

# VNP-100 Video Network Processor

*IP/ASI Video Transport w/ Encode/Decode/Transcode*

*The Most Flexible H.264 Full Duplex  
Encoder & Decoder*

- Standalone Video/Audio Codec, or Dual Enc/Dec
- Broadcast quality video/audio transmission over IP
- Low Latency Video/Audio transmission option
- Media Friendly Customer/User Interfaces
- Integrated Loopbacks, Test Patterns, and Alarms
- Configuration via user-friendly WEB interface
- SNMP Management



# VNP-100 Video Network Processor

The VNP-100 Video Network Processor addresses the need for transmitting high quality video, audio, and data over IP and satellite networks in a range of applications, including broadcast (contribution, distribution and transcoding), medical imaging, tele-presence, video surveillance and defense applications. This product supports the multiple profiles of H.264, AVC-I and the MPEG-2 video compression standards and the AAC-LC, HE- AAC, MPEG-1 Layer II and SMPTE302 audio standards. High video quality is supported in both compressed and uncompressed formats for HD and SD signals over IP links. The video capture and compression formats support 10-bit and 8-bit resolution with 4:2:2 and 4:2:0 Chroma processing. The VNP-100 is user configurable for single and dual encoding and decoding, as well as transcoding and codec applications.

## **Broadcast Quality Video & Audio Processing**

The VNP-100 is a standalone, high-quality video encoder/decoder (codec) supporting uni- and bidirectional transmission of real-time video and audio signals over IP Networks. The system enables multiple, user selectable compression algorithms depending on Software and Hardware configuration options. The system also enables transmission of Near-Loss-Less compressed SD & HD video over 10Gb/s IP networks.

## **Multiple Video/Audio user interfaces**

The VNP-100 encoder compresses a Standard- or High Definition video source with accompanying audio signals for transmission over IP Networks.

The Encoder accepts NTSC, PAL composite video formats with analog audio, HDMI video with embedded audio streams as well as SDI/HD-SDI/3G-SDI video signals with embedded audio streams, and AES/EBU Audio signals.

Independent of the encoder configuration, the VNP-100 decoder reconstructs a SD/HD Video signal with accompanying audio signals from an IP packet stream. The recovered video and audio signals are available as base-band NTSC/PAL composite video signals with baseband audio signals, HDMI video signals with embedded audio streams and SDI/HD-SDI/3G-SDI video signals with embedded audio streams.

## **Flexible System configurations**

The VNP-100 is available in bi-directional codec configuration, as well as single and dual Encoder or decoder configurations for uni-directional video/audio transmission for applications requiring high channel density in a small "foot-print" (up to 4 HD and 2 SD V/A channels per 1 RU). The VNP-100 also supports Transcoding between H.264 Profiles and H.264 & MPEG-2 formats.

## **Applications:**

- Broadcast contribution and distribution
- Surveillance (including Real time surveillance)
- Tele-Presence
- Medical imaging
- Tele-robotics

## **Network Interface**

The VNP-100 is equipped with both optical (1/10Gb/s) and electrical network interfaces, supporting 10/100/1000Mbps. Multiple bridged Ethernet interfaces provide flexible installation and interconnectivity options.

## **Powerful Management**

The VNP-100 is remotely manageable via a standard WEB interface and SNMP. Performance monitoring and system configuration capabilities facilitate installation and management in large networks.

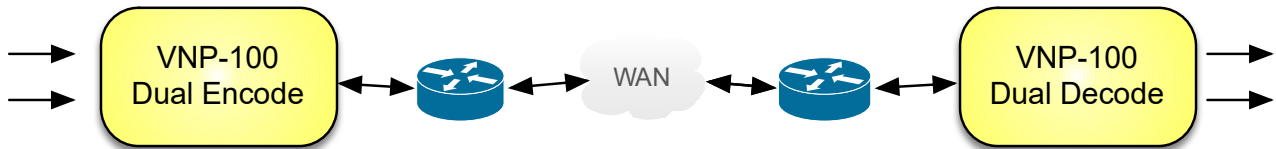
## VNP Key Features

- Video Interfaces: HDMI with embedded audio (up to 8 channels), composite video I/O (NTSC & PAL) and Auto sensing SDI/SDI/HD-SDI/3G-SDI with embedded audio (up to 8 channels)
- Audio Interfaces: Analog baseband, HDMI with embedded or S/PDIF audio, and SDI/HD-SDI/3G-SDI with embedded or AES/EBU audio
- Serial data transmission (RS232, RS422) & RS422 PCM Telemetry
- IRIG-B support
- Managed service latency (Flat line response system) insures signal correlation between services
- IP Encapsulation/De-encapsulation of DVB/ASI Streams or Compressed Video/audio (TS)
- Multiple Video and Audio Compression algorithms
- Compression Latency: 2mS for Low latency compression schemes (Proprietary encoding) for MPEG2/H.264/AVC-I 50/100 compression system Latency: Encoder: 150mS, Decoding: 100mS
- Integral analog and digital video format conversion
- Video picture scaling
- Electrical & Optical Ethernet network/user interfaces
- UDP, RTP IP network protocols, Pro-MPEG FEC, RFC 3366 ARQ, SMPTE 2022-7 Seamless Switching
- Uni-cast and IGMP Multi-cast connections supported for each service
- VLAN with 802.1q Priority and DSCP QoS
- Local and Remote Management
- Multiple System configurations: Bi-directional video Codecs (Encoder/Decoder), Uni-directional Single & Dual Encoders or Decoders and Transcoding between all H.264/MPEG2 Profiles.
- Integrated Managed Ethernet Switch allowing LAN extension and daisy-chaining of Ethernet

**The VNP-100's Full Duplex Encoder/Decoder Flexibility will Simplify your Network.**

<b>4 HD/SD Channels in 1RU</b> <b>19" Rack</b> ★ <b>16 Audio Channels per Video Channel</b> ★ <b>Audio Lead or Lag Adjustment</b> ★ <b>ASI to IP Adaptor</b>	<b>Video, Audio and Data Transmission Platform</b> ★ <b>All-in-One Dual &amp; Single Encode / Decode / Codec / or Transcode</b> ★ <b>Simplex &amp; Full Duplex</b>	<b>Decoder Genlock</b> ★ <b>Custom Matrix Shaping Forward Error Correction</b> ★ <b>Push &amp; Pull Video</b> ★ <b>PTZ Camera Control Channel</b>
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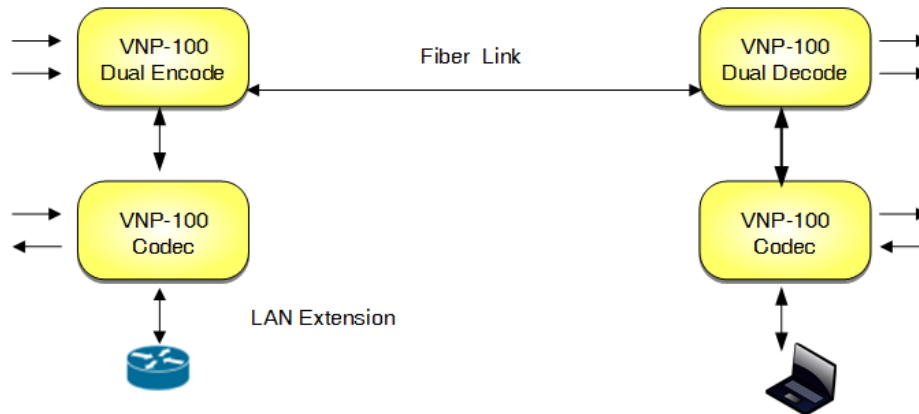
**VNP-100 Applications**



**Figure 1: VNP-100 Uni-directional Single & Dual Encoders or Decoders**

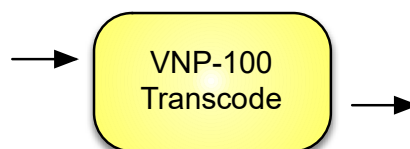


**Figure 2: VNP-100 Bi-directional video Codec (Encoder/Decoder),**



**Figure 3: 2mS Fiber Transmission System**

The VNP-100 is equipped with a SFP connector supporting 10Gb/s fiber optical transceiver interfaces that enable aggregated multi-Gigabits of Video, Audio & Data transport over dark fiber.



**Figure 4: VNP-100 Transcode**

The VNP-100 Media Processor provides an internal loop back of the decoders video/audio output to the encoder. The Decoder can output SDI/HDMI video and a DVB-ASI copy of the received UDP/RTP IP video stream or the transcoded ASI stream [output from the encoder].

## VNP-100 Technical Specifications

### Base System interfaces

#### Baseband Video Input & Output

Composite 1Vp-p Video (PAL B/D/G/H/I/M/N & NTSC M), 75 Ohms unbalanced, BNC connector

#### HDMI Input & Output Interfaces

HDMI (720X480i30 to 1920X1080@60, with embedded audio support for SD & HD video)

#### Baseband Audio

##### Analog Audio Input ports

Density: 1 stereo or 2 mono

Format: balanced

Impedance: > 10Kohms

Max input level: +21 dBu

Connection: DB-9

##### Analog Audio Output ports

Density: 1 stereo or 2 mono; Format: balanced; Impedance: 25 ohms

Max output level: +21 dBu; Connector: DB-9

##### Serial Data port

Density: 1 port Bi-directional (RS232/422)

Connector: DB-9

##### Serial Digital Video/Audio interfaces

##### SDI Video configurable Input or output

Density: 2 BNC connector

Configurable for: 2 inputs or 2 outputs or 1 input & 1 output

Formats: SDI, HD-SDI, 3G-SDI (with support for em-bedded audio up to 4 pairs), DVB/ASI

##### Digital AES/EBU Audio Interface

Density: 2 ports; Configurable for: 2 inputs or 2 outputs or 1 input & 1 output

Format: AES/EBU, balanced 110 ohms; Connector: DB-9

##### Compression Options (Hardware configurations)

**Video:** No-compression (SMPTE 2022-6), MPEG-2, H264, AVC-I 50/100, Proprietary Low latency compression

**Audio:** SMPTE302, MPEG-1 Layer 2, AAC-LC, HE-AAC

##### Remote Management

Built-in Web-based GUI and SNMPv2 and v3

##### Ethernet Network Interface

One pluggable SFP+ module. 1/10Gb/s Base-X; Two RJ45.10/100/1000Base-T

##### Physical Dimensions

1RU, ½-width 19". Two units fit in a 19": (H x W x D) 1.75" x 8.50" x 10.00" (4.45 x 21.59 x 25.54) cm

##### Environmental Conditions

Operating Temperature: 0 to 40°C (32F to 104F)

Storage Temperature: -40 to 70°C (-40F to 158F)

Relative Humidity: 5% to 90% (Non Condensing)

##### Power

100 – 264V AC (47 – 63Hz) < 60W