

ArVis

VIDEOGRAPHICS Expansion Card

ARDG2

The ARVTS Videographics Expansion Card provides a major enhancement to the graphics displays of the Archimedes system. The card includes a real-time colour frame-grabber to digitise live colour video inputs, a 384K byte video framestore with 16 bit levels and a dedicated RGB display Output with dynamic switching between the Archimedes and the framestore images.

The ARVTS Videographics System is a powerful tool for the acquisition, manipulation and creation of full colour video images. The ArVis videographics hardware together with the exceptional computing speed and power of the Archimedes Risc OS system creates a powerful video workstation at minimal cost.

FEATURES

The ArVis Videographics Expansion Card is used in combination with an ArVis videocontroller card to provide the following enhancements to the Archimedes computer:-

- * Full colour genlock to 625 line composite PAL video inputs from a camera, video recorder or tuner etc.
- * Decoding of the composite PAL picture signals into RGB components with all further processing at RGB levels to preserve the full bandwidth of the computer graphics.
- * The standard Archimedes monitor is used to simultaneously display any combination of the three image planes from the live video input, the digitiser/framestore and the normal Archimedes video display system.
- * Image planes are combined under software control using a wide selection of key and window effects including shadow keys for enhanced sub-titling applications. Very comprehensive OSCAR software is supplied with the ArVis videographics card to allow editing of images to pixel level.
- * The ArVis Videographics framestore and display hardware extends the number of simultaneous colours which can be painted and displayed by the Archimedes from 256 to greater than 32 thousand thus allowing for the storage, creation and manipulation of video picture quality images and the combination of these with the normal Archimedes images and live video.
- * Very high quality hard copies of the edited video images are now easily produced using the latest colour ink jet printers and OSCAR printer driver software.

The ArVis digitiser and framestore is the first system available for the Archimedes capable of digitising and storing high resolution colour video in 'real time'. It can also be used for a variety of stroboscopic and freeze frame video effects. A powerful feature is the ability to dynamically switch the bit coding structure between various positive, negative, monochrome, high resolution colour, model5 colour and false colour modes.

The bit coding structure for 15 bit hi-res colour has been carefully chosen to maintain compatibility with the lower resolution 8 bit 256 colour modes of the Archimedes displays. Frames can be acquired by the ARVTS Videographics Card at full colour video resolution then copies of these frames can easily be produced on disk at standard Mode 15 resolution for use in proprietary paint programmes, desk top publishing, and for display by other Archimedes computers not fitted with the ArVis Videographics System.

The framestore has a mask facility operating selectively under software control on all 16 bits. The stored image can be manipulated overwritten or combined with a second image from the computer memory in literally millions of different bit/logic combinations to create an artistically transposed image.

The Archimedes operating system has full bidirectional access to the content of any pixel or pixel block in the framestore independent of the display refresh and images can be stored and retrieved through the normal filing systems.

The user can paint 32,000 colours directly to the framestore & display without any palette restrictions and at a 640 x 256 pixel resolution identical to the widely used Archimedes screen modes. Professional video users will appreciate the facility for zooming the framestore image to the exact size of the video raster.

APPLICATIONS

The ArVis Videographics Card and video overlay system incorporates many unique features not found in other systems or simple monochrome digitisers.

In addition to the ability to capture and display high quality colour video images in real time the system adds additional image planes to the Archimedes and expands the number of colours from 256 to 32 thousand simultaneously available shades thus - theoretically - any video image displayed could be directly created by the computer!

The ability to acquire, store, retrieve, analyse and combine video images with computer generated text and graphics can be utilised for point of sales displays, video-slide presentations, medical and scientific analysis and measurement, discotheques, interactive video systems and video studios.

The ArVis videographics System can be used to produce full colour video quality printouts for use in a wide variety of VDP (video desktop publishing) applications including security badges, estate agents display panels, prints from videotape sequences etc.

TECHNICAL SPECIFICATION

SIZE	Single width plug in card using a double board construction. Interconnects to Arvis videocontroller board mounted behind a standard 310 backplane or connects via ribbon cables to the new Arvis videocontroller/genlock expansion card mounted on a 4 slot backplane. (We can supply a 4 slot backplane for the earlier 310 series).
RESOLUTION	640 X 256 pixels by 16 bits (15 colour bits & 1 mask bit) Switchable bit mapping for negative colour etc.
SPEED	Digitises in real time (50 fields per second)
MEMORY	384 KBytes special video RAM memory
INPUT	Direct RGB via connector or decoded video from controller card.
DIGITISER	Triple RGB analogue/digital converters, 12 MHz. clock rate.
TIMINGS	Genlocks to drive signals. Does not require any access from the Archimedes for display refresh. Very fast asynchronous data transfer between Archimedes RAM and videoframestore.
ADDRESSING	Archimedes has direct memory map access to any pixel or pixel block in the framestore for reading, writing, and masking pixel colour data.
DISPLAY	Triple digital/analogue converters. 75 ohm RGB output available on a 9 pin D connector plus additional RGB output to videocontroller image switch. Comprehensive key & window switching between framestore output and Archimedes RGB image planes and live video RGB.
IMAGE SIZE	Display width 52 microseconds (full tv raster), height 256 scans or 288 scans with zoom.

SOFTWARE SUPPORT

The Arvis Videographics Expansion Card is supplied with a powerful software module which is automatically down-loaded from ROM. This relocatable module provides additional * commands and SWI calls which can be incorporated into your own programmes.

The * commands are used to control the video digitiser parameters (RUN, HOLD, UPDATE, ZOOM, COLOUR BITMAP) and also allow the setting of the supremacy keys and shadow keys for the Archimedes colour palette registers.

The SWI calls are very comprehensive - they enable 16 bit blocks of pixel data to be transferred between the digitiser framestore and the Archimedes memory (scaling and masking) as well as operating on single pixels. Other SWI calls set mouse controlled crosswire pointers and wire boxes together with colour bit transcoding.

OSCAR

A powerful WIMP based applications programme is supplied on disc to give the Arvis user full editing control of the digitised images and image plane switching. A series of menus accessed from an icon bar provides a host of features including:-

DIGITISER	Run, hold, update, video, zoom, colour bit control, strobe, animate, user programme, video input, frame swap.
FULL SCREEN	Save, fetch, swap, pixelate, negate, solarize, paint, tile, mode convert, user programmes
BLOCK	Swap, reveal, cut, paste, zoom, reduce, flip, drag/reveal, negate, solarize, paint, mask colour, mask video, shade, border, plinth, user programmes 1 & 2.
CAPTION	Control of the supremacy and shadow keys. This menu includes a title and roller caption generator. User programme access points.
CLOCK	Analogue and digital clock & timing menu.
PAINT	This menu includes a 32,000 colour palette with extensive colour mixing and blending facilities. Zoom block for editing at pixel levels. Control of brush tools etc. Text printing directly to the framestore.
DISC	File handling in various formats - full video, Mode15, etc. Drive selection and catalogue display etc. Roller caption files & ability to import sprite files from other software.
TOOL	A variety of demo functions plus colour bars, etc.
DIRECT	Image switching is transferred to function keys. (To allow videotape recordings to be made without showing icons or menus.)
HELP	Help menu describing function key layout etc.

The above software is supplied with the Arvis Videographics Expansion Card. Other specialised application software for captions, sub-titling, etc. is under development. Hardcopy printout software for the ColourCel high resolution ink jet printer will also be available.