## HARDWARE REVIEW

# Dick Smith VZ200: good value

## By ROB FULLERTON

Dick Smith Electronics has released another personal computer on the market to follow closely on the heels of the Wizzard computer. The VZ200 uses a Z80A processor running at 3.58MHz, which must be the fastest clock of all the low-priced personal computers to date.

The computer is quite small, being only nominally larger than the keyboard and 50mm thick. It comes in an attractive white plastic case with the keyboard built into a sloping matte black surround.

A power-indicator LED is the only other feature on the front of the case. An on/off switch is located on the right-hand side. Across the back of the computer there are four sockets for 9v DC power, cassette tape, video monitor, and TV output. There are two edge connectors covered by protective metal plates for the add-on memory expansion and peripheral interface. Power comes from a separate large plug pack rated at 12v 1A. It has a generous length of lead.

Also incluced with the computer is a lead for connection of a standard audio cassette for program storage and a lead for connection to a monitor or TV. This TV lead is, unfortunately, only long enough to reach to a set placed on the same table as the computer. Other items included in the package are a BASIC reference manual, a book of application programs and a demonstration cassette.

### Keyboard

The keyboard is the same used in the Wizzard computer, which is not surprising, since both computers are made by Video Technology, Ltd, of Hong Kong. The moulded-rubber keys are set in a QWERTY arrangement with the standard ASCII character set. Each key performs up to four functions, including the ASCII character screen printed on the keytop, the single key Microsoft BASIC commands, the cursor control, and the on-screen editing.

The alternative functions are accessible by use of the CTRL key in the same manner one would use the SHIFT key. The single-word BASIC commands are printed on the computer above and below each key. All keys except CTRL have an auto repeat facility if held down for more than one second. This is very useful for cursor movement.

Comments I made about the keyboard of the Dick Smith Wizzard computer *(Bits & Bytes, June)*, also apply to the VZ200. The longevity of the screen-printed characters on the keys and the long-term contact reliability of the key switches remain to be proven.

### Video display

The VZ200 can use either a colour TV set or a colour monitor for display as both RF and video outputs are provided. The internal RF modulator is tuned to channel 1, Australia, but the picture in N.Z. will come up on channel 2 because of TV channel allocation differences between the two countries. Some re-tuning will be necessary to get the best picture.

The display area for the computer occupies a rectangle covering about two-thirds of the screen. In the text mode there are 32 characters per line with 16 lines displayed. Even with this smaller active display area the characters are sharp and easy to read. The stability of the picture was a little disappointing, however, with persistent diagonal ripples visible on both the TV and monitor displays. The upper-case ASCII character set is displayed and can also be set to inverse video.

### Editing

An excellent feature of the VZ200 is the on-screen editing capability. The cursor control keys allow you to position the cursor over any mistake in a line and then, by pressing INSERT or RUBOUT, change the required characters. This saves having to re-type the whole line again as with some computers. The auto-repeat function is very useful here as continued pressing of the RUBOUT will erase as many characters as required. These editing functions rank as one of the most desirable features of this computer, especially for the beginner.

### Graphics

Two display modes are available, text mode and graphics mode. In the text mode, the ASCII character set is displayed as well as the 16 chunky graphics shapes. These character may be displayed in eight different colours with a choice of two

background colours. For graphics mode the screen is divided into 128 x 64 pixels, each individually addresssable. Each pixel may be programmed on or off with the SET and RESET commands. The pixels may be any of four colours with two background colours. The 8192 pixels displayed in the graphics mode produce quite acceptable resolution for games and data displays.
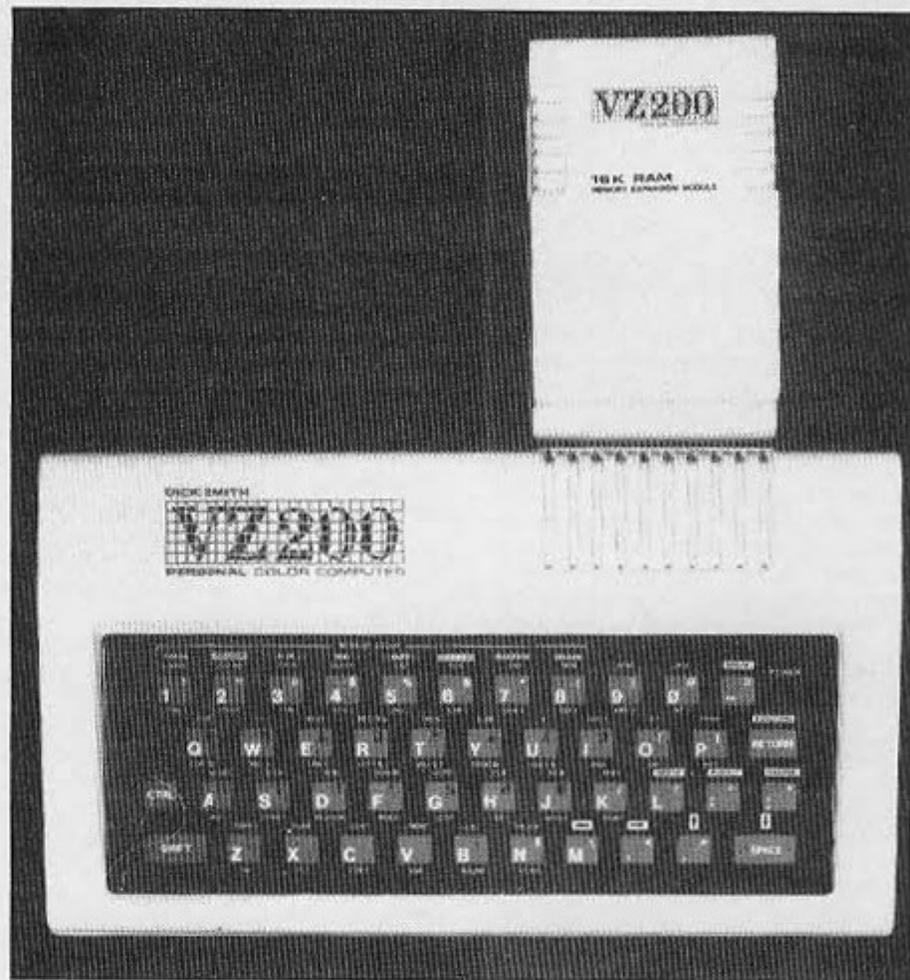
## Sound

It is possible to generate sounds on the VZ200 through the internal piezo speaker. Control of the tone frequency and duration is by the SOUND command. Programmable music notes covering 2½ octaves with nine different note durations are available. The sound is very tinny, and with only one channel it can hardly be considered suitable for ''serious music programming'' as claimed in the advertising leaflets. It is adequate for games only.

## Cassette data storage

For program and data storage the VZ200 provides a connection to an audio cassette recorder. An interconnection lead is supplied with two miniature jack plugs on one end and a stereo plug on the other. The stereo plug goes into the computer socket marked tape and the others plug into the ear and mic sockets on the recorder. A demonstration tape comes with the computer which shows off the colour and graphics capabilities.

I found some difficulty in loading this tape as the volume setting for the recorder playback appears quite critical for a successful load. There is no provision for cassette motor control. The difficulty is cured, however, by putting a 15-Ohm resistor in parallel with the earphone connection, i.e. soldering it between the two wires.

Five BASIC commands handle storage and retrieval of data from the



The VZ200 with the 16K RAM expansion module
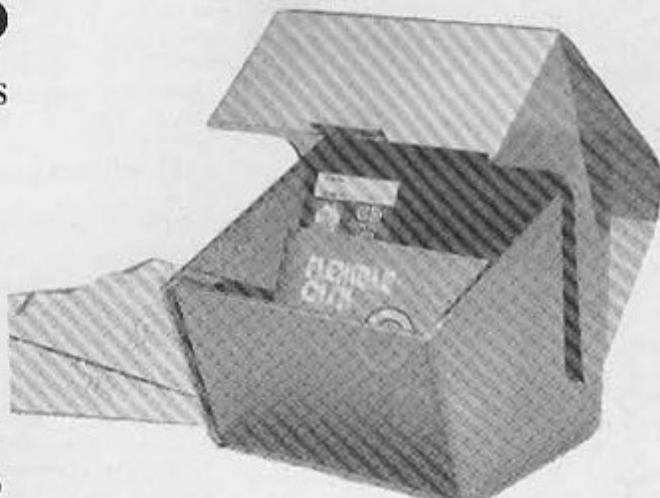
cassette. In addition to the usual CLOAD and CSAVE commands there is a CRUN command which works like CLOAD+RUN.

The VERIFY command checks the data on the tape against the RAM data after a CSAVE. This is particularly useful, as the RAM contents are not overwritten and another CSAVE can be given if the first load was erroneous. Files on the cassette are given a 16 character file name, so several files can be stored on a single cassette and the required file loaded by including it's file name with the CLOAD command.

As well as commands to store programs on tape there are two commands, INPUT # "filename" and PRINT # "filename", which allow storage and retrieval of variables and data from within a program that is already executing. The data on the tape is assigned to the variable list given in the INPUT # command. Similarly, the variable list after the PRINT # command is written to the tape. This feature makes a very flexible tape storage system and with a little programming ingenuity multiple mailing list programs and the like should be possible.

## BASIC

The VZ200 comes with an 8K version of Microsoft BASIC with 8K enhancements in ROM. This is an excellent version of BASIC for such a low-priced computer and contains many of the features only found on more expensive machines. For example, enhancements such as IF ... THEN ... ELSE and PRINT USING are included as well as the USER function for machine code programs.

The BASIC Reference Manual guides the new user through the fundamentals of the language and explains the use of each command with examples. It cannot, however, be considered a serious guide to Microsoft BASIC and a user would have to consult one of the many texts available to obtain the details of the language.

For instance, the published specifications for the ROM BASIC quote single-precision, floating-point maths functions with nine-digit internal precision and eight digits displayed. I found, however, that double precision was available using the D format (eg. 1.2345D+3) instead of the usual E format (eg. 1.2345E+3) and that results can be calculated and printed with 16 significant digits. This suggests there may be other enhancements in the ROM which are undocumented.

# Microcomputer summary

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| Processor: | Z80A running at 3.58MHz. |
| Memory: | ROM 16K with BASIC interpreter and operating system. RAM 8K (2K screen-6K for user programs). Expandable to 24K, with optional plug in module. Price $149. |
| BASIC: | 16K Microsoft BASIC. |
| Keyboard: | 45 keys in modified typewriter format. Keys auto-repeat after 1 sec. Single key BASIC command entry. |
| Screen: | Text Mode — 32 char. x 16 lines. Upper case ASCII plus 16 graphics characters for 64 x 32 graphics. Inverse video. 8 colours with 2 background colours. Graphics mode — 128 x 64 pixels individually addressible. 4 colours with 2 background colours. |
| RF output: | RF modulated signal on VHF channel 2. Cable supplied. |
| Video: | Composite video 1.4v P-P. PAL compatible. 75 Ohms impedance. |
| Sound: | Inbuilt piezo speaker. Music notes covering 2½ octaves with 9 note durations. Speaker "beeps" for keyboard entry. |
| Cassette: | Interface connects to standard audio cassette tape recorder. Data rate 600 baud. Cable supplied. |
| Power supply: | Plug pack. Output 10v DC at 800mA. |
| Manuals: | User manual, BASIC Reference Manual, book of sample programs. |

Memory addresses for the video portion of RAM are given for text and graphics modes. This enables PEEK and POKE to be used for direct screen addressing in graphics and games programs. The INKEY$ command, which polls the keyboard and returns the key value if pressed or a null string if no key is pressed, is a further feature which enhances games software. It is unfortunate that a complete memory map is not included.

The greatest feature of a computer with Microsoft BASIC is the enormous range of software written in this "industry standard" language. There are many books of programs written for Microsoft BASIC including those for the TRS-80 and the System 80. These should provide the VZ200 owner with an extensive software library to adapt to his computer.

## Memory expansion

The memory of the VZ200 can be expanded from its internal 8K RAM to 24K with the addition of the 16K expansion module. This plugs into the rear of the computer in the appropriately marked socket. It is a rather bulky package which relies only on the edge connector for physical attachment. If the computer is to be lifted it would seem wise to unplug the module before moving to prevent undue strain on the connector.

The other connection at the rear of

the computer is available to accept an interface for a Centronics-type printer. This interface, with printer cable attached, is obtainable from Dick Smith for $99. The Microsoft BASIC provides good software interface for a printer as the LPRINT command can be used with the USING command to give formatted printing. As well as the LLIST command is a COPY function which allows the screen contents to be dumped to the printer.

The expansion of the VZ200 is not limited to a printer only. The product leaflet quotes joysticks, games cartridges, larger expansion memories and serial and floppy disk interfaces as "coming soon".

## Summary

For the first-time computer purchaser the VZ200 offers excellent value for money at $349 for a complete up and running system. The 16K Microsoft BASIC interpreter has many enhancements not found on other personal computers in the same price range. The single key BASIC commands and on-screen editing make it an ideal machine for learning to program. The memory expansion to 24K and a printer interface make the VZ200 a powerful performer. The keyboard is definitely a disappointing feature, however, this should not prevent the prospective first time computer purchaser from giving the VZ200 very serious consideration.