

# H.264 Video Encoder/Decoder Card Set

## Full-featured H.264 Compression and Transport for MD8000 Users

The H.264 encoder/decoder card set is ideal for MD8000 customers needing to reduce transport network bandwidth while maintaining high video quality.

### KEY FACTS:

- Efficient, standards-based H.264 compression
- Uses “Universal” UVTX/UVRX video cards that support H.264, J2K, SDI, and 4K transport with appropriate firmware update
- Compatible with MD8000 networking equipment
- HD-SDI, SD-SDI and DVB-ASI video support

### KEY FEATURES:

- Adjustable compression, 2 Mbps to 150 Mbps
- Independently compresses one or two uncompressed inputs based on selected GOP mode
- Supports audio/ancillary parameter transport
- SMPTE 2022 standards compliant, including FEC, Hitless switching, and Auto protection

### APPLICATIONS:

- Carrier Class media networks
- Flawless Contribution video transport
- Reliable content delivery systems
- Live sports production
- Remote production



With a user-definable compression rate of 2Mbps to 150Mbps, the H.264 UVTX/UVRX card set gives customers the ability to fine tune network bandwidth vs. video quality to meet their own unique needs. The H.264 encoder operates in one of two different modes; either One GOP (Group of Pictures) or Multi-GOP modes. As part of the H.264 video compression standard, the GOP structure specifies how intra- and inter-frames are encoded. The three frame types used for encoding are I-frames (an independently coded picture), B-frames (bi-predictive coded picture), and P-frames (predictive coded picture).

One GOP encoding offers the highest video quality by using I-frame or P-frame only compression. One GOP mode can be applied independently to Ports 1 and 2 while Port 3 supports uncompressed SDI or DVB-ASI transport.

Multi-GOP encoding (Port 1 only) controls the number of frames in a GOP and can be set for One, Middle, or Long GOP sizes. Ports 2 and 3 support uncompressed SDI or DVB-ASI transport in this mode.

In addition, the H.264 line card processes up to four embedded audio groups using 16, 20, or 24 bit depth. Ancillary data, Forward Error Correction, Hitless Switching, and Auto Protection Switching are also supported.

### SPECIFICATIONS & SUPPORTING PARAMETERS:

Item	Description	Remarks
Inputs	For UVTX line card, HD-SDI, SD-SDI, or DVB-ASI inputs on Ports 1, 2 and/or 3	Port 3 only supports uncompressed SD/HD or DVB-ASI transport. Port 4 is not used.
Outputs	For UVRX line card, HD-SDI, SD-SDI, or DVB-ASI outputs on Ports 1, 2, and/or 3	Port 3 only supports uncompressed SD/HD or DVB-ASI transport. Port 4 is not used.
Video Interfaces	Optical (SFP) or Electrical (BNC Female, 75 Ohm unbalanced)	
Video Formats	DVB-ASI (188 or 204 byte), SD-SDI (525 or 625), HD-SDI 720p (50 or 59.94 Hz), HD-SDI 1080i (50 or 59.94 Hz), plus Auto Selection	
Compression Method	MPEG-4 AVC/H.264, High 4:2:2 profile	Also referred to as ISO/IEC14496-10 Advanced Video Coding
Encoder/Decoder Modes	I-Frame or P-Frame-only (One GOP), Middle GOP, or Long GOP (IP, IBP, IBBP and IBBBP), Closed GOP	Middle GOP sets GOP size = 15 or 16 Long GOP sets GOP size = 30 or 32
Chroma Sampling	4:2:0 or 4:2:2 HD or SD-SDI	
Transmission Format	SMPTE2022-6 for SDI uncompressed and DVB-ASI @270Mbps transparent transmission; or SMPTE2022-2 for SDI H.264 compressed and DVB-ASI TS-Only transmission.	
Transmission Bandwidth	Configurable 2 Mbps ~ 150 Mbps bandwidth per stream.	
Transport Modes	DVB-ASI signals can be transported in either transparent mode or TS-only mode where only effective TS packets are extracted and transmitted.	
Transport Latency	SDI H.264 compressed to I-Frame-only /P-Frame-only: 133ms (1080i/59.94, 720p/59.94, 525i); 160ms (1080i/50, 720p/50, 625i)	SDI uncompressed, DVB-ASI Transparent, DVB-ASI TS Only: 2ms
ID Generator	Built-in SD or HD video color bar generator	Supports user-defined text string up to 16 characters
Audio Encapsulation	SMPTE 302M compliant; 16, 20, or 24 bit audio bit depth; up to four audio groups	Embedded audio = enabled or disabled. Lip sync is controlled within + or - 2 Ms.
Ancillary Data	Packet ancillary based on SMPTE 2038 or Line ancillary (Media Links proprietary)	
Protection Methods	- Forward Error Correction (FEC) - Hitless Switching - Auto Protection Switching	FEC based on SMPTE2022-1 and SMPTE2022-5
Performance Monitoring	Monitors DVB-ASI, packet, board voltage and temperature, and SFP performance and status	Front panel LED indicators for abnormal conditions
Redundancy	Supports Single and Class B, C, and J redundant modes of operation	

### ORDERING INFORMATION:

Model	Order Number	Order Code
Universal 4 port Video Transmitter with H.264 encoding. Available with either optical or electrical rear connector panel	MD801058-G000	MD8000-UVTX-H264
Universal 4 port Video Receiver with H.264 decoding. Available with either optical or electrical rear connector panel	MD801059-G000	MD8000-UVRX-H264
Universal 4 port Video Transmitter - Rear Card (Optical)	MD807033-G000	Not Applicable
Universal 4 port Video Transmitter - Rear Card (Electrical, Coax)	MD807031-G000	Not Applicable
Universal 4 port Video Receiver - Rear Card (Optical)	MD807034-G000	Not Applicable
Universal 4 port Video Receiver - Rear Card (Electrical, Coax)	MD807032-G000	Not Applicable



UVTX H264  
Front Panel



UVRX H264  
Front Panel



UVTX/UVRX H264  
BNC Rear Panel (Electrical)



UVTX/UVRX H264  
SFP Rear Panel (Optical)

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