**IDE2AMI4**

**COLLABORATORS**

| | *TITLE* : | | |
| | IDE2AMI4 | | |
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| WRITTEN BY | | November 24, 2024 | |

**REVISION HISTORY**

| NUMBER | DATE | DESCRIPTION | NAME |
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# Chapter 1

# IDE2AMI4

## 1.1 IDE2AMI4.guide

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        -=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-
        How To Connect A 3.5" IDE Hard Disk To An Amiga A1200
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                  This Is Version 4 Of IDE2AMI

              Written by HYDRA of PERSPEX and LSD


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```

## 1.2 Installing a 2nd Hard Drive!

```
 Installing a 2nd Hard Drive!
```

```
==============================
```

If you've not read the rest of the document then do so first!

Okay, this is definately NOT for the faint hearted or those who are no good at diy.

First I'll explain the basics of daisy chaining 2 hard drives.

Okay, IDE can only have 2 devices at anyone time, the first device is called the MASTER and the second one is called the SLAVE.

when you get a new IDE device it's always configured to be the MASTER drive as most people only have one IDE device, so if you want to add another drive you need to do 2 things.

1) configure your 2nd device so that it is the SLAVE
2) configure your 1st device so it knows there is a SLAVE device.

(note: 2 is not always needed, but 9 of 10 times it is!)

IDE idiosyncrasys
=================

you now need to know that some IDE devices dont like being slaves to other devices and vice versa.  Even IDE devices from the same company aren't compatiable!

On a brighter note I can tell you that My western Digital 2250 and my conner 30254 work fine together! (and it's DARN GOOD having half a gigabyte of storage at your disposal!)

The reason for some IDE's being different to other IDE's is that PC's dont use the IDE standard to the full and only use bits of it, for instance, the PC's BIOS will not get all the info about the drive from the drive itself,  you have to tell it what you've plugged in :-) crap or what!.  anyway,  because of this hard disk manafacturers only implemented the bits of IDE that PC's use to cut costs.  So, when your nice shiny new A1200 comes along with it's all singing all dancing FULL IDE you start to find that these so called 'standard' IDE drives dont work properly!   Aaarrgghh!

See, PC's ARE to blame for all this, so take it out on your PC owning mate!

Dont you just HATE PC's ????  I know I do (I had one once, It pissed me off so much I ripped the hard disk out and connected it up to my Amiga instead! and have since sold the PC!!! hahahahaaaa :-)

So, the first thing to think about is wether your 2nd device will work with your first one,  if it does then carry on reading otherwise you might as well stop now!

right then, still here ?

Where do i put the bugger
=========================

to fit 2 3.5" hard disks inside the case of an A1200 is almost
impossible, it was bad enough with just one, let alone 2!  So, unless you
want to take out your floppy disk drive and put the hard disk there
you'll have to mount it externally!  What I've done is mount BOTH of my
hard disks externally,  it also makes it easier if you want to add an
external PSU for the Hard Drives if you have it like this. This brings me
nicely onto the next thing on the list :-

EEErrrrk, where's all the power gone!
=====================================

having one 3.5" HD is a bad enough strain on an A1200 PSU, but having 2
leaves the computer with NO power left at all!   If you went out and
bought an beefy PSU for your 1200 when you fitted the first hard disk
then there should be enough current for both of them (check theratings on
the Hard Drive(s) and on the PSU to make sure.)
If you didnt then your gonna have to either a) get one or b) buy an
external PSU for the hard drives,  the PSU MUST supply +12 volts at
around 1 amp minimum and +5 volts at around 1.2 amps.  If you can find
one with better ratings get that to be on the safe side,  but I wouldnt
recommend using less than the above ratings.

Oh no, i dont need to make another lead do I ?
==============================================

you most certainly do my dear reader!

what you now need is a lead that goes like this

```
#-------<-------------------------#----------------#
#-------->-------------------------#----------------#
#-------<-------------------------#----------------#
#-------->-------------------------#----------------#
#-------<-------------------------#----------------#
#-------->-------------------------#----------------#
#-------<-------------------------#----------------#
^                                 ^                ^
|                                 +--------+--------+
A1200's 44 way                      and 2 40 way
HIGH density                        normal density
connector                           connectors for the
                                      hard disks!
```

The little squigly arrows in the middle of the cable mean "there can be any
amount of cable here"

you now have a choice to make,  you can either make a whole new cable
and use the old one,  if you use the old one you can make it so that you
can unplug the hard disks from the computer.

Use the old cable
=================

ok then mr cheapskate! you'll need the following EXTRA bits

1 x length of 40 way IDC ribbon cable
    (make it as long as you want but not too much longer than a meter)
2 x 40 way IDC FEMALE connectors to crimp onto the above cable.
1 x 40 way IDC MALE cable fitting connector.
    (basicly it fits onto the cable the same as the other connectors did
    but this has pins instead of holes so you can plug your old cable
    into it.)
    these connectors are about 4 quid or more!! compared to the female
    ones that cost about 90p tops!

to make the cable do the following.

Crimp the 2 female connectors to one end of the 40 way IDC cable (use a
crimp tool or a vice) make sure you've got enough space between the
connectors to allow you to plug them into the hard disks easily enough,
about 4 inches should be plenty.

Next, crimp the 40 way MALE connector to the other end of the cable
making VERY sure that pin 1 on that connector matches pin 1 on the other
ones or you'll be scraping bits of IDE hard disk off your wall!

and thats it,  simple huh ?

Make A New Cable
================

ok, this is a bit more difficult than the other one so be prepared for
some real tedious soldering.

you'll need these parts to make this cable

1 x length of 40 way IDC ribbon cable
    (make it as long as you want but not too much longer than a meter)
2 x 40 way IDC FEMALE connectors to crimp onto the above cable.
1 x 44 way HIGH DENSITY female IDC connector (to plug into the A1200)
1 x length of 44 way HIGH DENSITY IDC ribbon cable
1 x length of heat shrink tubing, about 1.5 MM unshrunk should do the
    trick.
1 x soldering iron
1 x length of solder (for soldering wires!)

ok, now do this.

crimp 44 way cable into 44 way connector.
then crimp the 2 40 way connectors onto the 40 way cable about 4 inches
apart.

now comes the tricky bit. what you have to do is join the two cables
together!!  Erk!

so, solder pin 1 on the 44way to pin 1 on the 40 way cable all the way
down to pin 40, dont forget to put the heatshrink round the cable so that
the solder joints dont touch each other.

and thats that.

what about power ?

==================

oh yeah, nearly forgot!

if you've got a decent PSU for your A1200 then you can make a cable up as
per cable3.iff (which is the same as cable 2 onlyit has a 4th connector
on it.

OR

if you bought a seperate PSU then you'll need to wire it up to the
connectors as per the pinouts in cable2.iff


how do it configure the drives ?
================================

now there's a good question if ever I heard one!

well, as I've already said each IDE seems to be different so hear's a
quick guide line.

get hold of your existing (1st) hard drive, now somewhere on it there
should be a load of jumpers that we need to change.  if you remeber I
said there were 2 steps, 1 of which was to tell the master that there is
a slave drive present,  so we now have to find the jumper that tells the
hard drive that there is one,  on western digital drives it's marked as
SP meaning "Slave Present"  this jumper needs to be set

next get your other (2nd) hard drive, we've now got to tell it that it's
the slave drive, so find the jumper that tells it this.

you might also have to tell this drive (the 2nd drive) that there is a
slave present (itself, that is) if it didnt work.

heres a list of what some jumper labels might mean

C/D  = pc's use letters instead of device names (cos PC's are SHIT) so
       on a PC the first drive would be C: the next would be D: and so
       on, so this jumper means select first/second drive or master/slave
       or C/D,  get it ?
       only problem is we dont know if it means jumper set means C: or
       jumper set means D: ?  oh well...
SP   = Slave Present, set this on the master drive and you might need to
       set it on the slave drive too
SL   = Slave Drive
MA   = Master Drive


I've come across these on western digitals and conners, but havent really
looked at other makes too much.

if you need a hand give me a ring and i might be able to help you, you
never know.

you can also get drive/jumper setting info from various distributor BBS's
around the UK or you could try ringing the people you got the drive from.
most hard drives DONT come with any info on them what so ever, which is

```
REALLY helpful!

connecting them up.
===================
```

connect the drives to the 2 40 way female connectors on your lead, it
doesnt matter which way round they go (thats what the jumpers are for :-)
then dpenting on the cable you ad up connect it to a) your other cable or
b) your a1200.

now all we need is some power

so, connect your PSU or your power cable to the hard drives and thats
about it now.

```
lastly..
========
```

when you partition the drives make sure that the device names dont
conflict (ie, dont have two DH0:'s!)

## 1.3  About IDE2AMI

Ide2Ami is a collection of files that'll help you to understand how to
install a 3.5" hard drive into an A1200.  This is NOT a definative guide
or a set of rules on what to do/what not to do but it should make things
a bit clearer to you all.  (See Disclaimer)

## 1.4  Distribution

```
Distribution
============
```

This document and it's related IFF Pictures can be distributed anywhere
so long as nobody makes any profit out of it.  PD Companies can distribute
this archive if they wish but no more than 1.50 UKP may be charged for it.

Sysops of bulletin boards may make this file downloadable to anyone they
wish to

All files in this archive should be left intact with this message included.

## 1.5  Disclaimer

```
Disclaimer
----------
```
The author would like to make it clear that he accepts NO responsibility
whatsoever for ANY use of this document or the information contained within.
(but I'll try my best to help if you're stuck!)

## 1.6  Changes

Changes Made Since Version

1.0
---
CABLE2.LBM had a slight error in it.  The actual wires on the cables
did not correspond to the pins correctly.  This has now been rectified.

The drawings have now been converted as I have been told that the origonal
drawings were somewhat corrupted.  The reason for this is that they were
drawn on DPAINT on the PC (hopeless computers!!) and the file format was
incorrect.  They have now been converted to load into DPAINT and other IFF
viewers.

2.0
---
Spelling mistakes corrected, fitting instuctions and other helpfull hints
from people that have responded to this file (and belive me, there were
quite a few (perhaps I should have made it shareware :-) )
I've also now included 3 digitised pictures of the inside of my machine to
help you along.

3.0
---
added text on running 2 hard drives
added info on drives that work.
converted to amigaguide and most parts have been re-written!

## 1.7  What You Need

What You Need
=============

1 x A1200 Amiga Computer (no shit!)

1 x 44 Way HIGH DENSITY Female Connector

    (note,  these connectors and the cable are VERY hard to get hold of.
    i had to resort to buying a cable with the connectors already on it,
    I bought the cable from POWER COMPUTING for 10 Quid including 2
    connectors.  Trilogic also do one)

    Also make sure it is a HIGH DENSITY connector,  a normal 40way IDC
    connector WONT FIT,  like wise, the standard density ribbon cable also
    doesnt fit.

1 x length of 40 way HIGHDENSITY Ribbon cable to connect to the 44Way
    Connector (the length depends on wether you want to mount the drive
    externally, I.E.  Short for intenally (10 inches or so) or long for
    externally (1 Metre or so)

    I wouldnt recommend using overlong cables as i dont
    know what the hell would happen to the integrity of you data as it

```
        wizzes past you 5000000000 other power cables behind the back of
        your desk!

        (note, you only need 40 way ribbon cable as the 4 power
        pins of the 44way connector arent used)

    1 x 40 Way IDC Standard Density Female Connector

    1 x 4 way Power Connector  (the type of this depends upon the type used on
        your hard disk as some hard disks have the same kind of connector
        that is used on the floppy drive others have the older (more
        standard on hard disks) type of connector, and others have BOTH!

    1 x 3.5 inch hard drive,  make sure that the current (AMP) ratings do not
        exceed that of your power supply or it'll blow something up.... :-(
        I.E.

            On the back of the hard disk it might say something like

            =====================
             Current consumption
            =====================
                +12V  0.4 A
                 +5V 0.2 A
            =====================

            this would mean your PSU needs to provide this amount of power or more.
            (preferably more,  cos your computer eats some power and so does all
            your floppy disk drives/genlocks/digitizers/sound samplers/etc..)

            the output of the Amiga's power supply is shown on the underneath
            of the PSU,  there are various different amiga power supplys, all
            of which ARE interchangeable and ALL have different ratings.
            I've seen 2 different A500 PSU's and 2 defferent A1200 PSU's!!
            the best PSU so far is the lightweight A500 brick PSU as these
            tend to be a bit more reliable than the older A500 ones and can
            output more current than the A1200 ones, so if you've upgraded
            from an A500 and still have it lying around, swap it's PSU for
            the A1200's one!


        If your PSU doesnt supply enough power you will need to A) get one that
        does, B) Get a hard disk that doesnt eat much power or C) get a REGULATED
        +5 V and +12V Supply and connect it to the power pins of the hard drive.
        (pinouts of power pins are in file CABLE2.LBM)
        (note, any PSU out of a PC will do,  so if you've got a PC, rip it
        apart and nick the PSU from it (belive me, it's the only thing that
        PC's are useful for :-))))))))))))))))))))))))))))))))))))))))))))))

    Also it might be an idea to get 2 of the power connectors that are used on the
    floppy drive so that you dont need to cut the wires and solder extra wires
    onto the existing ones, but these are not nessasary, they just make it neater


    Note:

    Female Connectors are the ones with the HOLES and male ones are the ones
```

with the PINS.  (quite easy to remember really  :-)))


## 1.8  Making The Cables

```
Making the cables
=================
```

First, get the 44way connector and crimp in the cable as pictured in CABLE.LBM
then get the other end of the cable and connect each wire from the cable to
each pin on the 40 way connector (also as pictured in CABLE1.LBM)
Start from pin 1 on the 44 way and go upto pin 40, pins 41-44 are not used
by the 3.5inch hard drive as the pins are +5V and ground. but no +12V

Thats the fiddly bit done!!.

Note: I have been told by some people that it's possible to heat the HD cable
and stretch it to fit over the larger connector but I've not tried it..

Now we need to supply the Hard Disk with some power,  so, get the power
connector and then take the lead that connects the Floppy Disk drive to the
mother board.  Then solder the wires from your connector to the wires on the
lead making sure that you connect them correctly (as pictured in CABLE2.LBM)
this is very important as these wires connect +12V and +5 volts to the drive.
getting these the wrong way round will blow the hard drive! and possibly the
computer.  Shorting them out is also NOT recommended :-)

If you are using an external PSU for the Hard Disk then connect +12V, +5V and
ground to the pins on the Hard Disk Power Connector.  (pins in CABLE2.LBM)

And dont forget to turn on the hard drive BEFORE you turn on the computer.
(but if you were clever you would take the +5v or +12v from the A1200 and  ←
    connect
it to a relay so that when you turn on your computer it would turn on the PSU to
the drive..:)


## 1.9  Mounting The Hard Drive

```
Mounting The Hard Drive
=======================
```

there are several places to mount the hard drive, one of which is externally in  ←
    a
box (you can get a simple project box from maplin that does the job nicely) or
there are two places inside the 1200 that just about do the trick.

One of them is at the far left hand side (viewed from the front), but you'll  ←
    have to
remove a peice of the metal shielding.  The second is just underneath the  ←
    keyboard
connector (you'll have to remove the small metal cover here to  make it fit..
and remove a bit of the shielding.  If you look at INSIDE2.IFF you'll
see where i've cut the shielding.

## 1.10   Preping and Formatting

```
Preping and Formating
=====================
```

You now need to get some HD Prep software,  this is availiable from COMMODORE
and various other companies.  Most of the people who sell hard drives as kits
will be able to sell the prep program to you.

Microbotics have now realeased their HD prep software into the public domain and
is known as RDPREP, availiable from any decent BBS or PD library.

Basically a prep program just reads the info about the drive from the drive and
lets you partition it.

Note: each partition will eat up a certain amount of memory, so if you've only
got 2 meg in your a1200 I wouldnt recomment more than 2 partitions.

when you've preped and formatted your hard disk you should do a quick test to
make sure every thing works,  first switch off your a1200 and the hard drive(s)
if you have an external PSU,  then wait about a minute (it is IMPORTANT that you
wait this long)  Then turn your computer back on and check that the partitions
are still there via the boot up menu (hold down both mouse buttons on startup)

if they are not there then your hard drive isnt compatiable with the A1200,
quite a few drives seem to work fine until you switch your computer off and on
again,  the western digital 40 and 340MB and the Maxtor 250MB ones do this along
with a few others too

## 1.11   Installing Workbench

```
Installing Workbench
====================
```

Installing workbench 3.0 is DEAD EASY!

make sure you've got at bootable formatted partition on your hard drive and
then do the following.

1) boot for your origonal Workbench 3.0 system disk.

2) open a shell window

3) enter these commands to make some programs resident

```
   resident C:COPY
   resident C:MAKEDIR
```

4) then repeat this step for all your workbench 3.0 disks (system, locale
   and extras) except the FONTS DISK and the STORAGE DISK

```
   COPY DF0:#? DH0: ALL
```

5) insert the workbench 3.0 FONTS disk into df0:

```
6) then do these commands

   MAKEDIR DH0:FONTS

   COPY DF0:#? DH0:FONTS ALL
```

7) then go to the workbench screen, double click your hard disk icon so
   that it shows the root directory of your hard disk then make a directory
   called "Storage" (don't enter the quotes!)

8) then do these commands after inserting your Storage Disk in DF0:

```
   COPY DF0:#? DH0:Storage ALL
```

9) all you need to do now is drag the correct keymap and printer drivers
   from the subdirectory in dh0:storage into the same subdirectory in
   dh0:devs. (E.G.  Dh0:storage/keymaps/gp dh0:devs/keymaps/gb)

10) now reboot and go WOW!

simple huh, although if you were watching the output from the copy
command when you were copying the Locale Disk you would have noticed
that we copied loads of catalogs and info for all sorts of different
countries.  well, we only need the english ones so you can infact delete
all the ones that you dont want.  I recommend the use of a File Manager
program (such as my >>> EXCELLENT <<< AFCopy V3.4xx! (Plug Plug!)) to do
this as it's a bit fiddly!


## 1.12  Drives That Work

```
Drives That Work
================
```

The following makes of hard drive have been known to work with the 1200 (note  ↩
   that
some dont, so if you try before you buy then do so.)

Western Digital Caviar 2250
Segate (not tried these myself but beleive they are OK)
Connor (all the ones where the model number starts 30xxx (Mines a 30245))

if you can find a Western Digital drive that works, like the 250MB one, then
go for that as these are by far the fastest drives and have low power
consumption (which is good if you want to mount 2 hard drives! :-)


## 1.13  Drives That Don't Work

```
Drives That Don't Work
======================
```

Western Digital caviar 40MB/340MB drives

```
Maxtor 250MB
Fijitsu 100MB (mind you, it was 5 years old!)
Some IBM drives
Some JVC Drives
```

(also see Preping and formatting)

## 1.14   Where to get drives from

```
Where to get drives from
========================
```

The best place to pick up a cheap hard drive is from an add in micro mart,

Star Computers, Delta Technology and Jupiter Computers.

the best people to deal with are STAR, jupiter and delta are both VERY cheap
but the service isnt so good.

PLEASE when you ring these companies make sure that you dfd specify the
EXACT MAKE AND SIZE OF THE DRIVE YOU WANT AND MAKE SURE THEY HAVE IT IN
STOCK BEFORE PARTING WITH ANY MONEY or they might send you a maxtor when
you ask for a western digital like jupiter computers did to me!

## 1.15   Current Prices

```
Current Prices As Of 10/12/93
=============================
```

A Conner 250MB drive can be had from around 130-140 quid
A western digital of the same size is generally 20-30 quid more

(note: prices quotes are Ex-VAT and P&P)

## 1.16   Max Transfer settings

```
Max Transfer settings
=====================
```

normally you wont have to change this unless you get file corruption when
you save large files to your hard disk.

to check this, copy a large .lha file to ram: (about 600K sould be
enough) then copy this back to your hard disk and check the .lha file,
if you get CRC errors or any other errors then it looks like you'll need
to change it.

So, to change this, go into HD toolbox and select "Partition Drive",
then click on "Advanced options" then a button called "Change" will
appear, click it,  now you get another screen full of buttons one of

them will be a string gadget for the maxtransfer setting,  set this to
about 128KB in HEX (0x1ffff) then save your changes, reboot and try the
.lha test again, if works ok (it should do at this setting!) then
keep doubling the maxtransfer rate until it fails, then go a bit lower
until it works.  It's all a matter of trial and error really!

## 1.17   How To Contact Me

```
How To Contact Me (HYDRA)
=========================
```

If you have any queries, comments or suggestions then please write to me
at the following address.

```
Dominic
9 Shires Copse
Southbourne
Bournmouth
Dorset
BH6 4AU
```

OR phone me on +44 (0)202 434858 (after 6PM UK Time, ask for Dominic)

If you want to ring me up for advice, more info, swapping or for anything
else then feel free!

## 1.18   Other Programs by HYDRA Productions/Perspex/LSD

Watch out for other forthcoming programs by HYDRA Productions/Perspex/LSD
including :

```
AFCOPY   - V3.475  An absolutely COOOOL file manager program
           with loads of options and configurable gadgets with
           a cool OS2.04 look, added features under 3.0 and
           it's BLOODY quick!
           Take a look, you'll be surprised!
           >>> nothing disabled either!

IDE2AMI4 - How to connect 3.5" IDE Hard Disks to Amiga 1200's
           has digitised pictures and cable diagrams along with
           good instructions.
       >>>>> also tells you how to fit 2 IDE drives!!!!


VERMAN   - Revision Bumper for C Programmers

ExApp1.2 - Multi App like program (only this one is good!)
           it's an appicon that sits on your WB and runs
           different program depending on the file type
           dropped onto it.  Custom and user defineable file
           type matching via pattern matching and file content!
```

```
UFF        - Unused File Finder for /X 3.X
             finds files that are on your HD but not in conference
             lists so that you can delete them to free up
             hard disk space (thanks to Cruise/Sysop Fantazia)
             for the idea for that one!)
```