Down Memotech lane

Andy Pennell *delves into the heart of the new Memotech MTX500 micro*

The MTX500 is the first computer to be produced by Memotech, well known for its ZX81 add-ons, and has been designed to expand from a home computer to a full business machine.

The MTX costs £275 and comes complete with 24K Rom and 48K Ram. The Ram is divided into two sections — 16K video Ram, for the display, and 32K user Ram, for programs, etc.

The first impression of the machine is the professionalism in construction — it looks very nice indeed, in black with a smart metal facia. It is a heavy machine, and over 18in long, so you can appreciate what your hard-earned cash has been spent on.

There are a multitude of sockets along the back, consisting of two joystick sockets, cassette connections, Centronics printer socket, aerial socket, power socket and audio and video output. There is also provision for two RS232 sockets, but these are currently blanked off. All the sockets are concealed by being deeply recessed in the case, which makes it much harder to actually plug anything into them. In addition, the left-hand end of the case has a large expansion socket with all the CPU signals on it — Memotech thoughtfully supply a plastic blanking plate to protect and conceal it when not in use.

As well as the main unit, a space-age shaped power supply is included, which has a long mains lead but a short computer lead. This means that it has to sit on the table next to the micro, instead of on the floor. After switching on, I discovered that it is a big nuisance, and it makes a terribly loud buzzing noise, much louder than even the Spectrum's famous hum. This is further amplified as it manages to come through the tv speaker as well.

The MTX has a beautiful keyboard, divided into three sections. The first is the main alpha-numeric area, with all the normal keys in the correct places, and is a dream to type on. My only grumble is that

the return key is too small — I often hit the line-feed instead, which is directly above and bigger than the return key. This is the best keyboard on any micro under £1,000 I have ever used, including the BBC and Commodore machines. The two other groups of keys are a so-called numeric pad, and eight function keys.

Inside the case is what one comes to expect from Memotech — a very neat pcb that holds all the components including the main chips — namely a Z80A processor and TMS9929 graphics chips, as well as about 30 others. It takes up about two-thirds of the available space — the remaining free area being adjacent to the blanked off RS232 sockets, so I presume that is where the forthcoming communications card is going.

On powering up the MTX, I had difficulty in tuning my colour tv correctly. I eventually managed to get a stable picture of the initial blue screen, but the buzz from the psu was all too apparent from the speaker. This would not be a problem if it were not for the fact that the MTX puts its sound through the tv speaker, so you cannot turn the volume right down.

After a while, the picture quality deteriorates as the machine warms up, which necessitates re-tuning. After experimenting I found that some colours, particularly black, needed the tv retuned again to display properly.

Another problem is that the left-most characters on the screen disappear off the side, though Memotech makes it less noticeable by not using those positions when listing and editing programs. However, this sort of software adjustment should not be necessary to correct poor hardware. When programs are Run, the missing characters are all too notable by their absence.

I also tried a colour monitor using the video output of the MTX, and achieved similar results, but in black and white. After contacting Memotech, they told me that to get a colour video signal I would have to change a link on the pcb — surely it should be supplied set up for colour?

They also said that they are working on the problem of display quality, which is mainly due to the Texas chip. I can believe it after using a CGL M5, which also uses the Texas chip,

as it has similar distortion problems.

It is a shame about the tv circuitry, because the graphic effects possible using the Texas 9929 chip are very good. It has four modes, only two of which are necessary and available from Basic. In text mode, the display is 40×24 characters, with no graphics and only two colours — foreground and background, or, a la Sinclair, *Ink* and *Paper*.

The MTX graphics mode gives 16 colours and a resolution of 256×192 pixels which is about average nowadays, though the colour resolution is 64×192, which exceeds many, such as the Spectrum. When in this mode, text can be printed in colour, in a 32×24 form.

The major graphics facility of the MTX is that you can have up to 32 sprites on the screen at once. Sprites are objects, up to 32×32 pixels each, that co-exist with the graphics screen. They each have a priority, so that some move in front of others, while they all move in front of the graphics screen.

This makes it very easy to write games, even from Basic. For example, you can print the background, set up one sprite for your man, and another for each alien. Moving them is trivial, as you do not have to plot and unplot them — the Texas chip does all the hard stuff. The only limit is that a maximum of four sprites can be on one vertical position — any more become invisible.

On switching on the MTX, the message *Ready* appears at the very bottom of the screen, with the cursor four lines above it. I thought at first that something was wrong, but in fact when editing programs the display is divided into three sections, or virtual screens. The main one is the top 19 lines, where all printout and listings appear, the very bottom line is another, for error messages, and the remaining one is the four lines above that, where lines are entered and edited.

Trying to type in my first program without reading the manual revealed two unusual features of MTX Basic — the first was that spaces are absolutely critical, and must follow line numbers and separate commands, which takes some getting used to.

The second feature was that each line is checked for syntax before entering into the program, Sinclair style, which is terrific and ideal for the beginner. If a line is not correct, then the relevant error message appears and the cursor is placed in the line where the syntax failed. The line can then be edited, and re-entered. When a line is correct, it is printed in the upper screen together with its line number, if it has one — the MTX accepts line numbers from 0 to 65535, which is most unusual, and appreciated.

Editing is performed using the numeric pad, which has the cursor and other special keys on it. One unusual feature is that the *Delete* key deletes the character to the right of the cursor, which is opposite to the norm. However, if you think about it, it

is the best choice and makes editing lines much quicker.

The editing features in general are easy to use and very good. However, the cursor never changes to indicate the current mode, such as Insert or Caps, which can be annoying.

Program lines can be a maximum of four screen lines, which is usually sufficient. Unfortunately, the function keys cannot be programmed to give anything more than graphics characters, unlike the BBC equivalents.

The MTX's main language is Basic, but sub-languages Noddy and Z80 assembler are also included. The Basic is fairly standard, but does have extra commands to handle the machine's graphics and sound capabilities. This is the opposite of Commodore, for example, who supply a skeletal Basic and then charge over £40 for the extra commands you need to use their machines.

So-called "structured programmers" will not be very pleased with the MTX facilities, as it lacks procedures, *Repeat . . .Until, Do . . . While* and other such features. But, I think, procedures apart, they are no great omission.

The Basic is about average speed, around twice the speed of the Spectrum and half that of the BBC.

One thing I didn't like about program testing is that it is impossible to debug graphics programs, as when an error occurs the display switches back to text, with the offending line appearing in the lower screen, ready for editing. In addition to this, the *Continue* command didn't seem to work very often.

The MTX hardware excels in the graphics department, and so does the Basic. All the features (bar one) can easily be used with appropriate commands, which are very powerful. In fact, some commands are too powerful, and thus too difficult to use, particularly as the manual is really not very clear.

There are commands to create sprites, their shape, colour, size, position, direction and speed. These latter two make it simple to move things around the screen — just set the sprite up, and the machine will move it for you, leaving the program to do

other things. The only thing missing is a function to detect collision between sprites, but a delve into the back of the manual soon revealed which I/O location to test.

As well as sprite commands, there are commands to plot points, draw lines, draw arcs and draw Oric-style circles (ie ovals!). Colour and associated attributes are easy to control, using *Ink, Paper, Colour* and *Attr* commands.

As well as good graphics capability, the MTX boasts the same sound chip as the BBC micro — the Texas 76489. It has three tone channels and one noise channel, and is easily controlled from Basic. The volume and frequency envelopes can also be controlled, using a much easier method than the 14 parameters needed by the BBC. I do wish that there was a *Sound Off* or similar command though, as the sound is put through the tv, along with the psu buzz.

A language new to me, called Noddy, is included in the MTX, which is designed to make text handling easy, especially for beginners. It has only 11 commands, which allow pages of text to be printed, and simple choices to be made. It is indeed easy to use, but I would personally prefer it to be replaced with commands to make up for the Basic's deficiencies. Believe it or not, after entering a program with Noddy, the command to run it is *Plod,* named after the well-known constable.

Something which I am very pleased to see in the MTX is an inbuilt Z80 Assembler/Disassembler for machine code programmers. In a similar way to the BBC, lines of Z80 mnemonics can be included in programs, making the writing of machine code much easier. Although the assembler is not the most powerful I have seen, it is certainly a welcome addition — it even checks the syntax of each line first!

To help debug machine code, there is also a front panel display, which has a number of interesting features. As well as being able to modify and disassemble

sections of code, you can set breakpoints, examine and alter register values, and even single step through code. I hope other Z80 micro manufacturers (particularly in the Cambridge direction) take note of these great debugging aids.

Unfortunately, the Basic does not have many debugging aids, lacking line delete, renumber, and any hex to decimal conversion. This latter omission makes it difficult to use some of the machine's more advanced features, as the system variables and assembler listings are only in hex.

The Basic does have other oddities, such as *Let* being compulsory, no *Tab* command for printing, and an inaccurate

Pause statement. The error messages are all brief and ambiguous — the manual is little help, particularly with the common messages *SE.A,SE.B,SE.C* and *A!*
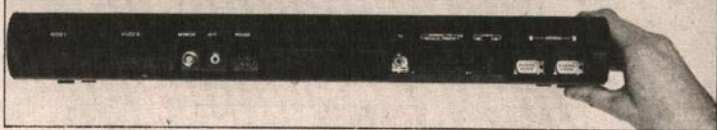
The manual I was supplied with is not a final one, which is just as well as it is not really suitable for the beginner. However, a wealth of technical information is given for the expert, though it does omit to mention the useful fact that commands can be entered in an abbreviated form, BBC style.

The cassette system appears to allow only Basic programs to be saved, loaded and verified, with no functions for variables, machine code or screens, and no *Merge* function. It may be able to do all these things, but the reference part of my manual doesn't mention cassette commands at all.

In addition my review machine appears to be incapable of *Saving* any programs, though it can load the demo tapes supplied. One tape is a very nice version of *Frogger*, called *Toado*, and the other is a difficult version of draughts. Also included is a demo tape, a cassette head cleaner and a blank tape.

The numeric keypad, to the right of the main keys, is a boon for editing, as has been mentioned. However, it cannot normally be used for entering numbers. In the manual, a *Poke* is given so that it can enter numbers, but even then the 9 key cannot be used as this was inexplicably chosen as the *Break* key. Another *Poke* is given so that the 9 key can be used, with the severe disadvantage that any program cannot be stopped. I recently discovered that pressing *Shift* with the number keys produced the required digits — the manual makes no mention of this.

In conclusion, the MTX is a nice machine, with good graphics and sound abilities, and a Basic that can use them. In future it should be possible to extend the Ram up to 512K — all of which will be accessible from Basic — and the Rom up to 72K. Other peripherals coming soon are

RS232, 80 column card and CP/M.

The MTX is a good equal to the Commodore 64, with similar user Ram, a better keyboard, equal graphics and sound, and similar in price (if you add the cost of Simon's Basic and a machine code monitor). It has the advantage that it works with most cassette recorders, but obviously cannot match the 64 for support yet. However, sufficient technical information is supplied for software houses to come up with the goods.

The MTX is a good games machine, and shows the potential for a powerful business machine so long as Memotech sort out the hardware problems. ∎