

Roms

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Chapter 1

Roms

1.1 A500/A2000 Rom Switcher

A500/A2000 ROM SWITCHER

Typed And Editied And Diagrams By Craig

Purpose:

With the release of Kickstart 2 (and the option of Workbench 2), Amiga owners have a choice of Operating Systems. Sure, Workbench 2 is a major improvement, but what if your favourite games stop working on your Amiga 500 Plus ? Or if you want to occasionally use WB2 on your standard A500, but still want Music-X to work correctly ?

You want a ROM Switcher, that's what you want. OK, so you can buy one from any one of countless advertisers, but why not save yourself some dosh and build one yourself ? If you do, you could save the price of the new ROM!

What You Will Need:

- 1 Piece of Veroboard (at least 22 strips by 32 holes)
- 3 40 pin DIL sockets
- 1 DPDT (Double pole, Double Throw) switch
- Lots of lengths of short wire
- 1 New Amiga Rom

Information:

Building a device which selects between one of two ROMs is a doodle - if you can make your own Printed Circuit Board (PCB). The problem is that there are forty connections which must be carried from one side of the circuit to the other, and that is a lot of hassle.

The design detailed here is nothing more than the simplest way possible and is a bit of a bodge job but does work. Once you see how the circuit works you will probably want to design your own, or you can build this one. For example, a form of stacking system will save space and allow many more ROMs to be added. Furthermore, owners with accelerator cards and/or A2000s will have to use a 40-way ribbon cable to reposition the circuit well out of harm's way.

How To Build The ROM Switcher:

To build the ROM switcher, start by making holes in the board shown as little white X's as shown in Diagram 1. There are 61 holes, so if you have the official veroboard hole-making machine (called a Spot Face Cutter) you'll save a lot of time. If you don't have one of these then a modelers sharp knife will suffice.

Next solder in the first two sockets ROM socket 1 and 2 on Diagram 1. Pay particular attention to their position with respect to the holes. The third socket is a tricky chappy, and I'll explain why.

We really don't want this third socket, what we really want is something different. Somehow we need to connect our circuit board to the empty ROM socket on the motherboard. The best way is to use something designed for the job - like a 40-way IC Header, with ribbon cable. Unfortunately, these are a little difficult to get hold of, and so some cunning is required. By taking each pin out of the DIL socket in turn and bending the part which normally holds the IC pins in place to the side, you can splay the legs out far enough to allow them to be soldered directly to the veroboard. It's not a very elegant solution, but works (see diagram 3). You might like to try using some special Wire Wrap DIL sockets, which should have long enough legs to pass through the board, be soldered and still fit into the motherboard socket.

Once you have finished with the three sockets, it's time to start soldering the wires into place. The wires must bring pin 1 of ROM 1 to Pin 1 of ROM 2, pin 2 of ROM 1 to pin 2 of ROM 2 and so on. The only exception is pin 10 - don't solder any wires there yet. I've only included the first two wires going to the different ROMs on the diagram as if all the wires were drawn on the diagram because they would clutter it up too much, so some of your common sense is required at this point. Remember to use long enough pieces of wire to allow both ROM to be seated in their DIL sockets. Use figure 4 to sort out the pin numbers, so that you don't put the ROMs in the wrong way and blow them up!

Four longer wires need to be soldered to the circuit board and brought to a switch. The switch must be a special type (not just On/Off), and must have a little wiring done to it (see diagram 1). When the solder has cooled, fit the ROMs in their DIL sockets. One ROM will come from the Amiga motherboard, the other from the friendly mail order ROM stockist. Use a gentle levering action with a screwdriver to obtain the first ROM.

In any case, when squeezing them into place, make sure that none of the legs have bent instead of fitting into the socket. If they have, bend them gently back into shape. The pins are flexible, but not indestructible so be careful!

Plug the board into the gap on the motherboard. NOTE: For some reason (a dead-end expansion idea?), some Amiga ROM sockets have 42 pins instead of 40. If this is the case, keep the two pins nearest the back free. Check the white writing stamped on your Amiga's motherboard near the ROM socket for more details.

Switch on! if nothing happens, switch off the power immediately and check everything thoroughly. Try flicking the switch (with the power off!) and seeing if it makes a difference. If it does, one of your ROMs is working, the other isn't: check the wiring. If the floppy drives makes grinding noises, you have either the ROM board or the ROMs themselves upside down!

You may want to make a small hole in the Amiga's casing to mount the switch. You can drill a hole using a hand-drill (with the right size drill bit) or failing that you can use a drilling tool called a reamer. Leaving the switch to dangle out of the side of the machine isn't generally a good idea.

How It Works:

All memory chips have a controlling signal called the Chip Select (CS) line. Whenever this signal is made low (i.e. grounded), the chip springs into life and returns the data it is asked for. If the CS line is left high, the chip is in a special 'turned off state' which ensures it is totally invisible to the rest of the system.

Since the Amiga normally only has one ROM, the CS line to it is low all the time. However, to connect two ROMs we will need to find a way of choosing between them. If all their pins - with the exception of the CS line - are common, selection is nothing more complicated than making sure when one ROM's CS is low, the other is high - and vice versa. Most of the hard work in our design is carried out by the DPDT switch, which is why it is essential that you wire it correctly.

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