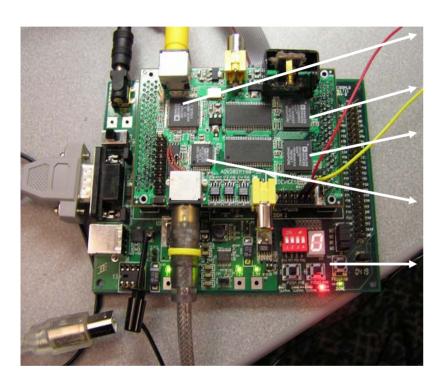
### ADV212

Demo Tools / Evaluation Systems



### ADV212 Evaluation systems – ADV212-ASD-P160-EB



- ADV7189 S-Video or CVBS analog video
- ADV212 encode
- ADV212 decode
- ADV7321 S-Video or CVBS analog output
- Memec Design Xilinx Spartan 3SxLC mother board



### ADV212 Evaluation systems - ADV212-ASD-P160-EB



#### Stand-Alone mode:

Control over push-button and DIP switch:

- o Demo Interlaced or De-Interlaced mode
- o Demo Rate Control [=Compression Ratio]



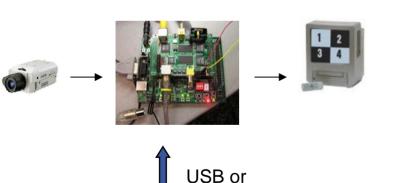
Control over HyperTerminal using provided Main Menu options:

- 1. Read compression rate used
- Change compression rate
- Change register settings
- 4. Change encode or decode parameters
- 5. Upload different firmware
- 6. Read registers from all ADV devices on board

#### **Developer mode:**

Control over entire system using source code:

- 1. Change to Custom Specific mode configuration
- 2. Change to DMA DREQ/DACK access
- 3. Change push-button and/or DIP switch assignment



**RS232** 



### ADV212 Evaluation systems - ADV212-ASD-P160-EB

#### The p160-SD evaluation kit comes with:

- ADV212 daughter card
- 2. Memec Design Xilinx S3 mother board
- 3. Power supply for board
- 4. Jtag interface cable [only required for Developer mode control to program the FPGA]
- 5. SDK Eval version of Xilinx software tools [only required for Developer mode control]

#### Additionally required by the User:

- **1. Stand-Alone Mode:** 2x S-Video or CVBS video cable, S-Video [CVBS] video source, video monitor
- 2. PC Control Mode: USB cable, 2x S-Video or CVBS video cable, S-Video [CVBS] video source, video monitor, PC
- **3. Developer Mode:** USB cable, 2x S-Video or CVBS video cable, S-Video [CVBS] video source, video monitor, PC



### ADV212 Evaluation systems - ADV212-HD-EB

HD-SDI Input

HD-SDI Output



- •1080i and 720p SDI compatible
- 32/64-bit, 33/66 MHz PCI card
- WinXP Application Software [Alberio]
- Encode JPEG2000 to file
- Decode JPEG2000 from file
- Use 2 cards in HD pass-through mode



### ADV212 Evaluation systems - ADV212-HD-EB

- Inputs HD-SDI
  - Can be converted from Component with 3<sup>rd</sup> party device (AJA)
- Outputs HD-SDI
  - Also can be converted to Component with an AJA device
- Formats Supported on HD-SDI
  - 1080i/60Hz/59.94Hz
  - 720p/60Hz
- Other formats can be done but only in Host Mode
  - Custom specific formats can be used
  - NTSC, PAL, De-interlaced NTSC or PAL
  - Played back on PC Monitor



### ADV212 Evaluation systems - ADV212-HD-EB - Applications

- Evaluation
  - Capture HD with various parameters, view results
- Hardware Acceleration
  - Alberio Eval software is DirectShow compatible and can be (has been) integrated with other DirectX workflows
- Demo
  - Streaming Media with 2 cards
  - Real-time rate control
- Reference
  - All software and schematics are available on FTP site



## ADV212 Evaluation systems – ADV212-HD-EB – What it is not good for

- Non standard video resolutions
  - Architecture is optimized for streaming video, not custom formats
- Prototyping Embedded Work
  - No CPLD space available for custom work
  - Chip is controlled from Windows XP, too complicated to learn much from
  - Windows Driver is a streaming filter driver so implementation is very obscure compared to an embedded system
- Incorporating into existing system
  - DirectShow is not easy to pick up
  - Hard to interface to standard windows drivers



### ADV212 Evaluation systems - ADV212-HD-EB - Alberio Software

- Alberio is a toolkit, not an application
  - DirectShow Kernel Streaming Filter Driver
  - A set of DirectShow filters for moving data around
  - Applications which simply tie these filters together
- DirectShow Filters
  - A filter is simply a piece of code that either sources a frame of data (Capture), sinks a frame of data (Render), or transforms a frame of data
  - Filters are put together to make a "filter graph" that represents some dataflow. For example, an "Encode to File" graph might contain a ADV212 Capture filter and a Binary File Render filter



# ADV212 Evaluation systems – ADV212-HD-EB – Alberio Software - Applications

- Applications are just UIs for the filters
- ADV212HDDemo
  - Main Application
  - Encode, Decode, Encode to Network, Passthrough
  - Provides realtime metrics for throughput and compression
- ADV212Player
  - Decode only application
  - Decode from file or network, play out SDI or to PC screen (maybe)
- HipiSourceCreator
  - Encodes custom formats from BMPs
  - Can take 720p BMPs and generate a playable file



# ADV212 Evaluation systems – ADV212-HD-EB – Alberio Software - Applications

- StillsDemo
  - Software only, any size image
  - Compares to JPEG at same compression ratio
- DumpFileChecker
  - Allows BIN files (Alberio's format) to be parsed and viewed as individual frames



## ADV212 Evaluation systems – ADV212-HD-EB – Alberio Software - Filters

### Driver

- Render, Capture, Codec Filters
- Contains the code that sets up and programs the ADV212
- Manage the DMA of data in and out of the part

### File Filters

- Source, Render
- Reads BIN and MXF files
- Writes BIN files

#### Network Filters

- Source, Render
- UDP based, very simple packetization



# ADV212 Evaluation systems – ADV212-HD-EB – Alberio Software – Filters [cont.]

- TypeConverter
  - Converts data from ADV212 into a format that the Windows renderer can display
    - IYUV for HD
    - YUY2 for SD
- Transcoder
  - Shows scalability
  - Allows user to strip off some number of quality or resolution layers if they encode with PLT



## ADV212 Evaluation systems – ADV212-HD-EB – Alberio Software - Modifications

- Relatively Easy
  - Changing UI for any application (buttons, logos, etc.)
  - Making a new app with existing filters
- Moderate
  - Modifying existing filters slightly (different file format, different network packets, etc.)
  - Integrate existing filters with other custom filters
  - Modifying interfaces
- Hard
  - New video formats
  - New custom filters
  - Integrating with non-DirectShow windows (or other) code
  - Linux



# ADV212 Evaluation systems – ADV212-HD-EB – Alberio Software – What is required to work with it

- Tools
  - MS Visual Studio .NET 2003
  - DirectX SDK
  - For the driver: Compuware DriverStudio(\$\$\$), MS DDK (Nearly Free)
- Knowledge
  - Filters, Filter Graphs, DirectShow
  - COM
  - Any Windows programming knowledge helps, but learning curve is steep
- Many things you can do, IF you can take the time.



# ADV212 Evaluation systems – ADV212-HD-EB – Alberio Software – Other requirements

- Windows XP
  - Won't work on any earlier windows versions
- DirectX 9.0+
- Windows Media 9.0+
- To play HD to screen: IYUV conversion filter
  - Doesn't come with Alberio
  - Might come with Video card driver or Windows Media
- For StillImageDemo & DumpFileChecker
  - Kakadu software <u>www.kakadusoftware.com</u> FREE software decoder



### ADV212 Evaluation systems - ADV212-HD-EB - Applications

- Evaluation
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  - Alberio Eval software is DirectShow compatible and can be (has been) integrated with other DirectX workflows
- Demo
  - Streaming Media with 2 cards
  - Real-time rate control
- Reference
  - All software and schematics are available on ADV212 product page

