KAYPRO 10

Glyn Moody tests the big brother to the machine that was voted 1983's Transportable Computer of the Year.

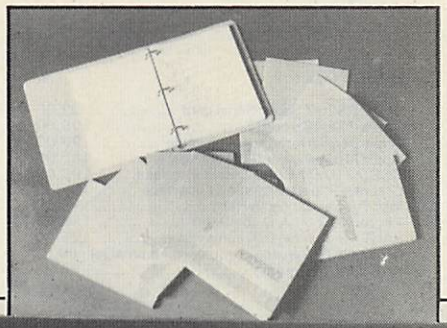
AT FIRST SIGHT the Kaypro 10 looks like a large tin box. Take off the lid and it proves to be a large tin box with a 9in. screen, 64K of RAM, a 390K floppy and a 10Mbyte Winchester running CP/M on a Z-80. Unremarkable statistics perhaps, except that the complete system costs only £2,595 plus VAT.

Though the Kaypro is supposed to be transportable, little attempt has been made to cram components together. Disc units positively luxuriate in space and the main PCB straddles the CRT in a relaxed sort of way. The box is consequently a substantial size: 18in. wide by 15in. deep and 8in. high. Of course there is no reason why a fetish should be made of packed, inaccessible boards and units, but for a machine that aspires to portability a more frugal approach to the use of internal space would be more appropriate.

The CRT and its associated power unit lie beneath the main circuit board, as does the power supply. The circuitry for the discs is contained on a second board, positioned vertically alongside the floppy on the right of the machine. A noisy fan cools the disc and the power supply.

At the back of the machine, above the fan's external mounting, is the Reset button. Moving to the right of that you find a parallel port, an RS-232 port, modem port and two further jacks, one for the detachable keyboard, the other for a light-pen. Beneath them lies the brightness control; there seems to be no provision for contrast changes.

You heave the Kaypro around in the screen-down position, so a sturdy carrying strap is fitted on the back as well. The ports are left open to the elements, and the numerous ventilation slots render the internal circuitry vulnerable. The keyboard clips on to the front of the screen and acts as a base for the unit when it is being carried. Four plastic studs keep it off the ground.

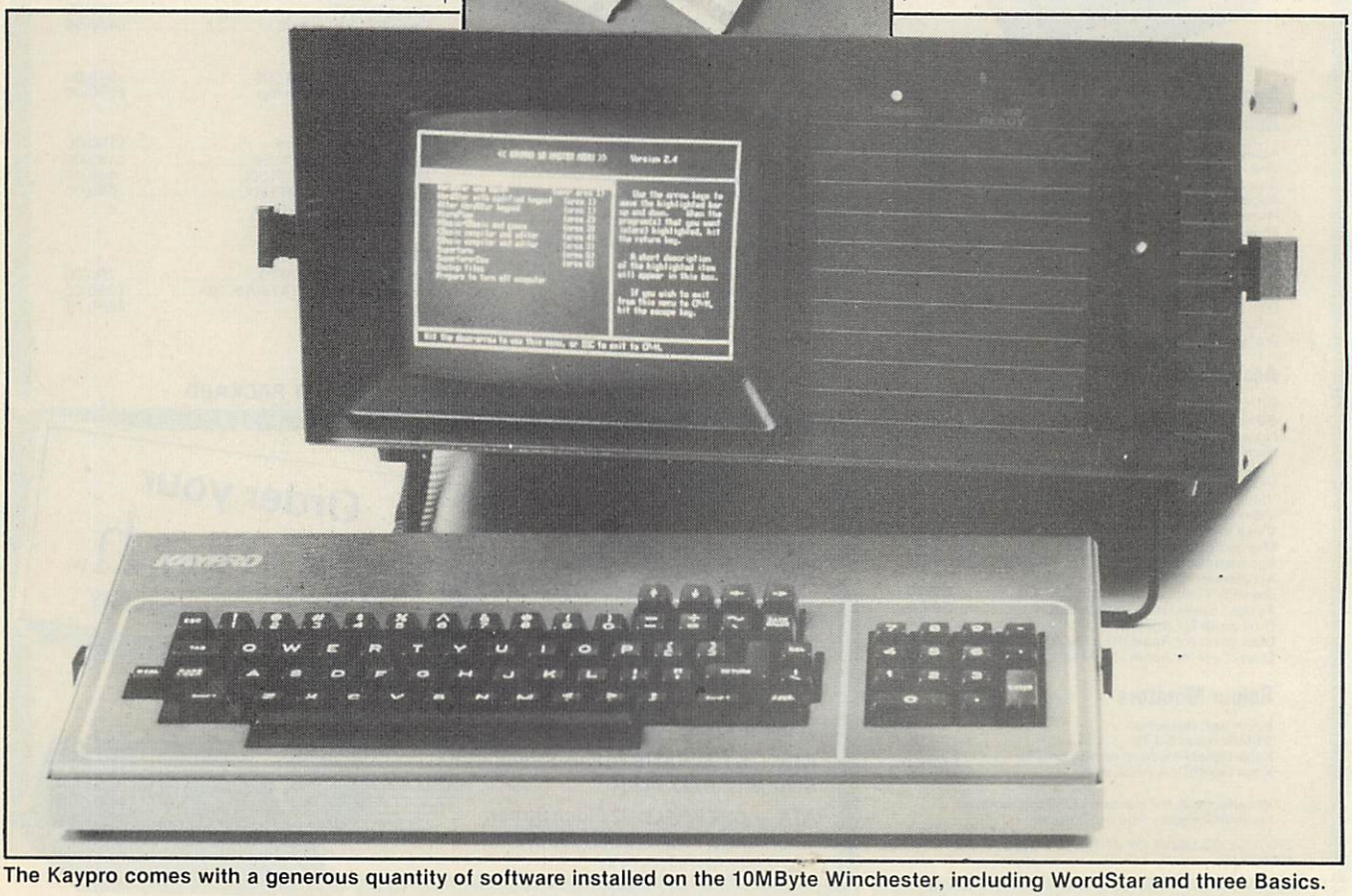


To set up the machine for use, you unclip the keyboard and unwrap the mains lead from four pegs on the back. A coiled cable links the keyboard to the appropriate jack, also at the back. While in use the machine can be angled on a built-in metal stand which pulls down from the front.

Keyboard fault

In addition to the standard QWERTY keys there is a numeric pad, but there are no function keys; four cursor keys lie along the top above the QWERTY number keys. The key movement is very shallow and over-sensitive, and the keys emit a tinny clanking sound when struck. For any touch-typist whose fingers have a tendency to linger on a key not in use the results are tiresome, with sprays of repeated characters peppering the text.

The 10Mbyte hard disc is partitioned into 16 users, numbered 0 to 15. User 0 contains all the CP/M system utilities, and it is from here that the boot sequence is initiated when the machine is turned on or reset. An



The Kaypro comes with a generous quantity of software installed on the 10MByte Winchester, including WordStar and three Basics.

autostart routine immediately calls up a master menu.

Kaypro has been generous with bundled software. User area 1 contains that old friend WordStar, along with a spelling checker from Oasis systems called The Word Plus. A subsidiary program allows the numeric keypad to be configured with a selection of the WordStar command strings. Micropro's standard WordStar reference manual is supplied with the package.

Spelling

The Word Plus has a dictionary of some 40,000 words, which is used to check text files in WordStar format. Words not in the main dictionary or appended special dictionaries are first identified and their contexts retained. Each unknown word is then reviewed on screen, and the user may correct it or add it to the dictionary.

Another facility available on The Word Plus is a program known as Find, which searches for words on the basis of crossword-type skeletons. For example

c?m?u?e?

will be found as "computer". The program also searches for words which begin and end with given strings, so

*hing

will produce all words in the dictionary that end in "hing".

The charmingly named Homonym Helper is intended for people who have difficulty in distinguishing between similar-sounding words, like compliment and complement, stationery and stationary, and even — if you are an American — bizarre and bazaar. The program searches through the text to locate potential trouble spots. In fact, as every *PC* reader is sure to know, these are homophones. Homonyms are words that have different meanings but are spelt the same, like "pole" as in North and "pole" as in telegraph. Such quibbles aside, these facilities should be a boon to crossword addicts.

User area 2 is the home of the spreadsheet application package. Kaypro has chosen Supercalc. Negotiations are currently under way for a suitable database package to complete the software trinity.

User areas 3, 4 and 5 all contain dialects of Basic. Along with Microsoft's interpreted MBasic, user area 3 includes a few ancient games written in that language's previous incarnation, called OBasic.

Digital Research's CBasic, accommodated in user area 4, is a compiled language. CBasic programs are written using a word-processing package in its non-text mode. The complete file is then compiled, though only to an intermediate program which must itself then be

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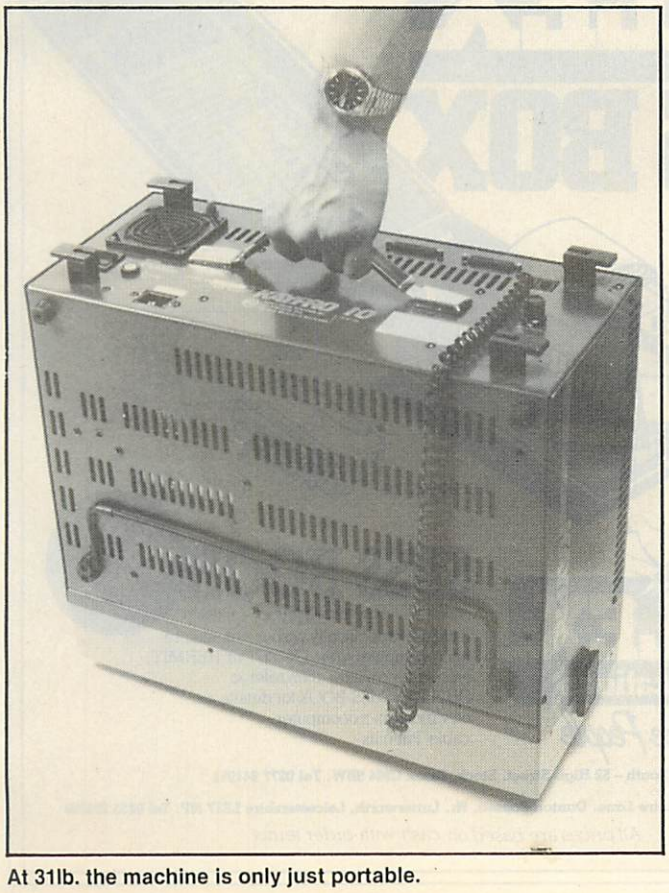
Specification

CPU: Z-80, eight-bit running at 4MHz
RAM: 64K
Dimensions: 18in. wide by 15in. deep by 8in. high
Weight: 31lb.
Display: 9in., 25-line by 80-character CRT
Keyboard: detached QWERTY with numeric keypad
Interfaces: parallel printer interface, RS-232C serial printer port, modem interface, keyboard and light-pen sockets
Discs: 5.25in. 380K floppy, 10Mbyte Winchester hard disc
Software in price: CP/M, MBasic, CBasic, SBasic, WordStar, Supercalc, The Word Plus, Suprterm
Hardware options: 5MHz card
Manufacturer: Non-Linear Systems of Solana Beach, California
U.K. distributor: CK Computers Ltd, Devonia House, High Street, Worle, Weston-super-Mare, Avon BS22 0JR. Telephone: (0934) 516246.
U.K. prices: Kaypro 10, £2,595; Kaypro II £1,520; Kaypro 4, £1,847; all prices exclude VAT

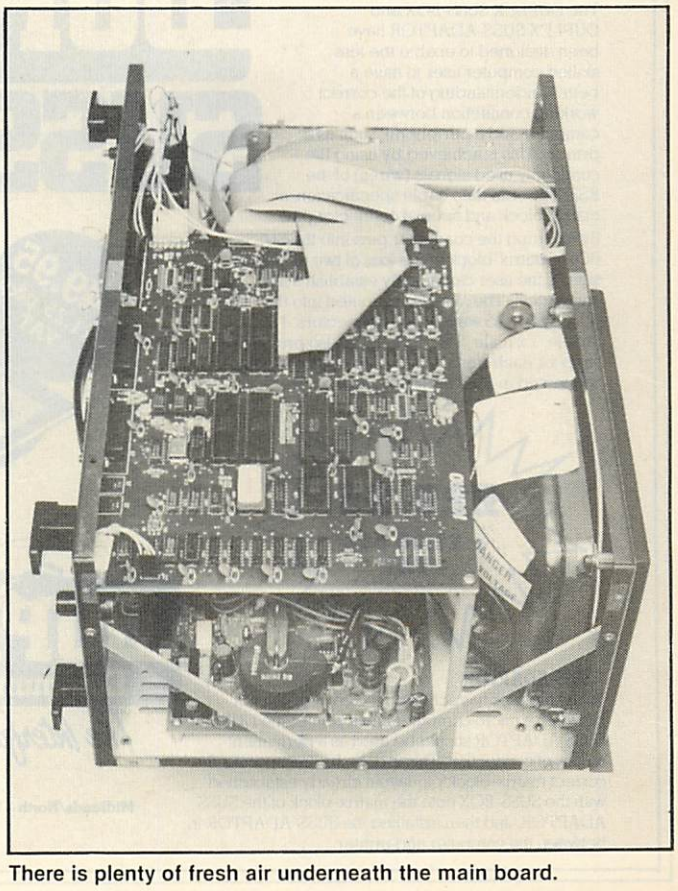
Benchmarks

Eight standard Benchmark routines — see *PC*, January issue, page 102 — were run in MBasic. The Kaypro emerges as a fast machine, neck and neck with the 8088-based IBM PC and close to the BBC Micro. All timings are in seconds.

	BM1	BM2	BM3	BM4	BM5	BM6	BM7	BM8	Av.
Kaypro 10	1.2	3.8	9.5	9.7	10.5	19.0	29.5	51.0	16.9
BBC Model B—6502	1.0	3.1	8.3	8.7	9.2	13.9	21.9	52.0	14.8
IBM PC—8088	1.2	4.8	11.7	12.2	13.4	23.3	37.4	30.0	16.8
Sinclair Spectrum—Z-80	4.8	8.7	21.1	20.4	24.0	55.3	80.7	253.0	58.5



At 31lb. the machine is only just portable.



There is plenty of fresh air underneath the main board.

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interpreted. Though it takes more effort to produce, the resulting program runs much faster than one in ordinary interpreted Basic.

SBasic, the dialect provided in user area 5, is also compiled, and structured too. This means that it includes such programming luxuries as procedures and functions, If-Then-Else syntax, While, Repeat and Case. No line numbers are necessary, and Goto calls are addressed by additional labels. Recursion is allowed in both procedure and function calls. The price to be paid for all these goodies is that variable types must be declared at the start of the program. Who will want all these features and two other Basics is not clear, but it is nice to have them.

Full provision

The final sector of the partitioned Winchester offers the impressively named Suprterm. It allows the Kaypro to be hooked up to on-line information sources via an RS-232 port, with or without a modem. The command structures are not particularly clear, though doubtless anyone wanting to use this facility frequently will soon get the hang of them. The program is probably more significant because of its presence in the bundled software than for the facilities it offers.

Also available on the master menu is the system shut-down option. This places the head of the hard disc in the safety zone, well away from data-bearing sectors. The unit may then be switched off at the rear and transported.

All the application packages and languages come with supporting documentation, most of it proprietary to the software house. In addition to these specific guides, Kaypro sensibly provides a summary of the software supplied and a general manual.

The manual is commendably full and unfussy. As well as background information on the hardware and its configuration, there is yet another tour of the software. One problem is that the software bundled with the Kaypro 10 seems to be changing slightly as time goes by. The manual does not keep up with it; but this will presumably be no problem when things have settled down. A glossary and index complete the contents.

The Kaypro runs the Z-80 at 4MHz, but a 5MHz card is available. Other add-ons in the offing are an 8088 board which takes the RAM to 256K and allows IBM-format discs to be read. Battery packs and real-time clocks are planned for the future.

The Kaypro series represents the first computers from Non-Linear Systems of Solana Beach, California. The name of the machine derives from that of the controlling Kay family. Hitherto the main product lines have been research test equipment, the company having brought out one of the first digital voltmeters. With nominal portability and a certain ruggedness of construction, the Kaypro machines are continuing in this vein. Last year 53,000 units were shipped, and sales reached $75 million. In addition to the top of the range Kaypro 10, two floppy-based versions are available: the Kaypro II and 4, with single- and double-sided double-density discs respectively.

Conclusions

- **It may be inelegant and noisy, but if you are looking for a 10Mbyte CP/M system the Kaypro is probably a bargain.**
- **There is a generous amount of bundled software, all accompanied by documentation.**
- **Billed as portable, the machine is in fact just about luggable. It is large and ungainly: more could be done to reduce its bulk, and probably its weight too.**
- **The keyboard lets down what would otherwise be an eminently usable system. Until something is done about its tactile response, the Kaypro cannot really be recommended for use as a word-processing machine.**
- **The Kaypro seems ideally suited for basic, all-round business use where convenience rather than elegance is paramount, and where price counts for more than advanced specification.**

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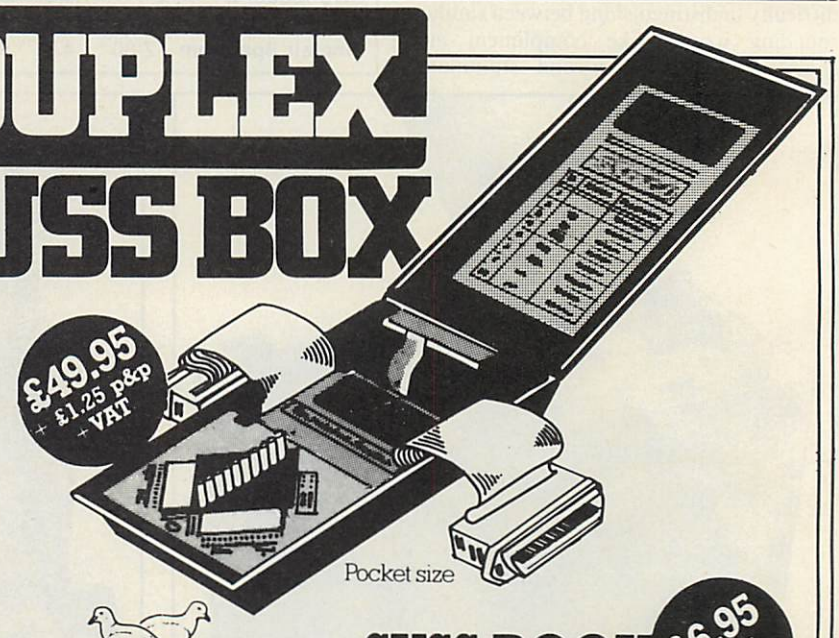

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