Addendum to the KAYPRO 16E User's Guide

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Product Update
KAYPRO 16E

This document summarizes the changes that have been made to the KAYPRO 16E since the User's Guide was last reprinted.

The biggest changes have been in the hardware: the K16E now comes with a 20 Megabyte hard disk standard (up from 10 Megabytes), and installed RAM has been increased from 256K to 768K! Complete specifications are shown in the following section.

There have also been software changes. The installation process is slightly different, and four utility programs have been added to the bundle. These will be explained in later sections.

The last part of this document will describe the Kaypro Multi-Video Board and switching between the various video modes available to you.

Please read the rest of this document BEFORE beginning to install your computer.

Hardware Changes

More Permanent Storage!

The biggest news is that the KAYPRO 16E now comes standard with a 20 Megabyte hard disk, at the same price as before! Therefore, please disregard references in the documentation to the 10 Megabyte hard disk of earlier versions.

More RAM!

The next biggest news is the change to put 768 kilobytes of Random Access Memory (RAM) into each machine, again without increasing price. This gives you capacity to run nearly every major software product on the market, with room to spare.

Please remember that the operating system -- MS-DOS -- can only directly use the first 640K of user memory. When you turn on your machine in the morning, the built-in diagnostics will only check out 640K of RAM. Don't worry: the other 128K is still there.

The best way to use this extra 128K is as a RAM disk. See the next section for an explanation of the two different RAM disk utility programs now provided with the K16E, VDISK and RAMdrive.

One last note: The 128K above 640K will need to be disabled if you install a memory card for applications conforming to the Lotus^{R}-Intel^{R}-Microsoft^{R} Expanded Memory Specification (EMS). Consult your dealer for help.

Complete specifications for the KAYPRO 16E are as follows:

8087 MATH CO-PROCESSOR

* 8088 microprocessor running at 4.77 MHz
* 768K of Random Access Memory (RAM)
* 20 MB hard disk
* 360 KB double-sided, double-density diskette drive
* High-resolution 9" monochrome monitor
* Versatile multi-video board capable of:
  * High-resolution (TTL) monochrome text (internal or external monitor)
  * Color emulation, displaying color graphics programs in shades of green (internal monitor)
  * RGB color text and graphics (external monitor)
  * Composite color text and graphics (external monitor)
* Video output connectors for external RGB color, monochrome, and composite monitors
* One parallel printer port
* One serial port
* IBM PC/XT-compatible keyboard
* One open expansion slot
* A true hardware RESET button

Software Changes

There are minor differences in the installation routine for the K16E. In addition, we have included four utility programs in your software bundle that are not described in the User's Guide: **VDISK.SYS, RAMDRIVE.SYS, LOCATE.EXE,** and **CHATTR.EXE.** We will discuss these after explaining changes in the installation procedures.

Note: if your dealer has already formatted your hard disk AND installed your entire software bundle, you may skip the next section and proceed directly to the section on New Programs.

How can I tell if the dealer has done the formatting and installation? Simple. Turn on your machine with no diskette in the floppy drive. If it boots and comes up with a time-and-date prompt, then the dealer has at least done the formatting. If it proceeds to the Master Menu after you respond to the time-and-date prompts, the dealer has installed everything.

Software Installation

The first change you will notice is that software diskettes are now labelled "Master Diskette" instead of "Autoload Diskette." Second, the diskettes are not specific to the K16E. The same master diskettes are also used for other Kaypro 16-bit computers.

Software installation consists of doing the *high-level formatting* of your 20 Megabyte hard disk and installing the software. The hard disk has already received *low-level formatting* and has been set up with a single MS-DOS partition at the factory.

Here are the steps to follow to complete the installation:

1. Start the computer with Master Diskette #1 in Drive A. The computer will automatically load the

INSTALL program, which is written in GWBASIC.

2. You will be prompted to respond to questions about your type of machine (K16), whether you are using an EGA video board (probably not), and whether you are using an external color monitor (are you?).

3. After answering these questions, you will be given a menu of installation choices:

   Hard disk install menu
   1) Format
   2) Install programs onto hard disk
   3) Install a floppy-disk-only version of an application
   4) Exit this installation

   Unless your dealer has done the formatting and installation, choose option 1 to format your hard disk. This process will take several minutes.

4. When the menu returns, select option 2 to install your software programs. Continue to follow the screen prompts, changing diskettes as necessary until the process is complete.

5. When the menu returns again, you may exit the installation program (option 4).

6. To verify that all has gone well so far, remove the diskette from Drive A and reboot the computer (either push the red button on the left side of the machine or hold down the Ctrl-Alt-Del keys at the same time).

7. If the computer prompts you for time and date, respond in the requested format and press ENTER.

8. After the time and date prompts, the Master Menu should appear on the screen.

9. You can escape Master Menu to run other programs by pressing the ESCape key. To restart Master Menu afterwards, type MENUST and press Enter.

New Programs

Two RAM disk Utilities:

VDISK.SYS
RAMDRIVE.SYS

There are two different RAM disk utilities in your software bundle, intended for two different types of applications. We will first give a general explanation of RAM disks and their usage before explaining the different programs.

What is a RAM disk?

A RAM disk (sometimes called a Virtual Disk) is a portion of your computer's Random Access Memory (RAM) which is set aside to function as a floppy disk. It is used exactly like any other floppy disk. You can copy programs to and from it. You can use it to store data files.

The advantage of a RAM disk is speed. Information can be stored and retrieved with amazing quickness. This can be a significant help if you use a word processing program that performs frequent disk accesses to read overlays and help messages.

The limitation is that information stored there will be lost when you turn off or reboot the computer. At the end of every work session, you will need to copy your data files back to the hard disk or to a floppy diskette.

VDISK -- The General Purpose RAM disk

VDISK is a Kaypro utility program that lets you use the extra 128K (and even part of the first 640K) of RAM as a

RAM disk. The advantage of VDISK over RAMDRIVE is that it **first** uses the RAM above 640K before taking any from the 640K normally available to your programs.

The disadvantage of VDISK is that it should not be used for applications that require conformance to the Lotus^{R}-Intel^{R}-Microsoft^{R} Expanded Memory Specification (EMS). Those applications should use the RAMDRIVE utility.

Overall, VDISK should be your first choice in RAM disks for a K16E that does not have a specialty add-on memory card.

RAMDRIVE -- The Special Purpose RAM Disk

RAMDRIVE is a utility program supplied with MS-DOS Version 3.2. The advantage of RAMDRIVE is that it can use expanded memory that conforms to the EMS specification. (Note: On 80286-based computers, RAMDRIVE can also be used to create RAM disks in extended memory above the 1 Megabyte boundary.)

The disadvantage is that for standard machines, RAMDRIVE cannot use any of the RAM above 640K. A RAM disk created with RAMDRIVE on a standard K16E will occupy part of the conventional memory below 640K.

Installing a RAM Disk

Both RAM disk utilities consist of a type of configuration file called a *device driver*. The file is copied to the hard disk root directory and invoked by an entry in the **CONFIG.SYS** file every time the computer boots up. Installing a RAM disk, then, is a matter of copying one file and either creating or modifying the CONFIG.SYS file.

The first step is to decide how large a RAM disk you need. With VDISK, the obvious choice is 128K, the amount of "free" RAM at your disposal. For applications with larger data or overlay files, try a RAM disk of 180-256K. The default values are 180K for VDISK and 64K for RAMDRIVE.

Remember: With VDISK, the first 128K will always come from RAM above 640K, with the balance coming from conventional memory. With RAMDRIVE, the entire amount comes from conventional memory.

Let's choose a RAM disk of 128K and work through a sample installation of VDISK:

1. Exit the Master Menu system by pushing the ESCape key.

2. Get to the Root Directory:
   Type: *cd*
   Press: Enter

3. Copy the VDISK.SYS file from your UTILITY subdirectory as follows:

   Type: *copy \utility\vdisk.sys*
   Press: Enter

4. **If you do NOT have a CONFIG.SYS file,** let's create one:

   Type: *copy con config.sys*
   Press: Enter

5. You should see the cursor at the far left margin. Now we put in the line that will invoke the device driver at boot time:

   Type: *device=vdisk.sys xxx*
   Press: Enter

   The *xxx* parameter is to be replaced by the size of the desired RAMdisk. In this example, you would type 128 in place of *xxx* to get a 128K RAMdisk. If you leave *xxx* blank, you will have a 180K RAMdisk.

6. Now let's add an end-of-file character:

   Press: F6 (The function key numbered F6)

7. Press: Enter

   The screen will say: *one file copied* and the DOS prompt (C:\) will return.

8. **If you already have a CONFIG.SYS file**, you can edit it as follows:

   Type: *copy config.sys+con config.sys*
   Press: Enter

9. The remaining steps are the same as for 5-7, above.

10. To complete the installation, reboot your computer (use the red button on the left or hold down the Ctrl-Alt-Del keys) and watch the screen. If all went well, you'll see the message that a RAMdisk was installed as your "last available drive" (usually Drive D:) using *xxx*K.

Installing RAMDRIVE is very similar. However the syntax of the statement in the CONFIG.SYS file has more options:

device=ramdrive.sys [xxx][ssss][dddd][/E][/A]

As before, *[xxx]* specifies the disk size in

kilobytes. The default value is 64. The minimum value is 16.

The *[ssss]* option specifies the sector size in bytes. The default value is 128. Allowable values are: 128, 256, 512, and 1024.

The *[dddd]* option specifies the number of root directory entries. The default value is 64, the minimum value is 2, and the maximum is 1024.

The */E* option lets you use extended memory (above 1 Megabyte) as a RAM disk, if you have an 80286-based machine. If you use this option, you cannot use the */A* option.

The */A* option lets you create a RAM disk in expanded memory (above 640K) with a memory board that conforms to the EMS specification, if such a board has been installed. If you use this option, you cannot use the */E* option.

CHATTR -- For Changing File Attributes

CHATTR is a program for changing the attributes of a file. Every file has four attributes that affect how the file can be used. The attributes can be likened to individual table lamps in your living room: each of the lamps may be on or off at any given moment, but the lamps are always there. Likewise every file has all four attributes, but each attribute may be turned on or off independently.

The four attributes are:

* **Read-Only** When this attribute is enabled, the file can be read and copied, but **cannot** be altered or erased by standard DOS commands.

* **System** Files with this attribute set are special-purpose files that can only be used by the Disk Operating System (DOS).

* **Hidden** Hidden files are invisible to standard DOS commands (such as COPY, DELete, REName, and DIRectory). Many System files are also Hidden files.

* **Archive** The Archive attribute is set whenever a file is altered or moved. The Archive attribute is turned off whenever the file is copied by a special purpose program (such as BACKUP or KCOPY) that makes backup copies of data or program files. The status of the Achive attribute has no effect upon how the file can be used, altered, copied, or deleted.

CHATTR can be used to set or change any of the above attributes. CHATTR can also be used to change or display the volume name of a hard disk or floppy diskette.

The standard syntax for using CHATTR is:

chattr function [function] ...

where *function* refers to any of the allowable operations. CHATTR allows you to string together several different operations on the same command line.

The syntax for *function* is:

[operation [switch] filespec [filespec] [filespec]...]

Operation may be any one of the following:

+ Turns on the specified attribute(s) without affecting any other.

- Turns off the specified attribute(s) without affecting any other. The - operator is also required by the ? switch to request the help screens, and by the v switch when working with Volume names.

= Turns on the specified attributes(s) and turns off any that are not mentioned.

The *Switches* are:

? Type *chattr -?* at the DOS prompt to get the first of several help screens: push the spacebar to release succeeding screens.

m Used only in conjunction with -? to disable the pauses between screens.

r Specifies the Read-Only attribute.

s Specifies the System attribute.

h Specifies the Hidden attribute.

a Specifies the Archive attribute.

d Instructs CHATTR to perform the requested

operation on files matching *filespec* in the specified directory AND all subdirectories beneath the specified directory. (Normally CHATTR only works in the specified directory.)

v Used to change or display volume label. Must be used with the - operator. See below for instructions on using the v switch.

Filespec refers to any drive and file designations normally usable with MS-DOS. Wildcards such as * and ? are permitted.

For example, to change the file FORMAT.COM in the current directory to a Hidden file you would:

Type: *chattr +h format.com*
Press: Enter.

Now try listing the files with the DIRectory command and FORMAT.COM will not appear. To change it back:

Type: *chattr -h format.com*
Press: Enter.

To use CHATTR to change the Volume name of a disk, the syntax is:

chattr -v [d:][name][/d]

where *[d:]* is the drive name; *[name]* is the desired Volume name; and *[/d]* is a switch to delete an existing Volume name (not used when a *[name]* is specified).

The program CHATTR has instructions built into it. If you type *chattr* at the DOS prompt with no parameters, you will get the following message:

Chattr ver X.XX Kaypro Corporation

Usage:

chattr [[-/+/=[rshadm?] filespec [filespec [...]]...]
chattr -? for extra help

LOCATE -- A File-Finding Utility

LOCATE will help you find a file on your hard disk, regardless of where the file is stored or in which subdirectory you begin your search. LOCATE can also be used to find subdirectories. The syntax is:

locate [-switch] <filespec>

Switch may be one of the following:

d Disregards subdirectories that match *filespec*.

s Shows directories, but does not display the trailing backslash (\) on the end of the directory name.

? Typing *locate -?* at the DOS prompt gives you the first of two help screens. Press the spacebar to release the second screen.

m Disables the pause between help screens.

Filespec may include the wildcard characters * and ?. LOCATE will find subdirectories as well as files and programs. LOCATE can also find duplicate files, regardless of how widely scattered they are.

Just for fun, you may want to find out how many files begin with the letter r. To do this,

Type: *locate r*.**
Press: Enter.

This will produce a listing of:

C:\UTILITY\RAMDRIVE.SYS
C:\UTILITY\REPLACE.EXE
C:\UTILITY\RECOVER.EXE
C:\MAIN\POLY\READ.ME
C:\MAIN\POLY\REMOVE.EXE.

LOCATE has a built-in help facility, similar to that in CHATTR. Typing *locate* at the DOS prompt will produce:

Locate ver X.XX Kaypro Corporation

Usage:

Locate [-dsm?] [d:] [pathname] filespec [...]
Locate -? for extra help

Changing Video Attributes

The KAYPRO 16E is equipped with an extremely versatile video display adaptor. It is capable of both high-resolution (TTL) monochrome text and color-graphics emulation on the built-in screen. It also has outputs for external high-resolution monochrome, RGB color, or composite color monitors.

When the K16E first boots up, it starts in the color mode. This means it can run software set up with drivers for the IBM Color Graphics Adaptor. Colors will be represented in various shades of green on the internal monitor. The advantage of this mode is that the screen can display graphics. The disadvantage is that text will be the dotty type font associated with normal color graphics adaptors.

For most applications not requiring graphics, you may prefer to switch to the high-resolution monochrome text mode. This is done by means of the VSWITCH program, which is loaded automatically at boot-up time and remains resident in RAM until needed.

To switch to the high-resolution text mode, hold down the Ctrl and Alt keys and press the > key. Immediately the text will be displayed in the fully-formed letters which most people find easier to read. To switch back, hold down the Ctrl and Alt keys and press the < key.

NOTE: BE VERY CAREFUL WHEN USING THE K16E WITH AN EXTERNAL MONITOR, especially when using monitors not made by Kaypro. See the next section for details.

Using External Monitors

You may use the K16E with either a monochrome, RGB color, or composite color external monitor IF you follow two simple precautions:

1. **BRING UP THE K16E AND SWITCH TO THE**

DESIRED VIDEO MODE BEFORE TURNING ON THE EXTERNAL MONITOR.

2. TURN OFF THE EXTERNAL MONITOR BEFORE SWITCHING VIDEO MODES.

The reason is simple: A monitor can be damaged if it receives the wrong type of signal. If you have an external monitor, **use the built-in K16E screen as your key to the operating mode of the video board.**

Even though the K16E User's Guide differentiates between the video connectors, calling one monochrome and one RGB color, the connectors are paralleled internally. Both receive the same signals.

When the computer first boots up, the video card is producing RGB color signals. The internal monitor translates these signals into shades of green. However, you must switch video modes to monochrome before turning on an external monochrome monitor. Similarly, you should turn off an external RGB color monitor before switching to the monochrome mode.

In summary, the Multi-Video Board gives you a lot of capabilities and versatility, and will reward you for exercising reasonable care in its operation.