# ELAN
## ENTERPRISE

RAM 64K OR 128K, UP TO 3.9 MEGABYTES

ROM 32K, UP TO 3.9 MEGABYTES

STEREO SOUND, 4 VOICES, 8 OCTAVES

FILE: CES JAN. '84

ELAN ENTERPRISE 64

MUTE
FUNCTION 5

AUTO
FUNCTION 6

GRAPHICS
FUNCTION 7

STATUS
FUNCTION 8

ERASE

ENTER

SHIFT

ALT

HOLD

DEL

STOP

INS

# WITH OBSOLESCENCE BUILT OUT

The Elan 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 Elan 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.

JOYSTICK 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, 58K is available for program use. And 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.

TEXT HANDLING The uniquely flexible graphics make it possible to choose a display with 56 lines on the screen at any one time – each with 84 columns. Sophisticated software provides sideways scrolling and 'window' displays onto large documents.

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.

PROBLEM MESSAGES When any

64 - 290

128K 435

oct.

difficulties arise, the Enterprise will give guidance as to the cause.

■ VIDEO OUTPUTS The Elan Enterprise has a huge memory. So it can provide excellent graphics on a domestic television as well as black and white or colour TV monitors. There is a facility for connection to both.

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 read text or data from one machine while writing on the other. Without investing in a disk drive, this is the most convenient method of word processing.

■ STEREO OUTPUTS Unlike any other computer in its class, the Enterprise can generate stereophonic sound. Sockets connect it to the loudspeaker of a standard hi-fi system, or to headphones.

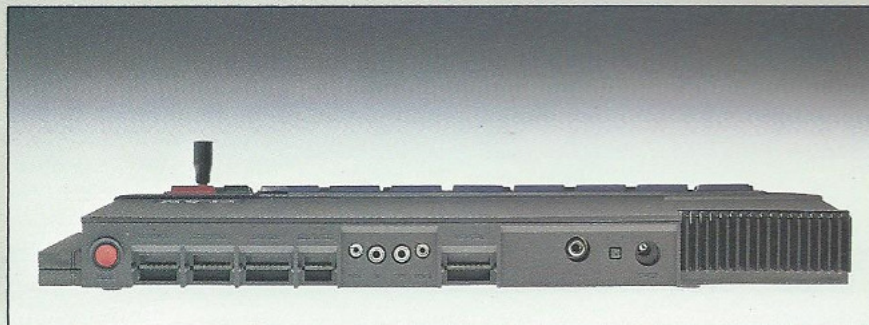RS423 SERIAL INTERFACE We've included an RS423 connection. You can easily connect the Enterprise to printers, graph plotters, telephone modems and many other output devices.

PARALLEL INTERFACE Most standard printers can be connected to the Enterprise via a 'Centronics' type interface.

■ EXPANSION For most people, a personal computer is only a start. Before long they want to move on. So the Elan 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.
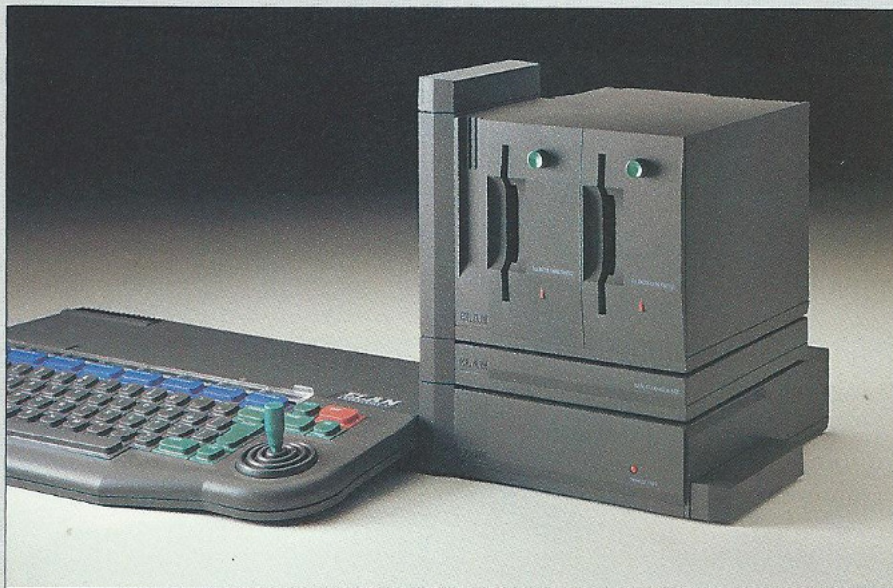
■ LOCAL NETWORK Elan computers are aquipped with a system called 'Intelligent Net'. Through a simple three wire link, 32 computers can talk to each other and share the use of peripherals.
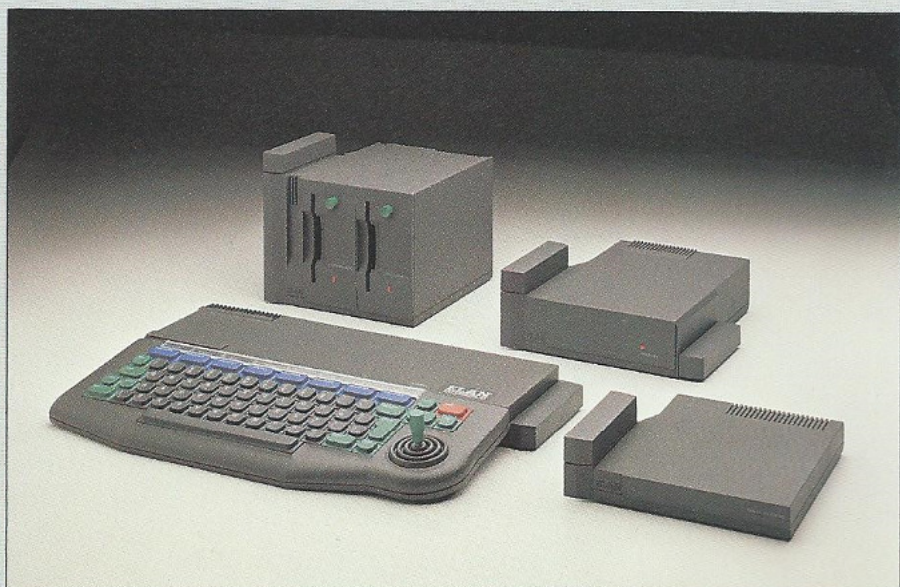
■ FUTURE ITEMS The Enterprise's unique expansion system allows the attachment of almost any kind of unit to increase the power and flexibility of the computer. There may be modems, additional microprocessors, robot control units, hard disks, speech synthesizers, home security control units and attachments which take software compatible with other computers.

■ THE EXPANSION SYSTEM By the time most computers are connected to a batch of add-on units, the wiring begins to look like a plate of spaghetti. With the Elan Enterprise, we have simplified all that.

■ THE EXPANSION PORT The 64 way expansion port is where obsolescence has been built out of the Elan Enterprise. Any future development, such as the digital optical disk, can be incorporated into the Enterprise system.
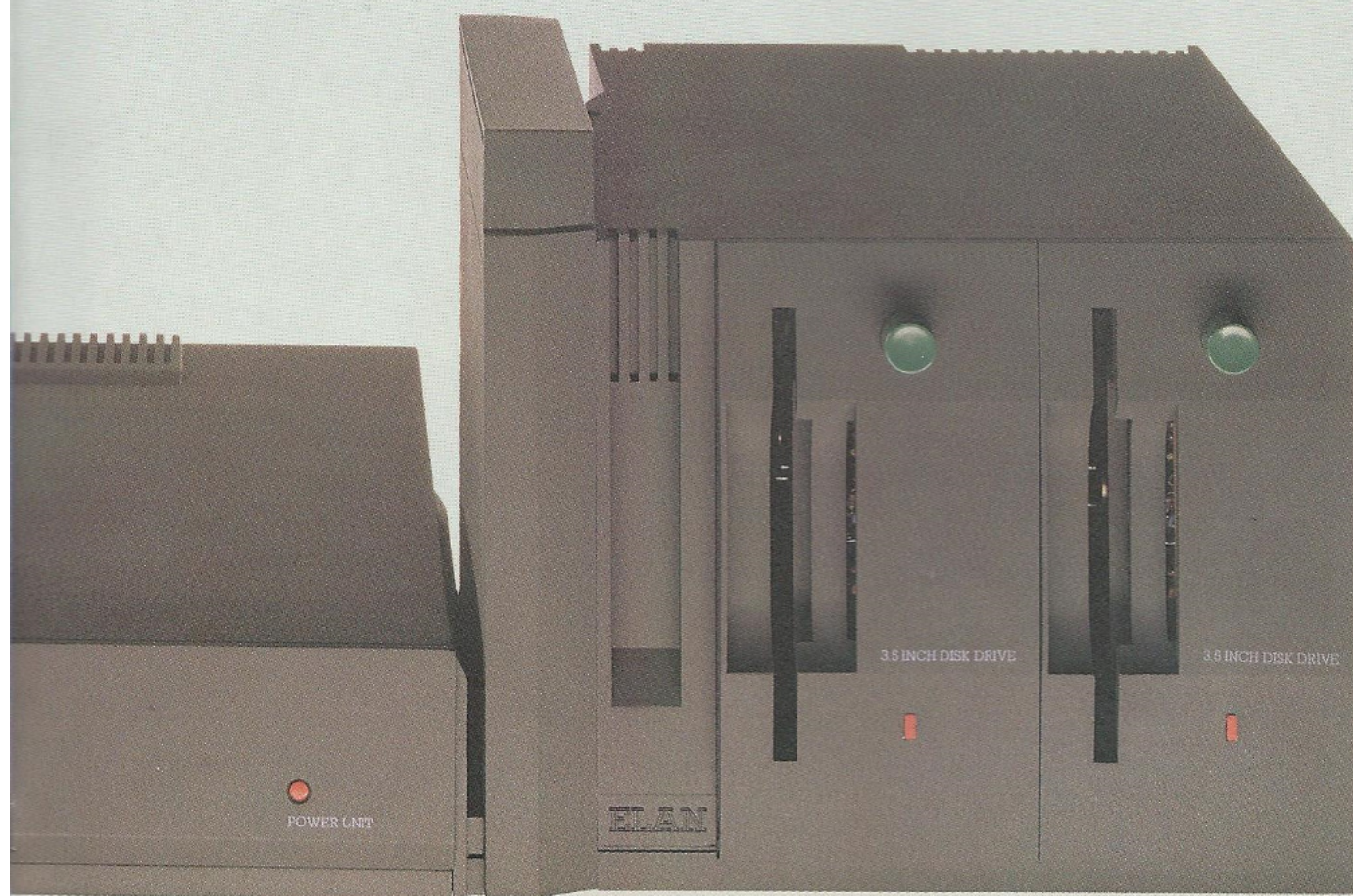
THE BASE UNIT Add-on units plug directly into each other to form the peripheral stack, thus eliminating messy and awkward wiring. The base unit contains an adaptor to provide power for all your expansion units.

It also 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.

THE DISK DRIVES Elan have again selected the most up-to-date consumer technology by choosing 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.

POWER UNIT

ELAN

3.5 INCH DISK DRIVE    3.5 INCH DISK DRIVE

Your Elan Enterprise comes with a free cassette. This is a BASIC language tutorial. Alongside the BASIC programming manual, this will teach you all you need to know to get started with the BASIC programming language. It also contains demonstration programs which illustrate features of the machine.

But the Elan Enterprise is more than just a computer to learn programming – it's a micro for the whole family. Elan Computers are supported by Intelligent Software, one of the world's top software companies for both home and business programs.

This means that from the moment you buy an Elan, 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 Elan is ideally suited to fast-action arcade style games, and its very high resolution graphics mean that you get spectacular colour and effects. There's SPACE CONVOY and other high-speed programs, such as MAZE MONSTERS, which give you all the thrills of arcade games, now with stereo too.

STRATEGY GAMES Intelligent Software are renowned for their strategy games, and Elan owners will be able to pit their wits against the world-famous Cyrus 2.5 CHESS program which captured the European Championship. If you reckon you're a card sharp, try a few hands with the toughest STUD POKER school in the world; or see if you can beat the computer at GIN RUMMY. You'll also have a chance to play some of the most popular word games, or try to solve some

fiendish adventures, with yourself in the role of hero. And if you've always wanted to be a pilot, test yourself on our FLIGHT SIMULATOR.

EDUCATION We'll have programs to help primary children with reading and arithmetic and secondary children with their O-levels. But adults aren't forgotten either; if you want to learn a foreign language, you can do it with your Elan. You can even use the Enterprise to learn how to write music.

HOME APPLICATIONS If bills baffle you and you've no idea how much you've got in the bank, sort out our finances with our HOME HELP package.

COMPUTING We're making sure that those who want to learn more than Basic are well catered for. Other language packages like LISP and FORTH are available, and there will be a wide

range of utilities to make programming easier, from the ASSEMBLER to graphics editors and disassemblers. For the more serious user, there are programs which translate Microsoft and BBC Basic into Elan's I. Standard Basic.

SPACE CONVOY If you reckon you're a wizard at arcade games, see how you get on with this fast-action space battle.

MAZE MONSTERS The theme's familiar; but there's a special difference to this popular arcade-style game.

CHESS Beginner or expert, you'll get a challenging game from Cyrus 2.5, the program which won the European Microcomputer Championship.

STUD POKER So you reckon you're a card sharp? Then see how you fare against opponents who analyse your strategy and adjust theirs to compensate – call that bluff!

GIN RUMMY Almost everyone has played rummy at one time – but not against opponents who are this tough to beat!

FLIGHT SIMULATOR All the thrills of flying a jumbo jet. No auto-pilot here; it's up to you to get the plane up, fly to your destination, and land it safely.

TEACH YOURSELF FRENCH Don't be embarrassed on those holidays abroad any more – learn to speak the language like a native!

SCHOOL MATHS If you're worried about the exams, this is the way to highlight your problem areas and get you through with flying colours.

HOME HELP If you don't know where the money goes, here's a program to help you keep an eye on your finances, cut your bills and make the bank happy.

LISP This simple language allows you to explore the world of intelligent machines.

FORTH Here's a language which is about 10 times faster than BASIC – and it's also easy to program with.

ASSEMBLER For those who want to program in the computer's own language.

BASIC TRANSLATOR – BBC Translate BBC BASIC into I. Standard BASIC with this program.

SMALL BUSINESS The Enterprise's RAM – which grows larger than any other home micro – means that lists of files or financial planning can be comfortably accommodated without running short of memory. The proper keyboard and the ability to display more than 80 columns on the screen are great advantages here, especially for our spreadsheet program.

Independent software houses are also writing or converting programs to run on the Enterprise.

**ELAN'S CUSTOM MADE CHIPS**
All computers rely on microchip circuits to make them work. But the Elan Enterprise has two chips that you won't find in any other machine. They have been designed for us by Intelligent Software Ltd. 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 Elan Enterprise is the first home computer to feature stereo sound.

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

MEMORY 64Kb internal RAM (128Kb for Enterprise 128). 32Kb internal ROM. 20Kb BASIC, 12Kb 'EROS' operating system. ROM BAY for plug-in ROM pack up to 64Kb. Memory is extendable to 4Mb 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 'function keys' can be programmed at 2 levels (normal and 'shift') to give 16 single key functions or commands. Default settings for these keys include RENUMBER, COPY and CONTINUE. A full upper and lower case character set is available, this may be redefined by the user or extra characters added. Inputs are provided for the connection of two external joysticks.

**DISPLAY** Outputs are provided for a normal colour TV, composite video and RGB analogue monitors. The text screen can display up to 84 characters by 56 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 Graphics commands include PLOT, CIRCLE, and PAINT. TURTLE graphics commands are also included. 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).

**COLOUR** 256 colours are available with up to 256 on the screen at the same time. Colour commands include DESK, 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, with pre-programmed sounds such as SPLAT and BOOM. The TUNE function provides a macro-language music control.

**BASIC KEYWORDS** Ask, Auto, Break, Call, Case, Cause Exception, Chain, Clear, Close, Continue, Copy, Data, Debug, Declare, Def, Delete, Dim, Display, Do, Else, End, Exec, Exit, For, Gosub, Goto, Graphic Clear, Graphic Print, Graphics, Handler, Hello, Help, If, Image, Input, Let, Line Input, List, Load, Look, Loop, Merge, Music, New, Next, Numeric, On, Open, Option, Picture, Pitch, Play, Plot, Print, Program, Randomize, Read, Rem, Renumber, Reset, Restore, Retry, Return, Run, Save, Select, Set, Sound, Start, Status, Stop, String, Table, Text, Then, Toggle, Trace, Turtle, Use, Verify, Video Input, Video Print, Volume, Wait, When.

**BASIC MACHINE OPTIONS** Byte, Bytes, Capture, Click, Dates, Echo, Exception, Fkey, IO, Rem1, Rem2, Tape Sound, Times. Background Color, Border Color, Beam, Chars, Charset From, Character Height, Color, Desk, Flashing, Ink, Line Style, Page Size, Palette, Paper.

**BASIC FUNCTIONS AND VARIABLES** Abs, Acos, Ands, Angle, Asin, Atn, Bang, Bchrs, Beep, Boom, Ceil, Chrs, Circle, Colour, Cos, Cosh, Cot, Csc, Date, Dates, Deg, Eps, Eval, Exline, Exp, Extype, Fp, Free, Inf, Inkeys, Int, Ip, Lbound, Lcases, Len, Log, Log10, Log2, Lshifts, Ltrims, Max, Maxlen, Min, Mod, Ors, Ord, Paint, PI, Ping, Pop, Pos, Rad, Rnd, Round, Rshift, Rtrim, Sec, Sgn, Sin, Sinh, Size, Splat, Sqr, Strs, Tab, Tan, Tanh, Time, Times, Truncate, Tune, Ubound, Ucase, Val, Xor, Zap.

**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 using the COPY and ECHO commands or saved on tape. Full screen editing is available for BASIC or other languages. AUTO and RENUMBER are also included.

**PRINTER/RS423/NETWORK INTERFACES** The parallel printer interface allows the connection of any 'centronics' compatible printer. The serial interface is bi-directional and to the RS423 standard.

'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 disc drives, a modem/PRESTEL 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.

Different people have different needs when it comes to choosing a computer. So to help you to decide which make and model would

## 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. The Elan Enterprise contains a unique memory controller and a plug-in expansion system to allow unrivalled RAM capacity. RAM is usually measured in thousands of computer words (KiloBytes – KB or K for short).

| COMPUTER | Resident RAM (KB) | Expandable up to (KB) |
|---|---|---|
| Elan Enterprise 128 | 128 | 3,968 |
| Elan Enterprise 64 | 64 | 3,968 |
| Apple II E | 64 | 128 |
| Commodore 64 | 64 | No expansion possible |
| Lynx 48 | 48 | 192 |
| Sharp MZ80 A | 48 | No expansion possible |
| Acorn Electron | 32 | No expansion possible |
| Dragon 32 | 32 | 64 |
| BBC Model B | 32 | No expansion possible |
| Sord M5 | 24 | 56 |
| Atari 600XL | 16 | 64 |
| Oric 1 | 16 | 48 |
| Sinclair Spectrum | 16 | 48 |
| Colour Genie | 16 | 32 |
| Epson HX 20 | 16 | 32 |
| Tandy Colour | 16 | 32 |
| Vic 20 | 5 | 21 |
| Sharp PC 1500 | 3.5 | 11.5 |
| Sinclair ZX81 | 1 | 16 |

## COMPUTING POWER

This is determined by the speed of the microprocessor, which is measured in millions of cycles per second (MegaHertz). Old-fashioned computers are not able to work at such a high speed as modern designs.

| COMPUTER | Speed (MHz) |
|---|---|
| Elan Enterprise 64 | 4 |
| Elan Enterprise 128 | 4 |
| Lynx 48 | 4 |
| Sord M5 | 3.58 |
| Sinclair Spectrum | 3.5 |
| Sinclair ZX81 | 3.5 |
| Colour Genie | 2.2 |
| BBC Model B | 2 |
| Acorn Electron | 2 |
| Sharp MZ80 A | 2 |
| Atari 600XL | 1.8 |
| Sharp PC 1500 | 1.3 |
| Apple II E | 1 |
| Commodore 64 | 1 |
| Dragon 32 | 1 |
| Epson HX 20 | 1 |
| Oric 1 | 1 |
| Tandy Colour | 1 |
| Vic 20 | 1 |

## TEXT HANDLING

For Word Processing or any other application that requires a lot of words on the screen, it is important to provide as many columns of characters and as many lines of text as possible. If you want to do word processing without splashing out on one or two disk units, it is much easier and faster if you have two cassette interfaces rather than one.

| COMPUTER | Maximum Columns x Lines | Built-in Word Processor | Cassette Interfaces |
|---|---|---|---|
| Elan Enterprise 64 | 84 x 56 * | Yes | 2 |
| Elan Enterprise 128 | 84 x 56 * | Yes | 2 |
| BBC Model B | 80 x 32 | No | 1 |
| Acorn Electron | 80 x 32 | No | 1 |
| Apple II E | 80 x 24 | No | 1 |
| Oric 1 | 40 x 28 | No | 1 |
| Commodore 64 | 40 x 25 | No | 1 |
| Sharp MZ80 A | 40 x 25 | No | 1 |
| Atari 600XL | 40 x 24 | No | 1 |
| Colour Genie | 40 x 24 | No | 1 |
| Lynx 48 | 40 x 24 | No | 1 |
| Sord M5 | 40 x 24 | No | 1 |
| Sinclair Spectrum | 32 x 24 | No | 1 |
| Sinclair ZX81 | 32 x 24 | No | 1 |
| Dragon 32 | 32 x 16 | No | 1 |
| Tandy Colour | 32 x 16 | No | 1 |
| Vic 20 | 22 x 23 | No | 1 |
| Epson HX 20 | No TV output | | |
| Sharp PC 1500 | No TV output | | |

## COLOUR GRAPHICS

Good colour graphics require high resolution and the availability of many different colours. With many computers it is not possible to achieve both at the same time. With the Elan computer, it is. Some computers are extremely

| COMPUTER | Maximum Resolution |
|---|---|
| Elan Enterprise 64 | 672 x 512 * |
| Elan Enterprise 128 | 672 x 512 * |
| BBC Model B | 640 x 256 |
| Acorn Electron | 640 x 256 |
| Commodore 64 | 320 x 200 |
| Atari 600XL | 320 x 192 |
| Lynx 48 | 256 x 248 |
| Sord M5 | 256 x 196 |
| Apple II E | 256 x 192 |
| Dragon 32 | 256 x 192 |
| Sinclair Spectrum | 256 x 192 |
| Tandy Colour | 256 x 192 |
| Oric 1 | 240 x 200 |
| Vic 20 | 176 x 158 |
| Colour Genie | 160 x 96 |
| Sharp MZ80 A | 80 x 50 |
| Sinclair ZX81 | 32 x 24 |
| Epson HX 20 | No TV output |
| Sharp PC 1500 | No TV output |

*The above information relates to PAL TV system.

# COMPARED

be ideal for you, we've taken a number of important features and compared the Elan computers with the current models.

## 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. ROM is also measured in KiloBytes.

| COMPUTER | ROM (KB) |
|---|---|
| Elan Enterprise 64 | 32 |
| Elan Enterprise 128 | 32 |
| Epson HX 20 | 32 |
| BBC Model B | 32 |
| Acorn Electron | 32 |
| Atari 600XL | 24 |
| Commodore 64 | 20 |
| Vic 20 | 20 |
| Colour Genie | 16 |
| Dragon 32 | 16 |
| Lynx 48 | 16 |
| Oric 1 | 16 |
| Sharp PC 1500 | 16 |
| Sinclair Spectrum | 16 |
| Tandy Colour | 16 |
| Apple II E | 12 |
| Sinclair ZX81 | 8 |
| Sord M5 | 8 |
| Sharp MZ80 A | 2 |

## KEYBOARD

A keyboard with full-travel keys (like an electric typewriter) is a pleasure to operate. But some manufacturers resort to calculator type keys or, worse still, a membrane keyboard just to save themselves a little money.

The number of keys is also important. More keys allow you more functions and more functions make the computer easier to use.

| COMPUTER | Number | Type | Special Functions | Built-in joystick |
|---|---|---|---|---|
| BBC Model B | 74 | Full | Yes | No |
| Sharp MZ80 A | 73 | Full | No | No |
| Elan Enterprise 64 | 69 | Full | Yes | Yes |
| Elan Enterprise 128 | 69 | Full | Yes | Yes |
| Epson HX 20 | 68 | Full | Yes | No |
| Commodore 64 | 66 | Full | Yes | No |
| Vic 20 | 66 | Full | Yes | No |
| Sharp PC 1500 | 65 | Calculator | Yes | No |
| Colour Genie | 63 | Full | No | No |
| Apple II E | 62 | Full | No | No |
| Atari 600XL | 62 | Full | Yes | No |
| Acorn Electron | 56 | Full | Yes | No |
| Lynx 48 | 57 | Full | Yes | No |
| Oric 1 | 57 | Calculator | No | No |
| Sord M5 | 55 | Calculator | No | No |
| Dragon 32 | 53 | Full | No | No |
| Tandy Colour | 53 | Full | No | No |
| Sinclair Spectrum | 40 | Calculator | No | No |
| Sinclair ZX81 | 40 | Membrane | No | No |

limited in the choice of colours available for graphics use, or can only change colour on block boundaries. Here, once again, the Elan Enterprise tops the list.

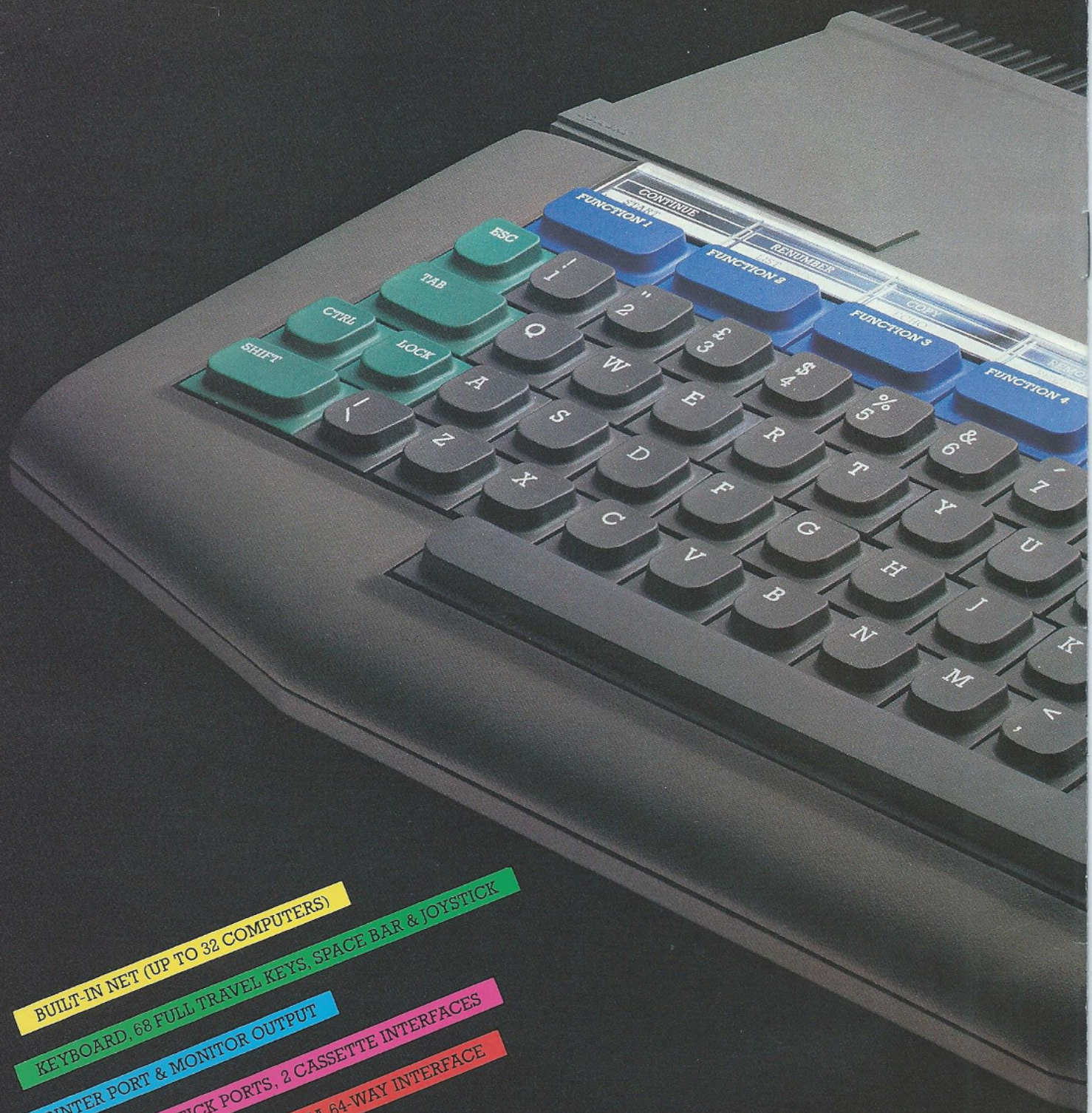| Max Colours on Screen | Colours Available |
|---|---|
| 256 | 256 |
| 256 | 256 |
| 8 | 8 |
| 8 | 8 |
| 16 | 16 |
| 16 | 256 |
| 8 | 8 |
| 32 | 32 |
| 16 | 16 |
| 8 | 8 |
| 8 | 8 |
| 8 | 8 |
| 8 | 8 |
| 8 | 8 |
| 16 | 16 |
| 8 | 16 |
| Monochrome only | |
| Monochrome only | |

## SOUND

Good music and interesting sound effects require as many electronic 'voices' as possible, and there should be a proper audio output through your television loudspeaker. The Elan Enterprise not only provides both but has something no other computer can offer – stereo! Three-dimensional audio effects are produced by the independent stereo control of every voice.

| COMPUTER | Voices | Octaves | Output through TV | Stereo |
|---|---|---|---|---|
| Elan Enterprise 64 | 4 | 8 | Yes | Yes |
| Elan Enterprise 128 | 4 | 8 | Yes | Yes |
| Atari 600XL | 4 | 3½ | Yes | No |
| BBC Model B | 4 | 5 | No | No |
| Commodore 64 | 3 | 9 | Yes | No |
| Colour Genie | 3 | 8 | Yes | No |
| Oric 1 | 3 | 7 | No | No |
| Sord M5 | 3 | 5 | Yes | No |
| Vic 20 | 3 | 3 | Yes | No |
| Acorn Electron | 2 | 5 | No | No |
| Sinclair Spectrum | 1 | 6 | No | No |
| Dragon 32 | 1 | 5 | Yes | No |
| Tandy Colour | 1 | 5 | Yes | No |
| Epson HX 20 | 1 | 4 | No | No |
| Sharp MZ80 A | 1 | 3 | No | No |
| Apple II E | Beep | * | No | No |
| Lynx 48 | Beep | * | No | No |
| Sharp PC 1500 | Beep | * | No | No |
| Sinclair ZX81 | No sound | | | |

* No tone generator

BUILT-IN NET (UP TO 32 COMPUTERS)

KEYBOARD, 68 FULL TRAVEL KEYS, SPACE BAR & JOYSTICK

PRINTER PORT & MONITOR OUTPUT

2 EXTERNAL JOYSTICK PORTS, 2 CASSETTE INTERFACES

COMPUTER FULLY EXPANDABLE VIA 64-WAY INTERFACE

BUILT-IN WORD PROCESSOR

GRAPHICS RESOLUTION UP TO 672X512, COLOURS UP TO 256

CARTRIDGE ROM, UP TO 64K

# ELAN
## COMPUTERS LTD