KAYPRO® 2000
USER'S GUIDE

THE

KAYPRO 2ØØØ

USER'S GUIDE

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

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions manual, it may cause interference to radio and television communications reception.

This equipment has been tested and found to comply with the limits for a Class A or Class B computing device in accordance with the specifications in subpart J of Part 15 of FCC Rules.

If it has a Class A label on the back, this computer complies with the FCC limits which are designed to provide reasonable protection against such interference when operated in a commercial environment.

If it has a Class B label on the back, this computer complies with the FCC limits which are designed to provide reasonable protection against such interference when operated in a residential environment.

Interference to radio or television reception can be determined by turning the equipment off and on. If there is interference, the user is encouraged to try 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 following booklet prepared by the Federal Communications Commission may be 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: The user at his own expense will be required to take whatever measures may be required to correct any interference.

CONTENTS

INTRODUCTION

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 TECHNICAL INFORMATION for advanced users and technicians.

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 2000. 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 2000.

There are manuals which tell how to use the various software programs, such as the word processor, the spreadsheet program, and the database program.

FEATURES OF THE KAYPRO 2000

The KAYPRO 2000 is a portable, MS-DOS based microcomputer which is functionally compatible with the IBM PC. Most software that runs on the IBM PC or IBM PC XT will run on the KAYPRO 2000. The KAYPRO 2000 will not read diskettes created on a KAYPRO 2, 4, 10, 16, or 16/2. Standard features are:

    MS-DOS operating system
    8088 processor
    256K standard memory
    Upgradable to 768K RAM
    One integral 720K 3.5 inch micro-floppy diskette drive
    Two position adjustable LCD screen with 80 columns and 25 lines
    High resolution (640 by 200) bit-mapped graphics
    One asynchronous serial port
    A complete applications software package
    MS GW-BASIC language (BASICA-compatible)

WHAT YOU WILL NEED

Before you start, you should have:

* Blank diskettes. You should buy 3.5 inch micro-floppy diskettes.

* A work surface at typing height

* A power outlet close to the work surface. Though the Kaypro 2000 is battery-powered, it is a good idea to use an external power source as much as possible so that the battery pack retains a full charge. 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.

GETTING STARTED

SETTING UP YOUR KAYPRO 2000

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
    Battery charging unit

2. Set the KAYPRO on the work surface with the side having the rubber strips down, and with the words "KAYPRO 2000" facing you.

3. Place the charging unit on the work surface.

4. Plug the small, tubular steel end of the power cord into the power jack located on the rear panel of the computer, to the left of the handle.

5. Plug the three-pronged end into a nearby outlet.

6. Leave the computer charging for twenty-four hours.

    It is very important that you begin using the KAYPRO 2000 with the battery pack fully charged. This initial charge increases the total life of the battery pack, and insures that your computer's power system will function efficiently.

STARTING THE KAYPRO 2000

1.   The KAYPRO 2000 is turned on by raising the cover. Release
     the latches on the sides, and raise the cover by placing
     your index fingers on the latches and gently pulling them
     toward you while CAREFULLY lifting the cover with your
     thumbs, until it is angled away from you. The lid release
     will slide into place, locking the cover into position.

When the computer is turned on, it looks for a diskette in the
drive. If you do not put a diskette in the drive within
approximately 35 seconds, a tone will sound every few seconds
until you insert a diskette. If the KAYPRO detects no keystrokes
or diskette access within a few minutes, the machine
automatically shuts off.

The LCD screen may appear opaque or unreadable at first. You may
adjust it to one of two positions:

1.   Locate the Lid Release latch on the lower right side of the
     LCD screen, and place the thumb of your right hand on it.

2.   Gently hold the cover in your left hand.

3.   Slide the latch to the right and hold it there.

          The cover now pivots freely on its hinges and can be
          set to one of two positions. Do not bring the cover
          too far forward or you will turn the computer off.

4.   Adjust the screen to the position which is best for you.

5.   Release the latch.

If the screen is still unreadable, adjust the contrast. To
increase the contrast:

     Simultaneously press the CTRL, ALT and F2 key.

To decrease the contrast:

     Simultaneously press the CTRL, ALT and F1 key.

If the screen is still unreadable, adjust the entire computer in
the following manner:

1.   Grip the front edge of the keyboard between the thumb and
     index finger of each hand.

2.   Gently, lift the keyboard up and out of the computer.

3. Place the keyboard in front of you.

4. Carefully move the computer back and forth or from side to
    side, until the screen is clear and readable.

For more comfortable viewing, place the computer at eye level,
while leaving the keyboard at typing height. Angle the keyboard
toward you, using the folding angle struts located on the bottom
of the keyboard.

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 open or disassemble the diskette. Do not flex or bend the diskette.

KEEP DISKETTES COVERED: Leave the metal protection tab in place.

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.

INSERTING DISKETTES: Use these instructions when working with the section COPYING MASTER DISKETTES. Open the drive by pushing the sliding latch to the left until the drive pops up and the plastic drive-protector pops out. Remove the drive-protector. Then, holding the diskette with the label to the right and the metal tab to the left, insert the diskette into the drive. There may be some resistance when the diskette is almost in the drive. Continue to push it until a click is heard and the diskette stays in the slot. Close the drive.

TO REMOVE A DISKETTE: Slide the drive latch to the left until the drive pops up. Gently remove the diskette from the drive. When the computer is not in use, keep the plastic drive-protector in the drive.

STORE INFORMATION FREQUENTLY: Store information 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: 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 TAB: A sliding tab is located in the corner of any 3.5 inch diskette. This tab allows information to be written to or read from a diskette. To protect the data on a diskette,

slide the tab to uncover a small, rectangular hole; the computer then cannot write on the diskette. To permit the computer to write on the diskette, slide the tab to cover the hole.

COPYING MASTER DISKETTES

Read the section on the page fifteen titled INSERTING DISKETTES. Master diskettes can only be used to create working copies; they cannot be used for work purposes.

To make a working copy:

1. Turn on the computer.

2. Insert a Kaypro AutoStart Master diskette into the diskette drive.

3. Follow the prompts on the screen. Use the time while the diskette is copying to read the next page.

4. When the working copy is completed, remove the diskette from the drive.

5. Store the master diskette in a safe place for future use.

6. Reset the system by pressing the Ctrl, Alt, and Del keys simultaneously.

Repeat steps 1-6 for each Autostart diskette. When you are done, turn off the computer by closing the cover. To do this:

1. Locate the Lid Release latch on the lower right side of the LCD screen, and place the thumb of your right hand on it.

2. Gently hold the cover in your left hand.

3. Slide the latch to the right and hold it there.

4. Pull the cover forward and close it.

    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.

ABOUT POWER

The KAYPRO 2000 operates from one of two power sources: an external 120V AC wall outlet, or the internal 7V DC battery pack. Whenever the KAYPRO 2000 operates from the 120V power source, the internal battery pack automatically charges. The battery pack in the KAYPRO 2000 will last about four hours with ten percent diskette access time. That is, if the computer is actually reading from or writing to the diskette ten percent of the time that the computer is on, the battery pack will last about four hours. The KAYPRO 2000 will run all conventional software while powered from the battery pack.

When the computer is reading from or writing to a diskette, the diskette drive is operating and the battery pack must provide power for mechanical operations. When the computer is not operating the diskette drive, the power consumption is much less. Hence, copying and formatting disketttes uses a great deal of power, and the user should perform these operations while the KAYPRO 2000 is powered from the 120-volt power source.

OVERSEAS POWER REQUIREMENTS

If you want to take your computer overseas, electronics stores have power conversion units that will allow you to use the KAYPRO 2000 in the country you are visiting. Before purchasing a conversion unit, check with your dealer about the types and models you should buy.

SHELF LIFE

Even if you do not use your KAYPRO 2000 for several weeks, the battery will eventually run down. To avoid draining the battery pack, leave the computer charging whenever possible. You cannot overcharge the computer. The shelf life of the KAYPRO 2000, starting from a full charge and without any computer use, is approximately two weeks.

THE KEYBOARD

The KAYPRO 2000 is designed so that you can control the computer entirely from the keyboard. The keyboard is divided into three areas: a function key area on the top, a typewriter-style keyboard in the center, and an area to the right that contains cursor control keys.

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

KEYS ON THE TOP OF THE KEYBOARD

F1-F10   On the top of the typewriter-style keyboard there is a row of function 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> prompt is on the screen, the function keys perform command line editing functions. See the section of the MS-DOS manual on Editing Command lines.

NUM LOCK   switches on the numeric keypad. See the KEYPAD part of this section.

SCROLL   Also the BREAK key. This key has no specific meaning.
LOCK   Several different types of software use it in conjuction with the CTRL key to perform various functions.

KEYS ON THE LEFT OF THE KEYBOARD

ESCape   is used according to instructions for the software you're using.

TAB   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.

CTRL   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.

CAPS LOCK puts alphabetic characters in upper case. Press once

to activate it and press again to deactivate it.

SHIFT   is used simultaneously 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.

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

RETURN   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.

ALT   The Alternate key is used in combination with other
             keys to tell the computer to do a specific task. The
             Alt key is held down while the next key is pressed.

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

THE BLUE KEY

To the left of the cursor control keys, there is a key with a
blue square on it. This key performs special functions and works
in conjuction with other keys that have blue characters on them
to perform specific tasks.

THE CURSOR CONTROL KEYS

On the lower right portion of the keyboard, you will see the
cursor control keys. These consist of four keys with small, grey
arrows on them, one pointing up, one down, one left and one
right. These allow you to move the cursor anywhere on the
screen, depending on the program being used.

These keys have four other designations on them: PG UP, PG DN,
END and HOME. These functions are used in some popular word
processing programs. If you are in WordStar for example:

To scroll up one page:

     Simultaneously press the blue key and the PG UP key.

To scroll down one page:

     Simultaneously press the blue key and the PG DN key.

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GETTING STARTED

The HOME function takes the cursor to the beginning of a document
being edited, the END function to the end. HOME and END do not
work with WordStar, which makes other provisions, however they do
work with other popular word processing programs.

To go to the beginnning of the document:

    Simultaneously press the blue key and the HOME key.

To go to the end of the document:

    Simultaneously press the blue key and the END key.

THE KEYPAD

Eleven keys on the right side of the keyboard have both black and
orange characters on them. The orange characters define numbers
and a decimal point, and comprise a numeric, calculator-style
keypad.

To use the keypad:

    Press NUM LOCK.

The keys that make up the pad will now output only numeric
charactors. To return the keyboard to character output, repeat
the above operation.

WORKING WITH DISKETTES

DISPLAYING OR SETTING THE TIME AND DATE

The date and time on the KAYPRO 2000 can be set so that any files you create or alter will have the date and time recorded in the directory.

To display or change the current system date setting:

1.   Type: DATE
     Press RETURN.

2.   If you do not want to make a change, press RETURN.

3.   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.

The time is always displayed with the system prompt, for example: 12:09 A>

To change the current system time setting:

1.   Type: TIME
     Press RETURN.

2.   If you do not want to make a change, press RETURN.

3.   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>.

THE SYSTEM PROMPT AND THE FLASHING LINE

The A> prompt is called a system prompt. When you see a system prompt, it is an indication that the computer will accept typed commands to tell it what to do. The letter designation in the prompt tells you the current logged drive. Your KAYPRO 2000 has only one drive; the A drive. The commands are for disk operating system (DOS) programs. Your KAYPRO 2000 uses MS-DOS, a disk operating system by MicroSoft. Some of the main functions of MS-DOS are to handle input from the keyboard and output to the screen, handle file allocations, and communicate with peripheral devices, such as a printer.

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.

FORMATTING A DISKETTE

All new diskettes must be formatted to prepare them to receive
information. When a diskette is formatted for the KAYPRO 2000, it
is magnetically imprinted with 160 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. Place your working copy of the MS-DOS diskette in the drive.

2. After the A> prompt, type: FORMAT A:/S
    Press RETURN.

        You will see the following prompt:

        Insert new diskette for drive A:
        and strike any key when ready_

        The "new diskette for drive A:" is the diskette you
        wish to format.

4. Follow the prompts. Respond with upper-case letters.

The /S in the FORMAT command automatically places the system
files on a diskette as it is formatted. The FORMAT program has
several options like this. These are described in detail in your
MS-DOS OPERATING SYSTEM USER'S GUIDE. To use your new formatted
diskette in your KAYPRO 2000 you will need to put two files on
it: AUTOEXEC.BAT and COMMAND.COM. These files are on the
working copy of your MS-DOS diskette, and you can place them on
your new diskette using the COPY command, described later in this
section.

PLACING THE SYSTEM FILES ON A DISKETTE

System files are put on a diskette so the KAYPRO 2000 can be started from that diskette. If the diskette has been formatted with the /S option, (See the previous page) then you do not need to place system files on it.

If you want to place the system files on a diskette, the destination diskette must either have no files on it or already have a version of the system files that you want to update.

To place the system files on a diskette, place your MS-DOS diskette in the drive and enter the command, SYS, and follow it with the drive letter and a colon (:):

Type: SYS B:
Press: RETURN

The B: in this command is a reference to the B drive, however, there is no B drive. The reference to it is an artifice, to allow the copying of files with a single drive machine.

You will see this prompt:

Insert diskette for drive B:
Strike any key when ready.....

Remove the MS-DOS diskette and insert the diskette on which you wish to place the system files.

When the SYS operation is done, this message will be displayed:

    System Transferred
    A>

If you enter the DIR command at this point, you will see a prompt to insert the original, source diskette.

There are two MS-DOS system files, IO.SYS and MSDOS.SYS, that never appear on directory listings.

BACKING UP FILES

It is imperative that all files be backed up on diskettes. If a
diskette is damaged, it can be re-formatted, repaired, or replaced.
The information on it cannot. However, if you periodically copy
your files onto backup diskettes, the information on them is
safe.

When backing up files, use the DISKCOPY command to copy an entire
diskette. See the MS-DOS OPERATING SYSTEM USER'S GUIDE.

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.

COPYING FILES FROM ONE DISKETTE TO ANOTHER

To copy a file from one diskette to another:

1.   Type: COPY A:FILENAME.EXT B:
      Press RETURN.

          FILENAME.EXT represents the name of the file you wish
          to copy, followed by its three character extension.
          For example, COMMAND.COM or WSMSGS.OVL.

2.   When prompted, remove the source diskette (The "diskette for
      drive A:"), and insert the target diskette (The "diskette
      for drive B:").

When the COPY operation is done, this message will be displayed:

      1 File(s) copied
      A>

If you enter the DIR command at this point, you will see a prompt
to insert the original, source diskette.

More information on the COPY command can be found in the MS-DOS
OPERATING SYSTEM USER'S GUIDE.

USING OTHER FEATURES

SPECIAL FUNCTIONS

The user of the KAYPRO 2000 has complete control of the computer from the keyboard. This includes resetting the computer in a number of different ways, and controlling the contrast of the LCD screen.

RESETTING THE COMPUTER

While running certain programs, you may discover that your computer does not accept input from the keyboard, or the program displays the same message repeatedly, or that something quite strange is happening. You may start over by resetting your computer. There are several ways to do this: by restarting your operating system , called a "soft reset"; and by electronically stopping and starting your computer, called a "hard reset".

There are three ways to perform a hard reset: from the keyboard, using the cover, and from the bottom panel of the computer.

A soft reset will work most of the time and is preferable to a hard reset because it does not involve interrupting the current flow.

To perform a soft reset:

    Simultaneously press the CTRL, ALT, and the DELETE keys.

The computer should restart, and the opening messages should appear. If this does not not work, perform a hard reset from the keyboard:

    Simultaneously press down the blue, CTRL, ALT, and ESC keys.

If this does not not work, perform a hard reset by closing and opening the cover.

If this does not work, perform a hard reset from the bottom panel:

1. Procure a small plastic rod shaped like a toothpick. The rod must be plastic. **DO NOT USE METAL** under any circumstances. Using a metal rod will seriously damage your computer.

2. Close the cover.

3. Turn the computer over and place it on a surface that will not scratch the top cover.

4. Locate the small hole which is just above the opposite corner from the two phone jacks. This is the reset hole.

5.   Gently insert the plastic rod into the reset hole until you feel it press the button within.   Remove the rod.

If the computer will not reset after you have taken these steps, contact your dealer.

SETTING THE SCREEN CONTRAST

To increase the contrast:

Simultaneously press down the CTRL, ALT, and the F2 keys.

To decrease the contrast:

Simultaneously press down the CTRL, ALT, and the F1 keys.

TECHNICAL INFORMATION

TROUBLESHOOTING

If you have difficulties when operating your KAYPRO 2000, 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 2000.

SYMPTOM: Programs won't load or execute.

PROBABLE CAUSES AND REMEDIES:

1. No power. Be sure that the power cords are plugged into both the wall and the KAYPRO 2000. Be sure the battery pack is charged. Check any switches controlling the wall outlet.

2. Drive not closed.

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

4. Diskette isn't in the drive correctly (label side to the right and the metal tab to the left)

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

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

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

SYMPTOM: No LCD display.

PROBABLE CAUSES AND REMEDIES:

1. The screen is reflecting light poorly. Adjust the LCD screen.

2. Low contrast. Adjust the contrast as instructed in "SETTING THE SCREEN CONTRAST"

3. The software is installed incorrectly. Install it for a black and white display

SYMPTOM: Computer unexpectedly ignores keyboard entries.

PROBABLE CAUSES AND REMEDIES:

1.   The battery pack does not have enough power.   Connect the charging unit.

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

3.   Check the connections of keyboard to computer.

4.   Electronic malfunction.   Reset the computer as previously explained.

SYMPTOM: The keyboard produces numbers where you expect letters.

PROBABLE CAUSES AND REMEDIES:

The numeric pad is still activated.   Press NUM LOCK.

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. **DO NOT** allow water or any fluid to contact any electronic components.

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

CONNECTING SERIAL DEVICES

ABOUT CABLES

The KAYPRO 2000 connects to both serial printers and external
modems with serial cables (available from your dealer). These
cables are **NOT** interchangable, so if you intend to use both an
external modem and a serial printer, you must obtain two
different cables.

SERIAL PRINTER

The KAYPRO 2000 is compatible with most serial printers.
Connect your computer to your printer with a KAYPRO 2000 serial
printer cable. Plug one end of the cable into the connection on
the printer and the other end of the cable into the RS-232C
serial port on the left side of your KAYPRO. Next, initialize
any software that did not come with your computer to address the
serial port, rather then the parallel port. You do this by using
the installation program provided with your software.

EXTERNAL MODEM

The KAYPRO 2000 will work with most standard external modems.
Again, the connection is made through the RS-232C serial port,
using a KAYPRO 2000 external modem cable. Follow the
instructions for your particular modem and telecommunications
software.

Please note that Kaypro Corporation makes no guarantees about the
suitability of a given serial device for use with the KAYPRO 2000
RS-232C interface. Before you purchase any serial device, insist
upon a demonstration of its operation.

KAYPRO 2000 SERIAL PORT PIN ASSIGNMENTS
PRIMARY ASYNCHRONOUS COMMUNICATIONS

PIN	SIGNAL
1	GROUND
2	TRANSMIT DATA
3	RECEIVE DATA
4	REQUEST TO SEND
5	CLEAR TO SEND
6	DATA SET READY
7	GROUND
8	CARRIER DETECT
20	DATA TERMINAL READY
22	RING INDICATOR

I/O CONNECTORS

The following figures should be used as reference for the I/O interface between the KAYPRO 2000 computer and any peripherals you use. Note that there is an extra telephone-style jack and a rubber-shielded one-hundred pin connector on the bottom of the computer. Both of these ports are for use with KAYPRO 2000 accessories, which will be available soon.

The Bottom of the Computer

RJ-11 Internal Modem Port
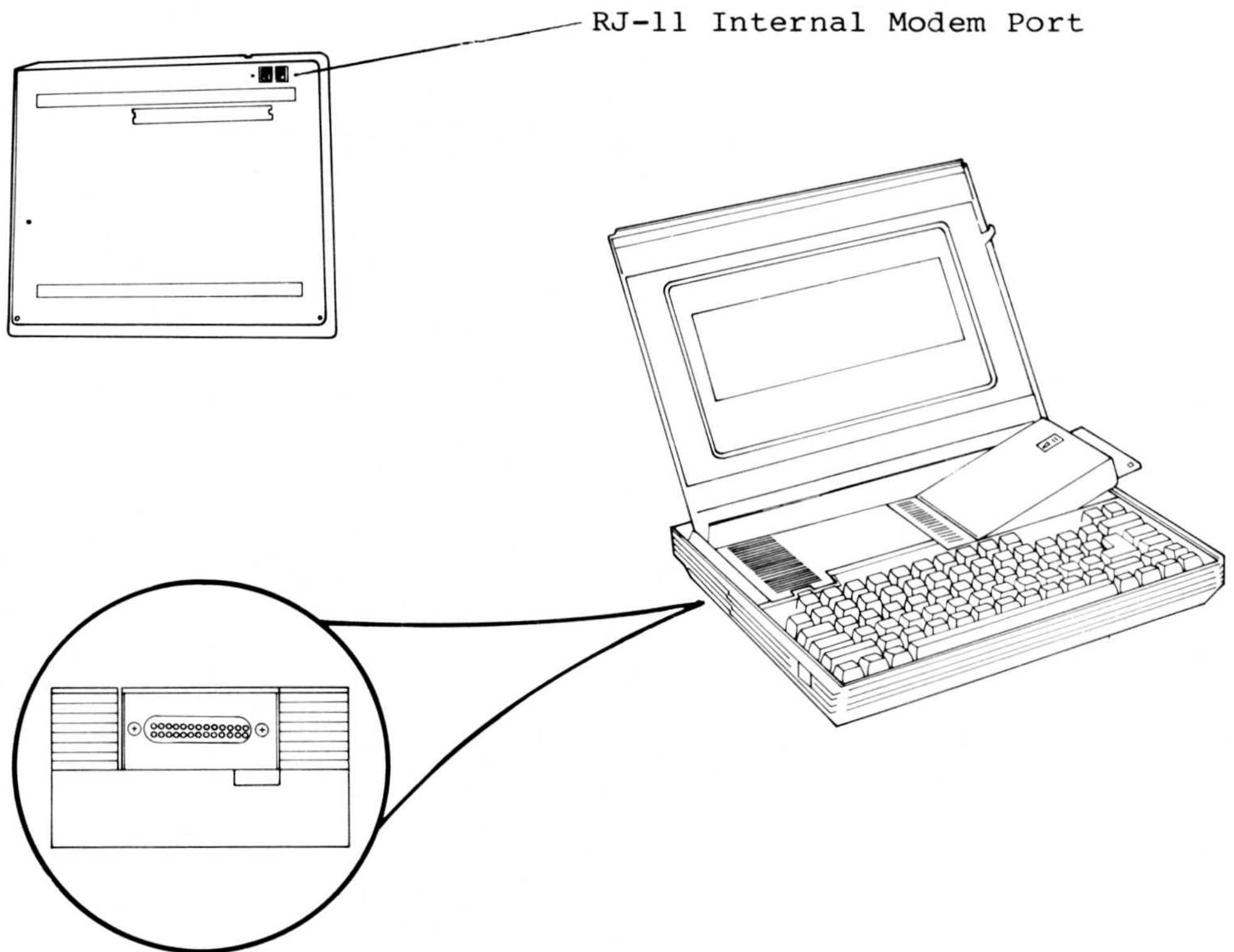
RS-232C Serial port

SERVICE WARNING

Proper precautions must be observed to assure that components are not damaged when this unit is serviced or adapters are added to or removed from the I/O channels.

The preferred method is to have a grounding strap attached to the wrist with the drain lead connected to a common earth ground and to have the unit positioned on a conductive grounded mat. With the above precautions observed, and the power switched off, one may insert or remove components or adapters.

If one has built up a charge, this may be felt when first contacting the aforementioned surfaces.

Failure to observe these precautions may damage the unit in such a manner as to render it unserviceable or unreliable.

MEMORY MAP OF THE KAYPRO 2000

Address	Region
FFFFFh	SYSTEM BIOS ROM
FE000h	
FDFFFh	ON-BOARD SYSTEM ROM
FC000h	
FBFFFh	MEMORY EXPANSION ROM
F0000h	
EFFFFh	READ/WRITE MEMORY
D0000h	
CFFFFh	RESERVED
CC000h	
CBFFFh	HARD DISK INTERFACE
C8000h	
C7FFFh	ADVANCED VIDEO INTERFACE
C0000h	
BFFFFh	RESERVED
BC000h	
BBFFFh	LCD AND COLOR/GRAPHICS
B8000h	
B7FFFh	RESERVED
B4000h	
B3FFFh	MONOCHROME DISPLAY
B0000h	
AFFFFh	RESERVED
A0000h	
9FFFFh	MEMORY EXPANSION *
40000h	
3FFFFh	USER MEMORY
00000h	

* AVAILABLE FROM YOUR DEALER

I/O PORT ADDRESSES

PORT #(HEX)	DEVICE/FUNCTION
000-00F	DMA CONTROLLER, 8237
020-021	INTERRUPT CONTROLLER, 8259
040-043	TIMER, 8253
060-063	PROGRAMMABLE PARALLEL INTERFACE, 8255
080-083	DMA PAGE REGISTERS
0A0-OAF	NMI REGISTER
OC0-0CF	RESERVED
OE0-0EF	RESERVED
100-1FF	NOT ASSIGNED
200-20F	GAME CONTROLLER
210-217	EXPANSION UNIT
220-24F	RESERVED
278-27F	RESERVED
2F0-2F7	RESERVED
2F8-2FF	ASYNCHRONOUS COMMUNICATIONS (SECONDARY)
300-31F	PROTOTYPE CARD
320-32F	FIXED DISK CONTROLLER
378-37F	PARALLEL PRINTER INTERFACE
380-38F	SDLC COMMUNICATIONS INTERFACE
3A0-3AF	RESERVED
3B0-3BF	MONOCHROME DISPLAY INTERFACE
3C0-3CF	RESERVED
3D0-3DF	COLOR DISPLAY INTERFACE
3E0-3EF	RESERVED
3F0-3F7	FLOPPY DISK INTERFACE
3F8-3FF	ASYNCHRONOUS COMMUNICATIONS (PRIMARY)

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 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 from drive A. 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. A kilobyte or kbyte is 1024 bytes.
CHIP	slang for an integrated circuit
CONSOLE	the device used for communication between the computer and you. In the KAYPRO 2000 this is the keyboard and the LCD display.
CPU	acronym for Central Processing Unit: the microprocessor chip
DEBUG	to remove mistakes from a computer program (see BUG)
DIR	a built-in MS-DOS command that lists files

GLOSSARY

DIRECTORY   a listing of files

FILE   a collection of characters, data, or what-have-you that is stored. A file can contain a program or information to be used by other programs.

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: NAME.EXT.

FLOPPY   a diskette of magnetic media which is encased in a sturdy envelope.

FORMAT   the organization of data on a diskette. A double-sided, double-density format on the diskette consists of 80 tracks per side; 160 total per disk, with each track divided into 9 sectors.

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.

LCD   Acronym for Liquid-Crystal Display. A liquid-crystal display consists of a thin sandwich or cell of two glass plates, sealed at the edges and containing nematic liquid-crystal material. When small voltages are applied to the LCD in the correct manner, it acts as a display screen for data, text or information from your computer.

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 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.

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.

SECTOR
a group of bytes on a diskette. A 3.5 inch micro-floppy diskette for the KAYPRO 2000 has 9 sectors on each track, with each sector containing 512 bytes of information.

GLOSSARY

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 KAYPRO MS-DOS USER'S GUIDE.

TRACK

a ring of information on a disk. A micro-floppy diskette has 160 tracks.

UTILITY

a program often used, particularly by programmers. For example, FORMAT.COM is a utility program (details in the MS-DOS manual) that allows the formatting of floppy diskettes.

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Part Number 3655-C

KAYPRO

KAYPRO 2000
Preliminary Specifications

OVERVIEW: . . . . Desktop IBM PC power in a lap-size package, at *less* than a desktop price.

CPU/SYSTEM: . . . . 4.77 MHz 8088. IBM PC-type system architecture. 8087 socket. Built-in real time clock.

RAM: . . . . 256KB standard. Expandable to 768KB, *internally*.

DISK STORAGE: . . . . 720KB internal 3.5″ disk drive (equivalent to *two* IBM PC 360KB floppy disk drives).

DISK EXPANSION: . . . . Additional 3.5″ disk and two 360KB (IBM format) 5.25″ drives may be added. Hard disk may also be added.

DISPLAY: . . . . Superior quality LCD screen with tilt adjustment, remote contrast control and low glare lens. 25 lines by 80 columns, 640 x 200 bit map graphics.

KEYBOARD: . . . . *Detachable* ultra-compact PC keyboard. Full size sculpted keys with ergonomic layout and nonglare finish. Adjustable slope angle. 3-way use: nested in machine, on desk, in lap.

SERIAL PORT: . . . . IBM compatible RS-232C serial port.

EXPANSION PORT: . . . . 100 pin connector provides for IBM PC Bus, external disks, additional ports, etc., through Base Unit or Disk Adapter.

POWER: . . . . AC adapter/charger and built-in rechargeable battery pack. 4 hours typical operating time.

COMPATIBILITY: . . . . Fully compatible with IBM PC in all key areas:

Software: Runs all popular programs for IBM P.C.

Hardware: Accepts standard IBM expansion cards (with Base)

Media: Can read and write standard IBM 5.25″ diskettes, with external drive. Also accepts DG/1 media.

Display: Behaves like IBM color card with monochrome monitor. (Most popular configuration)

Keyboard: Every key on the IBM PC keyboard is represented.

STANDARD SOFTWARE: . . . . WordStar, Mailmerge, InfoStar +, CalcStar, Tutors and Lessons, GW-Basic, and MSDOS.

CONSTRUCTION: . . . . Lightweight brushed aluminum case with sculpted rubber protection grips and built-in handle.

SIZE/WEIGHT: . . . . 11.5" (D) x 13.1" (W) x 2.6" (H)   11.5 lbs.

CARRYING CASE: . . . . Padded nylon carrying case with detachable shoulder strap and briefcase handle flap.

RETAIL PRICE: . . . . $1,995 Complete. (Suggested list)