



Control Centre

The Roland MP401 MIDI interface is a sophisticated unit that connects microcomputers to digital synthesisers. It controls all external synchronisation functions, internal and external timing, tape input/output, and synthesiser output. This means the host computer is responsible only for the sending and receiving of commands and memory management. The MP401 costs £160, and works with the IBM PC and the Apple II and IIe. According to Roland, a Commodore 64 version will be available in the near future

synthesiser, and in instrumental techniques in general. A good example of this is the emergence of the keyboard-controlled bass synthesiser. In the 1960s, the Motown style of pop/soul music relied heavily on the electric bass. During the 1970s, funk bass players developed a level of virtuosity that rivalled that of lead guitarists; by the end of the decade this style could go no further and the keyboard-controlled bass synthesiser emerged. This led to new problems for the keyboard player, who was now required to take on the functions of the bass-player — working with the drummer to 'anchor' the rhythm section in strict time — and who was now not playing 'keyboard' music. As

new analogue synthesisers appeared on the market, trumpet, saxophone and drum sounds became available. More and more keyboard players turned to a simple device to deal with these new responsibilities. This was the sequencer.

A sequencer is a device that co-ordinates several independent strands of music into a unified work according to a specified pattern. It operates by using controlled voltages that are fed through an oscillator to produce a series of tones of different frequencies. The higher the voltage, the faster the metal strip vibrates, and the resulting waveform is heard as a high-pitched sound. A sequencing unit is used to control the oscillator. This is necessary because music is rarely composed of nonstop sound sequences — short gaps or long silences are required, both to create rhythmic patterns and to form the overall structure of music. A gap in a sequence pattern is caused when the control unit sends a zero voltage to the oscillator. The purpose of 'sequencing' is to ensure that the gap occurs in exactly the same place each time the pattern repeats.

Few synthesisers in the late 1970s had complete sequencing facilities, but musicians were quick to use what was available. The pulsating disco music produced by Giorgio Moroder with Donna Summer is very much sequencer music, and the new British synthesiser bands developed a completely new style to match the new equipment. No longer was it necessary to play every single note with a series of grand gestures, in the style of Rick Wakeman. Instead, a whole sequence, or riff, could be started or stopped by changing one setting. In the meantime, the player could move away from the keyboard, dance in time to the sequencer beat, and then return to another

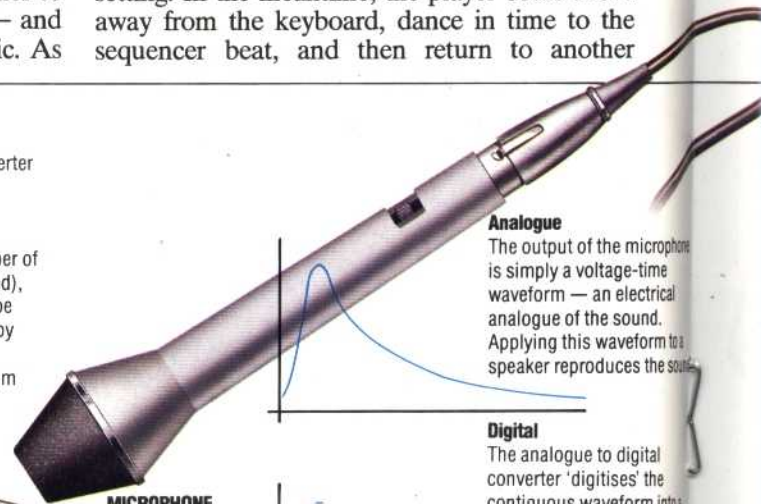
STEVE CROSS

Step Up And Play

Electronic sounds can be produced by programming the output of tone and/or white-noise generators (this is how you create sound on a microcomputer); or, by sampling real sounds, making a digital 'template' of the sounds, and using that template to recreate the sounds' waveform through a

digital to analogue converter driving a loudspeaker.

Sampling gives an accurate sound picture (depending on the number of waveform samples stored), which would otherwise be hard to program except by trial and error — try synthesising a snare drum beat on your micro!

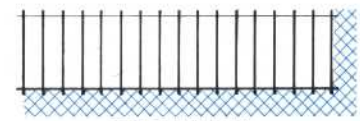
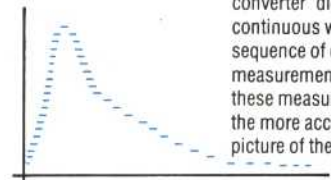


Analogue

The output of the microphone is simply a voltage-time waveform — an electrical analogue of the sound. Applying this waveform to a speaker reproduces the sound.

Digital

The analogue to digital converter 'digitises' the continuous waveform into a sequence of discrete voltage measurements. The more of these measurements taken, the more accurate the digital picture of the sound



SAMPLE MEMORY