

AMSTRAD PC 2000

S E R I E S



THE REVOLUTION IN BUSINESS SOLUTIONS

AMSTRAD

DESIGNED
AND BUILT
TO MEET
THE NEEDS
OF THE
FUTURE

AMSTRAD PC 2000

S E R I E S

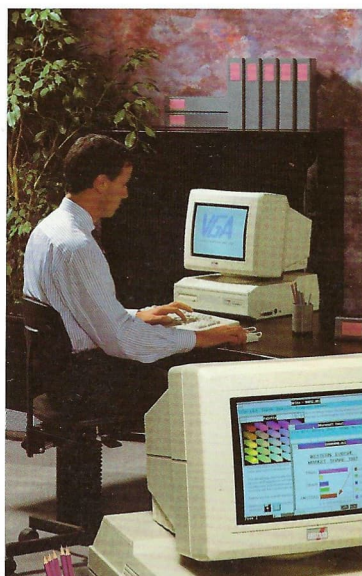


The Amstrad PC2000 series has been designed and built to the highest specification to provide a new level of price/performance among business computers.

From floppy disk-based business applications through to individual power user workstation devices using the powerful Intel 80386 microprocessor, the Amstrad PC2000 series provides a solution to match the user's requirement.

Throughout the design of the systems, the most advanced components and techniques have been employed to provide users with systems which offer high performance and throughput.

Each model in the range has a set of options to allow a perfect match between the system and the application, complemented by the Amstrad range of analogue, VGA compatible monitors to create a high-quality display of information in any business environment.



VGA COMPATIBLE

To match the resolution capabilities of the Amstrad analogue monitor range, all of the models in the PC2000 series use an extended version of the VGA display system. VGA is the latest standard in business computer graphics, which in high resolution mode allows 16 colours to be displayed at any one time. The version used in the Amstrad PC2000 series, however, allows 256 colours to be used (chosen from a palette of 262,144), creating outstanding graphical display ability. This VGA capability is actually built onto the motherboard of the system, unlike many other machines which require the purchase of an adaptor card with the use of an extra expansion slot. It is also compatible with the less advanced Hercules, CGA and EGA standards, so that existing software can be used without modification.



EXTERNAL DRIVE ADAPTOR

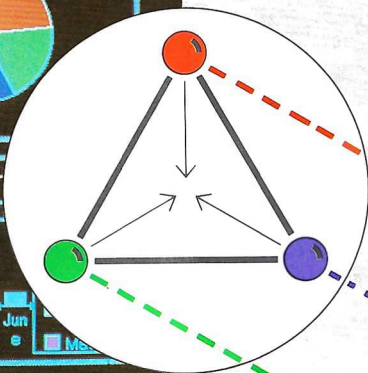
The resolution of a display screen is an important element in the overall quality of a system, particularly when the user may be working at the screen for several hours at a time. The key indicator of this is the dot pitch, which in a quality, high resolution monitor will be a low figure, increasing as the resolution decreases. Within the Amstrad monitor range a dot pitch figure as impressive as 0.28 may be attained.

This number actually describes the distance in millimetres between the red, green and blue dots which make up the display – the closer they are, the sharper the image.

The PC2000 series uses the convenient 3½" disk format, but some users will have software or data stored by themselves or others in their company on 5¼" floppy disks. In order to overcome this potential problem, an external drive adaptor has been built into the side of all PC2000 machines.

It is easily accessible and will allow for a standard 5¼" drive to be simply 'plugged in'. Once connected the 5¼" drive will enable the transfer of data from one disk to another or the actual use of the data stored on the 5¼" format. The advantage of this adaptor is clear – any company that has an existing range of 5¼" based machines need not fear that upgrading to the latest technology might make expensive software redundant, nor fear that departments using the new machines will be left out in the cold.

Additionally this adaptor allows for the use of tape streamers for back up data storage or the addition of an extra 3½" disk drive.



DOT PITCH

AMSTRAD PC 2086



The PC2086 is designed to be the ideal introduction to the series bridging the gap between existing machines and the more advanced PC2000 machines. It is also ideal for use as a stand-alone system or as part of a large multi-user network of machines.

Using the Microsoft® MS-DOS 3.3 operating system, the PC2086 also features Microsoft Windows V2.03, while the use of 1:1 hard disk interleaving and a full 16-bit internal bus means that the full processing power of the 8MHz 8086 microprocessor is used to maximum advantage.

640K of parity checked high-speed RAM is standard with a choice of either single or twin 720K 3½" disk drives, or a 30Mb hard disk version with single 720K 3½" disk drive.

A highly integrated design means that many features which would normally occupy valuable bus slots are incorporated on the motherboard, including the floppy disk controller, serial and parallel ports and controller for the integral mouse.

The PC2086 can be used with any of Amstrad's new range of antiglare VGA compatible monitors and has the added advantage of an inbuilt drive adaptor so that 5¼" software and data files can be accessed and used normally through a standard external 5¼" disk drive.

F E A T U R E H I G H L I G H T S

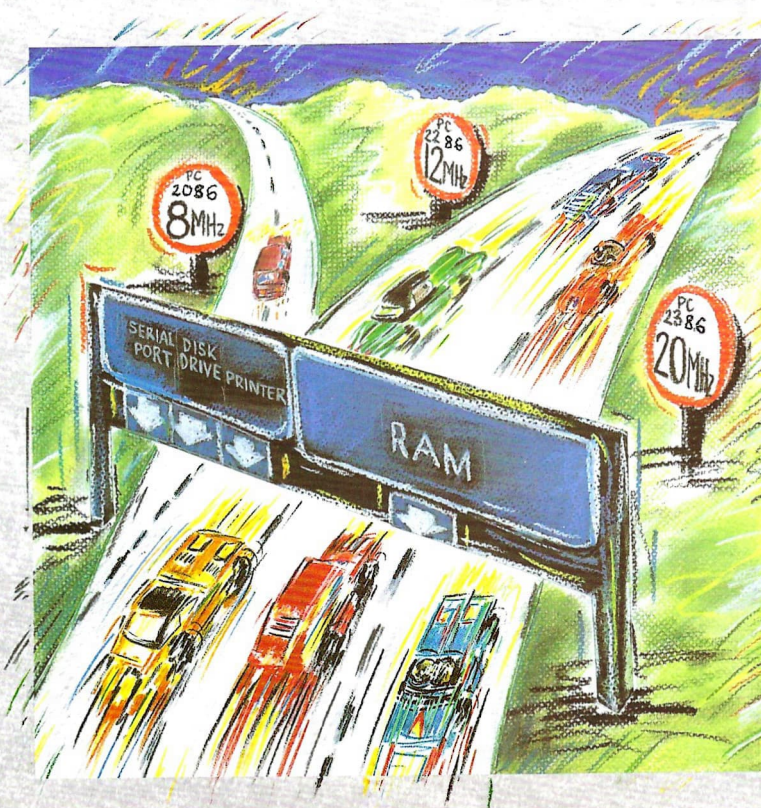
- 8MHz 8086 MPU
-
- 640K parity checked RAM
-
- 720K 3½" disk drive(s)
-
- 30Mb hard disk option with 1:1 interleave
-
- VGA compatible with full EGA/CGA/Hercules compatibility
-
- Highly integrated design
-
- 3 x 8-bit expansion slots free
-
- Adaptor for 5¼" or 3½" disk drive or tape streamer
-
- 8087 maths co-processor socket

MOVING DATA AROUND THE SYSTEM QUICKER AND MORE EFFICIENTLY

With high performance processors and peripherals, getting data around the system is a key area, centering on the computer's bus – the routes by which data moves around the system. There are two buses in the system, an internal full-speed, full-width bus which connects the processor and main memory, and the external peripheral bus. By their nature, peripherals operate at a slower rate than the processor, so connecting them to the main bus would slow down the system. Amstrad's solution is to operate the expansion bus at a slower rate than the internal bus, and to provide a buffer register which minimises the time the processor might wait for a peripheral to finish using the bus, thus speeding up the overall system operation.



BUS STRUCTURE



The platter of a hard disk revolves very quickly – quicker than the head can read data from the surface and pass it to the system. One way of overcoming this is to arrange the data on the surface of the disk in such a way that when one sector of information has been read, the disk has revolved to the point where the next required sector is in position to be read. While the disk has been revolving, the head has passed over the subsequent piece of data, so that to read an entire track of data, the disk will revolve several times. On most systems, the disk will revolve twice or three times for each track of data read, and this is called 2:1 or 3:1 disk interleaving.

The hard disks used in the Amstrad PC2000 series have controller electronics which contain extra memory that is used as a sector buffer. This allows a whole track of data to be read in one revolution, so that it can be arranged on the disk with 1:1 interleaving, and passed as requested to the system, resulting in an overall performance improvement.



DISK INTERLEAVING

AMSTRAD PC 2286



F E A T U R E H I G H L I G H T S

- 12MHz Intel 80286 MPU
- 1Mb parity checked RAM (expandable on motherboard to 4Mb)
- Choice of VGA compatible monitors
- Adaptor for 5¼" or 3½" disk drive or tape streamer
- LIM 4.0 expanded memory
- 1.4Mb 3½" disk drive(s)
- 40Mb hard disk option with 1:1 interleave
- Novell Netware compatible
- Highly integrated design
- 5 x 16-bit expansion slots free
- 80287 maths co-processor socket

The PC2286 is based on the powerful Intel 80286 microprocessor operating at 12MHz. It is supplied with MS-DOS® 4.0, when expanded can be used with OS/2, and also includes Microsoft® Windows 286 which allows users to access several Windows applications at one time.

The use of 1:1 disk interleaving and asynchronous expansion bus operation means that the full processing power of the 80286 is used to maximum advantage, while the Amstrad VGA monitors with a dot-pitch as low as 0.28 provide a crisp high-resolution display in either full colour or monochrome.

1Mb of parity checked high speed RAM with a sophisticated 12MHz 16/32-bit internal bus is standard. RAM is expandable to 4Mb.

Twin 1.4Mb 3½" disk drives, or a 40Mb hard disk with a single floppy drive is available. The hard disk version features 1:1 interleaving for maximum efficiency.

RAM CACHE AND WAIT STATES

Imagine that you want to borrow a book on a particular subject. Off you go to the local library, where, most of the time, you will find it. If it isn't there, then you will have to go to the central library, which is a time-consuming activity.

The local library cannot have every book that someone might want, so the librarians try to have a selection which will cover the most common requests, so that users do not have to go to the main library very often.

That is the principal behind the RAM cache feature of the Amstrad PC2386.

The local library would represent the RAM cache while the central library would act as the main RAM. An extra 64K of special high-speed memory is used to store the data which the processor has used most recently, because as much as 95% of the time, the processor will want to perform repetitive operations on the same set of data.

The RAM cache memory speeds up the overall operation of the system by ensuring that most of the time the data that the processor requires is stored locally, removing the need for it to access the main memory each time.

This minimises the amount of time that the processor spends in **wait states**, which is analogous to the time you would spend travelling to the central library, in the above example. Most memory requires the processor to go into a wait state once or twice for each memory access, and so is called 1 or 2 wait state memory. The high-speed memory used in the PC2386 RAM cache is zero wait state memory, so for the 95% of the time that the required data is to be found in the RAM cache, the PC2386 is operating in zero wait state mode.



AMSTRAD PC 2386



The PC2386 is the flagship of the PC2000 series, for the high end workstation user. Throughout the design of the system, advanced techniques have been incorporated to take full advantage of the 20MHz Intel 80386 processor, including 64K of RAM cache memory, asynchronous expansion bus operation and effective zero wait state memory operations.

It is supplied with MS-DOS® 4.0, can be used with OS/2 and also includes Microsoft® Windows 386 to allow users to access several Windows or DOS applications at one time.

4Mb of parity checked high speed memory with a full width 32-bit bus and a 65Mb hard disk with sector buffer are standard. Users can switch the addressing of main memory areas through software, allowing fully flexible allocation between base, expanded and extended memory.

The RAM is expandable to 16Mb on the motherboard, while virtual memory operation allows applications to use hard disk storage as RAM. Again the external drive adaptor allows the use of 5¼" disk format and also tape streamers for back up data storage.

F E A T U R E H I G H L I G H T S

20MHz Intel 80386 MPU

4Mb parity checked RAM
(expandable to 16Mb on board)

Choice of VGA compatible monitors

Adaptor for 5¼" or 3½" disk drive or
tape streamer

64K of 35ns RAM cache

1.4Mb 3½" disk drive(s)

65Mb hard disk
with 1:1 interleave

Novell Netware compatible

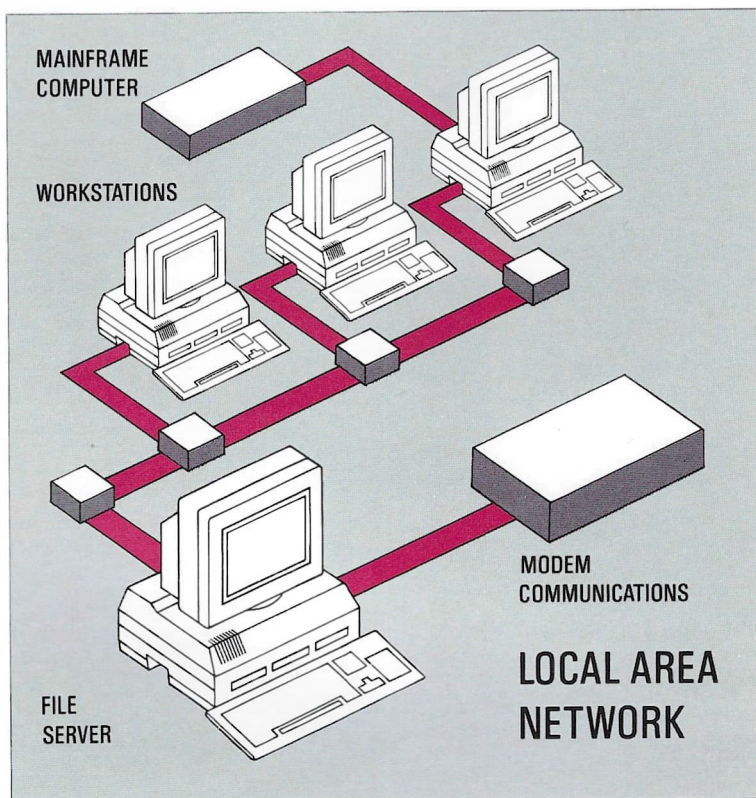
LIM 4.0 expanded memory

80387 maths co-processor socket

5×16-bit expansion slots free

BUSINESS APPLICATIONS

The PC2000 series now offers the data processing manager real choice. Whether it's a network file server, a workstation server or for mini/mainframe communications the power user can find a solution. Program development and all the intricacies of CAD/CAM can be addressed by these products in a multitasking environment with high resolution VGA graphics. Compatible with a whole industry of software the PC2000 series allows properly engineered products to become a vital aid to productivity. The existence of a bi-directional parallel printer port and a serial interface means that there are no restrictions in terms of connectivity. Printers and a host of other peripheral devices are immediately attachable.



The Amstrad Antigliare VGA compatible monitors pictured here are also available for individual purchase. Dot pitch figures range from 0.42 to as low as 0.28.



SPECIFICATION

SYSTEM UNITS	PC2086	PC2286	PC2386
Processor	8086	80286	80386
Clock Speed	8 MHz	12 MHz	20 MHz
Wait States	—	1/2	0.05
Full Width Main Memory	16 bit	16/32 bit	32 bit
Maths Co-Processor Socket	8087	80287	80387
RAM (Parity Checked)	640K	1MB	4MB
RAM Cache	—	—	64K @ 35ns
Expansion Slots	3x8 bits plus HD	4x16 bits, 1x8 bits	4x16 bits, 1x8 bits
Asynchronous Bus Operation	•	•	•
Hard Disk Option with 1:1 Interleave	30MB	40MB	65MB
Floppy Drives	720K	1.4MB	1.4MB
External 5¼", 3½" Disk Drive & Tape Streamer Connector	•	•	•
Hercules, CGA, EGA & VGA Compatible	•	•	•
Bi-Directional Parallel Printer Port	•	•	•
Serial RS232 Port	•	•	•
Battery Backed Clock & Configuration RAM	•	•	•
Mouse — with Microsoft Compatible .COM & .DRV	•	•	•
101/102 'AT' type Keyboard	•	•	•
Security Lock for Keyboard	•	•	•
Volume Control for Speaker	•	•	•
Built-In LIM 4.0	—	•	•
RAM Division Option to Conventional/Extended/LIM	—	•	•
Novell Netware Compatible	Workstation	Server	Server
Microsoft® <input type="checkbox"/> MS-DOS®	3.3	4.0	4.0
<input type="checkbox"/> Windows™	2.03	286	386
<input type="checkbox"/> GW BASIC™	•	•	•

DIMENSIONS: (mm)				
System Unit <input type="checkbox"/> Width	365	415	415	
	<input type="checkbox"/> Height	140	160	160
	<input type="checkbox"/> Depth	395	485	485
Keyboard <input type="checkbox"/> Width	475	475	475	
	<input type="checkbox"/> Height	35	35	35
	<input type="checkbox"/> Depth	200	200	200

MONITORS	PC12MD	PC14CD	PC12HRCD	PC14HRCD
Screen Size (diagonal)	12" (30.5cm)	14" (35.6cm)	12" (30.5cm)	14" (35.6cm)
VGA	•	•	•	•
Analogue Compatible	•	•	•	•
Resolution <input type="checkbox"/> Dot Pitch	—	0.42	0.28	0.29
<input type="checkbox"/> 640x480	•	•	•	•
Tilt and Swivel Base	•	•	•	•
Antiglare	•	•	•	•
Up to 256 Colours on Screen	—	•	•	•
Automatic Conversion to 64 Shades of Grey	•	—	—	—

CONFIGURATIONS	PC2086	PC2286	PC2386
12" Monochrome	SD DD HD	DD HD	HD
14" Colour	SD DD HD	DD HD	HD
12" High Resolution Colour	SD DD HD	DD HD	HD
14" High Resolution Colour	SD DD HD	DD HD	HD

*Except single drive configuration

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