

# VEGA-3321-IOF3

## 4K Broadcast IP Video Gateway & Acquisition Accelerator PCIe Card



### Features

- Hybrid 12G-SDI and ST2110 IP Video Interface
- 25G SFP+ (ST-2110) IP video interface for uncompressed video transport
- UHD Video Acquisition and Playback
- Video acquisition, IP video gateway, and RAW PCIe data transfer within a single card
- Supports ST2022-7 seamless protection switching for stream redundancy
- PCIe Gen3 x8 interface with < 35 W power consumption

### Introduction

The Advantech VEGA-3321 is a high-performance PCIe Gen3 x8 video interface card designed for professional broadcast and IP media applications. It features hybrid 12G-SDI and 25G ST-2110 connectivity, supporting up to 4K60 uncompressed video capture and playback. The card handles 4:2:2/4:2:0 8/10-bit video, embedded audio, and SMPTE-compliant ancillary data, enabling seamless interchange between SDI and IP workflows. With PTP synchronization, ST-2022-7 redundancy, and AES67 audio support, VEGA-3321 ensures precise timing and reliable streaming. Optimized for Linux Kernel 5.15+, it delivers low-latency performance under 35 W, ideal for live production, contribution, and professional video processing applications.

### Specifications

Acquisition (12G-SDI)	Feature List	SMPTE ST 259 SMPTE RP 165 SMPTE ST 292 SMPTE ST 372 SMPTE ST 424 SMPTE ST 2081-1 SMPTE ST 2082-1 SMPTE ST 352	
	Video input	Resolution	(DCI 4K) 4096 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (UHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (FHD) 1920 x 1080p 23.98, 24, 25, 29.97, 30,50, 59.94, 60 (FHD) 1920 x 1080p 50, 59.94, 60 (level B) (FHD) 1920 x 1080i 50, 59.94, 60 (HD) 1280 x 720p 50, 59.94, 60 (SD) 576i 50 & 480i 59.94,60
		Pixel Format	NV16 / YUY2 / v210 / P210 / RGB
		Sampling	422/420
		Bit Depth	8 /10 bits
		HDR	Supported
	Audio input	Sample Frequency	48KHz
		Sample Depth	24 bits
		Channel Layouts	PCM 16 channels
	Video output (Playback)	Resolution	(UHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (FHD) 1920 x 1080p 23.98, 24, 25, 29.97, 30,50, 59.94, 60 (FHD) 1920 x 1080p 50, 59.94, 60 (level B) (Option) (FHD) 1920 x 1080i 50, 59.94, 60 (HD) 1280 x 720p 50, 59.94, 60 (SD) 576i 50 & 480i 59.94, 60 (Option)
		Pixel Format	NV16 / YUY2 / v210 / P210 / RGB
		Sampling	422/420
		Bit Depth	8 /10 bits
		HDR	Supported
	Audio output	Sample Frequency	48KHz
		Sample Depth	24 bits
		Channel Layouts	PCM 16 channels
	Ancillary Data		Supported

**Specifications (Cont.)**

IP Video (25G SFP+)	Feature List	ST 2110-20 - Uncompressed video transport with RTP payload (up to 4 streams) ST 2110-21 - Narrow (linear) sender ST 2110-30 - PCM Digital Audio (up to 4 streams) ST 2110-31 - AES audio with both linear PCM and non-PCM data (up to 4 streams) ST 2110-40 - RTP payload based transport of SMPTE ST 291-1 Ancillary Data Packet (up to 4 streams) PTP - Profile AES67/SMPTE2059-2, Multicast & Mixed SMPTE ARP, IGMPv3 support ST 2022-7 seamless protection switching	
	Internet Protocol	Supports IPv4 static IP setting	
	Video	Resolution	(UHD) 3840 x 2160p 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (FHD) 1920 x 1080p 50, 59.94, 60 (HD) 1920 x 1080p 23.98, 24, 25, 29.97, 30 (HD) 1920 x 1080i 50, 59.94, 60 (HD) 1280 x 720p 50, 59.94, 60
		HDR	Supported
	Audio	Audio Formats	ST 2110-30 (PCM 8 channel) +ST 2110-31 (PCM or AES3 8 channel) or 2x ST2110-30 (PCM 8 channel)
Channel Layouts		PCM 16 channel	
Ancillary Data	ST 2110-40 / RFC 8331 - ancillary data in RTP stream support		
Toolkit	OS	Above Linux Kernel 5.15	
	Development Kits	Capture / Playback / PCIe card management	
Physical Characteristic	Interface	Input	12G-SDI x 4 Shared (BNC type) 12G-SDI channel: 4ch Audio: SDI embedded audio 25G SFP+ (ST-2110) input PCIe Gen3 x8 input
		Output	12G-SDI x 4 Shared (BNC type) 12G-SDI channel: 4ch Audio: SDI embedded audio 25G SFP+ (ST-2110) x 1 output PCIe Gen3 x8 output
	Power Consumption	< 35W	
	Dimensions	PCI Express 3/4 Length Full Height 254 (L) x 126 (W) x 21.5 (H) (mm)	
Environmental	Operating Temperature	0 to 45 °C	
	Non-operating Temperature	-40 to 85 °C	
	Operating Humidity	95% RH @ 40°C, non-condensing	
	Non-operating Humidity	95% RH @ 40°C, non-condensing	
Multi Video Path Switch	Model 1: Video Acquisition	25G SFP+(ST-2110): video input 12G-SDI: video input PCIe Gen3 x8: video RAW output	
	Model 2: IP Video Gateway	25G SFP+(ST-2110) video input to 12G-SDI video output PCIe Gen3 x8: video RAW output	
	Model 3: IP Video Gateway	12G-SDI video input to 25G SFP+(ST-2110) video output PCIe Gen3 x8: video RAW output	

**Ordering Information**

Part number	Description
VEGA-3321-I0F3	UHD Broadcasting IP Video ST-2110 gateway and acquisition accelerator card

