a2630fix

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Contents

Chapter 1

a2630fix

1.1 A2630Fix.guide

                                    A2630 Fix V1.1 (6-Sep-96)

            Introduction

            c:cpu

            RAM test / monitor

            U300 patch

            Turning resistors

            Memory connectors

            Display flicker fix
             NEW!

            Jumper settings
             NEW!

            Other sources of information

1.2 Introduction

This short guide should offer you some possible solutions if you
have any problems with your A2630.
I had problems with constant crashes and so I started
collecting patches and tried one after another. My problem was
a non-working a2091/a2630-combination.
A few things to remember:
- If your system is working, do not fix it
- I am not a hardware expert, I have just collected these things
  and cannot guarantee for them. USE AT YOUR OWN RISK!

I am very sorry, but I do not know the original authors of all
patches, so if any of the patches helps to solve your problem you may
give thanks and praises to the unknown net-man.

Please send me a mail if you find any bugs in this guide or if you
have some more information:

tiemant@uni-muenster.de

or

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1.3 c:cpu

You may try first various combinations for the c:cpu options.
Maybe something like "cpu nocache" or "cpu fastrom" can solve
your problems, although it might give a worse performance. The
cpu command and its options are described in the DOS book that
comes with your Amiga.

1.4 RAM test / monitor

Maybe your problems come from one or more bad ram chips. You may
use a ram test program, which can be found somewhere on aminet.
You can also use the built-in ram test of the a2630. To use it
you have to start the monitor of the a2630:
- reset your amiga, hold down the right mouse button and press "shift-M"
  before the amiga boots again
- after the monitor has started you can get a command list with "?"
- type "i" to get information about your system, most important is
  the address of your a2630 memory, which is from 00200000 to
  00600000 on my system (the last number might be 00400000 if you
  have only 2MB of ram on your a2630)
- type "t 200000 600000" (replace with the addresses of your board) to
  start the memory test. The test will show the number of passes (first
  number) and the value which is currently written to and read from ram.
  You should let the test run for several minutes, better hours if you
  have the time, memory errors do not show up every time a defective
  ram is used. If it finds an error then it will print a third number
  and make a line feed. So you can let the test run unattended and look
  later for the result.

1.5 U300 patch

You might add 1K from pin 10 to 14 at U300 on the a2630. This is
often done if the board is used with more than 25MHz, but
might fix problems even with the original clock of 25MHz.
You can find U300 in the middle of the board, if you look for it left
below the jumpers.

1.6 Turning Resistors

This patch finally solved my problems. But I do not know if
it would have helped me, if I had not applied the other patches
(U300, U605 - see below) before. I asked Dave Haynie about this
patch and you can read his answer below, he explains more than I
am able to understand:)
If you want to use this fix, you have to turn around the 4 resistor
packages RP104-RP107 on your board. Three (RP104, RP106, RP107)
can be found in the lower left part of the board, below the
shield cover. RP105 is just below the right memory connector at
the top of the board. If you do not find them on the board, you
may try to locate them in figure E.1 in your A2630 manual. Now
look if they have their common pin on the same side as the drawing
on the board suggests. If not, you might turn them around...

Subject: Re: A2630 fix question

> I had lots of problems with my 2000/Rev4.3, A2091, A2630Rev9.2
> setup until someone told me, that there were some resistor packages
> soldered in the wrong orientation on the A2630 (RP104-RP107). I
> looked at the board and I saw, that they had their common pin
> on the other side than the drawing on the board (now I know what
> it is good for:))

That's odd...

> My question: Was there any good reason for turning the RPs or was it
> just an error that happened during the production of the board?

I suppose it might have been intentional. I didn't do it that way, but
I didn't really touch the A2630 after Rev 6. Pretty much everything
done after that was to FCC certification. It's possible that these
resistors, which I believe I had in there for data bus pullups, were
switched around to act as pulldowns. If you lay out the resistor pack
footprint right, you have +5V at pin 1, Ground on the last pin, and so
you can get "proper" behavior with either orientation. I've been been
a big fan of pulldowns on bipolar logic (typically, bipolar output
stages can drive a great deal of current low, but not so much high),
but they do tend to limit the peak voltage, and occasionally over-peak
spikes, when a signal swings high. This is good for FFC certification,
and not bad for typical system operation in most cases. Apparently you
have found one of the cases in which pulldowns can be a problem.

Or perhaps you're trying a complex fix for a simple problem already
solved in most systems. I don't know what you had failing, but if it's

DMA between the A2091 and A2630, there's a known problem on some A2000
motherboards. Certain vendors versions of the 74ALS245 chip used at
U605 on the A2000 motherboard cause a problem, a potential glitch on
the BAS* (buffered address strobe) line of the Zorro II bus, during
DMA turnaround (when the A2091 drops the bus and the A2000 logic picks
it back up). This glitch is nicely shaped into a pulse by the ALS245's
schmitt input, but that pulse on AS* is ignored on the motherboard,
it's not long enough to usually affect the 7MHz logic on the A2000. It
is long enough to mess with the 25MHz logic on the A2630, however. To
fix this, you add a 1K pullup between pins 11 and 20 on U605 (which
you'll find between the CPU and first Zorro slots).

Maybe changing the A2630 resistor packs to pullups helps, too, I never
really looked at the problem. But this resistor fix makes a very big
difference, you might want do it even if your system is working find
now, just to be safe.

            -Dave Haynie

1.7   Memory connectors

Every A2630 has two memory connectors (CN300, CN301) for expanding the
board with a daughter board that can contain more RAM. These connectors
should be placed on the back of the board ("solder side"), but on
some A2630s they are placed on the same side as all the other parts.
Moving them from the front to the back should allow you to use one of
the overpriced memory boards.
If you do not want to use such a board, than you could let the connectors
on either side, because it should not give any problems.

1.8   Display flicker fix

(The following article is from Joerg Hilsebecher. First comes the german,
then the english version. If you have any further questions then see
his e-mail address below.)

Bildschirmflackern mit A2630

Die Story:

Beim Betrieb einer A2630 enstehen (un-)regelmaessig flackernde, horizontale
Streifen auf dem Bildschirm, vor allem bei hohem DMA/Floppy-Betrieb. Die
Ursache hierfuer duerfte der hohe Stromverbrauch der A2630 sein. Deshalb
koennte der hier vorgeschlagene Hack auch bei aehnlichen Problemen mit
anderen Turbo-Karten im A2000 (hat ausser mir noch jemand einen?) hilf-
reich sein.

Als die Streifen bei mir auftraten, habe ich alle gaengigen Hinweise hierzu
ausprobiert (direkte Kabel zum CPU-Slot, keramische Puffer-Kondensatoren am
Video-Hybrid, ...). Leider hat nichts davon wesentlich geholfen.

Nach einigem herumprobieren habe ich dann doch noch eine Ursache und die
zugehoerige Loesung gefunden: Neben dem Video-Hybrid – seltsamer Baustein,
eine Laengsseite mit Pins, sieht aus wie (und ist) eine kleine,
Kunststoff-ueberzogene Platine – sitzen zwei Puffer-ElKos (470uF), die auf
meiner Platine mit C214 und C226 bezeichnet sind. Der gleiche Hybrid sitzt
aber auch auf der A2320 (und anderen Flicker-Fixern?). Diese hatte ich
probeweise mit 1000uF-Versionen ersetzt. Das half etwas. Nach dem Motto
"Viel hilft viel!" habe ich jetzt zwei 4700uF Versionen eingebaut –
und die Streifen sind weg.

Kurz:

Man nehme zwei ElKos 4700uF, 16V, radial/stehend und ersetze damit
die beiden Elkos (470uF) neben dem Video-Hybrid. Fertig.

Short & englich (?):

This hack is aimed to remove the flickering lines on the screen that may
occur when some board draws a high current from the motherboard – like the
A2630. A reason for the flickering may be an unstable power supply to the
hybrid video components which can be found on the motherboard or some
flickerfixers (e.g. the A2320). The hybrid video "chip" is a small printed
circuit board which is sealed in plastic and is mounted by a row of pins, it
carries on one side. Next to the hybrid two capacitors of 470uF can be
found, which should stabalize the hybrid's supply. Use two larger electrolytic
capacitors of 4700uF, 16V to replace the small ones. That should do it.
Bye the way: Solder at Your own risk!

Weiterhin gilt: NO RISK – NO FUN -- LOETEN AUF EIGENES RISIKO

Zu Risiken und Nachwirkungen lesen Sie bitte Ihre Garantie-Urkunde und
befragen sie Ihren autorisierten Commodore->AmigaTechnologies->ViScorp
->EagleComputer Vetragshaendler.

Autor: Joerg.Hilsebecher@Urz.Uni-Heidelberg.de

1.9 Jumper settings

Here are the jumper settings from the manual. Disabling RAM can come
in handy if you have bad rams on the board or if your hd-controller
crashes in dma-mode. Also, if you want to install a gfx-board or
something which takes lots of autoconfig-space (limited to 8MB)
then you can disable some of the RAM (all or 2MB), but better
throw out all of the old 16Bit RAM, because that is much
slower. Anyway, good for quick testing ...

JP202 CRYSTAL BRIDGE

```
two rightmost pins: FPU/CPU run with same clock (default)
two leftmost pins: seperate FPU clock installed

J301 MEG4
set: 2MB RAM expected
off: 4MB RAM expected

J302 B2000
set: removed 68000 expected (must be set on old german A2000)
off: 68000 on motherboard installed (default)

J303 AUTO
set: disable A2630 RAM
off: autoconfig A2630 RAM (default)

J304 OSMODE
set: boot UNIXX
off: boot AmigaDOS (default)
```

1.10   Other sources of information

Walter Harms, who has also contributed some of the patches presented here,
has collected most of the important patches for the A2000 and some other
background information about it (and the A1000!). Visit his www-pages:

    http://www.uni-oldenburg.de/~u173034

    Walter.Harms@arbi.informatik.uni-oldenburg.de

Interesting stuff is spread all over aminet, but check out especially
the hard/hack directory. (Note: the RAM-Hack is no longer available)

    aminet/hard/hack/

Lots of hardware patches/infos for all Amigas are on the
MeetingPearls 3 CD-ROM (some are only in german):

    Meeting_Pearls_III:pearls/text/Hardware