

## Key Features:

### Extreme Accuracy

- $\pm 0.5$  ns pixel jitter
- 59 dB S/N ratio
- 8 or 10 bit monochrome
- 24 bit color
- Gain, black level, and phase adjustments

### High Performance

- Real-time video streaming with AVI file creation
- 750 MB/second sustained PCI Express x4 bus transfers
- Real-time H.264 codec
- Simultaneous real-time compressed & uncompressed transfer to memory
- Real-time up/down video re-sizer/scaler

### Video

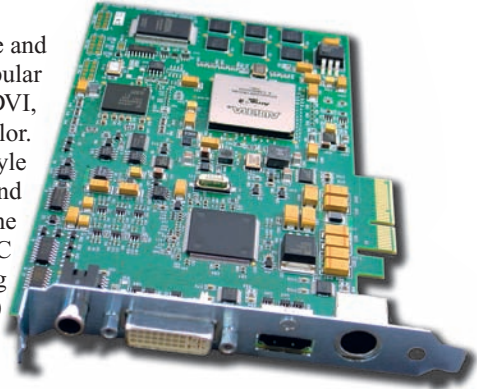
- Up to 50 MHz pixel rate
- Up to 1024 x 1024
- Includes 480p, 576p, & from VGA to SVGA
- Non-standard and standard video inputs
- DVI, RGB, YPbPr, S-video, composite color & monochrome
- Connectors: HDMI-style DVI, DVI-I, S-video

### Software

- Windows 7, XP, Vista
- Auto-SYNC
- WDM driver, Linux driver
- Example programs with source code

## Real-time H.264 compression for DVI, RGB, Monochrome, & SDTV

AccuStream Express SD 50+C provides video capture and real-time H.264 hardware compression from all popular non-standard and standard definition video sources: DVI, RGB, YPbPr, monochrome, S-video and composite color. Physical input connectors on the board are HDMI-style DVI, DVI-I, and S-video. Up to 50 MHz pixel rates and up to 1024 x 1024 pixel resolution are supported. The extreme performance of AccuStream Express SD 50+C is due to the PCI Express x4 bus design, delivering sustained performance to system memory of 750 MB/second. For example, AccuStream Express HD+C can stream to memory simultaneously both uncompressed and H.264 compressed video without dropping any frames.



### Accuracy

The AccuStream Express SD 50+C delivers 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 59 dB signal-to-noise ratio provide the accuracy and image fidelity required of high performance applications. For superior quality, 10 bit analog-to-digital converters are used throughout. Color video may be stored as 24 bit, and monochrome video at 8 or 10 bit. Pixel formats include RGB 24, RGB 32, RGB 5:5:5, RGB 8, YCbCr 4:2:2, YCbCr 4:4:4, 8 bit monochrome, and 10 bit monochrome.

### Performance

AccuStream Express SD 50+C achieves its extreme 750 MB/second sustained performance via its PCI Express x4 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. Real-time display is simultaneously enabled by real-time transfer of image data directly to display card memory over the bus. AccuStream Express SD 50+C also features independent, dual video data paths, allowing for the simultaneous delivery of uncompressed and H.264 compressed video data for processing. The real-time, high performance H.264 codec delivers compressed video at data rates from 2-30 Mbps. Further, all AccuStream Express boards include a real-time up/down video re-sizer/scaler which uses a polyphase algorithm for optimum image quality. The real-time scaler supports scaling images down to 4 x 4 and up to 2048 x 2048.

### Video

AccuStream Express SD 50+C acquires images and video streams from both non-standard and standard video inputs from DVI, RGB, YPbPr, S-video, composite color, and monochrome sources. Video input connectors on the board include an HDMI-style DVI connector (for DVI-D input), a DVI-I connector (for DVI-D, DVI-A, RGBHV, & monochrome inputs), and a S-video connector (for S-video & composite color inputs). Input resolution is up to 2 megapixels total area and pixel rates are up to 50 MHz. 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 is available. AccuStream Express SD 50+C is fully compliant with the DVI 1.0 specification.

### Software

AccuStream Express SD 50+C 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 Express SD 50+C to the incoming standard or non-standard video signal. 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

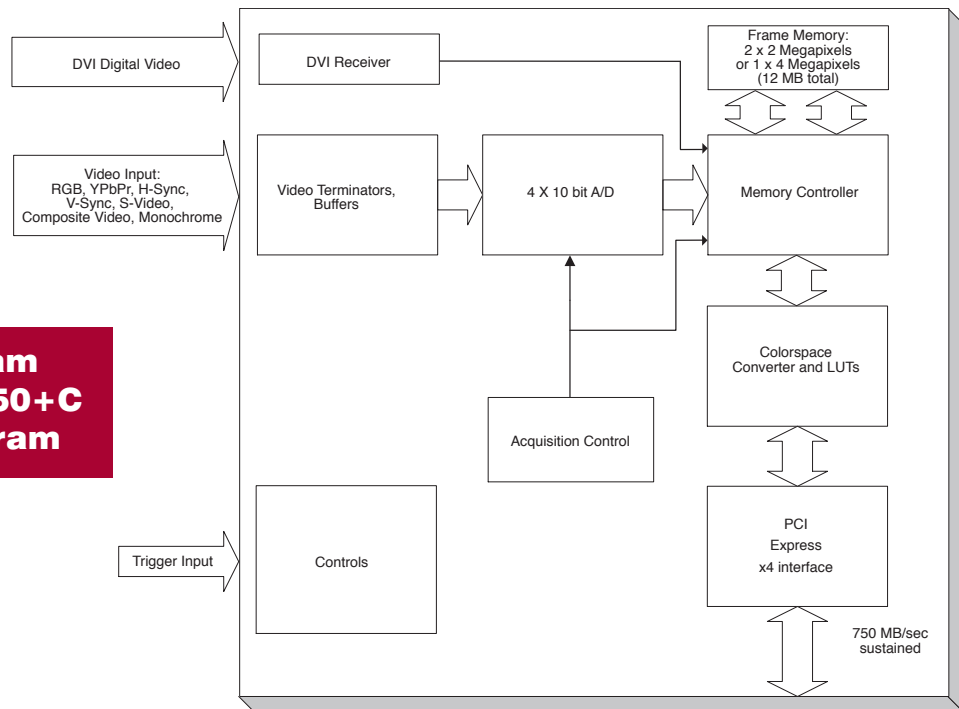
for simple, step-by-step video adjustments. AccuStream Express SD 50+C is supported by the IDEA (Imaging Development Environment for Applications) software development kit. By using IDEA™, developers have the confidence of knowing that they can write their applications once and have support built-in for the entire AccuStream Series. TWAIN, WDM, and VFW drivers are included to further simplify development and use of AccuStream Express SD 50+C. 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, videostreaming to AVI files, integration with Pegasus Imaging compression for streaming, overlays, and much more. Auto-SYNC, IDEA, example programs, and drivers are provided free of charge with each AccuStream Express SD 50+C. Linux drivers are also available.

## Applications

- Network streaming:** Acquire, compress, and stream video over networks for remote monitoring.
- Flight simulation:** Acquire from standard resolution simulation displays.
- Medical imaging:** Acquire from medical imaging devices.
- Military imaging:** Acquire from standard resolution video screens for command & control.
- Multimedia:** Acquire from any standard definition device.

# AccuStream Express SD 50+C Specifications

## AccuStream Express SD 50+C Block Diagram



## Video - Analog

- Video input: RGB, YPbPr, S-video, composite color, 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
- Gain, black level, white balance, phase adjustment
- AC coupled with DC restoration
- H and V sync input
- Bandwidth: 330 MHz
- Pixel rate: up to 50 MHz
- Horizontal frequency: up to 105 kHz
- Pixel resolution: up to 2 megapixels total area, includes up to 480p, 576p, & from VGA to SVGA 800 x 600 at 72 Hz

## Video - Digital

- DVI 1.0 compatible receiver
- Includes up to 480p, 576p, & from VGA to SVGA 800 x 600 at 72 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
- Up to 50 MHz DVI

## Compression

- Real-time H.264 codec
- Compressed bit rates from 2 Mbps to 30 Mbps
- Simultaneous streaming of both compressed and uncompressed stream

## Image Quality

- Pixel jitter:  $\pm 0.5$  ns
- S/N ratio: 59 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, 8 or 10 bits monochrome
- Color formats: RGB 24, RGB 32, RGB 5:5:5, RGB 8, YCbCr 4:2:2, YCbCr 4:4:4, 8 or 10 bits monochrome

## Performance

- 750 MB/second sustained to system memory via PCI Express x4 bus master
- Real-time video streaming
- Real-time transfer to VGA memory
- Storage memory: 2 megapixels, 12 MB total
- Real-time up/down video re-sizer/scaler

## Physical

- Half-size PCI Express card (length 6.6 inches, height: 4.2 inches)
- One female HDMI-style DVI connector
- One female DVI-I connector
- One female S-video connector
- One female phono connector for trigger
- PCI Express x4

## Cabling

- HDMI to HDMI cable (optional)
- DVI to DVI cable (optional)
- DVI to VGA cable (15 pin D-shell) (optional)
- DVI to VGA cable (5 BNC) (optional)
- S-video cable (optional)
- S-video adaptor (optional)
- DVI to HDMI cable (optional)
- DVI to VGA adaptor (optional)
- DVI to HDMI adaptor (optional)
- DVI to BNC adaptor (optional)
- Trigger adaptor (optional)

## Software

- Windows 7, XP, Vista; 32 & 64 bit
- WDM driver
- VFW 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
- Linux driver

## Controls

- Trigger input



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