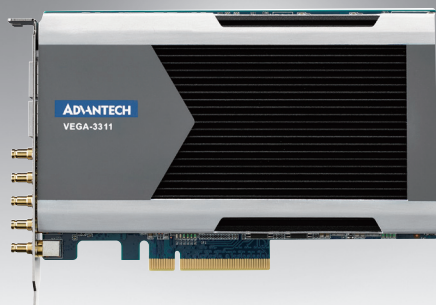


VEGA-3311

4K HEVC/AVC Broadcast Video Encoding Card

Preliminary



Features

- 1-ch 4Kp60 or 4-ch 1080p60 real-time 4:2:2 10-bit HEVC, AVC encode
- AIMS roadmap support including SMPTE 2022 or SMPTE 2110 & VSF TR-03/-04 w/ AES67 audio & SMPTE 2059 sync
- 4K video capture over built-in, 4-ch SDI-3G or 1-ch SDI-12G (SDI only, VEGA-3311-S)
- 4K video capture over built-in, 4-ch SDI-3G or 1-ch SDI-12G and 2x 10GbE (VEGA-3311-I)
- Simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks

Introduction

VEGA-3311 enables HEVC, AVC, real-time 1-ch 4K UltraHD (2160p60) and 4-ch FHD (1080p60) encode. It is particularly relevant for 4K UltraHD transmission which requires a much higher stream capacity.

VEGA-3311 is tailored for professional media processing and are capable of performing professional grade 4Kp60 Main10 profile HEVC encoding at less than 35W power consumption. The VEGA-3311 adapter additionally features 4K video capture over built-in 4-ch SDI-3G or 1-ch SDI-12G video inputs for acquisition-based encoding and 4-ch SDI-3G video outputs for acquisition-based decoding in contribution workflows. VEGA-3311 can also support low latency transmission of uncompressed or lightly compressed video over standard IP networks according to industry agreed standards. This card feature a simple-to-use API and example code for FFmpeg and GStreamer multimedia frameworks to streamline product development and their integration into existing applications.

Specification

Live Video Input - SDI-3G/SDI-12G	Video Encoding	H.265/HEVC	Resolution (x1ch)	(UHD)3840x2160 (FHD)1920x1080 (HD)1280x720 (SD)720x576 (SD)720x480
			Resolution (Multi-channel more than x2ch)	(FHD)1920x1080 (HD)1280x720 (SD)720x576 (SD)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 / 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
				Video Encoding
Resolution (Multi-channel more than x2ch)	(FHD)1920x1080 (HD)1280x720 (SD)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 length	One Picture (I only) / 0.5sec / 1 sec			
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.)

Live Video Input - SDI-3G/SDI-12G	Audio Encoding	Control	Single ch	Supported		
	Video Capture	Control	Pixel Format	NV12 / YV12 / I420 / P010 / NV16 / YV16 / YUY2/P210		
			Resolution	(UHD)3840x2160 (FHD)1920x1080 (HD)1280x720 (SD)720x480		
			Frame Rate	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i		
	Audio Capture	Control	Sample Frequency	48KHz / 96KHz		
			Sampling Depth	16 bit / 24 bit		
			Channel Layouts	8-ch / 16-ch		
	SMPTE ST-2110	Video Encoding	H.265/HEVC	Resolution (x1ch)	(FHD)1920x1080 (HD)1280x720 (SD)720x576 (SD)720x480	
				Resolution (Multi-channel more than x2ch)	(FHD)1920x1080 (HD)1280x720 (SD)720x576 (SD)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 / 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				H.264/AVC	Resolution (x1ch)	(FHD)1920x1080 (HD)1280x720 (SD)720x480
					Resolution (Multi-channel more than x2ch)	(FHD)1920x1080 (HD)1280x720 (SD)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 Rate control	4:2:0 / 4:2:2 CBR / Capped VBR			
		GOP length	One Picture (I only) / 0.5sec / 1 sec			
		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)			
		Audio Encoding	Control		Single ch	Supported
Video Capture		Control	Pixel Format	NV12 / YV12 / I420 / P010 / NV16 / YV16 / YUY2/P210		
			Resolution	(FHD)1920x1080 (HD)1280x720 (SD)720x480		
	Frame Rate		60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i			
Audio Capture	Control	Sample Frequency	48KHz / 96KHz			
		Sampling Depth	16 bit / 24 bit			
		Channel Layouts	8-ch / 16-ch			
		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 / 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					

File Based Video Input (PCI Express)	Video Encoding	H.265/HEVC	Resolution (x1ch)	(UHD)3840x2160 (FHD)1920x1080 (HD)1280x720 (SD)720x576 (SD)720x480 User defined resolution
		H.265/HEVC	Resolution (Multi-channel more than x2ch)	(FHD)1920x1080 (HD)1280x720 (SD)720x576 (SD)720x480 User defined resolution
		H.265/HEVC	Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
		H.265/HEVC	Bit depth	8, 10 bits
		H.265/HEVC	8-bit encoding from 10-bit raw data	Supported
		H.265/HEVC	Chroma Sampling	4:2:0 / 4:2:2
		H.265/HEVC	Rate control	CBR / Capped VBR
		H.265/HEVC	GOP structure	I picture only / IPPP / Closed GOP/Open GOP / Adaptive GOP (Scene change)
		H.265/HEVC	CPB delay control	3s, 1s, 0.5s
		H.265/HEVC	Filter	De-blocking filter / Fixed strength
		H.265/HEVC	Low latency	5,6 frame (GOP = IBBB)
		H.265/HEVC	Ultra low-latency	< 1 frame
		H.265/HEVC	HDR	Supported
		H.264/AVC	Resolution (x1ch)	(UHD)3840x2160 (FHD)1920x1080 (HD)1280x720 (SD)720x576 (SD)720x480 User defined resolution
		H.264/AVC	Resolution (Multi-channel more than x2ch)	(FHD)1920x1080 (HD)1280x720 (SD)720x576 (SD)720x480 User defined resolution
		H.264/AVC	Frame rate/Scan mode	60p/59.94p/50p/30p/29.97p/25p/24p / 59.94i/50i
		H.264/AVC	Bit depth	8, 10 bits
		H.264/AVC	8-bit encoding from 10-bit raw data	Supported
		H.264/AVC	Chroma Sampling	4:2:0 / 4:2:2
		H.264/AVC	Rate control	CBR / VBR / Capped VBR
		H.264/AVC	GOP structure	I picture only / IPPP / IBB/IBBB / Closed GOP/Open GOP / Adaptive GOP (Scene change)
		H.264/AVC	CPB delay control	1s, 0.5s
		H.264/AVC	Filter	De-blocking filter / Fixed strength
		H.264/AVC	Low latency	5, 6 frame (GOP = IPPP)
Feature	Operating System	Windows Server 2012 & 2012 R2 (64-bit), Windows Server 2008 R2 (64-bit) Linux Kernel 5.8.0		
	Development Kits	Ffmpeg 3.4.1, Microsoft DirectShow		
	Networking Interface	2x 10Gbps Ethernet port (VEGA-3311-I)		
	Forward Error Correction	Level A and Level B FEC (steam basis)		
	Connectors	SFP+ Module		
	Internet protocol	Support IPV4 static IP setting		
	Streaming Protocol (output)	RTSP/RTMP/RTP/TS over IP (UDP)/HTTP		
	Video-over-IP	SMPTE 2110 & VSF TR-03/-04 w/ AES67 audio & SMPTE 2059 sync Optional TICO compression		
Physical Characteristic	Video Input Interfaces	PCIexpressGen3 x8 4x SDI-3G (Level A/B) or 1x SDI-12G 1x Tri-sync 2x 10Gbps Ethernet port (Rx, VEGA-3311-I)		
	Video Output Interface	PCI express Gen3 x8 4x SDI-3G (VIF) / (PCIe--> SDI) or 1x SDI-12G (VIF) / (PCIe)		
	Power Consumption	<35W		
	Dimensions	PCI Express Half Length Full Height 167.65 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-3311-S0M0	4Kp60 HEVC/AVC Broadcast Video Encoding / Decoding Card w/ SDI only
VEGA-3311-A0M0	4Kp60 HEVC/AVC Broadcast Video Encoding / Decoding Card, File base
VEGA-3311-I0F0	4Kp60 HEVC/AVC Broadcast Video Encoding Card w/ SDI & VoIP

