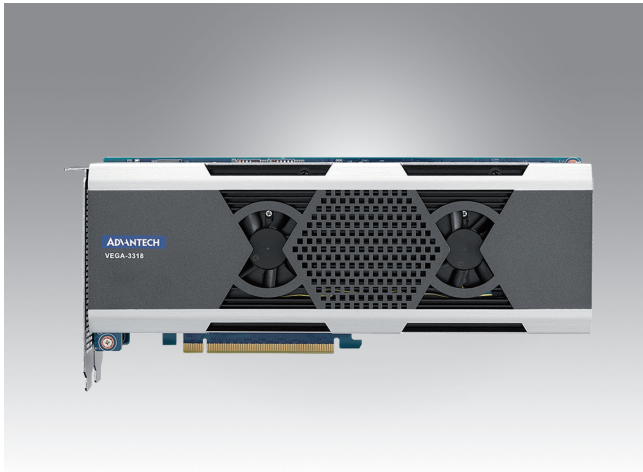


# VEGA-3318

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



### Features

- 8-ch 4Kp60 or 32-ch 1080p60 low-latency HEVC, AVC & MPEG-2 encode, decode & transcode
- Support for adaptive bitrate (ABR) streaming, 10-bit profiles and 4:2:2 chroma subsampling
- 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)			

## 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	Supported	
		HEVC to AVC	Supported	
		AVC to HEVC	Supported	
		AVC to AVC	Supported	
		MPEG2 to HEVC	Supported	
		MPEG2 to AVC	Supported	
	N:M	HEVC to HEVC	Supported	
		HEVC to AVC	Supported	
		AVC to HEVC	Supported	
		AVC to AVC	Supported	
MPEG2 to HEVC	Supported			
MPEG2 to AVC	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