REAL WORLD INTERFACES

Hardware and Software — Design and Consulting

rw@firstpr.com.au http://www.firstpr.com.au/rwi/

s10s11e.doc 13 August 2017

Installation instructions for the M32S1 32 Megabyte memory board in the Akai S1000 or S1100

Specifications

This memory board replaces all existing memory boards and behaves *exactly* like four Akai 8 Megabyte memory boards. The existing board or boards in the machine are not needed and cannot be used with the new board – so you can use them in another machine or sell them.

32 Megabytes provides around **3 minutes and 10 seconds of stereo sampling at 44.1 kHz** or **6 minutes and 20 seconds of mono**. The exact time depends on the relatively small amount of memory which may be taken by the sampler's operating system software for its own operations. 32 Megabytes is 16 megawords. This is exactly 16,777,216 words. At 44,100 samples per second, this is 380.436 seconds, or three minutes and ten seconds of stereo.

Guarantee

The memory board is guaranteed for one years or for five years if operated at temperatures of no more than 70° C (158° F). This does not cover damage during installation, especially from static electricity, or any other kind of damage. *Real World Interfaces* will repair or replace the faulty board. The customer will be generally be responsible for transport costs regarding warranty repairs. Replacement or repair will only be contemplated after the customer makes a full fault report and works with *Real World Interfaces* to resolve all other possible sources of trouble. The customer is responsible for the installation being carried out by a suitably qualified electronic technician – someone who takes responsibility for their work.

If you have any problems, please contact *Real World Interfaces* via email at rw@firstpr.com.au. This is a permanent email address, and the permanent World Wide Web address is http://www.firstpr.com.au/rwi/ .

Akai information on the Net

Please see http://www.firstpr.com.au/rwi/smem/ for details of the memory boards and links to other sites with FAQs, the final releases of the operating system software (which can be written to a floppy disc), and details of Akai Sampler mailing lists.

The latest version of the S1100 OS is 4.30 and for the S1000 it is 4.40.

0 - Who should install the board?

The procedure for installing the board is quite simple. If it wasn't for static electricity and other possibilities for damaging the memory board and/or the Akai sampler, then almost anyone could do it.

Since static electricity is such a problem, a competent electronic technician should install the board. If the technician is not familiar with this particular kind of Akai sampler, then the owner should be present to assist in the final testing of the machine.

If you are not an electronic technician, and are considering doing the job yourself, consider the following questions:

1 - Are you prepared to take responsibility for everything that happens to the memory board and the Akai sampler, and for your own safety and that of others?

2 - Did you *already* know that it is very easy to develop a static charge of thousands or tens of thousands of volts, and without realising it, cause this charge to connect with one or more circuit tracks in a piece of equipment, leaving permanent and intermittent damage to one to a dozen integrated circuits, and that such damage is likely to cost up to a thousand dollars to fix in a machine (such as the Akai S1000/S1100) with surface-mount custom LSIs?

If you could not truthfully answer "yes" to all these questions – then have an electronic technician who can answer "yes" to all these questions perform the installation.

1 - Dismantling

Remove the power lead from the back panel. Don't connect a power cord to the machine when its cover is open – since there are exposed 240/220/110 volt connections in the power supply which could cause injury or death if you touched them when power was applied. *Never rely on simply turning off the power on the front-panel, or at the power outlet – you may not be turning off the active line. Be sure to remove the power cord from the rear panel of the machine*

Remove the top cover of the S1000/S1100 so you can see inside the machine. You will have one, two, three or four memory boards. These are located under a metal clamp at the right-rear of the machine. Take precautions to avoid static electricity – which may seriously damage the electronics of your sampler or memory board. Always touch the metal chassis of the machine before touching any electronics.

Remove the two screws which hold the metal clamp in place. The four right-most "slots" – actually 64 pin connectors – are the memory board slots. Never plug anything else into these slots, or the memory boards into any other slot. Other boards which may be installed include those for SMPTE, SCSI, Digital Audio Interface and (for the S1100) the Motorola DSP5600 24 bit DSP chip. Leave these other boards where they are.

Take a note of *exactly* which memory boards are in which slots. There are complex rules for how a mixture of 8 and 2 Megabyte boards must be installed in S1000/S1100s. If you need to re-install these boards, you should have a note of exactly which slot each board belongs in.

Remove the existing memory boards. For reasons which are completely unknown to Real World Interfaces, it was common for the original 2 Megabyte board to be installed with a small ceramic capacitor connected between it and a tag screwed to the chassis. Remove that capacitor, the tag and its screw.

2 - Installation

The 32 Megabyte memory board can be plugged into any of the four memory card connectors – the four right-most connectors when viewed from the front of the machine.

Remove the 32 Megabyte memory board from its static-protective packaging and holding it in your hand, touch the chassis of the sampler with your other hand – and then plug the board into the slot of your choice.

When board is in position, re-install the metal board clamp using the two screws.

Now turn the machine upside down and shake out any debris from the preceding operations. There shouldn't be any, but it is best to guard against lost screws or other things.

Replace the top cover of the machine and reconnect the power cord.

Note: With ordinary memory 8 Megabyte boards, there are switches (S1100) or inconveniently located links (S1000) to be changed to configure the machine for 8 Megabyte cards instead of its default of 2 Megabyte cards. The Real World Interfaces 32 Megabyte memory board does not use the signals which those switches or links affected. Therefore it does not matter what state those switches or links are in.

4 - Testing the new memory system

Power the machine up. It should report on the bottom line of the display, for about 4 seconds, the version of the operating system (in EPROM inside the machine) and that there are 16 Megawords of memory. For instance, with 4.30, the latest version of the S1100 operating system:

```
OPERATING SYSTEM  4.30 16Mwords fitted
```

A word is a 16 bit sample and 16 bits is 2 bytes. So 16 Megawords is 32 Megabytes.

If the front panel display does not report 16 Megawords, or if the memory test below fails, then contact Real World Interfaces to report the problem. (Sometimes, it is necessary to leave the sampler turned off for ten seconds or so before turning it on again – to avoid the CPU waking up in a state which does not lead to the correct memory display.)

Neither the S1000 or S1100 have a memory test facility. Therefore the best approach is to record a very long stereo sample and listen to it playing back carefully for any kind of problem. Technically, this does not test every bit of the memory in both the 0 and 1 states – but it is a good test nonetheless. The likelihood of single faulty bits is remote. Most real memory problems will result in highly audible problems – such as distortion, noise or perhaps strange timing effects.

A good source of sound is a gentle, classical music CD.

Plug the signal to be recorded into the input sockets and connect a stereo amplifier to the output sockets.

Here is the procedure for recording the maximum length stereo sample:

1 - Turn the machine on. Following the initial four second or so memory size message, the machine may wait for a while with a message such as "waiting for hard disk". If this occurs, press the F7 button.

2 - Press the "Edit Sample" button. (Lower row, second from left.)

3 - Press the F2 button – which the LCD shows has the "REC1" function.

4 - Use the data knob to select "mode=STEREO".

5 - Click the cursor knob nine clicks to the right. This will position the cursor at the far left of the "record tim" field.

6 - Press the "9" button five times. This will result in the software writing in the maximum time available for the available memory. On the S1100 with 32 Megabytes and the 4.30 operating system, this is 190.20 seconds.

7 - Press the F3 button, which the LCD labels as "REC2". You should now be able to hear the record input signal from the output of the machine.

8 - Adjust the Record Level knob so that the peak of the bar-graph on the left of the screen is within the little rectangle at the top left. It should not reach the top of the rectangle – that would cause distortion.

9 - Press F8 – which the LCD labels as "ARM". As soon as the audio level is within the rectangle, the recording will start and you will see a graph of peak volume.

10 - The sampler will take three minutes and ten seconds to record its sample. When it is finished, the record input will no longer be audible from the machine's output.

11 - Play the sample back by pressing and holding the ENT/PLAY key. Keep it pressed for all the 190 seconds and listen closely to the audio. You should not hear any glitches or distortions which were not present in the original material.

If you have difficulties with this, you may wish to take out the Real World Interfaces 32 Megabyte memory board and re-install one (or more of) the original memory boards to prove that the recording and playback procedure works.

If you have any reason to question the performance of the new memory board, please contact Real World Interfaces with specific details. The memory board is designed to run coolly and reliably – indefinitely.

A word or two about memory board reliability

Real World Interfaces is aware of a number of technical difficulties with the original Akai memory boards and with the boards of other manufacturers. These problems have been completely overcome in the Real World Interfaces design – so any unreliability and temperature dependence which may have been caused by other boards should not be a problem with the Real World Interfaces board.

For a technical description of these problems, please contact Real World Interfaces at rw@firstpr.com.au.