DuetE-5 • Encoder | DuetD-5 • Decoder

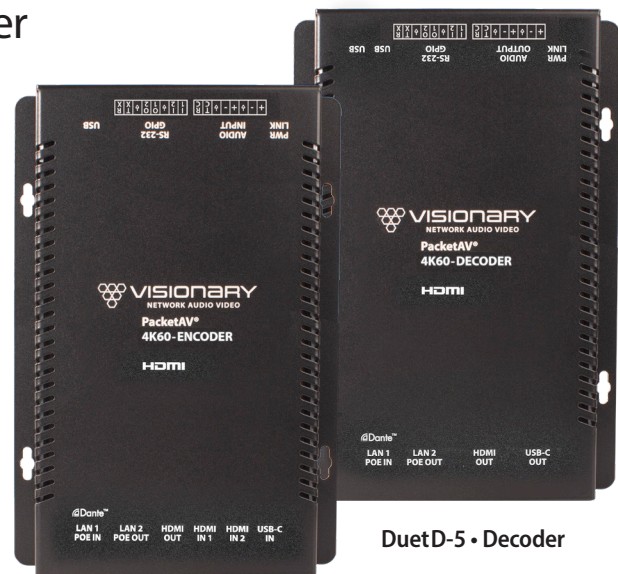## Distribute 4K60 4:4:4 & Dante® / AES67 over Gigabit Ethernet

Overview

Building on the groundbreaking success of the PacketAV® Duet-2, Visionary Solutions proudly presents the next-generation Duet-5 4K60 4:4:4 capable 1GbE AV over IP encoder and decoder. This cutting-edge solution continues to redefine networked AV, converging Dante®/AES67 audio and Video over IP on a single platform.

The Duet-5 supports 4K60 4:4:4 video and Dante®/AES67 audio over a single Gigabit Ethernet port, streamlining connectivity and enhancing efficiency in AV installations. With USB-C integration, the Duet-5 offers seamless soft-codec integration and compatibility with a wide range of peripherals for an even more versatile AV experience. The Duet-5 delivers 4K60 4:4:4 video with ultra-low latency of sub-frame, ensuring visually lossless, cinema-quality video performance.

Bypassing traditional switch matrix distribution constraints, Visionary's encoders and decoders harness the power of converged IP networks, providing exceptional flexibility and scalability for professional AV and IT applications.

Compatible with industry-standard IP networks, Visionary's PacketAV® and PackeTV® products can be deployed on existing enterprise networks or separate private networks for dedicated video traffic. This versatile approach simplifies installation while

DuetD-5 • Decoder

DuetE-5 • Encoder

accommodating the increasing demand for 4K UHD video in corporate, educational, medical, and government environments.

The Visionary Solutions Duet-5 4K60 4:4:4 capable 1GbE encoder and decoder sets a new benchmark in AV over IP technology, combining cutting-edge features with the proven reliability and performance of the Duet-2. Elevate your AV installations with the Duet-5, the ideal solution for delivering stunning visuals, flexible audio routing, and advanced network capabilities to meet the demands of today's professional AV environments.

Features

4K60 4:4:4 Video Support

- Experience ultra-high-definition video with 4K resolution at 60 frames per second and full 4:4:4 color sampling for unparalleled image quality, suitable for professional applications where every detail matters.

Isochronous USB 2.0 over IP

- Enables real-time data transfer for USB devices, such as webcams and microphones, over the network. This feature simplifies the deployment of video conferencing solutions and offers greater flexibility in AV system design. By leveraging the AV over IP infrastructure, it allows seamless integration and extension of USB peripherals.

Single Main Gigabit LAN Port for 4K60 4:4:4 Video, Dante®/AES67, Control, and Powered Device (PD)

- A single Ethernet port for Video over IP and Dante®/ AES67 audio embedding and de-embedding, with VLAN tagging capability to separate Audio & Video network traffic as needed

Full Motion MJPEG Substream

- Maximize bandwidth efficiency and enhance video quality with a full motion MJPEG substream, delivering smooth, high-quality video feeds for preview or monitoring purposes without impacting the primary 4K60 4:4:4 video stream.

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Features cont.

Ethernet Expansion Port - Power Sourcing Equipment (PSE)

- This port enables network connectivity for control and IP traffic pass-through to remote LAN devices (ex. displays, projectors, control touch-panels).

- The port can also be used to daisy-chain multiple endpoints for easy video wall creation or extend distances to displays

USB-C Connectivity

Encoder: USB-C Input

- Connect easily and share media from your Mac, Laptop, Tablet, Mobile, and Other USB-C enabled devices

- *Note: Not all devices will be compatible; Source devices must support DisplayPort Alt Mode for USB Type-C or Thunderbolt.*

Decoder: USB-C Output

- Enables soft-codec integration via driverless USB 2.0 connection to a PC for web conferencing applications such as Zoom, Skype, Cisco WebEx, and Microsoft Teams

- Capture, record, and stream meetings, presentations, conference cameras, and security footage directly to your PC

- Dynamically switch and view decoder output on your PC for recording, editing, videoconferencing, and streaming applications

- Use the PC streaming software of your choice and live broadcast your signal to any online video platform

- Bridge Dante®/AES67 audio into soft-codec via USB-C

- Eliminate distance limitations with USB cables and extension - access right where you need it, close to every device that needs it

- USB Video Class (UVC) - compliant, a video capture standard that's compatible with Mac OSX, Windows®, Linux® and Android operating systems

- Output Resolutions up to 4K30

Dynamic OSD text overlay capabilities

- The ability to overlay dynamic or fixed text on screen enables displaying of alerts, announcements, special instructions, clocks / timers, schedules, and other messaging

Power connected devices with PoE pass-through

- Encoders and Decoders only require standard PoE power (15w or lower), however, when PoE+ is supplied to the Main LAN port you can pass-through PoE power to devices connected to the Ethernet Expansion Port

Multiple selectable local input sources w/ HDMI loop-through (Encoder)

- 2 x HDMI® and 1 x USB-C input and 1 x HDMI output

- Switching between the three inputs can be performed automatically using auto-switching (input detect) mode, programmatically via a control system, or through a web browser

- HDMI loop-through: display any of the three locally connected sources

Enterprise Level Security –AES Encryption, 802.1x, HTTPS, SSH

Enterprise applications demand a secure Network AV solution

- AES Stream Encryption - The Advanced Encryption Standard, or AES, is a worldwide standard and was adopted as the standard encryption algorithm by the U.S. government for encrypting classified information

- HTTPS Secure API - Using secure SSL/TLS communications HTTPS provides integrity that a client is communicating with the real API and receiving back authentic data. It also ensures privacy for applications and users using the API

- 802.1x Authentication for Network access control - 802.1X provides a secure authentication mechanism for any device trying to access a network

- SSH Network Protocol - SSH is a network protocol used to remotely access and manage a device through command line communications. The key difference between Telnet (used by other AV over IP manufacturers) and SSH is that SSH uses encryption, which means that all data transmitted over a network is secure

HDMI 2.0 and HDCP 2.2, 2.3 Compliant

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Features cont.

Mass Configuration

- Auto Discover all endpoints on the network, export to .CSV file (all configurable parameters included), make changes offline, upload .CSV file through embedded web page of encoder/decoder and push configuration to the network
- No external software required – mass configuration capabilities built into the endpoint embedded webpage UI

LLDP Support

- Link Layer Discovery Protocol (LLDP) is a protocol used by network devices for advertising their identity, capabilities, and neighbors on a local area network based on IEEE 802 technology
- Allows for dynamic control of endpoints based on automatic discovery of physical location

QoS Support

- Quality of Service (QoS) is an advanced feature that prioritizes network traffic resulting in performance improvement for critical network traffic

Control

- Vision Lite Control Software
- 3rd Party Control Drivers [Crestron, QSC, Symetrix, RTI, etc.]
- *API providing access to the full range of features on the encoders and decoders offered to qualified System Integrators

Seamless Fast Switching

- Tearing free, no black screen, no frame lock

Independent Routing

- Independently route all signals with the ability to separately matrix video, audio (including Dante®/AES67), USB, IR, and serial (RS-232)

Auto Video Scaler

- No need to worry about configuring the source resolution
- 4K in/1080P out, 1080P in/4K out

Dynamically Optimized (Adaptive) bit-rate compression CODEC w/ built-in AI

- Visionary's highly efficient video compression codec is a modified full frame encoding that dynamically optimizes for fine lines (computer generated graphics) or motion video by using sophisticated AI to analyze the input source content. Actively matching the level of compression to a scene by leveraging periods of low motion video content reduces the stream's size and enhances performance - enabling, without compromising image quality, Visually Lossless transmission of computer generated graphics or full-motion video sources.
- Adjustable Video Bitrate: (50 – 200 Mbps or Auto [800Mbps max])

GPIO - 2x2 I/O User Configurable

- Control third party devices from any endpoint on the network

USB 2.0 over IP (KVM), RS-232 over IP, IR over IP, and CEC over IP

- Control practically any remotely located device using USB devices and interfaces
- Also supports KVM over IP
- Control any device with an RS-232 interface
- HDMI CEC signal extension over IP
- Seamlessly control infrared devices

KVM Multi Display Roaming

- Switch keyboard and mouse control automatically and seamlessly between PC's by moving the cursor across the boundaries of a display and 'roaming' to adjacently mapped displays.

Built in Video Wall Functions

- A Single platform to support distributed displays and Video Walls; without separate expensive video wall processors and controllers
- Enhanced Video Wall functionality – supports video rotation 180/270 degrees
- Easily create video walls using normal commodity displays
- Built-in video wall processor that allows you to build up to a 16×16 video wall

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Benefits

- A single Gigabit LAN Port for PoE Power, 4K60 4:4:4 Video, Dante®/AES67, and Control

- Secure Network Isolation - VLAN Tagging separates AV traffic on the corporate network

- One LAN drop to decoder enables local IP control of connected devices through Ethernet expansion port

- Built in connectivity for web conference soft-codec AV integration

- Eliminates need for separate AV Bridging hardware

- Capture, record, and stream meetings directly to PC (USB-C)

- Effortlessly share media from your USB-C enabled devices

- Acts as an in-rack or Bring Your Own Device (BYOD) endpoint for presentation sharing and conferencing applications

- Local input switching

- Easy Control Integration

- Ultra-low Latency [Sub-frame ~2ms visually lossless]

- Low bitrates

- No fiber or 10 Gigabit switch required

- Low-Cost network switches are used

- Scalable / Unlimited Distribution

- Any number and combination of inputs/outputs [in increments of one]

- Standard network cabling [CAT5e/6]

- Utilize existing network resources

- Rapid deployment

- Single network for AV and IT

- Reduced operating costs

Audio Workflow

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Specifications

Encoding/Decoding	
Video Codec	JPEG2000 based visually lossless video compression algorithm
Audio Codec	Dante® / AES67
Bit Rates	50 to 800 Mbps
Latency	Ultra-Low Latency Sub-Frame (visually lossless video) ~2ms @ 1080p60 & 4K60 4:4:4 ~4ms @ 1080p30 & 4K30
Streaming Protocols	IP, UDP, TCP, ICMP, IGMP
Copy Protection	HDCP 2.2, 2.3 AES-256 Encryption

Video	
Maximum Resolutions	High Dynamic Range (HDR) 4K60 4:4:4 HDR 8 bit 4K30 4:4:4 HDR 12 bit 1080p60 4:4:4 HDR 12 bit 1080p30 4:4:4 HDR 12 bit Supports HDR10, HDR10+, HLG, Dolby Vision
Input Signal Types (Encoder)	2x HDMI & 1x USB-C capable of receiving source input video formats up to 4K60 4:4:4 (DisplayPort Alt Mode for USB Type-C or Thunderbolt)
Output Signal Types	Decoder: 1x HDMI capable of scaling and outputting video formats up to 4K60 4:4:4 Decoder: 1x USB-C capable of scaling and outputting video formats up to 1080p60 4:4:4 Encoder: (HDMI Loop Out) capable of outputting video formats up to 4K60 4:4:4
Switcher (Encoder)	2 x HDMI® and 1 x USB-C input and 1 x HDMI output (manual or auto-switching)
Scaler (Decoder)	Supports a wide range of resolutions and rates, up to 4K in/1080P out, 1080P in/4K out, image rotation, and video wall up to 16x16 Integrated scaling helps optimize image quality and switching performance

Audio	
Input Signal Types	HDMI Audio, Analog Stereo Audio. Dante®/AES67 Network Audio (up to 4 channels) • 1 analog stereo input, unbalanced or balanced • 1 digital input de-embedded from HDMI
Output Signal Types	HDMI Digital Audio (NLPCM pass-through), Analog Stereo Audio, Dante®/AES67 Network Audio • 1 digital audio output via HDMI • 1 Analog Stereo Audio balanced output • 1 Dante/AES67 digital audio output (up to 4 channels)
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby True HD, Dolby Atmos, DTS ®, DTS-ES, DTS96/24, DTS-HD High Res, DTS-HD Master A udio, DTS:X, LPCM up to 8 channels.
Analog Formats	Stereo 2-channel
Analog-To-Digital Conversion	24-bit 48 kHz
Digital-To-Analog Conversion	24-bit 48 kHz
Dante™/AES67	24-bit 48 kHz
Analog Output Volume Adjustment	-80 to +20 dB

Communication & Control of External Devices	
Ethernet	Network connectivity for control and IP traffic pass-through to remote LAN devices
USB	USB 2.0 host or device signal extension and routing
GPIO	For extension and control of third-party devices
Serial / RS-232	Bi-directional device control and monitoring
IR	Device control via infrared
HDMI	HDCP 2.2, 2.3, EDID (encoder), CEC (decoder)

Connectors	
LAN 1	8-pin RJ-45 connector, female; 100BASE-TX / 1000BASE-T Ethernet port / PD port POE+ (IEEE 802.3at), POE+ Only required for LAN2 PSE
LAN2	8-pin RJ-45 connector, female; 100BASE-TX / 1000BASE-T Ethernet port / PSE port POE (IEEE 802.3af)
HDMI INPUT 1 & 2 (Encoder)	(2) HDMI Type A connectors, female; HDMI digital video/audio inputs
HDMI Outputs (Encoder loop-through & Decoder output)	HDMI Type A connectors, female; HDMI digital video/audio inputs
USB-C	Encoder input: (1) USB Type C connector, female; Decoder output: (1) USB Type C connector, female;
1st - 8 pin Euroblock 3.81mm pitch connector	Encoder Stereo Balanced Analog Audio Input Decoder Stereo Balanced Analog Audio Output
2nd - 8 pin Euroblock 3.81mm pitch connector	Shared GPIO / RS-232 / IR ports
USB Host (Decoder)	(2) USB Type-A connector, female; USB 2.0 host port; USB signal extender port for connection to a mouse, keyboard, or other USB 2.0 device
USB Device (Encoder)	(1) USB Type-B connector, female; USB 2.0 device port; USB signal extender port for connection to a computer or other USB 2.0 host

Power	
Power Consumption	12 W typical

Environmental	
Cooling	Convection / no fan (no moving parts)
Temperature	32° to 104° F (0° to 40° C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	41 BTU/hr
Acoustic Noise	0 dBA

Form Factor	
Dimensions	Height: 1.1 in. (28 mm) Width: 5.75 in. (146 mm) Depth: Encoder 8.86 in. (225 mm) Decoder 9.05 in. (230 mm)
Weight	1.0 lb (0.45 kg)

Compliance	
	CE, FCC, C-tick, RoHS, WEEE

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Dimensions

9.05" – 230 mm
Decoder

DUET 5
Encoder & Decoder

Top

8.86" – 225 mm
Encoder

5.75" - 146 mm

1.1"   28 mm

DuetE-5 • Encoder

1.1"   28 mm

DuetD-5 • Decoder

4.80" - 122 mm