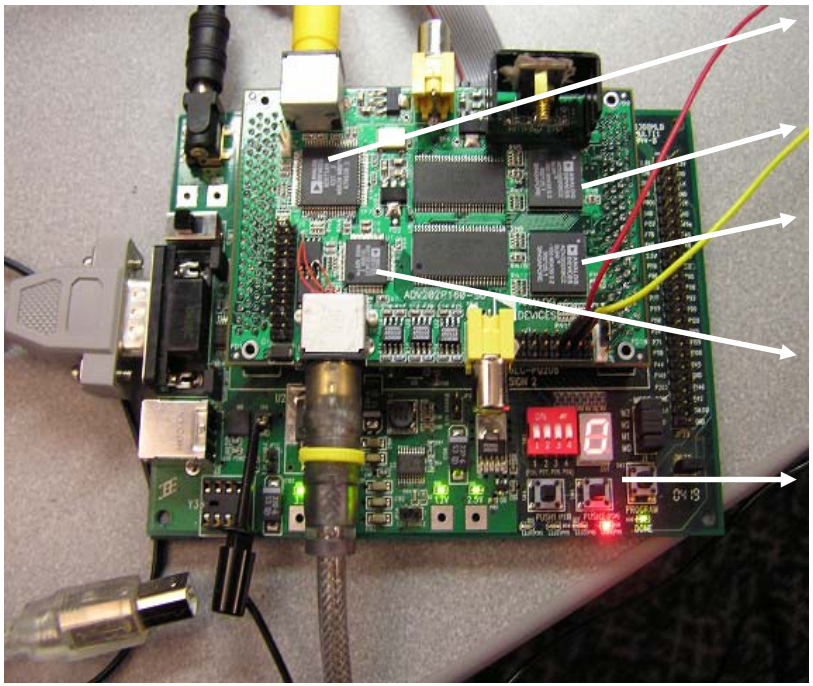
ADV212

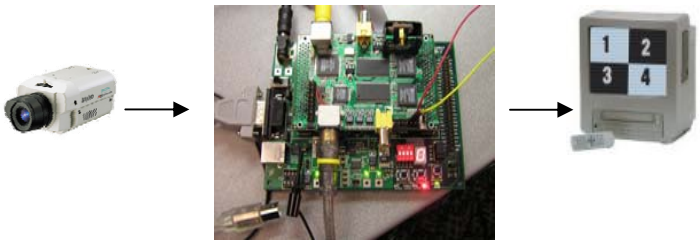
Demo Tools / Evaluation Systems

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

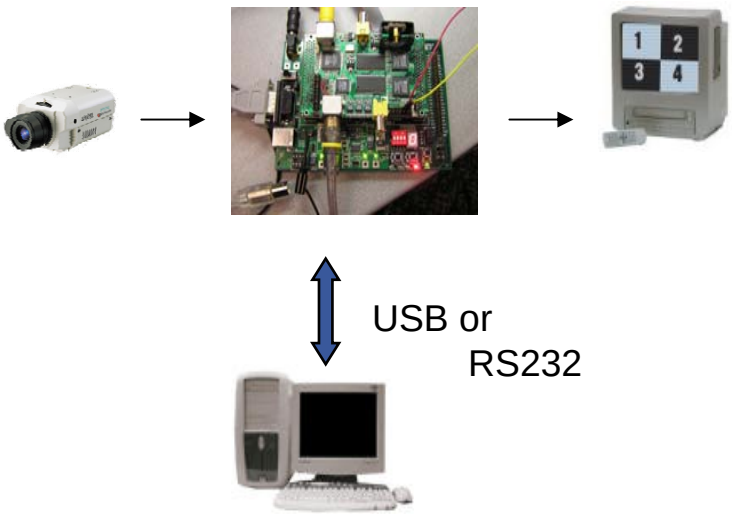
ADV212 Evaluation systems – ADV212-ASD-P160-EB



Stand-Alone mode:

Control over push-button and DIP switch :

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



PC control mode:

Control over HyperTerminal using provided Main Menu options:

1. Read compression rate used
2. Change compression rate
3. 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

ADV212 Evaluation systems – ADV212-ASD-P160-EB

The p160-SD evaluation kit comes with :

1. 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]

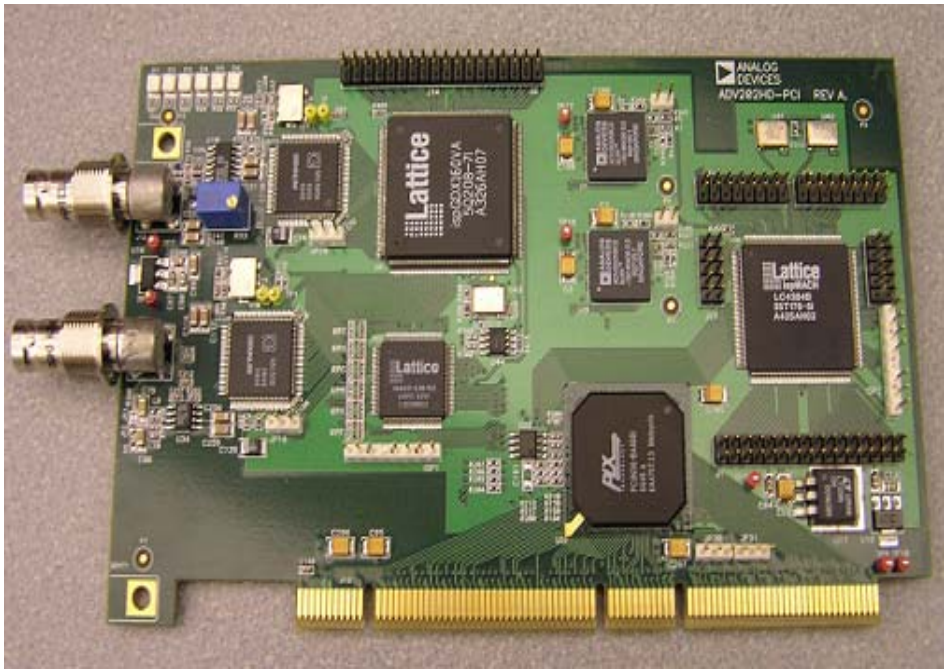
Additionally required by the User:

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

ANALOG DEVICES

ADV212 Evaluation systems – ADV212-HD-EB

- Inputs – HD-SDI
  - Can be converted from Component with 3rd 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 – www.kakadusoftware.com FREE software decoder

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