Dante AV™ Network AV Encoder/Decoder

Dante AV Transceiver
Joins the Dante Audio Family
Bolin’s D20 Series device can be programmed as an encoder or a decoder. D20 Series is a single channel networked AV over IP transceiver that is fully compatible with Dante audio devices within a Dante ecosystem for HDMI sources up to 4K60Hz 4096 x 2160, with embedded audio and PTZ camera movement control via IP or IR pass-through. It provides audio and video streaming over a standard gigabit network and D20S/D20H models as decoders output baseband video, either HDMI or 12G SDI, to work in professional AV applications.

It features advanced high-quality YUV4:4:4, ProAV optimized JPEG2000 lossless video compression technology and HDCP 2.2 compliant achieves ultra-low latency with 100% audio video synchronization when paired using Dante AV encoder and decoder.

- **Ultra-Low Latency**
- **Up to 4K60 High-Quality Image**
- **Lip Sync Issue Free, 100% Synchronized Video and Audio**

**Dante Ecosystem Friendly**

- Instant compatibility with over 3000 existing Dante-enabled products.
- Unified control of camera audio and video using familiar tools - Dante Controller
- No need to replace network infrastructure. Dante AV works with already installed cost-effective 1Gbps network gear.
- Fully compatible with existing Dante ecosystem applications: House of Worship, Video Conferencing, Live Production, Broadcast, Live Performance, Hospitality, Stadium, Sports Bar, Corporate, Education.
Bolin D20 Series DanteAV Transceiver
Transports 4K60 4:4:4 video over standard gigabit IP network with ultra-low latency and lossless quality. As part of the Dante family, using standard network switches and CAT5e UTP wiring, D20 Series transceiver delivers a high-performance virtual video matrix routing solution for Dante 4K video application (i.e., demanding conference room and classroom applications). D20 Series transceiver ensures real-time, full-motion 4K60 video performance for multimedia presentations, videoconferencing, and live camera streaming.

Seamlessly integrate with Dante Ecosystem
D20 series transceiver as a stand-alone Dante AV encoder/decoder endpoint seamlessly works with other Dante or Dante AV endpoints over the Dante audio over IP platform using a standard 1 Gbps network. With a rich set of Dante control interfaces, support for Dante Device Protocol, packet bridging, audio plus video and HDCP encryption, and professional onboard scaling, a D20 transceiver can easily connect a Dante AV product with network control into the growing ecosystem of Dante AV and Dante audio-enabled products.
Lossless image with extremely low codec latency
Bolin’s D20 Series Dante AV encoder/decoder incorporates a ProAV optimized implementation of the popular JPEG2000 codec in FPGA, which delivers visually-perfect lossless image up to 4K60/UHD 4:4:4 with < 10ms codec latency.

100% Synchronized video and audio
D20 Dante AV transceiver support sub-microsecond video and audio synchronization by designating a single network clock that always keeps the video in sync with audio regardless of the number of endpoints in the ecosystem, fixing lip-sync problems.

Multi-screen video display routing
As a decoder with unicast/multicast capabilities, the D20 receives the signal from a DanteAV PTZ camera or an encoder and feeds it to a display device via the HDMI and/or 12G-SDI output. Using the Dante Controller software, the decoder can quickly and easily switch between multiple DanteAV endpoints including cameras or encoders on the network, with no need for breakouts or matrix switches to display the video on any number of screens and provide the video for the video router system to use.

HDMI and SDI output
When used as a decoder, the D20 Series transceiver has two models: D20H with HDMI output and D20S with HDMI and SDI outputs. D20S is designed an SDI video processor built-in to convert Dante AV decoded HDMI to SDI (Up to 12G-SDI) signal for ProAV and broadcast video workflow applications.

Encoder/Decoder Configurable
D20H and D20S Dante AV transceiver can be configured as an individual encoder or decoder via a firmware update. For a complete encode/decode solution, you will need separate two devices. Unique firmware to program as an encoder or decoder will be available on www.bolintechnology.com/downloadcenter.

HDMI Output with 4K60 4:4:4 built-in high-quality scaler
The D20 Series has decoded images to output via HDMI 2.0/12G-SDI. Integrated high-performance scaling engine provides downscaling to the encoded source for a wide array of 4K, UHD, HD resolutions to match the different capabilities and requirements of sources, displays, codecs, and other equipment.

Audio transport formats: Dante Audio over IP
Supports standard Dante compatible networked audio streams from encoders and audio interfaces. The received Dante audio streaming can be combined with the video and then output via the HDMI/SDI output.
Implementation of HDCP 2.3 encryption
Adheres to the latest HDCP 2.2 specification for High-bandwidth Digital Content Protection. Allows protected content streams to pass between authenticated devices. HDCP 2.3 over network. (HDCP not with SDI workflow)

Device Control
Used as a decoder, D20 Series has built-in serial (RS-422), which can be used for serial port PTZ joystick controller via Dante Serial/IR Over IP control for connected display, PTZ camera or other devices. Paired with Bolin D412/D220 Dante AV PTZ camera, IP PTZ camera control is available via Dante AV network.

Dante Controller supported
Full setup and control and monitoring of the device is enabled through Dante Controller that delivers standard Dante features such as automatic device discovery and system configuration, making network setup a simple plug and play experience.

Network Connectivity
The D20 Series transceiver includes two RJ-45 1000BASE-T ports that can be used to transport video over a Gigabit Ethernet network. Ports 1 for Dante network primary connection and Port 2 can be used to daisy-chain other endpoints. Port 1 is also capable of receiving power from POE++ IEEE 802.3bt compliant (POE+ IEEE 802.3at backwards compatible).

USB HID and USB OTG
USB control over IP that can be switched and routed alongside the AV signal or separately via a control system allows you to use a USB mouse and/or keyboard to control a remote computer via the Dante network. USB On The Go (OTG) for keyboard and mouse.

Easy Installation
The D20 Series compact enclosure with HDMI secure lock easily mounts onto a flat surface or rack rail (single or dual), Din rail and fits easily behind a wall-mounted or ceiling-mounted flat panel TV display, above a projector, beneath a tabletop, or inside a lectern, AV cart, or equipment cabinet.
# SPECIFICATIONS

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## Encoding/Decoding

- **Encoder/Decoder**: Device can be configured to operate as an encoder or a decoder via firmware/software upgrade. However, the device is not able to simultaneously operate as both an encoder and decoder.

## Video Codec

- **Optimized implementation of JPEG2000 codec in FPGA, Licensed by IntoPIX**
- **Dante API management interface**

## Video Resolutions

- **Supported Resolutions**: 4096x2160p, 3840x2160p, 1920x1080p, 1920x1200, 1600x1200, 1280x720p, 1280x1024, 1024x768, 800x600, 720x576p, 720x480p, 640x480

## Frame Rates (Hz)

- **23.98, 24, 25, 29.97, 30, 50, 59.94, 60**

## Color Space

- **RGB, YCbCr**

## Component Bit Width

- **8-bit, 10-bit, 12-bit**

## Color Sub-Sampling

- **4:4:4, 4:2:2, 4:2:0**

## Bandwidth

- **4k@60 10bit 4:2:2; 500-600Mbps, results may vary depending on network configuration and management settings.**
- **1080p@60 10bit 4:2:2; 150-250Mbps, results may vary depending on network configuration and management settings.**

## Dante Ecosystem Friendly

- **Instant Dante Ecosystem compatibility with existing Dante-enabled products; Unified control of audio and video using Dante tools - Dante Controller**

## Video

- **Built-in HDCP encryption/decryption for video**
- **800Mbps recommended maximum bit rate**
- **Video transport formats: Dante Video over IP**
- **HDR support**
- **HDMI monitor output loop through**

## HDMI IN (when using the device as an encoder)

| HDMI 2.0 Supported Resolutions | 4096x2160p, 3840x2160p, 1920x1080p, 1920x1200, 1600x1200, 1280x720p, 1280x1024, 1024x768, 800x600, 720x576p, 720x480p, 640x480 |
| Frame Rates (Hz) | 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 |
| Colour Space | RGB, YCbCr |
| Component Bit Width | 8-bit, 10-bit, 12-bit |
| Colour Sub-Sampling | 4:4:4, 4:2:2, 4:2:0 |

## MONITOR OUT (when using the device as an encoder)

| HDMI 2.0 Supported Resolutions | 4096x2160p, 3840x2160p, 1920x1080p, 1920x1200, 1600x1200, 1280x720p, 1280x1024, 1024x768, 800x600, 720x576p, 720x480p, 640x480 |
| Frame Rates (Hz) | 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 |
| Colour Space | RGB, YCbCr |
| Component Bit Width | 8-bit, 10-bit, 12-bit |
| Colour Sub-Sampling | 4:4:4, 4:2:2, 4:2:0 |

## HDMI OUT (when using the device as a decoder)

| Format | HDMI 2.0 Supported Resolutions | 4096x2160p, 3840x2160p, 1920x1080p, 1920x1200, 1600x1200, 1280x720p, 1280x1024, 1024x768, 800x600, 720x576p, 720x480p, 640x480 |
| Frame Rates (Hz) | 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 |
| Colour Space | RGB, YCbCr |
| Component Bit Width | 8-bit, 10-bit, 12-bit |
| Colour Sub-Sampling | 4:4:4, 4:2:2, 4:2:0 |

## SDI OUT (when using the device as a decoder)

| Format | - | 12G-SDI |
| HDPCP Protection | - | Does not have output when the source video is HDCP content protected |
| Supported Resolutions | - | 4096x2160p, 3840x2160p, 1920x1080p, 1920x1200, 1600x1200, 1280x720p, 1280x1024, 1024x768, 800x600, 720x576p, 720x480p, 640x480 |
| Frame Rates (Hz) | - | 23.98, 24, 25, 29.97, 30, 50, 59.97, 60 |
| Colour Space | - | YCbCr |
| Component Bit Width | - | 8-bit, 10-bit, 12-bit |
| Colour Sub-Sampling | - | 4:2:2, 4:2:0 |
| Standard | - | SMPTE 292(1.5Gb/s), SMPTE 424, SMPTE 425-A(3Gb/s), SMPTE 2081, SMPTE 2082 With SMPTE352 SDI Metadata Supported |

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All models and specifications are subject to change without notice.
## Specifications

### Audio

Audio Transport Formats
- Up to eight channels at 44.1, 48, 88.2, or 96kHz. HDCP sourced audio channels limited to 48kHz.
- Dante Audio over IP
- HDMI 7.1 embedded audio
- High-quality, low jitter, th on-board clock generator for audio

Bit Depths
- **Input Signal Types (when using the device as an encoder)**: Up to 8 channels to Dante
- **Sample Rate**: 32k to 192k, PCM24
- **ASRC Conversion Range**: 1:8 to 8:1
- **ASRC Latency**: 80 samples (1.6ms @ 48kHz)

### Embedded Audio over HDMI

- **Sample Rate**: 24, 16 and 32 bits per audio sample
- **ASRC Conversion Range**: 1:8 to 8:1
- **ASRC Latency**: 80 samples (1.6ms @ 48kHz)

### Communication/Connector

#### Ethernet

- **Ethernet General**: Standard 1Gbps Ethernet
- **Auto-switching, auto-negotiating, auto discovery, full/half duplex, Dante Controller setup and control**

#### ETHERNET 1 POE

- **IEEE 802.3ab compliant 1000BASE-T Ethernet port**
- **IEEE 802.3bt Type 3 compliant, PoE++ Class 6 (60W)**

#### ETHERNET 2

- **IEEE 802.3ab compliant 1000BASE-T Ethernet port**

#### HDMI INPUT (Encoder only)

- **HDMI 2.0 Type A connector, female; HDMI digital video/audio input**

#### HDMI OUTPUT (Decoder only)

- **HDMI 2.0 Type A connector, female; HDMI digital video/audio output**

#### HDMI MONITOR OUTPUT (Encoder only)

- **HDMI 2.0 Type A connector, female; HDMI digital video/audio output**

#### HDMI OUTPUT (Decoder only)

- **HDMI 2.0 Type A connector, female; HDMI digital video/audio output**

#### USB 1, USB 2 (Decoder only)

- **USB Type-A connector, female; USB signal extender port for connection to a mouse, keyboard**
- **Available Power**: 100 mA at 5 VDC

### Serial Control

- **RS422**: RS-422 compatible with Visca control PTZ camera
- **RJ45**:
- **Control Protocol**: VISCA
- **IR TX, IR RX**: 2-pin 3.5 mm
- **Carrier Frequency**: 38 kHz
- **Supply Voltage**: 3.3V to 5V

### PTZ Camera IR Receiver

- **Front and Back**

### LED Indicator

- **Power**: Board Powered and Active
- **Codec**: Video Codec Active
- **System**: System Status
- **Error**: Software running status
- **Sync**: Dante Clock Slave, synchronization status
- **HDCP**: HDCP status

### Power

- **HDCP 2.3, EDID**:
- **pow er**: IEC60130-10 (JEITA standard RC-5320A) TYPE4 DC power connector; 12VDC 4A power input

### Network - Dante AV

- **Pow er by DanteAV Module**
- **Standard 1Gbps Ethernet**
- **Audio Flow**: x 15 Flow s / 8 Channels per Flow (unicast or multicast)
- **Video Flow**: x 1 Flow / 1 Channel per Flow (unicast or multicast)
- **Hardw are time-stamping, supporting sample-accurate playback**

### General

#### Pow er Consumption

- **Pow er input at 4K60: 28W**
- **Pow er input at 4K60: 40W**

#### Pow er Adaptor

- **Input**: 1.5 A maximum @ 100-240 VAC, 50/60 Hz, Output: 4A @ 12 VDC

#### 12V DC IN has priority over Ethernet 1 POE. Ethernet 1 POE will become active a fraction of a second after 12V DC IN is disconnected.

### Storage Temperature

- **-40 to 100**

### Operating Temperature

- **32° to 104° F (0° to 40° C)**

### Humidity

- **10% to 90% (non-condensing)**

### Heat Dissipation

- **Cooling fan speed adjustable, 3 Level**

### Acoustic Noise

- **NC35 or less, variable with cooling fan speed adjustment**

### Regulatory Compliance

- **CE, FCC Part 15 Class B digital device**

### Dimension

- **216.5x148.35x44mm (LxWxH)**

### Weight

- **2.5 lbs (1.3 kg)**

### Enclosure

- **Chassis**: Metal, black finish, heat dissipation surface, fan cooled; vented rear and sides

### Mounting

- **Included**: HDMI cable secure mount, surface mount for TV display, base mount.
- **Optional**: 19 inch single rack mount, 19 inch dual rack mount, Din rail mount

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ACCESSORIES

BL-PP97
97W High Power POE Injector

VCC-P12-4
12VDC 4A Power Adapter

VCC-CC45RS
RJ45 To RS232/RS422/485 Adapter

B-RM11
Dual Rack Mount Kit

B-RM10
Single Rack Mount Kit

B-BM10
Base Mount Kit

B-DR10
Din Rail Mount Kit

B-SM10
Surface Mount Kit

ORDER INFORMATION

- D10H (HDMI) Decoder Included: • B-BM10 (Base Mount) • B-SM10 (Surface Mount)
- D20H (HDMI) Transceiver Included: • B-BM10 (Base Mount) • B-SM10 (Surface Mount)
- D20S (HDMI, SDI) Transceiver Included: • B-BM10 (Base Mount) • B-SM10 (Surface Mount)

Optional
- B-RM11 (Double Rack Mount)
- B-RM10 (Single Rack Mount)
- B-DR10 (Din Rail Mount)
- BL-PP97 97W High Power POE Injector

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