380Z INFORMATION BULLETIN

DoI 'MICROS IN SCHOOLS' SCHEME

The Research Machines 380Z microcomputer system is a powerful, low-cost, general-purpose computer system, which has been selected by the Department of Industry for its 'Micros in Schools' programme. Under this scheme, purchasers of the recommended system qualify for a grant of 50% of the purchase price.

The system chosen for 'Micros in Schools' Scheme is the 380Z MDS-2, the popular dual disk version which is equally applicable to classroom instruction, computer studies courses, and general schools applications work.

Already widely used throughout secondary and higher education, the design, functional specification, facilities, and operational characteristics of the 380Z are particularly appropriate to computing in schools.

FEATURES OF THE SYSTEM INCLUDE:

- exceptional computing performance
- physical robustness and high reliability
- ease of operation
- simple, low-cost, on-site system expansion
- comprehensive display and graphics facilities particularly suited to the classroom environment
- high performance disk operating system based on the industry-standard CP/M
- proven system software plus the benefits of access to a comprehensive range of third-party educational software
- full hardware, technical, and software support.

A summary specification of this equipment is given overleaf.

SUMMARY OF FEATURES

The system

380Z computer with dual (double-sided) minifloppy disk drives, twelve-inch monochrome video monitor, and ASCII encoded keyboard.

High Resolution Graphics package

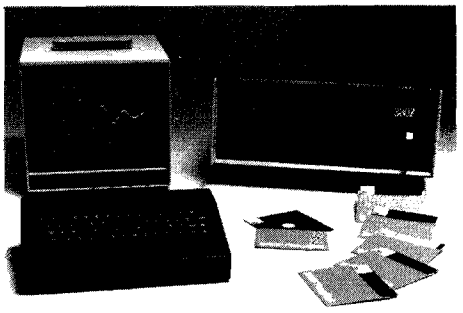
CP/M operating system

Extended BASIC

Z80 Assembler

Interactive Text Editor and Formatter

Spare disks



Hardware

The central processing unit and dual disk drives are contained in a single, small, free-standing unit measuring 19½ in wide, 16¾ in deep, and 8½ in high overall. The case is of steel construction and engineered to high standards for trouble-free operation. Socket connections are provided at the rear for peripheral devices; only two front panel controls, RESET and POWER (ON/OFF), are needed.

The 380Z **CPU** is based on the extremely successful, widely used, and very fast Zilog Z80A microprocessor. 32K bytes of RAM are provided as standard and there is an option for extending this if necessary.

Hardware expansion can be carried out on-site by the straightforward insertion of the appropriate pcb's in the available slots inside the case.

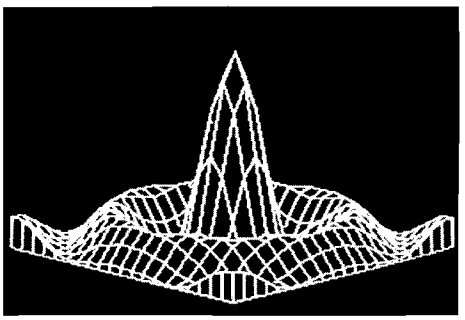
The **disk drives** give immediate access to on-line storage of up to 300K bytes of data on minifloppy disks. Although the system will also accept cassette tape inputs, the use of disks offers many advantages of speed, flexibility, and ease of use. The dual drive system is especially advantageous in the routine copying of disks for data security purposes.

A robust standard ASCII **keyboard** is included with the system. This discrete unit is simply plugged into a socket at the rear of the case and may be connected several feet from the CPU for maximum versatility in use. Special attention has been paid to the design of the keyboard and its 'touch' and an important feature is its use of *n* key 'roll-over' to ensure that all key depressions register.

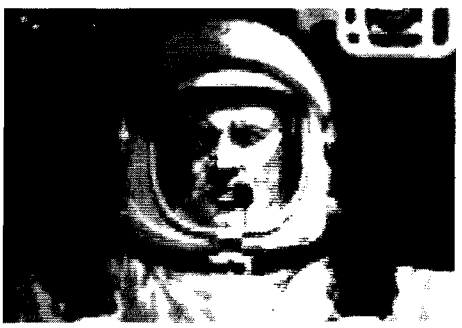
Video display. The system includes a 12 inch monochrome video monitor, and a connection is also provided which can be plugged directly into the UHF aerial socket of a standard domestic black and white television set. The large screen of a television is particularly suited to classroom use. Both outputs are available at the same time and up to eight monitors can be linked together, providing the monitors have input and output video sockets. The screen displays 24 rows of 40 characters, and uses a particularly legible character set which includes true descenders for lower case characters.

The Varitext 40/80 character VDU board is available. This facility can be fitted to new disk systems as an optional extra. Please see separate information sheet for details.

The 380Z has extensive **graphics** capabilities. Low resolution graphics are based on an 80 × 72 matrix (the same resolution as that used for Teletext and Viewdata). These are applicable to the presentation of static and animated tables, simple graphs, and other graphic aids. When using 40 × 24 resolution, two additional grey tones can be introduced.



The 380Z also offers medium and high resolution graphics, based on a 160 × 96 and 320 × 192 matrix respectively. Both can be combined with alphanumerics. Unlike many graphics facilities which are imposed on (and consequently both impair and are limited by) the overall system, the 380Z graphics feature is designed to be completely self-contained. Not only does it offer great versatility and clarity, therefore, but it also makes no demands on the CPU memory. In fact, the graphics board carries 16K of RAM, all or part of which can be accessed by the CPU as program memory if not being used for graphics.



Through the addition of an optional PAL or RGB board and the appropriate colour monitor, the medium and high resolution graphics capability is available in colour.

A standard RS232 **serial interface** is provided in the 380Z for the connection of a range of input-output devices including teletypewriters, printers, and paper tape readers. A **parallel interface** is provided to accept digital signals, for example to demonstrate computer control applications. A separate interface permits the use of a cassette recorder.

A distinctive feature of the 380Z is its **software front panel.** This allows the user to simultaneously display and modify the contents of all registers, of all memory blocks pointed to by the registers, and of separate blocks of memory. Powerful debugging facilities are provided. A 'single stepping mode' enables the operator to step through a program using single keystrokes and immediately see the effect on registers and memory. This is particularly useful for teaching and learning machine language programming and debugging.

Software

The MDS-2 version of the 380Z uses the Digital Research **CP/M disk operating system.** This powerful and versatile system has been adopted internationally as the informal industry standard and thus makes available an exceptional range of system software and user programs.

The standard software supplied with the 380Z includes:

Extended BASIC, one of the fastest general-purpose implementations of BASIC available with floating-point arithmetic, string handling functions, graphics, re-numbering, and particularly effective line editing.

Z80 Assembler, which uses Zilog mnemonics and produces object code in the industry standard Intel format.

Interactive Text Editor and Formatter, comparable in facilities to those available with large mainframe computers, but with the added benefit that the screen display is immediately updated as the text is edited.

Additional system software, such as FORTRAN and COBOL, is available from Research Machines as options; however, a particular benefit of the system is that its extensive use in schools means that a large choice of programs is also available to users through third parties. Examples include the Schools Council and Chelsea Science Simulation packages. These, together with User Group and commercial Z80-CP/M software, make the 380Z one of the best supported micro computer systems in current use.

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