.

After this I went to the original Raspberry Pi launch and got talking to Eben Upton who is an amazing guy (and a huge Amiga fan on the quiet who owned an Amiga 600). He wanted to get the Amiga emulator on the Pi so that it could run the games and I saw another great opportunity for the Amiga community.

I contacted Cloanto and also Hyperion to see if they were interested in working together to get the Amiga emulator onto the Pi as Eben was prepared to fund it as much as possible as it was early days for the Pi.

Sadly there were only disappointment from both Cloanto and Hyperion (go figure more let downs and missed opportunities) and whilst there may have been some small legal concerns the idea was not even seriously discussed. What is it WITH these guys?

Eben was disappointed but that is the life of an Amiga fan. However, now thankfully UAE4Arm is available and the Amibien Linux distro too which create an amazing Amiga experience on a Pi3 that is faster than even my 060/RTG Amiga 2000. So there was a happy ending.

Another break from AROS

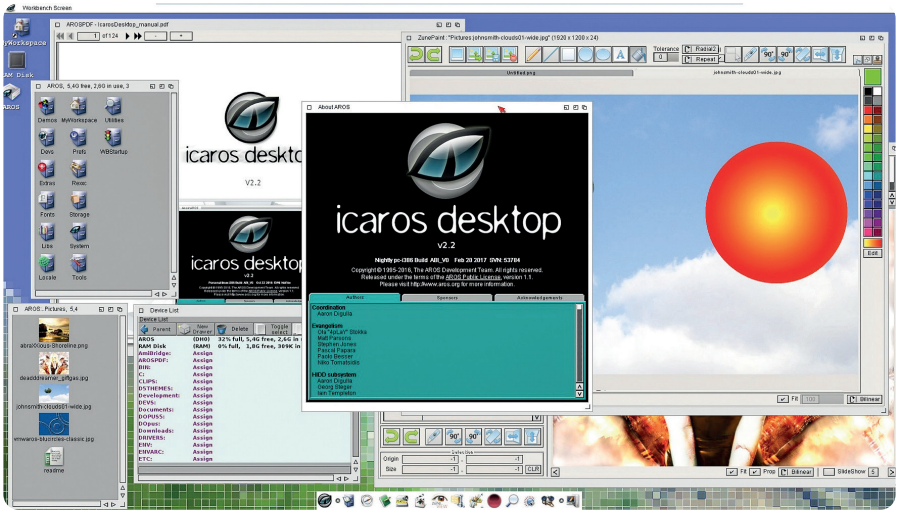
After this last let down (probably remembering the catastrophes before) I decided let it all go to concentrate on my new wife and in the end had a break for about three years.

Things settled down. Once the dust settled and I had my life back for a bit I am back again. I am doing another round of developer support and video promotion to get even more up to date and get more modern drivers created to put AROS on course into the future with the new high end components like the Amazing Ryzen CPU's. Exciting times.

So why AROS?

Firstly, Hyperion started with the Amiga Source code and the AROS team had to do a clean room rewrite of the Amiga 3.1 operating system from scratch. They kind of overshot because AROS is in fact more advanced than Amiga OS4.1 final edition. Plus even though OS4 has some 68k translation functionality (which is impressive) the UAE emulator in AROS runs Amikit beautifully in its own screen. Why is AROS more advanced? Well it has a full standard OpenGL stack, it has SMP, i.e. multi core running with AROS 64 bit already meaning greater than 4gb ram, and a larger library of driver support and is available in four platforms, X86, 68k, PPC and Arm.

On top of this, AROS supporters started the funding of buying the source code for Directory Opus Magellan and this has transformed AROS into a proper operating system with advanced file handling functionality including seamless FTP access and now with an advanced Webkit based browser OWB and great video and audio play back system in MPlayer. On top of this there is a large library of native AROS apps and ports from Linux for 2D and 3D games, utilities and some nice graphics applications.



Basically if you are a developer and have an Amiga application written in C, then you can recompile it onto AROS very easily. AROS is as close to source code compliant with Amiga OS 3.1 API's as possible, it has Zune which is a MUI clone, a wealth of Internet tools, full OpenGL support and of course the new multi core support ready for you to experiment with and extensive help to guide your journey. If you have applications created for Linux then they can be ported to AROS as well, especially as we also have the SDL library support for 2D graphics as well.

Can AROS be the Amiga Linux?

In the old days you had UNIX and it was controlled by a big company with all the problems associated and then along comes Linux which is a complete re write of UNIX just like AROS is to the Amiga OS. Now Linux is the dominant force and is an amazing system in its own right and is the most used operating system in the world.

This is probably going to happen with AROS over time because of its open source nature and the fact that once you get past the missing Amiga legal name, AROS is more Amiga in spirit than any other OS. Of course that is just my opinion, me and a lot of other free minded Amigan's.

I have thought for a long time that AROS is obviously the answer to the future of the Amiga, the only thing holding it back are those companies squabbling over ownership of the Amiga brand and trademarks which a lot of Amiga users feel is important to make there ownership feel legitimate.

What they do not understand is that the Amiga should be free now that Commodore is dead. Surely Hyperion should know by now that owning the rights to software that sells maybe a few hundred copies is not as good as pooling all developers around a group of Amiga flavours under a single banner that they can guide and also profit from if managed correctly.

If we were one harmonious group under an Amiga banner then more developers would join instead of leaving. I have heard from a number of developers who were interested but then just say, "But what about all the infighting". What about it, indeed.

So here is a controversial idea

AROS becomes a central repository for Amiga X86, Arm and 68k software. Hyperion and MorphOS continue with their excellent PPC OS's but create their own distribution of AROS on these other platforms (X86 and Arm) like ICaros on X86 but with there own flavour, design and extra software and experience.

Everyone benefits and Hyperion can charge for the brand name and to contribute to developers and everyone can be happy. Users get amazing performance on multiple platforms that they can afford with the badge they like. I can then try and get AROS Arm onto the Pi (with support from the Pi Foundation again as I have been talking again with Eben) but with the AmigaOS brand via Hyperion and Cloanto working together. If such a thing is even possible.
Of course we can just carry on the way that it has since Commodore died and AROS will over time become dominant, what with the Vampire improving 68k AROS to the point where it is a future proof Amiga 68k operating system without needing to pay for it, or be controlled by any company.

AROS x86 is already surpassing OS4 (and will emulate it soon) and is becoming nice and stable thanks to all the work being done on it, and soon we will move AROS distros to 64 bit with the SMP multi core support we've been working on (that you can try now, by the way).
The game however has changed and that is largely due to the Vampire, that has Classic Amiga fans salivating for 68k progress but that is only really possible with AROS 68k. There is work to do on AROS 68k because it is all C code and does not have the luxury of AmigaOS3.1 having optimised assembler routines for performance improvements, meaning

that sometimes AROS 68k is a lot slower than Commodore OS3.1.

However, for the long term, having AmigaOS in the portable C language is a massive advantage.

Question, what is an Amigan?

This is a very interesting question because ultimately every one has there own idea but here is mine. An Amigan is somebody that obviously fell in love with the Amiga back in the day, but has a spirit in them that makes them want to create, push their Amiga to the limit and push the boundaries of what is possible.

In the old days it meant developing bits of hardware to capture images or sound, or to bounce videos around a screen in hardware, to writing software that could render ray traced images or paint software that could animate or make music. It meant the amazing demo writers and game creators who amazed us all with what they could do with Jay Miners chipset, all the way to the Amigan that wrote a utility to just backup disks. Amiga is about creation and to my mind an Amigan creates.

We are lucky in this community to have such a diverse group of users and developers. Of course this causes passions to run high sometimes, but those with the control or influence of IP or resources need to work together for the bigger picture.

As always the last words and not naive in my opinion are these: we are a small community and we should work together, and if we do, we can make Amiga great again.

Steve Jones
iMica Ltd

Notes

CHECKMATE
Checkmate A1500 Cases

KICKSTARTER

Contributing authors: Steve Jones, Phil South and Rob Cranley
Designed by: Samuel Hurll
3D renderings by: Samuel Hurll and Paul Kitching