

A1200

COLLABORATORS

	<i>TITLE :</i> A1200		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY		February 12, 2023	

REVISION HISTORY

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Chapter 1

A1200

1.1 A1200 Hardware guide - Contents

Search

The A1200 Hardware Guide - Contents

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Introduction~and~Disclaimer~~~Read~me!~~

Basics

A1200~Specific~Problems~~~~~

History~of~the~A1200~~~~~

The A1200 Hardware FAQ by Warren Block

Advanced

The~Motherboard~~~~~

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Connectors~~~Pinouts~~~~~

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This Guide

The~Editor~::~::~::~::~::~::~::~::~::~::~::~

Credits~::~::~::~::~::~::~::~::~::~::~::~

Availability~::~::~::~::~::~::~::~::~::~::~

1.2 Introduction

The A1200 Hardware Guide

Distribution

This guide has been released as an information document. You are free to post it or send it wherever you want as long as credit for the work remains with myself and the people listed in the credits section. In addition, magazines wanting to include this guide on cover disks should ask permission first. I think that covers everything ;)

In addition, if this archive includes the A1200 FAQ by Warren Block, and/or the Searchguide archive, the rules for distribution of these files must be obeyed - in the case of the FAQ it is much the same as this guide's rules, but the author is Warren Block

Disclaimer

I have tried my best to ensure all information contained is correct. However I do not take responsibility for any incorrect information, and/or resulting damage to any hardware. Just so you're aware, my favourite is accidentally getting pinout diagrams mixed up...

Introduction

This guide is designed as a ultimate reference for A1200 Hardware queries. It was written by me, but includes information from many sources, most importantly the usenet comp.sys.amiga.hardware group, and quite a few individuals have contributed directly.

A lot of the information is from Warren Block, who allowed me to use his FAQ as part of the links. This appears in the main menu, plus all the specific menus which are linked to the relevant section of the FAQ. Note that this is his work, and sometimes we have differing ideas or opinions.

I hope to be able to continue updating this for as long as I still own my A1200.

1.3 Guide Availability

Guide Availability

This Guide is available from several locations.

AmiNET: `hard/misc/al200hwguide.lha`

Pure Amiga: `ftp://ftp.pureamiga.co.uk/guides/al200hwguide.lha`

My Homepage: `http://www.fuchal.demon.co.uk/amiga/al200hwguide.html`

It might be posted to `comp.sys.amiga.hardware` when a new version has been finished, but this is not guaranteed since it may be quite large.

1.4 A1200 Specific Problems

There isn't much that can go wrong that is specific to the A1200. ↔

But since

it's been around so long, there's a few nasties:

The Power Supply is woefully inadequate, for a machine with so much expansion potential.

It is very hard to get reliable Zorro compatibility.

The Keyboard has a different controller, meaning it won't register two keys pressed simultaneously on the same row - lack of multiple-key rollover is the cause. See the

Matrix Description

Older AT machines have problems with the floppy drive - some ↔
demos and games

may not run. Later this was fixed with a logic circuit. The problem was the lack of a specific line (DSKRDY), which some older less legal games and demos used to tell when the disk was ready for reading. This problem is not present in Commodore, or later AT A1200's.

Video problems, including banding (shared with the A4000) and overheating of the video processors, resulting in "glitchy" screens

The IDE port is non-buffered and can result in problems with using more than one IDE device

1.5 Drives Index

Drives Index

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Floppy~Drives

Hard~Drives

CD-Rom~Drives

1.6 Expansion boards Index

Expansion Board Index

=====

Information:

RAM Cards

68020 Cards

68030 Cards

68040 Cards

68060 Cards

Processor Frequently Asked Questions

Memory Frequently Asked Questions

Reference:

RAM Cards: Amitec
Prima
Magnum

68020 Cards: Apollo 1220

68030 Cards: Apollo 1230
Blizzard 1230-3

Blizzard 1230-IV

Magnum 030

Microbotics M1230XA

ViperI~1230

ViperII~1230

68040 Cards:

Apollo~1240

Blizzard 1240T/RC

Falcon 040

PowerComp 040

68060 Cards:

Apollo~1260

Blizzard 1260

Falcon 060

PowerComp 060

Note: I would very much appreciate user reports on the cards currently

lacking references.

Relevant Sections:

Expansion~Slot~Pinouts

Power~Supply~Problems

1.7 Miscellaneous Index

Miscellaneous Index

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The~Clock~Header

The Keyboard Matrix

1.8 Monitors Index

Monitors Index

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Information

Monitor Types

Frequently Asked Questions

Common Problems

1.9 Usable Monitors

The Following Monitors can be used with an A1200:

TV Monitors

Most types, including:

Commodore 1801

Commodore 1804

Commodore 1805

Philips CM8833

Philips CM8833-II

Multisync Monitors

	Size	Input	Resizing	Speakers
Amiga Technologies M1438S	14"	23D	No	Yes
Amiga Technologies M1538S	15"	23D	No	Yes
Amiga Technologies M1764S	17"	23D	Yes	Yes
Microvitec 1438	14"	15HDD	No	No
Microvitec 1440	14"	15HDD	Yes	No
Microvitec 1402	14"	?	No	No
Microvitec 1701	17"	?	Yes	No
Mitsubishi Diamondscan	14"	?	?	?
NEC 3D	14"	?	?	?

1.10 Monitor Information

Monitor Information

Two types of monitor are compatible with an A1200: TV monitors and Multisync monitors.

TV Monitors

These can only scan at a set rate, 15khz. Therefore they are perfectly useable with PAL and NTSC screenmodes, and will give better quality than a standard TV. However then you are limited to 1448 x 283, or 1448 x 566 if you can bear interlacing. You will notice that these screenmodes are stupidly ratioed, one being 5:1! The display will be unreadable.

Multisync Monitors

These are much more versatile than TV types. For a start they can scan, or sync at different rates, hence the name. This means you can display the higher resolution screenmodes, such as DBLPAL and EURO72. These give you a much larger area to work in. Steer clear of multisyncs which don't sync down to 15khz - most don't - and which are branded "VGA Monitor" as you won't be able to play 99% of your games or demos, or see Gurus or your early startup-screen.

Also don't be fooled by names - ones called Multisync, Multiscan, Bisync and Trisync might all work, the difference being the amount of different syncs they can handle.

Speakers

Don't rely on monitor manufacturers' speakers. If you value your sound, get a pair of external amplified speakers as they will be much better quality. The latest AT 1438 is the worst offender, and I know from experience that the CM8833-II had terrible sound quality.

Inputs

Most Amiga-specific monitors, i.e. the AT range, now come with the standard 23-pin Amiga video input. Older ones came with 9-pin plugs, especially TV types, or ones designed for PC's had 15-pin HD connectors. Some came with BNC plugs.

1.11 Pinouts Index

A1200 Hardware Guide - Pinouts

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Internal

IDE~Controller~Port
 Floppy~Drive~Port
 Floppy Drive Power Port
 Expansion~Edge~Connector
 Clock~Header
 LED Connector
 External

 Power~In

 Video~Out

 Parallel

 Serial

 Floppy~Drive

 Joystick~/~Mouse

1.12 Power Supply Index

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Power Supply Index

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Frequently Asked Questions

Common Problems

Related Sections:

Power Input Pinout

1.13 Zorro Index

Zorro Adaptor Boards - Index

Information

Frequently Asked Question (only 1)

Related Sections:

Expansion~Port~Pinout

1.14 History of the A1200

History of the A1200

The A1200 was released to an excited community in November 1992. There had been speculation for some time about a new Amiga, and when its big brother the A4000 arrived a few months earlier everyone knew the new baby, rumoured to be called the A800, was on its way.

The specification has stayed the same over the years, with the change in ownership of Commodore only bringing about a new ROM upgrade to 3.1. The specification was:

68EC020 Processor, the first Amiga ever to contain one
2mb Chip RAM as with the A4000 for AGA
PCMCIA card slot, as with the A600
AGA Chipset

This was considered the first thing Commodore had done right in a long time. The A4000 was overpriced, and they had alienated many customers by

bringing out the A500+ with little warning, then stopping production overnight to make way for the rather overpriced A600. But now there was a new low-mid range machine that everyone wanted.

Commodore listened to its developers when design was underway. Thus 2mb Chip RAM was included as standard, and there was a fall-back mode for older software which disabled the CPU cache and/or the AA chipset. Also included was better sprite handling (compared to the previous base/mid machines), but for price reasons a high density floppy drive and a Digital Sound Processor chip had to be left out. They also took the lowest of their CPU choices - allowances were made for an EC020@14mhz, an 020@14mhz, an 030@14mhz and incredibly a full 030 running at over 14mhz - likely to be 28mhz. Also forgotten was an on-board FPU (you can see the mounting pads next to the CPU - U0), and little goodies like Flash RAM and an on-board Clock

At its low price - £399 - it sold like hotcakes, and more and more specific software and hardware was being sold. The first flood of accelerators came pretty quickly, most being based on quicker 020s. Then it was slashed to £279 and really took off.

But many things never appeared. How about games on PCMCIA cards, or even widespread RAM card availability - perhaps a 32-bit PCMCIA slot would have been a better idea. Power Computing once said they were planning a DSP add-on, but it which never materialized. The Commodore CD-Rom drive thankfully never appeared - it was overpriced and fitted into the expansion slot, but several other card slot versions did. But these were still the good days, when C= was making a profit (or hid their losses well) and all your mates had an Amiga. Then A1200s started selling for less than £100 new and all the magazines went into big-headline mode....

When Commodore went into liquidation it looked like the end of the road for the Amiga range. The A600, 1200 and 4000 were the only models left in production and they were fast becoming old news. Then Escom came along, pumped lots of cash into it and everyone thought they were our saviours. But what they did was pump all their cash into it, steal the Commodore name for their PC peripherals, sell a few OS3.1 A1200's by displaying a purple boot-screen in a shop at a 3-year old price and go bust. Now VIScorp have Amiga Technologies, and everyone is predicting the future. I'm not going to.

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Blimey, it started off as a hardware guide and I ended up slating Escom. That's life.

1.15 All About the Motherboard

The A1200 Motherboard

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As motherboards go, the one found inside the A1200 is pretty boring. First thing you'll notice is that there are no jumpers. There is no SCSI or fast

Expansion Board Reference - Viper Mark 2

CPU: 68030/68EC030
 Memory: 1 72-pin Socket, upto 128mb autoconfig
 Speed: 28mhz, 33mhz, 40mhz or 50mhz.
 FPU: PLCC socket.

Notes: Couln't guarantee getting an MMU. Autoconfig works well, but design flaw means SIMM socket faces inwards when fitted.

Jumpers: Single jumper - CPU/ALT. CPU: FPU at Viper CPU speed
 ALT: FPU at optional crystal speed

1.21 Microbotics M1230XA Board

Microbotics M1230XA Accelerator Card

Description by David Bump

CPU: 68030	Jumpers: TEST
Manufactured Speeds: 30, 40, 50mhz	FPU Speed
FPU Socket: PGA	
SIMM Socket: 1 x 72-pin	
Total Memory: 128mb	
Autoconfig: No - Utilities supplied	
MMU: Only on 30mhz and 50mhz	
Real Time Clock: Yes	

Notes:

Two programs supplied to configure memory. SetXA takes the specification values as arguments and configures the board at startup (every time), while AddXAMem automatically adds just the memory every time. A better option is AutoXA, which installs itself, reboots and configures the memory automatically on subsequent boots.

Wait states can also be set with SetXA. It will automatically set the "proper" value, but this can be overridden.

1.22 Phase 5 Blizzard IV Board

Description by Duncan Gow

1.24 Internal Floppy Drive Information

Internal Floppy Disk Drives - Information

Internal

The A1200 was fitted with the standard Amiga 880k double-density double-sided drive. The most common (for the older, more common Commodore-produced machines) is the Panasonic, which is generally reliable.

A few drives will work "from the box" - generally these were made specially for Commodore or an external drive manufacturer, but some will work after tweaking, the main difference is that the diskchange signal is usually on pin 34, when the Amiga expects it on pin 2. (See Floppy Drive Header Pinouts).

The other problem is that some drives haven't got the signal connected to the header, even though the mechanism supports it. A good example of drives that nearly work is the Escom drive incident, where the drives used didn't support the DSKRDY signal. This was later fixed with a small logic circuit.

I have one 1200 with a Citizen drive and another with a Panasonic drive, both work fine. The Citizen was sourced from a Cumana External drive, but operates well internally. Some machines allegedly came with Chinon drives.

High density Drives

It is reasonably difficult to get an internal HD disk drive on an Amiga A1200. Power Computing do sell an internal version of their PowerXL drive which is largely successful, but this is expensive and sometimes troublesome. The other way is for those lucky souls who have an Amiga Technologies produced machine with the "dodgy" drives, apparently it is feasible to hack these into a larger density (using HD disks). Currently the author of the hack has reached 1.5mb per disk, but hopes are high for fully working, 1.76mb Amiga and 1.44mb PC compatibility. Watch this space or see Aminet for the hack.

1.25 External Floppy Drive Information

External Floppy Disk Drives - Information

Many manufacturers made external drives for the Amiga range, and indeed any Amiga external drive will work, including the new high-density drives.

These consist of a drive mech, which is usually Amiga-specific, and an adaptor

board which converts the 23-way External Drive output into the 34-way data and 4-way power inputs. The drives have enable switches on the back, and if you don't require the drive it can be disabled to save memory - usually between 30kb and 50kb per drive. Also, some A1010 (The original Commodore external drive) had the power passthrough connections left unsoldered to "protect" A500 users from blowing their power supplies.

Cumana drives are generally reliable, as they use a high quality Citizen mechanism. Drive are also available with built-in virus protection (which stops writes to track 0) and the highly dubious Synchro disk copier - "Can Copy Any DD Disk". Also look out for Amitek drives, which use Sony internals as these have a very long life.

The 1200, as with all other Amiga models can handle upto 4 drives, one internally and 3 externally via "daisy chaining". You should be careful not to exceed the limit of your power supply when adding more drives.

High Density

Basically there are two makes - the Power Computing Super XL drive or the 4-Square drive. The Power Computing uses a software patch to get itself into HD mode, and it reported to work quite well but not flawlessly. The 4-Square is much newer, and it shows with the styling. It is a very slimline drive, far too thin even for a normal connector so it makes do with a edge connector. Apparently it works well, and if you can live with the, erm, different styling then it may well be the one for you.

1.26 Common Floppy Drive Problems

Floppy Drives - Common Problems

My internal drive doesn't work. The light is on permanently but nothing happens.

or

The Early-Startup menu says I have DF0-DF3 when I only have one drive

Check the power cable, with a voltmeter to check the Amiga is providing power and also for fit on the floppy drive power port. Also check the data cable is in correctly and intact.

All my disks come back as read-only, but the tab is set to read/write.

Check the small switch at the front bottom left of the drive. If that can't be depressed, either due to dirt buildup or a broken shaft it will think the disk is write protected. Try and get a new switch to solder in, or unclog the dirt from around it.

I keep getting read or write errors on all my disks.

Is the drive aligned correctly? If disks that you format on that drive are OK but others disks have errors this is probably the case. Re-align the drive.

Is the disk seating properly? Bent guides could be a problem.

Does the disk rotate at the correct speed? Try one of Aminet's disk speed programs.

Try cleaning the read/write heads with a good quality disk drive cleaner - these usually consist of a fabric "disk" and some solvent.

1.27 CD-ROM Drive Index

CD-ROM Drive Index

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Common Problems

Frequently Asked Questions

Related Sections:

IDE Port Pinouts

1.28 CD-ROM Drive Information

CD-ROM Drive Information

Up until quite recently the only feasible way to add a CD-Rom drive to an Amiga A1200 was to buy a custom unit, which usually plugged into the PCMCIA port. These were made by Archos (Zappo in the UK) and consisted of an IDE drive, most commonly a Mitsumi and an interface. The same principle is applied to the brand new Amiga Technologies Q-Drive.

The times, they are-a-changing however. With the prices of bare SCSI units dropping weekly, many 1200 owners are turning to them. A SCSI interface is required, the most popular being the Squirrel which slots into the PCMCIA slot. Any SCSI adaptor will work however, including the Dataflyer which sits on the IDE port, and the range available to fit on Expansion boards.

They haven't stopped changing yet. Suddenly IDE drives are as cheap as muck - a double speed drive can now be picked up for the same price as a cable used to connect it. PC owners are to "thank", since that's where IDE CD-Rom drives are most commonly found. After getting hold of a special cable, it's a simple job of plugging the drive in and running a custom driver, a demo of which is available on Aminet. Cheap and easy, but they can never hope to match the speed of SCSI devices. As a rule single speed drives reach 150kb/s maximum, double speed drives 300kb/s, quad speeds 600kb/s and so on. However, as with all rules it can be broken, usually by very early drives which can fail to get anywhere near the speed and take these figures with the pinch of salt you normally reserve for transfer rates.

Type	Interface	Notes
Custom Unit	PCMCIA	Very expensive, but simple to install
SCSI	Squirrel	Not too hard to install, quite fast. Expensive.
SCSI	Dataflyer	Only as fast as IDE, but more expensive
SCSI	Via Expansion	Will go as fast as fastest drive (8x) Very expensive.
IDE	Internal IDE	Cheap and quick, but sometimes problematic software.
IDE	Via PCMCIA	Quick, but what's the point?

1.29 CD-Rom drive Common Problems

CD-ROM Drive Common Problems

I have an IDE CD-Rom which isn't recognised by ATAPI.

Are you sure it's ATAPI compatible? It won't work with any old IDE drive you know. Most are, it usually says either on the label on the actual disk, on the box or on the driver disk.

I have an IDE drive which transfers data really slowly.

Try typing "setatapispeed <unitnumber> 3" to set the atapi driver to its maximum speed.

I have an IDE drive but I can't seem to sample sound from it.

IDE drives which support CDDA sampling are unfortunately in the minority. Check with the manufacturer that your drive does support it through the IDE cable

1.30 Hard Drive Index

Hard Drives - Index

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Frequently Asked Questions

Related Sections:

IDE~Port~Pinouts

1.31 Hard Drive Information

Hard Drives - Information

The A1200 was designed to take the 2.5 inch hard drives, as found in laptop/notebook PC's and the Atari Falcon. Like the A600 before it, it came with a 44-pin IDE header on the motherboard. This provides the same control as the more common 40-pin type, but has power lines included. Inside is a cradle specially designed to accomodate a 2.5" drive within a few inches of the header.

About the time that the 1200 was released, Commodore was experiencing the first strains of financial difficulty. Hence many different makes of hard drive were bundled with the A1200HD models, usually Seagate 120mb models but some came with 80mb drives. Later the Escom models came with a 170mb drive.

It is perfectly possibly to autoboot off this controller, but many 1200's have problems in this; or to be more specific, many hard drives have problems with the A1200. If the hard drive is not ready when the A1200 wants to boot then it will not be seen by the system and it will go straight into floppy boot, or display the purple screen if there is no floppy. The most simple solution is to reset, as the problem only occurs on powerup.

The other problem is that some drives, Connors in particular, don't like a reset being performed. In this case the reset line of the IDE cable should be cut. It's usually the red one, but you can follow the wire up from the motherboard where it's marked to make sure. It won't hurt other drives (if you get another one) not to do a reset - you are not then restricted to Conner drives.

Now technology is cheaper, many people are wanting hard drives internally. So instead of getting the snug little 2.5" model they cram a larger 3.5" drive in there. I can see why, as I am one of those people - it's much cheaper. But the A1200 was never designed for this size of drive, and you have to remove various bits of shielding and case to get it in there.

The controller is quite a good one - it'll happily perform at quite high speeds (1.7mb/sec) and it is hard to overload it, for example by connecting a CD-Rom drive as well. It can be overloaded though, so don't try too hard!

1.32 Hard Drive Problems

Hard Drive Common Problems

I get errors when moving large files.

Welcome to the real world. Seemingly every A1200 user except myself has this problem, so take a look at the MaxTransfer section of the FAQ which will probably fix it for you.

My HD seems to draw a lot of power - the power light flickers when it access and sometimes it crashes.

It's not the HD at fault, but the power supply. See the
PSU Information

.

It just doesn't appear at bootup - I get the "insert floppy" screen.

It doesn't spin up fast enough. You can get a new HD, get OS3.1 which has a longer checking time or live with it.

It appears at bootup, but not after a reset.

It spins down when you reset. Cut line 1 on the IDE cable - it might be the red one, but follow the line from the motherboard just in case.

1.33 Monitor Common Problems

Monitors - Common Problems

My monitor will show high-frequency screenmodes, but not normal PAL.

Are you sure it can sync down to 15khz? Most normal "multisync" monitors can't, especially if bought from a PC-biased shop.

My multisync monitor has got huge black borders down the sides.

Mine too. It's a "feature" of most low-range multisyncs, that don't have digital resizing. You can try MonEd, from Aminet, which stretches the screen slightly and makes them a bit thinner, or if you're loaded get a better monitor that supports digital resizing. (Try the
monitor types
page)

1.34 Clock Header Pinout

"Clock" Header Pinout

22-pin Male Header

```

-----
| 20 22 24 26 28 30 32 34 36 38 40 |
| 19 21 23 25 27 29 31 33 35 37 39 |
-----

```

19: GND	Ground	30: A2	Address Bus Bit 2
20: +5v	+5v DC	31: D23	Data Bus Bit 23
21: INT6	Interupt Request	32: D22	Data Bus Bit 22
22: _SPARE_CS		33: D21	Data Bus Bit 21
23: _RTC_CS	Real Time Clock CS	34: D20	Data Bus Bit 20
24: _PWR_BAD		35: D19	Data Bus Bit 19
25: _IORD	IO Read	36: D18	Data Bus Bit 18
26: _IOWR	IO Write	37: D17	Data Bus Bit 17
27: A5	Address Bus Bit 5	38: D16	Data Bus Bit 16
28: A4	Address Bus Bit 4	39: GND	Ground
29: A3	Address Bus Bit 3	40: +5V	+5v

NOTES:

Why does it start at 19?

Because the header does. Look closely and the marker for pin 1 is right down on a row of solder-holes (unless you have a very early release). Since the header starts at 19, I did too.

So why the blank holes on the PCB?

I've explained this in the
Miscellaneous
section.

1.35 CPU Expansion Slot Pinouts

CPU Expansion Slot Pinout

1: Reserved	Address Bus Bit 31	76: D2	Data Bus Bit 2
2: Reserved	Address Bus Bit 30	77: D1	Data Bus Bit 1
3: Reserved	Address Bus Bit 29	78: D0	Data Bus Bit 0
4: Reserved	Address Bus Bit 28	79: GND	Ground
5: Reserved	Address Bus Bit 27	80: +5V	+5v DC
6: Reserved	Address Bus Bit 26	81: /IPL2	Int Pri Lvl 2
7: Reserved	Address Bus Bit 25	82: /IPL1	Int Pri Lvl 1
8: Reserved	Address Bus Bit 24	83: /IPL0	Int Pri Lvl 0
9: GND	Ground	84: Reserved	--
10: +5V	+5v DC	85: /RST	Processor Reset
11: A23	Address Bus Bit 23	86: /HLT	Processor Halt
12: A22	Address Bus Bit 22	87: Reserved	--
13: A21	Address Bus Bit 21	88: Reserved	--
14: A20	Address Bus Bit 20	89: SIZE0	
15: A19	Address Bus Bit 19	90: SIZE1	
16: A18	Address Bus Bit 18	91: /AS	Address Strobe
17: A17	Address Bus Bit 17	92: /DS	Data Strobe
18: A16	Address Bus Bit 16	93: R/W	Proc. Read/Write
19: GND	Ground	94: /BEER	Bus Error
20: +5V	+5v DC	95: Reserved	--
21: A15	Address Bus Bit 15	96: /AVEC	
22: A14	Address Bus Bit 14	97: /DSACK1	Data Send Ack.
23: A13	Address Bus Bit 13	98: /DSACK2	Data Send Ack.
24: A12	Address Bus Bit 12	99: CPUCLKA	CPU Clock
25: A11	Address Bus Bit 11	100: E CLOCK	Perip Enable Clk
26: A10	Address Bus Bit 10	101: GND	Ground
27: A9	Address Bus Bit 9	102: +5V	+5v DC
28: A8	Address Bus Bit 8	103: FC2	Function Code 2
29: GND	Ground	104: FC1	Function Code 1
30: +5V	+5v DC	105: FC0	Function Code 0
31: A7	Address Bus Bit 7	106: /RMC	
32: A6	Address Bus Bit 6	107: Reserved	--
33: A5	Address Bus Bit 5	108: Reserved	--
34: A4	Address Bus Bit 4	109: Reserved	--
35: A3	Address Bus Bit 3	110: Reserved	--
36: A2	Address Bus Bit 2	111: /BR	Bus Request
37: A1	Address Bus Bit 1	112: /BG	Bus Grant
38: A0	Address Bus Bit 0	113: Reserved	--
39: GND	Ground	114: /BOSS	
40: +5V	+5v DC	115: /FPUCS	FPU CS

41: D31	Data Bus Bit 31	116: /FPUSENSE	FPU Sense
42: D30	Data Bus Bit 30	117: CCKA	
43: D29	Data Bus Bit 29	118: /RESET	General Reset
44: D28	Data Bus Bit 28	119: GND	Ground
45: D27	Data Bus Bit 27	120: +5V	+5v DC
46: D26	Data Bus Bit 26	121: /NETCS	
47: D25	Data Bus Bit 25	122: /SPARECS	
48: D24	Data Bus Bit 24	123: /RTCCS	
49: GND	Ground	124: /FLASH	
50: +5V	+5v DC	125: /REG	Register Enable
51: D23	Data Bus Bit 23	126: /CCENA	
52: D22	Data Bus Bit 22	127: /WAIT	Interrupt
53: D21	Data Bus Bit 21	128: /KBRESET	Keyboard Reset
54: D20	Data Bus Bit 20	129: /IORD	IO Read
55: D19	Data Bus Bit 19	130: /IOWR	IO Write
56: D18	Data Bus Bit 18	131: /OE	
57: D17	Data Bus Bit 17	132: /WE	DRAM Write Enbl.
58: D16	Data Bus Bit 16	133: /OVR	Override SysDec
59: GND	Ground	134: XRDY	Ext. Data Ready
60: +5V	+5v DC	135: /ZORRO	
61: D15	Data Bus Bit 15	136: /WIDE	
62: D14	Data Bus Bit 14	137: /INT2	Interrupt Req.
63: D13	Data Bus Bit 13	138: /INT6	Interrupt Req.
64: D12	Data Bus Bit 12	139: GND	Ground
65: D11	Data Bus Bit 11	140: +5V	+5v DC
66: D10	Data Bus Bit 10	141: SYSTEM1	Ground
67: D9	Data Bus Bit 9	142: SYSTEM0	Ground
68: D8	Data Bus Bit 8	143: /xRxD	
69: GND	Ground	144: /xTxD	
70: +5V	+5v DC	145: /CONFIG OUT	
71: D7	Data Bus Bit 7	146: AUDIO GND	Audio Ground
72: D6	Data Bus Bit 6	147: AUDIO L	Left Audio
73: D5	Data Bus Bit 5	148: AUDIO R	Right Audio
74: D4	Data Bus Bit 4	149: +12V	+12v DC
75: D3	Data Bus Bit 3	150: -12V	-12v DC

Signals marked "--" are shown not connected on the schematics.

Signals with no description are still present - I couldn't find the name.

Pins 1 to 8 are marked Reserved but are shown connected to the Address Bus at invalid bits.

1.36 External Floppy Drive Port Pinout

Pinouts - Floppy Drive Port

```

-----
Female DB23 \ 1 2 3 4 5 6 7 8 9 10 11 12 /
              \ 13 14 15 16 17 18 19 20 21 22 23 /
              '-----'

```

1: /RDY	Disk Ready	13: /SIDE	Select Disk Side - 0 Upper
2: /DKRD	Disk Read Data	14: /WPRO	Disk is Write Protected
3: GND	Ground	15: /TK0	Position Head over Track 0
4: GND	Ground	16: /DKWE	Disk Write Enable
5: GND	Ground	17: /DKWD	Disk Write Data
6: GND	Ground	18: /STEP	Step Head - Pulse (_)
7: GND	Ground	19: DIR	Sel Head Direction - 0 In
8: /MTRXD	Disk Motor Control	20: /SEL3	Select Drive 3
9: /SEL2	Select Drive 2	21: /SEL1	Select Drive 1
10: /DRES	Disk Reset	22: /INDEX	Disk Index Pulse
11: /CHNG	Disk Removed	23: +12V	+12v DC (160mA Max)
12: +5V	+5v DC (250mA Max)		

Pins 8-10 and 16-21 are Open Collector

1.37 Internal IDE Pinouts

Pinouts - Internal IDE Header

Male 44-DIL Header

```

-----
| 1  3  5  7  9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 |
| 2  4  6  8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 |
-----

```

1: _RESET	Drive Reset	23: _IOWR	IO Write
2: GND	Ground	24: GND	Ground
3: D7	Data Bit 7	25: _IORD	IO Read
4: D8	Data Bit 8	26: GND	Ground
5: D6	Data Bit 6	27: WAIT	IO Channel Ready
6: D9	Data Bit 9	28:	--
7: D5	Data Bit 5	29:	--
8: D10	Data Bit 10	30: GND	Ground
9: D4	Data Bit 4	31: _IDE_IRQ	Interrupt Request
10: D11	Data Bit 11	32:	--
11: D3	Data Bit 3	33: A1	Address 1
12: D12	Data Bit 12	34:	--
13: D2	Data Bit 2	35: A0	Address 0
14: D13	Data Bit 13	36: A2	Address 2
15: D1	Data Bit 1	37: _IDE_CS[1]	IDE CS 1
16: D14	Data Bit 14	38: _IDE_CS[2]	IDE CS 2
17: D0	Data Bit 0	39: _IDE_LED	Drive active LED
18: D15	Data Bit 15	40: GND	Ground
19: GND	Ground	41: +5V	+5V DC
20:	--	42: +5V	+5V DC
21:	--	43: GND	Ground

4:	HQ-Pulse	--	/Right	Button 2
5:	Middle Button	Pen Press	--	Pot X
6:	Left Button	/Beam Trigger	/Button 1	--
7:	+5v	+5v	+5v	+5v
8:	GND	GND	GND	GND
9:	Right Button	Button 1	Button 2	Pot Y

Not all buttons are compulsory in all devices

1.40 Parallel Port Pinout

Pinouts - Parallel Port

```

-----
Female DB25 \ 1 2 3 4 5 6 7 8 9 10 11 12 13 /
              \ 14 15 16 17 18 19 20 21 22 23 24 25 /
              /-----\

```

1: /STROBE	Strobe	14: +5V PULLUP	+5v DC (10mA)
2: D0	Data Bit 0 (LSB)	15: ---	
3: D1	Data Bit 1	16: /RESET	Reset
4: D2	Data Bit 2	17: GND	Signal Ground
5: D3	Data Bit 3	18: GND	Signal Ground
6: D4	Data Bit 4	19: GND	Signal Ground
7: D5	Data Bit 5	20: GND	Signal Ground
8: D6	Data Bit 6	21: GND	Signal Ground
9: D7	Data Bit 7 (MSB)	22: GND	Signal Ground
10: /ACK	Acknowledge	23: GND	Signal Ground
11: BUSY	Busy	24: GND	Signal Ground
12: POUT	Paper Out	25: GND	Signal Ground
13: SEL	Select		

1.41 Power Input Pinout

Power Input Pinout

5-pin square DIN Female

```

-----
| 1     4 |
|     3   |
| 2     5 |

```

```

    /-----/
1: +12v DC
2: Shield Ground
3: -12v DC
4: Ground
5: +5v DC

```

Pin 2 is directly connected to the connector shield.

1.42 Serial Port Pinouts

Pinouts - Serial Port

```

-----
Male DB25  /-----/
            \ 1  2  3  4  5  6  7  8  9 10 11 12 13 /
            \ 14 15 16 17 18 19 20 21 22 23 24 25 /
            /-----/

1: SHIELD      Shield Ground      14: ---
2: TXD         Transmit Data      15: ---
3: RXD         Recieve Data       16: ---
4: RTS         Request to Send    17: ---
5: CTS         Clear to Send      18: AUDI    Amiga Audio In (Right)
6: DSR         Data Set Ready     19: ---
7: GND         System Ground      20: DTR    Data Terminal Ready
8: CD          Carrier Detect     21: ---
9: +12V        +12v DC (20mA Max) 22: RI     Ring Indicate
10: -12V       -12v DC (20mA Max) 23: ---
11: AUDDO     Amiga Audio Out (Left) 24: ---
12: ---       Speed Indicate      25: ---
13: ---

```

1.43 Video Port Pinouts

Pinouts - Video Port

```

-----
Male DB23  /-----/
            \ 1  2  3  4  5  6  7  8  9 10 11 12 /
            \ 13 14 15 16 17 18 19 20 21 22 23 /
            /-----/

```


1: /XCLK	External Clock	13: GNDRTN	Return for /XCLKEN
2: /XCLKEN	External Clock Enable*	14: /PIXELSW	Genlock Overlay*
3: RED	Analog Red**	15: /C1	Clock Out*
4: GREEN	Analog Green**	16: GND	Video Ground
5: BLUE	Analog Blue**	17: GND	Video Ground
6: DI	Digital Intensity*	18: GND	Video Ground
7: DB	Digital Blue*	19: GND	Video Ground
8: DG	Digital Green*	20: GND	Video Ground
9: DR	Digital Red*	21: -12V	-12v DC (10mA)
10: /CSYNC	Composite Sync*	22: +12V	+12v DC (100mA)
11: /HSYNC	Horizontal Sync*	23: +5V	+5v DC (100mA)
12: /VSYNC	Vertical Sync*		

Pin 13 can be considered Digital Ground

Signals marked * are 47 Ohm
Signals marked ** are 75 Ohm

1.44 Floppy Drive Power Port Pinout

Internal Floppy Power Pinout

Male Polarised 4-pin	,-----,	Accelerator
	1 2 3 4	V Slot
	'-----'	
	1: +5v	
	2: GND	
	3: GND	
	4: +12v	

1.45 pinoutsled

LED Connector Pinouts

5-pin SIL Male

	,-----,	Accelerator
	1 2 3 4 5	V Slot
	'-----'	

- 1: Power LED
- 2: Floppy Access LED
- 3: Hard Drive Access LED
- 4: Key (No Pin)
- 5: Common Ground

1.46 Power Supply Information

Power Supply Information

At first glance the power supply shipped with the A1200 seems to be identical to the A500 model before it. It is actually not as powerful as the A500 version, as it supplies exactly 3A on the +5v rail compared to 4.5A on the older model. The -12V and +12V supplies differ as well. Why Commodore decided to give its more powerful, more expandable new machine a smaller supply is beyond me, but whatever the reason the fact is that you need a better one.

Well, you do if you have any kind of serious setup. They usually get flakey with a 030 board and a 3.5" hard drive, but as always with Commodore's manufacturing record that's no guide. A while ago I converted a batch of PC power supplies for people with dodgy supplies on an exchange basis, and of the 6 I got back no two were the same. Some 1200's were running A600 supplies, some had PCB's twice the size of others.

The 5-pin square DIN plug is a rather special design. It's shared with the other smallbox Amiga's, but no other device uses it. I did have the address of a company in America who were selling them for \$4 each, but unfortunately it was mislaid. I would welcome a source of these items.

1.47 Power Supply Common Problems

Power Supply Common Problems

Help! My Computer keeps crashing, but only with my HD/RAM board plugged in.

You are experiencing what's known as Commodore Cheapness. The power supply that came with the 1200 was of a lower rating than the A500, and bizzarely of a lower rating than even early A600's. Get a new one - either an aftermarket 200W one or a A500 supply might cure it.

My supply makes a whining sound when it's on at the plug but not at the supply

switch - is it dangerous?

Not really dangerous to you, but your Amiga is very susceptible to power spikes. If a transformer is on the way out, which a noise like this points to, it could shoot some large currents into your machine. See if you can get it repaired - most of the components are quite common.

1.48 About the Editor

About the Editor

Oh, right, it's me. Umm, My name is Chris Appleton, and I've had exactly no experience of commercial computer repair, I've never done a course in it and I don't get paid for anything like it. So why do it? Believe it or not, I like writing stuff like this. I reckon it's my way of doing some good. I'm only 17, and I got my first 1.3 A500 back when I was 11. I swapped it for a A1200 in late 1993, and since then I've hacked it into a tower case with an 68040 and a CD-Rom drive. It's kinda cool, but I'm addicted to hacking it.

A little by-line of mine is writing. So little I, ummm, set up a WWW magazine with a couple of mates. You can catch my inane dribblings on Pure Amiga at <http://www.pureamiga.co.uk/>.

If you have any questions, contributions, error reports or gold bullion you can reach me at chris@fuchal.demon.co.uk.

1.49 Credits

Thanks to:

My wonderful beta testers, who hopefully prodded this guide until all the errors fell out.

Philip Ayres
Warren Block
Katy Appleton, spellchecker extraordinaire

Contributors

Warren Block, for the A1200 Hardware FAQ
references and the monitor info.
All the really great people who spent ages
describing their accelerators

And those who didn't know they contributed...

The guy who posted A1200 Schem's to Aminet :)
Commodore + AT for a great machine (</mush>)

1.51 Zorro Busboard Information

Zorro Boards Information

You may have worked out that the main difference between the A1200 and the A4000 is the 1200's lack of Zorro slots. So we can't use graphics cards, extra HD controllers, cheaper SCSI and so on.

Well, some companies have tried to change all this. They have designed, in conjunction with a tower case, a Zorro busboard which usually provides 5 Zorro slots (and sometimes a Video slot?). Sounds good? It usually is.

There are hundreds of compatibility problems. Because the 1200 expansion slot is just short of being a full Zorro slot (albeit the wrong sex), compromises have to be made. Also you'll have to buy a huge tower case to use it, the cost for these is often twice the price of a A1200, even without the motherboard. Finally, some A1200 cards won't work when there is a Zorro busboard present, such as the Blizzard 1260.

But is it worth it? Probably not at the minute. You pay a large sum of money for Zorro-2 slots which may or may not work with the card you had in mind, have to rebuild your 1200 into a case and then find out your expensive accelerator won't work (possibly). Or for the same overall price you could get a medium spec secondhand A4000 with Zorro-3, then sell your A1200. You choose.

1.52 Ram Card Information

RAM Card Information

RAM Cards are the basic type of board. Usually they let you add memory via a standard 72 pin socket, and often they have an FPU socket too. Some older boards, which date from the time of the first 1200, have only memory on-board with no sockets.

An FPU added to this board will make only a marginal difference to the 020. It will make no attempt to speed up games, or anything like normal screen redrawing. It will only speed up maths-intensive operations, like raytacing. This is because a program has to use FPU commands to use the unit, therefore a FPU-specific version has to be used instead.

Some boards, especially early ones, have problems with memory address mapping in that it overwrites the PCMCIA slot with more than 8mb on board, rendering it useless.

1.53 68020-based Card Information

68020 Card Information

68020 cards contain a faster processor, but of the same type that the A1200 has internally. Usually they run at 28mhz, twice the old speed. They also contain a 72-pin SIMM socket, and they sometimes have a built-in FPU which is separate from the CPU.

They make a good starting point into the world of accelerators, they are fast enough for most simple operations, and give the OS a little bit of oomph.

1.54 68030-based Card Information

68030 Card Information

The 68030 is the next step up from the A1200's internal processor. Cards with this processor on usually have at least one 72-pin SIMM socket, and either a PGA (Pin Grid Array) or PLCC (Plastic Leaded Chip Carrier) FPU socket, or in some cases both.

Speedwise it's quite a step up from the 14mhz 020, although for screen redraws and the like you still aren't trying to outrun AGA. However it can be fast enough to require 70ns SIMMs, so make sure you get these for it.

Beware of overclocked CPU's - the 68020 was produced in 20mhz, 28mhz, 40mhz and 50mhz flavours, and later 33mhz was added. However, many manufacturers assume (correctly, in most cases) no-one is going to read the processor before they install it, and many 28mhz 030's came with overclocked 20mhz processors.

Also, the EC version exists which doesn't have an MMU, but many manufacturers won't or can't tell you if a specific board has the MMU or not before you buy. And many EC marked CPU's have a part-working MMU which seems like a fully functioning one, for example it might run well enough to run VMM.

1.55 68040-based Card Information

68040 Card Information

The 68040 is probably the biggest step between processors. Although numerically speaking it's only "10" away from an 030, when it comes to speed it'll seem like "100". the biggest difference is that the 040 comes with both a FPU (68882) and MMU built into it. Therefore you can run virtual memory programs, and raytrace faster than a speeding bullet.

There is much less demand for overclocking the 040, and so manufacturers only

offer 25mhz and 40mhz versions - these are the speeds that Motorola rate them at.

The 040 runs very hot, because although it has stacks more power than an 030, it's crammed into a unit only about twice the size (remember there's an FPU and MMU in there too), and it still runs on 5v technology. Hence you will need a fan.

1.56 68060-based Card Information

68060 Card Information

The 68060 is the top of the range of Motorola Processors. It's based on the 040 in that it too includes a FPU and MMU, but it uses 3.3v technology so even after running Imagine for a week you won't need to fan-cool it.

Basically, it's really fast but really expensive.

1.57 Help with the A1200 Hardware Guide

Help:

AmigaGuide® Buttons: Contents: Changes with page content
 Index: Takes you to the main alphabetical index
 Help: Da-dah!
 Browse: Attempts to go through guide in order.

In the Contents Page: Click on the section you need. Most lead to other indexes, a few directly to pages.
 Contents: No effect.

In the section menus: Most have at least 3 sections - Information, frequently asked questions and common problems. Some have more, and some have related sections.
 Contents: Main Contents

On the Information pages: Click on the top-left box to return to the very first menu.
 Contents: TopicIndex

This guide supports SearchGuide. Wherever you see a Search button, you can click it to search for a specific topic. You must have SearchGuide installed for this to work, it is included in the original archive (see
 Availability
)

or look on Aminet in text/hyper.

Buttons marked FAQ will take you to the A1200 Hardware FAQ, by Warren Block. This will only work if the FAQ is in the same directory as this guide, and

named "A1200HardFAQ.txt". When pressed from a specific area, it will take you to the related section within the FAQ.

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Zorro Board Index

Zorro Board Information

1.59 The Keyboard Matrix

The Keyboard Matrix

This applies to the GB keyboard, but on each row the keys are listed left-to-right, so you know which key replaces it on other keyboards - for example the blank keys on GB.

One notable change from earlier keyboards, which does not lie in the matrix as such, is the lack of multiple-key rollover. This annoys most users - speed typists have to keep their speed down, and most annoyingly games have to have silly keys to avoid the fact that two keys on the same row cannot be pressed together.

Layout:

Row	Key	Connects Pins		Row	Key	Connects Pins
Top	Esc	7 to 15		2nd	<Shift>	12 to 30
	F1	7 to 17			<Blank Key>	3 to 15
	F2	7 to 18			Z	3 to 16
	F3	7 to 19			X	3 to 17
	F4	7 to 20			C	3 to 18
	F5	7 to 21			V	3 to 19
	F6	7 to 23			B	3 to 20
	F7	7 to 25			N	3 to 21
	F8	7 to 26			M	3 to 22
	F9	7 to 27			,	3 to 23
	F10	7 to 28			.	3 to 24
5th	'	5 to 15			/	3 to 25
	1	5 to 16			<Shift>	6 to 30
	2	5 to 17		Btm	<L Alt>	13 to 30
	3	5 to 18			<L Amiga>	14 to 30
	4	5 to 19			<Space>	3 to 27
	5	5 to 20			<R Amiga>	10 to 30
	6	5 to 21			<R Alt>	8 to 30
	7	5 to 22				
	8	5 to 23				
	9	5 to 24				
	0	5 to 25				
	-	5 to 26				
	=	5 to 27				
	\	5 to 28				
	<BS>	3 to 28				
4th	<Tab>	1 to 15		Top		2 to 28
	Q	1 to 16			<Help>	7 to 29
	W	1 to 17			(7 to 16
	E	1 to 18)	7 to 22
					/	7 to 24
					*	4 to 15
				4th	7	4 to 25
					8	4 to 21
					9	4 to 17

	R	1 to 19		-	4 to 29
	T	1 to 20		3rd <U Csr>	5 to 29
	Y	1 to 21		4	4 to 26
	U	1 to 22		5	4 to 22
	I	1 to 23		6	4 to 18
	O	1 to 24		+	4 to 16
	P	1 to 25		2nd <L Csr>	1 to 29
	[1 to 26		<D Csr>	3 to 29
]	1 to 27		<R Csr>	2 to 29
	<Return>	1 to 28		1	4 to 27
3rd	<Ctrl>	11 to 30		2	4 to 23
	<Caps Lock>	2 to 15		3	4 to 19
	A	2 to 16		<Enter>	4 to 24
	S	2 to 17		Btm 0	4 to 28
	D	2 to 18		.	4 to 20
	F	2 to 19			
	G	2 to 20			
	H	2 to 21			
	J	2 to 22			
	K	2 to 23			
	L	2 to 24			
	;	2 to 25			
	#	2 to 26			
	<Blank Key>	2 to 27			