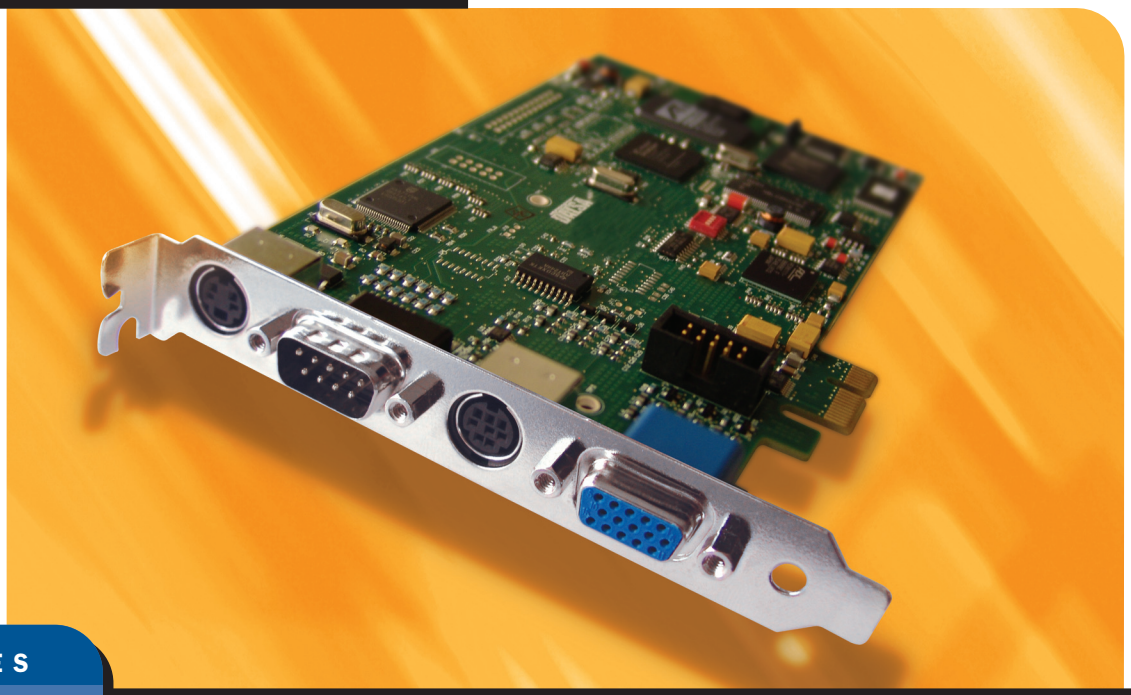
Bandit-3 CV Express™

A PCI Express Frame Grabber and VGA



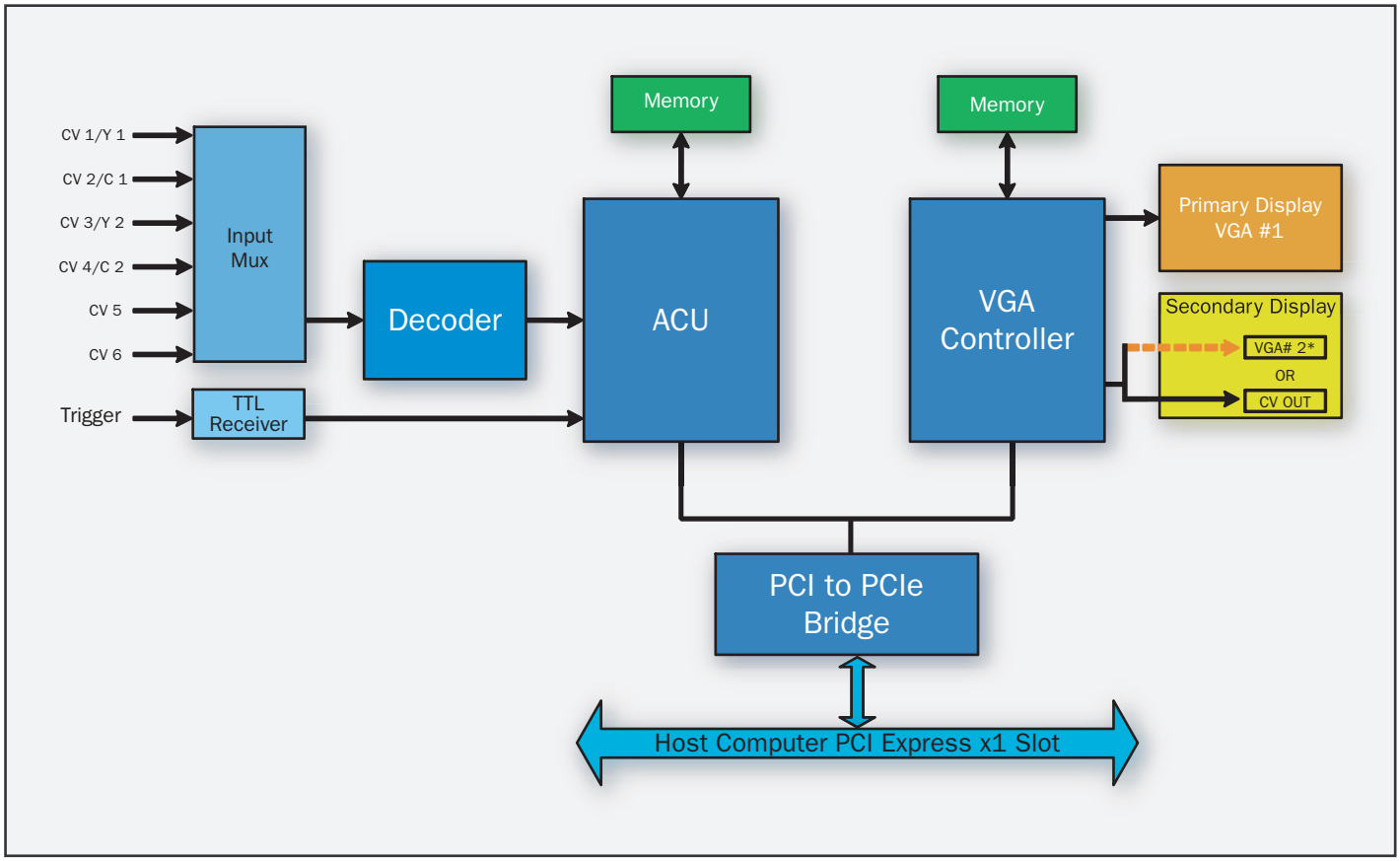
KEY FEATURES

- Improves performance and frees up computer slots
- Realtime transfer to host Enhances processing capabilities
- Separate and independent VGA and video outputs
- Non-destructive overlay on live images improves visualization attributes
- Robust application-specific software libraries speed time-to-market

OVERVIEW

Integrated Frame Grabber and VGA Accelerator

The Bandit-3 CV Express™ is a high-performance video capture and integrated VGA board designed to meet the dynamic requirements of general-purpose video applications. Available as half-size PCI Express x1 form factor board, the Bandit-3 CV Express offers a cost effective solution for a wide variety of application areas including video monitoring, medical visualization, surveillance, and machine vision applications. Its flexible acquisition front-end allows video capture from up to six color or monochrome composite video or two S video cameras. The board's integrated acquisition and display capabilities allow OEMs to bring high performance imaging solutions to market, faster.



Bandit-3 CV Express Functional Block Diagram

Video Capture

Bandit-3 CV Express offers multiplexed acquisition channels capable of acquiring video from NTSC/RS170 or PAL/CCIR cameras. Digitized images are transferred using onboard DMA to VGA display and system memory in real-time without loading the host computer resources.

Input Video Controls

For superior image acquisition, the Bandit-3 CV Express's highly adaptive programmable input filters offer brightness, contrast, hue, saturation, and sharpness control. The programmable input gain controller allows automatic or manual adjustments.

Scale, Invert, and Flip

The Bandit-3 CV Express features interpolated scale down by an arbitrary factor for the entire image or a region-of-interest. The input video can be flipped horizontally (image mirroring) or inverted vertically in real-time to maintain a consistent visual orientation. Image mirroring is an indispensable feature for teleconferencing, endoscopy, ophthalmology, and a variety of other image visualization applications.

Display Capabilities

Featuring powerful display capabilities, the Bandit-3 Series delivers improved performance, freeing up PCI bandwidth and CPU resources for other image processing tasks. Capable of supporting two independent display formats simultaneously, the Bandit-3 Series can operate as a frame grabber with system VGA or in a multiple adapter configuration of Windows XP.

VGA Display

(Primary Display Output)

The Bandit-3 CV Express's on-board VGA-accelerator supports display resolutions of up to 1600 x 1200 and the refresh-rate of up to 100Hz in 16, and 32-bit pixel formats. As a desktop VGA, Bandit-3 CV Express offers highly optimized 2D and 3D display rendering using the Direct Draw™ and the OpenGL libraries. With its integrated dual-head display capability, live images can be displayed on the primary or secondary display output, in a window, or in full screen mode. Additionally, the Bandit-3 CV Express supports Windows VGA extended desktop display capability in-conjunction with a third-party VGA card.

Video Output and Overlay

(Secondary Display Output)

The integrated secondary CRT controller supports non-interlaced VGA or interlaced TV output formats independent of primary display settings. Accessible directly from the Windows display control panel, the secondary display output can duplicate primary VGA display(including live image display in a window) or display live images only with or without graphics overlay.

The Bandit-3 CV Express's TV output can be used to record live images with graphics annotation on devices with either composite video or S-Video input types. The board's graphic overlay feature supports VGA independent pixel format allowing optimal use of frame buffer memory. Color-keyed non-destructive overlay is programmable using DALSA's Sapera API.

A suite of video output controls, further augments the video quality by offering control functions for brightness, contrast, hue, saturation, flicker filter, and under/over-scan mode select. TV output is available as composite video or S-Video in both NTSC and PAL formats.

Auxiliary Controls

Bandit-3 CV Express offers trigger input for external process synchronization. The TTL level trigger input is user programmable to work as a level or edge trigger input. In level-trigger mode, images are captured as long as trigger input remains active. Additionally, Bandit-3 CV Express takes full advantage of Sapera event-notification messages like start/end-of-field/frame/odd/even/transfer to improve application response time.

Software Support

Bandit-3 CV Express supports Sapera Essential software development library under Windows XP Professional. DALSA software development tools allow users to develop applications with C language DLLs, C++ classes, or ActiveX controls on Microsoft Visual C/C++ 6.0, Visual Basic 6.0 or Microsoft Visual Studio .Net or higher development platforms.

Specifications*

Board	• Half-slot PCI Express 1.0a compliant
Acquisition	• 6 Composite Video or 2 Y/C (4 CV and 1 YC OR 2 CV and 2 YC) • Standard RS170, NTSC, CCIR, and PAL formats • Up to 8MB of frame buffer memory and 16MB of display memory • Image mirroring and vertical flip • Adaptive 2/4 line comb filter for high accuracy chrominance and luminance separation • Arbitrary horizontal and vertical down scaling for randomly sized windows • 0.7 VPP 75Ω terminated
Pixel Jitter	• ± 2ns
Video Controls	• Brightness, contrast, hue, saturation, and sharpness controls • Independent gain and offset control • Programmable static or Automatic Gain Control
Pixel Formats	• Pixel formats allow 8-bit mono, 16-bit YUV 4:2:2 packed and YUV 4:2:2 planar formats
Transfers	• Simultaneous live image display and real-time transfers to system memory with no host CPU overhead • DMA supports scatter-gather to optimize host frame buffer usage • Allows on-the-fly camera switching with minimal frame loss
Display	• On board 2D/3D VGA accelerator allows true color 1280 x 1024@85Hz. • Independent multi-head display allows two VGAs or VGA and TV output • 8, 16, or 32-bpp acceleration
Overlay	• Non-destructive graphics overlay on live video • Overlay supports VGA independent pixel formats • User programmable color-keyed overlay display • Arbitrary horizontal and vertical scaling using DirectDraw
TV Output[1]	• Integrated, independent TV NTSC/PAL output formats • Outputs composite video or S-Video signals for TV type monitors • Programmable, adaptive 3-tap flicker filter • Vertical under-scan and over-scan compensation • Secondary output displays VGA with video and overlay or video with overlay only • 0.7 VPP 75Ω terminated
Controls	• 1 TTL Trigger Input • Detects loss of video signal • Comprehensive event notification for start/end of odd/even field or frame signals required for application process synchronization
Software	• Microsoft Windows XP Professional and Windows 2000 Professional • Supports DirectDraw and TWAIN-32 • Fully supported for Sapera Essential • Application development using C/C++ DLLs and ActiveX controls with Microsoft Visual Studio 6.0 and Microsoft Visual Studio .Net
System Requierements	• Intel Pentium class CPU, 64MB system memory, 10MB free hard-drive space
Dimensions	• PCI Express - 6.677” (16.95 cm) Length x 4.20” (10.7cm) Height
Power Comsumption	• Max 1.8A at + 3.3V • 170mA at + 12V
Temperature	
Operating	• 0°C (32° F) to +50° C (131° F)
Storage	• -40°C (-40°F) to +125°C (257°F)
Relative Humidity	• 5% to 95% (non-condensing)
Markings	• FCC-Approved • CE-Approved

Notes:

* Last updated September 2006
[1] Requires freeslot

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