

# ENTERPRISE

## COMPUTERS



With Obsolescence Built Out



## The Enterprise Computer

The Enterprise is a British home computer, designed by Intelligent Software Ltd, with more built-in features than any other machine currently available within its price range.

### KEYBOARD

The Enterprise has 69 full travel contoured keys. There are 8 special 'User definable' keys. These allow you to write programs in which just one keystroke will execute a number of commands.

On the right of the keyboard is a built-in joystick to use with games and text manipulation. There are two sockets to add extra ones, so up to three people could join in a game.

### MEMORY

The 64K or 128K RAM (Random Access Memory) lets you get the best from our outstanding graphics capability. Of the 64K in the Enterprise 64, up to 55K is available for program use. An advanced memory management system means that the computer memory can be expanded to a staggering 4 million bytes!

### BASIC

The Enterprise uses a fully structured programming language based on Standard Basic (as proposed by international standards authorities) and includes special commands for easy operation and control of the unique graphics and sound facilities.

### WORD PROCESSOR

The Enterprise has an easy to use, built-in word processor. It handles word-wrap, justification, text centering, and paragraph moving.

The uniquely flexible graphics make it possible to create a display with 50 lines on the screen at any one time — each with 84 columns.

### CASSETTE LOADING METER

Another unique feature is an indicator which helps you to set the correct volume on the cassette recorder, so that programs will load into the computer without difficulty.

### INPUTS/OUTPUTS

Video outputs — the Enterprise can provide excellent graphics on a domestic television as well as black and white or colour monitors. There is a facility for connection to both.

Stereo outputs — unlike any other computer in its class, the Enterprise can generate full stereo sound. Sockets connect it to a standard hi-fi system, or to headphones.

Cassette interfaces — the Enterprise has sockets for connection to two separate cassette recorders, both of which can be started and stopped under computer control. In this way a user can load text or data from one machine and save on the other. Without investing in a disk drive, this is the most convenient method of word processing.

RS423 Serial interface — we've included an RS423 connection. You can easily connect the Enterprise to printers, graph plotters, telephone modems and many other output devices.

Parallel interface — most standard printers can be connected to the Enterprise via a 'centronics' type interface.

### LOCAL NETWORK

The Enterprise is equipped with a system called 'Intelligent Net'. Through a simple three wire link, 32 computers can talk to each other and share the use of peripherals.

### EXPANSION

For most people, a personal computer is only a start. Before long they want to move on. So the Enterprise has plenty of room for expansion. On the left of the machine is a slot taking program cartridges for games and many other applications. The memory on these ROM (Read Only Memory) cartridges can be as much as 64K.

On the right of the machine is a 64 way expansion connector that lets you increase the power of your Enterprise with extra memory, disks or other add-ons.

## The Expandable Enterprise

### STANDARD PERIPHERALS

Because of the huge range of interfaces built into the Enterprise, most standard peripherals can be attached by a simple cable link. So the Enterprise is easily expanded by connecting items such as printers, graph plotters and monitors.

### THE BASE UNIT

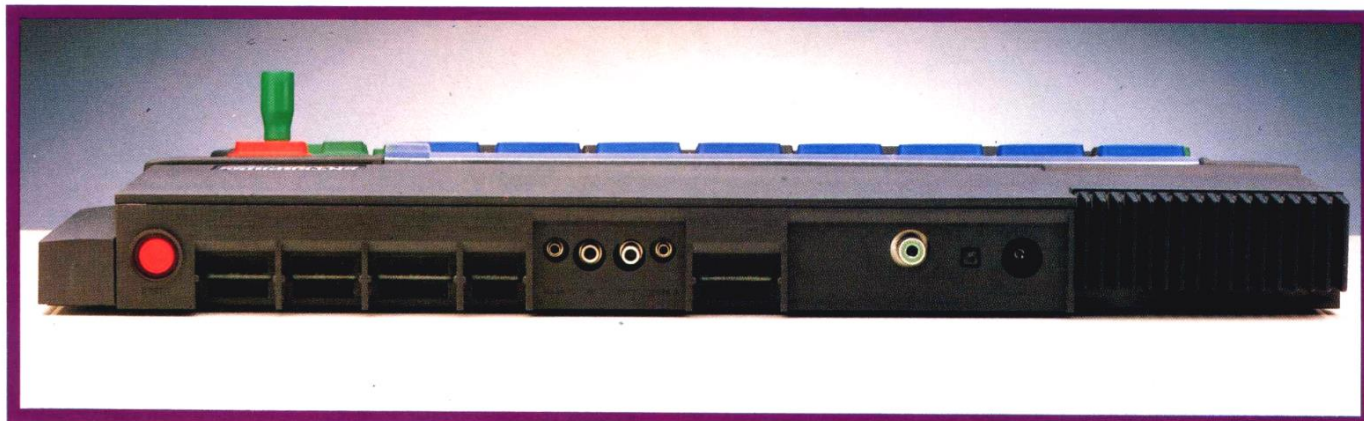
Add-on units plug directly into each other to form the expansion stack, thus eliminating messy and awkward wiring. The base unit contains an adaptor to provide power for all your expansion units, and also controls the operation of the stack. It supports each device neatly one above the other or, if you prefer, side by side.

### THE RAM EXPANSION

The Enterprise is designed to let you build up your memory capability as you go along. Each new RAM unit simply plugs into the stack. A single RAM unit can be connected directly to the Enterprise 64 without need for the base unit.

### THE DISK DRIVES

The Enterprise again makes use of the most up-to-date consumer technology with 3½ inch micro-floppy disk drives, which are becoming the new industry standard. These provide the performance available before only on large





computers and yet are small and robust.

#### FUTURE ITEMS

The Enterprise's unique stack expansion system allows the attachment of almost any kind of unit to increase the power and flexibility of the computer. These can be modems, additional microprocessors, robot control units, hard disks, speech synthesizers, home security control units and attachments which take software compatible with other computers.

This is how obsolescence has been built out. Any future development, such as the digital optical disk, can be incorporated into the Enterprise system.

## Technical Specification

#### CUSTOM CHIPS

All computers rely on microchip circuits to make them work, but the Enterprise has two chips that you won't find in any other machine. They have been designed for us by Intelligent Software. These two chips give the Enterprise its astonishing graphics and sound.

We call our custom-made video chip 'Nick'. It gives the Enterprise a unique flexibility in its screen display. While 'Nick' is busy on the video side of things, 'Dave' handles the audio. The 'Dave' chip opens up all sorts of possibilities in sound. The Enterprise is the first home computer to feature full stereo sound.

#### PROCESSOR

CPU Z80A microprocessor running at 4MHZ, with extended memory-mapping to 4 megabytes.

#### MEMORY

64K internal RAM (128K for Enterprise 128). 32K internal ROM. ROM BAY for plug-in ROM pack up to 64K. Memory is extendable to 4M of RAM and ROM.

#### KEYBOARD

68 full travel keys, space bar and a joystick. ISO standard layout with auto

repeat and audible 'key click'. 8 user definable 'functions keys' can be programmed at 2 levels (normal and 'shift') to give 16 single key functions or commands. A *STOP* key is provided for interrupting programs. A full upper and lower case character set is available, this may be redefined by the user or extra characters added. Inputs are included for the connection of two external joysticks.

#### GRAPHICS

Outputs are provided for a normal colour TV, composite video and RGB analogue monitors. Using an interlaced display, the text screen can show up to 84 characters by 50 lines. The top line of the display is normally a 'status line' for displaying system information. The graphics screen can be memory-mapped with a maximum resolution of 672 pixels by 512. Areas of the screen may be defined as *TEXT* or *GRAPHICS* and modes may be mixed.

Graphics commands include *PLOT*, *ELLIPSE*, and *PAINT*. Both absolute and relative plotting (like turtle graphics) are provided. Different line styles for drawing can be specified using the *SET LINE STYLE* options. The commands *TEXT* and *GRAPHICS* give access to the standard text and graphics pages. Additional pages as required may be defined (within the limits of available memory).

256 colours are available with up to 256 on the screen at the same time. Colour commands include *BORDER*, *PAPER*, *INK* and *PALETTE*, with a special function to select a colour by mixing red, green and blue.

#### SOUND

4 sound channels are provided, each with independent volume control on stereo output. The musical range covers eight octaves, and there are facilities for filtering and ring-modulation. Full envelope control of both pitch and volume is available from Basic. Sound output is through a built-in speaker, hi-fi or headphones.

#### BASIC

A fully-structured version of Standard Basic, with procedure functions, *DO-LOOPS* featuring *WHILE* and *UNTIL* testing, multi-line *IF* and *ELSE* blocks, *CASE* statements, procedure passing by value and by reference, and extra-accurate 10-digit decimal arithmetic. Support for machine-code is included with the facility to allocate memory space and *CALL* user programs.





The Basic is also uniquely extendable, with a sophisticated relocating-loader built-in. This permits the expansion of Basic by the creation of extra keywords, and enables the provision of the largest library of functions yet supplied with a home computer Basic.

Commands include: Allocate, Auto, Call, Case, Cause Exception, Clear, Close, Code, Continue, Copy, Data, Def, Delete, Dim, Display, Do, Else, End, Exit, For, Gosub, Goto, Graphics, Handler, Help, If, Input, Let, Line Input, List, Load, Loop, New, Next, Numeric, Open, Plot, Poke, Print, Randomize, Read, Renummer, Restore, Retry, Return, Run, Save, Select, Sound, Stop, String, Text, Then, Verify, When.

#### OPERATING SYSTEM

The Enterprise contains the most sophisticated operating system of any home computer. This is a device-independent channel-based extendable operating system, providing dynamic memory management through the full 4-megabytes of possible memory. By a simple re-allocation of channel, programs written to work with cassette can work with disk, or programs can be directed to work with a new kind of peripheral.

High-level functions include: System reset, Open channel, Create channel, Close channel, Destroy channel, Read character, Read block, Write character, Write block, Return channel status, Set channel status, Perform special function, Set default name, Return system status, Link device, Read system boundary, Set system boundary, Allocate segment, Free segment, Allocate channel buffer.

#### WORD PROCESSOR/EDITOR

The built-in word processing function allows the easy manipulation of text with *TAB* setting, centering and justification, and paragraph moving. Programs can be easily edited or modified using the *INSERT* and *DELETE* functions. Cursor control is by the joystick and the function keys are pre-programmed with the word processing commands. Text can be sent to the printer or saved on tape. Full screen editing is available for Basic or other languages.

#### PRINTER/SERIAL/NETWORK INTERFACES

The Parallel printer interface allows the connection of any 'centronics' compatible printer. The serial interface is bi-directional and is compatible with RS423 and RS232 machines.

'Intelligent Net' is a three wire serial network interface allowing the inter-connection of up to 32 computers. Each computer may 'talk' to others on the net, either individually or together.

#### EXPANSION PORT

The 64 way expansion port enables the Enterprise to be connected to the expansion 'stack'. Add-ons could include extra ROM and RAM, twin micro-floppy disk drives, a modem/PRETEL adaptor, an extra micro-processor module and a laboratory control unit. The expansion 'stack' has an integral power supply for powering attachments.

#### ROM BAY

Up to 64K of external cartridge ROM is allowed. These can contain application programs, games or other computer languages.

## Software Support

#### FREE CASSETTE

Your Enterprise comes with a free cassette. This includes a Basic language overlay, with a number of extra functions to give the Enterprise the most comprehensive and powerful Basic on any popular micro. The cassette will also show you how to use the computer and the word processor in a friendly and easy-to-follow way.

For those who wish to learn programming, this cassette gives an introduction to some of the commands used in Basic, and there are demonstration programs, including games, which illustrate features of the machine.

But the Enterprise is a lot more than a computer to teach you programming: it's a micro for the whole family. Enterprise Computers are supported by Intelligent Software, one of the top software companies for both home and business programs. This means that from the moment you buy an Enterprise, you're assured of a wide range of programs covering home use, business, games and education.

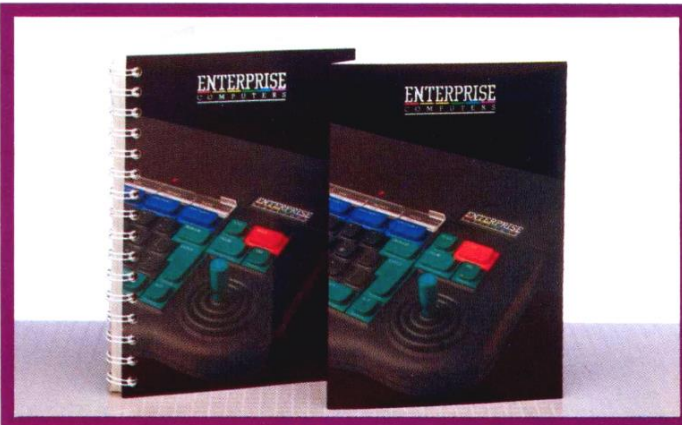
Here's just some of the software you will be able to buy.

#### ARCADE GAMES

The Enterprise is ideally suited to fast-action arcade-style games, and its unique sound and graphics chips mean that you will get programs no other rival computer can hope to offer.

One of these programs is *JUNGLE JIM*, where you have to roam around a jungle populated by ferocious tigers, giant spiders, hungry crocodiles, even man-eating moles in an attempt to rescue Jane, who's been abducted by headhunters. It's a very funny and addictive game.

If you like space games, you'll love *SPACE CONVOY*, a thrilling combination of arcade game and adventure. Steer your heavily-armed convoy through deep space, avoiding all sorts of traps and hostile aliens, in your quest for the vital elements of the Death Beam, the only weapon capable of confronting the Death Star.





Or try *HEART ATTACK*, a dramatic and realistic program which will teach you the perils of being shrunk to pinhead size and sent into the bloodstream to "operate" on a body racked by all sorts of diseases.

### STRATEGY GAMES

Intelligent Software is renowned for its strategy games, and Enterprise owners will be able to pit their wits against an enhanced version of the world-famous Cyrus 2.5 *CHESS* program which captured the European championship, a program for beginners and experts alike.

If you reckon you're sharp at cards, try your hand against the toughest *STUD POKER* school in the world, where the other players' strategy will change to take account of the way you play. Then see if you can beat the computer at *GIN RUMMY* — but, be warned, this is a very tough opponent! And, if you're a bridge player, our *BRIDGE MASTER* will give you the chance to play and analyse a large number of hands.

For those who are keen on word games, we have a number of programs using the biggest word base on a home computer, and if you're a crossword enthusiast who always gets stumped, our *CROSSWORD CHEAT* is the answer to your prayers!

Because the Enterprise enables you to mix text and graphics easily on the screen, all our *ADVENTURES* will combine the two and we are using a totally novel idea to make them different from anything else on the market.

### EDUCATION

The unique networking system of the Enterprise makes it perfect for school use, and we shall be helping both teachers and parents with programs which will teach children in a pleasant way, rather than merely offering practice in skills they already know. All our programs have been approved by educationalists and teachers, and cover both primary and secondary school children.

The handicapped will be able to use the Enterprise with a few simple adaptations and we have a number of programs which have already been tried and tested in special schools.

Adults aren't forgotten either. If you want to learn a foreign language or how to write music, you'll be able to do it with the Enterprise. We have a music

synthesizer program called *SUPERSONICS* which shows the unique range of the sound chip and gives you the chance to produce all sorts of tunes on the computer.

### PROGRAMMING AIDS

One of our aims with the Enterprise is to make programming easier. To this end, we are producing the most advanced versions yet of *FORTH* and *LISP*. The latter is the language most associated with artificial intelligence, while the former has found great favour with programmers because of its speed and ease of use. Both seem certain to become the standard versions.

Of course, most users will want to know more about the Enterprise Basic, and we have produced *TEACH YOURSELF ENTERPRISE BASIC* which will enable you to learn all about the most popular computing language in a friendly way.

Many buyers of the Enterprise will already own a computer and want to upgrade. For them, we have written *BASIC TO BASIC*, programs to convert Sinclair and BBC Basic into Enterprise Basic, so that they can easily use their favourite programs. It's also a great way of adding a large number of extra programs to your stock at a very low cost, because you will be able to use nearly all the programs given in magazines and books.

Other utilities include an *ASSEMBLER*, a *DISASSEMBLER*, and a *BASIC COMPILER*.

### BUSINESS

The Enterprise RAM, which can be expanded larger than the majority of other home computers (and many specialist business micros), means that lists of files of financial planning can be comfortably accommodated without running out of memory. And the ability to display more than 80 columns on the screen is a great advantage for our *SPREADSHEET* program.

Even if you do not want to buy the disk drives, which will give you almost instant access to huge files, our *DATABASE* program means you will be able to run a small business filing system and, of course, the built-in word processor enables you to write letters to customers, which you can keep on file. It's much easier than big filing cabinets and masses of paper!

Most of the main software houses are writing or converting their best programs to run on the Enterprise.





# Computers Compared

## Random Access Memory (RAM)

The larger a computer's RAM, the more things it can do. Most computers start with too little RAM and are severely restricted for expandability.

Computer	Resident Ram (K)	Expandable up to (K)
Enterprise 128	128	3,968
Sinclair QL	128	640
Tatung Einstein	80	No expansion possible
Enterprise 64	64	3,968
Amstrad	64	8,160
Apple II E	64	128
Commodore 64	64	No expansion possible
Lynx 48	48	192
Memotech MTX500/512	48	80
Sharp MZ80 A	48	No expansion possible
Acorn Electron	32	No expansion possible
BBC model B	32	No expansion possible
CGL M5	24	56
Atari 600XL	16	64
Colour Genie	16	32
Oric Atmos	16	64
Sinclair Spectrum	16	48
Tandy colour	16	32
Vic 20	5	21
Sinclair ZX81	1	16

## Standard Interfaces

Interfaces are needed to attach your computer to other machines. The most important are Parallel (P) for connection to standard printers, Serial (S) for sending signals between machines, and Network (N) for making computers work together.

Computer	
Enterprise 128	P/S/N
Enterprise 64	P/S/N
BBC Model B	P/S
Commodore 64	P/S
Memotech MTX500/512	P/N
Sinclair QL	S/N
Tatung Einstein	P/S
Atari 600XL	S
Amstrad	P
CGL M5	P
Colour Genie	S
Lynx 48	S
Oric Atmos	P
Sharp MZ80 A	P
Sinclair Spectrum	P
Sinclair ZX81	P
Tandy Colour	S
Vic 20	S
Acorn Electron	—
Apple II E	—

## Read Only Memory (ROM)

A larger ROM provides more scope for clever commands in the Basic programming language, and allows for a more powerful operating system.

Computer	ROM (K)
Enterprise 128	48
Enterprise 64	48
Sinclair QL	48
Acorn Electron	32
Amstrad	32
BBC Model B	32
Atari 600XL	24
Memotech MTX500/512	24
Commodore 64	20
Vic 20	20
Colour Genie	16
Lynx 48	16
Oric Atmos	16
Sinclair Spectrum	16
Tandy Colour	16
CGL M5	16
Apple II E	12
Sinclair ZX81	8
Tatung Einstein	8
Sharp MZ80 A	2

## Keyboard

More keys allow you more functions and more functions make the computer easier to use. Full travel keys are better than a calculator or membrane keyboard.

Computer	Number	Type	Special Functions	Built-in Joystick
Memotech MTX500/512	79	Full	Yes	No
Amstrad	74	Full	No	No
BBC Model B	74	Full	Yes	No
Sharp MZ80 A	73	Full	No	No
Enterprise 128	69	Full	Yes	Yes
Enterprise 64	69	Full	Yes	Yes
Tatung Einstein	67	Full	Yes	No
Commodore 64	66	Full	Yes	No
Vic 20	66	Full	Yes	No
Sinclair QL	65	Full	Yes	No
Colour Genie	63	Full	No	No
Apple II E	62	Full	No	No
Atari 600XL	62	Full	Yes	No
Lynx 48	57	Full	Yes	No
Oric Atmos	57	Full	No	No
Acorn Electron	56	Full	Yes	No
CGL M5	55	Calculator	No	No
Tandy Colour	53	Full	No	No
Sinclair Spectrum	40	Calculator	No	No
Sinclair ZX81	40	Membrane	No	No

## Text Handling

For word processing, or for other applications such as spreadsheet display, it is important to be able to view a large number of columns and lines on the the screen.

Computer	Maximum Columns × lines	Built-in Word Processor	Cassette Interfaces
Sinclair QL	85×25	Included	Microdrives
Enterprise 128	84×56*	Yes	2
Enterprise 64	84×50*	Yes	2
Acorn Electron	80×32	No	1
BBC Model B	80×32	No	1
Amstrad	80×25	No	1
Apple II E	80×24	No	1
Oric Atmos	40×28	No	1
Commodore 64	40×25	No	1
Sharp MZ80 A	40×25	No	1
Atari 600XL	40×24	No	1
CGL M5	40×24	No	1
Colour Genie	40×24	No	1
Lynx 48	40×24	No	1
Memotech MTX500/512	40×24	No	1
Tatung Einstein	40×24	No	—
Sinclair Spectrum	32×24	No	1
Sinclair ZX81	32×24	No	1
Tandy Colour	32×16	No	1
Vic 20	22×23	No	1

\*The above information relates to 625-line TV system, using interlace.

## Colour Graphics

The higher the resolution, the better the graphics obtained. Some computers are extremely limited in the choice of colours available for graphics use, or can only change colour on block boundaries. Here the Enterprise tops the list.

Computer	Maximum Resolution	Max colours on Screen	Colours Available
Enterprise 128	672×512*	256	256
Enterprise 64	672×512*	256	256
BBC Model B	640×256	8	8
Acorn Electron	640×256	8	8
Amstrad	640×200	16	27
Sinclair QL	512×256	4	8
Commodore 64	320×200	16	16
Atari 600XL	320×192	16	256
Lynx 48	256×248	8	8
CGL M5	256×196	16	16
Apple II E	256×192	16	16
Memotech MTX500/512	256×192	16	16
Sinclair Spectrum	256×192	8	8
Tandy Colour	256×192	8	8
Tatung Einstein	256×192	16	16
Oric Atmos	240×200	8	8
Vic 20	176×158	16	16
Colour Genie	160×96	8	16
Sharp MZ80 A	80×50	Monochrome only	
Sinclair ZX81	32×24	Monochrome only	

\*The above information relates to 625-line TV system, using interlace.

## Sound

Good music and interesting sound effects require as many electronic 'voices' as possible. The Enterprise not only provides both, but has something no other computer has offered before — full stereo! Three-dimensional audio effects can be produced by the independent stereo control of every voice.

Computer	Voices	Octaves	Stereo
Enterprise 128	4	8	Yes
Enterprise 64	4	8	Yes
Atari 600XL	4	3.5	No
BBC Model B	4	5	No
Memotech MTX500/512	4	—	No
Tatung Einstein	4	—	No
Amstrad	3	7	Yes
CGL M5	3	5	No
Colour Genie	3	8	No
Commodore 64	3	9	No
Oric Atmos	3	7	No
Vic 20	3	3	No
Acorn Electron	2	5	No
Sharp MZ80 A	1	3	No
Sinclair Spectrum	1	6	No
Sinclair QL	1	20	No
Tandy Colour	1	5	No
Apple II E	Beep	*	No
Lynx 48	Beep	*	No
Sinclair ZX81	No sound	—	—

\* No tone generator

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