

## Chapter 8

# Memory Upgrades and Other Options

### Program RAM vs. Sample RAM

If you're creating a lot of your own programs, and using samples loaded from disk, there are a few things you should be aware of to avoid perplexity. First of all, there's an important distinction between what we call Sample RAM and what we call Program RAM. Sample RAM refers to any SIMMs you may have had installed in your K2500. This RAM is reserved exclusively for sample storage; nothing else is stored there. Sample RAM is volatile; that is, when you power down your K2500, the data stored there will "evaporate" almost immediately. That's why you have to load RAM samples every time you power up.

The amount of sample RAM in your K2500 is indicated in the center of the top line of the Disk mode page. If the center of the display's top line is blank when you're on this page, it means that there is no sample RAM installed in your K2500 (or that the K2500 isn't recognizing it, in which case you should see your dealer or service center).

Program RAM is where all the other RAM objects you create (programs, setups, QA banks, songs, keymaps, etc.) are stored. The K2500 comes from the factory with approximately 240K of available Program RAM. The amount of free Program RAM is indicated at the right side of the top line of the display in Song mode and Disk mode. You can add a Program RAM (P/RAM) option to increase your total available Program RAM to about 1250K. Ask your dealer.

Program RAM is battery-backed, so anything that's stored there will be preserved even when you power down (as long as your batteries have enough juice). Fresh alkaline batteries will last up to two years, so you'll have very few worries about losing your RAM program information. Nonetheless, we recommend that you back up your programs, songs, etc. by saving them to disk. This offers insurance in case the RAM becomes corrupted. This is unlikely, but still a possibility.

If you create a program that uses a disk-loaded sample, the program information (number of layers, keymap assignment, output group, algorithm, etc.) is stored in Program RAM. All RAM samples associated with the program are stored in Sample RAM. This means that when you power down, the RAM samples associated with your programs will disappear. The program information, however, will remain in Program RAM indefinitely. When you power up again, your RAM programs will still appear in the display as you scroll through the program list, but they won't play if they use RAM samples, because the RAM samples are lost when you power down.

### Viewing RAM Objects

If you're a heavy Disk mode user, you'll often be faced with the decision to overwrite, merge, or append objects when you load files from disk. If you're loading into a memory bank that's nearly full, this can be a tricky call, because if you decide to merge or append, there may not be enough open slots in the memory bank to accommodate the objects you load. In this case, the extra objects will be loaded into the next-higher memory bank.

Things get even trickier if you save dependent objects when you save to disk. (A dependent object is any object that's associated with another object stored in a different memory bank—for example, a RAM sample with ID 301 that's used in a program with ID 200. See the discussion of dependent objects in Chapter 13 in the *Performance Guide*.) If you load a file that contains a number of dependent objects, some of them may be loaded into a higher memory bank than

the one you specified in the Bank dialog before you loaded the file. A quick way to see where the objects you loaded ended up is to use the "Objects" Utility function in Master mode.

Select Master mode and press the **Utility** soft button. Press the **Objects** soft button, and a list of RAM objects will appear. Use the Alpha Wheel to scroll through the list of objects. You'll see the type, ID, name, and size (in bytes) of each object.

## Choosing SIMMs for Sample RAM

Single In-Line Memory Modules, commonly referred to by the acronym "SIMM", are the small memory cards that the K2500 uses for Sample RAM. You can add up to eight SIMMs to your K2500, and since they range in available size up to 16 Megabytes, that means you can add up to 128 Megabytes of Sample RAM to your machine.

The K2500 will accept 30-pin non-composite SIMMs, in sizes of 1 Megabyte, 4 Megabytes, and 16 Megabytes, in either 8-bit or 9-bit configurations. The SIMMs must have an access time of 80 nanoseconds (ns) or faster. The maximum height and width of a SIMM for the K2500 is 30mm x 90mm (approximately 1.2 inches x 3.5 inches). Below is a list of some SIMMs that will work with your K2500:

Hitachi HB56A48A; 4Mx8  
Hitachi HB56A49A; 4Mx9  
TI TM124EU9B, TM124EU9C; 1Mx9  
TI TM497EAD9B, TM4100EAD9; 4Mx9  
TI TM4100GAD8, TM497GAD8A; 4Mx8  
TI TM16100GBD8;16Mx8  
TI TM16100EBD9;16Mx9  
NEC MC-421000A8B; 1Mx8  
NEC MC-424100A8B; 4Mx8  
NEC MC-421000A9B; 1Mx9  
NEC MC-424100A9B; 4Mx9  
Tosh THM81000AS, Tosh THM81000BS, Tosh THM81070AS; 1Mx8  
Tosh THM91000AS, Tosh THM91000BS, Tosh THM91070AS; 1Mx9

SIMMs are always installed in adjacent pairs, and must be installed by an authorized Kurzweil facility.



**CAUTION:** *You must not use composite SIMMs in your K2500. A composite SIMM is one that uses a PAL or other additional circuitry to make multiple DRAM chips act like bigger chips. Non-composite SIMMs (the kind you may use in your K2500) have no chips other than DRAM memory chips soldered to the board. SIMMs with PALs, buffers, or other logic components will not work in your K2500, and must not be used.*

## Using Headphones with the K2500

A good pair of headphones can be indispensable when you want to play but need to keep the volume down. You'll get optimum performance from headphones with at least 50 ohms impedance, but anything over 8 ohms is adequate. Headphone volume decreases as the impedance decreases.