

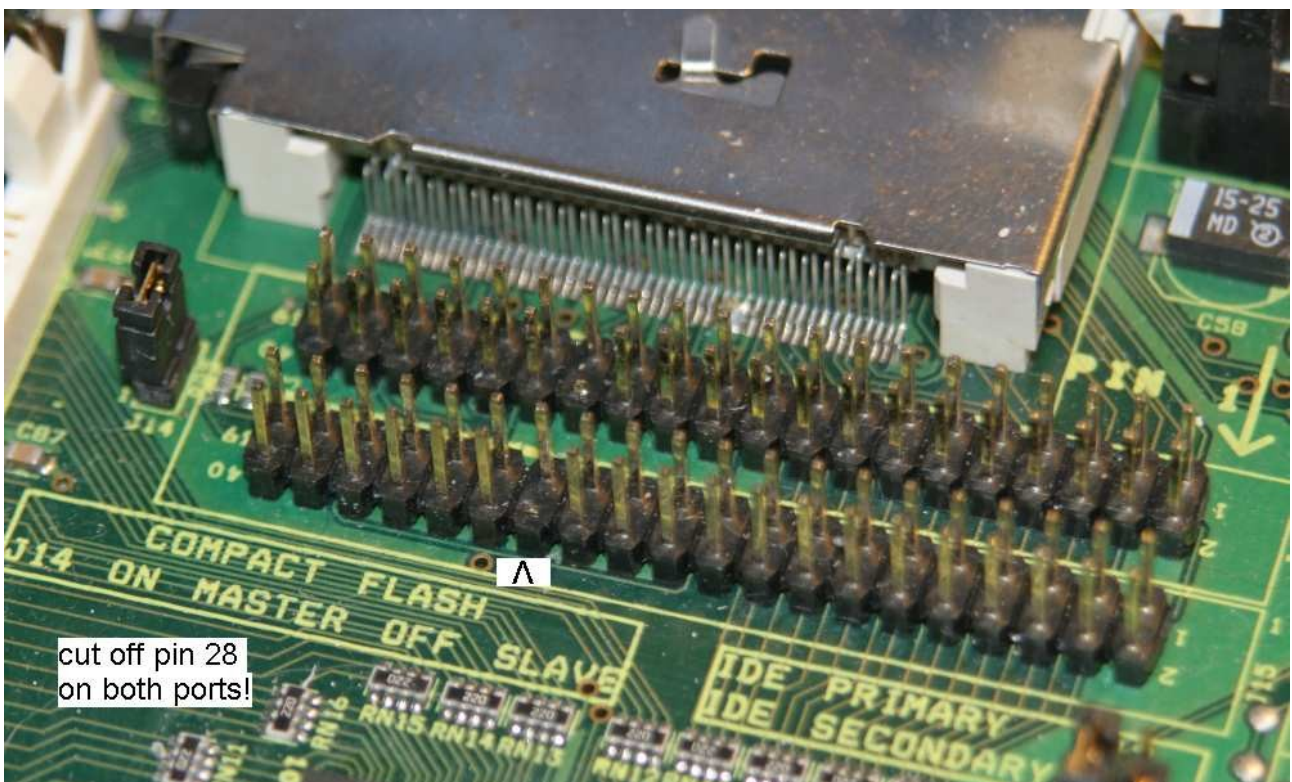
C-One IDE Port modifications

Due to multiple design flaws in the original board layout, the IDE ports cannot be used to their full extent by the cores. Fortunately, this can be fixed with easy modifications.

In detail, Jeri Ellsworth, the original designer of the C-One board, failed to follow popular documentation on IDE and PCI design, which leads to a number of problems.

First of all, the Cable Select -line (pin 28 of the IDE ports) is connected to the +5V power supply. This is a dangerous decision, as some CF-card adapters (such as the DeLock CF to IDE adapter) may have design flaws that, when combined, lead to a short and ultimately to burnt traces on the adapter.

It is therefore highly recommended to cut off pin 28 from both IDE ports!



You need a very sharp wire cutter to remove the pins at the very bottom of the connector. Please double-check that you're removing the correct pin(s).

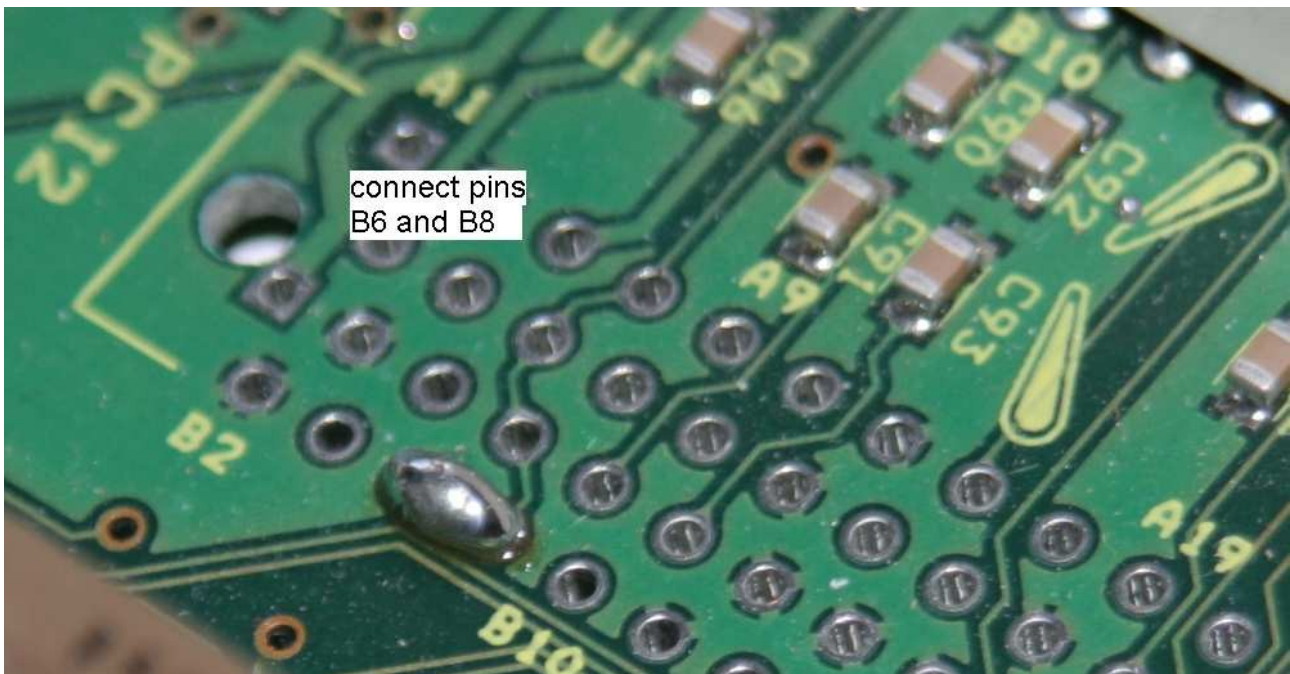
Faulty PCI signal design

You may wonder what PCI has to do with the IDE ports of the C-One. The missing link is interrupt handling: Whenever an IRQ happens on the C-One, it is handled by the 7064 CPLD on the board. Such events include the two IDE ports, the clockports, and the PCI slots. The PCI slots have a special position, as not only would a PCI card be able to issue an IRQ, but certain error conditions can also be caught. If it would be designed properly, that is.

On most computers of the past decades, IRQs can be masked individually. Not so in Jeri's design, she only implemented one IRQ mask bit for all possible interrupts on the C-One. This needs to be enabled in order to allow IDE interrupts to happen. However, this also enables PCI interrupts and PCI error condition reporting with interrupts, and here's the next design flaw: These three lines are in an unknown state when no PCI card is installed, which leads to phantom-interrupts and a non-starting Minimig / Amiga core.

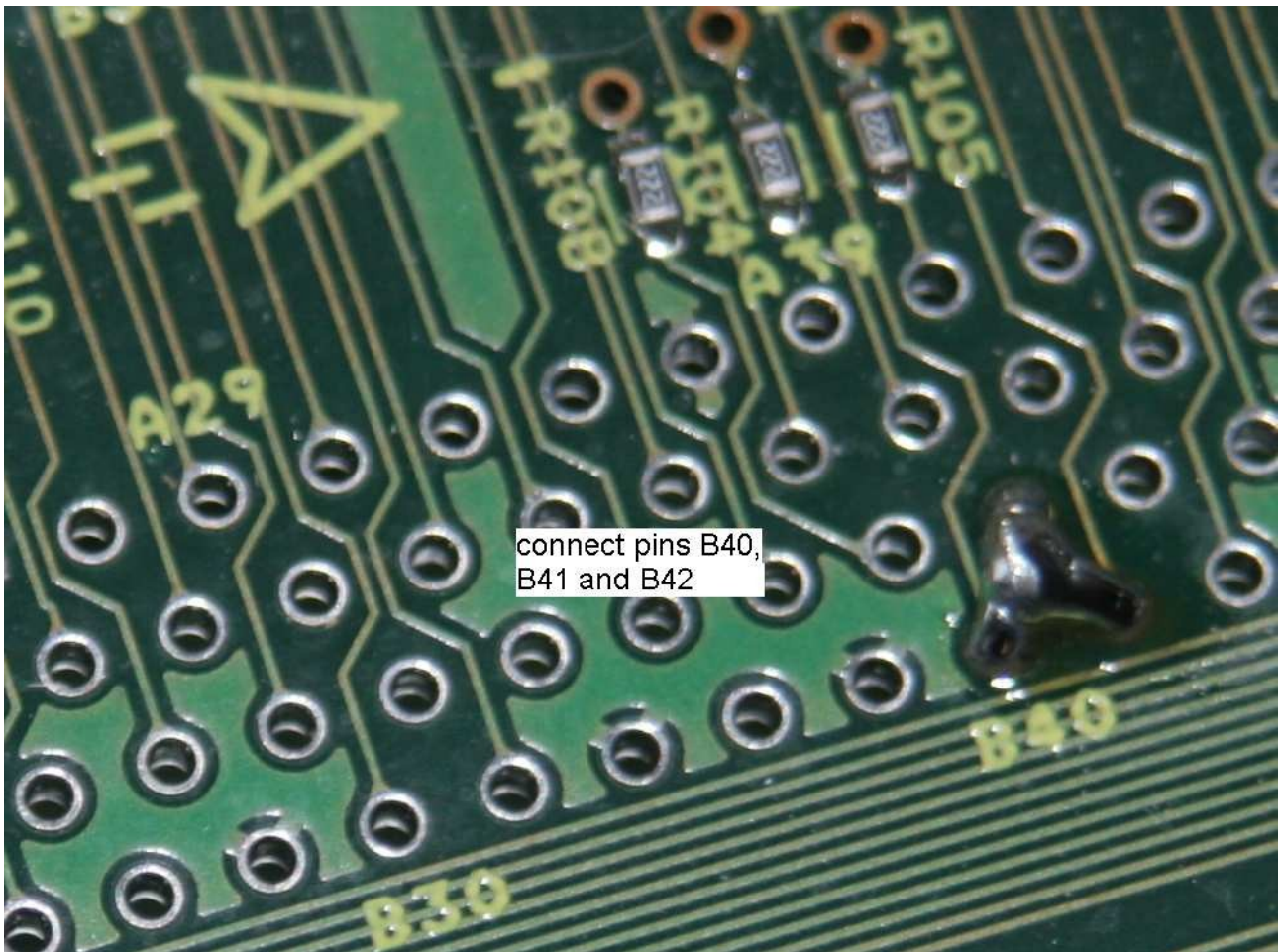
The simple solution is to continue the pace that we already went a year ago with the BA-mod: We're truncating the PCI slots in order to make the rest of the board work as expected. In other words: The PCI slots will never be used as such anyway, so we might as well disable parts of them in order to make other things work. **Please note that no PCI card should be inserted into the PCI slot after these modifications have been done!**

The first step is to short the PIRQ line to the Vcc line, which is located right next to it:



Since PCI slot number two has not been assembled at the factory, it's a good place to do the modifications. The PIRQ line is on pin B8, and it will be at a safe "logic high" when connected to the pin next to it, pin B6.

The second step is to put the SERR# (system error) and PERR# (parity error) to a safe "logic high". This is done in a similar fashion by shorting the lines to a Vcc line that's located close to these lines:



PERR is on pin B40, and SERR is on pin B42. The pin in between is a 3.3V supply, which is a perfect logic-high level. Connect the three pins with a wire or a glob of solder, as shown in the picture.

That's it! You're now ready to run the Minimig core V1.25 (or higher) with IDE port support on the primary IDE port of the computer. Be sure to use a kickstart rom with IDE support, either from an A600 (V 2.05 or higher) or from an A1200 (V3.0 or higher).

Up to two IDE devices can be installed, where the IDE device can be a real harddisk, an IDE flash module or a CF card that's connected with an IDE adapter. In theory, it should be possible to use the IDE-fix software package and also control CD-Rom drives and other Atapi devices. Please report back if you have tried this!

Connecting the IDE-fix hardware is not possible. It doesn't do any harm, but it also won't do any good, as the second IDE port that it's supposed to give, will not be functional on the C-One.

Last Words

Credits

Hardware Modification developed by Tobias Gubener and Jens Schönfeld

Minimig Core developed by Dennis van Weeren, Jakub Bednarski and Tobias Gubener, available at <http://www.c64upgra.de/c-one>

Fine print

This hardware mod is not for beginners. Although the task looks simple, you can easily destroy your board if you don't know what you're doing. If you don't feel 100% sure, please leave this up to someone who has experience with things like this. We don't assume any liability for damages you are doing to the hardware. Damages that are caused by wrong modifications are not covered by warranty.

For updates and further information visit <http://icomp.de> and <http://c64upgra.de/c-one/>

Individual Computers Jens Schönfeld GmbH
Im Zemmer 6
52152 Woffelsbach



good hardware for good computers.