

Chapter 9

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 K2600. This RAM is reserved exclusively for sample storage; nothing else is stored there. Sample RAM is volatile; that is, when you power down your K2600, 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 K2600 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 K2600 (or that the K2600 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 K2600 comes from the factory with approximately 500K 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 1500K. Ask your dealer.

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Sample RAM (SIMMs)      Program RAM (P/RAM)
    |                    |
    v                    v
DiskMode  Samples:43000K  Memory:166K
Path = \DRUMS\
(Macro on)
CurrentDisk:SCSI 4      Startup:Off
                        Library:Off
                        Verify :Off
Direct Access, 121MB
TAXMOR XL3-1001 1.07
<more> Load Save Macro Delete more>
  
```

Figure 9-1 Disk mode page showing Sample RAM and Program RAM

Program RAM is battery-backed, so anything that's stored there will be preserved even when you power down (as long as your battery is functional). A fresh lithium battery should last for several years, so you'll have very few worries about losing your RAM program information. Nonetheless, we recommend that you back up 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 discussions of dependent objects on page 13-18 and page 13-29 of the *Musician's 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 and Installing SIMMs for K2600 Sample Memory

SIMM Specifications

SIMMs for sample RAM must have the following characteristics:

- 72-pin noncomposite single, in-line memory modules (SIMMs), in sizes of 4 M, 8 M, 16 M, 32 M, 64 M, or 128 M
- 8- or 9-bit
- 3-volt or 5-volt (most SIMMS currently on the market are 5-volt)
- Fast-page (FPM) or extra data output (EDO) (80-nanosecond or faster)

You can add one or two SIMMs, up to a total of 128 M. See Table 9-1 on page 9-3 for size compatibility requirements.

SIMM Configurations

Some SIMMs cannot be paired with other SIMMs, regardless of their sizes. The following table shows which sizes can be combined.

Size in Megabytes	Can Be Paired With Other SIMMs
4	Yes
8	No
16	Yes
32	No
64	Yes
128	No

Table 9-1 SIMM-size Compatibility

For example, a 4 M SIMM can be combined with another 4 M SIMM to create 8 M of sample memory. Similarly, a 4 M SIMM could be paired with a 16 M or 64 M SIMM. It could not, however, be paired with an 8 M, 32 M or 128 M SIMM. If you use an 8 M, 32 M, or 128 M SIMM, you cannot use the other SIMM socket.

These companies make SIMMs that work (many other sources are also likely to have the proper configurations):

Newer RAM	(800) 678-3726 or (316) 943-0222
Chip Merchant	(800) 808-2447 or (619) 268-4774
Kamel Peripherals	(508) 435-7771 or (888) 295-2635
Lifetime Memory	(800) 233 6233 or (714) 794-9000



Caution: Do not use composite SIMMs. 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 (acceptable) have no chips other than DRAM memory chips soldered to the board. SIMMs with PALs, buffers, or other logic components will not work in a K2600; do not use them. Composite SIMMs may appear to work in some cases, but they will be unreliable.

Installing Sample RAM

There's an access panel on the underside of your K2600, which you'll need to open to install your sample RAM. This is the same panel you would open to install a replacement battery, the P/RAM-26 option, or ROM sound block options.



Warning: Turn off your K2600 and disconnect the power cable!

1. Carefully place your K2600 upside down on a padded level surface, with the front of the instrument toward you. Keyboard owners should use soft, sturdy foam under the ends of the instrument, to protect the wheels and sliders.

2. Locate the access panel. On keyboard models, it's about 6 by 13 inches in size, slightly to the right of center, toward the back of the instrument. On rack models, it's about 7 by 12 inches, and takes up a large portion of the underside of the instrument.
3. Remove the screws that hold the access panel in place—eight for the keyboard and six for the rack—and swing the panel open from the front. It hinges at the back, and rests in a position that's convenient for referring to the diagram that's printed on the inside of the panel.
4. Locate the two sockets for sample RAM. Note the location of the socket for the P/RAM-26 option. Don't put sample RAM into the P/RAM socket! Doing so could cause serious damage to the K2600, the SIMM, or both.
5. Place a SIMM into one or both of the sample RAM sockets. If you're putting in two SIMMs, be sure that their sizes are compatible, as shown in Table 9-1. There's only one way that the SIMMs will fit into the sockets; they won't fit at all if they're facing the wrong way. Be sure the clips at the sides of the sockets snap into place.
6. Check the setting of the voltage jumper, and change it if it doesn't match the voltage of your SIMMs. The K2600 arrives from the factory with the jumper set for 3-volt SIMMs. Since most SIMMs these days are 5-volt, you'll probably need to change the jumper setting.

The jumper is a small piece of molded plastic with a wire loop at the top. It has two slots that slide over two of the three pins that stick up from the circuit board. The pins are numbered from 1 to 3, *right-to-left*. Put the jumper on pins 2 and 1 (the two right-most pins) to configure the K2600 for 5-volt SIMMs, or on pins 3 and 2 (the two left-most pins) to configure it for 3-volt SIMMs. The circuit board is labeled accordingly.

We set the configuration for 3 volts so that if you were to install 3-volt SIMMs while thinking you were installing 5-volt SIMMs, you wouldn't pose any risk to your instrument.

7. Replace the access panel and loosely install the screws, starting with those closest to the hinge (the back) of the access panel. When the screws are loosely in place, tighten them all.

Using Headphones with the K2600

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 eight ohms is adequate. Headphone volume decreases as the impedance decreases.