Electronic Photography and Imaging Center

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VISTA™ Videographics Adapter
Specifications

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The VISTA™ Videographics Adapter is the newest member of the AT&T Truevision® line of microcomputer graphics products. Offering the ultimate power and flexibility in high-resolution video frame capture and display for the IBM PC AT and 100% compatible personal computers, VISTA is ideal for applications such as design and presentation graphics, video production, digital pre-press, desktop publishing and image processing. A 32-bit graphics processor, 2 or 4 Megabytes of dual-ported CMOS video memory, a proprietary video cross-point, input/output Look-up tables (LUTs), four channels of analog-to-digital and digital-to-analog conversion and robust genlock are among the features packed into the single-slot VISTA.
Suggested list price: $5,995.

VISTA Features

. High-resolution, single-slot frame grabber/buffer

. Multiple addressable resolutions, including 1024 x 1024 x 32 bits/pixel, 2048 x 1024 x 16 bits/pixel and 2048 x 2048 x 8 bits/pixel

. Four 8-bit channels for real-time capture

. Fully NTSC and PAL compatible

. User-programmable 32-bit graphics processor

. Programmable pixel clock (7 speeds up to 28.6 MHz)

. Binary zoom (1x, 2x, 4x, 8x, 16x) and clock zoom (e.g., 0.5x, 0.75x, 1x, .1.25x, 1.50x, 1.75x,..., 32x)

. Smooth, independent horizontal and vertical panning

. Input and output look-up tables (LUTs)

. Programmable resolutions for capture and display

. Interlaced and non-interlaced display

. Fully integrated genlock

. Continuous capture/display of multiple images using zoom and pan

. Flexible pixel specification (RGB with alpha channel or index, or index with alpha)

. Graphics system processor (GSP) RAM expandable to 12 MB (with separate board)

Technical Specifications

HOST COMPUTER INTERFACE

Host Type:	IBM PC AT and 100% compatible computers
Card Size:	13.35" x 4.5" x 0.75" (one slot required)
Data Bus Width:	16-bit or 8-bit (self-configuring)
Bus Clock:	6 MHz to 12 MHz
I/O Space Required:	8 bytes switch selectable from 7 locations
Data Transfer Rate:	2.67 Mbytes/second (in 8 MHz host)
Power Consumption:	15 Watts

GRAPHICS PROCESSOR

Processor Type:	Texas Instruments TMS 34010 Graphics System Processor
Processor Clock:	40 MHz
Video Memory:	4 Mbytes of dual-port 120 nsec video memory
Processor Memory:	Expandable in 2 Mbyte increments to 12 Mbytes (with additional card)

COLOR RESOLUTION

VISTA supports three pixel depths (the number of bits defining each pixel). Listed below are pixel depths and alternative pixel definitions for each resolution. The number in brackets indicate the size of each field in bits.

32 Bits/Pixel:	Independent Mode:	Red [8], Green [8], Blue [8], Alpha [8]
	Linked Mode:	Index [8], LUT Bank [3], Alpha [8]
	Split Mode:	Red [8], Green [8], Blue [8], Index [8]
16 Bits/Pixel:	Independent Mode:	Red [5], Green [5], Blue [5], Alpha [1]
	Linked Mode:	Index [8], LUT Bank [3], Alpha [5]
8 Bits/Pixel:	Linked Mode:	Index [8]

ADDRESSABLE RESOLUTION

Programmable pixel size and page organization. The page organizations described below can be sub-divided further to create multiple pages within the memory space. This capability can be used for animation and other related effects.

32 Bits/Pixel:	1024 x 1024 4 billion colors
	512 x 2048
	256 x 4096
16 Bits/Pixel:	2048 x 1024 65000
	1024 x 2048
	512 x 4096
8 Bits/Pixel:	4096 x 1024
	2048 x 2048 256
	1024 x 4096

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CAPTURE RESOLUTION

Programmable horizontal and vertical capture resolution. Nominal capture resolutions are shown for interlaced NTSC- and PAL-compatible video inputs.

NTSC (RS-170A)	PAL (CCIR-624)
756 x 486	738 x 576
604 x 486	590 x 576
504 x 486	492 x 576
432 x 486	422 x 576
378 x 486	369 x 576

DISPLAYABLE RESOLUTION

Programmable horizontal and vertical display resolution. Nominal display resolutions are shown for several different display formats. The list below is illustrative rather than comprehensive.

NTSC (RS-170A)	PAL (CCIR-624)	Interlaced	Non-Interlaced
1512 x 486	1476 x 576	1024 x 768	768 x 576
1008 x 486	984 x 576	(60 Hz)	(50 Hz)
756 x 486	738 x 576		
604 x 486	590 x 576	768 x 768	756 x 486
504 x 486	492 x 576	(80 Hz)	(60 Hz)

LOOK-UP TABLES (LUTs)

VISTA contains four 2048 x 8-bit CMOS static RAM LUTs. These may be configured as four independent channels (R, G, B, A) or linked together to form a color index system.

Input LUTs:	Independent Mode:	32-bits in → 32-bits out
Output LUTs:	Independent Mode:	32-bits in → 32-bits out
	Linked Mode:	11-bits in → 32-bits out

LUT Access:	Read or write at any time with no video contention
LUT Update:	Real-time during vertical blanking interval
Banks per LUT:	Eight 256-entry banks per table
LUT Storage:	Unlimited (stored in video memory)

ZOOM AND PAN

Programmable, independent horizontal and vertical magnify (enlarge) and minify (reduce).

Binary Zoom:	1x, 2x, 4x, 8x, 16x, or 32x (pixel replication)
Fractional Zoom:	0.5x, 0.75x, 1x, 1.25x, 1.5x, 1.75x, 2, ...32 (at 14.3 MHz)

Programmable, smooth independent horizontal and vertical panning.

Resolution:	1 pixel (for standard resolutions)
Speed:	Real-time
Wrap-Around:	With or without vertical and/or horizontal wrap-around
Split Screen:	Arbitrary vertical split screen with independent panning

GENLOCK

Master Mode:	VISTA generates all video timing information
Slave Mode:	VISTA synchronizes with an external video signal
Auto-Master Mode:	Reverts to master mode in the absence of sync input
Video Standard:	NTSC or PAL compatible (software programmable)

Horizontal Phase:	Programmable	0 degrees (nominal)
	Step Size	140 nsecs
	Fine Adjustment	+/- 280 nsecs (manual adjustment)
	Phase Jitter	+/- 10 nsecs (stable source)
Source Type:	Crystal Based	Camera / house sync
	Mechanical Based	VCR / video disk player

CAPTURE TIMING

Both NTSC (RS-170A) and PAL (CCIR-624) as well as non-standard timing

Sample Rate: (NTSC)	Programmable	14.318182 MHz (nominal) 13.500000 MHz *(option)* 11.454545 MHz 9.545455 MHz 8.181818 MHz 7.159091 MHz
Sample Rate: (PAL)	Programmable	14.187500 MHz (nominal) 13.500000 MHz *(option)* 11.350000 MHz 9.458333 MHz 8.107143 MHz 7.093750 MHz
Horiz. Scan Rate:	Programmable	15.734 KHz (nominal NTSC) 15.625 KHz (nominal PAL)
	Range	15 to 34 KHz
Vert. Scan Rate:	Programmable	30 Hz (nominal NTSC) 25 Hz (nominal PAL)
	Range	25 to 100 Hz
Interlace:	Programmable	2:1 Interlaced or Non-interlaced
Capture Window:	Programmable	52.8 usecs (nominal NTSC) 52.0 usecs (nominal PAL)
	Step size	140 nsecs
Lines Captured:	Programmable	486 (nominal NTSC) 576 (nominal PAL)
	Step size	1 line

* Requires hardware modification. Must be specified when VISTA is ordered.

DISPLAY TIMING

Both NTSC (RS-170A) and PAL (CCIR-624) as well as non-standard timing

Pixel Clock: (NTSC)	Programmable	28.636364 MHz 19.090909 MHz 14.318182 MHz (nominal) 13.500000 MHz *(option)* 11.454545 MHz 9.545455 MHz 8.181818 MHz 7.159091 MHz
Pixel Clock: (PAL)	Programmable	28.375000 MHz 18.916667 MHz 14.187500 MHz (nominal) 13.500000 MHz *(option)* 11.350000 MHz 9.458333 MHz 8.107143 MHz 7.093750 MHz
Horiz. Scan Rate:	Programmable	15.734 KHz (nominal NTSC) 15.625 KHz (nominal PAL)
	Range	15 to 34 KHz
Vert. Scan Rate:	Programmable	30 Hz (nominal NTSC) 25 Hz (nominal PAL)
	Range	25 to 100 Hz
Interlace:	Programmable	2:1 Interlaced or Non-interlaced
Blanking Width:	Programmable	10.76 usecs (nominal NTSC) 11.98 usecs (nominal PAL)
	Step size	140 nsecs
Lines Displayed:	Programmable	486 (nominal NTSC) 576 (nominal PAL)
	Step size	1 line

* Requires hardware modification. Must be specified when VISTA is ordered.

INPUT SIGNALS

Video Inputs:	Four symmetrical video input channels (red, green, blue, alpha)
Input Impedance:	75-ohm or high-impedance (jumper selectable)
Input Clamping:	Back porch or sync tip (jumper selectable)
Input Level:	Adjustable (660 mV to 1 V peak-to-peak)
A-to-D Conversion:	8-bits (256 levels) per channel
Sample Rate:	14.318182 MHz (nominal NTSC) 14.187500 MHz (nominal PAL)
Sync Input:	One channel (composite sync, composite video, or black burst)
Input Impedance:	75-ohm or high-impedance (jumper selectable)
Input Range:	300 mV to 4 V peak-to-peak
Input Connector:	9-pin D type female

Pin Assignment:

Pin 1:	Ground
Pin 2:	Ground
Pin 3:	Red Input
Pin 4:	Green Input
Pin 5:	Blue Input
Pin 6:	Alpha Input
Pin 7:	Sync Input
Pin 8:	Reserved (Do not connect)
Pin 9:	Reserved (Do not connect)

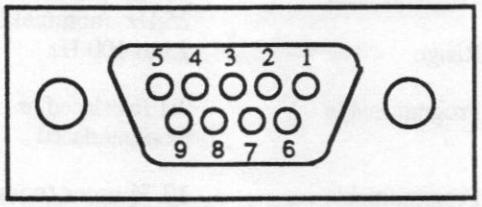

Figure 4.0 - VISTA Input Connector

OUTPUT SIGNALS

Video Outputs:	Four symmetrical video output channels (red, green, blue, alpha)
Output Impedance:	75-ohm
Output Format:	With or without sync (jumper selectable)
Output Level:	Adjustable (660 mV to 1 V peak-to-peak)
Alpha Output Filter:	Low-pass (-3db at 5.5 MHz) with jumper bypass
Alpha Output Level:	Adjustable (1 V to 2 V peak-to-peak)
D-to-A Conversion:	8 bits (256 levels) per channel
Sync Outputs:	3 channels (block sync, horizontal sync, vertical sync) Alternates: (composite sync, NTSC subcarrier, composite blank)
Output Impedance:	75-ohm
Output Level:	TTL
Polarity:	negative (active low)
Output Connector:	9-pin D type female

Pin Assignment:

Pin 1:	Ground
Pin 2:	Ground
Pin 3:	Red Output
Pin 4:	Green Output
Pin 5:	Blue Output
Pin 6:	Alpha Output
Pin 7:	Block Sync (Composite Sync) Output
Pin 8:	Horizontal Sync (Subcarrier/Burst Flag) Output
Pin 9:	Vertical Sync (Composite Blanking) Output

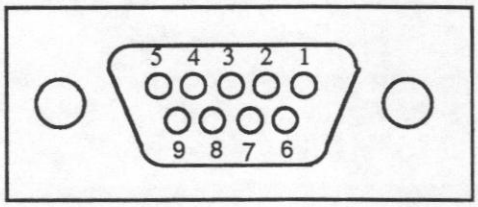

Figure 4.1 - VISTA Output Connector

Specifications subject to change without notification.