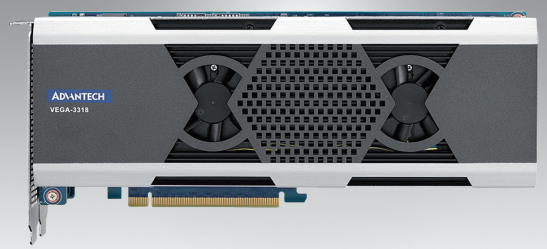
VEGA-3318

8-ch 4K HEVC/AVC/MPEG-2 Encoding, Decoding & Transcoding Accelerator

Preliminary



Features

- 8-ch 4Kp60 or 32-ch 1080p60 low-latency HEVC, AVC & MPEG-2 encode, decode & transcode
- Support for adaptative bitrate (ABR) streaming, 10-bit profiles and 4:2:2 chroma subsmapling
- Less than 65W power consumption
- Comprehensive developer tools including Linux and Windows SDKs, FFmpeg and GStreamer plug-ins, and virtualization-friendly drivers

Introduction

The VEGA-3318 is the world's first commercial-off-the-shelf video accelerator able to perform low-latency, professional-grade 8-ch 4Kp60 HEVC transcoding in an ultra-low power PCI Express format that can be integrated into standard servers via Linux API. Up to four VEGA-3318 accelerators can be integrated into a 1U server supporting up to 32 live UHD HEVC ABR streams per rack unit - the highest density available in the market. This enables agile, scalable, energy and cost efficient data center deployments to address the growing demand of live UHD OTT video streaming in the cloud. The CAPEX and OPEX savings are significant. VEGA-3318 accelerated solutions benefit from an up to 30x performance boost and up to a 20X reduction in power consumption and rack space when compared to non-accelerated solutions.
The VEGA-3318 supports UHD, HD and SD formats and HEVC, AVC and MPEG-2 codecs including 10-bit profiles, 4:2:2 chroma subsampling and ABR streaming. Developers can leverage Advantech's SDK which supports Linux and Windows operating systems, FFmpeg and GStreamer. In addition, Advantech has created software drivers that are virtualization friendly and support OpenStack. Advantech also offers hardware and software design and customization services for maximum deployment flexibility.

Specification

File Based Video Input (PCI Express)	Video Encoding	H.265/HEVC	Channels	8 (up to 4Kp60, 8bit/10bit, YUV) / 32 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
			Resolution (Multi-channel more than x2ch)	1920x1080 /1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			8-bit encoding from 10-bit raw data	Supported
			Chroma Sampling	4:2:0 / 4:2:2
			Rate control	CBR / Capped VBR
			GOP structure	I picture only / IPPP /IBB / Closed GOP/Open GOP / Adaptive GOP (Scene change)
			CPB delay control	3s, 1s, 0.5s
			Filter	De-blocking filter / Fixed strength
			Low latency	5,6 frame (GOP = IBBB)
			Ultra low-latency	< 1 frame
			HDR	Supported
		H.264/AVC	Channels	8 (up to 4Kp60, 8bit/10bit, YUV) / 32 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
			Resolution (Multi-channel more than x2ch)	1920x1080 /1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			8-bit encoding from 10-bit raw data	Supported
			Chroma Sampling	4:2:0 / 4:2:2
			Rate control	CBR / Capped VBR
			GOP structure	I picture only / IPPP /IBB/IBBB / Closed GOP/ Open GOP / Adaptive GOP (Scene change)
			CPB delay control	1s, 0.5s
			Filter	De-blocking filter / Fixed strength
			Low latency	5,6 frame (GOP = IPPP)

Last updated: 21-May-2018

Specifications (Cont.)

File Based Video Input (PCI Express)	Video Decoding	H.265/HEVC	Channels	8 (up to 4Kp60, 8bit/10bit, YUV) / 16 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			Chroma Sampling	4:2:0 / 4:2:2
		H.264/AVC	Channels	8 (up to 4Kp60, 8bit/10bit, YUV) / 16 (up to 1080p60, 8bit/10bit, YUV)
			Resolution (x1ch)	3840x2160 /1920x1080 / 1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8, 10 bits
			Chroma Sampling	4:2:0 / 4:2:2
		MPEG-2	Channels	16 (up to 1080i60, 8bit/10bit, YUV)
			Resolution (x1ch)	1920x1080 / 1280x720 /720x480
			Frame rate/Scan mode	60p/59.94p/50p(up to 720p), 30p/29.97p/25p/24p / 59.94i/50i
			Bit depth	8 bits
			Chroma Sampling	4:2:0
	Audio Encoding	Control	Single ch	Supported
	Audio Decoding	Control	Single ch	Supported
	Video Transcoding (PCIe in / PCIe out)	N:N	HEVC to HEVC HEVC to AVC AVC to HEVC AVC to AVC MPEG2 to HEVC MPEG2 to AVC	Supported Supported Supported Supported Supported Supported
		N:M	HEVC to HEVC HEVC to AVC AVC to HEVC AVC to AVC MPEG2 to HEVC MPEG2 to AVC	Supported Supported Supported Supported Supported Supported
Feature		Operating System	Windows Server 2012 & 2012 R2 (64-bit), Windows Server 2008 R2 (64-bit) / Linux Kernel 3.13.0 (64-bit)	
		Development Kits	Ffmpeg 3.4.1, Microsoft DirectShow	
		Streaming Protocol (input)	RTSP/RTMP/RTP/TS over IP (UDP)/HTTP	
		Streaming Protocol (output)	RTSP/RTMP/RTP/TS over IP (UDP)/HTTP	
		System Application	WEB GUI	
Physical Characteristic		Video Input/Output Interfaces	PCI express Gen3 x16	
		Power Consumption	<65W	
		Dimensions	PCI Express 10.5" Length Full Height, double-deck / 266.7 x 111.15 mm	
Environmental		Operating Temperature	-10 to 70 degrees Celsius	
		Non-operating Temperature	-40 to 85 degrees Celsius	
		Operating Humidity	50 to 95% (non-condensing)	
		Non-operating Humidity	50 to 95% (non-condensing)	

Ordering Information

Part number	Description
VEGA-3318-A0T0	8-ch 4K HEVC/AVC Real-time Encoding & Decoding Card