Fact Sheet
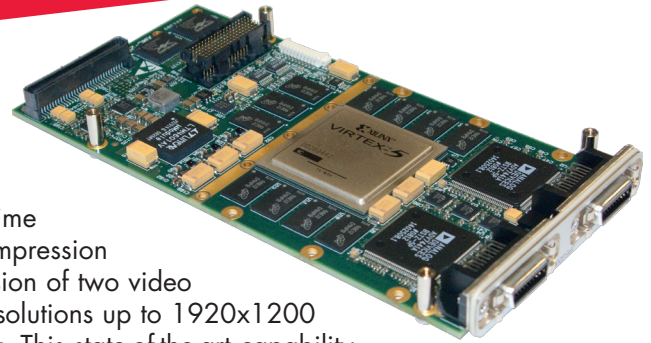
XMC-280
High-definition Real-time JPEG2000 Mezzanine

- Supports flexible video rates up to high-definition 1080p60 and 1920x1200 (60Hz).

- High-quality real-time JPEG2000 compression and decompression at full resolution and frame rate.

- Designed to minimize latency between capture and availability of encoded video.

- Programmable compression ratios and frame rate capture

- DVI, RGB and CVBS input as standard, designed to support other interfaces in the future.

- Air-cooled and conduction-cooled XMC modules designed for deployment in a wide range of defense and aerospace applications

- Fully integrated with Curtiss-Wright Controls Embedded Computing's video distribution and recording product families.

The XMC-280 provides real-time JPEG2000 compression or decompression of two video channels at resolutions up to 1920x1200 pixels at 60Hz. This state-of-the-art capability makes it ideal for high-definition video distribution and recording applications. JPEG2000 offers low latency, resilience against errors and retention of detail at high-compression ratios.

FPGA-based processing is used to implement the computationally intensive JPEG2000 algorithm in real-time. Three performance grades offering a range of compression throughput rates provide the optimal balance of price and capability.

An XMC-280 can be supplied in two configurations:

- Compression: the XMC-280 captures two input channels that are encoded into a JPEG2000 compliant data steam and transmitted over the PCI Express® (PCIe) interface.

- Decompression the XMC-280 receives two JPEG2000 compressed video data streams over the PCIe interface for decompression and display on two independent DVI outputs.

Both configurations support co-processor operation. In this mode the video inputs and outputs are not used: the XMC-280 acts as a JPEG2000 processor with both compressed and uncompressed video being transferred over the PCIe interface. Co-processor mode supports applications where multiple channels of video need to be decoded without being displayed. An example would be compressed video received from a network that needs to be decompressed for subsequent image processing.

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Specifications

Video Inputs

- Two video inputs; each can be:
    - Digital DVI
    - Analog RGB
    - Analog CVBS
- Maximum resolution 1920x1200
- For support of other video types (e.g. SMPTE-292) and resolutions please contact the design center
- Configurable frame rate capture (decimation)

Audio Inputs

- Two stereo channels
- 16-bit 44.1kHz
- WAV and PCM encoding

Video Outputs

- Two DVI digital video outputs
- Maximum resolution 1920x1200 (for higher resolution, contact the design center)

Audio Outputs

- Two stereo channels
- 16-bit 44.1kHz
- WAV and PCM encoding

Video Compression

- JPEG2000 ISO/IEC15444-1 image compression standard (DCI profile, 9/7 irreversible wavelet compression)
- Visually lossless with appropriate compression ratios
- Support for 4:2:2 and 4:4:4 video coding

PCI Express Interface

- PCIe optimized to provide in excess of 500MB/s in each direction
- 4-lane PCIe 1.1

Software Support

- Software support for Windows® and Wind River® GPP Linux® on x86 hosts
- Software support for Wind River® GPP Linux® and Wind River® VxWorks® on PowerPC™ hosts
- For support for other platforms, please contact the design center
- Fully integrated with Curtiss-Wright Controls' video distribution and recording product families

Figure 1: XMC-280 functional block diagram