

Atomwide 8MB Memory Upgrade

**Fitting instructions &
user guide**

IMPORTANT

Warranty restrictions:

This upgrade should only be installed by a Component Level Service Centre approved by Acorn Computer. If this instruction is disregarded then the guarantee on either this upgrade or the computer, or both, may be invalidated. If, after consideration, you do not wish to attempt this upgrade then please contact us to arrange for the upgrade to be installed on your behalf.

License restrictions:

The Atomwide 8MB Memory Upgrade is protected under world copyright law: reproduction of its artwork is expressly forbidden. The software is similarly protected by recent British copyright law amendments and is supplied under licence from Acorn Computer plc, Cambridge, England; it may only be used with the Atomwide 8MB Memory Upgrade.

Suitability:

This upgrade is suitable for the following Acorn Archimedes models: A440, R140 and all models in the A400/1 series. It is not suitable for use with either A3000 or A305/A310 models. Please ensure that you are about to upgrade a suitable machine to avoid wasting our time and yours.

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Designed and manufactured by Atomwide Ltd.

Documentation by Capricorn Consulting, London, SE14

Contents of the 8MB Memory Upgrade:

- One copy of these instructions
- One 3.5 in. floppy disc
- One black bag marked "MEMC card" -
One black bag marked "RAM card"
- One small piece of insulating material

Check that each of these items is present before proceeding further. If any item(s) is/are missing then kindly contact Atomwide Limited immediately.

You will also require:

- At least one slot-head (-) screwdriver
- At least one Philips-head/Posidrive (+) screwdriver
- A 68-pin PLCC extractor tool
- A clean, flat, static-free work surface
- A stable receptacle for screws
- Thirty minutes free from interruptions
- Common sense and patience

It is particularly important that you have a genuine 68-pin PLCC extractor tool rather than some ersatz substitute. Use of other than the appropriate tool can damage both ICs and sockets - no warranty claims will be accepted either by Atomwide Limited or Acorn Computer as a result of damage resulting from the use of inappropriate tools.

Getting ready to fit the 8MB Memory Upgrade:

Because the contents of CMOS configuration memory will be lost during the installation process it makes sense to save the current configuration; a utility is provided for this purpose; to use it do the following:

- Insert the 8MB Memory Upgrade floppy into the machine
- Exit the desktop and enter the following at the supervisor "s" prompt:

```
ADFS <RETURN>  
MOUNT 0 <RETURN>  
CMOSSAVE <RETURN>
```

- Wait a few moments for the program to finish and the floppy disc light to go out.

Finally, before switching the machine off you should close all open files and make hard discs safe by entering, again at the supervisor prompt:

```
SHUTDOWN <RETURN>
```

Now switch off the power and disconnect the computer from the mains supply.

Service documentation:

You may find it useful to refer to the relevant Service Manual for the computer you are planning to work on. Acorn Computer publishes two relevant documents, one for the A440 (Acorn part no. 0476,155) and another for the A400/1 & R140 models (part no. 0483,075). Both Service Manuals are available from:

The Spares Department
Acorn Computers Ltd.
Fulbourn Road
Cherry Hinton
Cambridge CB 1 4JN

Telephone: (0223) 245200

In particular, the sections covering disassembly and assembly contain informative diagrams and step-by-step instructions.

Fitting the 8MB Memory Upgrade:

Stage One - Disassembling the computer

- Double-check that you have switched off the computer and disconnected it from the mains supply.
- Unplug the keyboard, mouse and all cables from the rear of the computer.
- Place the monitor, keyboard and mouse safely out of the way.
- Remove any expansion cards ("Podules") from the computer by following the instructions supplied with them.
- Using a Philips-head (+) screwdriver remove the three screws along the top rear of the computer case and the one either side towards the front of the case. Put the five screws safely out of the way.
- Slide off the top cover of the case towards the rear. Lift it gently and put it to one side.
- Remove the screws retaining the backplane at each end of its metal support bar. Unplug the three power connectors and lift the backplane upwards to detach it from the main circuit board. Put the two screws safely out of the way.
- Detach the two leads at the rear of the floppy disc drive from the drive.
- If a hard disc is fitted, detach the two ribbon cables and one power cable from the drive. Unscrew the two screws holding the hard disc bracket onto the bus bar and remove the drive from the computer. Put the two screws safely out of the way.
- Detach the loudspeaker/LED, battery and fan connectors from the edge of the main circuit board next to the power supply. All three connectors should remain captive at the other end.
- Detach the four power connectors from the main circuit board. Note their respective position and colour for use during re-assembly.
- Remove the two screws which retain the back panel of the main circuit board at the rear of the machine. Put the two screws safely out of the way.

- If the computer is an A400/1 model, unscrew the nut which retains the earthing strap to the bus bar next the the floppy disc drive, and lift off the earth strap. Replace the nut on the threaded post so as not to lose it. Also remove the two screws which hold the main circuit board to the base of the machine and the screw found on the underside of the case between the serial and parallel ports.

It should now be possible to slide the main circuit board the necessary four or five inches out of the rear of the case.

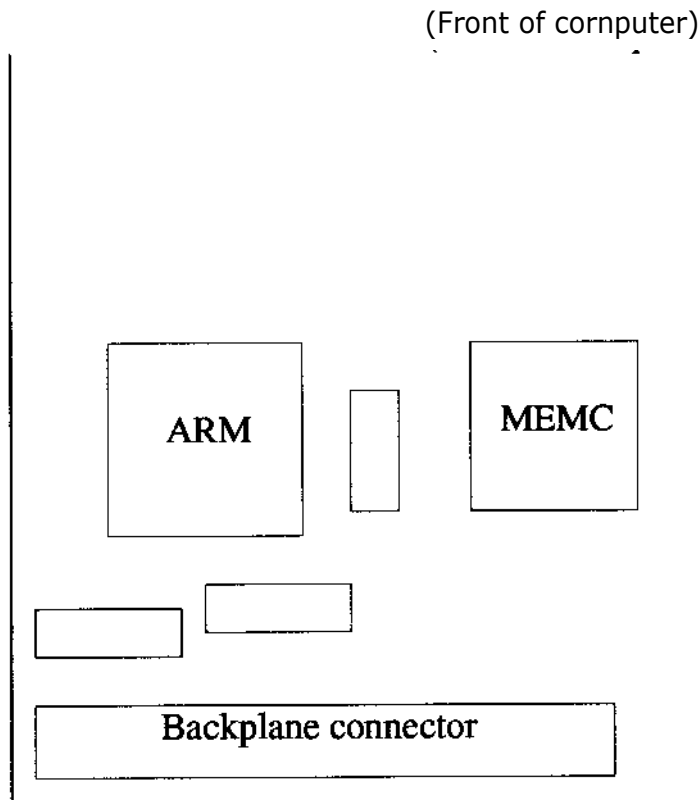


figure one - position of ARM & MEMC

Stage Two - ARM3 Upgrades

Looking at the main circuit board from the front of the computer, identify the large square 84-pin processor socket labelled "ARM" between the floppy disc bus bar and the backplane connector. If the socket contains an ARM or VL86C010 processor chip which sits flush in the socket then skip the rest of this section. A small board plugged into the ARM socket indicates an ARM3 Upgrade is present - read the rest of this section now.

The 8MB Memory Upgrade may be fitted to machines equipped with ARM3 Upgrades sold by Aleph One Limited but with NO OTHER ARM3 UPGRADE. If the machine is fitted with an Aleph One ARM3 Upgrade then remove it by pulling firmly upwards at the edges of its circuit board, noting its orientation as you do so.

Examine the plug on the bottom of the ARM3 Upgrade; if it consists of a roughly cubic solid black plastic core surrounded by gold-coloured square posts then IT MUST BE EXCHANGED BEFORE FITTING THE 8MB MEMORY UPGRADE. Contact Atomwide Limited immediately about exchanging the ARM3 Upgrade at the address shown at the front of this manual.

An ARM3 Upgrade whose plug has a hollow core or round posts is compatible with the Atomwide 8MB Memory Upgrade.

Stage Three - The MEMC card

Looking at the main circuit board from the front of the computer identify the MEMC socket which is to the left of ARM (i.e. nearer the power supply) and slightly smaller.

Examine the lettering printed on the MEMC chip. The 8MB Memory Upgrade may be fitted to computers equipped with MEMC1A or VL2304A memory controller chips. It is the suffix "A" which is important. If the machine does not contain a suitable MEMC or you are in any doubt then contact Atomwide Limited immediately for assistance.

- Remove the MEMC chip using a 68-pin PLCC extractor tool . Place the chip in/on a static-free receptacle.

- Open the bag containing the "MEMC card", remove the card and place it on a static-free surface. Place the MEMC chip you have just removed from the computer in the vacant socket on the "MEMC card" in the same orientation as its neighbour and push it home using your thumb. The MEMC chip should sit flush within the socket.

- Turn over the "MEMC card" and note the three plugs on the underside. The large square plug should be positioned over the MEMC socket on the main circuit board, whilst one of the two small white plugs will fit over the fan connector near the power supply. Two plugs are provided to cater for the change in position of the fan connector between A440 and A400/1 models. The card will only easily fit over one of them.

- Put the "MEMC card" in place and push the plugs home gently using your thumb. Examine the machine from the side and satisfy yourself that the card is properly seated in the sockets before proceeding. If in doubt, remove the card and try again.

- Slide the main circuit board back into the computer and re-fit the two screws which retain the board at the rear. On A400/1 models re-fit the screws through the board from beneath (up to three screws).

Stage Four - Cable origami

- Re-connect the loudspeaker/LED and battery connectors to the main circuit board.
- Plug the fan lead onto the new fan connector on the "MEMC card".
- Re-connect the four power connectors with short leads to the main circuit board. They are colour-coded and the main circuit board is clearly marked with their names: Purple/-5V, Yellow/+12V, Black/0V, Red/+5V. Push each home firmly onto its post.
- On A400/1 models remove the nut from the earthing post and re-connect the earth strap onto the post, tightening the nut afterwards.
- If a hard disc was fitted re-attach its bracket to the bus bar with two screws. Reconnect the 34-way control cable at both ends and thread the 20-way data cable through the hole in the "MEMC card" cable before re-connecting it at both ends.
- Insert the floppy disc drive cable into the main circuit board connector.
- If an ARM3 Upgrade was fitted position it over the ARM socket in the correct orientation (with the large, cylindrical capacitors over the MEMC socket) and push it home firmly.
- A small piece of insulating material is supplied to act as a spacer between the Atomwide 8MB Memory Upgrade and the Aleph One ARM3 Upgrade. If an ARM3 Upgrade is fitted insert the insulator between the two cards where they overlap to protect against short circuits.
- Re-attach the floppy disc drive bracket to the bus bar using two screws and connect the 34-way data and 4-way power connectors.
- Re-connect the three power connectors with long leads to the backplane (Yellow/+12V, Black/OV, Red/+5V)
- Before putting the backplane into its socket ensure that the "MEMC card" ribbon cable runs BENEATH the backplane. Insert the backplane and attach the backplane support bar to the case using two screws.

Stage Five - The RAM card

Open the bag containing the "RAM card", remove the card and place it on an anti-static surface.

- Locate the row of ICs labelled IC24-1C27. These are located behind an expansion slot on the backplane (labelled "Backplane Connector" in figure one). Remove the ICs from their sockets and insert them into the corresponding slots on the new "RAM card". (Make sure that you have the card the right way round, the ICs should be towards the front of the machine). The "RAM card" can then easily be inserted into the sockets vacated by the ICs.

- Connect the free end of the 34-way cable from the "MEMC card" to the connector at the edge of the "RAM card". A polarising stud ensures it may only easily be inserted one way around.

Stage Six - Using the 8MB Memory Upgrade

- Insert any remaining expansion cards following the instructions supplied with them. Check that all wiring is correct and that everything is screwed down before finally sliding the case cover back on and using up the last five screws to re-attach it.

- Re-attach any cables to the rear of the computer, along with the keyboard and mouse at the front.

- Hold down the DELETE key on the keyboard and switch on the mains power, keeping DELETE held until the RISC OS desktop appears.

- The computer should report an "Address exception at &xxxxxxx". This indicates that the 8MB Memory Upgrade has successfully been fitted. A bug in RISC OS means that new software must be loaded from disc before the new memory can be used.

Sometimes a game will stop the modules loading
Turn on with delete key pressed.
Put system software in
Shift reset to last disc.

- Insert the 8MB Memory Upgrade floppy disc, exit the desktop and enter the following at the supervisor ("*") prompt:

```
ADFS <RETURN>
MOUNT 0 <RETURN>
SETUP <RETURN>
```

- Once the program has completed and the floppy disc light is extinguished hold down CTRL and press BREAK, keeping CTRL held down until after releasing BREAK. The computer should boot from the floppy disc and enter the desktop, at which point it is ready for use.

- To prove that the 8MB Memory Upgrade is working, examine the "Task Display" window available from the Archimedes menu in the lower right-hand corner of the desktop. You might also have already noticed that the start-up message displayed after CTRL+BREAK has been amended to read "RISC OS 8192K".

- In future, the desktop will only operate if the computer starts up with the 8MB Memory Upgrade floppy disc inserted. You might like to copy the !Boot file from the floppy disc onto your hard disc by dragging it from within the Desktop. Advanced users can amend their boot sequence to cause the replacement modules to be loaded every time.

- To re-load your configuration from the disc exit the desktop and enter the following at the Supervisor "*" prompt:

```
ADFS <RETURN>
MOUNT 0 <RETURN>
CMOSRESET <RETURN>
```

and press CTRL+BREAK when the floppy disc light goes out.

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Wagner looking into it