READ ME FIRST

KAYPRO® 16

USER'S GUIDE

THE
KAYPRO 16E
USER'S GUIDE

©October 1985 **Kaypro Corporation** Part Number 2849-E

LIMITED WARRANTY

Kaypro Corporation warrants this new Kaypro computer to the original purchaser to be in good working order for a period of ninety days from the date of purchase from an authorized Kaypro dealer. Kaypro makes no other warranty with respect to the computer including, without limitation, no warranties as to its performance, merchantability, or fitness for any particular purpose.

Kaypro shall not be liable for any incidental or consequential damages related to the use of, or possible malfunction of the Kaypro computer. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty does not cover any computer which has been the subject of abuse, accident, any modification whatsoever, or repairs by unqualified service facilities.

Kaypro will, at its option, repair or replace the product during the 90-day warranty period without charge. In order to obtain warranty service, the customer must provide proof of purchase date and return the unit to an authorized Kaypro service facility. Alternatively, the customer may obtain an R.M.A. number from the Kaypro Hardware Technical Support Department at 533 Stevens Avenue, Solana Beach, California 92075, and ship the unit prepaid to Kaypro.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

8/29/84

FCC INFORMATION

As Kaypro keeps in step with computer technology, the models have changes which affect FCC ratings. The proper rating is affixed to the back of each computer, and the appropriate FCC information is given here.

FCC INFORMATION FOR CLASS A

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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.

FCC INFORMATION FOR CLASS B

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 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, DC 20402, Stock No. 004-000-00345-4.

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.

NOTE: TO PRESERVE THE EMI CHARACTERISTICS OF THIS COMPUTER, THE FOLLOWING EMI-SUPPRESSING CABLES (OR THEIR EQUIVALENTS) MUST BE USED TO CONNECT TO PERIPHERAL DEVICES:

CABLE APPLICATION	PART NUMBER	REMARK
Keyboard to KAYPRO	81-405	Supplied with KAYPRO
KAYPRO Serial Port to Serial Peripheral (Printer, Plotter, Modem)	81-552	Option
To a Peripheral Modem	81-548	Option
KAYPRO Parallel Port to Printer	81-551	Option

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PREFACE

This user's guide should serve as a pleasant introduction to the use of your new computer.

Look now at the **TABLE OF CONTENTS** to see the subjects covered. It is best to go through the sections in order.

There is a **GLOSSARY** at the back if you have questions about unfamiliar words.

After you use the manual the first time, it can serve as a reference by referring to the **INDEX** at the back.

The last page is a **RETURN FORM** for you to tell us how we can make this user's guide better serve the new user.

This manual should be considered an introduction to the capabilities of your KAYPRO 16E. More features are described in the other manuals about MS-DOS, the disk operating system by MicroSoft. The MS-DOS manuals are written by MicroSoft Corporation to be used with many computers, so some information may not apply to the KAYPRO 16E.

There are manuals which tell how to use the various software programs, such as the word processer, the GWBasic programming language and the utilities.

FEATURES OF THE KAYPRO 16E

The KAYPRO 16E is a transportable, MS-DOS based microcomputer system which is functionally compatible with the IBM PC XT. Most software that runs on the IBM PC or IBM PC XT will run on the KAYPRO 16E. The KAYPRO 16E will not read diskettes created on a KAYPRO 2, 4, or 10 without a special utility. Standard features are:

MS-DOS operating system
8088 processor
256K standard memory upgradable to 640K RAM with Kaypro board
Integral 10MB fixed disk
Integral 360K double-sided double-density diskette drive
9" monochrome CRT with 80 columns and 25 lines
High resolution (720 by 350) bit-mapped characters with the internal screen or external monochrome screen
High resolution (640 by 200) bit-mapped graphics in black and green (black and white on an external screen)
Medium resolution (320 by 200) bit-mapped graphics in any 4 of 16 shades of green (16 colors on an external screen)
Composite, monochrome and RGB video output connectors
One asynchronous serial port
One parallel printer port
IBM PC-compatible keyboard
Word-processing software
Communications software
GW-BASIC language (BASICA-compatible)
One user expansion slot

WHAT YOU WILL NEED

Before you start, you should have:

- Blank diskettes. You should buy 5-1/4 inch, double-density, double-sided, soft-sector diskettes.
- A work surface at typing height.
- A power outlet close to the work surface. The outlet should be grounded and should be on a circuit that isn't loaded with other appliances.
- A good rule of thumb for temperature is--if you are comfortable, your computer will be comfortable.

OPTIONAL EQUIPMENT

POWER LINE FILTER

If there is heavy machinery operating from the same power source, or if there are frequent power surges, you may want to invest in a power line filter. A filter removes spikes and variations in the power line that can upset the operation of your computer.

BACKUP POWER SOURCE

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

OVERSEAS POWER REQUIREMENTS

If you want to take your computer out of the United States, your dealer can switch the power supply to allow your computer to use the foreign current.

CARE OF DISKETTES

Diskettes store data on a magnetic surface that is vulnerable to damage which could result in the loss of data. Here are a few simple guidelines for handling and using diskettes.

HANDLE DISKETTES WITH CARE: Do not flex or bend diskettes. Do not touch the brown, exposed portions of the diskettes, as chemicals or oils on the fingers can damage stored data.

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

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. Do not place diskettes on top of the computer.

POWER: Never have a diskette in the drive when you turn ON the power. Always remove a diskette before turning OFF the computer.

INSERT DISKETTES CAREFULLY: Open the drive door, and holding the diskette with the label to the left and the write-protect notch down, insert the diskette into the drive. There may 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. Close the drive door.

TO REMOVE A DISKETTE: Open the drive door. Gently remove the diskette from the drive.

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

BACK UP: Back up on diskettes the files which are on the fixed disk. If something unexpected happens regarding your computer or the fixed disk, you will still have those files. See the section on "Backing Up Your Files". Also make backup copies of any diskettes you make to ensure that, if one is lost or damaged, you will still have a copy.

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

WRITE-PROTECT NOTCH:

- If this notch is covered, information can only be read FROM the diskette.
- If you want to write information to a diskette, don't cover its write-protect notch.
- When you want to ensure that you do not accidently erase stored information, cover the write-protect notch with the tabs which are provided with new diskettes.

SETTING UP YOUR KAYPRO 16E

SETTING UP YOUR KAYPRO 16E

1. Remove the computer from the box. Save the packing materials in case you ever want to ship your KAYPRO. The box should also contain the following:

   Manuals for the software
   KAYPRO ownership documents
   Coiled cable (found when the computer is opened)

2. Set the KAYPRO on the work surface with the large, ventilated surface down and the part with the handle and power cord facing away from you.

3. Undo the latches on the sides by pulling outward on the portions farthest away from you.

4. Set the keyboard down in front of the main unit.

5. Lift the front of the main unit, and pull down the wire stand.

6. Unwind the AC line power cord, but *do not plug it in yet.*

7. Remove the coiled keyboard cord from its packing position.

8. Route the cord to the back of the main unit, and plug one end into the keyboard jack on the rear panel.

9. Plug the other end of the cable into the jack on the back of the keyboard.

10. Open the door of the diskette drive, and remove the cardboard shipping protector. If you close the computer to carry it, reinsert this protector. If you ever ship your KAYPRO, be sure to place the protector in the diskette drive.

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

12. Connect the computer to the power source.

STARTING THE KAYPRO 16E

STARTING THE KAYPRO 16E

1. Turn on the computer, using the power switch on the back panel.

   On the front panel of your KAYPRO 16E are three indicator lights:

   - a power light to indicate the power is ON
   - a ~~10~~ 20 MB light to indicate the fixed disk is being accessed
   - a disk drive indicator light to indicate that the diskette drive is in operation

   Do not turn off the computer when the ~~10~~ 20 MB or diskette drive lights are on.

   The changing numbers are indications that the diagnostics are taking place. You can abort the process by pressing any key.

   The ~~10~~ 20 MB light will go off when the fixed disk has reached full speed, which will be about 15-20 seconds.

2. If there is nothing on the screen, it may be necessary to use the brightness control knob on the back of the computer.

THE KEYBOARD

The keyboard for your KAYPRO 16E is divided into three areas: a function key area on the left, a typewriter-style keyboard in the center, and an area to the right that resembles a calculator keypad.

With the exception of a few control keys, such as CTRL, ESC, and NUM LOCK, keys will automatically repeat when held down.

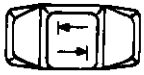
KEYS ON THE LEFT OF THE KEYBOARD

On the left side of the keyboard are two columns of functions keys labeled F1 through F10. The functions of these keys are determined by the program being used. Consult the software manual for the program.

When the A > or C > prompt is on the screen, the function keys perform command line editing functions. See the section on Editing Commands.

KEYS IN THE CENTRAL SECTION OF THE KEYBOARD

The ESCape key is often used to cancel some action or to escape from an undesired activity depending on the instructions for the software you're using.

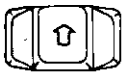


The TAB key moves the cursor horizontally and/or inserts a certain number of spaces, depending on the program in use. Normally the cursor moves to the right. Tab to the left by holding down the shift key while pressing TAB.

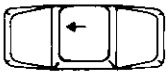
The control key is used simultaneously with letter keys to do certain functions. Hold down the CTRL key and type the letter. Sometimes the function will display as a ^ character followed by a second character.

The system can be reset from the keyboard by holding down both the Ctrl and Alt keys; then pressing Del.

The CAPS LOCK key, when activated, puts alphabetic characters in upper case. Press once to activate it (the green light at the top of the keyboard goes on), and press again to deactivate it.

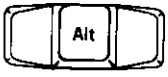


The SHIFT key is used with letter keys to put alphabetic characters in upper case. It also accesses the characters on the upper part of keys which have two characters, for example, @ and ?. When the CAPS LOCK key is activated, the shift key will temporarily reverse its effect on other keys. Try it.



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

The ENTER 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 symbols which are often used to indicate that you should press the enter key.



The Alternate key enables a third interpretation to be placed on the keystroke following it. The Alt key is held down while the next key is pressed.

Pressing Shift-PrtSc sends the contents of the screen to your printer.

THE KEYPAD

To the right of the keyboard there is a calculator-style layout. This keypad has two modes of operation: numeric and function. The Num Lock key is used to switch between the two modes. When the light in the Num Lock key is ON, the numeric pad is active.

When the light is OFF:

Moves the cursor up one line.

Moves the cursor down one line.

Moves the cursor to the left by one character position.

Moves the cursor to the right by one character position.

Moves the cursor to the upper left corner of the screen.

Moves the cursor to the lower left corner of the screen.

SETTING UP THE FIXED DISK

To set up the fixed disk so that you can use your KAYPRO 16E:

1. Turn on the computer.

2. Insert Autoload Diskette #1 into the diskette drive with the label to the left, and the write-protect notch down.

3. Follow the prompts on the screen.

   The first diskette takes the longest time--about 12 minutes. The rest of the diskettes take about one minute each.

   When you remove the last diskette, the MS-DOS prompt changes to C> instead of A>.

4. You may now enter the date and time.

SETTING THE DATE AND TIME

The date and time on the KAYPRO 16E can be set so that any files you create or alter during the time the computer is on will have the date and time recorded in the directory.

When the date or time is displayed, if you do not want to make a change, press the ENTER key. The Master Menu will appear.

To change the time:

- Enter numerals only.
- Use military time. (If p.m., add 12 hours to the present time; for example, if it is 5:20 in the afternoon, it is 17:20 military time.)
- Separate the hour and minutes with a colon.
- You need not enter the seconds <ss> or hundredths of seconds <cc>.

To change the date, enter numerals only. Separate the numerals with hyphens or slashes. The number of days in the months and leap years are changed accordingly.

When you press ENTER, the Master Menu will appear.

USING THE MASTER MENU

It's easy. On the screen the main choices are on the left. Information about the choices is on the right. Directions are at the bottom of the screen. When you choose an option by pressing the right-arrow key, new information appears on the right.

When beginning to use a program, you may be asked to name a file. See the section on Naming Files.

If you leave the Master Menu by pressing the ESCape key and you want to return to the Master Menu, at the >, type: menust
Press ENTER.

TURNING OFF THE COMPUTER

For now, turn off the computer by using the power switch on the back panel of the computer.

IMPORTANT! In the future, if you are working in a file, before you turn off the computer, the file should be closed according to the instructions for the program.

NOTES

Strange things may happen if you do something that the program/computer doesn't expect, or if there is a "bug" (a hole in the logic of a program). Try resetting the computer by pressing Ctrl, Alt, and Del simultaneously, or press the red reset button on the left panel of the computer. Either of these procedures will destroy information which is in the temporary memory of the computer, but will not affect the information which has been saved on the disk.

When the computer is turned on, it looks for a diskette in drive A. If there is no diskette in the drive, or the drive door is open, the computer will then start from the fixed disk, drive C.

The A> and C> prompts are called system prompts. When you see a prompt, A>, or C>, it is an indication that the computer will accept typed commands to tell it what to do.

The flashing line is a cursor--a place marker to show where information can be entered. The next character you type will appear at this location.

UNDERSTANDING FILES

A file is a collection of related information, either data, text or instructions, stored on a magnetic surface (diskette or fixed disk drive) and given a specific name. All information in your computer is stored in the form of files. If you use WordStar to write a letter to a friend, the file's name might be FRIEND.LTR. A data file might be named PARTS.DTA. WordStar itself is a file, called WS.COM. A file name can have a maximum of eight letters in it, with a three letter extension. For example: AUTOEXEC.BAT or DISKCOPY.COM.

RESERVERD CHARACTERS AND NAMES

When using your computer, you will be creating and naming files. These are the characters that you must not use in a file name:

Period	(.)	Comma	(,)
Colon	(:)	Semicolon	(;)
Plus Sign	(+)	Equal Sign	(=)
Less than sign	(<)	Greater than sign	(>)
Slash	(/)	Backslash	(\)
Left Bracket	([)	Right Bracket	(])
Bar	(|)	Quotes	(")

It is recommended that you use only the letters A through Z and the numbers 0 through 9, as some programs may have problems with other characters.

MS-DOS has names for the components of your computer. MS-DOS calls these components *devices*, and their names are reserved. Do not use any of the following device names in a filename:

DEVICE	NAME
Console (keyboard/screen)	CON
First serial port	AUX or COM1
Second serial port	COM2
First printer port	LPT1 or PRN
Second printer port	LPT2
Third printer port	LPT3
Test device	NUL

MS-DOS will accept lower case letters for commands and file names and will automatically convert them to upper case.

Files have different attributes; characteristics that allow them to be used in specific ways. Some files are "hidden", so they cannot be viewed, erased or copied, while others are protected by being "read only" files. This is a list of the attributes a file may possess.

SYSTEM FILES

A system file is one that composes the operating system, such as MSDOS.SYS. Some files are both system files and hidden files.

READ ONLY

A read only file is a file that cannot be erased or changed in any way.

HIDDEN FILES

A "hidden" file is a file that is in the directory, but cannot be viewed from MS-DOS. Were you to enter a DIR command at the MS-DOS prompt, you would see every file in the directory, except the hidden files. A hidden file cannot be copied or erased.

ARCHIVE FILES

An 'archive' file is one that has not been copied (By a backup program) since it was last changed. Archive files are usually data files that are changed every day, however, any file can be an archive file.

The program KCOPY, while being a file transfer program, can be used simply to display a list of files and their attributes. See USING KCOPY, later in this manual.

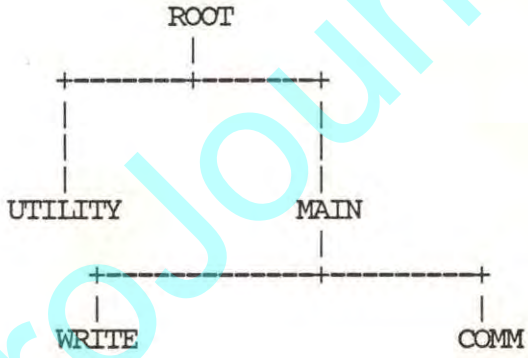
In computer books, the generic name for a file is <filename>. When you see this, substitute the name of the file you want to use, but do not type the angle brackets < >. Include the file extension, if there is one.

Directory names have up to eight characters with the same restrictions as filenames, but with no extensions.

DIRECTORIES

A directory is the place on a diskette or fixed disk where a file is stored. Directories have value relative to each other; some directories are subordinate to other directories. The first directory is called the root directory. There can be only one root directory on every diskette or fixed disk. The root directory is created automatically when you format a diskette or a fixed disk. Branching from the root directory, there can be other directories which contain logical groupings of files, or other directories, which in turn contain files.

Here is an example of the way your fixed disk is probably set up:



The structure of the above directory organization is called a "directory tree". The root directory is the "parent directory" for the entire tree. Subdirectories can be parent directories also, by having subdirectories themselves. In the above directory tree the directory MAIN is a subdirectory of the directory ROOT. However it is also the parent directory of the directory WRITE.

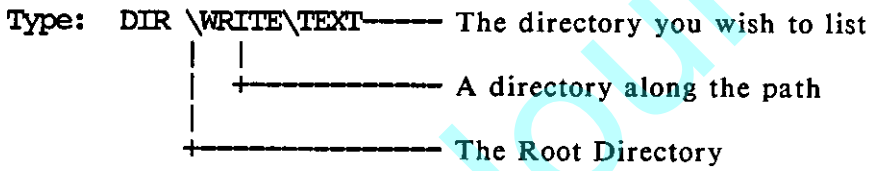
The structure of the above directory organization is called a "directory tree". When you loaded your fixed disk, the autoload procedure created a directory tree on it.

PATHS

A directory path is a route through the directory tree. When using certain commands, you must specify the path to the files with which you are working. There are two types of paths: absolute paths and relative paths.

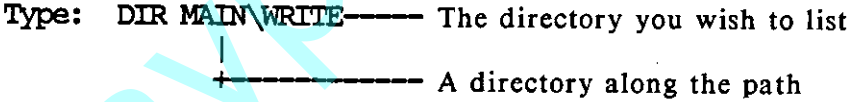
ABSOLUTE PATHS

When specifying an absolute path, you *must begin at the root directory*, no matter what directory you are currently in. For example, if you are logged on to the C drive, in a subdirectory called DATA, and you wish to list the files in a subdirectory of WRITE called TEXT, then from the C> prompt:



RELATIVE PATHS

Relative paths start at the current directory (the directory that you are in) and involve only subdirectories of the current directory. For example, if you are in the directory ROOT, and you want to see a listing of the files in the subdirectory WRITE from the C> prompt,



If you wish to perform an operation (DIR, COPY, KCOPY) on a file or directory that is above your current position in the directory tree, then use an absolute path. Otherwise use a relative path.

Before proceeding further, look up the DIR, COPY, CHANGE DIRECTORY and PATH commands, and the definition of 'wild cards' in your MS-DOS USER'S GUIDE. Pay special attention to the COPY command. Once you have some blank formatted diskettes (See FORMATTING A DISKETTE), experiment: List directories, change from directory to directory, copy a file, use PATH to link two directories. Use the wild cards in copying and displaying files.

LISTING A DIRECTORY

When a directory is listed, the listing consists of other directories, file names, their size in bytes, and the time and date of their last change.

To list all files on the current directory or the DEFAULT DRIVE, which is the drive onto which you are currently logged, then at the system prompt, type:

DIR
Press the ENTER key.

To list all files on a SPECIFIC DRIVE, at the system prompt, type the DIR command, then type the drive letter followed by a colon. For example:

DIR A:
Press the ENTER key.

To list all files with a SPECIFIC FILE NAME which are on the disk in the current directory of the DEFAULT DRIVE, at the system prompt, type DIR and the file name, for example:

DIR SMITH
Press the ENTER key.

To list all files with a SPECIFIC FILE NAME which are on a SPECIFIC DRIVE, at the system prompt, type:

DIR c:filename.ext
Press the ENTER key.

To list all files with a SPECIFIC EXTENSION which are on the current directory of the default drive, at the system prompt, type:

DIR .EXT
Press the ENTER key.

To pause the directory listing after the screen is filled, type a /P switch after the command, for example:

DIR B:/P
Press the ENTER key.

To display only file names (five per line) in a Wide Display, type a /W switch after the command, for example:

DIR B:/W
Press the ENTER key.

A directory listing the files on a diskette may look like:

```
Directory of C:\MAIN\WRITE

MAILMRGE OVR          13568      8-09-84    10:15a
WINSTALL EXE          40960      8-09-84    10:15a
WS       COM           4096     11-21-84     9:30a
WS       INS          45824     11-21-84    10:15a
WSMSGS                29056     11-23-84     6:35p
WSOVLY1               41216     12-01-84    12:49p
        6 FILE(S)          2892387 bytes free
```

For further information on manipulating the named directories, see the section on Working with Directories or the MS-DOS USER'S GUIDE.

D

D is a program that tells the user exactly what files exist in specific directories, and how many kilobytes those files use. To use D, start from the UTILITY directory.

Type: D
Press ENTER.

Paths and drives may be specified when using D (see the section on PATHS). For example, to examine the files in a subdirectory called DATA which is on a diskette in the A drive, type:

```
D A:\DATA ------ Subdirectory
  | |
  | +---------- Root directory
  |
  +------------ Drive designation
```

WORKING WITH DIRECTORIES

The named directories can be created, modified, copied, and erased, just like files.

CREATING A SUBDIRECTORY

To CREATE a subdirectory of the current directory, type:

MD <NEWNAME>
Press the ENTER key.

Substitute the name of the directory you wish for <NEWNAME>.

DISPLAYING THE FILES IN THE CURRENT DIRECTORY

To display the current directory, type:

DIR
Press the ENTER key.

DISPLAYING THE NAME OF THE CURRENT DIRECTORY

To display the name of the directory you are currently working in, type:

CD
Press the ENTER key.

CHANGING TO A SUBDIRECTORY

To change from the current directory to a directory that is lower on the directory tree, type:

CD <OTHERDIR>
Press the ENTER key.

Substitute the destination directory name for <OTHERDIR>. When changing to a directory that is not beneath the current directory, you must specify an absolute path, from the main directory. Start with a backslash (\) (See section on PATHS).

CHANGING TO A DIFFERENT DIRECTORY

To change to another directory, type CD and the filenames in the desired path, for example:

CD \ABLE\BAKER\CHARLIE
Press the ENTER key.

GOING TO THE PARENT DIRECTORY

To go to the parent directory of the working directory, type:

CD ..
Press the ENTER key.

REMOVING A SUBDIRECTORY

First, use the DEL command to delete all files in the directory you want to delete. Then, from the main directory, remove the subdirectory by substituting UNWANTED with the name of the directory you want to delete and typing:

RD UNWANTED
Press the ENTER key.

For further information, see the MS-DOS USER'S GUIDE.

WORKING WITH DISKETTES

FORMATTING A DISKETTE

All new diskettes must be formatted to prepare them to receive information. When a diskette is formatted for the KAYPRO 16E, it is magnetically imprinted with 80 circular tracks, with each track having 9 sectors.

CAUTION: Formatting a diskette erases all the information which is on it.

To format a diskette:

1. Put a new diskette in the diskette drive, and close the drive door.
2. From the Master Menu, use the down-arrow key to move the darkened bar to *Utilities.*
3. Press the right-arrow key.
4. Choose *Format a Floppy Disk* by pressing the right-arrow key.
5. Follow the prompts.

COPYING DISKETTE FILES TO THE FIXED DISK

When transferring files to the fixed disk, be aware of the following points:

1. All file operations that use a drive other than the current logged drive will take place in the root directory of the other drive if no path is specified. The current path on the logged drive is not taken into account.

2. The limited capacity of diskettes makes named directories impractical. Therefore, files on diskette will normally be in the root directory.

This leaves you with two choices when moving files from diskette to the fixed disk.

1. The computer can be in the destination directory, and the file will end up in the correct (destination) directory by default.

2. The computer can be in the root directory on the fixed disk or the floppy disk drive, and you specify the correct path for the destination file specification.

Then, use the standard command syntax for copying files. See COPYING FILES.

COPYING FILES

From the Master Menu, choose *Copy Files.* Follow the instructions on the screen.

You can copy groups of files by substituting wildcard characters in the file specification. Wildcard characters are the asterisk and the question mark. A question mark will match with any one character; the asterisk can substitute for more than one character. Examples of wildcard file specifications are:

TH??FILE.TXT	will match with THATFILE.TXT, THISFILE.TXT, and THEMFILE.TXT.
THISFILE.*	selects THISFILE.TXT, THISFILE.DOC, THISFILE.ASM and THISFILE.COM.
TH*.*	allows a match with any file where the first two letters of the filename are TH. You would get THEM.COM, THOSE.ASM, THE.001, THATFILE.ASM, etc.
.	matches with all files in the current directory.

For more information about copying files, see the COPY section in the MS-DOS USER'S GUIDE.

KCOPY

There is another way to copy files between diskette and fixed disk: KCOPY. KCOPY is a utility program that enables its user to designate specific files and directories, and copy them.

KCOPY uses the same syntax as the COPY command in MS-DOS, with two important differences: KCOPY allows the user to copy a file onto itself, and KCOPY copies everything. KCOPY will copy directories, the files in directories, subdirectories, the files in subdirectories, etc. If you KCOPY a complete directory tree to a blank formatted diskette, KCOPY will create directories on the blank diskette. Wherever you designate a directory to be copied, if the target diskette does not have that directory on it, KCOPY will create that directory on the target.

Your KAYPRO 16E has two types of video displays available: monochrome and color (on the internal monitor, color is displayed in varying intensities of green). KCOPY *must* be operated using the color video display.

To use KCOPY, place a diskette containing programs you wish to copy in drive A, then from the Utility directory,

Type: KCOPY A: C:
Press ENTER.

This will copy all the files and directories from the diskette in the A drive to the Utility directory of the fixed disk (the C drive).

Here is where KCOPY differs from COPY. KCOPY stops and allows you to select exactly which files will be transferred. You will see a menu of function keys with explanations at the top of your screen, and a listing of the files in your root directory at the bottom.

MARKING FILES

On the far left hand side of the file list, you will see a column of 'M's, this means every file and directory is marked: designated to be copied when copying begins. All the files and directories displayed on your screen are marked for copying. If you were to start copying now, every file and every directory would be copied.

SCROLLING THROUGH FILES AND DIRECTORIES

Use the down arrow key to move down through the files, the up arrow key to move up. Pressing the PG UP key scrolls up a screen at a time, Pressing the PG DN key scrolls down. Pressing the HOME key takes the highlighted bar to the top of the list, Pressing the END key takes it to the bottom.

Another column on the right side of your screen designates the amount of kilobytes in each file. If the highlighted bar is positioned on a directory name, "- - -" will appear in the right column. When the highlighted bar is on a directory, rather than a file, pressing the right arrow key will take you into that directory. The displayed list will disappear and a list of the directory the highlighted bar was resting on will appear. This is how you mark files in a subdirectory. To return to the original directory, press the left arrow key.

THE FUNCTION KEYS FOR KCOPY

F1 - MARK HIGHLIGHTED NAME FOR COPY

Use this key to mark a file or directory for copying.

ALT-F1 - UNMARK HIGHLIGHTED NAME

Use this key sequence (Press the ALT key, hold it down, then press the F1 key) to unmark a file. For example, you may wish to copy everything from one diskette to another, except for four special files. You would unmark those files and then start the copy operation.

The same holds true for directories. Remember that if you unmark a directory, then that directory, all the files within it, all subdirectories and the files within them, *will not be copied.*

F2 - MARK ALL NAMES

This option allows you to mark every file and directory on a diskette.

ALT-F2 - UNMARK ALL NAMES

This option allows you to unmark every file and directory on a diskette. If a diskette contains many files, and you wish to copy only a few, you may want to unmark all the files and directories, then mark the ones you wish to copy.

F3 - MARK BY TYPE

This option allows you to mark names according to type. When you press F3, you see the prompt "What file type letter(s)?" There are four types: directories, hidden files, archive files, and system files.

DIRECTORIES

By entering a backslash (\), you tell KCOPY to mark only directories, not the files within them. Remember, KCOPY begins with all files marked, so to copy only a directory structure you would first unmark all files (ALT-F2), then mark by type and choose directories.

HIDDEN FILES

Mark any hidden file by entering an H. A 'hidden' file is a file that is in the directory, but cannot be viewed from MS-DOS. If you enter a DIR command at the MS-DOS prompt, you will see every file in the directory, except the hidden files. KCOPY lists and copies hidden files.

ARCHIVE FILES

Notice the column directly to the left of the filename column. The 'A' stands for archive. An 'archive' file is one that has not been copied (by a backup program) since the last time it was changed. Archive files are usually data files that are changed every day, however, any file can be an archive file. KCOPY is a backup program. Every time a copy operation takes place you are asked, "Clear archive bit after copying?". Answer yes, copy a file, and the file ceases to be an archive file. The archive column appears empty. If the archive bit is to be cleared, the source diskette must not be write protected.

SYSTEM FILES

By entering an S, you tell KCOPY to mark only the files that compose the operating system, such as MSDOS.SYS. There is a column to the left of the name column that will contain an S if the highlighted bar is currently positioned on a system file.

ALT-F3 - UNMARK BY TYPE

This allows you to unmark files using the conventions described in F3 - MARK BY TYPE.

F4 - MARK BY PATTERN

This option allow you to mark files using wild cards (See "wild cards" in your MS-DOS USER'S GUIDE index). For example, if you wished to mark every file with a DTA extension, you would press F4, and the at the prompt:

Type: *.DTA
Press ENTER

You will be asked whether or not you wish to mark files in subdirectories, then KCOPY will mark all the files with a .DTA extension.

ALT-F4 - UNMARK BY PATTERN

This allows you to unmark files using conventions described in **F4 - MARK BY PATTERN.**

THE OPERATION COMMANDS IN KCOPY

F5 - START COPYING FILES

Pressing the F5 key begins the copy operation.

F6 - QUIT KCOPY

Pressing the F6 key ends KCOPY and returns the system to MS-DOS.

F7 - REPLACE SOURCE DISK

Pressing the F7 key enables the user to change the logged diskette drive. If you wish to switch diskettes or access another drive, use this option.

F8 - TRANSFER FILES OVER DATA LINK

This option allows the user to transfer marked files and directories to another computer, through the serial port of the computer running KCOPY. KCOPY automatically sends the files, and the user should have some type of telecommunications software running on the other computer, waiting to receive the files. Set the telecommunications software on the receiving computer to the following parameters.

Protocol:	XMODEM/B CRC
Baud Rate:	9600
Data Bits:	8
Stop Bit:	1
Parity:	NONE

The XMODEM protocol will not allow the transfer of subdirectories or directory structures. If you wish to copy subdirectories or directory structures over a data link, you must run the KAYPRO program CATCH.EXE on the receiving computer instead of telecommunications software. At the system prompt of the receiving computer:

Type: CATCH
Press the ENTER key.

Note: The F8 option does not work with modems. It works only with a direct, computer-to-computer connection.

THE KCOPY SWITCHES

Switches are characters placed at the end of the command line that cause KCOPY to operate in a specific manner. These are the switches.

/A Copies all archive files and clears the archive bit.

/B Marks only archive files.

/C Copies all files and directories.

/M Marks according to specified wildcard pattern.

/U Unmarks according to specified wildcard pattern.

/S Allows the user to swap diskettes before KCOPY runs.

/X Copies all files and directories to a data link.

The /A, /C, and /X options bypass the KCOPY menu and starts copying immediately. For example, to cause KCOPY to bypass the mark/un-mark menu and begin the copy operation immediately, place the /C "bypass switch" at the end of the command:

Type: KCOPY A:*.* C: /C
Press the ENTER key.

This command would copy every file and directory from drive A to drive C, without displaying a menu or a file and directory list.

ESCAPE AND CONTROL-C

To stop any operation at any time, and return to the KCOPY main menu, press either the Escape key, or simultaneously press the control (Ctrl) and the C keys.

BACKING UP FILES

It is imperative that all files be backed up on diskettes. If a fixed disk fails, it can be reformatted, repaired, or replaced, but the information on it cannot. However, if you have backed up your fixed-disk files onto diskettes, they can be reloaded onto a new or repaired fixed disk.

1. Following the instructions in Formatting a Diskette, format one diskette for each named directory containing software. If a DIR shows more than 300 kilobytes worth of files in one directory, you may need more than one diskette per directory.

2. Place a blank, formatted diskette in the diskette drive.

3. From the Master Menu, choose *Copy Files.*

4. If the combined size of the files will fit on a diskette, then, when asked for the source, type the source as indicated on the right of the screen.

5. When asked for destination, type: a:
   Press the ENTER key.

   The name of each file will be displayed on the screen as it is copied onto drive A.

6. When the copy process is complete, label the diskette(s) with the name of the directory from which the files came.

7. Repeat steps 2 through 4 for each named directory on drive A.

DATA FILES

Data files, especially business data files, such as those from an accounting system, require a more elaborate backup. The following system is the *MINIMUM* and the least complicated method.

1. On day 1, back up all data on a blank diskette. This diskette, or diskettes, is the Grandfather.

2. At the end of day 2, back up all data on a second blank diskette. This diskette is the Father.

3. Following the end of business on day 3, back up that day's data on the Grandfather diskette. This process will overwrite the old information with new data. This diskette is now the new Father, and the old Father becomes the Grandfather.

4. Repeat this procedure at the end of each business day. These steps illustrate the basic sequence of a simple backup schedule for data diskettes. The worst that can happen is that two days' data will have to be reconstructed. Some companies will carry this sequence to a Son generation of backup and always keep the Grandfather in another location. The old Grandfather (new Son) is brought in each day for backup, and the old Father (new Grandfather) is removed from the premises. That way, even a fire or other catastrophe will not destroy the business records. We are talking about the accounting records of a business. Without them, a business cannot survive.

RENAMING FILES

To change a file name, exit the Master Menu by pressing ESCape; then type:

REN PRESENT.EXT NEWNAME.EXT

If the file is on another drive, the drive letter and a colon must be given after the command, REN.

ERASING FILES

Erasing of files is done with the DEL command.

To erase a file:

1. Exit the Master Menu by pressing the Escape key.
2. Go to the directory containing the file.
3. Type: DEL or ERASE
4. Add the file name with its file extension.
   Press the ENTER key.

   Example: DEL VEHICLE.EXP

   This will erase VEHICLE.EXP from the current directory.

Wildcard characters may be used in the filename. (See the MS-DOS USER'S GUIDE for information about wildcards.) Be careful using wildcards when erasing files, as it is quite easy to delete files that you really want to keep.

LEARNING ABOUT THE STATUS OF A DISK

After the system prompt, enter the command: CHKDSK

This utility will give the following status report on a disk:

```
362496  bytes total disk space
 22528  bytes in 2 hidden files
 18432  bytes in 8 user files
321536  bytes available on disk

262144  bytes total memory
237568  bytes free
```

Other uses of the CHKDSK utility are itemized in the MS-DOS USER'SGUIDE.

USING OTHER FEATURES

COMBINING SEVERAL FUNCTIONS IN ONE COMMAND LINE

Command "piping" lets you give more than one command to the system at a time. You can combine normal commands, filters, and redirection into one command line. Pipes are specified with the vertical bar (|) placed between commands.

To sort the output of the directory command and list it on the screen one full screen at a time, type:

```
DIR | SORT | MORE
Press the ENTER key.
```

To sort the listing of the current directory and write it to a disk file (as, for example, DISK.DIR) instead of printing it on the screen, type:

```
DIR | SORT | >DISK.DIR
Press the ENTER key.
```

For further information, see the MS-DOS USER'S GUIDE.

EDITING COMMAND LINES

When you enter a command after the C> prompt, the command is automatically saved in a "command template". By using the function keys on the left of the keyboard, you can recall, change, and then re-execute a command line.

If you display part of a line and type new characters, the following characters in the line will be overwritten. To insert characters, press the Ins(ert) key on the right of the keyboard. To stop insertion, press Esc(ape).

To delete characters to the right of the cursor, press Del(ete).

To void the current input and leave the template unchanged, press Esc(ape).

After the C> prompt, you can use the following function keys to display the contents of the template:

F1 <COPY1>
Displays one character at a time. The right-arrow key does the same thing.

F2 <COPYUP>
Displays all characters up to a specified character. Press F2 followed by a character in the command line. If you press ENTER, the rest of the line will be deleted.

F3 <COPYALL>
Displays all the remaining characters.

F4 <SKIPUP>
Skips up to a specified character, deleting the characters over which it skips. Press F4 followed by a character in the command line.

F5 <NEWLINE>
Makes the new, edited line the new template without executing the command. Press F3 to display the edited line.

F6, F7, F8, F9, and F10 have no functions.

When you are done editing a line, press ENTER. The command as it appears on the screen will be executed and will become the new command template.

FINDING A SEQUENCE OF CHARACTERS

To find a string of characters in specific files, use the FIND command. It has the form:

FIND /V /C /N "string" filename(s)
Press the ENTER key.

The switch letters following the slashes are optional. Their functions are:

/V displays all lines not containing the specified string

/C prints the count of lines containing a match in each of the files

/N precedes each line by its relative line number in the file

The string of characters must be in quotes. Type double quotes around a string that has quotes in it.

REDIRECTING INPUT AND OUTPUT

You can redirect screen output and keyboard input to and from disk files rather than the screen and keyboard.

The greater than symbol (>) redirects output normally sent to the screen to a disk file or printer.

The less than symbol (<) redirects input.

Possible uses are:

To send the directory listing to a file called MYFILES.DIR rather than to the screen, type:

```
DIR >MYFILES.DIR
Press the ENTER key.
```

This would overwrite any prior version of MYFILES.DIR.

To append the directory listing onto the end of MYFILES.DIR, rather than overwriting the older version, type:

```
DIR >>MYFILES.DIR
Press the ENTER key.
```

To sort the list of names in NAMES.DOC and then send them to your printer, type:

```
SORT <NAMES.DOC >PRN
Press the ENTER key.
```

See more about this in the MS-DOS USER'S GUIDE.

DISPLAYING A FILE ON SCREEN

There is a quick way to view what is in a file.

1. Get the system prompt on the screen.

2. Type: TYPE
   Press the space bar once.
   Type the name of the file.
   Press the ENTER key.

   The contents of the file will quickly scroll by.

3. To suspend the scrolling, simultaneously depress the Ctrl key and the S key.

4. To continue the scrolling, press any key.

To view the contents of the file one screen at a time, type:

TYPE FILENAME.EXT | MORE
Press the ENTER key.

To display another screen of information, press the ENTER key.

TURNING OFF THE CONTROL-C FUNCTION

Some programs have a Ctrl-C command, and MS-DOS has a Ctrl-C function. To keep the MS-DOS Ctrl-C function from affecting a program Ctrl-C function, you can turn it off by typing:

BREAK OFF
Press the ENTER key.

When you are done with the program, turn Ctrl-C back on by typing:

BREAK ON
Press the ENTER key.

CLEARING THE SCREEN WHEN USING MS-DOS

After the system prompt, type: CLS
Press the ENTER key.

SWITCHING SCREEN TYPES

The KAYPRO 16E screen is set for color operation, the colors displayed on the internal monitor show as different intensities of green. If you were to connect a color monitor to the computer, the monitor would function in full color.

For tasks such as editing text, you may want to configure the internal monitor to operate in a high-resolution, monochrome mode, or to use an external high-resolution, monochrome monitor. To do this, at the system prompt:

Type: VSWITCH
Press the ENTER key.

The program will run, you will see a display of its version number and the system prompt will return.

Once VSWITCH has been run, you may switch to the monochrome mode by simultaneously pressing the CTRL, ALT, and the greater-than (>) keys.

To change it back to color operation, simultaneously press the CTRL, ALT, and the less-than (<) keys.

The MODE command allows you to do this from your operating system. See below.

USING THE MODE COMMAND

The MODE command enables you to change the video output from the standard color display to a monochrome display, or a black and white display. Use this command if you have an external monitor, and you wish to configure the video output for it. MODE also enables you to change the number of columns and rows your screen displays from the standard 80 by 25, to any of several options. To use the MODE command:

Type: MODE <DISPLAY>
Press the ENTER key.

"<DISPLAY>" is where you enter the part of the command that tells the computer what type of display you wish. Below is a list of possible displays.

Command	Display
MONO	Selects monochrome, 80 columns by 24 rows.
BW40	Selects 40 by 25 black and white text mode on a color monitor.
BW80	Selects 80 by 25 black and white text mode on a color monitor.
CO40	Selects 40 by 25 color text mode.
40	Selects 40 columns in the current mode. Forty column monochrome is not available.
80	Selects 80 columns in the current mode.

For example: If you wished to switch from monochrome to color mode, and retain the same screen format, you would type:

MODE CO80
Press the ENTER key.

The MODE command also enables you to change the the operating mode of the parallel or serial port, and re-route the printer output. See the MS-DOS USER'S GUIDE.

OTHER MS-DOS FEATURES

Some commands which are not covered in this user's guide but are covered in the MS-DOS USER'S GUIDE are:

AUTOEXEC.BAT	automatic program execution files
EDLIN	to create text or write programs
FC	to compare files
LINKER	to link object modules (for programming purposes)
PRINT	to print a text file on a printer while continuing work on the computer
PROMPT	to change the MS-DOS command prompt to, for instance, the time, date, current directory, version number
RECOVER	to recover a file or disk which has bad sectors
REM	to display remarks in a batch file
SET	to set a string value equivalent to another string
VER	to display the version number of MS-DOS
VERIFY	to change to a mode which will verify that all files are written correctly to disk

TECHNICAL INFORMATION

TROUBLESHOOTING

If you have difficulties when operating your KAYPRO 16E, *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 16E.

POSSIBLE PROBLEMS, 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. **No video display, or parts of the screen not readable.** You may be in monochrome mode when the program you are running needs a color screen. If you have run VSWITCH, simultaneously press the CTRL, ALT and less-than (<) keys. If you have not run VSWITCH, then exit from the program and type the command: MODE CO80 and press ENTER.

4. **Strange characters on the screen or no characters.** You might have been in monochrome mode when you invoked a program that uses graphics or colors. Press the CTRL, ALT and DEL keys to reboot the computer and restart the program.

5. **Program will not load.** Drive door may not be closed, *or* the diskette in the drive isn't the diskette expected by the operating program, *or* the diskette isn't in the drive correctly (label side to the left and the write-protect notch down).

6. **Program will not execute.** Diskette may have been damaged. Try making another copy.

7. **Program not responding as expected.** You're asking the program to do something it can't. When all else fails, read your manual.

8. **No response from keyboard.** You may have responded incorrectly to a prompt or menu selection. Check for error message from program.

9. **No response from keyboard.** 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." Turn the computer off and then back on. This will perform a keyboard reset.

10. **No response from keyboard.** Incorrect instruction sequence. Check the appropriate manual to insure that you are using the correct operations and sequence.

11. **No response from keyboard.** Check the connections of the keyboard to the computer.

MAINTENANCE

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

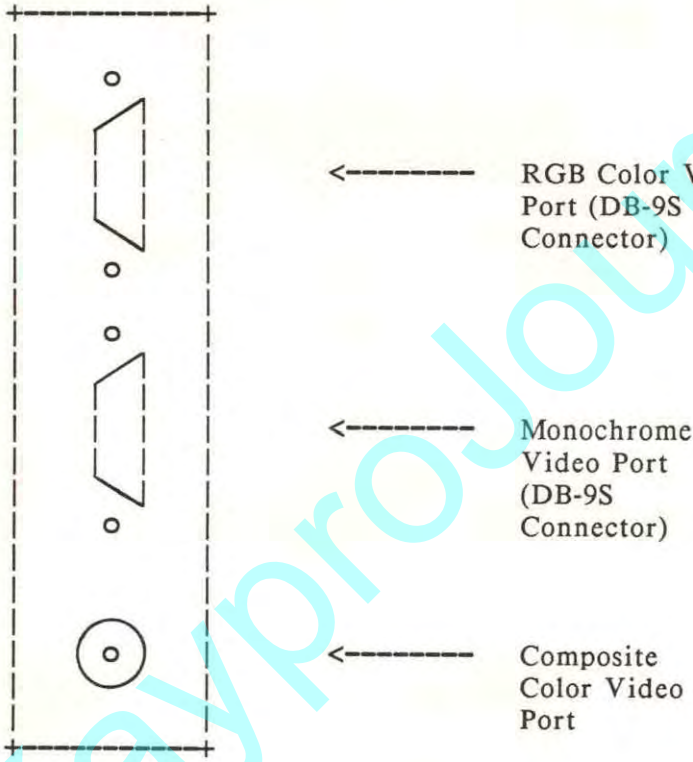
It is important to keep the computer and diskettes dust-free. The computer itself can be cleaned with a damp, lint-free cloth. A mild kitchen detergent can be used, if necessary.

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

Occasionally the filter on the back panel will need to be cleaned. *Do not remove the screws on the grill holder.* Simply grasp the center section with two fingers and pull until the grill pops out. Clean the filter by gently agitating it in water and mild soap or detergent. Let it dry, replace it, and replace the grill.

THE VIDEO PORTS

There are three ports allowing video output from the KAYPRO 16E. These are: an RGB port, a monochrome video port and a composite video port. These ports are located on the left side of the computer next to the slot containing the serial and parallel ports. The configuration for these ports is shown below.



CONNECTING A PRINTER

PARALLEL PRINTER

If you have a printer with a Centronics 36-pin connector, connect your computer and your printer with a KAYPRO 16E parallel printer cable (available from your dealer). Plug the Centronics end of the cable into the connection on the printer and the DB-25 plug end of the cable into the DB-25 socket on the side of your KAYPRO.

If you have a non-standard connector on your printer or cannot find a suitable cable already assembled, the following pin assignments should prove useful to the person who fabricates your cable.

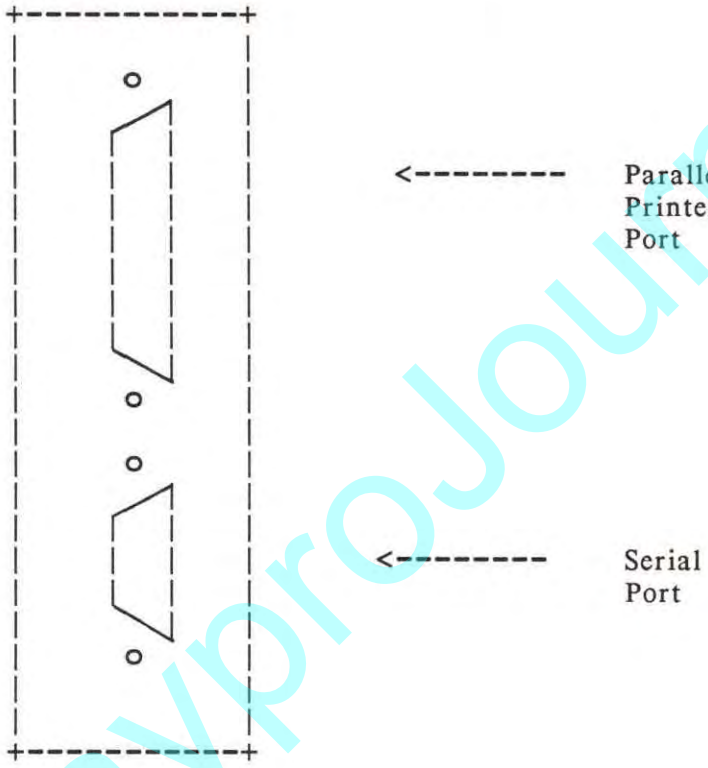
PARALLEL PRINTER CABLE

DB-25 CONNECTOR (KAYPRO) PIN	SIGNAL	CENTRONICS (PRINTER) PIN
1	Strobe	1
2	Data 0	2
3	Data 1	3
4	Data 2	4
5	Data 3	5
6	Data 4	6
7	Data 5	7
8	Data 6	8
9	Data 7	9
10	Acknowledge	10
11	Busy	11
12	Paper End	12
13	Select	13
14	Auto Feed	14
15	Fault	32
16	Initiate	31
17	Select In	36
18	Ground	34
19	Ground	19
20	Ground	21
21	Ground	23
22	Ground	25
23	Ground	27
24	Ground	29
25	Ground	30

NOTE: ALL CABLES USED ON THE KAYPRO 16E MUST BE SHIELDED IN ORDER TO COMPLY WITH FCC REGULATIONS.

I/O CONNECTORS

The following figure should be used as reference for the I/O interface between the KAYPRO 16E computer and any peripherals you use.



SERIAL DEVICES

Your KAYPRO 16E was designed to be as easy to use as possible. The standard expanded system consists of your computer connected to a standard parallel printer via the parallel connector. This leaves the serial connector on the side of the computer open for serial devices such as modems and serial printers.

If you want to connect your KAYPRO 16E to a serial device, your dealer should be able to supply you with the correct cable. If the proper cable is not available through your dealer, the following information should be useful to the person who fabricates the cable.

The modem cable and the serial printer cable are not interchangeable, so if you want to use both a modem and a serial printer, it will be necessary to have two different cables available.

Please note that Kaypro Corporation makes no guarantees about the suitability of a given serial device for use with the KAYPRO 16E serial interface. Before you purchase any serial device, insist upon a demonstration of its operation.

DB-9S SERIAL PORT

KAYPRO 16E Serial Port Pin Assignments
(Primary Asynchronous Communications)

DB-9S CONNECTOR PIN	SIGNAL
1	Data Set Ready
2	Transmit Data
3	Clear to Send
4	Receive Data
5	Signal Ground
6	Data Terminal Ready
7	Carrier Detect
8	Request to Send
9	Ring Detect

SERIAL PRINTER CABLE (DCE)

DB9S CONNECTOR (KAYPRO) PIN	SIGNAL	RS-232-C (PRINTER) PIN
1	Data Set Ready	20
2	Transmit Data	3
3	Clear to Send	4
4	Receive Data	2
5	Signal Ground	7
6	Data Terminal Ready	8
7	Carrier Detect	6
8	Request to Send	5
9	Ring Indicator	22

MODEM CABLE (DTE)

DB-9S CONNECTOR (KAYPRO) PIN	SIGNAL	RS-232-C (MODEM) PIN
1	Data Set Ready	6
2	Transmit Data	2
3	Clear to Send	5
4	Receive Data	3
5	Signal Ground	7
6	Data Terminal Ready	20
7	Carrier Detect	8
8	Request to Send	4
9	Ring Detect	22

VIDEO CONNECTOR FOR EXTERNAL RGB MONITOR

The video connector that is used with an external RGB monitor is located on the side of the computer near the parallel and serial connectors. The cable used to connect an external monitor and the KAYPRO 16E computer requires a standard 9-pin plug and is available through your dealer. *Before plugging the cable into your computer, refer to the illustration of I/O connectors showing the position of the connectors.* The serial port on your computer has a DB9S female connector, and it looks exactly the same as the DB9S connectors used for the RGB and monochrome monitor outputs. Although the connectors are the same type, they are *NOT* interchangeable.

EXTERNAL RGB MONITOR PIN ASSIGNMENTS

1. Ground
2. Ground
3. Red Input
4. Green Input
5. Blue Input
6. Intensity
7. No Connection
8. Horizontal Sync
9. Vertical Sync

EXTERNAL MONOCHROME MONITOR PIN ASSIGNMENTS

1. Ground
2. Ground
3. Not Connected
4. Not Connected
5. Not Connected
6. Intensity
7. Video
8. Horizontal
9. Vertical

VIDEO CONNECTOR FOR COMPOSITE VIDEO MONITOR

The video connector that is used with an external composite video monitor is located near the parallel and serial connectors on the side of the computer. It uses a standard composite video cable that is available through your dealer.

MEMORY MAP OF THE KAYPRO 16E COMPUTER

System ROM, BIOS	FFFFFh FE000h
Reserved	EFFFFh CC000h
Hard Disk Control	CBFFFh C8000h
Reserved	C7FFFh BC000h
Color Graphics I/O Buffer (when selected)	BBFFFh B8000h
Monochrome I/O Buffer (when selected)	B7FFFh B0000h
Reserved	AFFFFh A0000h
Memory Expansion (*)	9FFFFh 40000h
User Memory	3FFFFh 00000h

(*) Available as an option from your dealer

I/O PORT ADDRESSES

PORT # (HEX)	DEVICE/FUNCTION
000-00F	DMA Chip 8237A-5
020-021	Interrupt 8259A
040-043	Timer 8253-5
060-063	PPI 8255A-5
080-083	DMA Page Registers
0A0-0AF	NMI Mask Register
2F8-2FF	Asynchronous Communications (Secondary)
320-32F	Hard Disk
378-37F	Parallel Printer
3B0-3BF	Monochrome (when selected)
3D0-3DF	Color/Graphics (when selected)
3F0-3F7	Floppy Diskette
3F8-3FF	Asynchronous Communications (Primary)

ASCII CHART WITH TEXT ATTRIBUTES

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
00	0	Blank (Null)	Ctrl 2		Black	Black	Non-Display
01	1	☺	Ctrl A		Black	Blue	Underline
02	2	☻	Ctrl B		Black	Green	Normal
03	3	♥	Ctrl C		Black	Cyan	Normal
04	4	♦	Ctrl D		Black	Red	Normal
05	5	♣	Ctrl E		Black	Magenta	Normal
06	6	♠	Ctrl F		Black	Brown	Normal
07	7	•	Ctrl G		Black	Light Grey	Normal
08	8	■	Ctrl H, Backspace, Shift Backspace		Black	Dark Grey	Non-Display
09	9	○	Ctrl I		Black	Light Blue	High Intensity Underline
0A	10	◙	Ctrl J, Ctrl↵		Black	Light Green	High Intensity
0B	11	♂	Ctrl K		Black	Light Green	High Intensity
0C	12	♀	Ctrl L,		Black	Light Red	High Intensity
0D	13	♪	Ctrl M, ↵, Shift↵		Black	Light Magenta	High Intensity
0E	14	♫	Ctrl N		Black	Yellow	High Intensity
0F	15	☼	Ctrl O		Black	White	High Intensity
10	16	►	Ctrl P		Blue	Black	Normal
11	17	◄	Ctrl Q		Blue	Blue	Underline
12	18	↕	Ctrl R		Blue	Green	Normal
13	19	‼	Ctrl S		Blue	Cyan	Normal
14	20	¶	Ctrl T		Blue	Red	Normal
15	21	§	Ctrl U			Magenta	Normal
16	22	▬	Ctrl V		Blue	Brown	Normal
17	23	↨	Ctrl W		Blue	Light Grey	Normal

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
18	24	↑	Ctrl X		Blue	Dark Grey	High Intensity
19	25	↓	Ctrl Y		Blue	Light Blue	High Intensity Underline
1A	26	→	Ctrl Z		Blue	Light Green	High Intensity
1B	27	←	Ctrl [, Esc, Shift Esc, Ctrl Esc		Blue	Light Cyan	High Intensity
1C	28	└	Ctrl \		Blue	Light Red	High Intensity
1D	29	↔	Ctrl]		Blue	Light Magenta	High Intensity
1E	30	▲	Ctrl 6		Blue	Yellow	High Intensity
1F	31	▼	Ctrl —		Blue	White	High Intensity
20	32	Blank Space	Space Bar, Shift, Space, Ctrl Space, Alt Space		Green	Black	Normal
21	33	!	!	Shift	Green	Blue	Underline
22	34	"	"	Shift	Green	Green	Normal
23	35	#	#	Shift	Green	Cyan	Normal
24	36	$	$	Shift	Green	Red	Normal
25	37	%	%	Shift	Green	Magenta	Normal
26	38	&	&	Shift	Green	Brown	Normal
27	39	'	'		Green	Light Grey	Normal
28	40	(	(	Shift	Green	Dark Grey	High Intensity
29	41	)	)	Shift	Green	Light Blue	High Intensity Underline
2A	42	*	*	Note 1	Green	Light Green	High Intensity
2B	43	+	+	Shift	Green	Light Cyan	High Intensity
2C	44	,	,		Green	Light Red	High Intensity
2D	45	—	—		Green	Light Magenta	High Intensity
2E	46	.	.	Note 2	Green	Yellow	High Intensity

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
2F	47	/	/		Green	White	High Intensity
30	48	0	0	Note 3	Cyan	Black	Normal
31	49	1	1	Note 3	Cyan	Blue	Underline
32	50	2	2	Note 3	Cyan	Green	Normal
33	51	3	3	Note 3	Cyan	Cyan	Normal
34	52	4	4	Note 3	Cyan	Red	Normal
35	53	5	5	Note 3	Cyan	Magenta	Normal
36	54	6	6	Note 3	Cyan	Brown	Normal
37	55	7	7	Note 3	Cyan	Light Grey	Normal
38	56	8	8	Note 3	Cyan	Dark Grey	High Intensity
39	57	9	9	Note 3	Cyan	Light Blue	High Intensity Underline
3A	58	:	:	Shift	Cyan	Light Green	High Intensity
3B	59	;	;		Cyan	Light Cyan	High Intensity
3C	60	<	<	Shift	Cyan	Light Red	High Intensity
3D	61	=	=		Cyan	Light Magenta	High Intensity
3E	62	>	>	Shift	Cyan	Yellow	High Intensity
3F	63	?	?	Shift	Cyan	White	High Intensity
40	64	@	@	Shift	Red	Black	Normal
41	65	A	A	Note 4	Red	Blue	Underline
42	66	B	B	Note 4	Red	Green	Normal
43	67	C	C	Note 4	Red	Cyan	Normal
44	68	D	D	Note 4	Red	Red	Normal
45	69	E	E	Note 4	Red	Magenta	Normal
46	70	F	F	Note 4	Red	Brown	Normal
47	71	G	G	Note 4	Red	Light Grey	Normal
48	72	H	H	Note 4	Red	Dark Grey	High Intensity
49	73	I	I	Note 4	Red	Light Blue	High Intensity Underline
4A	74	J	J	Note 4	Red	Light Green	High Intensity

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
4B	75	K	K	Note 4	Red	Light Cyan	High Intensity
4C	76	L	L	Note 4	Red	Light Red	High Intensity
4D	77	M	M	Note 4	Red	Light Magenta	High Intensity
4E	78	N	N	Note 4	Red	Yellow	High Intensity
4F	79	O	O	Note 4	Red	White	High Intensity
50	80	P	P	Note 4	Magenta	Black	Normal
51	81	Q	Q	Note 4	Magenta	Blue	Underline
52	82	R	R	Note 4	Magenta	Green	Normal
53	83	S	S	Note 4	Magenta	Cyan	Normal
54	84	T	T	Note 4	Magenta	Red	Normal
55	85	U	U	Note 4	Magenta	Magenta	Normal
56	86	V	V	Note 4	Magenta	Brown	Normal
57	87	W	W	Note 4	Magenta	Light Grey	Normal
58	88	X	X	Note 4	Magenta	Dark Grey	High Intensity
59	89	Y	Y	Note 4	Magenta	Light Blue	High Intensity Underline
5A	90	Z	Z	Note 4	Magenta	Light Green	High Intensity
5B	91	[	[		Magenta	Light Cyan	High Intensity
5C	92	\	\		Magenta	Light Red	High Intensity
5D	93	]	]		Magenta	Light Magenta	High Intensity
5E	94	^	^	Shift	Magenta	Yellow	High Intensity
5F	95	—	—	Shift	Magenta	White	High Intensity
60	96	`	`		Yellow	Black	Normal
61	97	a	a	Note 5	Yellow	Blue	Underline
62	98	b	b	Note 5	Yellow	Green	Normal
63	99	c	c	Note 5	Yellow	Cyan	Normal
64	100	d	d	Note 5	Yellow	Red	Normal
65	101	e	e	Note 5	Yellow	Magenta	Normal
66	102	f	f	Note 5	Yellow	Brown	Normal

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
67	103	g	g	Note 5	Yellow	Light Grey	Normal
68	104	h	h	Note 5	Yellow	Dark Grey	High Intensity
69	105	i	i	Note 5	Yellow	Light Blue	High Intensity Underline
6A	106	j	j	Note 5	Yellow	Light Green	High Intensity
6B	107	k	k	Note 5	Yellow	Light Cyan	High Intensity
6C	108	l	l	Note 5	Yellow	Light Red	High Intensity
6D	109	m	m	Note 5	Yellow	Light Magenta	High Intensity
6E	110	n	n	Note 5	Yellow	Yellow	High Intensity
6F	111	o	o	Note 5	Yellow	White	High Intensity
70	112	p	p	Note 5	White	Black	Reverse Video
71	113	q	q	Note 5	White	Blue	Underline
72	114	r	r	Note 5	White	Green	Normal
73	115	s	s	Note 5	White	Cyan	Normal
74	116	f	f	Note 5	White	Red	Normal
75	117	u	u	Note 5	White	Magenta	Normal
76	118	v	v	Note 5	White	Brown	Normal
77	119	w	w	Note 5	White	Light Grey	Normal
78	120	x	x	Note 5	White	Dark Grey	Reverse Video
79	121	y	y	Note 5	White	Light Blue	High Intensity Underline
7A	122	z	z	Note 5	White	Light Green	High Intensity
7B	123	{	{	Shift	White	Light Cyan	High Intensity
7C	124	¦	¦	Shift	White	Light Red	High Intensity
7D	125	}	}	Shift	White	Light Magenta	High Intensity
7E	126	~	~	Shift	White	Yellow	High Intensity
7F	127	Δ	Ctrl ←		White	White	High Intensity

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
■ ■ 80 to FF Hex are Flashing in both Color and Monochrome ■ ■							
80	128	Ç	Alt 128	Note 6	Black	Black	Non-Display
81	129	ü	Alt 129	Note 6	Black	Blue	Underline
82	130	é	Alt 130	Note 6	Black	Green	Normal
83	131	â	Alt 131	Note 6	Black	Cyan	Normal
84	132	ä	Alt 132	Note 6	Black	Red	Normal
85	133	à	Alt 133	Note 6	Black	Magenta	Normal
86	134	å	Alt 134	Note 6	Black	Brown	Normal
87	135	ç	Alt 135	Note 6	Black	Light Grey	Normal
88	136	ê	Alt 136	Note 6	Black	Dark Grey	Non-Display
89	137	ë	Alt 137	Note 6	Black	Light Blue	High Intensity Underline
8A	138	è	Alt 138	Note 6	Black	Light Green	High Intensity
8B	139	ï	Alt 139	Note 6	Black	Light Cyan	High Intensity
8C	140	î	Alt 140	Note 6	Black	Light Red	High Intensity
8D	141	ì	Alt 141	Note 6	Black	Light Magenta	High Intensity
8E	142	Ä	Alt 142	Note 6	Black	Yellow	High Intensity
8F	143	Å	Alt 143	Note 6	Black	White	High Intensity
90	144	É	Alt 144	Note 6	Blue	Black	Normal
91	145	æ	Alt 145	Note 6	Blue	Blue	Underline
92	146	Æ	Alt 146	Note 6	Blue	Green	Normal
93	147	ô	Alt 147	Note 6	Blue	Cyan	Normal
94	148	ö	Alt 148	Note 6	Blue	Red	Normal
95	149	ò	Alt 149	Note 6	Blue	Magenta	Normal
96	150	û	Alt 150	Note 6	Blue	Brown	Normal
97	151	ù	Alt 151	Note 6	Blue	Light Grey	Normal
98	152	ÿ	Alt 152	Note 6	Blue	Dark Grey	High Intensity
99	153	Ö	Alt 153	Note 6	Blue	Light Blue	High Intensity Underline
9A	154	Ü	Alt 154	Note 6	Blue	Light Green	High Intensity

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
9B	155	¢	Alt 155	Note 6	Blue	Light Cyan	High Intensity
9C	156	£	Alt 156	Note 6	Blue	Light Red	High Intensity
9D	157	¥	Alt 157	Note 6	Blue	Light Magenta	High Intensity
9E	158	Pt	Alt 158	Note 6	Blue	Yellow	High Intensity
9F	159	ƒ	Alt 159	Note 6	Blue	White	High Intensity
A0	160	á	Alt 160	Note 6	Green	Black	Normal
A1	161	í	Alt 161	Note 6	Green	Blue	Underline
A2	162	ó	Alt 162	Note 6	Green	Green	Normal
A3	163	ú	Alt 163	Note 6	Green	Cyan	Normal
A4	164	ñ	Alt 164	Note 6	Green	Red	Normal
A5	165	Ñ	Alt 165	Note 6	Green	Magenta	Normal
A6	166	a	Alt 166	Note 6	Green	Brown	Normal
A7	167	o	Alt 167	Note 6	Green	Light Grey	Normal
A8	168	¿	Alt 168	Note 6	Green	Dark Grey	High Intensity
A9	169	⌐	Alt 169	Note 6	Green	Light Blue	High Intensity Underline
AA	170	¬	Alt 170	Note 6	Green	Light Green	High Intensity
AB	171	½	Alt 171	Note 6	Green	Light Cyan	High Intensity
AC	172	¼	Alt 172	Note 6	Green	Light Red	High Intensity
AD	173	¡	Alt 173	Note 6	Green	Light Magenta	High Intensity
AE	174	<<	Alt 174	Note 6	Green	Yellow	High Intensity
AF	175	>>	Alt 175	Note 6	Green	White	High Intensity
B0	176	▒	Alt 176	Note 6	Cyan	Black	Normal
B1	177	▒	Alt 177	Note 6	Cyan	Blue	Underline
B2	178	▓	Alt 178	Note 6	Cyan	Green	Normal
B3	179	│	Alt 179	Note 6	Cyan	Cyan	Normal
B4	180	┤	Alt 180	Note 6	Cyan	Red	Normal
B5	181	╡	Alt 181	Note 6	Cyan	Magenta	Normal
B6	182	╢	Alt 182	Note 6	Cyan	Brown	Normal

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
B7	183		Alt 183	Note 6	Cyan	Light Grey	Normal
B8	184		Alt 184	Note 6	Cyan	Dark Grey	High Intensity
B9	185		Alt 185	Note 6	Cyan	Light Blue	High Intensity Underline
BA	186		Alt 186	Note 6	Cyan	Light Green	High Intensity
BB	187		Alt 187	Note 6	Cyan	Light Cyan	High Intensity
BC	188		Alt 188	Note 6	Cyan	Light Red	High Intensity
BD	189		Alt 189	Note 6	Cyan	Light Magenta	High Intensity
BE	190		Alt 190	Note 6	Cyan	Yellow	High Intensity
BF	191		Alt 191	Note 6	Cyan	White	High Intensity
C0	192		Alt 192	Note 6	Red	Black	Normal
C1	193		Alt 193	Note 6	Red	Blue	Underline
C2	194		Alt 194	Note 6	Red	Green	Normal
C3	195		Alt 195	Note 6	Red	Cyan	Normal
C4	196		Alt 196	Note 6	Red	Red	Normal
C5	197		Alt 197	Note 6	Red	Magenta	Normal
C6	198		Alt 198	Note 6	Red	Brown	Normal
C7	199		Alt 199	Note 6	Red	Light Grey	Normal
C8	200		Alt 200	Note 6	Red	Dark Grey	High Intensity
C9	201		Alt 201	Note 6	Red	Light Blue	High Intensity Underline
CA	202		Alt 202	Note 6	Red	Light Green	High Intensity
CB	203		Alt 203	Note 6	Red	Light Cyan	High Intensity
CC	204		Alt 204	Note 6	Red	Light Red	High Intensity
CD	205		Alt 205	Note 6	Red	Light Magenta	High Intensity
CE	206		Alt 206	Note 6	Red	Yellow	High Intensity
CF	207		Alt 207	Note 6	Red	White	High Intensity
D0	208		Alt 208	Note 6	Magenta	Black	Normal

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
D1	209	═	Alt 209	Note 6	Magenta	Blue	Underline
D2	210	╥	Alt 210	Note 6	Magenta	Green	Normal
D3	211	╙	Alt 211	Note 6	Magenta	Cyan	Normal
D4	212	╘	Alt 212	Note 6	Magenta	Red	Normal
D5	213	╒	Alt 213	Note 6	Magenta	Magenta	Normal
D6	214	╓	Alt 214	Note 6	Magenta	Brown	Normal
D7	215	╫	Alt 215	Note 6	Magenta	Light Grey	Normal
D8	216	╪	Alt 216	Note 6	Magenta	Dark Grey	High Intensity
D9	217	┘	Alt 217	Note 6	Magenta	Light Blue	High Intensity Underline
DA	218	┌	Alt 218	Note 6	Magenta	Light Green	High Intensity
DB	219	■	Alt 219	Note 6	Magenta	Light Cyan	High Intensity
DC	220	▄	Alt 220	Note 6	Magenta	Light Red	High Intensity
DD	221	▌	Alt 221	Note 6	Magenta	Light Magenta	High Intensity
DE	222	▐	Alt 222	Note 6	Magenta	Yellow	High Intensity
DF	223	▀	Alt 223	Note 6	Magenta	White	High Intensity
E0	224	α	Alt 224	Note 6	Yellow	Black	Normal
E1	225	ß	Alt 225	Note 6	Yellow	Blue	Underline
E2	226	Γ	Alt 226	Note 6	Yellow	Green	Normal
E3	227	π	Alt 227	Note 6	Yellow	Cyan	Normal
E4	228	Σ	Alt 228	Note 6	Yellow	Red	Normal
E5	229	σ	Alt 229	Note 6	Yellow	Magenta	Normal
E6	230	µ	Alt 230	Note 6	Yellow	Brown	Normal
E7	231	τ	Alt 231	Note 6	Yellow	Light Grey	Normal
E8	232	Φ	Alt 232	Note 6	Yellow	Dark Grey	High Intensity
E9	233	θ	Alt 233	Note 6	Yellow	Light Blue	High Intensity Underline
EA	234	Ω	Alt 234	Note 6	Yellow	Light Green	High Intensity
EB	235	δ	Alt 235	Note 6	Yellow	Light Cyan	High Intensity

Value		As Characters			As Text Attributes		
					Color/Graphics Monitor		Monochrome Monitor
Hex	Dec	Symbol	Keystrokes	Modes	Background	Foreground	
EC	236	∞	Alt 236	Note 6	Yellow	Light Red	High Intensity
ED	237	ϕ	Alt 237	Note 6	Yellow	Light Magenta	High Intensity
EE	238	ϵ	Alt 238	Note 6	Yellow	Yellow	High Intensity
EF	239	∩	Alt 239	Note 6	Yellow	White	High Intensity
F0	240	≡	Alt 240	Note 6	White	Black	Reverse Video
F1	241	±	Alt 241	Note 6	White	Blue	Underline
F2	242	≥	Alt 242	Note 6	White	Green	Normal
F3	243	≤	Alt 243	Note 6	White	Cyan	Normal
F4	244	⌠	Alt 244	Note 6	White	Red	Normal
F5	245	⌡	Alt 245	Note 6	White	Magenta	Normal
F6	246	÷	Alt 246	Note 6	White	Brown	Normal
F7	247	≈	Alt 247	Note 6	White	Light Grey	Normal
F8	248	○	Alt 248	Note 6	White	Dark Grey	Reverse Video
F9	249	●	Alt 249	Note 6	White	Light Blue	High Intensity Underline
FA	250	·	Alt 250	Note 6	White	Light Green	High Intensity
FB	251	√	Alt 251	Note 6	White	Light Cyan	High Intensity
FC	252	η	Alt 252	Note 6	White	Light Red	High Intensity
FD	253	2	Alt 253	Note 6	White	Light Magenta	High Intensity
FE	254	■	Alt 254	Note 6	White	Yellow	High Intensity
FF	255	BLANK	Alt 255	Note 6	White	White	High Intensity

GLOSSARY

GLOSSARY

ADDRESS	a number used by the computer to keep track of different memory locations
ARCHIVE	a file that has not been copied (by a backup program) since it was last changed. Archive files are usually data files that are changed every day, however, any file can be an archive file.
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 number of signal level changes per second in a serial transmission
BIT	a binary digit, the smallest piece of information a computer can handle (see BYTE)
BIT RATE	number of bits transmitted per second
BOOT	loading the operating system into memory Cold boot occurs when the machine is first turned on. It may also be reloaded while the computer is on by pressing the Ctrl-Alt-Del keys.
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 kilobyte or kbyte is 1024 bytes
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.
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 MS-DOS command that lists files
DIRECTORY	a listing of files
FILE	a collection of related information, either data, text or instructions stored on a magnetic surface (diskette or fixed disk drive) and given a specific name.
FILENAME	the name of a file. You see the file name when you list the directory or use it to access a file. The general form for a filename is: B:NAME.EXT. The first part (A: 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 file extension, 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
FORMAT	the organization of data on a disk. A double-sided, double-density format on the diskette consists of 80 tracks per disk, with each track divided into 9 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. 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 diskette or tape, and put it into the computer's memory.
MACHINE LANGUAGE	a binary computer language, as opposed to either assembly language (see your MS-DOS PROGRAMMERS REFERENCE) or high-level languages like BASIC.
MEMORY	electronic storage of data. Done in ROM (Read Only Memory) and RAM (Random Access Memory) and on the fixed disk and diskettes.
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.
MS-DOS	acronym for Microsoft Disk Operating System. The disk operating system for 8088 and 8086 microcomputers.
OPERATING SYSTEM	the operating system manages memory locations, details of disk and printer input and output, and any other peripherals. Manages details of which file is which, where it is, and how to access the one you want.
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, such as 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 (GW-BASIC) or a compiler (COBOL, FORTRAN, PASCAL, etc).

PROMPT — a symbol or message displayed by a program to inform the user that the program requires some instruction or information. In MS-DOS, 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. RAM can be read from and written to.

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.

A program in ROM tests the computer when it is turned on; then, if everything is OK, it loads the operating system. Read Only Memory also contains the instructions needed for the hardware and software to talk to each other.

SAFETY ZONE — a portion of a fixed disk which is reserved as a space to which the read-write head can move when it has nothing else to do.

SECTOR — a group of bytes on a disk. The standard MS-DOS 2.1 double-density floppy disk has 9 sectors on each track, with each sector containing 512 bytes of information.

SOFTWARE — the programs which make it possible for a user to operate a piece of computer equipment

SYSTEM PROGRAMS	the MS-DOS operating system has two kinds of programs, internal programs and external programs. Internal programs exist inside of COMMAND.COM and do not appear on directory listings. They load into memory when your computer is started. A discussion of all the internal programs is contained in the MS-DOS USER'S GUIDE.
TRACK	a ring of information on a disk. A double-sided diskette has 80 tracks.
UTILITY	a program often used, particularly by programmers. For example, FORMAT.COM is a utility program (details in the MS-DOS USER'S GUIDE) that allows the formatting of floppy diskettes.

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