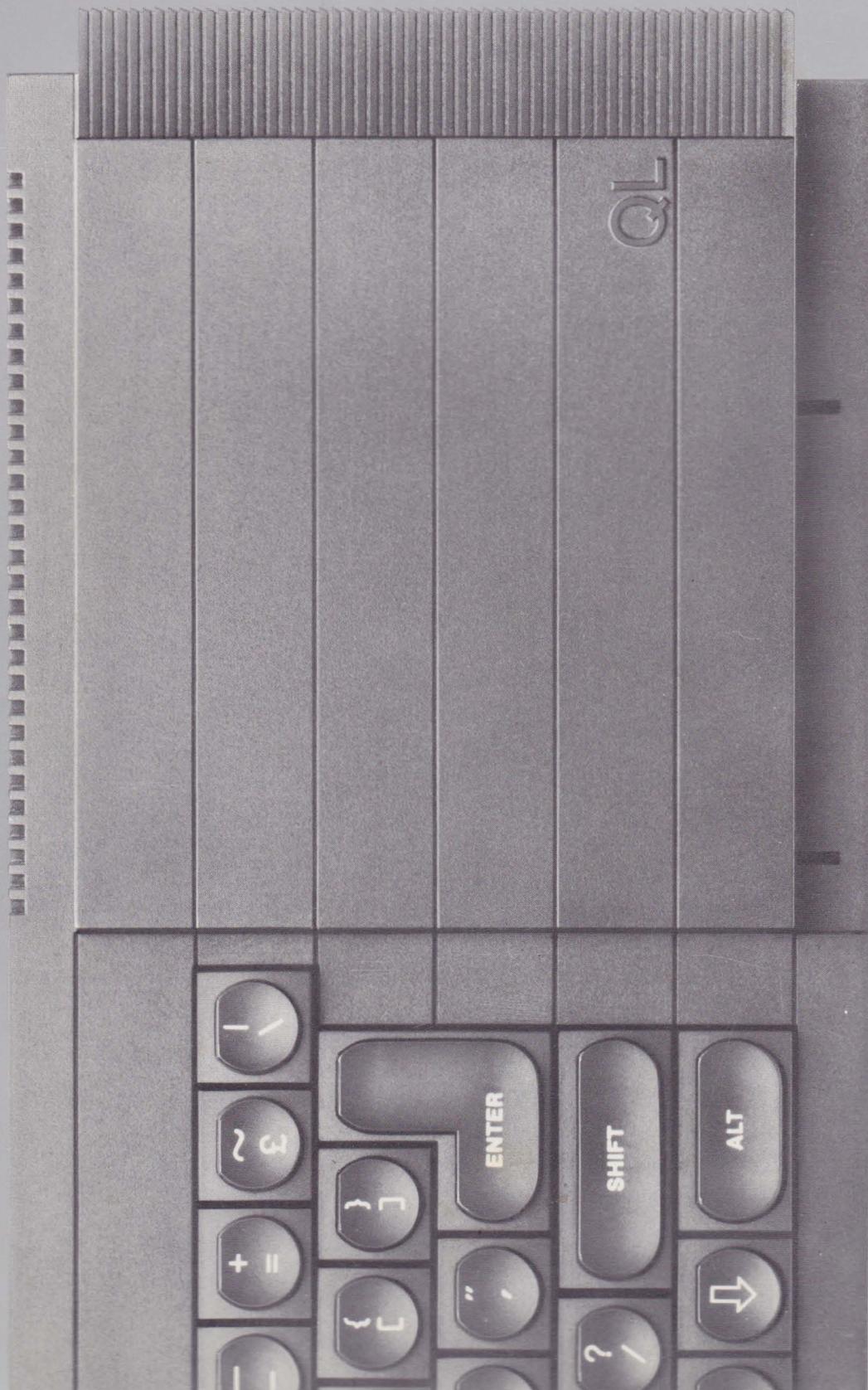
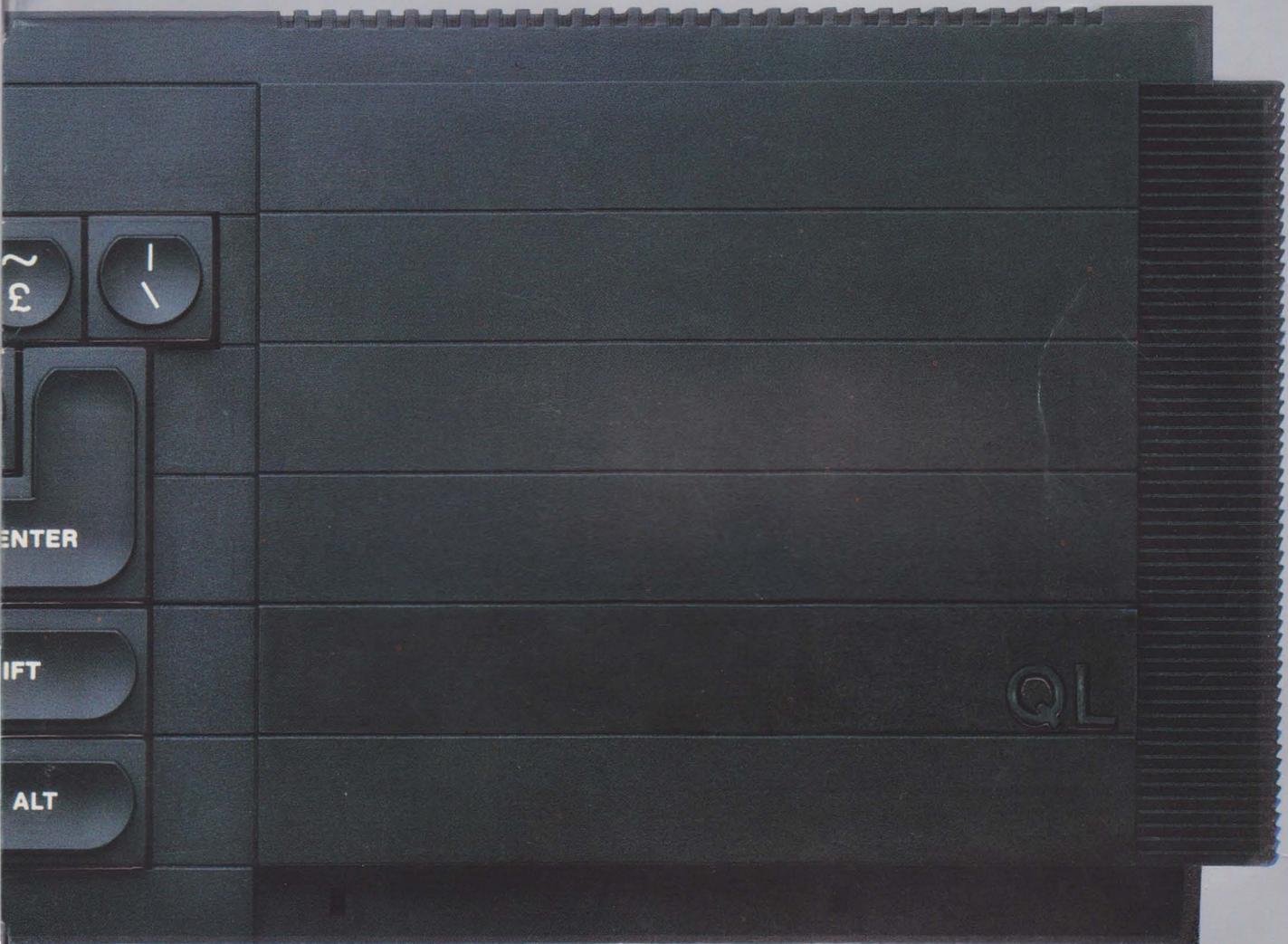


sirniclair



128K memory  
32-bit processor  
Professional keyboard  
Two Microdrives built in  
High-resolution colour display  
Software included: spreadsheet,  
database, word-processing, business graphics



# The Sinclair QL

Sheer professional power in the special Sinclair style

**sinclair**

# QL—the Sinclair quantum leap

In 1980, Sinclair started the world with a computer for less than £100.

It had 1K RAM. It had a black-and-white display. By today's standards, it was almost primitive. But it *worked* – and the ZX80 started Britain's computer revolution.

Four years – and three computers – later, Sinclair is introducing a product which is even *more* revolutionary than the ZX80: the Sinclair QL. It represents a quantum leap in personal micro capability.

The Sinclair QL offers an incredible 128K RAM – expandable to 640K.

It uses a 32-bit processor – the advanced Motorola 68008 chip.

It's supplied complete with a suite of four programs which outperform the software for *all* existing micros.

It has two built-in Microdrives, each offering 100K of storage for programs and data.

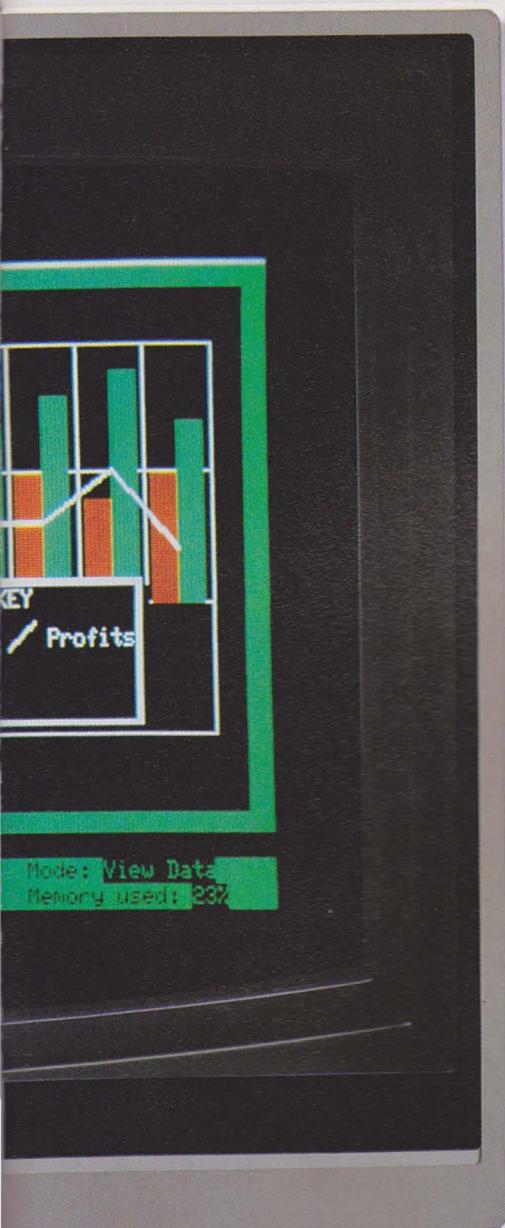
It has networking capability; a full-size QWERTY keyboard; its own operating system – QDOS – which accommodates multi-tasking.

It drives colour and monochrome monitors and TV, incorporates RS-232-C serial interfaces, accepts joystick cursor control...

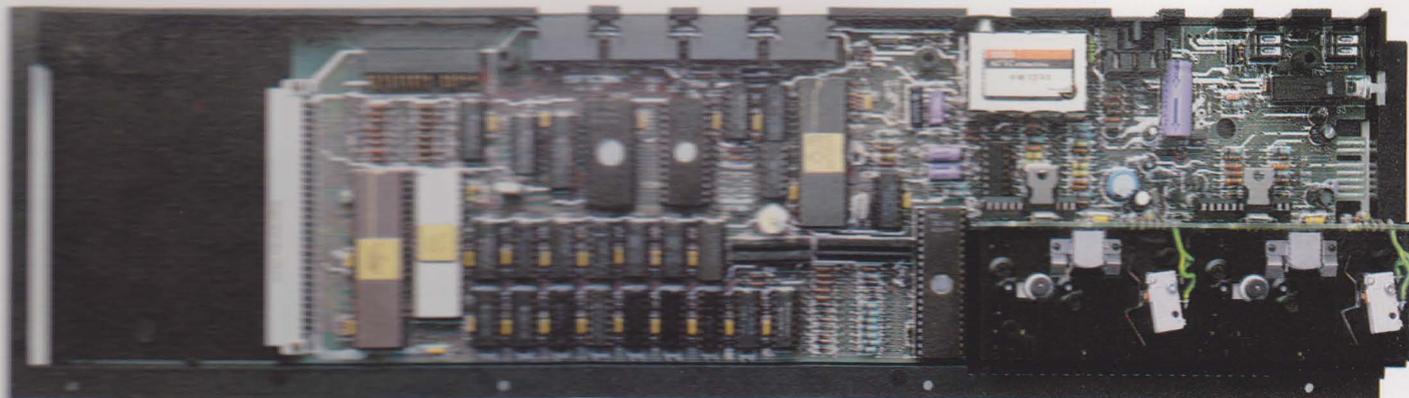
It allows you to do *more* than any other micro available today. It tackles business routines with confidence. It plays games of altogether exceptional sophistication. It makes the most complex programs simpler and faster to write or run. And because it's so powerful, it's uniquely user-friendly – gentle and helpful with beginners, flexible and responsive to advanced programmers.

In fact, the Sinclair QL matches and surpasses the performance of machines costing thousands of pounds.

**Yet it costs only £399 to make the Sinclair quantum leap!**



# Throughput

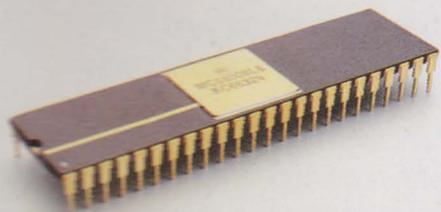


## Processors

The Sinclair QL contains two processors, and two custom-designed control chips.

The main processor is a member of the 32-bit Motorola 68000 family - the 68008 - widely regarded as the most powerful micro-processor available.

Users of the Sinclair QL will immediately appreciate the architecture and instruction set the 32-bit processor offers. And its power and speed offer dramatic opportunities for the design of spectacular software, so you can confidently expect a flood of outstanding applications software to become available. You can also be sure that the QL will not become outdated. 32-bit architecture is future-proof.



Almost all computers costing under £1000 today use 8-bit processors. Even the new generation of business computers, such as the IBM PC, are only now beginning to use 16-bit processors. Any computer already using a Motorola 68000 chip costs over £2,500 - yet with the Sinclair QL, the 32-bit Motorola 68008 is available for less than £400.

Alongside the 68008, a second processor, an Intel 8049, controls the keyboard, generates the sound, and acts as an RS-232-C receiver. None of the power of the 68008 processor is wasted on these functions.

The two custom chips are unique to Sinclair. Like all Sinclair-designed chips they are both elegant and powerful. One controls display and memory; the other controls the Microdrives, the real-time clock, local area network, and RS-232-C transmission.

## Memory

To get the most out of a powerful processor, powerful programs are needed, often working on large amounts of data. Both call for plenty of memory - and the Sinclair QL has it.

Most users will find the QL's 128K of internal RAM provides more than enough capacity for their largest program, and cuts out the bogey of running out of bytes. It handles the very advanced software supplied with the machine, which simply could not run with less memory.



For users with altogether exceptional amounts of data or very large programs to manage, a RAM expansion board will be available to expand the 128K to 640K simply and inexpensively.

## Revolutionary QDOS operating system

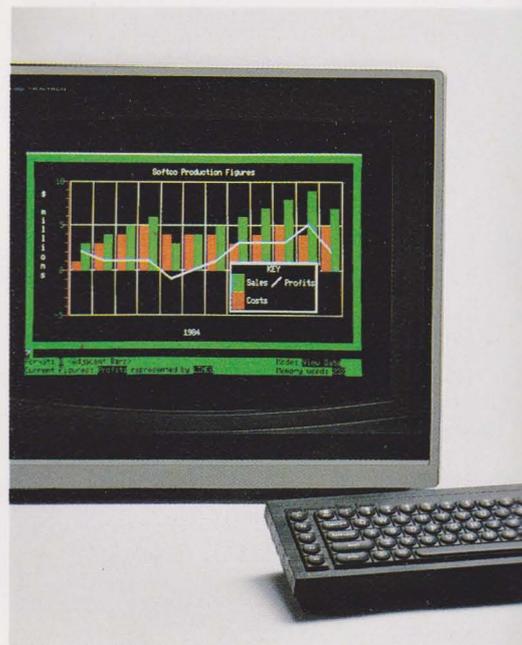
The QL's 32K ROM contains a new operating system (QDOS) specially developed for the QL.

QDOS is unique to Sinclair, and a key element in the QL's performance. No existing operating system was remotely capable of capitalising on the full power of the 32-bit processor. QDOS sets a new standard in operating systems for the 68000 family of processors, and may well become the industry standard.

QDOS is a single-user, multi-tasking, time-sliced system using Sinclair SuperBASIC as a command language.

One of its most significant features is a very powerful multi-tasking capability. Multi-tasking is the ability to use several programs individually and simultaneously. The QL also displays the results simultaneously in different portions of the screen. Each program running can be scrolled within its window independently. This feature is not normally available on computers costing less than £7,000.

QDOS has fully device-independent input/output. A program can be written without reference to the type of device to be used, which can be specified when the program is run; and the QL can sense the type of peripheral devices connected to its expansion port and organise their input/output.



# Input



## Sinclair SuperBASIC

Sinclair BASIC is the world's most popular language – for the QL, it has been made even more powerful.

The new Sinclair SuperBASIC presents no problems to anyone used to Sinclair BASIC. It simply combines the familiarity of BASIC with a number of major developments which allow the QL's full capability to be exploited. It handles strings, for example, in the same neat way – but it also handles arrays just as neatly.

Its three major advantages over conventional BASIC are that it's fully procedure structured; it's extendable; and its execution speed is independent of program size.

Anyone writing large programs will appreciate the procedure facility, which allows code to be written in clearly defined blocks.

Its extendability allows new procedures to be added by the user which will work in exactly the same way as the command procedures built into the ROM.

And because of its constant execution speed, SuperBASIC does not get slower as programs get larger. Long programs run much faster than with other BASICs.

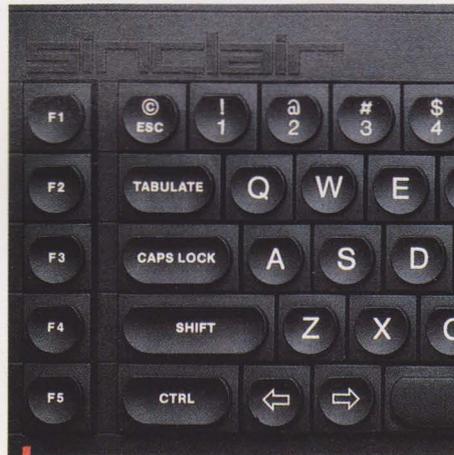
Over the years, BASIC has come in for a good deal of criticism. Sinclair SuperBASIC puts right what has been described as 'wrong' about BASIC.

32-bit architecture, 128K RAM and QDOS combine to give the QL the performance of a mini-computer for the price of a micro.

## Keyboard

The QL keyboard is designed for fast, accurate input of data and programs.

It is a full-size QWERTY keyboard, with 65 keys, including a space bar; left- and right-hand shift keys; five function keys; and four separate cursor-control keys. All keys are full-travel, ergonomically shaped, and two-shot moulded so that the characters never wear off.



Key action is positive and precise: The keyboard is quiet, with an audible click to indicate that the key has made contact, without the need to watch the screen.

A membrane beneath the keyboard protects the machine from dust (and coffee!).

The computer can be raised slightly at the back by small detachable feet, for users who find an angled keyboard more comfortable.

## Microdrives

The Microdrives for the Sinclair QL are identical in principle to the popular and proven ZX Microdrives, but give increased capacity and a faster data-transfer rate. The cartridges are inexpensive and removable, and each holds at least 100K bytes. Typical access speed is 3.5 seconds, and programs or data can be loaded into the internal RAM at up to 15K bytes per second.

The Sinclair QL has two built-in Microdrives. If required, a further six units can be connected. (These units should be QL Microdrives – ZX Microdrives are not suitable, though cartridges are interchangeable with appropriate formatting.) Four blank cartridges are supplied with the machine, and an order form is included to make further cartridges easy to obtain.



Both Microdrives and cartridges are exceedingly compact, and take up very little space within the machine or on a work-top.

## ROM Cartridges

The Sinclair QL has a slot to accept a QL ROM cartridge as the more popular pieces of software become available in this form. Again, please note that ZX ROM cartridges are *not* suitable for use on the Sinclair QL.



# Output

In addition to the expansion slot and the Microdrive extension slot, the Sinclair QL has no fewer than 9 peripheral ports, neatly configured at the rear.

## Reset button

This allows the computer to be cleared without disconnecting the power supply.

## Microdrive extension slot



## Local area network: QLAN

A high-speed communications link for up to 64 Sinclair QL and ZX Spectrum computers. Data is passed over the network at 100K baud, and protocols ensure that relevant stations are ready before data is passed. Data may also be broadcast over the network to all computers listening.

## Monitor port

The Sinclair QL provides very high resolution when connected to a monitor. Two modes are available: 512 x 256 pixels, giving 4 colours – black, white, green, red (or 4 grey scales in monochrome) and 256 x 256 pixels, giving 8 colours (or 8 grey scales) and hardware flash.

The number of characters on the screen is determined by the number of pixels, but a choice of character sets is available. Normal format is 85 columns by 25 rows.

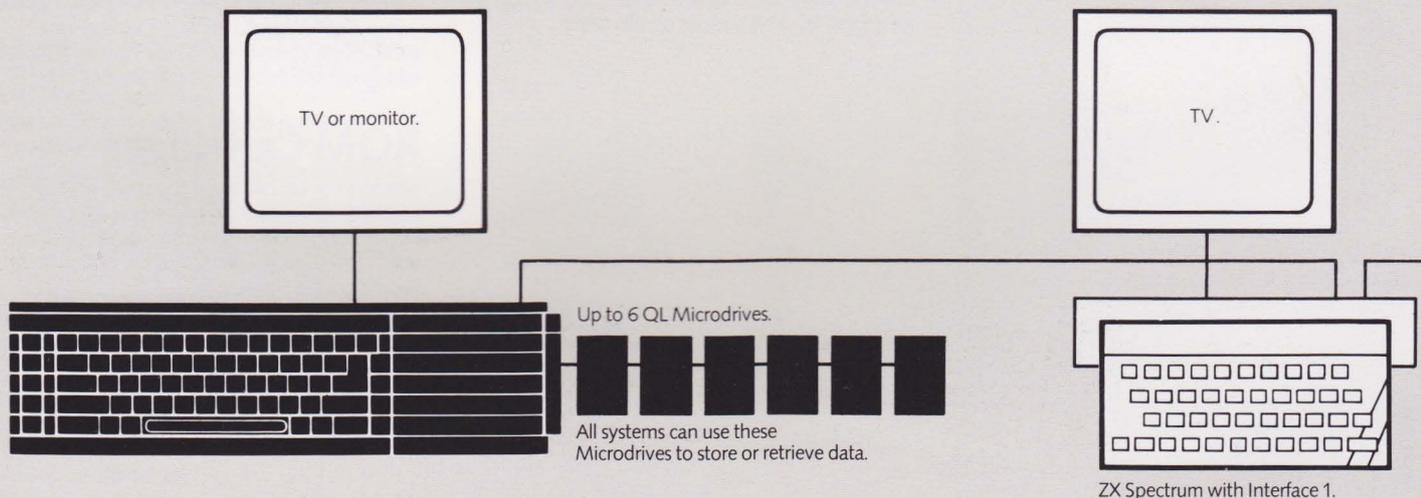
Both RGB (colour) and monochrome monitors may be used.

## TV port

Display modes for TV are the same as those for a monitor, but normal format is 40 to 60 columns, depending on software.

Both colour and monochrome TVs may be used.

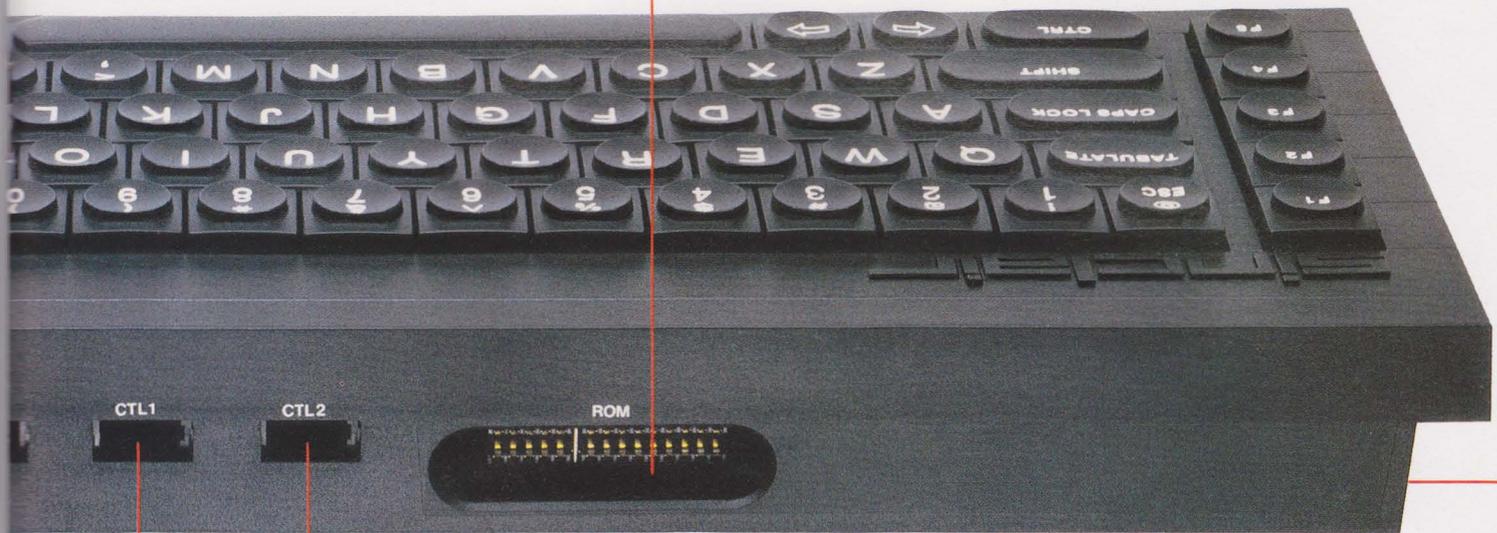
## Typical QLAN configuration



**ROM cartridge slot**

Accepts one QL ROM cartridge, which simply plugs in. Up to 32K ROM is possible.

**Expansion slot for 0.5 Mb memory board and forthcoming peripherals.**



**RS-232-C**

Two standard communications interfaces for peripherals such as printers and modems. Allow transmission at rates from 75 baud up to 19,200 baud, or transmit/receive in full duplex at seven rates up to 9,600 baud. (A parallel printer interface will be available as an optional extra.)

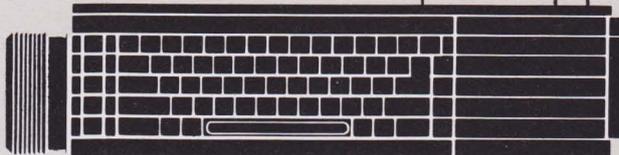
**Joysticks**

Provision is made for the attachment of one or two joysticks for games or cursor control. Cursor control is also provided by four separate keys on the keyboard.

RS-232-C printer or modem or terminal. All systems can use this printer/modem/terminal.



QLAN: up to 64 systems.



QL with 0.5 Mb expansion board.

# Included—superb professional software

The QL is a software-designer's dream. The software supplied with the Sinclair QL has been written by Psion Ltd, and completely outperforms existing software for micros. No other comparable machine could even run them. The power of the QL means that the software is both far more capable *and* infinitely more simple to use.

There are four programs in the suite—word-processing, spreadsheet, business graphics, and database management.

They're written specially for the QL and incorporate many major developments beyond existing software packages. Each program is completely interactive: the results of your commands are instantly displayed, not stored invisibly till you run or print. A series of helpful prompts is *always* on display—no complex strings of commands to remember or look up in the manual. Because the suite was designed as an integrated whole, the programs are consistent in design and presentation—learn one, and you've learned them all. All of them use colour, and data is transportable from one to another. (For example, up-dated figures can be transferred from spreadsheet to graphics for an instant visual presentation.)

The accompanying manual is clear and simple—and, most important, a single-stroke HELP command displays a complete menu of appropriate options if you're ever stuck, and returns you to precisely the point you had reached in your operation.

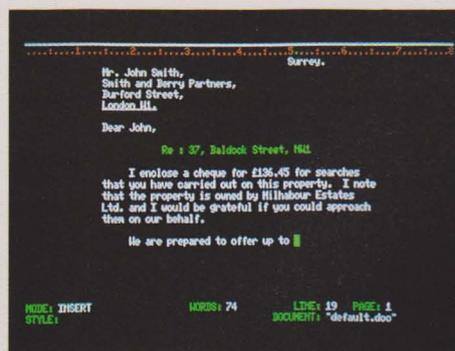
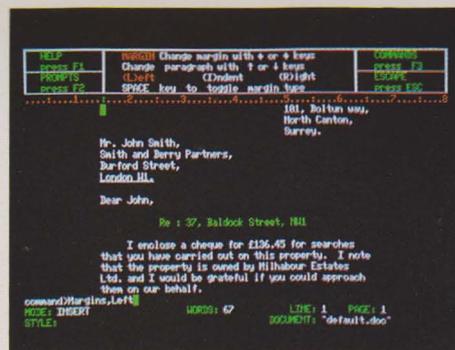
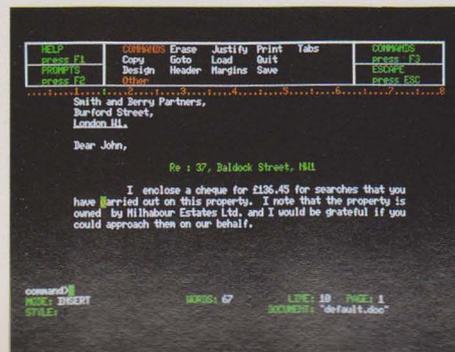
Members of the Sinclair QLUB can also contact Psion at any time for further guidance or instructions on the operation of any of the four programs. Full QLUB details are on page 8.

## Word-processing

Certain to set a new standard of excellence, QL Quill uses the power of the QL to show on the screen exactly what will be printed—what you see is what you get. No training is needed—a beginner can be using QL Quill for word-processing within minutes.

The display is in full colour for maximum clarity, and not even the fastest typist can beat the program's key-in speed.

QL Quill brings you *all* the facilities of a very advanced word-processing package. This program on its own is a justification for buying the Sinclair QL.



## Spreadsheet

One of the most popular programs for a micro—and traditionally one of the hardest to come to grips with. Now, it's no problem.

QL Abacus makes simultaneous calculations and 'what if' model-construction easier than it has ever been. Sample applications are provided, including budget-planning and cash-flow analysis, but there's no limit to what you can do.

Unlike other spreadsheets, QL Abacus allows you to refer to rows, columns and cells by the names you assign to them. You don't have to use meaningless letters and numbers.

You can also assign function keys to change a variable and carry out a complete 'what if' calculation with a single key stroke.

	February	March	April	May	June	July
SALES	1000.00	1050.00	1100.00	1157.62	1215.51	1276.28
COSTS	670.00	697.50	725.37	756.69	789.53	821.95
PROFIT	330.00	352.50	374.63	399.93	426.98	454.33

AUTO-CALCULATE on Input (Y or N).....	YES
CALCULATION order row or column.....	ROW
GAPS feed between pages (Y or N).....	YES
GAPS between lines on printer.....	0
LINES per page of printer paper.....	66
PAPER (width, height or other).....	£
PRINTER paper width (characters).....	80
STATIONERY continuous, single page.....	CONT
DISPLAY 80,64,40 columns (8,6,4).....	80

	February	March	April	May	June	July
SALES	£1000.00	£1050.00	£1100.00	£1157.62	£1215.51	£1276.28
COSTS	£670.00	£697.50	£725.37	£756.69	£789.53	£821.95
PROFIT	£330.00	£352.50	£374.63	£399.93	£426.98	£454.33

## Database management

QL Archive is a very powerful filing system which sets new standards, using a language even simpler than BASIC. It combines ease of use – for simple applications such as card indices – with huge power as a multi-file, open-ended data-processor. It includes a screen editor which allows you to design your own screen and format your reports. Procedures and programs may be written and saved for repeated use and a full editor is included.

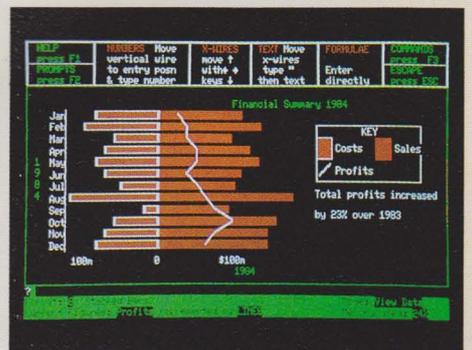
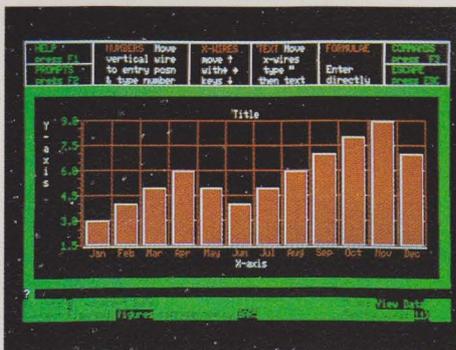
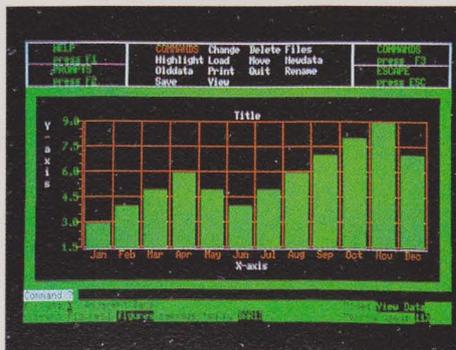
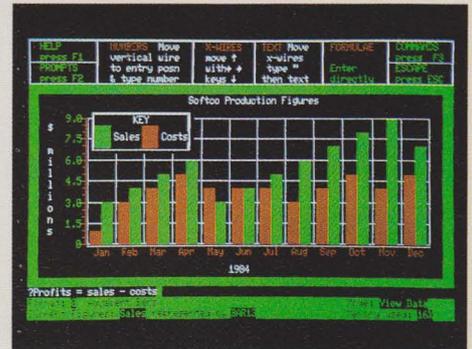
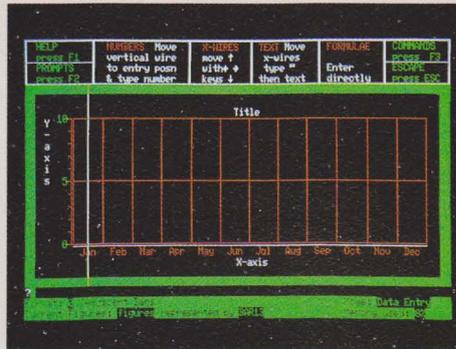
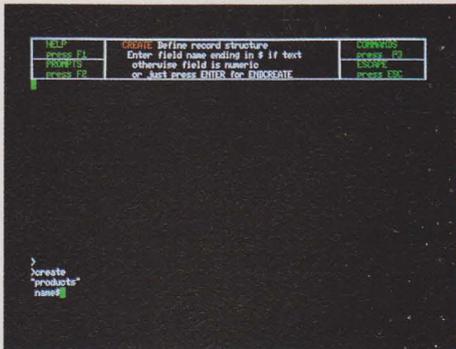
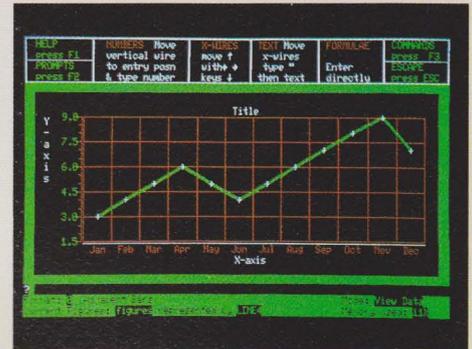
QL Archive includes two sample applications – 'card index' and 'cheque book'.

## Business graphics

QL Easel is a high resolution colour program so easy to use you probably won't refer to the manual!

The program handles anything from lines, shaded curves or histograms to overlapping or stacked bars or pie charts.

QL Easel does not require you to format your display before entering data; it handles design and scaling automatically or under your control. Text can be added and altered as simply as data.



## Unlocking the power of the Sinclair QL

The Sinclair QL provides performance in a class of its own. It is easy to learn, and easy to use.

The manual supplied with the machine is designed to ensure that users have immediate access to the QL's full power. It includes:

- \* a comprehensive description of the machine and how to use it
- \* learning to program in Sinclair SuperBASIC
- \* a Sinclair SuperBASIC reference manual
- \* a complete guide to QL Quill, Abacus, Archive and Easel

all in an A4 ring binder.

The manual also contains order forms for accessories and options, details of the comprehensive one-year QL guarantee, and servicing information.

## The QL expansion programme

A vigorous and continuing programme of enhancements for the QL is under way.

Enhancements already under development include

- \* C compiler
- \* 68000 assembler
- \* terminal emulator
- \* 0.5 Mb memory expansion board
- \* analogue/digital converter
- \* hard disc (Winchester) interface
- \* modem
- \* parallel printer interface
- \* IEEE-488 interface

Details of these and other peripherals and software can be found inside the brochure flap.

Order forms for the 0.5Mb expansion board, QL Microdrives and blank Microdrive cartridges will be sent with your QL.

## How to stay in touch with developments – the QLAB

The QLAB is the QL Users Bureau.

Membership is open to all QL owners; for an annual subscription of £35, QLAB members receive one free update to each of the four programs supplied with the QL, and six newsletters a year. These newsletters will provide technical tips and suggestions for applications of your QL software, and you can be sure that whenever any new hardware or software is expected you will be the first to hear about it and get a chance to order it.

In addition, Sinclair has made exclusive arrangements for QLAB members to obtain software assistance from Psion. If you have any questions concerning the use or application of QL Quill, Abacus, Archive or Easel, all you have to do is to write to Psion direct, quoting your QLAB membership number. Psion will reply, usually within 48 hours.

## The Sinclair QL – a quantum leap in personal computing



QL computer, power supply, manual, software and blank Microdrive cartridges – the most powerful professional personal computer ever produced. £399.

# For £399, professional personal computing with the Sinclair QL

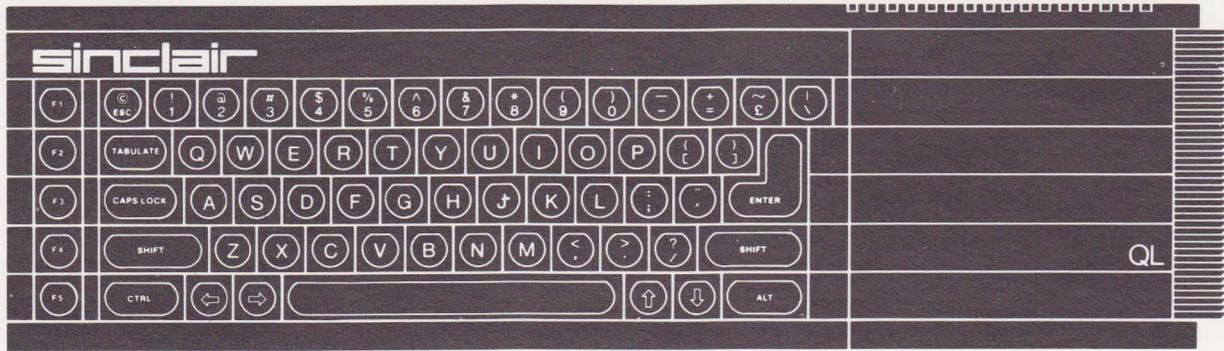
- \* All the speed and power of 32-bit processor architecture.
- \* Capacity to spare – 128K RAM as standard, expandable to 640K.
- \* Two Microdrives built in, 100K per cartridge.
- \* Full networking capability – up to 64 Sinclair QL and ZX Spectrum computers, each with peripherals.
- \* RGB or monochrome monitor and TV display ports; RS-232-C; joystick ports.
- \* Multi-tasking facility with new QDOS operating system.
- \* New Sinclair SuperBASIC language.
- \* Outstanding new software included for word-processing, database, spreadsheet and business graphics.



ORDER FORM

◀ LIFT FOR ORDER FORM

# QL Order Form



### To order by telephone

- Phone Camberley (0276) 685311. (Please do not use this number for other enquiries. The operators do not have general or technical information).
- Have your credit card number ready. (Access/Barclaycard/Trustcard only)  
It may be possible to extend your existing credit limit.  
Please ask our telephone staff for more details.

### To order by mail

- Complete the form and send it to the address below.  
For credit card purchasers it may be possible to extend your credit limit.  
Full details will be sent when we acknowledge your order.

Please allow 28 days from receipt of order for delivery. 14-day money-back option.

### For general enquiries

- Phone Camberley (0276) 686100 or write to the address below.

**Sinclair Research Ltd, FREEPOST, Camberley, Surrey, GU15 3BR.**



**Send to: Sinclair Research Ltd, Computer Division, FREEPOST, Camberley, Surrey, GU15 3BR.**

Qty	Item	Code	Item Price £	Total £
	Sinclair QL Computer	6000	399.00	
	QLUB membership (one year)	6100	35.00	
	Postage & packing (any order over £390)	6999	7.95	

£ \_\_\_\_\_

Tick the appropriate box

- I enclose a cheque made payable to Sinclair Research Ltd for £ \_\_\_\_\_
- Please charge my Access/Barclaycard/Trustcard account number \_\_\_\_\_

Signature \_\_\_\_\_

PLEASE PRINT

Mr/Mrs/Miss \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

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.12 January 1984

NEW SINCLAIR QL LAUNCHED WITH COMPREHENSIVE SOFTWARE SUITE -  
MORE THAN HALVES PROFESSIONAL COMPUTING COSTS

A 'quantum leap' in computing performance, the new Sinclair QL is designed for the serious home, business or educational user.

'Uniquely versatile', and at £399 inc VAT, less than half the cost of any comparable machine, Sinclair claims its launch, today, January 12, will dramatically expand the market for professional computers.

The QL is supplied complete with its own powerful and integrated software suite, written by - and licensed from - Psion. Designed to be immediately useful to the non-specialist in either home or office, its four state-of-the-art programs cover wordprocessing, planning, information handling and graphics. They draw on all of the computer's advanced design features.

These include high resolution colour graphics; 128K RAM memory (expandable via a 0.5Mb RAM pack to 640K); two built-in 100K QL Microdrives for mass storage and a full-size 65-key professional QWERTY keyboard.

Many of its advanced capabilities, such as multi-tasking and -window display, are normally available "only on machines costing several thousands of pounds", according to Sir Clive Sinclair.

Contd../

For further information contact:

Bill Nichols or  
Liz Walker

Sinclair Research Limited *London*  
23 Motcomb Street · London · SW1X 8LB  
Telephone 01-235 9649 · Telex 918966

Describing the QL as "Sinclair's most important contribution to personal computing since breaking the £100 barrier with the ZX80", he added "it should set new industry standards for value, performance, quality and, central to its design philosophy, user-friendliness".

Measuring 5 $\frac{3}{8}$ " x 1 $\frac{1}{4}$ " x 18 $\frac{3}{8}$ " and weighing just over 3 lbs the QL offers, via rear peripheral ports, full networking, dual joystick and ROM cartridge expansion capabilities.

Industry standard RS-232-C communications facilities for other computers, printers and modems are available, and RGB monitor and TV ports provided for use with either colour or monochrome monitors and TVs.

Using the microdrive expansion slot up to six QL Microdrives can be stacked externally - giving 800K maximum storage.

Based on four Sinclair-designed semi-custom ICs the QL's specification incorporates a powerful 32K 'Super' ROM - containing newly-written Sinclair QDOS operating system and the Sinclair SuperBASIC programming language, a radical enhancement of Spectrum BASIC.

Potential expansion for other peripherals including, say, a memory manager, is almost unlimited due to the QL's advanced Motorola 68008 32-bit processor with its one megabyte (empty) linear address capability.

Sinclair foresees the QL as the nucleus of an extremely powerful system and is already developing a series of major peripherals and enhancements, including:

- 0.5Mb memory expansion board,
- PASCAL compiler,
- 68000 assembler,

Contd../

- terminal emulator,
- analog/digital interface,
- hard disk (Winchester) interface,
- modem,
- parallel printer interface with multi-channel sound-generator,
- IEEE-488 interface.

The company plans to market the QL progressively to the serious home user, and professional and executive users, and aims to attract orders from small and large businesses and higher educational establishments.

Extensive testing and quality control programmes for the QL are now underway at Thorn EMI Datatech's Feltham facility where production is scheduled to reach 20,000 units per month by summer. Sinclair anticipates introducing a second source during the latter part of 1984.

QL advertising begins immediately with first UK mail-order deliveries expected at end-February. UK retail and US and European export sales are planned provisionally for the third quarter.

\*\*\*\*

Priced at just £399 inc VAT the Sinclair QL is supplied complete with 1.8 amp power supply, manual (containing a full course in Sinclair SuperBASIC), software suite on microdrive cartridges and four blank microdrive cartridges.

Orders and customer enquiries should be directed to Sinclair Research Limited, Stanhope Road, Camberley, Surrey GU15 3PS. Tel: 0276 685311 (orders only); 0276 686100 (enquiries only).

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## NOTE TO EDITORS

For Sinclair media enquiries please contact Bill Nichols,  
Sinclair Research Limited, 23 Motcomb Street, London SW1X 8LB.  
Tel: 01-235 9649.

## Additional telephone numbers:

Motorola (Robin Saxby) - 01 902 8836.

Psion, Technical enquiries (Peter Norman) - 01 723 6919/9408.

Psion, Media enquiries (Robin Kinnear) - 01 580 5432.

• 12 January 1984

SINCLAIR QL - TECHNICAL BACKGROUND, HARDWARE SPECIFICATION  
AND EXPANSION

The Sinclair QL incorporates four Sinclair-designed semi-custom ICs. The first, dual-sourced by Plessey and Synertek, controls display and memory; the second, dual-sourced by NCR and Synertek, other major functions including Microdrives, local area network and RS-232-C transmission; the third and fourth, from Ferranti, provide analog functions required by the Microdrives.

For the QL's CPU Sinclair selected the Motorola 68008 processor as being 'the most advanced on the market and a likely future industry standard'. Principal advantages include high speed 32-bit architecture (as opposed to current 8- or 16-bit standards), and a comprehensive instruction set.

Perhaps most important its one megabyte of available non-segmented address space makes possible a wide family of peripherals and enhancements.

Specification

Dimensions: 138 x 46 x 472mm (5 $\frac{3}{8}$ " x 1 $\frac{3}{4}$ " x 18 $\frac{3}{4}$ ").

Weight: 1388 gms (3.055 lbs).

Price: £399 inc VAT.

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For further information contact: Bill Nichols

CD35c

Sinclair Research Limited *London*  
23 Motcomb Street · London · SW1X 8LB  
Telephone 01-235 9649 · Telex 918966

RAM: 128K, expandable externally to 640K.  
(32K dedicated for screen bit map).

ROM: 32K, contains Sinclair SuperBASIC and  
Sinclair QDOS operating system.  
(Expandable via ROM cartridge to 64K).

CPU: Motorola 68008, running at 7.5MHz, for  
all principal functions. (Architecturally  
the 68008 is a 32-bit processor with an  
8-bit data bus. One megabyte of non-  
segmented address space is available.)

A second processor (Intel 8049) controls  
keyboard, sound, RS-232-C receive and  
real-time clock functions.

Operating system: QDOS, developed by Sinclair. Key features  
include;

- single-user multiple tasking,
- time sliced priority job scheduler,
- display handling for multiple screen  
windows,
- device-independent input-output.

Language: Sinclair SuperBASIC, a radical enhancement  
of Spectrum BASIC, with principal  
advantages;

- procedure structuring,
- extendability (including syntax),
- interpretation speed independent of  
program size,
- clean machine-code interface,
- operating system facilities accessible  
from SuperBASIC,

Contd../

- equal capability for strings and arrays,
- full-screen BASIC editor,
- full error-handling facilities.

**Video:** High-resolution graphics capability with colour/monochrome monitor (or TV) in two modes; 512 x 256 pixels (4-colour), 256 x 256 pixels (8-colour).

Normal character display format up to 85 x 25 with choice of character sets available; TV format up to 40 to 60 columns depending on software.

**Keyboard:** Full-size 65-key QWERTY keyboard featuring space bar; left- and right-hand shift keys; five function keys, four cursor-control keys.

**Microdrives:** The QL incorporates twin QL microdrives, with a minimum 100K bytes capacity each, 3.5 seconds average access time and loading of programs or data into internal RAM at up to 15K bytes per second.

**Power supply:** 9v DC at 1.8 amps, 15.6v AC at 0.2 amps.

### Expansion

Excluding RGB monitor and power sockets and the TV port, nine peripheral/expansion ports are provided; internal expansion (1), microdrive expansion (1), ROM cartridge (1), serial (2), local area network (LAN) (2), joysticks (2).

Contd../

- Internal: One megabyte of address-space is available providing almost unlimited potential for expansion.
- Microdrive: Enables a further six QL Microdrives to be attached. ZX Microdrives are incompatible although blank cartridges are interchangeable after reformatting. Four blank cartridges are supplied with each QL.
- ROM cartridge: Accepts one QL ROM cartridge up to 32K - does not accept ZX ROM cartridges.
- Serial: Two standard RS-232-C communications interfaces for printers, modems etc. Transmission at rates from 75-19200 baud or full duplex transmit/receive at seven rates up to 9600 baud.  
(Note: a parallel printer interface is planned as an optional extra.)
- LAN: For up to 64 Sinclair QL or ZX Spectrum computers; data transmission over the net at 100K baud.
- Joysticks: Provision for one or two for games or cursor control.

- ends -

12 January 1984

SINCLAIR QL COMPUTER - APPLICATIONS SOFTWARE

Background information

After a major 18-month development programme Psion has written a comprehensive software system with applications programs designed to turn micro-computers into useful machines for non-specialist people both in their work and at home.

Under an agreement Psion and Sinclair Research are supplying these powerful business tools on the Sinclair QL to every customer.

The applications programs provide a comprehensive word-processing, planning, information handling and graphics capability and are integrated in style, structure, design and in the sharing of information

QL QUILL - wordprocessor

QL ABACUS - spreadsheet

QL ARCHIVE - database

QL EASEL - graphics

Each program is more powerful and functional than existing equivalent products of desktop computers up to £5,000 (such as the IBM PC) and as such represents 'state-of-the-art' software.

The fundamental quality of the software is its usability. The software has been designed to make these powerful tools available and usable by a mass market with no prior training or pre knowledge. The software understands the user, rather than the user having to understand the software. This has been achieved by the use of a number of concepts

Contd../

For further information contact:

Bill Nichols

Peter Norman, Psion Ltd. 01-723 9408/6919

Sinclair Research Limited *London*  
23 Motcomb Street · London · SW1X 8LB  
Telephone 01-235 9649 · Telex 918966

CD35g

"Pyramidal"

"Do and See"

"Inform and Decide"

All have a pyramidal structure that takes the user directly to the most commonly used facilities, enabling even the most inexperienced person to perform useful tasks immediately. As an individual becomes more experienced control of more parameters is possible and the most expert can achieve the very high levels of sophistication built into the software.

At all times a totally interactive approach is used. The usual effect and reward to any user action is immediate. The output is always displayed on the screen in the format it will be printed or plotted - for example there are no special control characters to indicate various type fonts. The type font itself is shown.

The software is self-documented. Throughout the programs comprehensive information on the current status and on what actions are available are displayed in full English. Continuous prompting is directed at the current action being pursued. In addition a comprehensive HELP function is available in all the packages and at all times. No matter where the user is in the software, even in the middle of a complex input, simply pressing function key 1 will help call up the full HELP screen of relevant information. Further HELP pages can be followed or the user may return precisely to where he was in the program through the ESCAPE key.

Details of QUILL, ABACUS, ARCHIVE and EASEL follow.

Sinclair QL Computer - Software

## QL QUILL - WORD PROCESSING

Word processors are the most common business application of micro-computers and yet often require substantial training in their use. QUILL is designed to provide all the necessary information on the screen as the document is created.

The comprehensive command and control panel at the top of the screen details which actions are available, and constantly updates to provide relevant information. The status panel at the bottom of the screen gives current status.

In common with the other programs QUILL is fully interactive with real time margin variation, justification, page formatting etc. Whatever course of action is taken produces immediate visual results. The natural corollary of this is the adoption of the What You See Is What You Get format with the various font styles shown directly on the screen as bold, superscript, subscript and underline.

QUILL exhibits an intelligent attitude in the implementation of its many functions. For example, when inserting text in the middle of existing text, automatic justification takes place unless more than one word is typed when the line splits to allow more insertions without the distracting continuous justification. There is also a command, Glossary, which saves or recalls passages of text and format instructions with just two keystrokes, taking the tedium out of typing standard formats or letters.

QUILL has all the features of a modern word processor - erase, copy, move, search and replace, tabs, headers, footers - plus some more unusual ones such as Viewing a wide document to check for overall layout and format, Glossary and the Import of data, tables and graphs from the rest of the applications software suite. Further details can be found in the user manual.

## KEY FEATURES OF QUILL

WYSIWYG approach with screen representation formatted like a printed page in real time - truly interactive including real time margin variation, justification, page formatting etc.

Font style shown on screen directly as bold, superscript, subscript and underline.

Page formatting, page number in different styles, headers and footers.

Glossary commands, saves or recalls passages of text and format instructions.

Tabs with comprehensive formats including left tabs, right tabs, centre tabs and decimal tabs.

Horizontal scrolling for large documents.

View command or bird's eye view for large documents.

Automatic insert and delete mode with automatic split of text for large insert entry.

Comprehensive prompting with "inform and decide" and not simply menus.

Help function key available at all times with automatic call-up of relevant pages.

Erase and copy blocks of text.

Search and replace.

Import of files for making lists from ARCHIVE, tables from ABACUS and graphics from EASEL.

FOR FURTHER INFORMATION CONTACT: Peter Norman, Psion Limited,  
22 Dorset Square, London NW1. Tel: 01-723 9408/6919

**QL ABACUS - SPREADSHEET**

ABACUS is uniquely powerful as a worksheet in many respects.

ABACUS eliminates the grappling with row and column co-ordinates and replication of formulae over rows and columns required by existing worksheets with two major innovations:

**Labels** - ABACUS will use the existing text as sufficient reference for whole rows or columns or individual cells, eg "sales" or "February" or "sales.February" or "Feb.sa".

**Row/Column Operations** - ABACUS will automatically apply the rules or formulae entered to whole rows, columns or blocks of cells without recourse to any complex command structure. Eg "Row = 100" will put 100 in each cell in the current row, or more powerfully, one can set up the row "profit" as "profit = sales - costs" and ABACUS will put in the formula to subtract the row "costs" from the row "sales".

ABACUS is an "intelligent" worksheet because it uses 'everyday' labels, because it always prompts with the most likely choice of parameters required and because it always informs and guides the user in the entry of data and in the decisions which must be made. The software is self-documented and includes comprehensive Help files which can be accessed at any time.

ABACUS is also hugely powerful with an enormous range of in-built functions for operating on text as well as numbers. These commands include the joining of worksheets, the use of multiple windows, the variation of widths and justification of text, the use of different units including monetary, integer, percentage, decimal and exponential form, and the ability to prompt the operator for the input of data as part of the worksheet. ABACUS is also significantly faster than other worksheets and utilises memory in a more efficient manner, thus increasing its capacity.

A comprehensive list of commands and functions available in ABACUS can be found in the reference section of the user manual.

## KEY FEATURES OF ABACUS

Data, text and formulae entry is direct into cells or whole rows or columns with ranges automatically prompted by ABACUS.

Rows, columns and cells are referred to by user-defined names or variables automatically from text entries. Eg the column January in a budget may be referred to as January or Jan. etc, and the relevant cell as Jan. sales or jan. sa or sal. JA. etc.

Size 256 rows x 64 columns with more than 16,000 cells.

Accuracy to 16 significant figures.

Memory efficient 2 to 3 times as efficient as last-generation spreadsheets.

Speed substantially faster than last-generation spreadsheet.

Windows: horizontal or vertical with joint or individual scrolling.

Input line editor with cursor motion, insert, delete and recall of previous entry.

Screen formats automatic switch-in software for 80, 64 or 40 column screens.

Units - integer, decimal, exponent, percentage, monetary with arbitrary symbols, positive and negative numbers or brackets for accounting.

Consolidation joining or merging of two or more spreadsheets.

Ordering or sorting of columns or rows.

Variable grid variable column widths and insertion and deletion of rows and columns.

Justification - left, right or centre of text and numbers.

/7

(Abacus contd..)

Prompting for user with information and suggestions and not just menus. Automatic choice and prompting of parameter commands.

Transmission of files through export and import of mail to other QL applications software.

Comprehensive numeric functions including full trigonometric functions (sine, arcsine, log, etc), average, maximum, minimum, internal rate of return, net present value, angles, date and time.

Comprehensive text functions including logical if, ascii code to character and character to code, string concatenation, lower and upper case conversion, repeat function etc.

Input functions on execute to prompt the user with data or text queries for repeated use.

Help key for user information - comprehensive and available at all stages throughout the software.

FOR FURTHER INFORMATION CONTACT: Peter Norman, Psion Limited,  
22 Dorset Square, London NW1. Tel: 01-723 9408/6919

**QL ARCHIVE - DATABASE**

Database programs are by their nature more complex to operate than other general business applications software. ARCHIVE has been designed to reduce this degree of difficulty and at the same time offer a sophisticated multifile relational database.

In common with the other programs in the suite, ARCHIVE can be used immediately, utilising a database structure provided with the program - a simple but powerful card index. Thus one can explore and make practical use of the flexible searching, selecting and matching facilities that allow retrieval of data from any angle.

ARCHIVE is language based and can be used to construct comprehensive multifile relational databases with the minimum of experience. The language is similar in operation to SUPERBASIC and utilises procedures constructed from some eighty commands, allowing the most sophisticated data handling to be performed all within the framework of the familiar information prompting and Help facilities.

Fields and records are defined with variable lengths, being both efficient in memory usage and much more flexible for the user - it is often very difficult to accurately predict data length requirements when first constructing a database. Records can be displayed in any format, and the powerful language allows output to be printed in a preferred style.

Multifile searching and cross-reference is available, and one can even Import data from ABACUS or export data, with the field names as labels, back to ABACUS or on to EASEL and QUILL.

A comprehensive summary of the commands and functions available on ARCHIVE can be found in the reference section of the user manual.

## KEY FEATURES OF ARCHIVE

Multifile relational database arbitrary number of files with true multifile capability. (Not just a subsidiary file.)

Language-based using syntax similar to SUPERBASIC for user familiarity.

Variable length fields and records for efficient use of memory and disk.

Sorting is extremely rapid for large files from microcassette due to the use of a memory based index technique.

Up to 256 fields per record of numeric or text type.

84 command words available including if - else - endif construct, all, endall, do while etc.

Comprehensive numerical functions including all standard mathematical functions (sine, arcsine, log, etc), average, maximum, date and time, etc.

Comprehensive text functions including string slicing, upper and lower case conversion, code to character, etc.

Comprehensive database functions including field types, record number, count, eof, free memory etc.

Powerful SELECT functions including find, search "expression", and SELECT "expression".

Interpretive or run mode.

Procedures in a similar style to LOGO.

/10

(Archive contd..)

In-line editor, procedure editor and screen editor.

Screen formatting and report formatting editor in the saving and loading of screen formats.

Input and output through screen entry or prompt entry.

Print, tab, input command words with ink and paper colours for colour monitors.

Export and import of files to the other QL applications software, QUILL, ABACUS and EASEL, and to SUPERBASIC and other programs.

Designed for direct use by end users for simple applications such as card indices or through procedures for sophisticated multfile data processing.

FOR FURTHER INFORMATION CONTACT: Peter Norman, Psion Limited,  
22 Dorset Square, London NW1. Tel: 01-723 9408/6919

Sinclair QL Computer - Software

**QL EASEL - GRAPHICS**

EASEL is a spectacular graph creating program that provides the most dramatic and effective way of communicating a series of numbers.

EASEL is totally interactive and leads the user straight into graph creation without ever having to construct a table of values or face a barrage of questions before seeing any results. The familiar pyramidal structure allows deeper 'digging' to various levels of user design, even to the extent of defining the colour of the graph "paper" and of the text and axes.

There are a series of eight pre-set formats which can be called with a single keystroke, giving bar graphs of different colours and styles, such as stacked bars, overlapping bars plus line graphs and pie charts. Any of these formats can be altered to suit the user's requirements, and throughout the program choice can always be made by example ie EASEL will illustrate the various options available.

Text can be input anywhere on the screen using cross-wires for positioning, and it can be subsequently moved if required. In fact EASEL behaves intelligently in homing in the cross-wires on the nearest piece of text, or the Key, or the axis labels.

However, EASEL is more than just a means of plotting data, it can manipulate and evaluate expressions and has a series of mathematical functions. Thus a graph of "profits" can be calculated and displayed simply by typing "profits = sales - costs", and similarly logarithmic and trigonometric expressions can be utilised.

EASEL is designed to handle data entry, manipulation, display and printout in a totally self contained manner, while at the same time is capable of receiving data from ABACUS or ARCHIVE (and exporting it back) or sending graphs to QUILL for inclusion in a document.

/12

(Easel contd..)

A more detailed description of EASEL's facilities can be found in the user manual

#### KEY FEATURES

Fully interactive entry is always directly in graphics mode with each action producing the immediate visual result.

Data and format are logically separate so that the same set of data can be observed in innumerable different styles.

Includes bars, lines, filled lines, pie charts, mixed lines and bars, stacked bars, side-by-side bars, overlapping bars.

Highlighting of special bars or pie slices.

Text - entry at arbitrary positions with titles, axes and keys.

Pick up and move text, keys and titles.

Horizontal and vertical representations.

Standard formats and user defined formats are available down to smallest detail.

Use of formulae with common maths functions for the creation, analysis and manipulation of data sets eg profit = sales - costs, or  $a = \sin(\text{col}(\ ))$ .

Help pages facility available through software at any stage with call-up of relevant pages.

Automatic vertical and horizontal scaling.

Editing with crosswires.

Export of graphics pictures to QUILL word processor and data to or from ARCHIVE and ABACUS.

FOR FURTHER INFORMATION CONTACT: Peter Norman, Psion Limited, 22 Dorset Square, London NW1. Tel: 01-723 9408/6919

12 January 1984

COMPREHENSIVE QL SOFTWARE SUITE ANNOUNCED - INTRODUCING  
QL ABACUS, ARCHIVE, EASEL AND QUILL  
NEW-STYLE QL USERS BUREAU ESTABLISHED

Each Sinclair QL is supplied complete with a powerful immediately useful and integrated software system with applications programs and full supporting documentation.

Equally valuable in the home or office the suite contains QL Abacus for spreadsheet analysis, Archive for database management, Easel for graphics and Quill for wordprocessing.

Written by, and licensed from, Psion the fully-interactive packages are based on the concepts of 'Inform and Decide', 'Do and See' and 'What You See is What You Get' (WYSIWYG).

Psion's managing director, David Potter, said that "the fundamental quality of the software - which has taken 18 months to develop - is its useability. Each program is more powerful and functional than existing products for desk-top computers costing up to £5000.

Yet it is designed to be used with no prior training or computer knowledge. The software understands the user rather than the user having to understand the software".

All four programs incorporate state-of-the-art developments in each subject area, share a common style and have been designed, above all, for ease-of-use. With direct entry

Contd../

available to the most regularly required features every owner can be operational at a basic but useful level within a few moments.

Thereafter as his experience grows he can move through each program's pyramidal structure progressively taking control of more sophisticated functions.

Eliminating the delays of batch-processing, most results are displayed immediately, in real-time, and in the same format as they will be printed.

Throughout operation full information is displayed on current status and command availability. HELP is always available - even during input - and, after consultation, will return the user to exactly the same place in the original work.

As an invaluable aid to say, report writing or planning development, data can be transferred from program to program within the suite using IMPORT and EXPORT commands, and modified at the destination point before return.

An important and innovative new service to users is the Sinclair QL Users Bureau (QLUB) which will automatically supply software updates free to members. In addition Psion will provide written response to technical queries on software. QLUB will also mail six free newsletters each year containing technical tips, applications suggestions and latest news on Sinclair QL hardware, software and peripherals. Membership is £35 per year.

- ends -

Contacts for further information:-

Sinclair press enquiries (Bill Nichols) - 01 235 9649.

Psion technical queries (Peter Norman) - 01 723 6919/9408.

Psion press enquiries (Robin Kinnear) 01 580 5432.



Microcomputer  
Products

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Telex: 296489 PSIONC G.

12 January 1984

## COMPANY BACKGROUND

PSION is a British company which was formed in October 1980 and now specialises in the development and distribution of high quality software products for home and business microcomputers. Founder and majority shareholder is Dr David Potter, 40, previously an academic specialising in Computational Physics at Imperial College and the University of California.

Based in central London, PSION employs 25 innovative software engineers who use an in-house £½ million development system for software based on DEC 'VAX' minicomputers.

The company's initial contact with Sinclair Research was with PSION's independent production of software for the ZX 81 home computer. It later developed into a full marketing agreement under which all PSION originated software for the Sinclair Spectrum and ZX 81 home computers is sold direct to Sinclair for distribution worldwide. Under a separate agreement PSION has now licenced Sinclair, on a royalty basis, to supply PSION applications software with each QL computer.

PSION has produced more than three million pieces of software, much of it exported, with more than 500,000 pieces sold in October alone. Turnover is now running at a rate in excess of £9 million.

**MEDIA CONTACT:** Robin Kinnear, Kinnear and Partners, 22 Little  
Portland Street, London W1N 5AF. Tel: 01-580 5432

• 12 January 1984

SINCLAIR RESEARCH LIMITED - BACKGROUND INFORMATION

Sinclair Research was founded by its chairman, Sir Clive Sinclair in July 1979, to conceive, develop and market new consumer electronics products.

In four years the company has established itself as a world-leader in the personal computer market with total sales in excess of 2,300,000 units and monthly production of over 100,000 units. Recently it entered a second major market area by launching its flat-screen pocket TV.

Sinclair Research is 85% owned by Sir Clive and a further 10% is held by a group of institutional investors who in February 1983 subscribed £13.6 million gross by private placement - capitalising the company at £135.9 million.

Company turnover doubled to £54.53 (£27.17) million in the year to March 1983 while profits before taxation and exceptional item were £14.03 (£8.55) million.

Sinclair Research concentrates itself on R & D and marketing and subcontracts all production. Current Sinclair Research projects include a new range of personal computers, computer peripherals, flat-screen TV developments and consumer applications of solid state technology.

Based in Cambridge, Sinclair Research has branch offices in London and Boston USA, and additional research laboratories in Winchester and St Ives, Cambs.

- ends -



CAPTION

The new Sinclair QL: at just £399 inc VAT, a 'quantum leap' in computing performance and designed for the serious home, business or educational user.

Supplied complete with its own powerful software suite - including spreadsheet analysis, wordprocessing, graphics and database management - the QL's features include high-resolution colour graphics, 128K RAM (expandable via a 0.5Mb RAM pack to 640K); two built-in 100K QL Microdrives for mass storage and a full-size 65-key professional QWERTY keyboard. Full expansion and communications' facilities are available.

For further information contact:-

Bill Nichols  
Sinclair Research Ltd  
23 Motcomb Street  
London SW1X 8LB.      Tel: 01-235 9649.



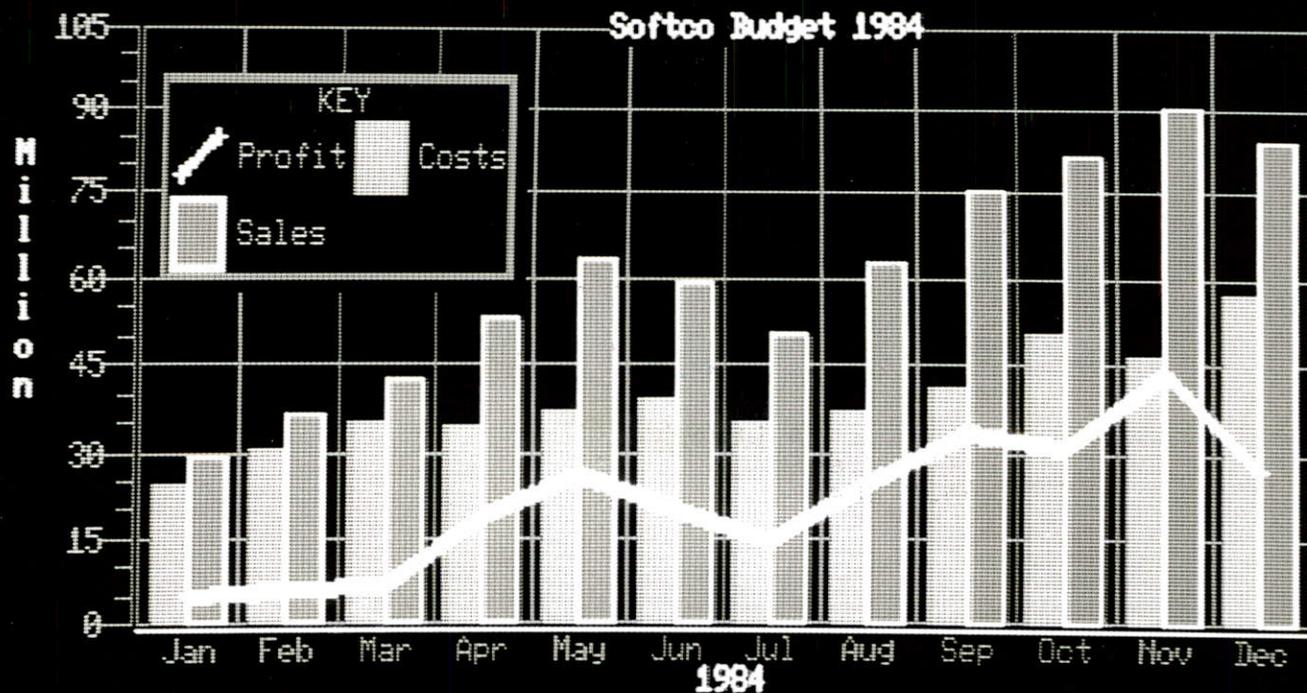
CAPTION

The new Sinclair QL showing QL Microdrive cartridge insertion.

For further information contact:-

Bill Nichols  
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23 Motcomb Street  
London SW1X 8LB.      Tel: 01-235 9649.

### Softco Budget 1984



Contents

Format:  (Adjacent Bars)

Current Figures: Sales represented by BARIS

Mode: View Data

Memory used: 452

CAPTION

A screen from the QL Easel graphics package, one of the four programs from the integrated Psion-written software suite which is supplied complete with every QL.

For further information contact:-

Bill Nichols  
Sinclair Research Ltd  
23 Motcomb Street  
London SW1X 8LB.      Tel: 01-235 9649.

HELP press F1	CURSOR move ← with ↑↓ keys →	TEXT Type to insert at █ Press ENTER for new para Delete: SHIFT KEY & ←↑↓ Change mode: SHIFT KEY & F4	STYLE press F4 GLOSSARY press F5	COMMANDS press F3 ESCAPE press ESC
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.....1.....2.....3.....4.....5.....6.....7.....8

London HL.

Dear John,

Re : 37, Baldock Street, NML

I enclose a cheque for £136.45 for searches that you have carried out on this property. I note that the property is owned by Milharbour Estates Ltd. and I would be grateful if you could approach them on our behalf.

We are prepared to offer up to █

MODE: **INSERT**  
STYLE:

WORDS: 65

LINE: 21 PAGE: 1  
DOCUMENT: "default.doc"

CAPTION

A screen from the QL Quill wordprocessing package, one of the four programs from the integrated Psion-written software suite which is supplied complete with every QL.

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CAPTION

The new Sinclair QL shown with a prototype of the forthcoming QL 0.5Mb RAM pack, connected via the QL's internal expansion slot.

For further information contact:-

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