



LOGO language and the CP/M business operating system is promised shortly. The Amstrad has a single joystick socket that accepts Atari-style joysticks. Some games need two joysticks, so Amstrad supplies a pair of joysticks that fit into the socket at the same time.

The Amstrad has a built-in loudspeaker (complete with volume control) but the sound may also be fed to an external amplifier to give stereo sound from the computer's three separate 'voices'. One voice is fed to the right-hand speaker, one to the left, and the third is mixed equally between them. With suitable programming, an alien spaceship can not only be made to move across the screen but its sound will appear to swoop around the room.

Controlling the sound from BASIC is very simple, despite the sophistication of the system. Notes can not only be made to start and stop at a chosen pitch and volume, but their envelope, or 'shape', can also be controlled. The volume envelope may be adjusted to make a note imitate the sound of, say, a piano or bell. The pitch envelope can also be controlled independently for creation of sound effects like sirens and whistles, while each sound voice can be mixed with 'noise', making explosions and gunshots easy to simulate.

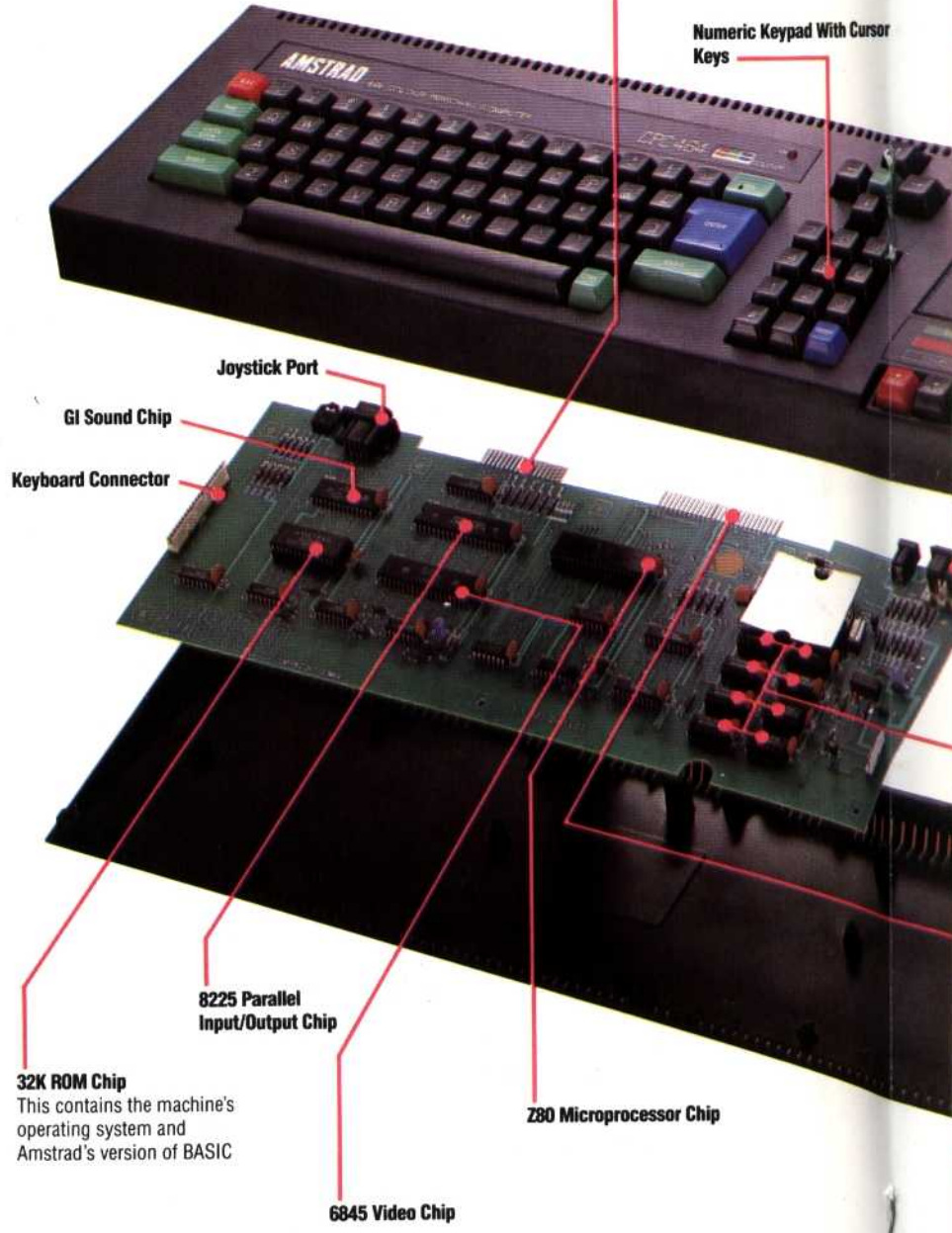
The Amstrad's best feature is its superb graphics. There are three display modes available, each providing a different number of characters and a different number of colours on the screen at once. Each of these modes uses the same 16 Kbytes of memory and there is a trade-off between the number of colours and the resolution and text format. The highest resolution mode allows only two colours on the screen at any one time, one foreground and one background. 80-column text is available, and the machine supports an impressive 640 x 200 graphics resolution. At the other extreme, the 20-column mode gives 16 colours on the screen at once. The third mode allows four colours and 40 columns.

Although the number of colours on the screen at one time is limited, these can be selected from a palette of 27. Browns and pastel shades may be displayed as well as the usual red, green, blue, etc. The border colour around the display area can be selected from the same palette of colours. Any of the colours can be made to flash between two different shades at varying rates. As well as providing an excellent easel for detailed still pictures, the Amstrad graphics also provide a good base for animation techniques. Sprites are the only omission. However, the screen handling from BASIC is fast enough to make this deficiency less serious.

Although the screen display uses up a hefty 16 Kbytes of memory, this does not take memory space away from the user's program. The screen RAM and the BASIC ROM occupy the same area in the processor's memory map. A custom chip inside the Amstrad switches between the two as required, so a full 42 Kbytes of memory are left

Centronics Printer Interface

It's useful to have this standard printer interface, unfortunately Amstrad chose to use an edge connector for this, rather than a proper socket



32K ROM Chip
This contains the machine's operating system and Amstrad's version of BASIC

Z80 Microprocessor Chip

6845 Video Chip



Juggling Joysticks

The Amstrad has one joystick socket that allows a standard Atari-type joystick to be used. However, the company also produces its own joystick, and this has a joystick socket on it that enables a second joystick to be plugged in. The signals from the second joystick are relayed through the first