

## Key Features:

### Extreme Accuracy

- $\pm 0.5$  ns pixel jitter
- 47 dB S/N ratio
- Gain, black level, and phase adjustments

### High Performance

- Real-time video streaming with AVI file creation
- 250+ MB/second sustained 64 bit/66 MHz PCI bus transfers
- Simultaneous real-time transfer to memory and display

### Video

- Up to 170 MHz pixel rate
- Includes 1600 x 1200 x 60 Hz & 1280 x 1024 x 85 Hz
- Non-standard and standard video inputs
- 24 bit RGB, YPbPr, DVI 8 bit monochrome
- Video output (loop-through)
- DDC compliant

### Software

- Windows XP/2000/NT
- Auto-SYNC
- Video for Windows driver
- Example programs with source code

## Applications:

- Maritime navigation systems
- Military imaging
- Medical imaging
- Display monitoring
- Distance learning

## 170 MHz Frame Grabber & Video Streamer

The AccuStream Series™ of frame grabbers and video streamers is the most advanced, most versatile series of products that Foresight Imaging has ever introduced. The extreme performance is due to the 64 bit, 66 MHz PCI bus design, delivering sustained performance to system memory of over 250 MB/second. In addition to 64 bit, 66 MHz PCI, AccuStream 170™ is also compatible with the 32 bit PCI bus, PCI-X, 3.3 volt slots, and 5.0 volt slots. The first member of the AccuStream Series, the AccuStream 170, is ideal for RGB color, YPbPr, DVI (digital visual interface), and monochrome applications such as maritime navigation systems, high resolution display transmission and monitoring, and medical imaging.



### Accuracy

The AccuStream 170 continues in the Foresight Imaging tradition of delivering extreme accuracy and image quality for demanding customers with high resolution and precision applications. Extremely low pixel jitter of  $\pm 0.5$  ns, superior analog design, and a 47 dB signal-to-noise ratio provide the accuracy and image fidelity required of high performance applications. Color video digitization is performed at 8 bits each of R, G, and B (24 bits per pixel) or 24 bit YPbPr. Monochrome acquisitions are at 8 bits per pixel. Pixel formats include RGB 24, RGB 32, RGB 16, RGB 8, YCbCr 4:2:2, YCbCr 4:4:4, and 8 bit monochrome.

### Performance

As a member of the AccuStream Series, AccuStream 170 achieves its extreme 250+ MB/second sustained performance via its 64 bit, 66 MHz PCI bus mastering design, scatter-gather technology, and double buffering. This high performance requires minimal CPU intervention so that the processor is free to work on other tasks or process the data immediately. Video streaming applications such as display monitoring are enabled subject to the 250 MB/second sustained bus transfers. RGB color applications use double buffering up to acquisition rates of 100 MHz. This allows for acquisition of every frame for video streaming applications. RGB applications with acquisition rates over 100 MHz utilize single buffering which allows every other frame to be acquired for video streaming applications. For example, a video signal of 1600 x 1200 x 60 frames per second is 162 MHz. AccuStream 170 achieves a maximum video streaming rate of 30 frames per second from this video format. Monochrome inputs always use double buffering, enabling every frame to be acquired for the full 170 MHz acquisition rate of the AccuStream 170. Real-time display is simultaneously enabled by real-time transfer of image data directly to display card memory over the 64 bit, 66 MHz PCI bus. AccuStream 170 also features independent, dual video data paths, allowing for the simultaneous DirectDraw display of YCbCr 4:2:2 color video and the transfer of full 24 bit RGB video data for processing.

### Video

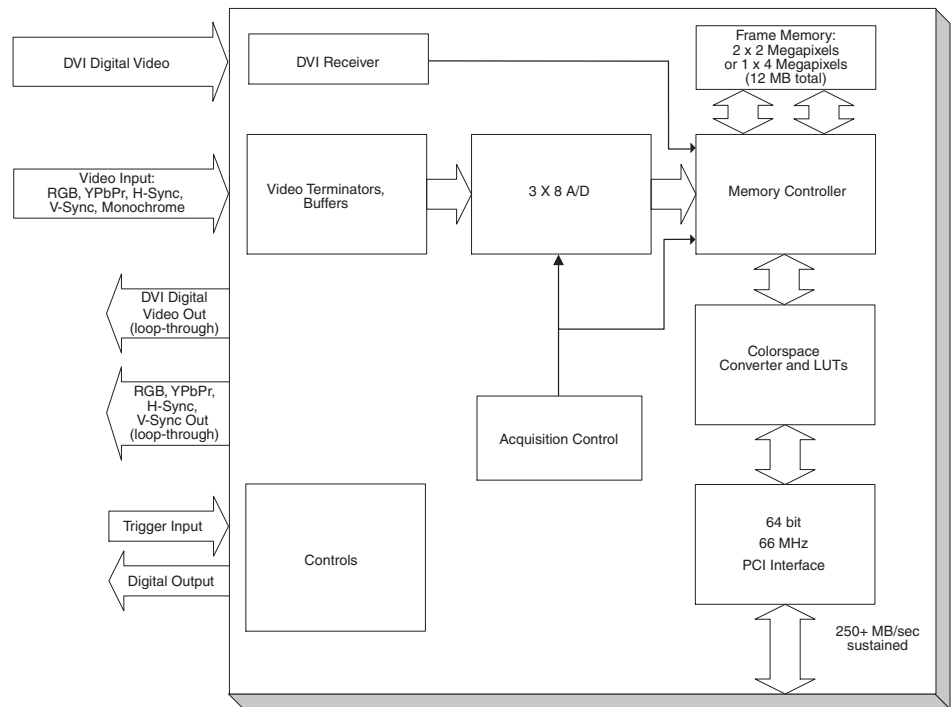
AccuStream 170 acquires images and video streams from both non-standard and standard video inputs up to 170 MHz analog RGB, YPbPr, DVI, and analog monochrome. Input resolution is up to 4 megapixels total area for single buffered acquisitions and up to 2 megapixels for double buffered acquisitions. Active RGB, YPbPr, DVI, or monochrome loop-through output is provided. This feature eliminates the need for a separate, active video splitter to ensure high quality video input. For fine tuning of the video signal, gain, black level, white balance, and phase controls are provided. Separate H and V sync are supported. An external trigger and a high current digital output are available. AccuStream 170 is fully compliant with the Display Data Channel (DDC) specification of DVI. It also features DVI Hot Plug Detect and Digital Monitor Emulation.

### Software

AccuStream 170 is supported by Auto-SYNC™, Foresight Imaging's flagship automatic configuration software. Auto-SYNC ensures quick and simple installation and image capture by automatically configuring AccuStream 170 to the incoming video signal. This includes both standard and non-standard video signals. Auto-SYNC automatically analyzes the incoming video signal and builds a configuration file. Use the configuration file as created or utilize the Auto-SYNC Wizard for simple, step-by-step video adjustments. If the incoming video signal is a standard VESA display type, Auto-SYNC's VESA mode can be used to match up to a database of configuration files in a matter of seconds. This speeds board configuration and ensures high quality video acquisition. AccuStream 170 is supported by the IDEA™ (Imaging Development Environment for Applications) software development kit. By using IDEA, developers have the confidence of knowing that they can write their applications once and have support built-in for the entire AccuStream Series, I-Series™, and HI\*DEF™ product families. A Video for Windows driver and a TWAIN driver are included to further simplify development and use of the AccuStream 170. With IDEA, ActiveX controls are provided to facilitate easy development with Visual Basic, Visual C++, and Visual J++. Extensive example programs (with source code) are provided with IDEA. Functions of the example programs include triggered acquisition, video streaming to AVI files, integration with Pegasus Imaging compression for streaming, integration with third party DICOM software, overlays, and much more. Auto-SYNC, IDEA, example programs, and drivers are provided free of charge with each AccuStream 170.

# ACCUSTREAM 170 Specifications

## ACCUSTREAM 170 Block Diagram



### Video - Analog

- Video input: RGB (one), YPbPr, (one) or monochrome (up to three)
- Non-standard and standard video resolutions and frequencies
- Input range: 0.5 V pp to 1.0 V pp
- Offset: -1.0 V to 2.0 V DC
- 75 ohm termination
- 8 bit gain, 8 bit black level, white balance, phase adjustment
- AC coupled with DC restoration
- H and V sync input
- Bandwidth: 330 MHz
- Pixel rate: up to 170 MHz
- Horizontal frequency: up to 105 kHz
- Pixel resolution: up to 4 megapixels total area in single buffered acquisition mode; up to 2 megapixels total area in double buffered acquisition mode

### Video - Digital

- DVI 1.0 compatible receiver
- Supports display resolutions up to UXGA (1600 x 1200 at 60 Hz)
- The receiver operates with true color (24-bit) panels in 1 or 2 pixel(s)/clock mode and features an intrapair skew tolerance of up to one full clock cycle
- 170 MHz operation

### Controls

- Trigger input
- High current digital output

### Pass-Thru

- **Analog**
  - The Red, Green, Blue, H and V Syncs from the input connector are buffered and sent out through a second DVI-I connector
  - Pass-thru R, G, B signals output impedance - 75 Ohms
- **Digital**
  - The four differential DVI pairs from the input connector are retransmitted by means of a DVI 1.0 compliant transmitter and sent out the second DVI-I connector
  - Transmitter differential voltage single-ended peak to peak amplitude 310 mV min, 370 mV typical, 430 mV max

### Image Quality

- Pixel jitter:  $\pm 0.5$  ns
- S/N ratio: 47 dB
- Linearity: Better than 99%
- Gain and offset stability: 1% from 15°C to 40°C
- Synchronization time: less than 250  $\mu$ s
- A/D conversion: 8 bits each of R, G, & B (24 bits per pixel), 24 bits YPbPr
- Color formats: RGB 24, RGB 32, RGB 16 (5:5:5), RGB 8, YCbCr 4:2:2, YCbCr 4:4:4, 8 bit monochrome

### Performance

- 250+ MB/second sustained to system memory via 64 bit, 66 MHz PCI bus master
- Real-time video streaming
- Real-time transfer to VGA memory
- Storage memory: 2 x 2 megapixels in double buffered acquisition mode; 1 x 4 megapixels in single buffered acquisition mode; 12 MB total

### Physical

- Half-size PCI card (6.6 inches length)
- Two female DVI-I connectors
- One 2.5 mm stereo audio jack for trigger and high-current digital output
- 64 bit, 66 MHz PCI; 32 bit 33/66 MHz PCI; PCI-X compatible
- 3.3 volt and 5.0 volt PCI compatible

### Cabling

- DVI to DVI cable (optional)
- DVI to VGA cable (15 pin D-shell) (optional)
- DVI to VGA cable (5 BNC) (optional)
- Trigger cable (optional)

### Software

- Windows XP, 2000, NT
- Video for Windows driver
- Auto-SYNC automatic configuration software
- Example application programs (source code included)
- Real-time video streaming with AVI file creation
- IDEA software development kit
- ActiveX controls
- TWAIN driver



978-458-4624

info@foresightimaging.com

www.foresightimaging.com