The Kaypro Column

By David Thompson

Kaypro is distributing an update package for the early Kaypro 10 (the one with the Tandon drives) that lets you boot off the floppy.

All systems are supposed to automatically boot off the floppy if there is a disk in the drive but only the more recent systems can do it. Format and Sysgen a floppy with your 10, then hit the reset button with the new disk in place and see if the system will boot off the floppy (the winchester light will not come on). If yours will not boot off the floppy, then you need to get the free upgrade kit from your dealer.

The update package includes a new monitor ROM and a disk of new software. However, the ROM they send is a 250ns part (2732A-25) while the ROM that came in the 10 was rated at 200ns (2732A-20). The first replacement ROM that I got wouldn't run at all, so I swapped it for another and the second one seemed to work fine.

After I put the lid on the system and started using it, it got flaky. It would lock up sometimes, ignoring the keyboard—other times it would just reboot with no warning.

So I erased the ROM that had come in my 10 and burned in information from the new (slower) ROM. This cured the flakiness.

So, if you are having random problems with a Kaypro 10, check the monitor ROM, U42. If it is a 250ns part, you should see about getting a faster part. Note that the monitor ROM is a little hard to find since it is tucked under the drive cable. In fact, the cable may well be contributing to the heat problem so if you are desperate, you might prop the cable up away from the ROM temporarily while you're getting a new part.

This ROM problem makes me suspect that there are some hardware timing problems on the Kaypro 10. A select line or a data buffer may be slow, causing critical timing problems.

We've found that IIs and 4s will be absolutely reliable at 5 MHz with the 250 ns ROMs but the 10s will not work at 4 MHz with the same parts.

Sponge

All of you with fans on your Kaypros (and bells on your toes) should remember to check the little sponge filter behind the fan. That little filter doesn't look like it would filter much, but it sure can clog up. When it does, you get the noise but no action.

Just pull off the little plastic cover and rinse out the sponge. That's all there is to it.

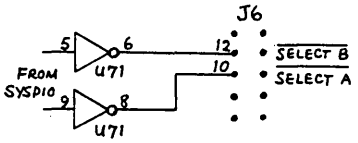


Figure 1 - Original Kaypro Drive Select

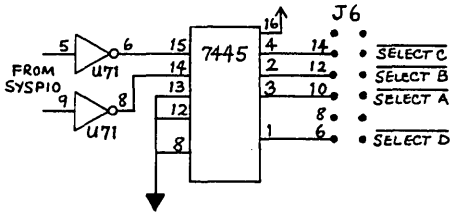


Figure 2 - Select Circuit to Access 4 Drives with Pro-8+

KIPS

I received a "newsletter" from Custom Electronics of Fresno, California. The "newsletter" is called KIPS (Kaypro Information Peripherals and Software) and for $14.95 per year, you are supposed to get: "Periodical mailings of Hardware and Software tips from users nationwide." You are also supposed to be able to purchase all kinds of Kaypro products at "KIPS DISCOUNT PRICES."

Well, KIPS is really just a 36 page catalog with 3 pages of tips. In these three pages they cover the latest from Kaypro, such as:

The Kaypro 10 has a built-in 10 Meg hard disk. The Kaypro 4 is a Kaypro II with "double sided double density disks." (No mention of the drives.) And that when you have a Kaypro, you have "the ability to dedicate the computer to any language you might want to learn."

After all this, they review JRT Pascal and benchmark it against SBASIC. No indication of the programs they ran, though they called them "time trails." (Yep, trails, which may mean it was a foot race.)

So, we turn to the other 33 pages in this "mag." Here you can purchase at "discount" a Gemini 10X that they say retails for $499 (retail is really $399) and which they will sell for $339.95. (The usually mail order price for this printer is between $269.95 and $299.95.) It also appears that they are selling a public domain accounting package for $199.95 (without manuals). For another $149.95, they'll send you the documentation!

They also sell a Kaypro II monitor ROM with a custom sign-on. You get 23 characters on the first line and 17 on the second. This is very interesting since I designed a custom monitor ROM for the Kaypro II with 23 characters on the first line and 17 on the second. (When you design something in this business, you never know who will wind up selling it!)

The KIPS people included an advertising cover letter, just in case we might want to put our ad in their "magazine." The letter noted that they would be glad to run any editorial material we wrote about ourselves, if we bought advertising. I may be old fashioned, but that's definitely not my idea of ethical journalism.

PRO-8

Dana and I have gotten some calls from people who are trying to use the PRO-8 copy programs to copy one format disk (say a Kaypro II disk) to another format (say Kaypro 4 or 8). These track copy programs will only copy between two disks of the same format.

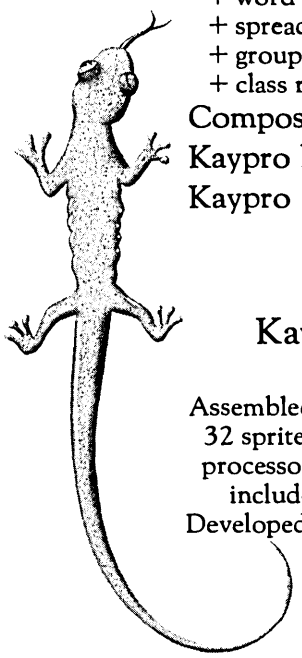
So, if you want to format and copy to a disk that is different from the source disk, do the following: Choose the correct version of COPY, select the "O" option and then either "F" to format in B: or "X" to format drive A:. After you have formatted the disk(s), exit the COPY routine and use SYSGEN.COM (comes with CP/M) to put system tracks onto the disk (don't use the "SYSGEN" built into the copy program, it wipes out the system tracks if the disks are formatted differently). Then use PIP.COM to transfer the files.

BELLS AND WHISTLES

External Video Generator
Easy Installation

Add an external composite video monitor for all your needs:

+ word processing
+ spread sheet work
+ group demos
+ class rooms



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There is also one small bug in the "2on8" routine. If you put an 80-track drive in A:, this program will not properly format a Kaypro II disk in A:. The following will fix the problem.

```
A>ddt 2on8.com
DDT VERS 2.2
NEXT PC
1F80 0100
-s732
0732 FC f8
0733 F5 .
-cntl-C
A>save 30 New2on8.com
```

In other words, changing the byte at 732 (hex) from FC (hex) to F8 (hex) makes everything work properly.

Tandon 101-4

Tandon has begun shipping a new drive called the 101-4. We've had problem reports from users who have this drive. We borrowed a 101-4 long enough to bring it up on our Kaypro II.

The most remarkable thing about this drive is that it is practically silent. I mean, that little stepper just doesn't realize what steppers are supposed to sound like. It is great. Anyway, check out the following if you have one of these.

1. Be sure that only one drive is terminated (two terminators will overwhelm the driver). The terminators look like blue ICs.

2. Set up the jumpers as follows: W9 open, W19 closed, Jumper on W13 for 6 ms step rate. W10, W11, W12, and W14 should be left open.

3. Drive select is done by W1-W4. If this will be drive A: then jumper W1, if B: jumper W2. The rest of the board should be jumpered correctly as shipped.

4. Be sure you power down the system after setting the jumpers. The onboard processor only checks the jumpers at power-up.

5. You may have to hit the reset button a few seconds after you power-up since these drives take a while to check themselves out.

6. Remember the COPY programs will usually only run at 2.5 MHz.

So far, however, the older Tandon 100-4, as well as the TEAC, and CDC quad density units have been flawless and we've gotten no reports of problems with any of the double and single sided 48 tpi drives.

TEAC

The TEAC drives have the ribbon connectors mounted upside down from other drives so you might wind up finding that your drive data cable is too short if you have one TEAC drive and one Tandon. If they are both TEACs, then you are OK.

CDC

On these drives, be sure to jumper "M." Also jumper the drive number, 1 for drive A:, 2 for drive B: and so on.

Four Drives on the 4

All of the PRO-8 monitor ROMs we've shipped in the last 2 months support 4 drives as well as 2 (see, there is such a thing as a free lunch). That means that you will be able to use two outboard drives as C: and D: if you add a simple drive decoder circuit and the necessary data and power cables. If you get the TEAC half-wide drives you can mount all four drives inside the cabinet and run the whole thing off the built-in supply since the TEACs use only half the power (as well as half the space) of the Tandons. The Tandon and CDC drives will require separate power supplies. The ROMs that support four drives have +'s around the

(continued on next page)

ROM sign-on message (so we call them PRO-8+ ROMs).

We will have a complete Plus-2 package for the PRO-8+. The package will include the decoder board and a disk with the additional formatting and system utilities that you will need for four drives. We're also getting prices on complete cables so if you don't want to build your own we'll have them. More information on these in issue #18.

Note that this will be the genuine Micro C decoder board. You'll be the envy of all the Kaypro users on your block when you show them your very own Micro C decoder. We're waiting for Batman and Robin to order their own copy of this beauty.

Anyway, this way you can leave your original drives in place, if you wish, and add two more of any type (191K, 380K, or 784K) outboard or you can replace your present drives with up to four half-wides (of any persuasion) and not have anything hanging out.

Kaypro II Version A

During the Spring of 83, Kaypro spent several months trying to clean up a disk error problem. During this period they went through three new versions of their monitor ROM. The monitor ROMs (U47) were marked (on the paper stuck on the ROM) with an 'A', 'B', or 'C' suffix. Kaypro shipped a few 'A' versions and almost none of the 'B' versions (I understand they had a bad bug), before they went to the 'C' versions which they are still shipping.

I hadn't been able to find anyone who could tell me what they changed from version to version, but now, thanks to a letter from Terry Kingrey, I have a pretty good clue.

Terry tried installing one of our PRO-monitor ROMs on his system but it didn't work (he hadn't told us that he had one of the 'A' ROMs). So he tried substituting parts on his Kaypro to see if he had a defective chip (we would have told him not to bother). He didn't have a 1797 floppy disk controller to swap with the one on his board so he substituted a 1793 from a friend's Kaypro. After he substituted in the 1793 he found that his system worked just fine with our PRO-monitor ROM.

That news sent Dana and I to the Western Digital book to see what the differences were between the 1793 and the 1797. The 1797 does side select and the 1793 doesn't, but Kaypro isn't using that line. However, the 1797 requires a sector size bit, the 1793 doesn't. That could be the difference.

Anyway, if you are one of the select few with an 'A' version of the Kaypro, it looks like you can upgrade to one of the PRO-monitors (II, 4, or 8) if you will replace your 1797 with a 1793 disk controller. 1793s cost about $25.00 each. You can order them from Unicorn Electronics 213-341-8833.

If you have a ROM with no suffix or with a 'C' suffix you are just fine. You have the 1793 disk controller already.

Oh, and thanks a bunch, Terry, for the letter. We couldn't have done it without you.

Close Look at the New Kaypro 4

I had heard that the new Kaypro 4 had a Kaypro 10 board, two 390K drives, plus a battery backed-up timer and modem. Whee!

It turns out that the new 4 board is more than just the 10 board with two additions. It contains two new 40-pin ICs that replace a lot of standard ttl chips.

One of them is dedicated to the video section and it looks like the graphics department just got a lot smarter and easier to use (is someone planning 1,2,3 for the Kaypro?).

All the Kaypros will soon contain this new board and meanwhile they've just dropped the price of the Kaypro II to $1295 (and the board is running 4MHz besides!).

Advantages

Kaypro has added a lot of the features that independent suppliers have been selling (which is unusual for a large manufacturer). Obviously Kaypro has been listening to users.

Also, if Kaypro can resist making changes for a while, you'll see a lot of hardware and software coming out for this board. After all, people will only have to design a product once and it will work on all the new Kaypros.

Disadvantage

However, a lot of present upgrades will not now work on the new board. Dana will be working on new monitor ROMs but, of course, those new ROMs aren't done yet. So those of you with a Kaypro 4 with graphics and two half-wide drives will have to wait a while before making your system distinctive.

And, those of you planning to purchase a Kaypro 10 might want to wait a month or so and then make sure you will be getting a system with the built-in modem.

The MODEM

The built-in modem is a very simple 300 baud direct connect unit. It is locked at 300 baud for now because its UART (asynchronous serial chip) is tied to the same half of the 8116 baud rate generator as the keyboard SIO. Since the keyboard communicates at 300 baud it's obvious that Kaypro figured it could save the price of another baud rate generator by using the same clock twice.

However, until we come up with something sneaky (and if it's sneaky, it's right down our alley) you'll lose use of your keyboard if you try running the modem at, say, 450 baud.

Support For Fat Jack

As a technical journal, we've considered ourselves above the jungle of Kaypro add-ons such as legs (a 1 by 2 board mounted underneath the front gives it a great "pair" of legs), stands (I can't stand them) and reading racks (if God had meant for me to have a reading rack he would have taught me how to read).

However, the Twist people sent us one of the Fat Jack reading racks and a pageclip (which holds books open when they are on the rack). The rack easily hooks to the top of the Kaypro and holds books or papers at just the right level.

Then Sandy spied the rack and started using it. She loved it. In fact, she wouldn't even let me borrow it.

Well, anyone who puts out a product that Sandy won't loan me, and then supports it like this, has earned a mention in Micro C.

Fat Jack Reading Rack $17.95
Twist Inc
PO Box 1406
Renton, WA 98057

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