Research Machines 380Z

A robust physical construction and superb high resolution graphics have made this microcomputer very popular in schools and with the military

The products of Research Machines Limited represent one of the most enduring classes of computer available. Although these machines are not particularly innovative, nor especially competitively priced, they are extremely solidly designed and constructed, well-supported and extraordinarily reliable. The company's most popular computer, the RML 380Z, won't be found in many homes but, as one of the most common educational machines, it represents for many children their first experience of computing.

Compared with most machines the 380Z is huge: the main circuit boards are kept in a robust 19 inch (48cm) wide casing, complete with handles at the sides. Removing the lid of this 'black box' reveals why it's so big, as nearly a quarter of the space inside is taken up by the power supply. Though sheathed in metal, its weight makes it clear that this is not an advanced switching-type power supply unit, but a solid iron-cored transformer with enormous capacitators. This may seem old-fashioned, but it has the considerable advantage of being almost impossible to overload or otherwise damage.

It is perhaps this reliability that has made the 380Z popular at the Ministry of Defence, where a large number are used for stock control and similar chores. In those schools and colleges that offer higher-level maths, physics and science, the machine is particularly favoured for its high resolution graphics, which prove useful for pictorial demonstrations of various aspects of the curricula.

The High Resolution Graphics (HRG) package is a set of machine code routines that are called from the user's program, and which can alter the display generated by the HRG card. This must be present in order to produce graphics at all; and although it was originally introduced some years ago, it remains one of the better systems available. By altering the contents of certain memory locations the card can generate displays at several resolutions in the normal colours (red, yellow, green, blue, magenta, cyan). Depending on the resolution chosen, which can range from 160 x 96 to 320 x 192, these six colours plus white can be given up to 255 different levels of brightness, thus increasing the range of colours to 1,786 (seven times 255, plus black). Alternatively, it is possible to use some of the bits normally intended for specifying intensity to produce multiple pages of graphics, though the number of different intensities will be correspondingly lower.

A full set of these calls, plus a number of others for handling such related matters as printer dumps (copying the screen to paper), are provided as extended versions of the RML BASIC. This dialect is much like Microsoft BASIC, and most keywords are used in an identical fashion. The only major exception is the use of text labels for calling subroutines, rather than an address in decimal.

However, the interpreter plus HRG package together occupy a considerable amount of

Monitor
To take full advantage of the 380Z's facilities, a colour monitor, with an RGB interface, is essential. The machine can be purchased with 40 or 80 screen columns as standard, and this determines the type of monitor needed

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Disk Drive Controller Board
As well as carrying a specialised disk controller chip, this board has a Z80 clock/timer chip (CTC), and an 8521 serial Input/Output chip, which together provide impressive communications facilities

Bus Terminator Board
This is situated at the far end of the bus to the CPU board, and guards against interference on the various electrical lines

Keyboard
The keyboard supplied with the RML 380Z is mounted in a small but weighty metal box. The keys are arranged in a fairly standard pattern, and are of high quality, with a solid but pleasantly light touch. They are obviously designed to withstand heavy use, a factor that makes the keyboard an ideal choice for the classroom

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