

will make PET do the job without further instructions from you. If a VERIFY ERROR occurs, however, the loop will abort and PET will return to the READY state.

Be extremely careful about your RECORD button when you are SAVEing and VERIFYing, especially when these are done under program control. Trying to SAVE *without* the RECORD button will leave your tape exactly as it was before the SAVE, and trying to VERIFY *with* the RECORD button depressed will erase the tape. Remember — PET can't tell the difference between its cassette recorder buttons. It only knows whether one or more of them are down, and it can't tell which ones or how many you've pushed.

Like most other BASIC commands and statements, SAVE can be abbreviated. The proper abbreviation is 'Sa', which prints on the screen as 'S(spade)' if your PET is in graphics mode. Similarly, VERIFY can be abbreviated as 'Ve', and LOAD as 'Lo'. The abbreviated forms work exactly like the fully-spelled ones, but they are easier to type. ©

## Product Review:

# The Optimized Data Systems PH-001 2114 RAM Adapter

David C. Swaim  
Marietta, GA

I turned on my PET 2001-8 one day, loaded a program and typed RUN. The computer went into never-never land leaving me with no option but turning it off and back on. When I did this I got the "\*\*\* COMMODORE BASIC \*\*\*" but only 2612 bytes free. I had a bad RAM chip. If you own an "original" PET 2001-8 and recently had a RAM chip go bad you already know the next part of the story. The 2001-8 PET uses the 6550 RAM chips. These chips are out of production and if you can locate one you will pay a premium price for it. Eventually you will not be able to get one at any price. Just when I was feeling like my computing days were over I discovered Optimized Data Systems (P.O. Box 595, Placentia California 92607). These fellows make a handy adapter which allows you to replace your 6550 RAMs with the more available (and cheaper) 2114 RAMs. Their PH-001 2114 RAM Adapter allows you to replace up to 4K of memory one chip at a time so you can keep

using your good 6550 RAMs. This was obviously just what I needed.

Being impatient and knowing only that they made an adapter I decided to call them (area code 714 996-3201, don't call collect). The person I talked to was very helpful and explained what they made. You can get the RAM adapter in various stages of readiness. The PHB-001 is a bare double-sided printed circuit board and sells for \$8.95 (add \$1.50 postage and handling to all prices, California residents add sales tax). You supply all the other parts. The other parts needed are two 22 pin wire-wrap sockets, a 74LS139 dual decoder, two 0.1 uf capacitors and 2114s and sockets. If you think you might have trouble finding these parts the PHK-001 at \$13.95 contains all the parts to make the adapter with two 2114 sockets. The PHK-001S at \$16.95 is the complete kit including eight sockets for your 2114s. If you are not adept at soldering miniature PC boards (the lands on the adapter board are pretty close together) I recommend the assembled and tested PH-001S adapter at \$22.95. The 2114 RAMs are extra on all of the above. I only needed one so that's all I got. I ordered the assembled version plus one 2114 RAM over the phone Monday afternoon (phone charge card orders only). On Thursday I received the adapter in the mail. I can only say that shipment was prompt. The adapter itself was in a sealed plastic bag. The 2114, which I almost threw away with the packing, was pressed onto a small piece of conductive foam and was loose in the packing material. They included a self addressed stamped post card requesting an honest response to the product on which I suggested they at least put the 2114s in a plastic bag in the future.

Installation of the adapter is simple. First you remove the last two 6550 RAMs from the main PC board on the PET. These are inserted into the 22 pin sockets on the adapter board. These two sockets are wire-wrap sockets and they plug directly into the now empty sockets on the PET. Then when any 6550 RAM in the top 4K goes bad simply unplug it and plug a 2114 into the corresponding socket on the adapter board (a diagram is provided). With two of these adapter boards the entire 8K of memory can be replaced with 2114s.

The user instructions that come with the PH-001 are pretty thorough with adequate warnings on avoiding static electricity while handling the RAMs. The only problem I had was figuring out which way the 2114 went onto the circuit board. After studying the parts layout diagram I was able to figure it out. The last page of the directions gives a very detailed description of how the adapter works and suggests the possibility of using the PH-001 as a 4K memory expansion (Hmm.....).

The materials and workmanship on the PH-001 are excellent and the peace of mind is well worth the small price. ©