

# THE ARCHIMEDES MUSIC WORKSTATION



The powerful 32-bit architecture of the Archimedes computer is ideal for the following music applications:

- As a composing tool
- As a musical instrument
- As a music system controller
- As a teaching aid

Controlling instruments and sound electronically is best achieved by using a computer to 'see' what is happening in the audio world. For example, traditional music scoring, waveform representation, harmonic analysis and many others.

Due to the 'real time' nature of music this can put enormous demands on the computer. The power of the Archimedes processing chip and graphics display controller with in-built stereo sound capability allows the user to work with music and sounds in a way that was previously only available on high powered mini computers and dedicated electronic systems.

## THE ARCHIMEDES COMPUTER AS A CONTROLLER

This is the most common use of a music computer. Electronic instruments, samplers, keyboards or other computers and sequencers may be connected via the industry standard Musical Instrument Digital Interface (MIDI) connectors. Other connection methods include the BBC microcomputer compatible bus expander for which many popular products have been developed, the BBC micro user port for specialised equipment in music laboratories or the computer industry standard serial connector. In addition to these the Archimedes computer can communicate with other Acorn computers via the Econet networking connector.

The music programs use one or more of the connection methods with the flexibility of various options which allow the construction of the simplest to the most sophisticated music system in easily controlled steps.

The high quality graphics and the associated fast screen redrawing have permitted software developers to produce

extremely easy to use programs with simple commands to access a wide range of facilities quickly and with minimal fuss: a vital feature for use in a dynamic real time environment like music where the performer does not want the technology to get in the way.

## THE ARCHIMEDES COMPUTER AS AN INSTRUMENT

The dedicated Archimedes video controller chip produces stereo sound via the jack socket on the back of the computer. This may be connected to a stereo amplifier or a pair of headphones. For local monitoring purposes the two channels are mixed into a single internal speaker which may be turned on or off as required.

The computer has up to eight separate sound channels that may be individually placed in different stereo positions. Each sound channel will have a digital waveform representing the sound to be produced. This can be a long complete sample or, due to the very fast computing power, can even be recalculated as the sound is produced; a technique used by many of today's synthesisers. The user can choose from inbuilt sounds, purchased library discs, or user sampled sounds on disc produced using a microphone and one of the low cost samplers available. The sounds can be replayed, filtered, mixed and manipulated in a variety of exciting ways – enabling the user to explore new sounds by 're-synthesising' as required.

The user's 'instruments' can now be replayed by a very easy to use 'scoring' sequencer where notes are manipulated with a 'mouse' or by plugging an external sequencer or keyboard into the MIDI connector and playing the computer as an instrument.

Other interesting uses of the Archimedes computer as a sound generator are in the teaching of wave theory with Fourier synthesis, digital filtering and other signal processing techniques. This allows rapid generation of complex test waveforms for applications such as physiological signals, power system testing and many other instrumentation needs.



## THE EQUIPMENT YOU WILL NEED

In addition to a computer from the Archimedes range, you will probably need some music software (programs) and possibly a MIDI interface for the computer. Programs are available for the Archimedes computer that enable you to add to the range of sounds in the machine, create and play music scores and print out the music. With the MIDI interface fitted, programs are available to control other musical instruments.

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