

MEMOTECHS ARE MADE OF THIS

The Memotech MTX promises to be a great bet for both the home and business user. Geoff Bains deserts his BBC to look at the competition

Memotech made its name in the fickle world of computers over two years ago with cheap reliable add-ons for the Sinclair micros. Not content with a role on the sidelines, in the summer of last year a Memotech micro was launched to an enthusiastic response and cries of 'At last, a cheap competitor to the BBC. Half a year later this micro is beginning to reach the eager arms of those waiting patiently.

It was clear from the start that the Memotech MT-500 was a little different from its kin in the home micro market. For a start it is built not of flimsy plastic mouldings but from an aluminium shell that looks strong enough to drive a tank over, let alone hammer with frustration at the invading aliens.

What really attracted prospective buyers at the time of its launch, however, was the promise of the Memotech's excellent graphics and sound. For a machine costing only £275 with 32K of memory left for the user's programs, after the graphics has taken its toll, this was indeed incentive against the £400 BBC.

In fact the MTX micro cannot quite compete against the BBC on graphics and sound but that does not detract from it as a machine in its own right. For a comparatively cheap £275 the Memotech should find a lucrative niche in the market.

The Memotech micro comes in two forms. The MTX-500 and the MTX-512. The 500 is the cheaper at £275 and comes with 32K. The only differences of the MTX-512 is that it comes with a whopping 64K of Ram. This will cost you an extra £40 but will give you more memory on a home computer than most folk would care to dream of. If you want to upgrade a MTX-500 to an MTX-512 the Ram extension will, of course, cost that bit more (£50) than having it built-in from scratch.

There are some, more cynical, people who may scoff at the thought of 64K of Ram. It is quite true that you will probably never use much more than 10K or so for your own programs. If you intend to stay on the lower, home micro, rungs of the ladder for ever (and there's nothing wrong in that, after all) you would do well to consider if you really think that maximum useless memory is worth the money. The Memotech micros, however, are destined for users with higher aspirations. Memotech is prom-



ising a whole heap of software cartridges and add-ons to turn your humble MTX-500 or 512 into a fully fledged business system (or thereabouts). Several of these goodies are, inevitably, yet to make their debut on the micro stage. Meanwhile, then, let us concern ourselves only with those items that actually arrive in the long awaited cardboard carton.

Firstly there is of course the micro itself. This is large by home micro standards, nearly 20in across. This room is not wasted, though; most of it is taken up by the 79 keys which make up the Memotech's keyboard.

Graphics potential

The keyboard is the real typewriter kind. This is essential if Memotech's hopes for the machine are to be realised. Even if you are only ever to use your micro for games and your own programming, a decent keyboard is a great bonus. The MTX doesn't fail here. Typing on this keyboard is no strain on the finger or the brain. The feel of the keys is a little on the rattly side but this does not detract from them too much.

As well as the usual QWERTY selection of letter keys there is also a numeric key pad and a pad of eight function keys. Full marks for that. The function keys are situated as a block at the right hand end of the keyboard and not strewn along the top row of keys like some micros. Although this is a style more in line with business machines (that's probably why Memotech chose it) it does preclude any

method of temporarily labelling these keys. A perspex strip over a row of user definable keys, to take a paper strip of labels, is a trick already used by Acorn and Elan and well worth copying.

On each side of the space bar there is an unlabelled key. These apparently do nothing, but if pressed at the same time they act as a reset key. Reset keys are always a good idea but because of the finality of their action it is an even better idea if they are a bit harder to accidentally hit than these. You do have to hit two at once which is a step in the right direction, but a recessed switch, or the like, around the back would have been better.

The majority of buyers will probably purchase an MTX not for the promised serious possibilities, though they may well consider these, but for its abilities as a home computer.

Hidden inside the impregnable fortress of your MTX case is a chip from Texas Instruments known to those in the trade as a 9918. The number, of course, need not worry you, but what should concern you is that this chip is the same as that used in several other micros. This chip controls just about every aspect of the MTX's display. The text format, the graphics, and the sprites. It is certainly a versatile little piece of plastic, more complex than the microprocessor itself, that is in charge of the whole machine.

Several other machines use exactly the same chip. This means that the graphics potential of the MTX should

WHAT MICRO? TEST

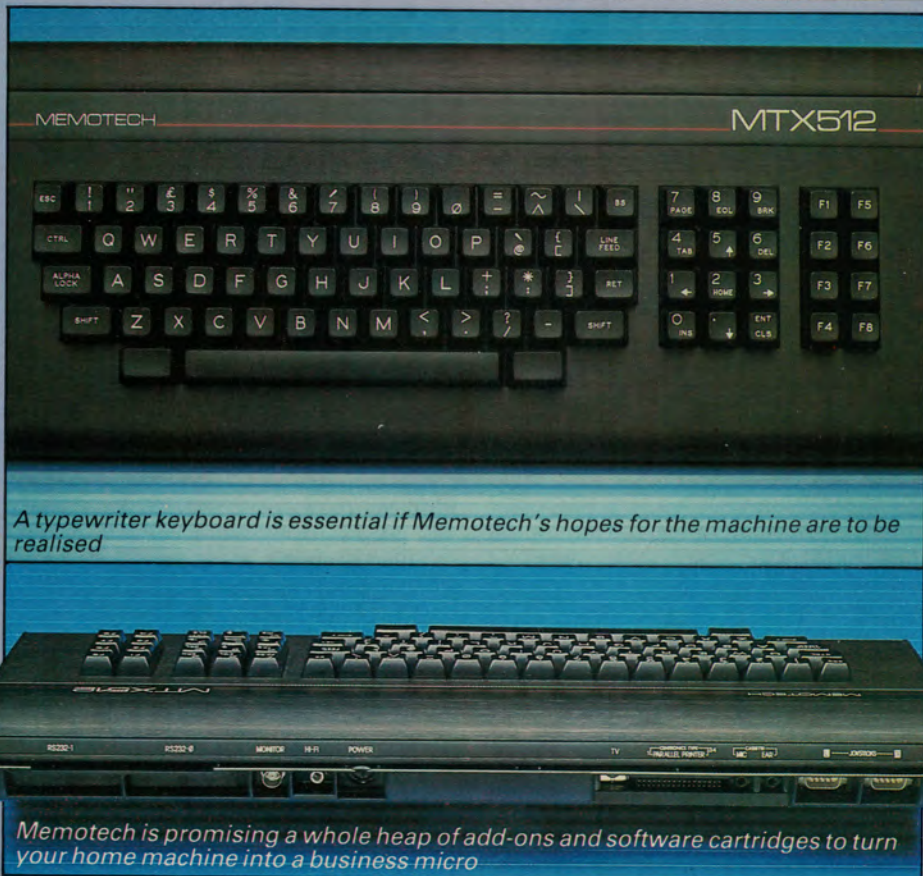
Memotech MTX 500 £275

not be greater or lesser than these other machines. The Sord M5 (£150) uses this chip as does the Spectravideo SV318 (£199). In fact this graphics controller chip is the one specified in the recent MSX standard.

Not only, then, do other machines on the market have potentially exactly the same graphics facilities as the Memotech, but an awful lot of cheap Japanese micros to this standard will appear on our shores in the very near future. One of the first, from Yamaha, is

COMPARABLE MICROS

Model	Price	Memory	Free memory range	Memory options (approx price)	Size (in)
Atari 800	£300	48K	38½-45½K	None	13½x11½x4½
BBC Model B	£400	32K	9-28K	None	16x13x3
Commodore 64	£229	64K	38K	None	16x8½x3
Lynx	£235	48K	14½K	144K (£180)	13x8x2½
Memotech MTX 500	£275	48K	32K	64K (£50)	19x8x2
Spectravideo SV-318	£199	32K	12K	48K (£33) 96K (£102)	16x8x3
Spectrum	£100	16K	9K	48K (£30)	9x5½x1



A typewriter keyboard is essential if Memotech's hopes for the machine are to be realised

Memotech is promising a whole heap of add-ons and software cartridges to turn your home machine into a business micro

previewed elsewhere in this issue.

What, then, is the potential of this marvellous chip used in the MTX? Firstly text. The MTX can put 960 characters at once up on your TV screen in a 40 x 24 format. This is as good as most home computers and about all that a normal TV can display without resorting to fuzziness. Memotech is promising an add-on for the MTX machines to give them a 80 column display. This is essential for real business work. The 80 column add-on will be incorporated into the disk drives that are to be available for the MTX. There is, however, no plan for a separate 80 column add-on for home users who don't want to go to the expense of disk drives.

The text can be any of sixteen colours. These cover the usual range from bright primary colours to pastel shades. All of the colours appear a little washed out on the Memotech machine. This was not the fault of the TV used nor the display chip itself - colours on the Sord M5 for example are very strong. It seems that Memotech may have a bit of cleaning up

to do on some part of the video circuitry here.

The background to the text can also be in any of the sixteen colours. It is a pity that the display chip used does not allow parts of the screen to be different background colours. The BBC micro, for example, will allow any single character to take a different background colour from its neighbour.

All of the letters, numbers, and other characters available on the MTX can be redefined to create new or accented letters and symbols. In addition to these

95 characters there are also 25 others that are set aside for your own character shapes.

The greatest attraction to buyers for the MTX has been its graphics. The potential for graphics from the controller chip in the MTX is excellent. The display from this chip (so the chip's manual goes) can be best thought of as a series of transparent sheets placed inside your TV, one on top of the other. If there isn't anything at some position on one sheet then the next sheet behind will show through. On the back sheet there is a backdrop. This can be any plain colour. This sheet will also effect the border around the active part of your TV screen. In front of the backdrop there is the main graphics sheet. This can be used in a number of ways in various modes.

First there is the text mode. It is this mode that gives you the 40 column by 24 row text format. The text mode uses up very little of the screen memory (only 3K) because it is comparatively simple, but this doesn't help you much as no more is released for your program's use. The text mode display can only be in two colours. One for the characters and one for the background.

There are three graphics modes available on the MTX's graphics chip. One, the so-called multicolour mode is not too useful. This mode comprises a screen of 64 x 48 small squares. Each of these squares can be any of the sixteen colours available. However as there is no possibility of text in this mode and the graphics are, to say the least, chunky, this mode is not available from Basic.

There are two other graphics modes. These are a lot more useful. Both will allow text, graphics and sprites on the screen, and both will allow you to use all sixteen colours on the screen at once. The differences between the two ► 38

KEYBOARD

Model	Number of keys	Number of function keys	Numeric pad	Feel	Layout	Overall
Atari 800	61	4	No	7	8	7
BBC Model B	75	10	No	9	7	8
Commodore 64	66	4	No	8	8	7
Lynx	57	—	No	7	6	6
Memotech MTX 500	79	8	Yes	7	7	7
Spectravideo SV-318	71	5	No	4	7	5
Spectrum	40	—	No	3	5	3

37 ► modes are that mode II allows more user definable characters (768) than graphics I, giving you enough to have a different character in all of the 32 x 24 positions if you really wanted. Graphics II also allows you to define a separate foreground and background colour for each line of a sprite (they are made up of eight lines) instead of just a single pair of colours for the whole sprite as graphics I dictates. It is mode II that is used as the graphics mode by MTX Basic. Both mode I and the multi-colour mode could be selected using



machine code, but as mode II gives you everything that the others do and more, Memotech has wisely restricted the choice from Basic to simplify matters for the user. Drawing pictures on the screen is also simplified with the inclusion of several Logo type commands in Basic. This is not a full implementation of Logo, but a useful addition nonetheless.

The sprites take up the remaining 32 sheets that make up your display. Each sheet can hold one sprite. By carefully arranging which sprite is on which sheet you can make your space invader, say, move in front of the flying saucers. All the difficult parts of moving the sprites around are taken care of for you. Once the sprite's shape has been defined with one command and given a number to determine which sheet it is to appear on, with another, it can be placed anywhere on or off the visible screen, or moved in a straight line, with yet another single Basic command.

All this makes writing fairly complex games very simple. The problems start when you realise what commands Memotech expects you to learn for these actions. Instead of simple, easy-to-remember Basic keywords such as PUT SPRITE as there is in MSX standard Basic, Memotech have used a selection of horrible mnemonics like MVSPR and CTLSPR. True, Memotech has left the system as versatile as possible, but it would have been preferable to have made it really easy to use. The Japanese MSX standard and other manufacturers have managed this using the same hardware, so Memotech really has no excuse.

The MTX Basic generally appears a bit of a rushed job. A versatile automatic

DISPLAY

Model	Maximum number of colours	Maximum graphics resolution	Maximum text format	Range control	Ease of use	Overall
Atari 800	16	320x192	40x24	8	6	8
BBC Model B	8	640x256	80x25	8	6	9
Commodore 64	16	320x200	40x25	4	4	3
Lynx	8	256x248	40x24	7	6	7
Memotech MTX 500	16	256x192	40x24	9	7	8
Spectravideo SV-318	16	256x192	40x24	9	7	8
Spectrum	8	256x192	32x16	4	6	3

line numbering command is included but there is no line renumbering. There are no definable functions – surely a standard feature in these days of advanced Basics. The Basic program editing is also a little strange.

Usually Basic editors come in one of two forms. Some form of on-screen editor is best. These allow you to move a cursor around the program lines that you have already written on the screen, changing characters as you go. The more old fashioned line editors require you to tell the micro that you want to edit a particular program line, whereupon it will present you with a copy of that line to run through making your additions and deletions. The line editor is a lot less convenient to use but simpler to implement. Memotech has chosen a sort of hybrid editing system for the MTX Basic.

As you type a program it will appear in the top two thirds of the screen. To edit a line, you have to tell the computer that you want to do so and that line appears at the bottom of the screen in a separate editing window. So far so much like a line editor. Now however you can move back and forth over that single line using cursor keys incorporated into the numeric pad to change the single line. Much in the same way as a decent screen editor. The net result is an editor that is fairly easy to use, certainly better than a normal line editor, but yet again: why couldn't Memotech have gone the full hog to a real screen editor?

The use of windows on the screen like this is another feature of the MTX. The screen can be divided up into sections by a program so that, say, data can be entered into one area while another part of the screen displays the results. Although the control of these windows from Basic is very versatile, yet again the commands used are confusing. The

section in the manual which deals with this is also incomprehensible, to say the least. The program, error message and editing windows are just examples of the seven windows that the screen can be divided into at any one time. The



manual warns of the dangerous consequences of tinkering with these particular windows, so you are left with only four to play with.

MTX Basic includes a versatile sound facility too. The almost standard three voices plus a noise channel are provided with the sound output directed to your TV speaker. The Basic commands to control this are better thought out than those to control the graphics. Single notes can be played or tunes easily constructed. Some control of the envelope, or shape, of the sound is also possible. For this last facility, Memotech has not resorted to its tactics of horrible mnemonic commands, either. The relevant numbers are just tacked on to the end of the sound statement if needed, or not if they are not required. Couldn't be simpler. It's a pity BBC Basic could not be more like this.

Basic is not the only language that is included with an MTX. The 24K of ROM also contains an assembler and strange new language called Noddy. Noddy is a text handling program. It is not a word processor but a text formatting and shuffling program. It is difficult to see why it was included at all. Had the ► 40

SOUND

Model	Range of control	Ease of use	Loudness	Number of voices	Overall
Atari 800	£8	7	TV	4	8
BBC Model B	9	3	4	4	9
Commodore 64	6	6	TV	3	6
Lynx	2	5	6	1	4
Memotech MTX 500	7	9	TV	4	8
Spectravideo SV-318	7	9	TV	4	8
Spectrum	2	8	2	1	5

BASIC

Range Model	Ease of commands	Line of use	Line re-number	auto-number	Trace	Error trap	Basic Integer variables	Basic maths speed	Basic sort speed	screen speed
Atari 800	8	5				✓		355	34	11
BBC Model B	9	7	✓	✓	✓	✓	✓	55	11	3
Commodore 64	7	7					✓	88	24	8
Lynx	6	7	✓	✓	✓			122	15	16
Memotech MTX 500	6	5		✓				81	26	16
Spectra-video SV-318	8	8	✓	✓	✓	✓	✓	347*	23	19
Spectrum	7	8						176	36	19

*Slow because calculations are to 14 decimal places

38 ► trouble been taken to make this language some real use to users of the MTX then nothing but praise could be bestowed on Memotech. As it is, however, Noddy is likely to spend most of the time totally ignored.

Noddy's only redeeming feature is the sense of humour that it reveals in its authors. The command to be used in Basic to call up a Noddy program is 'PLOD'. Erstwhile followers of Enid Blyton will recognise the name of Toytown's long arm of the law.

In addition to Noddy, the MTX machines also offer a built-in assembler. Assembly language is the intelligent man's machine code. It offers all the advantages of machine code, such as speed and efficiency of memory usage, without half of the hassle. Assembly language is about half way between machine code and Basic on the understandability scale. The assembler that resides in the MTX's Rom, takes your assembly language program and translates it to genuine machine code before it is run.

The joy of using assembly language on the MTX, however, is that programs written in this language can be incorporated into Basic programs in a similar way to their inclusion on the BBC micro and the Electron. However, there is a major difference between the assembler language built-in to MTX and BBC Basics. In BBC Basic the assembler language program is listed, just like Basic, as part of the Basic program. This means that it can be edited and shifted around just as though it was a basic program. Not so on the MTX.

The assembly programs on the MTX are written in a different mode to normal Basic program writing. This separate mode is a bit like the separate mode needed to edit a Basic program. Programs can be written and edited for inclusion in a Basic program only in the assembler mode. This is much less convenient and easy to learn than the method used in BBC Basic. The commands used to list and edit the assembly language program in the assembler mode also leave much to be desired. It seems that Memotech, in its striving to simulate the concepts of business machines, has taken a leaf out of Word-

Star's book. All the editing commands are horrible single letter mnemonics. The only real reason to make the commands so unfriendly is to save Rom space. However because only three quarters of the Rom space is actually used, it seems that yet again a rushed job is indicated.

There are several other items included with the micro itself, in the Memotech box. For a start, there is, of course, a power supply. It is a shame that in a machine this size the power supply could not have been built-in to the main cabinet. There are enough extra bits and pieces lying around a micro desk as it is. However, given that

Memotech has opted for the separate box, this power supply is remarkably well thought out. It is styled to go nicely with the main machine, and (unusually) includes such items as an on/off illuminated switch and decent lengths of lead. There are also five cassettes neatly tucked into the expanded polystyrene of the packaging.

Two of these are games provided by 'Continental Software' that (surprise, surprise) harks from the same address as Memotech itself. These are 'Toado' – a variant on the Frogger theme – and Draughts, which speaks for itself. Neither are particularly inspiring but they do serve as time passers while you wait for some good software to be produced. The other three cassettes are altogether more useful. There is a demonstration tape to goggle at, when you first use

your micro, a blank tape to take your own programs, and a cassette recorder head-cleaning tape; a very thoughtful touch. A cassette lead is also provided.

There is also copious supplies of printed matter to accompany your MTX. Apart from numerous price lists, guarantee card, specification sheets and other distractions, there is the manual.

The whole 250 page work has the appearance of a photocopied draft copy with numerous misprints and typing errors. Nearly all the explanation is confusing and there is no index and only a barely complete contents page. The reference section to the Basic keywords – the most used part of any manual – is stupidly placed, not at the very back or front where it can be easily found, but wandering somewhere in the centre of the book. Even the binding of the manual, stapled as it is, is not suitable. Manuals are very important to first time users of a micro. It is time that manufacturers recognised this fact and stopped looking on this item as a profit guzzler to be completed as cheaply as possible at

MANUALS

Model	Binding	Number of pages	Use to beginner	Detail	Accuracy	Overall
Atari 800	Ring	119	6	7	8	7
BBC Model B	Spiral	520	3	8	8	7
Commodore 64	Spiral	170	4	5	7	5
Lynx	Spiral	100	4	6	6	5
Memotech MTX 500	Spine	250	2	8	4	3
Spectra-video SV-318	Ring	80	5	3	7	4
Spectrum	Spine	250	9	6	8	8

the last minute.

The shoddy manual distracts from what is mainly a good machine. The Memotech MTX is not revolutionary in any way, but it is, however, a tried and trusted design, sturdy in construction, and British.

If you're looking for a business machine for serious work then it is bound to be a better bet to buy a machine purpose designed for that task. If you're wanting a machine only for playing games and the simplest of programming then there are cheaper home micros on the market with similar capabilities.

However, if you fall between the business and the home micro market you will find either of the MTX a good buy, giving you a decent home machine and a good base for future expansion. ■

VERDICT

The Memotech MTX micros are based on an established, though good, hardware design. This is largely let down by the poorer standard of the software (Basic, Assembler, and 'Noddy'). Although the MTX is at present occupying a promising hitherto-vacant, position in the market as a cheap but serious home micro, it is likely to find very strong competition in the coming months from the expected flood of Japanese MSX machines. Without substantial price cuts, the Memotech micros are unlikely to survive this in large numbers.