Video Capture for the PCI Bus

The **PIXCI** ® **SV5** digitizes analog video and transfers the digitized video through the PCI bus at full video rate. Video sources that use standard formats (NTSC, RS-170, PAL, CCIR, and S-Video) are supported. As a PCI bus master, the PIXCI SV5 board transfers image data without using the host computer's processor. Images may be transferred, at full or reduced frame rates, to computer memory for processing and/or analysis by the host computer's processor(s), to the VGA system for display, or to other targets on the PCI bus such as disk controllers (real time video to disk).

The PIXCI SV5 and XCAP software can capture video sequences to the computer's hard drive. Live images may be displayed on the computer's VGA monitor during image capture. Up to eight PIXCI SV5 boards in one computer can capture simultaneously from multiple video sources.

ACQUISITION — The PIXCI SV5 provides a 3-input video multiplexer, which allows signal selection from two BNC and one S-Video input. Programmable gain, hue, brightness, saturation, and contrast adjustments can condition the video signal.

A unique digital genlock circuit ensures precise synchronization of every image. The PIXCI SV5 imaging board genlock subsystem accepts video timing from a VCR.

SCALING AND CROPPING — The captured image can be cropped in single pixel increments, and then scaled down to as few as 4 pixels by 1 line. Horizontal and vertical scaling is performed in real-time by interpolation, providing a high quality representation of the original image.

I/O CONTROL — Four TTL inputs and four TTL outputs are available for synchronizing image capture and controlling external devices. A TTL input signal from a part-in-place sensor can capture an image or an image sequence. A TTL output signal can trigger an alarm or control extended integration in a camera.

OPTIMIZED IMAGING SYSTEMS – With data transfer directly into the host's memory at video rates, the imaging potential of the PIXCI SV5 is limited only by the host computer and peripherals. A high quality computer, S/VGA card, camera, lighting, and lens are recommended for best results. EPIX, Inc. can supply high quality imaging components to complement the PIXCI SV5, as well as complete, customized systems for machine vision, motion analysis, image storage and transmission, and other imaging or video applications.
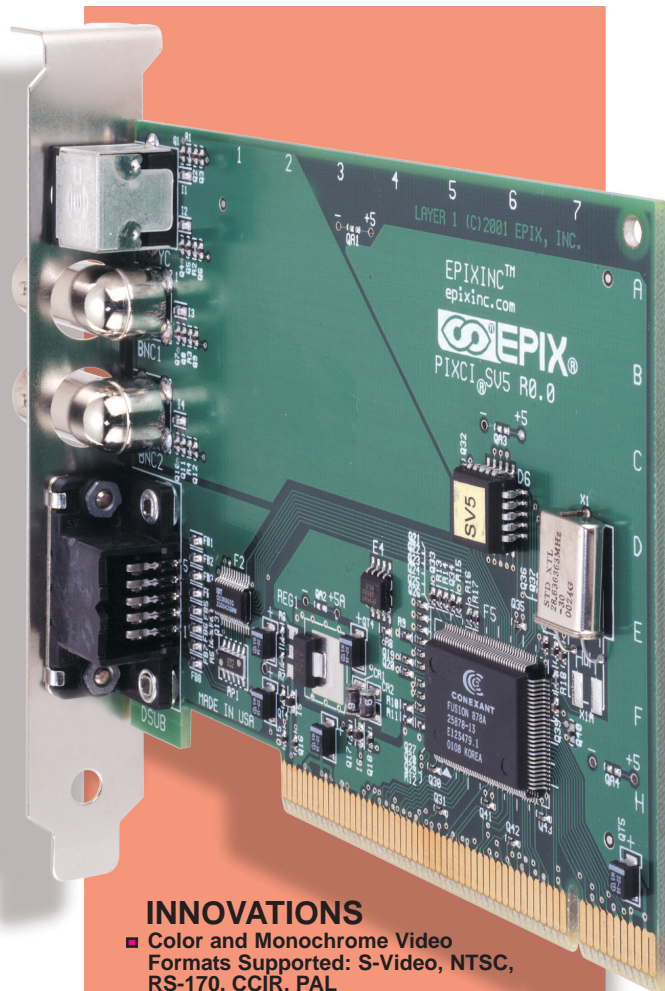
INNOVATIONS
- **Color and Monochrome Video Formats Supported: S-Video, NTSC, RS-170, CCIR, PAL**
- **PCI Bus Master**
- **Real-Time Transfer to PCI Bus**
- **Crop, Scale, and View in Window**
- **4 Input and 4 Output Triggers**
- **Programmable Hue, Brightness, Saturation, and Contrast**
- **Plug 'N Play Operation**
- **Extensive Software**

APPLICATIONS
- **Automated Inspection**
- **Motion Analysis**
- **Microscopy**
- **Medical Imaging**
- **Robotics**
- **Laser Beam Analysis**
- **Object Tracking**
- **Multimedia**
- **Print Quality Inspection**

IMAGE PROCESSING PRODUCTS FOR RESEARCH AND INDUSTRY

PIXCI® SV5 Video Capture for the PCI Bus

FEATURES

MUX — The multiplexer selects the video source, for the Programmable Gain, from either the S-Video input connector or from one of the two (composite video) BNC connectors. The multiplexer may be switched during vertical blanking.

Programmable Gain — Compensates for reduced amplitude in the analog signal input. Gain can be programmed from 0% to more than 200%.

Luminance A/D — Provides analog to digital conversion of NTSC, RS-170, CCIR, PAL, and the luminance (Y) component of S-Video sources.

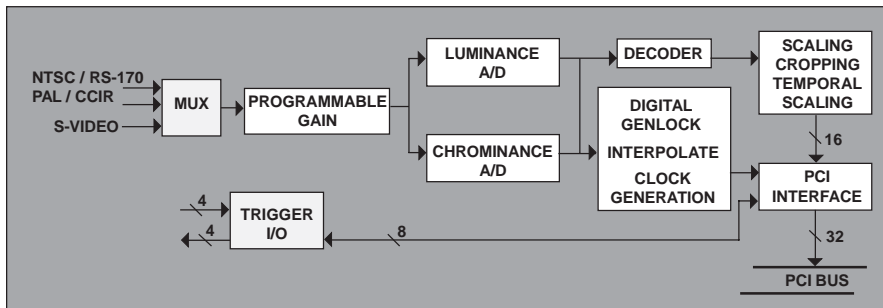**Chrominance (Color) A/D —** Provides analog to digital conversion of the color (C) component of S-Video.

Decoder — Separates the Y/C components. Generates the U/V color difference signals.

Digital Genlock — Automatic synchronization circuitry for precise digitization. Accommodates video sources which have variable timing, such as video tape recorders. Generates the pixel clock for transferring image data to the PCI bus interface.

Scaling, Cropping — Interpolation is used to scale images to as small as 1/14 of their original size.

Temporal Scaling — Image sequences may be captured at full or reduced frame rates.

Trigger I/O — Four TTL inputs and four TTL outputs can be used for synchronization with external events.

XCAP Capture & Adjust Dialog

The XCAP imaging program features a Capture & Adjust Dialog dedicated to controlling the PIXCI SV5 imaging board.

Video To Disk Available:

Capture image sequences, Video To Disk, using an EPIX imaging system (PIXCI SV5 board, camera, & computer). Color or monochrome, full video rate, for minutes or *hours*. Contact EPIX, or your authorized EPIX distributor, for a system customized to your specifications.

PIXCI SV5A OPTION

The PIXCI SV5A offers 3 BNC connnectors instead of 2 BNC and 1 S-Video — all other features are identical to the PIXCI SV5.

SPECIFICATIONS

VIDEO INPUT:
- Color or Monochrome Video Acquisition: NTSC, RS-170, NTSC S-Video: PAL, CCIR, PAL S-Video
- Resolution-Pixels:
  752x480: NTSC, RS-170, NTSC S-Video
  920x580: CCIR
  768x580: PAL, PAL S-Video
- Resolution-Format:
  8 bit Monochrome
  24/32 bit RGB
  YUYV/UYVY/YUV[4:2:2:]/YcrCb
- Capture Rate:
  30 fps: NTSC, RS-170 NTSC S-Video,
  25 fps: PAL, CCIR, PAL S-Video

CONNECTIONS:
- 4 Pin DIN Receptacle: S-Video Input
- 2 BNC-Jacks: Composite Video Input
- DB15 Receptacle: TTL I/O Triggers
- Cables optionally available.

BUS REQUIREMENTS:
- 5 volt signalling PCI bus slot
- 0.55 Amps @ +5 Volts
- 4.913 in. by 3.350 in.

DISPLAY:
- Via PC's graphic display (S/VGA) card. PCI S/VGA supported - AGP S/VGA recommended.
- Video display rate dependent on video format, graphic display card type, bit depth, resolution, processor speed, and motherboard bandwidth.

DISPLAY - Windows:
- Any Windows compatible graphic display.
- 16 bit mode supported, 24/32 bit mode recommended. DirectDraw support recommended.
- Special support for S/VGA cards w. hardware UYVY/VYUY overlays and chroma keying features, allowing low overhead video rate display w. graphic overlays.

DISPLAY - LINUX:
- Any Linux compatible graphic display.
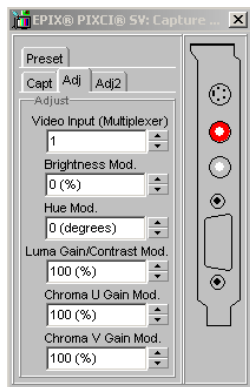- TrueColor or DirectColor mode recommended.

DISPLAY - DOS:
- S/VGA card compatible with VESA 1.0 or later.
- Monochrome display in 8 bit mode, 24/32 bit mode recommended.
- Color display in 24/32 bit mode.

CERTIFICATION AND TESTING:
The PIXCI SV5 has been tested per EMC directive 89/336/EEC and is Certified to CE Class B emission standards (which is more restrictive than the FCC class B limit).
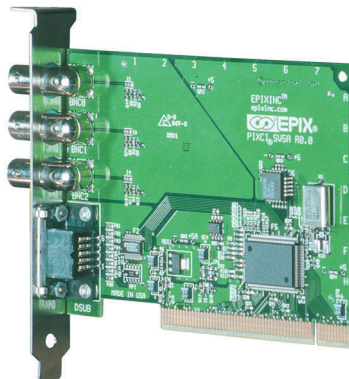

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