

## REVIEWS

### HARDWARE

# IMPROVE YOUR MEMORY

The Multiform Z80 second processor is probably the most flexible currently available. Ed Brown explains why

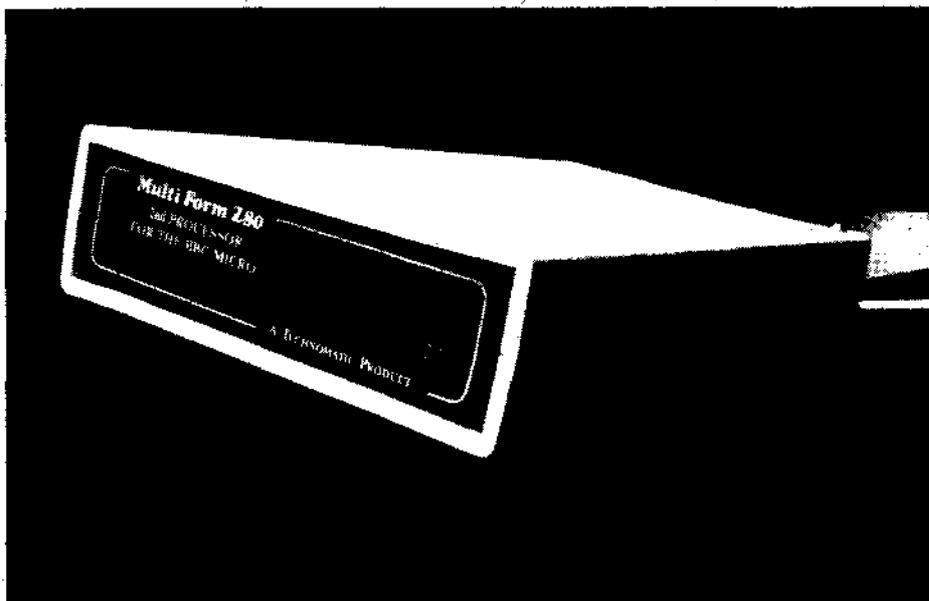
The latest addition to the Z80 second processor field is an offering from Technomatic aimed at those who have previously used CP/M. This Multiformat Z80 second processor overcomes the major criticisms of other Z80s by providing several disc formats that the user can select at will. In addition it is possible to add further formats as they are required, thus providing a very flexible and powerful system.

Until now it has been necessary to obtain software for Z80 second processors on their individual format of disc and then to install the software to handle the BBC micro screen control codes. Now by using the Multiformat Z80 these problems are a thing of the past. With a library of 28 formats (growing all the time) and three different screen emulations, together with the ability to read Torch format discs, the package is probably the most flexible currently available. Already an optional software package is being offered for reading and writing IBM PC format discs.

The package consists of a Z80 second processor and 64k of memory which is attached through the 1 MHz bus, a ROM chip, two discs and a manual. Its operating system is OSM, a CP/M look-alike, and as far as I can tell it is fully compatible with CP/M. When testing for compatibility I ran several programs ranging from the classics such as Pocket Wordstar, and the other Micropro products (kindly supplied by BEL), through to disc editing programs and communications software, and they all ran correctly. When ordering it is necessary to specify the type of filing system you are using, as the ROM chips for each system are different.

Full and clear instructions are given on inserting the ROM. The hardest task was removing the screws on the BBC micro casing. Once fitted, the \*HELP command shows the presence of the ROM and the system can be booted up by typing \*Z801 (the last digit determines the type of Disc Filing System that is fitted to the Beeb).

The system consists of the operating system, OSM, and the utilities PIP, STAT, SUBMIT, XSUB, ACCESS, BSTAR, SCOPY, DISPLAY, RS423, TORCHRW, and FORMAT. In addition there is the ROM-based



Technomatic's Multiform Z80: aimed at previous users of CP/M

multiformat software that comes into effect when the system is booted up with the \*Z801D command. On typing \*Z801D the system presents a menu of options on the screen which allows you to define the mode of operation of the system. Although this sounds complicated it is in fact simple. The seven options available from the main menu are described below with some short notes on what they accomplish.

Three terminal emulations are available on the system and these can be selected from this option on the menu. The emulations available are for the popular ADM3A and Hazletine 1500 and the BBC VDU in mode 3. This means that it is easy to install standard packages such as Pocket Wordstar for the Technomatic Z80 as these support either or both of these terminals. The option of BBC VDU mode 3 allows most programs to run that have been installed for the Acorn. The Display program under OSM allows the same selection of terminal emulations.

You can select which disc format you want for each drive by using the Read parameters option from library file option. This is done by first specifying which library you want to select from, and then by selecting a format from those presented on the menu. The package comes supplied with a number of formats,

including Acorn; Superbrain and Amstrad, in a file called General. Other formats and libraries can be created by using option 3.

The add/define parameters option allows you to define your own formats for discs you want to read or write but which are not already included in a library. The method of doing this is to answer a series of questions about the format you wish to read or write. To do this you will need to know details such as the number of tracks, the sectors per track, density, number of directory entries, number of skipped tracks and the skew factor. Most of this information can be obtained from STAT together with a little educated guesswork. The other option is to sit down and systematically work through the different combinations until you find the one that is right for the disc you are trying to access. But you cannot examine the formats already described to see if any match up to the format you want.

You can remove a format from a library by using the option, delete entry in library. First, specify the library and then select the format from the menu. Once selected you are asked to confirm that you wish to remove the library. Similarly, you can create a new library to add additional formats.

The format disc option allows formatting a disc in the format selected for the drive speci-

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fied. The same operation is carried out by the 'Format' program that runs under the OSM.

The Exit option allows you to boot the OSM operating system or enter any \* commands to configure the system before booting OSM. Once you have selected the disc format and terminal emulation you require then you exit the menu by using the Exit option. Now the disc formats to be displayed will be shown and if these are correct, the system is booted by typing Return. Once in the system the following commands are available: PIP, STAT, SUBMIT and XSUB are equivalent to their CP/M counterparts but provide a better idea of what is happening.

You can transfer programs between the BBC DFS and OSM using the 'Access' program. This provides an easy method of utilising the files previously created under the BBC micro DFS.

BSTAR allows \* commands to be accessed from OSM and is useful for setting up the function keys from within a Submit file for different programs.

The SCOPY program is provided to allow

for the copying of discs when only a single drive is available. Since OSM is provided in RAM it is possible to run the whole system with only a single drive.

The terminal emulations can be selection via the 'Display' program. The default emulation is the ADM3A emulation.

RS423 is a flexible program that allows the setting of all the necessary values for communications through the RS423 channel.

TORCHRW primarily provides for the reading and writing of Torch format discs but also gives format and examination facilities. All the facilities are easily accessible from the menu displayed when the program starts up. And there is a separate program to perform similar functions (including reading and writing) on PCDOS format discs.

Format allows the formatting of a disc in the format selected for the drive. Torch and PCDOS format discs are dealt with using separate programs. Format is similar to the format disc option on the start up menu.

Technomatic's Multiform Z80 second processor is a very useful package which allows

the use of many different disc formats, something that is normally only found on machines costing thousands of pounds. Although it does not use CP/M, the OSM operating system which is in ROM seems to be completely compatible with CP/M. A wide selection of programs were installed and tested without problems. The task of transferring and installing the programs for the system was greatly eased by the flexibility of the Multiform approach and the implementation of the terminal emulators.

In addition to the standard package there is an additional software package that allows the reading and writing of PCDOS format discs. This package works the TORCHWR software in that it is totally menu driven and provides the ability to read the directory of both OSM and PCDOS discs, delete files from OSM and PCDOS, and to transfer files in either direction.

*Multiform Z80 Second Processor, £299 and PCDOS Multiform Utility, £75, Technomatic Ltd, 17 Bumley Road, London NW10 1ED, Tel: 01-208 1177.*