THE KAYPRO 10 USER'S GUIDE

User's Guide

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REDIRECTION Please first direct all queries and problems to your dealer.

May 1983 Part Number 1409

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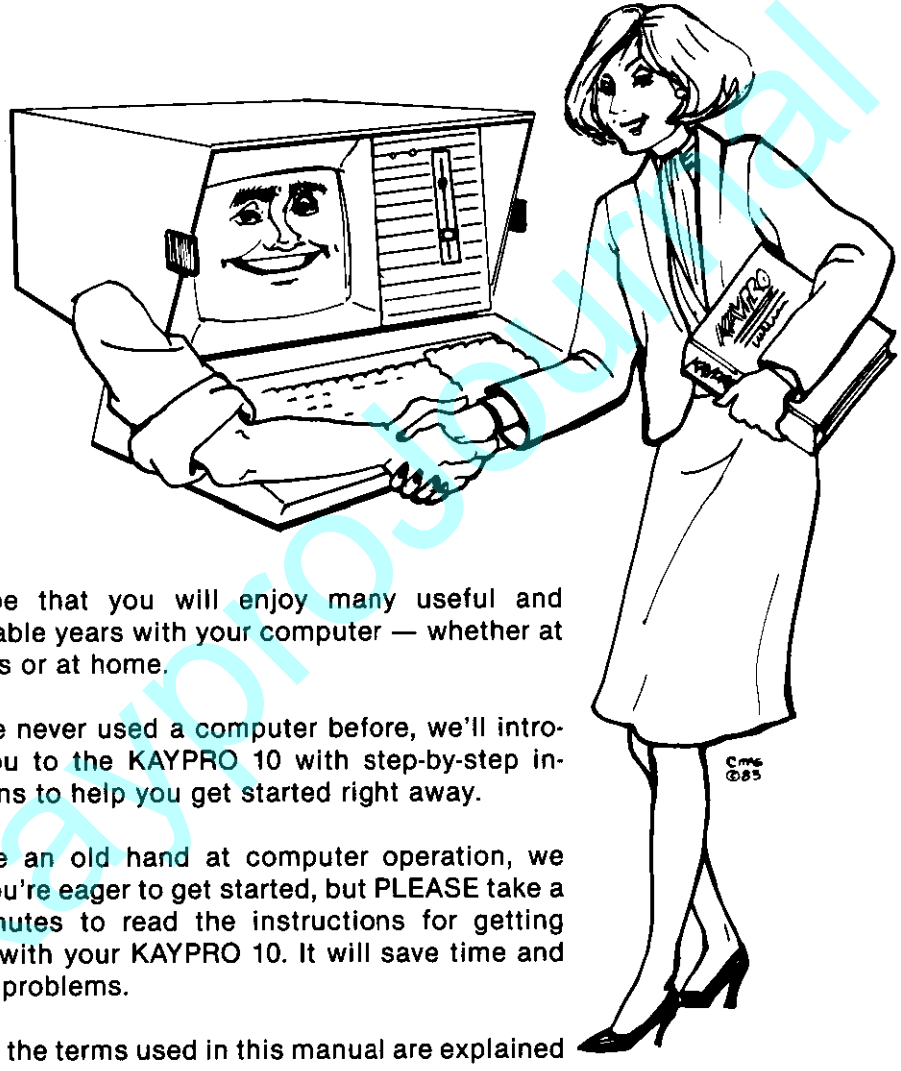


We hope that you will enjoy many useful and pleasurable years with your computer — whether at business or at home.

If you've never used a computer before, we'll introduce you to the KAYPRO 10 with step-by-step instructions to help you get started right away.

If you're an old hand at computer operation, we know you're eager to get started, but PLEASE take a few minutes to read the instructions for getting started with your KAYPRO 10. It will save time and prevent problems.

Many of the terms used in this manual are explained in the glossary at the back.

UNPACKING YOUR KAYPRO 10

When unpacking your KAYPRO 10, be sure to save the packing materials in case you want to ship it some day. The box should also contain the following:

Manuals

KAYPRO 10 User's Guide
Perfect Writer/Perfect Speller
Perfect Filer
Perfect Calc
ProfitPlan
CP/M
S-BASIC
M-Basic User's Guide
The WORD Plus

Miscellaneous

3 Perfect Command Summary Cards
KAYPRO ownership documents
Coiled cable (found when the computer is opened)

WHAT YOU WILL NEED

Blank Diskettes

It is advisable to have blank diskettes for backing up the files in which you store information, such as: text files, mailing lists, and programs which you write. The KAYPRO 10 uses 5¼-inch single-sided or double-sided, double-density, soft-sector floppy diskettes. If you value the information you'll be storing, don't buy low-quality diskettes.

Work Surface

You will want a work surface about 25 inches high with leg room underneath.

Power Requirements

Power requirements for the KAYPRO 10 are 115 to 125 VAC, 50 to 60 Hertz at 60 watts (normal house current). The outlet should be grounded. Your dealer can switch the power supply to 220 VAC if you want to take your computer overseas. For power requirements for peripherals such as a printer, consult the owner's manual for the peripheral.

Optional Line Filter

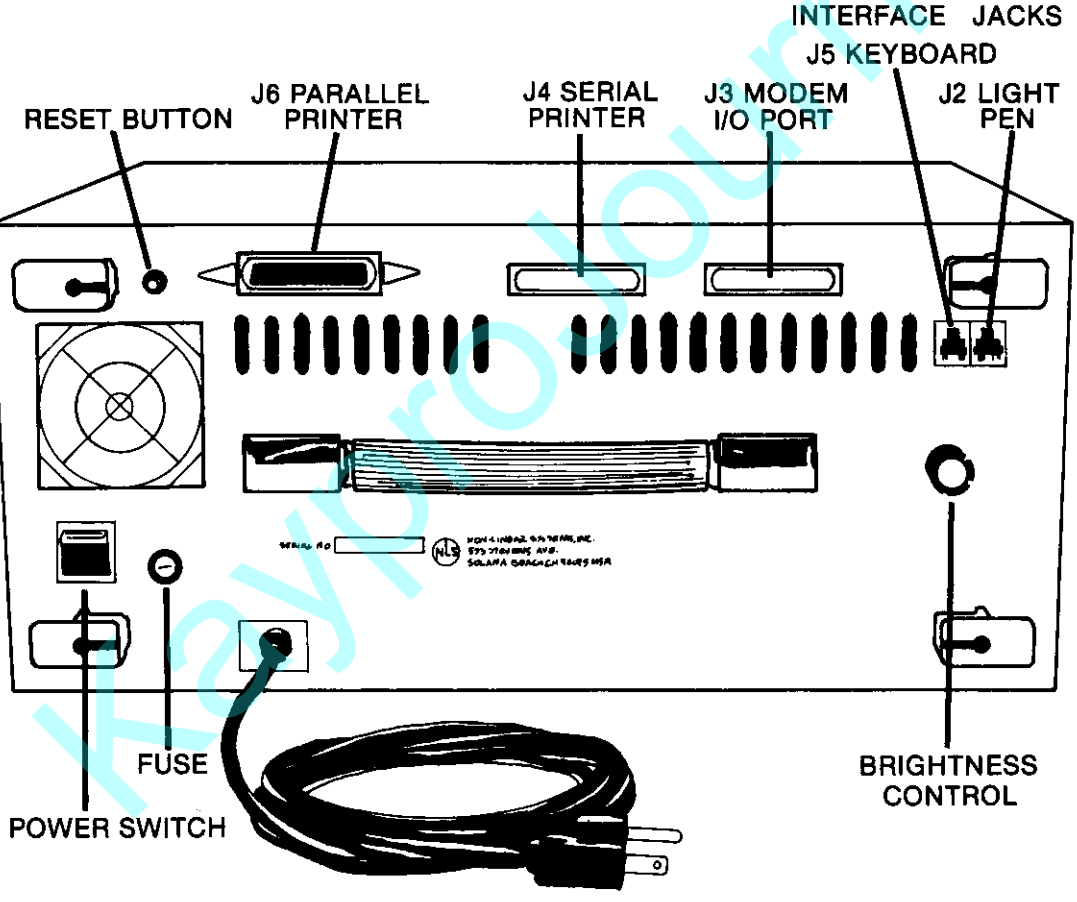
If you have heavy machinery operating from the same power source, or if you experience frequent power shortages or surges, it may be advisable to use a line filter.

Optional Backup Power Source

To provide continuous power in case of a power outage, backup power sources are available from various manufacturers. Contact your dealer about this.

SETTING UP YOUR KAYPRO 10

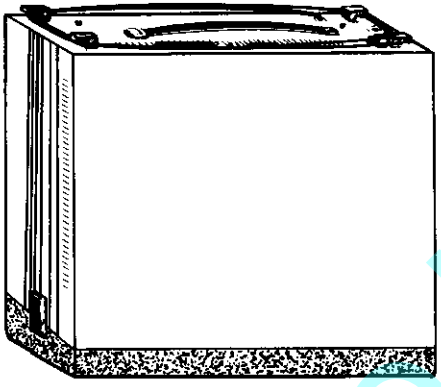
1. Set the KAYPRO 10 on the work surface where you want the keyboard to be, because the keyboard is on the bottom. While it is in this position, look at the rear panel to locate the controls, switches, and ports.

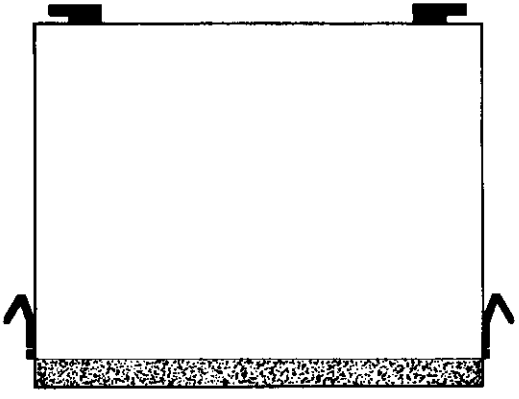


2. Then, turn the KAYPRO 10 so the ventilated side faces away from your work position.

3. Unwind the AC line power cord, but DO NOT PLUG IT IN YET.

4. Push down the tops of the latches on both sides of the KAYPRO; then pull out the bottoms of the latches to detach them from the keyboard.

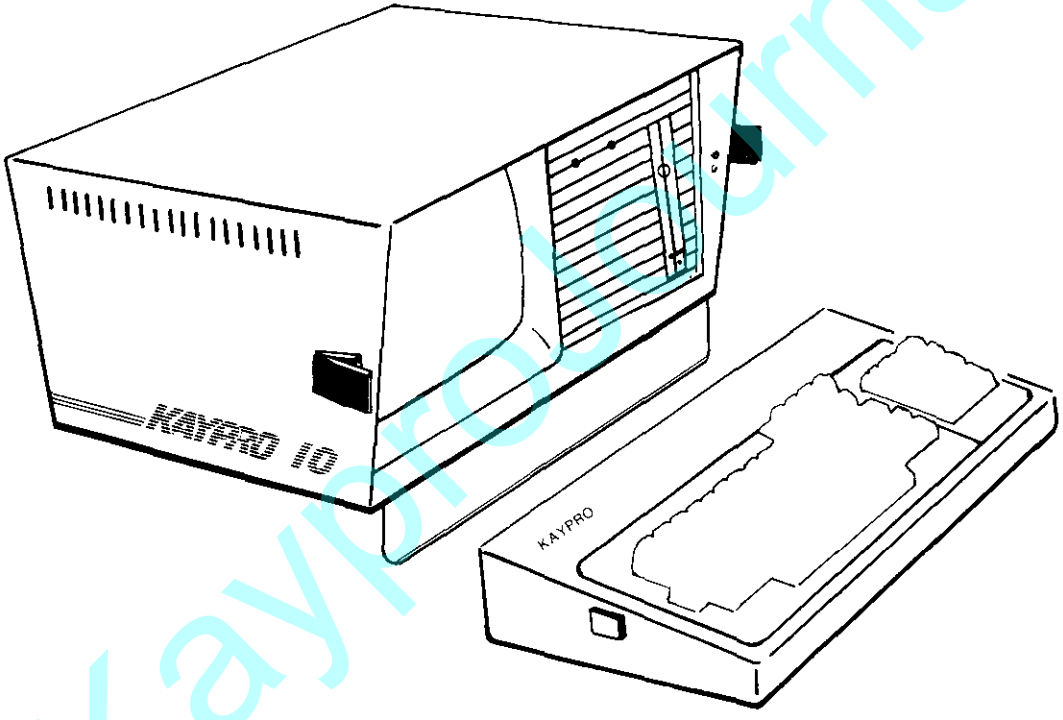




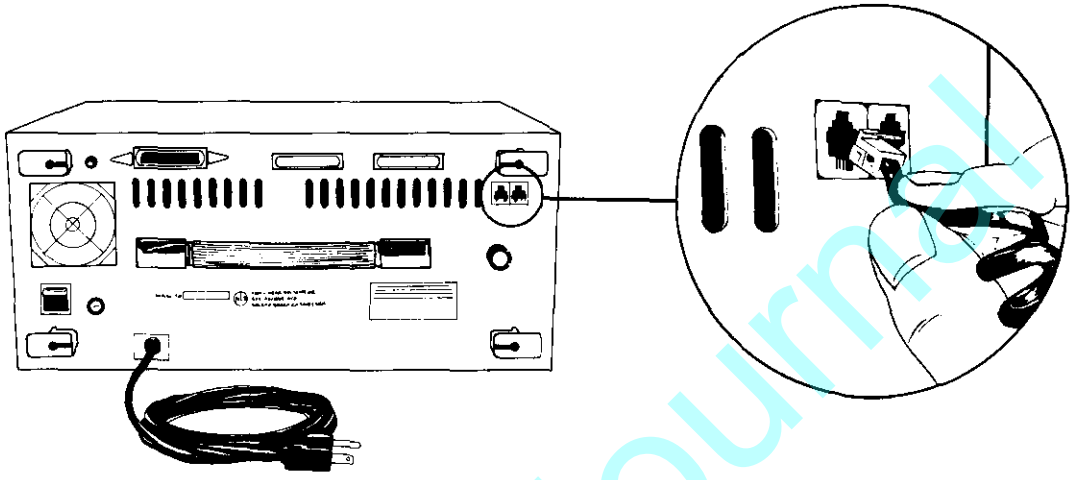
5. Carefully lift the computer off the keyboard, and lay it on the working surface with the large, ventilated surface down.

6. Place the keyboard where you can use it comfortably.

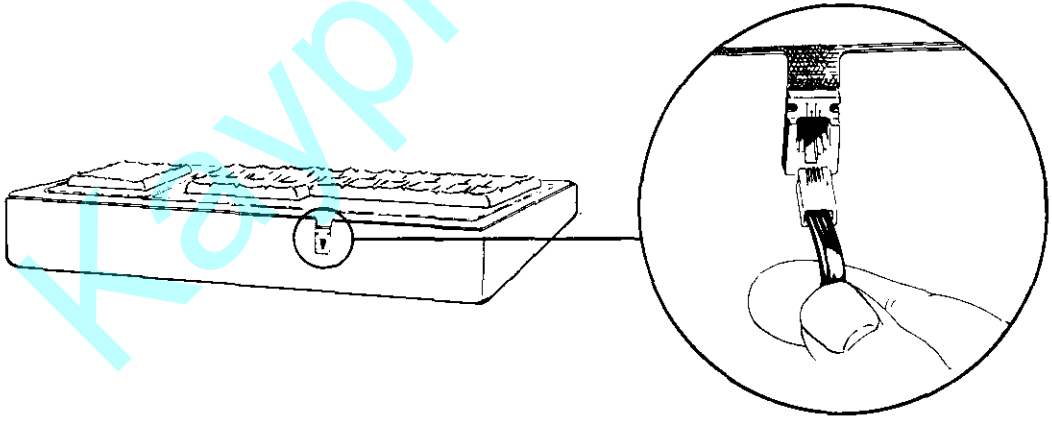
7. Raise the front of the computer, and pull down the metal stand.



8. Plug one end of the coiled cable into the J5 keyboard jack on the back panel of the computer. The protrusion on the plastic connector should be up.



9. Plug the other end of the cable into the jack on the back of the keyboard. The protrusion on the plastic connector should be down.



10. Route the coiled cable under the computer.

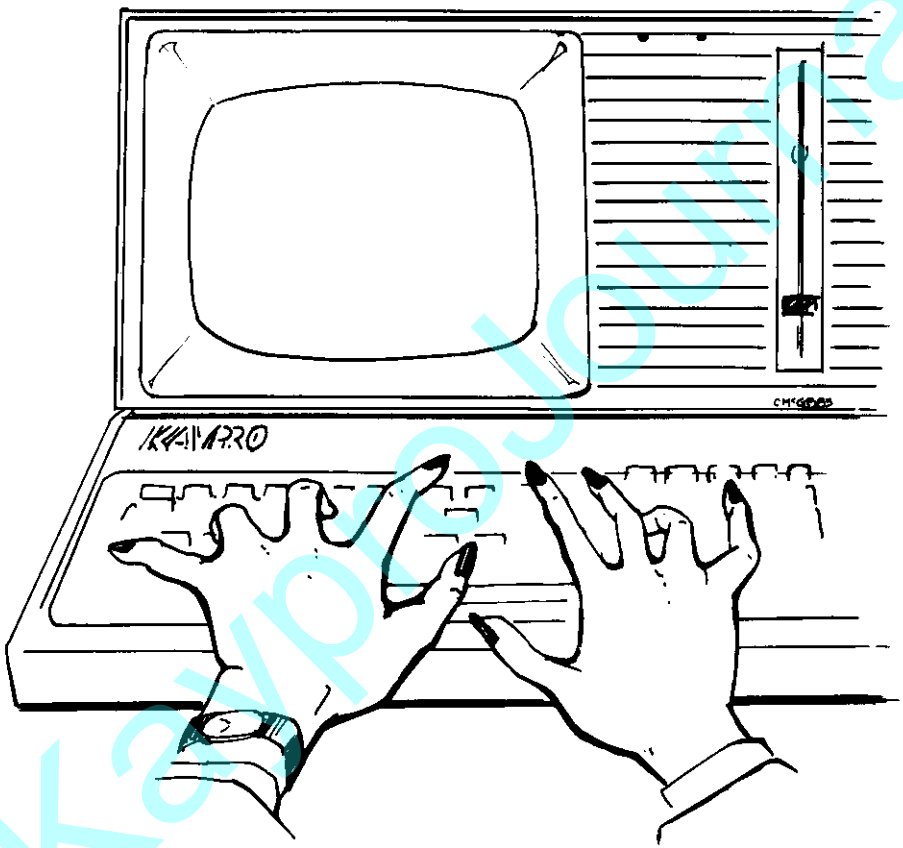
11. Remove the cardboard disk-drive protector from the disk drive. If you close the computer to carry it, reinsert this protector. A handy place to keep the protector is tucked under the handle on the back of the computer. If you ever ship your KAYPRO 10, be sure to place the protector in the disk drive, or the drive warranty will be void.

12. Make sure the ON-OFF rocker-type switch on the back of the computer is turned OFF (down).

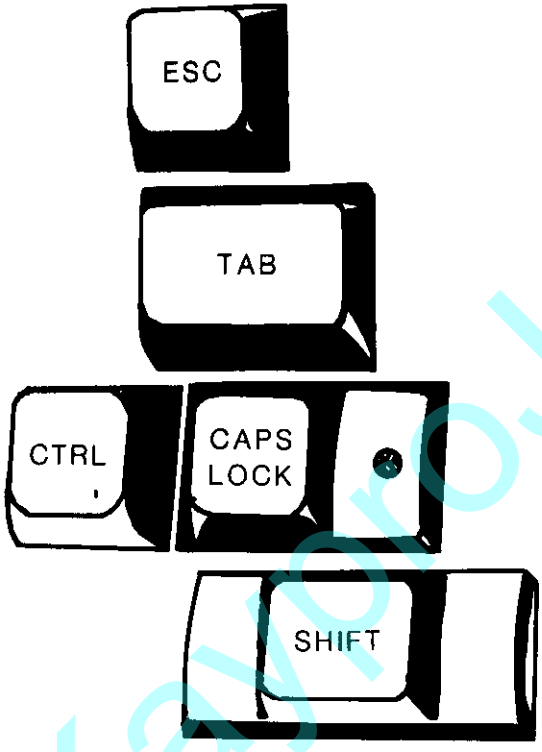
13. Then connect the computer to the power source.

    Before you turn the computer ON, take the time to read the next section. It contains information regarding memory, the CP/M operating system, the screen, the cursor, and floppy diskettes.

BECOMING ACQUAINTED WITH
YOUR COMPUTER



KEYS ON THE LEFT OF THE KEYBOARD



The ESCape key is used according to instructions.

The TAB key moves the cursor horizontally a set number of spaces and inserts those spaces, depending on the program in use.

The CONTROL key is used simultaneously with letter keys to do certain functions. Depress the CTRL key; then, while it is depressed, type the letter. Sometimes the control function will display as a ^ character followed by a second character.

The CAPS LOCK key puts alphabetic characters in upper case. Press once to activate it (the red light on the key goes on), and press again to deactivate it.

The SHIFT key is used simultaneously with letter keys to put alphabetic characters in upper case.

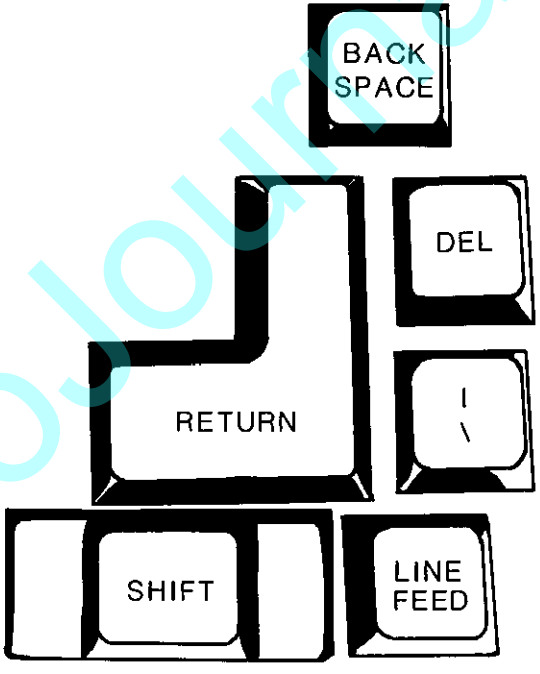
KEYS ON THE RIGHT OF THE KEYBOARD

The BACKSPACE key moves the cursor backward, **sometimes deleting** the character over which it moves, depending on the program being used.

The DELETE key echoes the previous character while **deleting** it. It has other functions, depending on the program being used.

The RETURN key moves the cursor down a line and returns the cursor to the left of the screen. It also tells the computer to execute a command and has various other uses. <RET> and <CR> are computer symbols to indicate that you should press the return key.

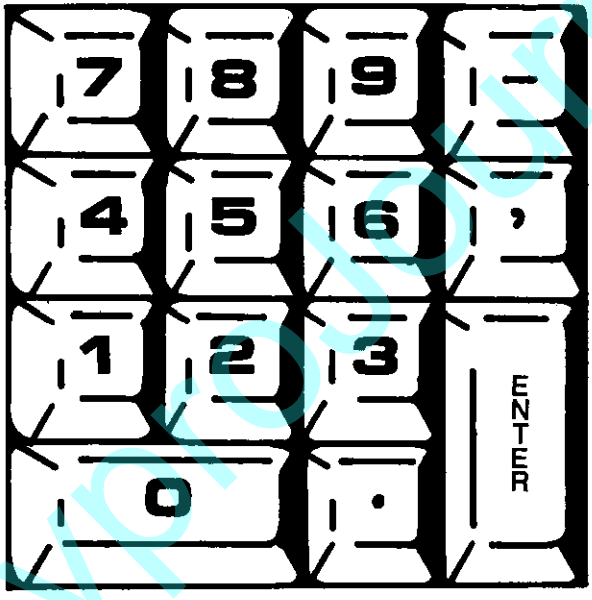
The LINE FEED key moves the cursor down one line with no return to the left.



THE KEYPAD

To the right of the main keyboard are 14 keys in a numeric calculator-style layout.

With the exception of a few control keys, such as CTRL, ESC, and RETURN, all of the keys, including the cursor movement keys, will automatically repeat when held down.

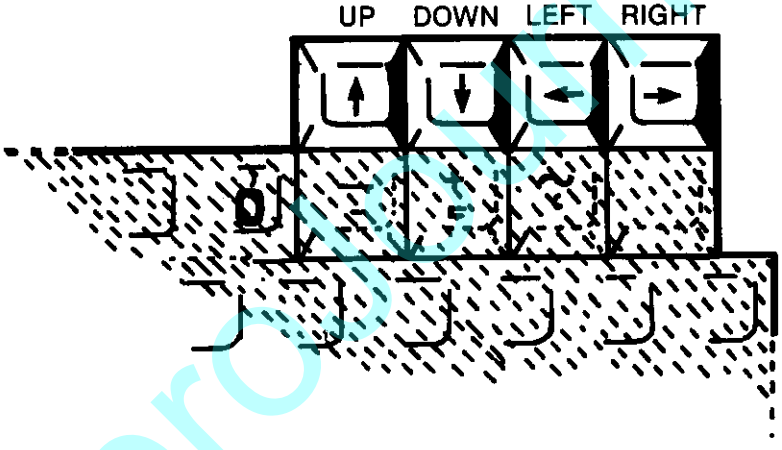


You can use the CONFIG program to program the cursor keys and the keys on the keypad to act as any character or control key that you desire.

THE CURSOR AND CURSOR KEYS

The cursor is a place marker to show where information can be entered. On the KAYPRO 10, it is indicated by a flashing rectangle. The next character you type will appear at this location.

When you are using certain programs, you can use the cursor keys to move the cursor freely in any direction on the screen:



These keys will not function in this manner in CP/M.

THE BIG GREEN SCREEN

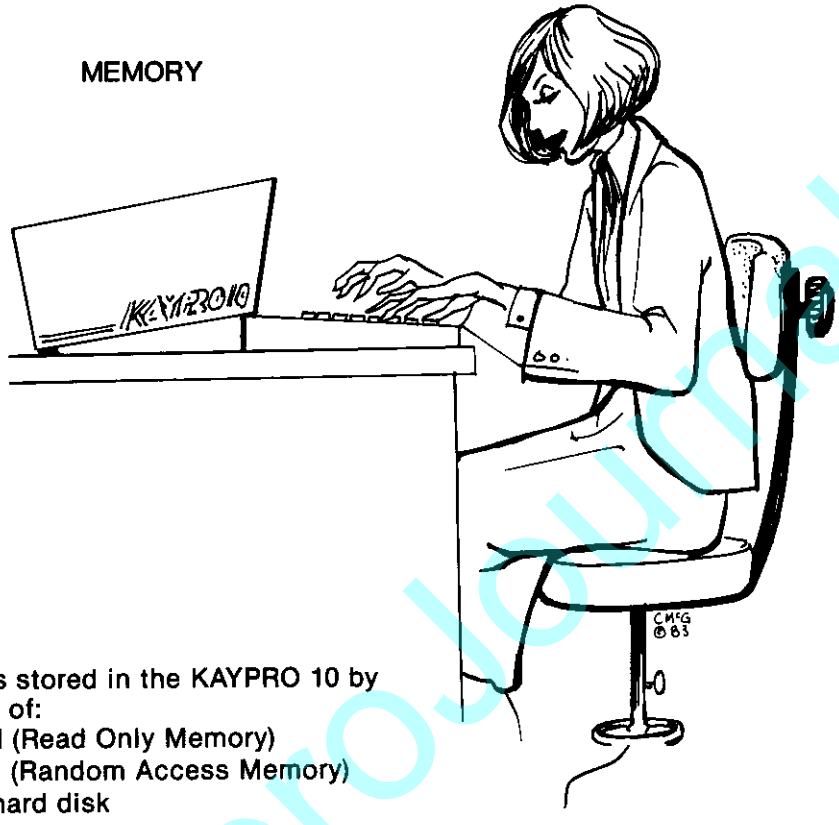
The video screen displays information communicated between you and the computer, such as characters typed on the keyboard, stored information, and prompts (requests for you to type information).

The screen holds 1,920 characters in 80 vertical columns and 24 horizontal lines. There is another (25th) line, which is a status line.

The character set is the standard ASCII set.

You can adjust the brightness of the display by turning the brightness knob on the back panel.

MEMORY



Data is stored in the KAYPRO 10 by means of:

- ROM (Read Only Memory)
- RAM (Random Access Memory)
- the hard disk

ROM is the smallest portion of memory — about 4 kbytes (4,000 bytes). ROM contains **unchanging** programs and information most frequently used.

RAM holds 64 kilobytes (64 thousand bytes). RAM can be read from and written to. RAM is lost when the computer's power is turned off, so, if you want to save a program or data which you have put in RAM, you will have to save it on the hard disk.

The hard disk holds 10 million bytes of information that may be stored, retrieved, changed, and erased, as necessary. If the information you are storing has continuing value for you, you will want to back up the information which is on hard disk by copying the information to a floppy diskette.

STORAGE OF PROGRAMS AND INFORMATION

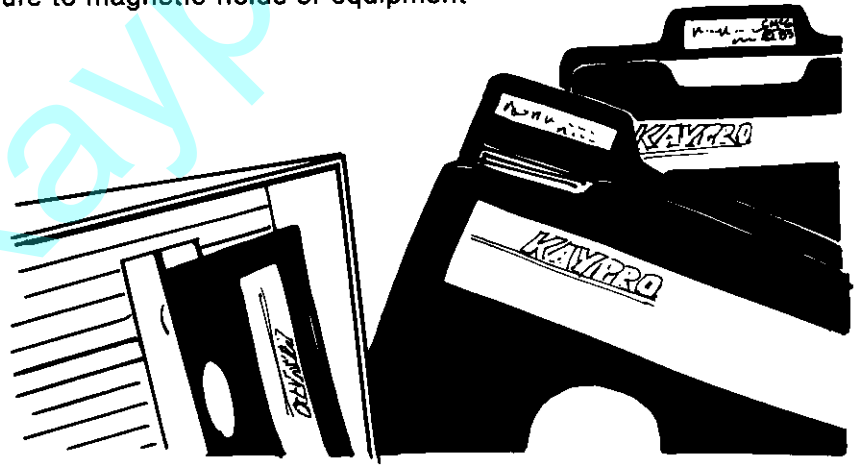
Information is stored in the form of **files.** The number of files that can be stored on a disk depends on how much information is in each file.

The **hard disk** contains the CP/M program, which operates the computer, and the software programs, such as Perfect Writer. The hard disk is permanently fixed within the machine. The head-disk interface is vulnerable to rough handling when moving the computer.

On the KAYPRO 10, **diskette** storage is used to back up files which are on the hard disk. The KAYPRO 10 uses 5¼-inch single-sided or double-sided, double-density soft-sector diskettes. Single-sided diskettes can store 195K bytes, and double-sided diskettes can store 390K bytes. 4K bytes of space are reserved for the operating system and other essentials.

Floppy diskettes store data on a magnetic surface that is vulnerable to damage which could result in the loss of data. Damage can be caused by:

- heat or cold
- moisture
- dust
- touching (chemicals or oils on fingers)
- bending or folding
- exposure to magnetic fields or equipment



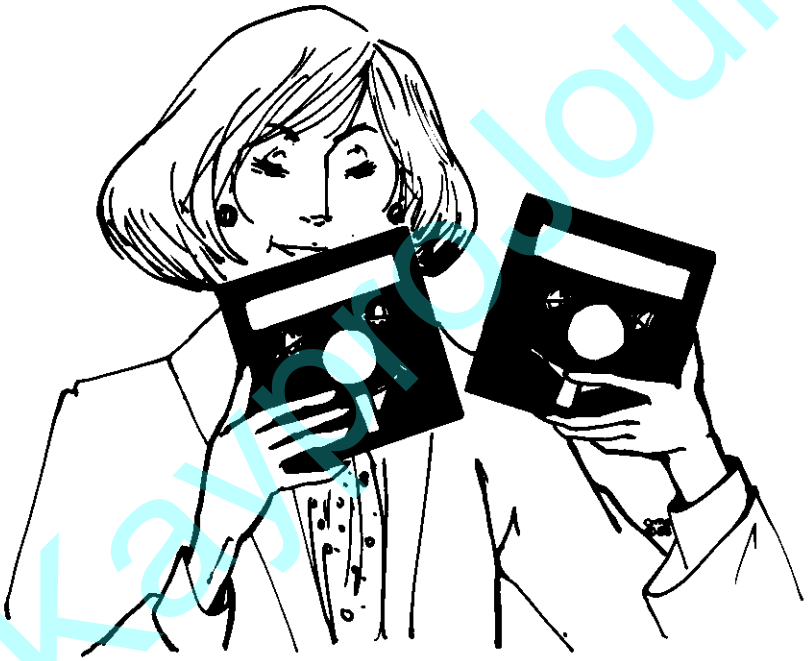
CARE OF DISKETTES

Here are a few simple guidelines for handling and using diskettes.

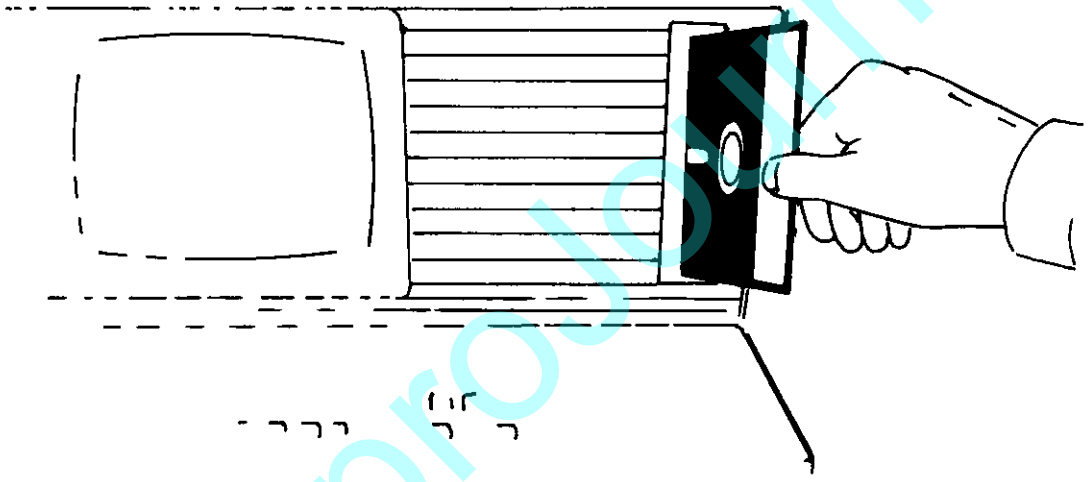
POWER:

- Do not turn the computer ON or OFF with a diskette in the drive.
- Always remove the diskette before turning OFF the computer.
- Do not have the diskette in the drive when you turn ON the power.

HANDLE DISKETTES WITH CARE: Do not flex or bend diskettes.



INSERT DISKETTES CAREFULLY: When inserting them into the drive, hold diskettes with the label clockwise and the notch down. There will be some resistance when the diskette is almost in the drive. Continue to push it in until a click is heard and the diskette stays in the slot. Turn the latch to the right until it is horizontal. The latch loads and unloads the heads on the floppy disk.



TO REMOVE A DISKETTE: Turn the latch at the front of the drive counterclockwise from horizontal to vertical. The diskette will eject slightly. Take the diskette completely out of the drive so as to not confuse the computer as to whether it should boot up from the diskette.

CHANGING DISKETTES: After you change diskettes, warm boot the computer by holding down the CTRL key while you press the C key. If you fail to do this, the computer may give a BDOS Error prompt later. If there is a BDOS error prompt when you give the command to save a file, all the information you have entered since the last save may be lost. Remember to do a CTRL-C after changing diskettes!

KEEP DISKETTES COVERED: Keep diskettes in their protective covers when not in use. Do not touch the exposed (brown) portions of the diskettes.

STORE DISKETTES SAFELY: Store diskettes in a container or file in a clean, dry, cool place away from magnetic fields, away from the computer, away from telephone lines, etc.

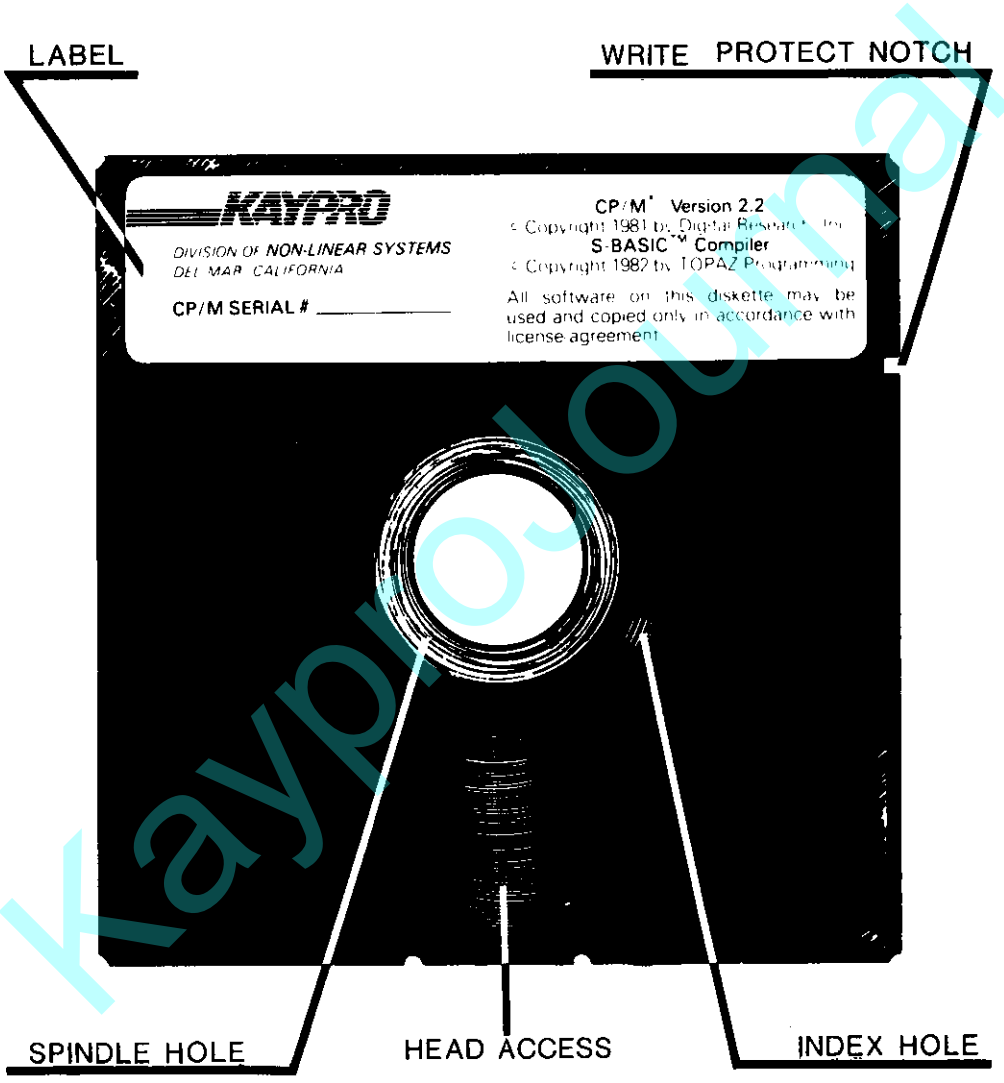
STORE INFORMATION FREQUENTLY: Store information on the hard disk as you create it — about two to four times an hour — and store your work whenever you leave the computer, even briefly. The procedure for storing information depends on the program being used.

BACK UP: It is a good idea to back up with diskettes the files which are on hard disk. Then, if something unexpected happens regarding your computer or the hard disk, you will have the information.

LABEL DISKETTES CAREFULLY: Immediately label all diskettes which contain programs or data. Use plain "press-apply" labels to identify the files you transfer to diskettes. Write the label first, and then apply it to your diskette. If you must write on a label which is already on a disk, use only a soft, felt-tip pen, as a ballpoint pen can damage a diskette.

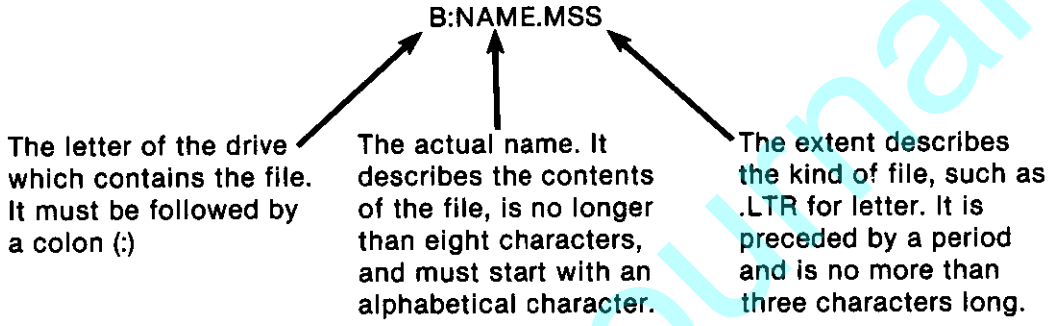
WRITE-PROTECT NOTCH: A write-protect notch allows information to be written to or read from a diskette.

- If this notch is covered, information can only be read from the diskette.
- Don't cover the write-protect notch if you want to store information on a diskette.



NAMING FILES

Files must be named according to established practices, and the file names must be typed correctly.



There are some characters that you must NOT use in a filename:

< > , ; = ? * [ ]

We recommend that you use only the letters A to Z and the numbers 0 to 9, as some programs may have problems with other characters.

Be sure to type the letter of the drive you want before the file name; otherwise the computer will stay in the current drive.

You may type **file names** and **drive names** in lower case, as lower case is automatically changed to upper case.

In computer books, the generic name for a file is <filename>. When you see this, substitute the name of the file you want to use, but do not type the angle brackets < >. Include the extent, if there is one.

THE SETUP OF THE HARD DISK

KAYPRO 10 is a ten-megabyte unit. This means 10 million characters can be stored on the hard disk! The hard disk is divided into two logical units, with five megabytes each. Each unit is designated as a drive.

The hard disk is drives A and B. The drive which takes the diskette is drive C. The diskette has a capacity of 392 Kbytes.

Each drive is further subdivided into sixteen user areas, which are tagged with user area numbers from 0 to 15. (User areas are further explained in the **CP/M User's Guide.)**

Within each of the user areas, you can set up files to hold information, much as a filing cabinet holds information in file folders. There is no specified amount of space in each user area. Each user area takes from the full storage capacity as it needs it. When a file is erased, the space previously taken by the file goes back into main storage.

A user area can contain up to five megabytes, if the space on that drive is not used by other user areas.

The hard disk has the following files:

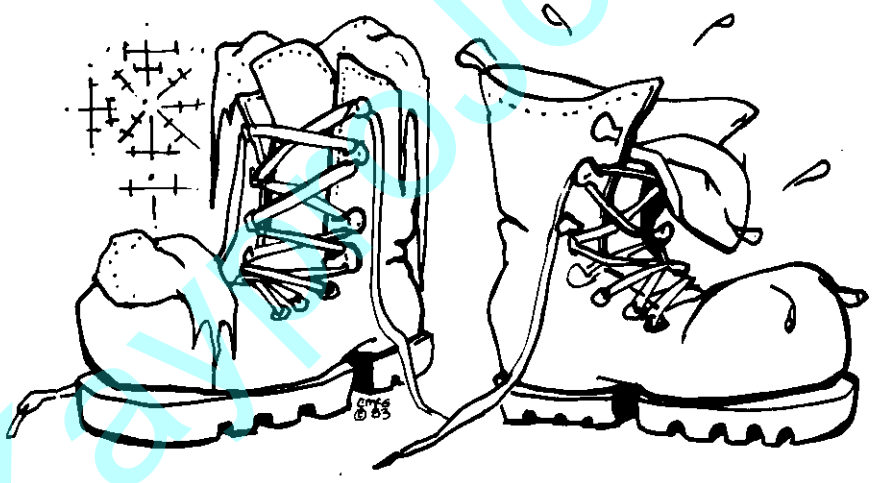
User 0 has utility files.
User 1 has Perfect Writer.
User 2 has ProfitPlan.
User 3 has Perfect Calc.
User 4 has Perfect Filer and the Individual Member Data Base.
User 5 has Perfect Filer and the Organizational Member Data Base.
User 6 has S-BASIC and Perfect Writer.
User 7 has MBASIC and Games.

In addition, user area 15 has provisions for a file, [UNUSED.BAD.]. This is a safety feature which will not concern the user but **which should not be erased** if you find it in user 15.

COLD BOOT AND WARM BOOT

Cold boot and warm boot are computer slang for two processes which are also called cold start and warm start.

COLD BOOT: This is the process which starts the computer when you turn it on. When you see the A0> prompt on the screen, the cold boot has been accomplished, and the computer is ready for a program to be implemented.



WARM BOOT: This is the process which restarts the computer while it is turned on. When it is restarted, the memory is cleared. Some programs do a warm boot for you when the program is finished, and you will see (for example) the message:

```
Warm Boot

A0>
```

When you see the prompt, A0>, CP/M is waiting for you to enter the name of a program you want to run or to give it a warm boot instruction.

To give the warm boot instruction, press the CTRL key and the C key at the same time.

For more information about cold and warm boots, refer to the CP/M manual provided with your KAYPRO 10.

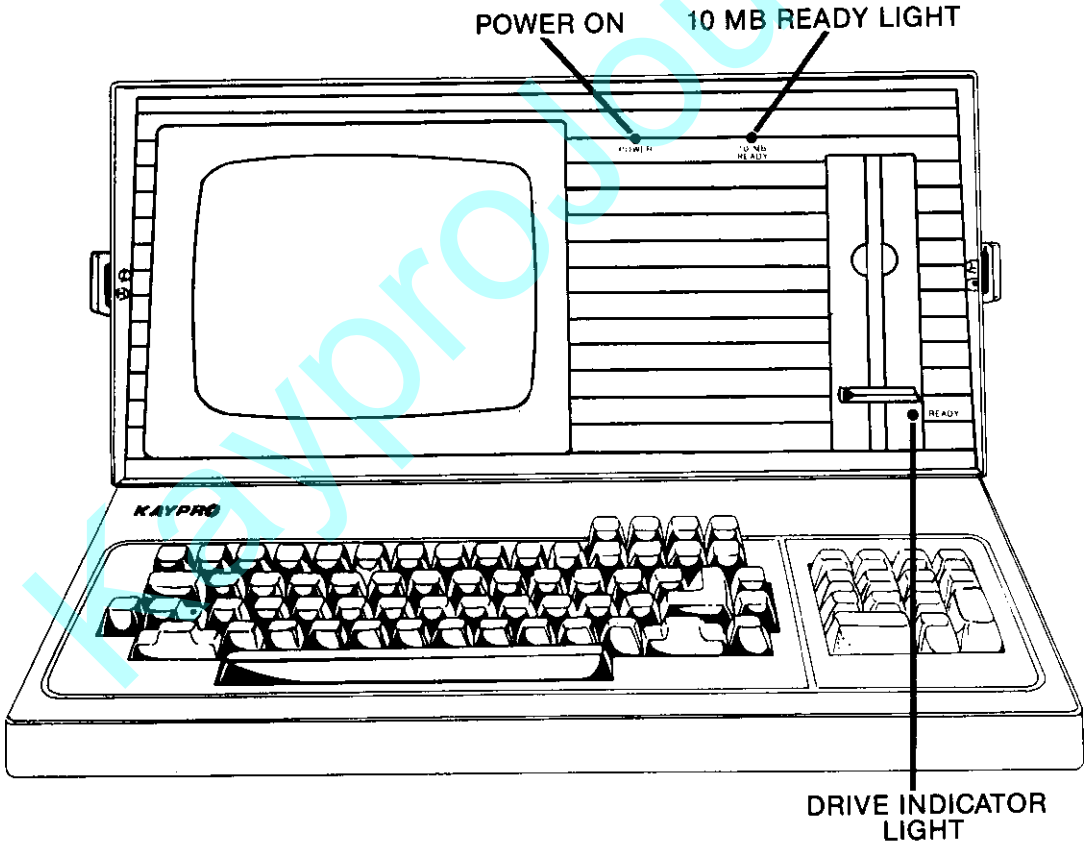
Occasionally, strange things may happen when you do something that the program/computer doesn't expect or that may be a result of a "bug" — a hole in the logic of a program. Do **NOT** pull the plug or turn off the machine. Doing this can destroy information which is in the machine at the time and damage information on the hard disk. If you are completely lost and want to turn off your computer, push the reset button on the back of the computer; then type the command: safety

STARTING YOUR KAYPRO 10

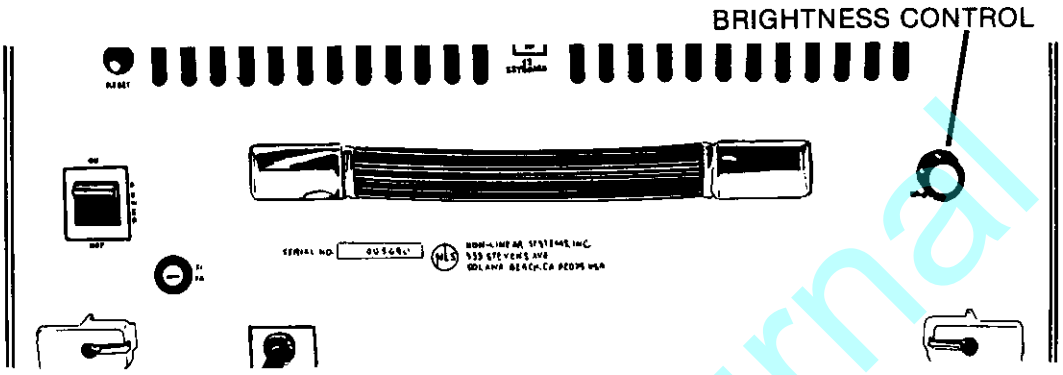
1. Turn on the computer, using the power switch on the back panel. Wait 15-20 seconds while the hard disk within the computer rotates up to speed.

   The disk unit runs with the read/write head in contact with the disk at all times. When the computer is not "busy", the head is moved into a safety zone on the disk, and the red light on the right goes off.

2. Wait for the ready light on the right to go off.



3. It may be necessary to use the brightness control knob on the back of the computer to adjust the brightness of the screen.



There are always three drives to use — A, B, and C.

The drive on which the boot is done is always A.

So, if the boot is done on the hard disk:

the hard disk is drive A and drive B, and the diskette drive is C.

4. See where it says: A0>
   This signifies that the head is located on drive A in user area 0.

5. Move to another user area by typing (for example): user 7

There will be an A7> to show that you may now work with user area 7. These prompts occur for each of the three drives and for each of the 16 user areas numbered 0 to 15 which are in each drive.

The prompts are CCP prompts. CCP is the Console Command Program.

Whenever there is a CCP prompt, the console is waiting for you to give it a command.

TURNING OFF YOUR KAYPRO 10

IT IS **IMPERATIVE** THAT THE HEAD FOR THE HARD DISK BE IN THE **SAFETY ZONE** BEFORE TURNING OFF THE KAYPRO 10.

This is easy to do.

1. If the B > prompt is displayed, type: A:
   Press RETURN.

2. At the A > prompt, type: safety
   Press RETURN.

3. When the prompt indicates it is safe to turn off the machine, turn off the power, using the ON/OFF switch on the back panel.

Practice this now.

Put a reminder on the front of your KAYPRO 10 to always, before turning if off, type: safety

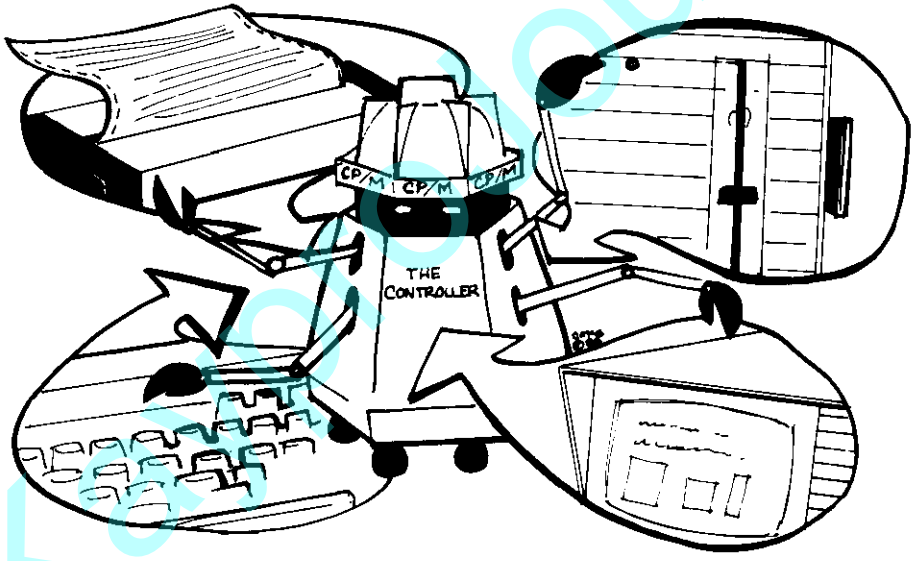
CP/M — THE PROGRAM WHICH OPERATES THE KAYPRO 10

Your KAYPRO 10 computer uses the CP/M (Control Program Monitor) operating system. Three important components of CP/M are:

BDOS, the Basic Disk Operating system, which handles user areas and files on diskettes;

BIOS, the Basic Input/Output Sytem, which communicates with printers and other peripheral devices; and

CCP, the Console Command Program, which communicates between you, the user at the keyboard, and the internal processing of the computer.



Some other functions of CP/M are:

1) Stores and retrieves programs and data

2) Receives and transmits programs and data to and from the outside world

3) Manages the keyboard

4) Sends information to the display screen

5) Provides the general environment required for constructing programs, storage, editing, and assembly, etc.

6) "Boots" (automatically starts) the computer

At your command, the CP/M also does other useful functions by means of "utility" programs. To get an idea of what is available, read the summary below or, after you have learned to start and stop the KAYPRO 10, view the KAYPRO.LRN file. To do this:

1. Turn on the computer, or, if it's already on, warm boot the computer by pressing CTRL, then simultaneously pressing the c key.

2. Type: user 1

3. After the prompt, A1>, type: PW KAYPRO.LRN

4. When you are finished reading the file, close it by pressing CTRL and simultaneously pressing x, then c.

You will get some very useful information from viewing this file. Here is a brief description of some CP/M system commands and utility programs.

- PIP Copies files from one place to another
  General form: PIP B: = A:THATFILE.MSS

  Drive B is the destination of THATFILE.MSS, and drive A is the source of THATFILE.MSS.

- DIR Provides a DIRectory of files in a user area

- TYPE TYPEs the contents of a document file on the screen.
  General form: TYPE THATFILE.MSS

- ERA ERASES the file specified
  General form: ERA THATFILE.MSS

- REN RENames the file specified
  General form: REN B:NEWNAME.MSS = B:OLDNAME.MSS

The prompt, A > (with a number between the A and the >), indicates the currently-logged drive, meaning the drive in which the computer will automatically look for files if the drive name (A: or B:) isn't specified. The computer cannot locate a file on a drive or in a user area that is not the logged drive. A message will display:

NO FILE
or
File not found

until you change to the proper drive. For example, if you want to know how much space is left in a user area, then, after the A0> prompt, type:

STAT

The STATus of drive A, user 0, will be given.

After the A0> prompt, you could type:

STAT B:

and the STATus of drive B, user 0, would be given.

You can also change the currently-logged drive from drive A to drive B by typing a B: after the A0> prompt.

The same instructions apply to drive C if there is a diskette in it.

You can find the STATus of all the files in a drive by using a "wild card" consisting of *.*. It is spoken of as "star, dot, star". After the A > or B >, type: STAT *.*

This is a helpful utility if you need to do some diskette space allocation and need to know how much space is used by each file.

Read your CP/M manual, especially the first 33 pages, for more details. The following programs were developed especially for KAYPRO.

- CONFIG — CONFIG allows you to:

  alter a word processing program so that you can use a serial printer instead of a parallel printer,

  change the functions of the four arrow keys and the numeric keypad.

- BAUDM — Changes the baud rate of the RS-232C serial interface for a **modem.** (CONFIG can also change the baud rate.)

- BAUDP — Changes the baud rate of the RS-232C serial interface for a **printer.**

USING THE DIRECTORY

All the directory entries for all the user areas are intermixed in one massed directory, but you can treat them as fifteen separate working areas.

If the computer is in user area 1, and you type: dir
the directory only gives those files which are in user area 1. And the list, if it contains too many names to display at one time, will scroll too fast to read. You can stop scrolling by pressing at the same time CTRL and S. To restart scrolling, press those keys again. A better way is to use the directory program called D.

The D Program

Type: d
Press RETURN.

The files in the current user area will be listed alphabetically with the size of the files. Only as many file names will be displayed as the screen will hold. On the bottom line, a prompt will tell you to:

Press space to continue

- To list all files of an entire drive, type: d $uvs
  Press RETURN.

- To find the user area number of all files with a certain extent (file type), type (for example): d *.mss $uvs

  D will list all .mss files with their size and user number (UN).

- To search all the user areas for a particular file, type:

  d (the name of the file you want) $uvs

  Press RETURN.

COPYING FILES FROM ONE USER AREA INTO ANOTHER USER AREA

This procedure must be done from drive A. If you are not in drive A, at the B> prompt, type: A:
Press RETURN.

1. Type: user

2. Type the number of the user area into which you want to copy the files, for example: user 10
   Press RETURN.

3. To copy a file from (for example) user area 2 into the currently-logged user area on drive A, substitute the name of your file for filename and type: PIP A: = A:filename[G2]
   (G stands for Get.)
   Press RETURN.

   Warm Boot will appear when the file is copied. To check to see whether the file has been copied, type: DIR

   The square brackets must be square brackets, not parentheses.

   To correct an error in typing, use the BACKSPACE key.

   If there is an INVALID FORMAT error message, check very carefully to see that everything is typed correctly.

4. To copy all files from one user area into another user area, for example, user area 2, the command form is: pip a: = a:*.*[g2]

   There will be a COPYING — notation with the name of the files appearing as each is finished copying.

5. You can copy a file from a user area in drive A to the user area of the same number in drive B. Type: b: = a:filename

ERASING FILES

To erase a file:

1. Go to the user area containing the file.
2. Type: era
3. Add the file name with its extent.
   Press RETURN.

   Example: era vehicle.exp

FORMATTING A DISKETTE

Before you can use a new diskette, you must first format the diskette to prepare it to receive information.

When a diskette is formatted, it is magnetically imprinted with 40 circular tracks, with each track having 10 sectors.

It is wise to format new diskettes when you receive them, as it may not be convenient to do so when you need them.

Note: Formatting a diskette which has information erases the information.

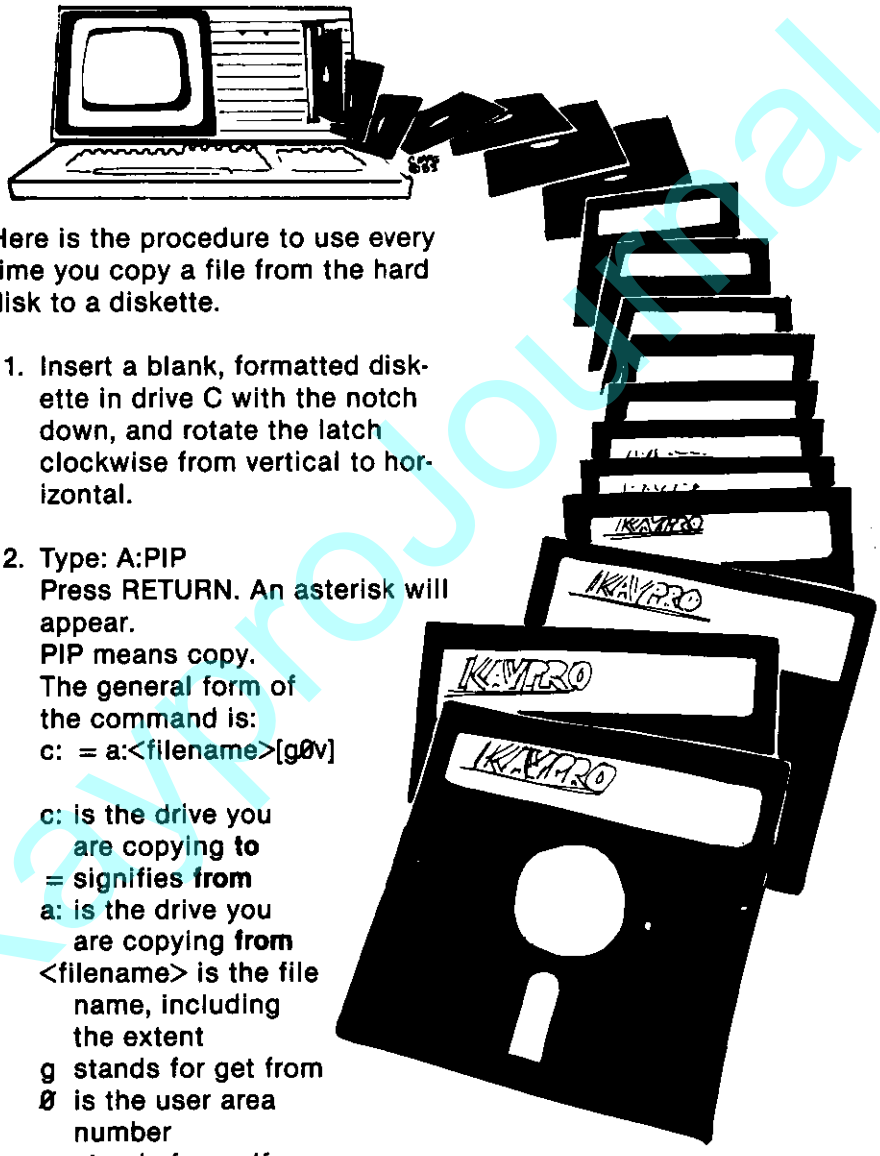
To format a diskette:

1. After the A0> prompt, type: FLPYFMT

2. Follow the prompts. Respond with upper case letters.

Note: DO NOT ATTEMPT TO FORMAT THE HARD DISK UNLESS YOU HAVE THE TECHNICAL KNOWLEDGE TO DO SO.

COPYING FILES TO DISKETTES



Here is the procedure to use every time you copy a file from the hard disk to a diskette.

1. Insert a blank, formatted diskette in drive C with the notch down, and rotate the latch clockwise from vertical to horizontal.

2. Type: A:PIP
   Press RETURN. An asterisk will appear.
   PIP means copy.
   The general form of the command is:
   c: = a:<filename>[gØv]

   c: is the drive you are copying **to**
   = signifies **from**
   a: is the drive you are copying **from**
   <filename> is the file name, including the extent
   g stands for get from
   Ø is the user area number
   v stands for verify

Here is an example:

To copy the file, example.txt, from drive A, user 8, of the hard disk to the diskette in drive C:

1. At A0>, type: pip
   Press RETURN.

2. Type: c: = a:example.txt[g8v]

3. When the asterisk appears, press CTRL and simultaneously press c. Warm Boot and A0> will appear.

4. You can check drive C for the file by typing: dir c:
   Press RETURN.

5. Go to user area 8 on drive C by typing: user 8
   Press RETURN.

6. Type: dir
   Press RETURN.

7. Label the diskette.

Note: A .$$$ means the information was incorrectly typed. The file name appears on the directory with .$$$ as the extent, but no information is in the file.

The BACKUP Program

If the file is too big to fit on one diskette, the KAYPRO 10 will copy as much as possible on one diskette, and then prompt to insert diskettes as necessary until the whole file is copied.

To use BACKUP:

1. At the A > or B > prompt, type: BACKUP

2. Respond to the requests for information, using upper case letters.

   The last file to be put on diskette will be numbered (e.g., 001). It would be wise to number your diskette labels accordingly.

A TOUR OF THE SOFTWARE

KAYPRO 10 comes with software installed on the hard disk. The following describes how to begin these programs. Read the manuals to fully learn how to use each program.

Perfect Software

The Perfect software programs have a fully-integrated package of programs which use the same commands. Perfect Writer has a full array of document design features. Perfect Speller is a 50,000-word spelling checker. Perfect Filer allows you to easily keep mailing lists and other informational data bases. Perfect Calc is a spreadsheet program which uses the virtual memory feature to give you a greatly-increased data base. Perfect Writer has a self-teaching lessons program to introduce you to the commands and make its many capabilities accessible.

Getting Started in Perfect Writer

Included on the hard disk is a lessons program to introduce you to Perfect Writer commands. We recommend that you go through these lessons before using Perfect Writer.

To get started on the Perfect Writer lessons:

1. Turn on your KAYPRO 10, or if it's already on, warm boot the computer by entering the command: CTRL-C

2. After the A > prompt, type: user 1
   Press RETURN.

3. Then type: menu
   Press RETURN.

4. When the KAYPRO Word Processing Menu appears, type: E

Note: The upper case letters are commands. The lower case letters are for getting help information.

5. When asked at the bottom of the screen what file you want to edit, type: LESSON0
   Press RETURN.

After about a half minute, lesson0 will appear on your screen.

During the lessons, you will be told to leave the lesson and then come back. To get back into each lesson from the main menu:

- Choose Edit by typing: E
- Indicate the lesson number by typing:

  lesson1 (or whatever lesson number)

- Don't leave a space between "lesson" and the number.

When you are ready to write a document with Perfect Writer:

1. Repeat steps 1 through 4 above.

2. When the line at the bottom of the screen asks what file to edit, type: <filename>

   <filename> is a descriptive name of your document-to-be. It can have no more than eight characters. Do not type the angle brackets, < >.

3. A new file screen will appear, and you can start writing.

There are two essential commands that should be learned immediately.

The Save File Command

After you have written some text, save that text by holding down the CTRL key while pressing the X key (this will be designated as CTRL-X); then hold down the CTRL key while pressing the S key (CTRL-S). So, the Save File command is:

CTRL-X CTRL-S

In the bottom left corner of the screen, you will see the message, Writing..., as the file is being saved. The message, File Written, will appear when the file has been completely saved.

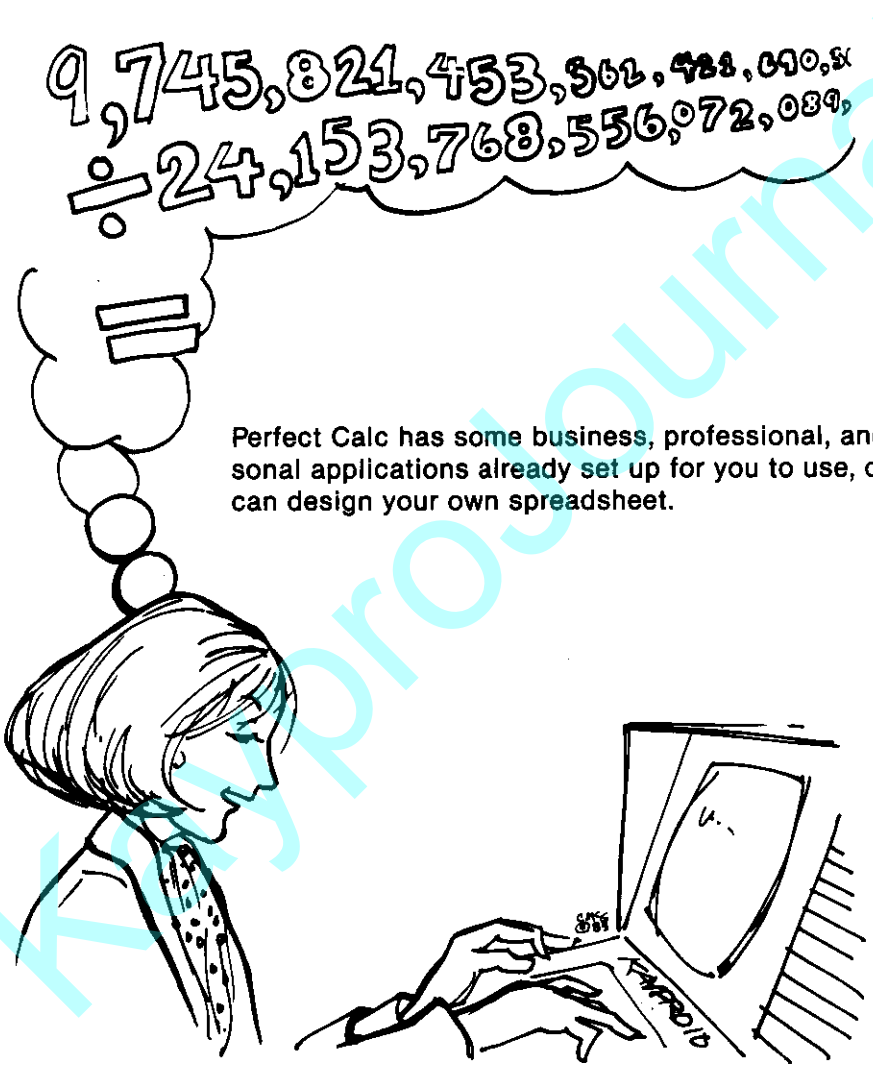
The Close File Command

When you're through writing, first save the file. Then close the file by typing:

CTRL-X CTRL-C

For complete information, consult the Perfect Writer User's Guide.

Note: For information concerning configuring Perfect Writer for your printer, refer to the Technical Information section of this User's Guide and to the Perfect Writer manual.



Perfect Calc has some business, professional, and personal applications already set up for you to use, or you can design your own spreadsheet.

A spreadsheet is a ruled type of paper used in business for putting numbers in the form of a table so that calculations can easily be done with them.

Spreadsheet

With Perfect Calc, you use the spreadsheet on the screen instead of on paper. The boxes taken vertically are columns. The boxes taken horizontally are rows.

Using Perfect Calc consists of:

- putting headings over the columns you will use and giving labels to the rows.
- entering the formulas which will tell Perfect Calc which calculations you want done with the data.
- entering data in the boxes.
- watching the calculations being done.

To use Perfect Calc to its fullest, you should read the manual and do the exercises given in the manual. If, for now, you want to take a peek at Perfect Calc:

1. Turn on the computer, or if it's already on, warm boot the computer by entering a CTRL-C.
2. Type: user 3
3. Type: dir
   Press RETURN.

You will see listed the names of files for Perfect Calc, some of which are applications already set up to use as they are or to modify.

4. Type: PC CHECK.PC
   Press RETURN.

   The PC tells the computer that you want to use the Perfect Calc program. CHECK.PC tells the computer that you want to use the check file.

   While the program is loading, a blank spreadsheet will be displayed.

   After the program has loaded, there will be displayed a check register program.

5. Using the arrow keys, move the cursor to the location following:
   Beginning Balance =

   Note: You can cancel commands by using CTRL—G.

6. Type an amount.

   As you type the amount, it will appear in the status line at the bottom of the screen. If corrections are needed, use the DELete key.

7. Press the RETURN key.

   There will be a pause while the balance is entered.

8. Move the cursor to check number 1.

9. Type the number of the check with which you want to start.

10. Press the RETURN key.

    Watch the numbers automatically change to follow the number you have entered.

    For now, skip the data and description columns.

11. Move the cursor to the Paid column.

12. Type the amount of the check.
    Press RETURN. The register balance is automatically calculated.

13. Press the ESCape key.

14. Simultaneously press the shift key and the period (.) key.

    The cursor will go to the bottom of the spreadsheet, where you will see a register (records) balance and a reconciliation balance.

15. Go to the top of the spreadsheet by simultaneously pressing the shift key and the comma (,) key.

When your checks are returned from the bank, you can enter a 1 in the Cleared column by each returned check, and your reconciliation balance will be automatically figured!

You can design your own spreadsheets and put in your own formulas for calculations. Read the Perfect Calc manual to learn to use the program to its fullest.

Getting Started with Perfect Filer

Perfect Filer is a data base program which allows you to create records management systems and store data concerning customers, employees, clients, merchandise, etc. To become acquainted with all of the capabilities of Perfect Filer, read the Perfect Filer manual, and follow the tutorials. To get you started:

1. Turn on the KAYPRO 10, or, if the computer is on, warm boot the computer by entering: CTRL-C

2. Go to the proper user area by typing: user 4
   Press RETURN.

3. Now copy the necessary files for a data base to drive B by typing:

   pip b:=a:*.*
   Press RETURN.

   All the Perfect Filer files will be transferred to drive B, user area 4. You may use them there while reserving the empty files in user area A4 in their original state for creating another data base.

4. Type: filer
   Press RETURN.

5. The prompt will appear:

   Enter disk drive containing data base:

   Type: b

In this case, user 4 contains the Individual Member Data Base.

Note: If you use the Organizational Data Base, the user area is 5.

6. For now, assume the date is correct.

   Press: x

7. Refer to the tutorial in the Perfect Filer manual for entering and saving data in these preprogrammed data bases. Take your time as you go through it.

   RETURN moves the X down the menu;

   Backspace moves the X up the menu;

   Pressing X selects that option;

   ESCape backs out of Perfect Filer, one menu at a time. Also, ESCape activates a selection when there is an ON/OFF option.

You can have only one data base in each user area. If you enter data into this file which you do not want to lose, and you want to make another data base, you will have to choose another user area, as copying the Perfect Filer files into this user area again will overwrite what is here.

ProfitPlan — The Mathematical Spreadsheet

Budgeting, forecasting, and financial planning are available with ProfitPlan. Computations are accomplished through a series of steps. Select a command, and ProfitPlan will ask you for the necessary data through questions and prompts on the screen.

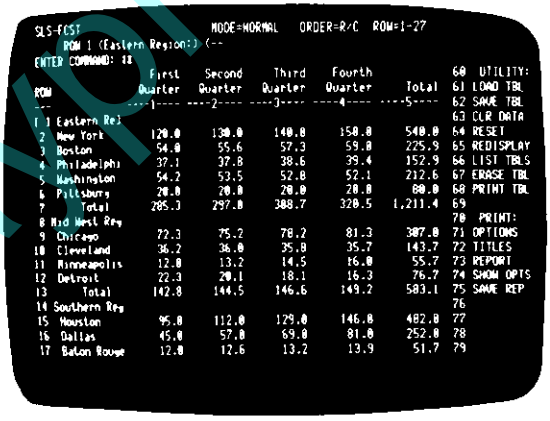
Getting Started With ProfitPlan

ProfitPlan comes with a sample table, called Sales Forecast. Let's take a look at this table.

1. Turn on your KAYPRO 10. If it's already on, type: user 2
   Press RETURN.

2. Type: pp
   Press RETURN.

   You will see the ProfitPlan spreadsheet on the screen:



On the right side of the display are the first 20 commands. Commands 1 through 5 are for groups of command headings; typing one of these numbers gives you access to a group of commands:

FORMAT includes commands 18 through 28. You can name rows, name columns, specify width and move columns, set decimals, etc.

DATA includes commands 30 thru 39. You can enter data, move data pointer, fix, nullify, and go to.

MATH includes commands 40 through 58. You can add, subtract, multiply, divide and perform all four operations with a constant, as well as round off, etc.

UTILITY includes commands 60 through 68. You can retrieve your table from a disk, save data on a disk, clear all data, reset, list and erase.

PRINT includes commands 70 through 75. You can choose report options, print reports on the printer, save to a disk file, etc.

To cancel a command, press the DELete key.

4. Look at the Utilities by typing: 5
   Press the RETURN key.

5. To load tables, type: 61
   Press RETURN.
   You will see:

   TABLE NAME: *********

6. Type: SLS-FCST
   Press RETURN.
   An example will appear.

7. To change the numbers in any row or column, use command: 31
   Press RETURN.

8. When prompted: CHOOSE (VALUES = 0, CONSTANT = 1, GROW = 2, INCR = 3), type: 0
   Press RETURN.

9. The cursor is indicated by the square brackets around a number. Move the cursor, using the arrow keys

10. Type a number.
Press RETURN.

The number in the table wil be replaced with the number you have typed, and the cursor will advance one column.

If the cursor disappears, it may have moved off the visible part of the spreadsheet. If you have been moving to the right, press the left arrow key repeatedly until the cursor returns to view. If you have been moving down on the spreadsheet, press the up arrow key repeatedly until the cursor returns to view.

11. Once you have changed one or more numbers, you may automatically recompute the entire table. Use command: 6

12. If you wish to save the original table in addition to the revised table, give the revised table a new name by typing command: 62

Otherwise, only the revised version will remain as SLS-FCST. If you give a new name, you will have two tables:

- The sample, SLS-FCST
- Your own version, named, for example, FCST-TWO

13. To end this demonstration, type the stop command: 9

14. When the command asks: VERIFY (Y OR N), type: y

See the ProfitPlan manual for complete details for using the features of ProfitPlan.

Microsoft BASIC-80 — The Interpreter

M-BASIC is the CP/M version of the high-level language BASIC-80. It is an easy-to-use BASIC interpreter which incorporates features that can be used by both the beginner and the experienced programmer.

Included is O-BASIC — an older version of M-BASIC.

Getting Started with M-BASIC

If you are not familiar with the BASIC programming language, there are a variety of books available on the subject. To get you started:

1. Turn on the computer, or if it's already on, warm boot the computer by entering a CTRL-C.

2. Type: user 7
   Press RETURN.

3. After the A > prompt, type: MBASIC
   Press RETURN.

4. After you see OK on the screen, accurately type in the following, pressing RETURN after each line:

```
10 INPUT "PICK A NUMBER";X
20 Y = X * X * X
30 PRINT X;" CUBED EQUALS ";Y
```

5. To run this program, type: RUN
   Press RETURN.

6. When "PICK A NUMBER" appears, type a number.
   Press RETURN.
   The cube of that number will appear.

7. To return to the system, type: system
   Press RETURN.

This is just a short example. Read the **Microsoft BASIC User's Guide** for more details.

S-BASIC — The Compiler

S-BASIC is a structured programming language. If you are not familiar with programming, the S-BASIC manual provides a good introduction and needed reference material.

Getting Started with S-BASIC

Your S-BASIC User's Guide thoroughly introduces you to S-BASIC and provides needed reference material. The first two chapters, however, were written so that you could use any word processing or text editing system to write your S-BASIC programs. The following are those two chapters rewritten specifically for use with Perfect Writer.

You will use the Perfect Writer and S-BASIC programs to write S-BASIC programs. These are in user area 6.

FUNDAMENTALS of S-BASIC PROGRAMMING

To get you started, let's write a short program in S- BASIC.

1. Turn on your computer, or if it's already on, warm boot the computer by entering CTRL-C.

2. Type: user 6

3. After the prompt, A6>, enter:

   PW TRYOUT.BAS

   Press RETURN.

Include .BAS at the end of your filename whenever you write an S-BASIC program.

You have just created a new file.

4. Type:

   Print "This is my first S-BASIC program."

5. Press RETURN.

6. Now to save this program, enter:

   CTRL-X CTRL-S

   (Press CTRL and, while holding it down, type X, then S.)

   The following will appear in the lower left portion of the screen:

   File Written

7. To exit Perfect Writer, enter:

   CTRL-X CTRL-C

   You will see:

   Warm Boot

   A6>

8. Then enter: SBASIC TRYOUT

   Press RETURN.

Your program will be written on the screen, and the message will appear:

****** End of program ******

Entering SBASIC TRYOUT causes the computer to start compiling your program. For more information on compiling, refer to your S-BASIC User's Guide.

It will take a while for the computer to compile your program.When it is done, you'll see on the screen:

Compilation complete

Warm boot

A6>

Now you're ready to run your first program.

9. Type: TRYOUT

10. Now press the RETURN key. On the screen you'll see:

This is my first S-BASIC program.

Congratulations, you have written and run your first S-BASIC program!

That's the procedure to follow every time you create a new file to hold a program, write your program, save it, and compile it.

To make a listing of a program on your printer, enter:

SBASIC NEWFILE.AZY

or enter: PIP PRN: = NEWFILE.BAS

Again, instead of NEWFILE, you'd use the name of your program.

To find out the size of the file you have created, type: d

So, now that you know the fundamentals of the process of programming in S-BASIC, you will want to read your S-BASIC manual to learn more.

User area 6 contains three basic files that you can compile and run:

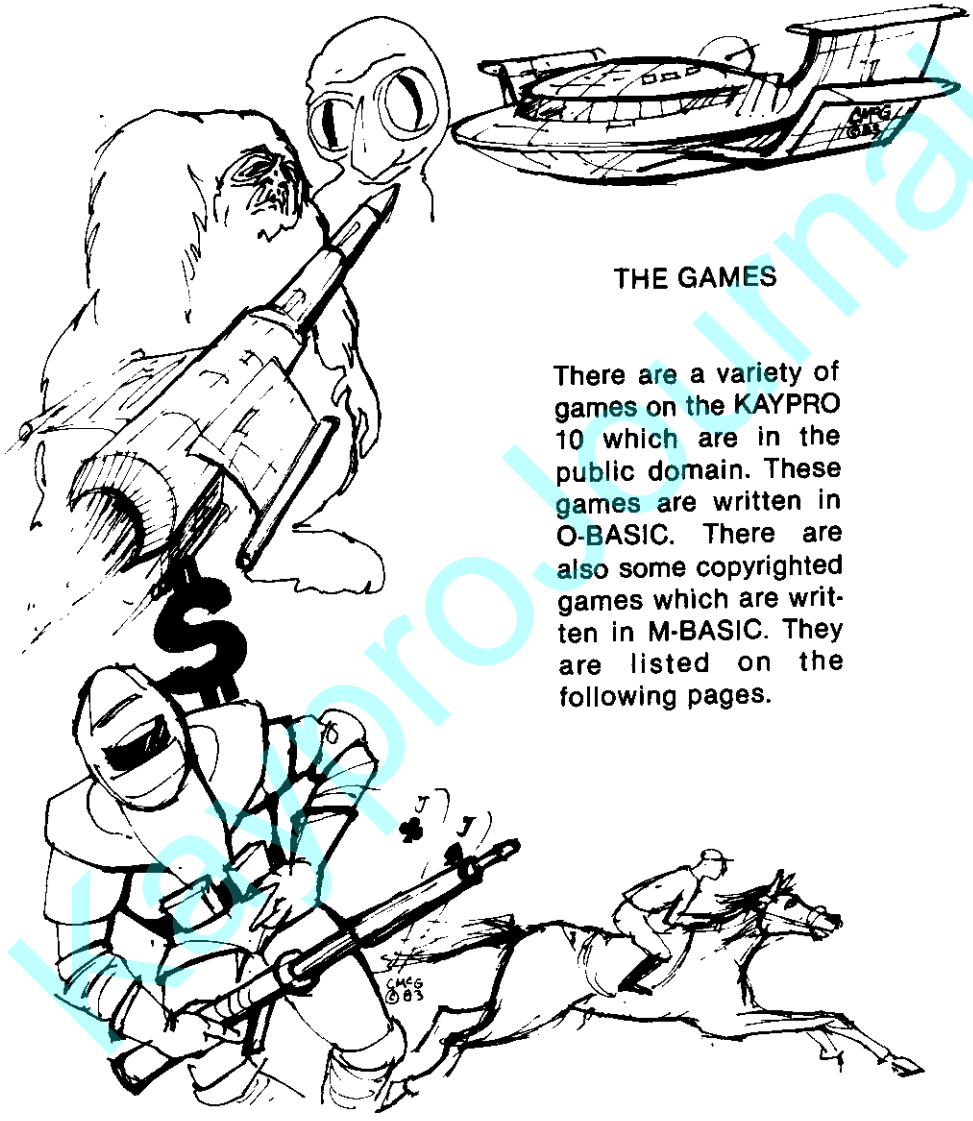
FAC.BAS	This program computes the factorial of an input number.
DPLAY.BAS	This program illustrates the sequential access of a random file, specifically working with the RECORD.SEQUENTIAL ON/OFF statement. If this statement is OFF, then all variables of a random record must be read or written in one statement. If it is ON, you can read or write part of a random record.
XAMN.BAS	With this program, if you have the technical knowledge, you can examine diskettes for bad sectors, look at and change data in sectors, move sectors, map a diskette or a file, and compute logical blocks. When the program first comes up, you have to specify the drive which contains the file you want to examine (A = 0, B = 1).

The WORD Plus — The Spelling Checker

The WORD Plus is one of the best and most powerful spelling checker programs available. It is in user 1. See the manual for details on how to use this program. It also:

- finds rhyming words
- looks up correct spelling
- locates anagrams
- counts the words you have written
- locates homonyms
- lists the frequency of words used
- alphabetizes word lists

The WORD Plus is one of the most powerful spelling checker programs available. Consult the directory for the location of this file. See the manual for details.



THE GAMES

There are a variety of games on the KAYPRO 10 which are in the public domain. These games are written in O-BASIC. There are also some copyrighted games which are written in M-BASIC. They are listed on the following pages.

To play the O-BASIC games which are listed below:

1. Type: user 7
   Press RETURN.

2. Type: OBASIC <GAME>

   where <GAME> is the name of the game you want to play. Do not type the angle brackets, < >.

3. To break any game in midplay, type: CTRL-C

4. To return to the CP/M operating system after a CTRL-C or after a game is over (you'll see the word "Ok" on the screen in either case), type: SYSTEM

   Press the RETURN key.

5. Once you have an "Ok" on the screen, call up any of these games by typing:

   LOAD "GAME.BAS"

   GAME is the name of the game you want to play, and it should be all in **capital letters.**

6. Press the RETURN key.

7. To begin play, type: RUN
   Press RETURN.
   The game should appear.

8. To get game instructions, type the number 1. If no instructions are needed, type the number 0.

The following is a list of the games and a short description of each:

STRTRK — From the beginner to the expert, this exciting game puts you in command of a Federation starship, with warp drives phasers, and photon torpedoes at your disposal to combat Klingons.

TRADE — A game for 1 to 4 players. The object is to establish interstellar trade routes and amass vast amounts of money based on stock purchases, mergings, and splits, using the resulting dividends to buy more stocks and increase your holdings in companies such as BETELGEUSE LIMITED. This computerized board game is one of the hottest games going.

CHASE — Caught in a maze of high-voltage fence posts and five security machines, your task is to destroy all of the security machines before they get you.

BLKJK — Play casino blackjack against the computer. You can wager up to $500 with casino rules, including insurance, splits, and doubling down.

WUMP — This is the game of Hunt the Wumpus. Try to catch the Wumpus in a cave of 20 rooms while avoiding bottomless pits and super bats. Each turn you can move to another room or shoot a crooked arrow. The Wumpus is sleeping, and if you wake him, he may eat you. Watch out, I smell a Wumpus.

HORSE — Go to the track and bet on horses to win, place and show. Watch SEA BISCUIT, GALLANT FOX, CITATION and the rest as they come around the bend into the home stretch.

ROCKET — This is a lunar landing simulation game where you start off at 500 feet above the lunar surface at a downward velocity of 50 ft/sec with 120 units of fuel. You specify how much fuel you want to use for each turn, and down, or up, you go. Good luck, and keep an eye on your fuel.

TAXMAN — This well-named game starts with the question: "Hi, I'm the taxman. Do you want the regulations?" Sound familiar? Well, you can beat the taxman at his own game. Begin with a list of whole numbers (you decide how many) and play by taking a number from the list. The taxman gets all the factors of your number that are left. You proceed by choosing numbers until all the numbers are gone; the one with the highest total wins.

BIO — This computerized study of biorhythmic curves plots your biorhythm for a number of days. You input your birthday in a six-number string, with the year first, then the month, and then the day (for example, March 2nd, 1948 would be: 480302), and then input the current date in the same manner. The resulting graph indicates whether your physical, mental, and emotional biorhythms are high, low, or critical.

* * *

The following three copyrighted games are included with the M-BASIC files. To play any of the three games listed below, at the A7> prompt simply type the name as shown.

LADDER — A game in which you have lads that you move left, right, up, or down with the blue keypad (4 = left, 6-right, 8-up, 2 = down, and any other number to stop), and jump over obstacles with the space bar. Avoid the rolling barrels (o), grab the ampersands (&) along the way to earn bonus points, and climb up the ladders (H) to the highest level to reach the dollar sign and onto a new screen. Watch out for the fifth screen, though, it's a killer. There are five levels of difficulty, which you can choose before the game, that will increase the speed, if you desire. Start at level one if you know what's good for you.

CATCHUM — This game puts your cats (C) in a maze of dots, which you are eaten as you go along. Avoid the monsters (A). There are four energy O's that will transform the A's into M's so that they can be eaten for bonus points. Also, you can gain extra points by nabbing the dollar sign when it appears. You move by using the keys on the blue keypad (4 = left, 6-right, 8 = up, and 2 = down). There are nine levels of difficulty, which can be set before the game starts. The levels of difficulty change the speed of the game. If you're really hot at Catchum, try level 9. It'll cool you down.

ALIENS — Attention, alien invasion in progress! Man the laser base, and fire upward toward encroaching aliens. Get bonus points for hitting the saucers flying across the top of the screen. But watch it every time you shoot and miss, you lose a point. And every time your laser base gets hit, you lose 25 points. This game is actually six games in one which you can call up from the menu:

1) Bloodbath - For this one, the laser base never stops moving. Fire upward at the aliens, and get them before they crush you.

2) We Come in Peace - You can stop and direct the laser base left or right in this version.

3) The Aliens Strike Back - In this version, the aliens have the ability to fire back at you, so watch out.

4) Invisible Alien Weasels - The aliens are invisible here, so keep on your toes. Beeps will let you know when you've got one with your trusty laser beam.

5) Klinker - Here the barriers, as well as the aliens, are invisible, so watch where your laser beam goes when you fire it.

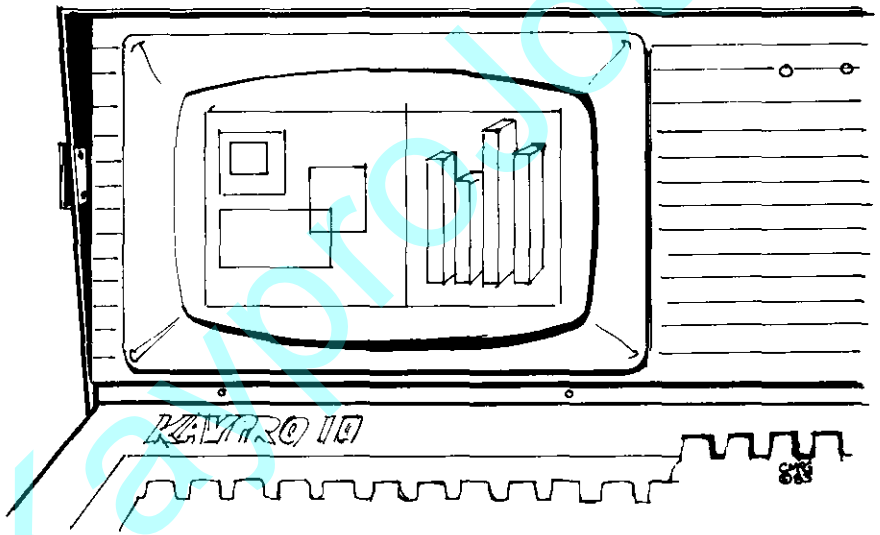
6) The Black Hole - Hold onto your senses for this one. Not only are the barriers and aliens invisible, but your laser base is, too. This one is definitely not for beginners.

To move the laser base left, type a z or a comma (,).
To move the base right, type a c or a slash (/).
To stop the base, type an x or a period (.).
To fire the laser beam, press the space bar.
To exit any game, type a q

Note: To exit the last three games listed, type a q twice.

USING GRAPHICS ON THE KAYPRO 10

The KAYPRO 10 has graphics capability. However, it needs a program to tell it what to do. If you are able to write these programs, then the information you need is on the following pages. If you are not able to write the programs and want to use the KAYPRO 10 graphics capability for business or other purposes, then it is best to find someone to write a program to do what you want.



Video Graphics and Attributes Command Set

The KAYPRO 10 has a graphics and attributes set that currently includes drawing and erasing lines, drawing and erasing pixels, inverse video, reduced intensity, blinking fields, graphics characters, cursor positioning, and cursor on/off.

Drawing Graphics

To draw graphics on the KAYPRO 10, the screen is treated as an array 100 pixels high, and 160 pixels wide. Any spot on the screen can be addressed by a vertical coordinate (ranging from 32 to 131) and a horizontal coordinate (ranging from 32 to 191). The pixel in the upper left corner of the screen has coordinates of 32,32. It would seem natural to start the numbering of coordinates at 1 or 0. However, some byte values of 32 or less are interpreted by BDOS as control keys.

Line and pixel graphics are drawn on the screen by writing an escape sequence to the console output. For the purpose of **drawing lines and pixels,** an escape sequence is a 4- or 6-byte sequence defined as follows:

Escape sequence =

ESC <sequence-type> <V1> <H1> [<V2> <H2>]

where:
1) ESC is an ascii 27 (1B hex).
2) <sequence-type> is a character of the set:

*	to write a pixel
(space)	to erase a pixel
L	to draw a line
D	to delete a line

3) V1, H1, V2, H2 are 1-byte values indicating locations on the screen.

To write a pixel:
The sequence-type must be a "*".
H2 and V2 are not used.
V1 is the vertical coordinate of the pixel.
H1 is the horizontal coordinate.

To erase a pixel:
The sequence-type must be a space.
H1, V1, H2, and V2 are the same as above.

To draw a line:
The sequence-type must be an "L".
H1 is the horizontal coordinate of the first point of the line.
V1 is the vertical coordinate of the first point.
H2 is the horizontal coordinate of the last point.
V2 is the vertical coordinate of the last point.

To delete a line:
The sequence-type must be a "D".
H1, V1, H2, and V2 are the same as above.

Cursor Positioning

When positioning the cursor on the KAYPRO 10, the screen is treated as an array 25 characters high, and 80 characters wide. Any spot on the screen can be addressed by:

a vertical coordinate (ranging from 32 to 56) a horizontal coordinate (ranging from 32 to 111).

The character in the upper left corner of the screen has coordinates of 32,32.

The cursor can be moved to a desired position on the screen by writing an escape sequence to the console output. For the purpose of **cursor positioning,** an escape sequence is a 4-byte sequence defined as follows:

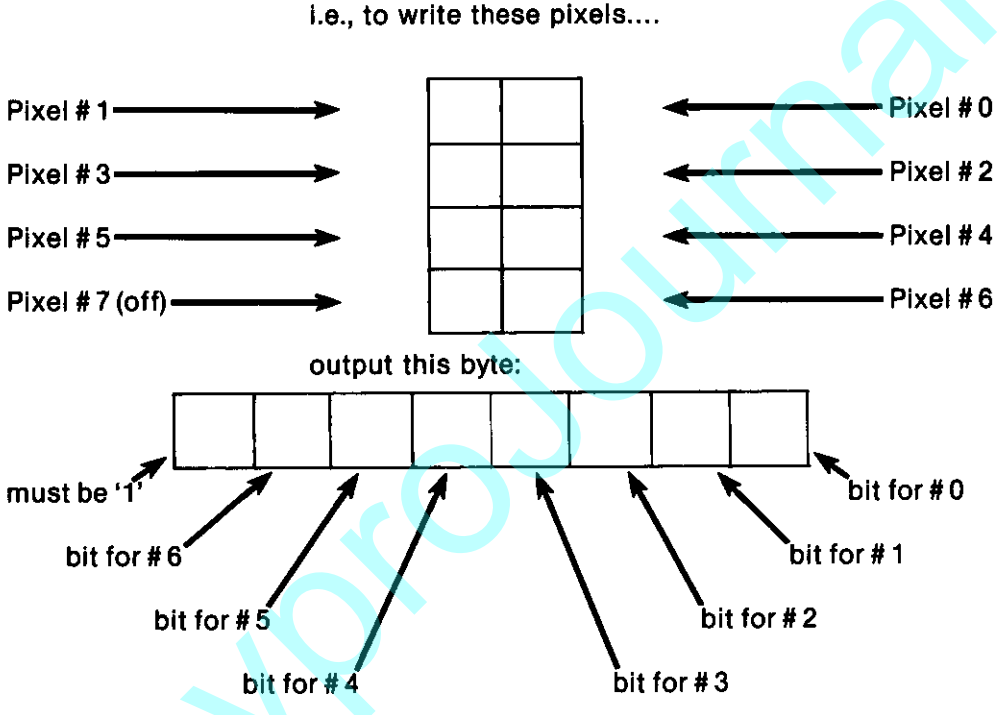
Escape sequence = ESC EQUALSIGN <V1> <H1>

where:

1) ESC is an ascii 27 (1B hex).
2) EQUALSIGN is the character '=' (3D hex).
3) V1, H1 are 1-byte values indicating the location on the screen.

Graphics Characters

Each of the character positions on the screen occupies the same area as eight pixels (4 high, 2 wide). Thus, pixels can be addressed in groups of eight at a time. To set pixels in a character position, the cursor is moved to that position, and then a byte is sent to the console output. This byte must have the high-order bit set to 1 to distinguish it from normal characters. The remaining seven bits are used to set 7 of the 8 pixels.



As shown above, pixel # 7 is off. To write a pixel with it on, send the inverse video command (ESC,B,0), then output the inverse for bits 0 through 6, i. e., 10000000b would print a blank graphics character; (ESC,B,0),10000000b would print a solid character.

Character Attributes Commands

Characters can be set to inverse video, blinking, reduced intensity, or underlined. Also, the cursor can be turned off. These attributes are activated by sending a 3-byte escape sequence to the console output:

Escape sequence = ESC <on-off-code> <attribute-code>

where:
1) ESC is an ascii 27 (1B hex)
2) <on-off-code> is a:
'B' to set an attribute ON, or
'C' to set it OFF.
3) <attribute-code> has a value of 0 through 4, as follows:

0 = inverse video,
1 = reduced intensity,
2 = blinking,
3 = underline,
4 = cursor.

Default for these attributes is:

inverse video = off
reduced intensity = off
blinking = off
underline = off
cursor = on

Comments:

1) Examples of line and pixel drawing can be found in GRAPHICS.BAS.

2) A line drawn from point A to point B will not always look the same as a line from B to A; it will be a mirror image.

3) Graphics characters, pixels, and lines cannot write over normal characters.

Summary of Commands

Graphics commands:

Set Pixel	ESC, * , V1, H1
Clear Pixel	ESC, , V1, H1
Set line	ESC, L , V1, H1, V2, H2
Delete line	ESC, D , V1, H1, V2, H2

Attribute commands:

	To Turn ON:	To Turn OFF:
Inverse Video	ESC, B, 0	ESC, C, 0
Reduced Intensity	ESC, B, 1	ESC, C, 1
Blinking	ESC, B, 2	ESC, C, 2
Underlining	ESC, B, 3	ESC, C, 3
Cursor	ESC, B, 4	ESC, C, 4

In the S-BASIC graphics package (graphics.bas), there are several procedures that allow the user to draw complicated figures with just one command. These are routines for drawing:

Circles:
require three parameters:
1) the vertical coordinate of the center of the circle,
2) the horizontal coordinate of the center,
3) the radius of the circle.

Rectangles:
have four parameters:
1) the vertical coordinate of the upper left corner,
2) the horizontal coordinate of that corner,
3) the height,
4) and the width.

Squares:
need three parameters:
1) the vertical coordinate of the upper left corner,
2) the horizontal coordinate of the upper left corner,
3) and the length of a side.

Bars:
require eight parameters:
1) the vertical coordinate of the base of the bar,
2) the horizontal coordinate of the base,
3) the height,
4) the width,
5) the depth,
6) the interior of the bar filled or empty,
   This parameter should be:
   0 for an empty bar,
   1 for a full one.
7) vertical illusion of depth up or down,
   −1 for up
   1 for down
8) horizontal illusion of depth left or right.
   −1 for left
   1 for right

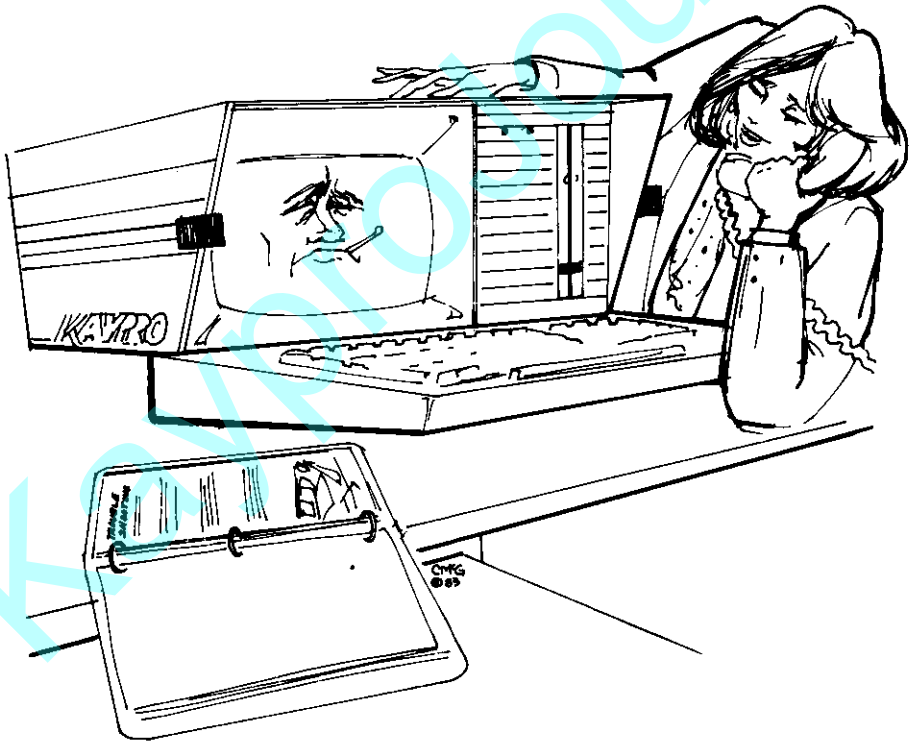
To observe the use of these procedures, we recommend that you run the following program: $INCLUDE GRAPHICS

```
VAR V1, H1, RADIUS = INTEGER
VAR V2, H2, HEIGHT, WIDTH = INTEGER
VAR V3, H3, LENGTH = INTEGER
VAR V4,H4,H,W, V.PERSP, H.PERSP, INT, DEPTH = INTEGER

V1 = 15
H1 = 15
RADIUS = 10
CIRCLE V1, H1, RADIUS

V2 = 30
H2 = 10
HEIGHT = 20
WIDTH = 40
RECTANGLE V2, H2, HEIGHT, WIDTH

V3 = 60
H3 = 20
LENGTH = 30
SQUARE V3, H3, LENGTH

V4 = 80
H4 = 80
H = 50
W = 15
DEPTH = 8
V.PERSPECTIVE = -1
H.PERSPECTIVE = 1
INTERIOR = 0
BAR V4, H4, H, W, DEPTH, INT. V. PERSP, H. PERSP

V4 = 20
H4 = 130
H = 50
W = 10
DEPTH = 15
V.PERSPECTIVE = 1
H.PERSPECTIVE = 1
INTERIOR = 1
BAR V4, H4, H, W, DEPTH, INT, V. PERSP, H. PERSP
```

Notes

TROUBLESHOOTING

If you have difficulties when operating your KAYPRO 10, **please** check the following list of symptoms and remedies before calling your dealer. Of course, when programs don't do what you expect, read the manual for that program. If the following quick checks don't fix the problem, contact your dealer for assistance with both the operation of your software and the service needed for your KAYPRO 10.



SYMPTOM: Programs won't load or execute.

PROBABLE CAUSES AND REMEDIES:

1. No AC power. Be sure that the power cord is plugged in. Check the power switch and any switches controlling the wall outlet.

2. No video display. Adjust brightness control on rear panel.

3. Latch on drive door not turned to horizontal position.

4. Diskette is in drive when it is not needed.

5. Diskette in drive isn't the diskette expected by the operating program.

6. Diskette isn't in the drive correctly (label side to the left and the write-protect notch down).

7. Diskette has been damaged. Try making a copy.

8. Incorrect response to a prompt or invalid menu selection; check for error message from program.

9. You're asking the program to do something it can't. When all else fails, read your manual.

SYMPTOM: Computer unexpectedly ignores keyboard entries.

PROBABLE CAUSES AND REMEDIES:

1. Disconnect and reconnect the coiled cord which attaches the keyboard to the computer.

2. Fluctuations in the AC power line. Use another outlet or an External Power Conditioner. Some battery backup units will filter out noise from heavy electrical machinery as well as cover for temporary "brownouts."

3. External peripheral devices or their connecting cables may be at fault. Try operation without peripheral or with different cable to isolate the problem.

4. Damaged or faulty diskette. Try to make a copy.

5. Incorrect instruction sequence. Check the appropriate manual to insure that you are using the correct operations and sequence.

MAINTENANCE

Because of the generally high reliability of modern, solid-state components, with normal use your computer should need very little maintenance or service.

It is important to keep the computer and diskettes dust-free. The computer itself can be cleaned with a damp, lint-free cloth. A mild kitchen detergent can be used, if necessary.

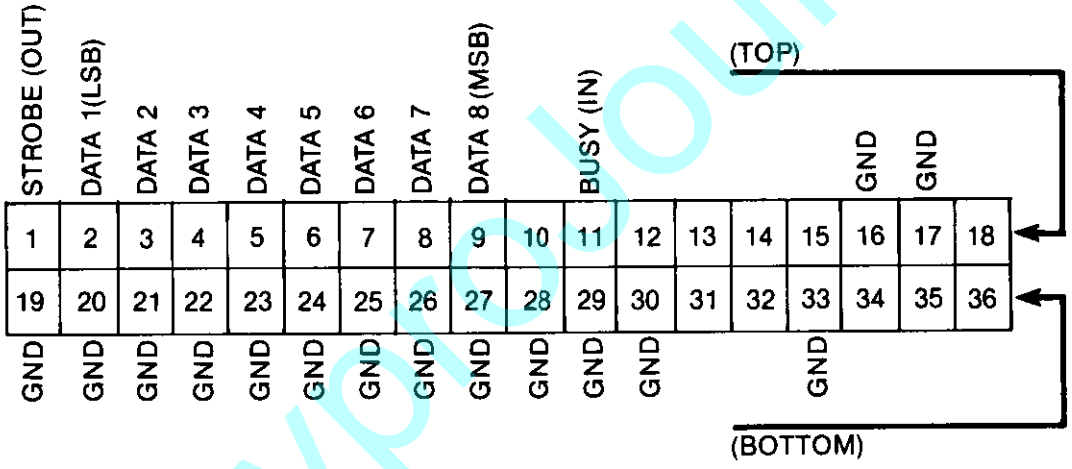
Care for peripheral devices, such as printers, should be covered in the manual that came with the device.

Occasionally remove the grill which holds in the foam filter on the back panel of the KAYPRO 10. Clean the filter by gently agitating it in water and mild soap or detergent. Let it dry, replace it, and replace the grill.

CONNECTING A PRINTER

Parallel Printer

Your KAYPRO 10 computer comes equipped with a Centronics-type connector on the back panel, labelled: J6 PRINTER OUTPUT. If you have a printer with a similar 36-pin connector, then all you need is a standard parallel printer cable (available from your dealer) to connect the two units. If you have a non-standard connector on your printer or cannot find a suitable cable already assembled, then the following pin assignments should prove useful to the person who fabricates your cable.



Note that the BUSY line is read by the KAYPRO as ACTIVE when left disconnected. If you tell your computer to print something when there is no printer there, your computer will sit patiently and wait for a printer to say that it's ready for data. And wait and wait and wait... Press the reset button on the back panel.

Serial Printer

Your KAYPRO 10 was designed to be as easy to use as possible. The standard KAYPRO expanded system consists of your computer connected to a standard parallel printer via the parallel connector, and connected to a modem via the RS-232C serial connector, J4. However, if you have a serial printer, you will need to adapt your serial interface for your printer.

The following information is provided to aid such modifications. Please note that Non-Linear Systems and Kay Computers make no guarantees about the suitability of a given serial printer for use with the KAYPRO 10 RS-232C serial interface. The reasons for some of the difficulties are given here, but before you purchase any serial printer, insist upon a demonstration of its operation.

There are three things you must do if you are to use a serial printer with the KAYPRO 10 computer:

1. You must tell CP/M to redirect the printer output to the serial interface. Use STAT to change the physical assignment, like this: A>STAT LST:=TTY:

2. You can make the change from a parallel printer (LPT:) to serial (TTY:) permanent for some of your programs by using the CONFIG program, which is a part of CP/M.

3. Make sure that the line being used by your computer for data transmission (pin 3 of connector J4) is connected to the printer's data reception pin. This is usually, but not always, pin 3 of the printer connector.

4. The remaining task is to take care of the hand-shaking signal lines. You can strap the signals, so that they are always true (i.e., connect pins 8 and 5 of connector J4 to pin 6). The potential problem with defeating the handshaking lines in this manner is that you have to limit your baud rate to avoid overwriting the printer's internal buffer. For example, if you leave the the baud rate of the KAYPRO 10 at 300 baud, your printer must be able to print at least 30 characters per second.

If you have problems with overwriting the buffer in your serial printer, you will have to implement some handshaking to correct the problem. The KAYPRO 10 uses pin 20 DTR (see the following figure) as an indicator of printer readiness. For proper hand shaking, the serial printer must produce a "not busy" signal for pin 5 that is high when the printer can accept data. Details of the handshaking required by your printer should be in its owner's manual.

KAYPRO SERIAL PRINTER PORT — RS232C

1 - CHASSIS GROUND

2 - TRANSMIT DATA - FROM COMPUTER

3 - RECEIVE DATA - TO COMPUTER

7 - SIGNAL GROUND

20 - DATA TERMINAL READY

Remaining pins are unconnected.

To defeat the RS-232C handshake:

Outbound 5 to 20 (jump)	output
Inbound 5, 6 to 8	input

SERIAL PORT ASSIGNMENTS

For Modem (serial channel A):

PORT 4 is the Z-80A SIO data port.
PORT 6 is the Z-80A SIO control and status port.

Received character available is obtained by testing bit 0 of the status port. Transmit Buffer Empty is obtained by testing bit 2 of the status port. Other details can be found in the Z-80A documentation available from Zilog.

The serial output is a 8-bit word with one start, one stop, and no parity.

Baud Rate Table

HEX #	Baud Rate
0	50
1	75
2	110
3	134.5
4	150
5	300
6	600
7	1200
8	1800
9	2000
A	2400
B	3600
C	4800
D	7200
E	9600
F	19200

Note: The baud rate will be 300 baud up or when reset switch is pressed.

I/O PORT ADDRESSES

Port #	Use and/or assignment
0	Baud rate for Modem (Write only) Writing a number between 0 and F (hex — see preceding table) to this port will set the RS-232C baud rate.
4	RS-232C Modem Data (R/W) Data register of the Z-80A SIO
5	Keyboard Data (R/W) Eight-bit data from detachable keyboard. See the following S-BASIC program for an example of writing to this port.
6	RS-232C Status for Modem (R/W) Control/status port for the Z-80A SIO. See Zilog and Mostek Microcomputer Data Books.
8	Baud Rate for Serial Printer
14	System Port (R/W) This port is used for system control. The various bits are used for memory bank selection, disk drive control, and printer handshaking.
18	Parallel Printer Port (Write only) Eight-bit data to parallel printer connector
0C	Serial Printer Data (RS-232C)
0E	Serial Printer Control/Status

PROGRAM TO TURN OFF THE KEYBOARD BEEPER

This program is in the S-BASIC programming language..

```
10  REM  This program turns off the keyboard beeper.
20  VAR QUIET, KEYBOARD = INTEGER
30  KEYBOARD-5
40  QUIET = 8
50  OUT KEYBOARD, QUIET
60  END
```

PERFECT WRITER CONFIGURATION TIPS

If Perfect Writer is not printing properly, you probably need to configure Perfect Writer for your printer. To do this:

1. If the KAYPRO is not on, turn it on.

2. If the KAYPRO is on, be sure the current file is saved and closed, according to the instructions in the manual for the program being used.

3. If you are not in user area 1, type: user 1

4. After the A1> prompt, type: pfconfig
   Press RETURN.
   Read the display and follow the prompts to the master menu.

5. Choose #2 from the menu by typing: 2
   Press RETURN.

6. When the printer menu appears, choose #1. If your printer is listed, you will use it in the next step.

7. Choose #5 from the printer definition menu. The current default printer and type for console output will be displayed. If your printer was listed in the last step, enter that name. If your printer wasn't listed, enter: PLAIN

   (Note: The default printer type, PLAIN, works for most dot-matrix printers; the printer type, TELETYPE, works for most letter-quality printers).

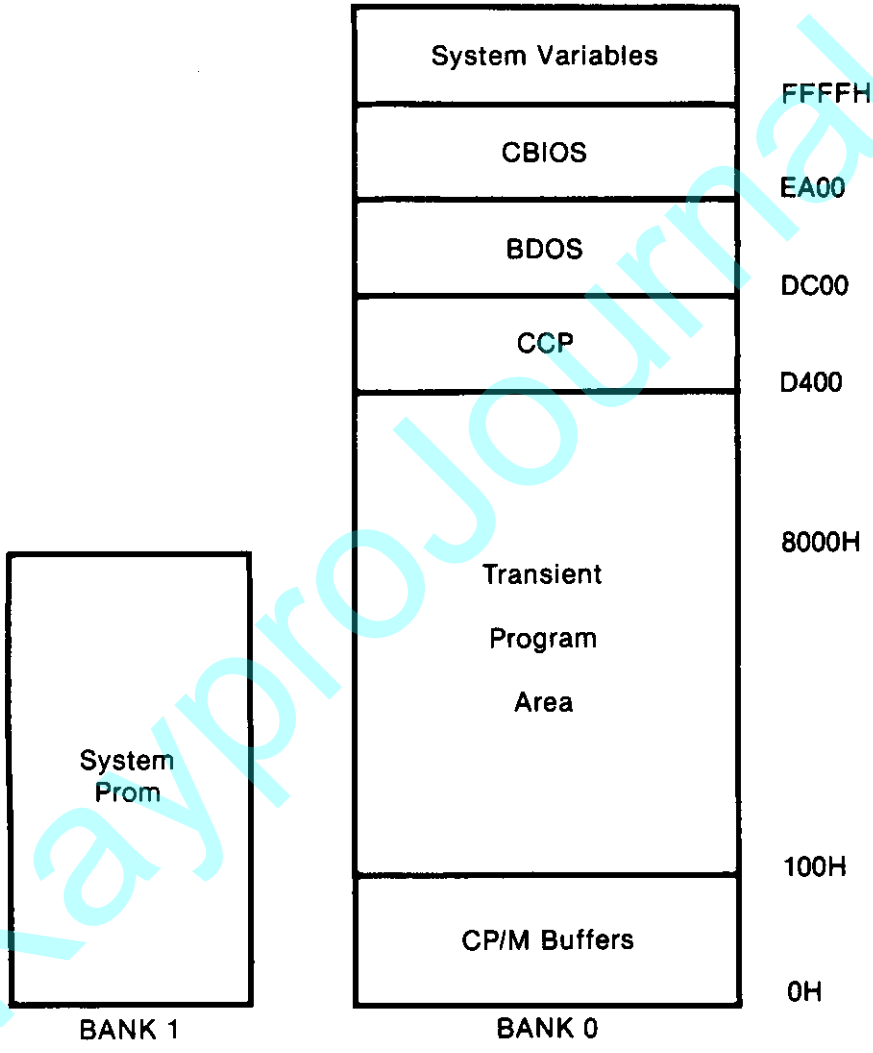
8. For the name of the type for console output, enter: CONSOLE

9. Then return to the main menu (choose #6).

10. Lastly, exit the configuration program (choose #6 from the main menu).

One last note: If your printer wasn't listed in step 6, and if the PLAIN, TELETYPE, or VANILLA printer types don't work for your printer, you will either have to define a new printer type (#2 on the printer menu) or update an existing printer definition (#3 on the printer menu), such as PLAIN. You will be asked several detailed questions concerning your printer if you define a new printer type, so either have your printer owner's manual handy or ask your dealer for help.

MEMORY MAP OF THE KAYPRO 10 COMPUTER



Please note that only the lowest 16 Kbytes of memory will change with the bank select bit; addresses above 7FFF hexadecimal are always available for either bank.

COMMON CONTROL FUNCTIONS IN CP/M PROGRAMS

DEL	Delete and echo the last character typed at the console (Same as rubout)
CTRL-U	Delete the entire line typed at the console
CTRL-X	Same as CTRL-U
CTRL-R	Retype current command line: types a "clean line" following character deletion with rubouts
CTRL-C	CP/M system reboot (warm start)
CTRL-E	Physical end of line: carriage is returned, but line is not sent until RETURN key is depressed
CTRL-Z	End input from console (used in PIP and ED)
CTRL-P	Copies all subsequent console output to the currently assigned list device (e.g., a printer) and the console device until the next CTRL-P is typed.
CTRL-S	Stops the console output temporarily. Program execution and output continue when another character is typed at the console (e.g., another CTRL-S). This feature is used to stop output on high-speed consoles, such as CRTs, in order to view a segment of output before continuing.

VIDEO SOFTWARE DRIVER

The KAYPRO 10 video section was designed to imitate the control sequences of a Lear-Siegler ADM-3A terminal. For most commercial software, this means you can "install" or customize the display characteristics by choosing the ADM-3A from the menu. For custom software or those instances where there is no choice of "ADM-3A" on the menu, the following information may help.

VIDEO CONTROL SEQUENCES (those similar to ADM-3A)

Designation	Dec	[HEX]	Action
Bell	07	[07]	Beep sent to keyboard
Backspace	08	[08]	Non-destructive cursor left
Line Feed	10	[0A]	Cursor down
Vertical Tab	11	[0B]	Cursor up (screen does not scroll)
Form Feed	12	[0D]	
ETB	23	[17]	Clear to end of screen
Cancel	24	[18]	Clear to end of line
Substitute	26	[1A]	Clear screen (also home cursor)
Record Seq.	30	[1E]	Home cursor

ESCAPE SEQUENCES

ESC A	27,65	Display lower case alphabet
ESC E	27,69	Insert line
ESC R	27,82	Delete line

ESC = row + 32	column + 32	Positions cursor
ESC = [y + 20H]	[x + 20H]	Same

Please note that, while the normal ASCII-printable characters are displayed on the screen, the operation of control codes not documented above is subject to change and may not be what your software expects. As an example, the NULL character (0H) will be displayed on the screen as an accent grave (`).

KAYPRO 10 DECIMAL EQUIVALENTS OF CHARACTERS

(US ASCII)

32	space	64	@	96	`
33	!	65	A	97	a
34	"	66	B	98	b
35	#	67	C	99	c
36	$	68	D	100	d
37	%	69	E	101	e
38	&	70	F	102	f
39	'	71	G	103	g
40	(	72	H	104	h
41	)	73	I	105	i
42	*	74	J	106	j
43	+	75	K	107	k
44	,	76	L	108	l
45	–	77	M	109	m
46	.	78	N	110	n
47	/	79	O	111	o
48	0	80	P	112	p
49	1	81	Q	113	q
50	2	82	R	114	r
51	3	83	S	115	s
52	4	84	T	116	t
54	6	86	V	118	v
55	7	87	W	119	w
56	8	88	X	120	x
57	9	89	Y	121	y
58	:	90	Z	122	z
59	;	91	[	123	{
60	<	92	\	124	|
61	=	93	]	125	}
62	>	94		126	~
63	?	95	_		

GLOSSARY

ADDRESS	a number used by the computer to keep track of different memory locations
ARRAY	a set of elements arranged in a pattern
ASCII	acronym for American Standard Code for Information Interchange; a 7-bit code for representing character data such as letters, punctuation, etc.
BACK UP	to copy information or programs as a protective measure
BAUD RATE	the speed of serial communications; BAUD is used generally as meaning bits per second: 300 baud would be 300 bits/second or 30 characters per second
BDOS	acronym for Basic Disk Operating System: the section of CP/M that keeps track of disk files
BIOS	acronym for Basic Input/Output System: the section of CP/M that handles the hardware of the KAYPRO
BIT	a binary digit, the smallest piece of information a computer can handle (see BYTE)
BOOT	loading CP/M into the computer's memory from drive A, COLD BOOT occurs when the machine is first turned on; WARM BOOT occurs when you press the CTRL and C keys simultaneously (see CP/M manual for details)
BUFFER	an area of memory set aside for storing and manipulating data associated with I/O devices, such as disks and keyboards.
BUG	a problem or undesirable side-effect of a computer program, almost always unexpected and unwelcome (see DEBUG)
BYTE	8 bits; the size of a memory location in the KAYPRO; a computer "word" (note: a kilobyte or kbyte is one thousand bytes)
CCP	acronym for Console Command Processor: the section of CP/M that makes sense of what you type on the keyboard

CHIP	slang for an integrated circuit
CONSOLE	the device used for communication between the computer and you. Normally, this is the keyboard and the video display.
CP/M	acronym for Control Program for Microcomputers. The most popular disk operating system for 8080 and Z-80 micro computers, CP/M keeps track of the files and programs on the hard disk and the floppy disks and facilitates their use.
CPU	acronym for Central Processing Unit: the microprocessor chip
CRT	acronym for Cathode Ray Tube: the "TV" tube used as the video display
DEBUG	to remove mistakes from a computer program (see BUG)
DIR	a built-in CP/M command that lists the files of a user area or diskette. *See An Introduction to CP/M Features and Facilities* for details.
DIRECTORY	the list of files in a user area or on a disk. The KAYPRO 10 allows 1000 different entries in the directory (see DIR and STAT), but on the hard disk there can be 1000 files.
FILE	a collection of characters, data, or what-have-you that is stored in a user area or on a disk. A file can contain a program or information to be used by other programs or a manuscript, etc.
FILENAME	the name of a file, which you see when you list the directory or use when you access a file. The general form for a filename is: B:NAME.MSS The first part (A:, B: or C:) indicates which drive the file is in. The second part is the name, and can be up to eight characters long. The last part is called the extent, can be up to three characters long, and is separated from the name by a period.
FLOPPY	a diskette of magnetic media which is encased in a sturdy envelope. It stores data in areas called files.
FORMAT	the organization of data on a disk. A single-sided, double-density format on the floppy disk consists of 40 tracks per disk, with each track divided into 10 sectors.

HARD DISK	A fixed, durable disk for storing information magnetically. It is permanently located within the computer.
HARDWARE	the physical parts of the computer and its peripheral equipment, as opposed to SOFTWARE.
HIGH-LEVEL LANGUAGE	a computer programming language that is similar to English or mathematics. S-BASIC and PASCAL, for example, are high-level languages.
INPUT	data put into the computer. By extension, the process or means of putting data into the computer.
LOAD	to take information from a storage medium, such as a disk or tape, and put it into the computer's memory.
MACHINE LANGUAGE	a binary language that a computer can understand, as opposed to either assembly language (see the ASM section of your CP/M manual) or high-level languages like S-BASIC.
MODEM	acronym for MOdulation/DEModulation: a device that connects a computer terminal to another computer terminal via a communications link, such as the telephone system. With the KAYPRO, modems are connected directly to the RS-232C connector at the rear of the machine.
OUTPUT	information displayed or used to control devices external to a computer. By extension, the process or means of getting information out of a computer.
PERIPHERAL	any device connected to and used with your computer (e.g., a printer or modem).
PIXEL	an element or location on the screen for the purpose of forming characters or graphic displays
PROGRAM	a set of instructions for a computer; the SOFTWARE. When these instructions are in a high-level language like BASIC, they will always have to be converted into a set of low-level or machine language instructions by either an interpreter (M-BASIC) or a compiler (S-BASIC).

PROMPT	a unique character or characters displayed by a program to inform the user that the program requires some instruction or information. In CP/M, the A> is a prompt which indicates that the computer is waiting for the user to enter a command.
RAM	acronym for Random Access Memory: the memory that the computer uses for short-term storage of information and programs. Unlike ROM, the information stored in RAM is changeable and volatile, meaning it will disappear when the power to the computer is turned off.
ROM	acronym for Read Only Memory: the memory that is used for unchanging information and programs. Information stored in ROM is not volatile, and will remain intact regardless of whether the power to the computer is on or off.
SAFETY ZONE	a portion of a hard disk which is reserved as a space to which the read-write head can move when it has nothing else to do. Also, the head must be moved to the safety zone before the computer is turned off. This is done by typing after the A> prompt: safety
SECTOR	a group of bytes on a disk. The standard KAYPRO double-density floppy disk has 10 sectors on each track, with each sector containing 512 bytes of information.
STAT	a CP/M program that gives the statistics of a disk's files, showing how much space (in kilobytes) each file is using and how much empty space is left on a disk.
TRACK	a ring of information on a disk. A double-density floppy disk has 40 tracks.
USER AREA	The 15 areas on a hard disk which are set up to hold files. They have no specific size, but adjust in size as necessary.
UTILITY	a program often used, particularly by system programmers. For example, PIP is a utility program (details in the CP/M manual) that allows the transfer of files.

FCC INFORMATION

This equipment generates and uses radio frequency energy and, if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.
Relocate the computer with respect to the receiver.
Move the computer away from the receiver.
Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U. S. Government Printing Office, Washington, D. C. 20402, Stock No. 004-000-000345-4.

If this computer is used with peripheral devices such as a printer or modem, then well-shielded cables must be used to preserve the radio interference characteristics.

Warning: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

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