We review a remarkable portable:

Computing on the go with the Otrona 512

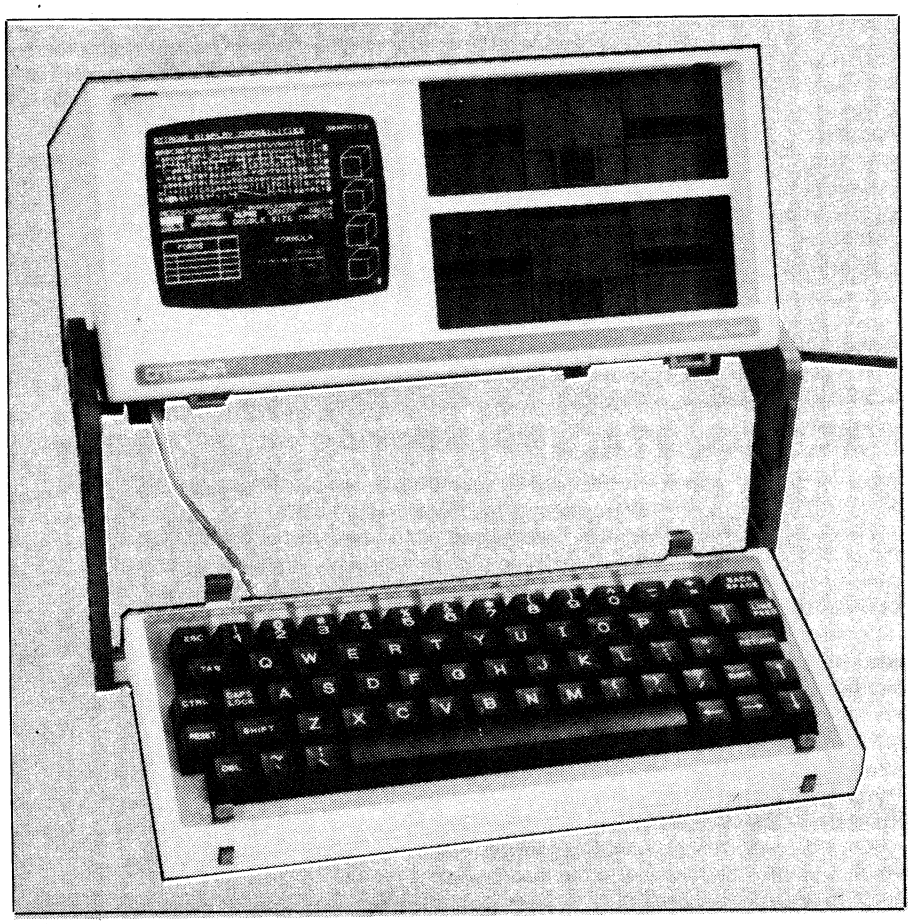
The Otrona 512 is a portable computer that can be picked up and carried around like a briefcase but is a full-featured disk-based system, offering a wide array of features and software.

by PETER VERNON

The July, 1982 issue of the US magazine "Microcomputing" contains the story of David Kline, a free-lance journalist who used a portable computer to report on guerrilla operations in Afghanistan. With the help of the computer he was able to compose and file stories via the international telephone system, many hours ahead of his colleagues with more mundane equipment. His tale is a major boost for the portable computer.

The Otrona 512, imported in Australia by Elmeasco Instruments, is a "second generation" portable computer. With the concept already proved by the Osborne the designers added features such as high capacity disk drives and an 80-column screen while at the same time reducing the weight of the system.

Based on a Z80A 8-bit microprocessor running at 4MHz, the Otrona includes 64K of RAM. Disk and screen access is by way of a 9517 direct memory controller and is exceptionally fast, a feature which allows full use of the extensive graphics capabilities of the machine.



For transport, the Otrona 512 is a compact 30 x 14 x 38cm, (WxHxD) weighing about 8kg. In this mode the carrying handle doubles as a clamp holding the detachable keyboard in place over the dual disk drives and 14.5cm (diagonal) green phosphor CRT screen. The cabinet is moulded of white, impact resistant plastic.

When unfolded the handle acts as a support for the CRT and disk unit, and allows the keyboard to be unlatched from the front panel. A short removable cable connects the keyboard to the computer itself. We are told that this cable is a standard US telephone connector, available in several different lengths.

The keyboard is a full alphanumeric format, conforming to the IBM Selectric arrangement with additional cursor control and programmable multi-function keys. There is no separate numeric keypad, but Otrona do provide software to re-program the keyboard to create numeric keys in a standard calculator style layout. Unfortunately, no provision is made for re-labelling these keys, and this method must be considered a stop-gap at best.

Two built-in "slimline" minifloppy disk drives provide mass storage for the system. These are double-sided, double density units, each capable of storing 360K bytes when formatted for CP/M.

The video screen is capable of displaying upper and lower case characters (with descenders) in either 24 lines of 80 characters each or 24 lines of 40 double-sized characters. An extensive range of video attributes can be programmed, including high-lighted and half intensity characters, inverse video, overstrikes, underlines and sub- and superscripts.

A demonstration program supplied with the review machine illustrates these features, and includes a sample of the non-English alphabet and mathematical character sets. These capabilities, however, are seen to best advantage on a larger video monitor.

Graphics are also supported by the Otrona 512. Graphics resolution is 320 horizontally by 240 vertically, which is higher than many full-sized microcomputer systems.

At the rear of the computer are connections for peripheral equipment. Two RS232C serial ports are provided, with baud rates separately selectable from 75 to 19,200 bps. An RCA socket provides for connection of an auxiliary video display, without the necessity for any adapter.

Also at the rear is the mains input voltage selector (120-240VAC), fuseholder and power switch. A battery adapter and battery pack is optionally available, and plugs into a second panel connector. An expansion board can also be plugged into a slot on the rear panel.

Switching on . . .

Readying the Otrona for work is a fairly simple matter. The carrying handle is unlocked by two pushbutton latches (which seem a little balky and stiff to use). When unlatched the keyboard hinges downwards, connected by a thin cable which can be up to two metres long (apparently for the benefit of those using a larger video display).

If the system is switched on without a disk in Drive A the computer displays "no disk in place . . ." and enters a terminal emulation mode. A number of communications protocols can be implemented, allowing the Otrona to be used for data communications with mainframe computers. An acoustically-coupled modem is available separately.

As soon as we switched on we used the "set up" mode to check the terminal parameters. Pressing Control/Esc enters this mode, displaying several lines of status information at the bottom of the screen. The battery-powered clock and calendar were functioning, already set to the correct time and date.

Other keys, labelled on the keyboard, allow the user to vary the brightness of the display, the pitch and volume of the keyboard audio feedback, (four different click sounds plus "off") and the communications rates of both serial ports, (called printer and communications although they are full-featured ports not restricted to these uses) and to turn the keyboard bell on or off.

All these features are fully described in the opening chapters of the manuals which come with the system. Setting up instructions and details of changing the mains input voltage, power connector and fuse are also given. With the exception of the incomplete "programmers' reference guide", the manuals supplied with the Otrona are readable and easily understood.

Supplied with software

Software supplied with the Otrona 512 includes CP/M 2.2, BASIC-80, WordStar Plus, Valet 1.1 and Charton, plus a disk of utilities and demonstration programs. A powerful Monitor program, including diagnostic routines, is contained in ROM in the machine.

The language supplied with the Otrona 512 is MBASIC, the CP/M version of Microsoft's BASIC-80 V5.0 interpreter. This is a powerful, full-featured disk version of Basic conforming to the ANSI standard. Users with experience of other versions of Microsoft Basic will have no trouble adapting, and the extra features of the language greatly simplify the writing of large applications programs.

MBASIC strings can be up to 255 characters in length and variable names can be up to 40 characters long. In addition to integers and fixed point constants, MBASIC supports floating point numbers, in either single or double precision (16 significant digits). Hex and octal constants are also supported.

An attractive feature of the language is the use of variable type declarations, allowing the programmer to specify which variables will be stored in double precision, single precision etc. Single precision stores and calculates numeric values to eight significant digits and double precision allows 16 significant digits.

Control structures include the familiar IF . . . THEN . . . ELSE and also WHILE . . . WEND. Programs can be CHAINed together, with global variables declared by the statement COMMON. Variables can also be passed from one program to another, so that programs which are too large to fit into RAM can be run by calling in sections from disk as required.

Disk file handling capabilities are also included in the language, allowing both sequential and random access files to be created or read from Basic. Assembly language programs are also fully supported; the statement CALL allows assembly language routines to be executed from a given address, and allows variables to be passed to the routine. The USR statement is also available.

Comprehensive graphics statements are provided, to draw and erase points and lines, fill areas of the screen with patterned characters and to create new fill patterns, and to draw circles and arcs. Text can be laid over the graphics display or used in any combination with graphics, and the active plotting areas can be confined to any selected area of the screen.

Experienced programmers will appreciate the powerful editing functions and the extensive debugging and error handling statements provided by MBASIC. All in all, MBASIC appears to be an excellent language for business and scientific applications, although unfortunately it lacks matrix manipulation statements. MAT statements, provided in some versions of Basic, considerably simplify the task of writing scientific application programs, but are unlikely to be missed in business applications.

Also included with the Otrona is WordStar Plus 1.0 (by MicroPro International). This CP/M word processing system is considered by many to be the most powerful word processor in wide use, and particular enhancements to the Otrona version add even more appeal.

Otrona 512: vital particulars

Processor:	4 MHz Z80A
RAM:	64K
ROM:	4K containing Monitor and diagnostic programs.
Interfaces:	Two RS232C serial ports, 75 to 19,200 bps.
Keyboard:	IBM Selectric lay-out with programmable keys.
Display:	80 x 24 lines, 40 x 24 lines, 320 x 240 dot graphics.
Peripherals:	Two disk drives built-in, 360K per disk STD expansion board available.

Most word processing functions are accessed by single keys on the top row of the keyboard, including insertion and text formatting. Cursor movement and a delete key are also labelled on the keyboard. The more conventional keyboard commands for standard WordStar, a combination of Control and alphabetic keys are also available.

As an indication of the features of WordStar, the instruction manual lists 124 commands and options, divided into groups including file management, cursor controls, text formatting, and basic and advanced editing commands. Such complexity can be overwhelming at first, but the manual written for the Otrona is clear and carefully graduated for the beginner, introducing the most frequently used commands first, and leading, with practice exercises, to full use of the system.

The inclusion of WordStar Plus is an attractive feature of the Otrona 512. For long sessions, however, concentration on the tiny video display quickly becomes tiring. A larger CRT monitor would be a necessity for lengthy use in such applications. On the plus side, WordStar for the Otrona makes good use of the highlight and half-intensity features of the video display.

Also supplied with the Otrona is "Charton", a program which allows the user to plot graphs, specifying headings and labels and the number of horizontal subdivisions to be shown. Vertical scaling is automatic, and a choice of bar graphs, line graphs and pie-charts is offered.

Graphs can be superimposed, and displayed with a range of shadings using the Otrona's definable graphics characters to fill blocks. Once displayed on the screen the graph can be printed on an appropriate graphics printer if hard copy is required, or updated to reflect new conditions.

"Valet", supplied with the standard machine, can be accessed at any time from CP/M. This program works in conjunction with the battery-powered clock/calendar to allow the user to set up to six appointment reminders or other alarms. Each alarm consists of a time, date and message. When the Otrona is running the alarm will interrupt the current program at the specified time, automatically saving work in progress, and display the preset alarm or reminder message.

A 14-digit, four function Reverse Polish Notation calculator is also incorporated into Valet for mathematical operations. Valet also contains the printer driver routines for graphics screen dumps, and the setting procedure which allows the user to adjust the brightness of the display screen, volume of the keyboard sound, bell on/off and the baud rates of the communications and printer ports.

To round off this array of software a communications package and an electronic spreadsheet calculator will also be available. Needless to say, any other CP/M compatible software will also be run on the Otrona 512, providing it is available correctly formatted for the Otrona's double density 14cm disks.

Manuals supplied with the Otrona include specially written versions of the WordStar-Plus and Basic-80 manuals and a copy of "The CP/M Handbook" by Rodney Zaks. We were also provided with a preliminary programmers' guide.

Who will it appeal to?

Apart from well-heeled free-lance journalists, the Otrona 512 portable would be an attractive proposition for the businessman on the move, executives who want one personal computer for both the home and office and those involved in extensive field-work. The main attraction is the saving in time and money made possible by the computer.

A demonstration cost analysis program used by Otrona dealers, in fact, calculates the "pay back" period of the machine, based on estimates of the time saved in document creation and filing, analysis and business planning and communications. Otrona claim that the computer will pay for itself in under 12 months in common middle-management applications.

Applications which can only be filled by a portable computer include the collections and analysis of data in the field (whether "the field" is a scientific research station or a salesman's territory) and the creation and display of transportable management and marketing presentations. The traveller who brings his own computer to back up his arguments with facts, figures and graphics displays cannot help but make an impression!

At $4995 for the basic unit, the Otrona 512 is not cheap. This price, however, includes all the software required for a fully functioning business system, disk drives and communications ports. There is nothing else to buy unless hard copy is required, in which case any one of a range of serial printers can be added.

The computer is compact and sufficiently robust to bear the rigours of travel, whether under the seat of a passenger plane or in the boot of a car. As a ready-to-go, hard-working portable computer the Otrona is an attractive proposition. You can even use the computer to work out if the expense was worthwhile!

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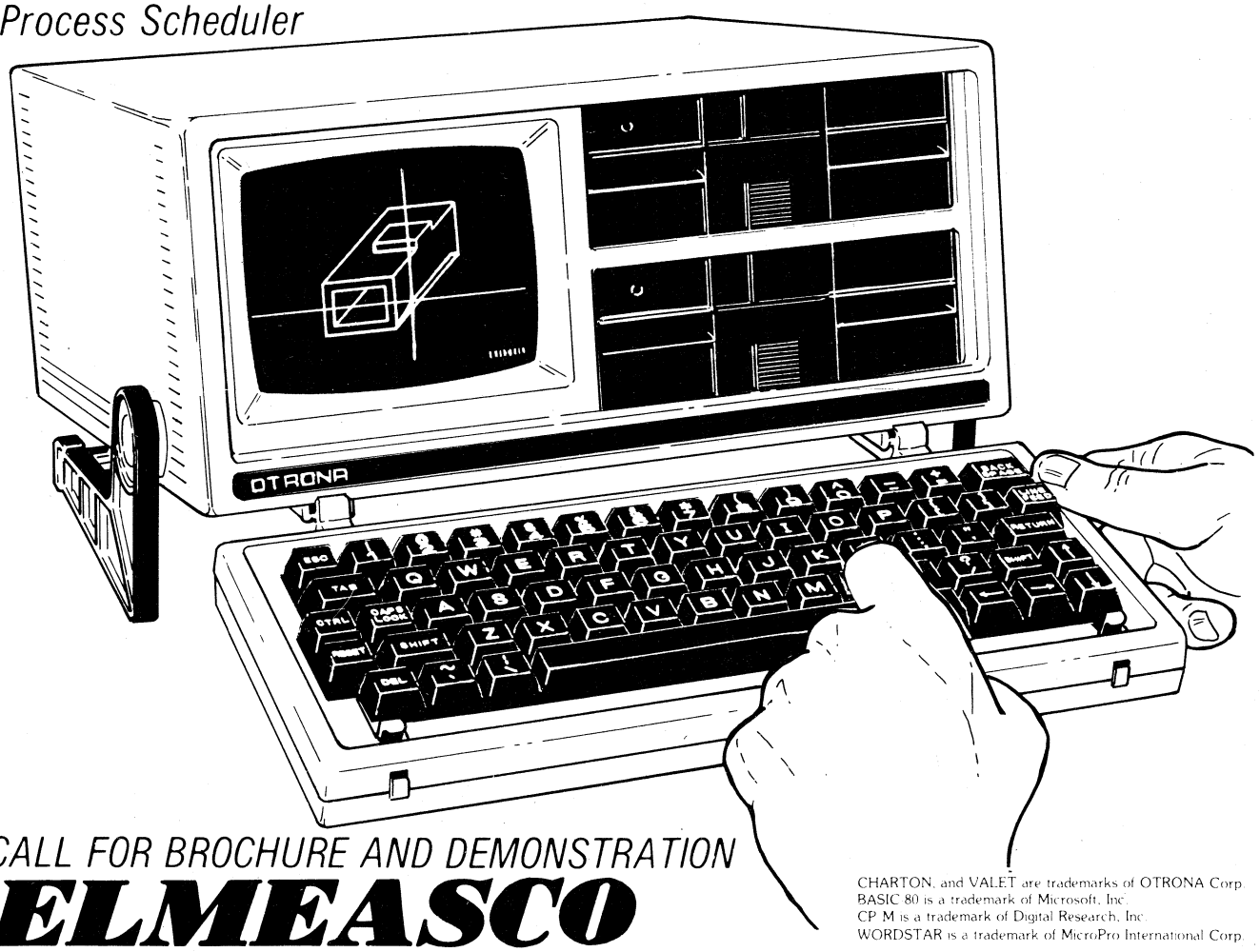

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