



2 Sequential Circuits' Six-Trak

This is a powerful synthesiser with a built-in multi-track tape recorder. The Six-Trak is so named because it can record on six different tracks. Unlike many such synthesisers, the Six-Trak allows for each musical voice to have a different sound which makes it possible to create complex ensemble sounds. Each voice can be controlled for frequency, timbre, waveform, frequency glide and note bending. The Six-Trak costs £795

3 Sequential Circuits' Model 64

By plugging the Model 64 into the memory expansion port of a Commodore 64, it is possible to incorporate a MIDI-equipped synthesiser and the computer's memory, cassette or disk storage and video display into a music system. The Model 64 stores timing, pitch and modulation information for up to 4,000 notes in record mode. For playing back, the interface can either send the digital signal exactly as it was received from the keyboard (real-time), or can correct it to a given time signature (step time). The Model 64 costs £185



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sensitive music keyboard and two foot-pedals. The sensitive keyboard provides the difference between a responsive or a 'dead' touch in performance, and the sensitivity data from real-time playing can be stored for recording and replay. It has 32 sound-generating units, rather than oscillators, each of which can have up to 11 defined characteristics. If required, all 32 units can be used to produce a single note. This facility alone, in the hands of a capable user, gives a PDSG a richness and variety of sound on a par with most of the synthesisers we have listed in the box.

If a single generating unit is assigned to each note, then a programmed sequence can be made up of 32 individual lines. Alternatively, a proportion of generators can be used for sequenced material, and the remainder played in real time against the sequence. Waveform characteristics are displayed on the screen, giving the opportunity to analyse sounds visually — an invaluable back-up to aural guesswork, and a factor that makes the PDSG ideally suited to music education. The sound-generation package alone — adequate for non-real-time sequencing, waveform creation and analysis — costs about £200, with the keyboard at around the same price.

The main drawback to the PDSG is its representation of sound at the digital-to-analogue conversion stage. The human ear and brain can interpret sounds across a bandwidth from 20Hz to 20KHz. Natural sounds, including those produced by acoustic musical instruments, are

active within the whole of this bandwidth and more. The PDSG, however, can represent sound only within a bandwidth of up to 12KHz. As a result, its sound quality is on a par with an adequate home hi-fi system, and the manufacturers assume that a home hi-fi amplifier and speakers will be used to complete the system. Most synthesiser players would be dismayed if this was their only choice of amplification. Clef Products plan versions of the PDSG to interface with other microcomputers.

MIDI has been seen as a breakthrough because it gives microcomputer owners access to real music synthesisers. The PDSG system is advanced enough in many respects for synthesiser owners to consider buying a microcomputer and a 'conceptual synthesiser' instead.

A Feel For The Music

The development of the MIDI interface provides microcomputer owners with a range of possibilities in music-making. But, at the same time, there is a risk of buying an expensive package — the interface itself, additional software and a synthesiser — only to be swamped by the intricacies of the system.

One alternative is to start with an inexpensive music system to become familiar with the basics of electronic music. Such a system, of course, must be good enough to be musically satisfying and stimulate an interest in the further possibilities of electronic music. A good 'starter package' is the cassette-based Ultisynth 64, produced by Quicksilva. This exploits the Commodore 64 SID (sound interface device) chip and its three oscillators.

Using the package, each key of the Commodore's keyboard becomes an independent control for generating and defining sound. The four basic wave shapes — sine, square, triangle and sawtooth — are available, together with incremental settings for defining the attack-sustain-decay-release (ADSR or envelope) characteristics. Sounds can be filtered (i.e. a specified bandwidth of frequencies can be subtracted from the output) to characterise the sound still further. Ring modulation — a process that gives the sum and difference of any two frequencies — is also included. This is useful for producing quite authentic bell-like sounds. In addition, rhythm can be written in, pre-set rhythms incorporated, and 2,048 notes can be sequenced.

The Ultisynth facilities closely resemble those of the VCS 3, a 'classic' voltage-controlled synthesiser of the late 1960s and early 1970s. Today, the Ultisynth package costs only £14.95, while the VCS 3 is acquiring the status of a museum piece.

Another cassette-based system suitable for the beginner is Romik's Multisound, which is very similar to Ultisynth in its control facilities, but gives a graphic display of a music keyboard. Positions on this keyboard are selected using a cursor and the notes defined by information entered on the computer's alphanumeric keyboard. This makes the package more 'musician-friendly', exploiting any previous familiarity the user may have with a music keyboard.