

# 9992-DEC • AVC / MPEG-2 Software Defined Broadcast Decoder

The Cobalt® 9992-DEC AVC/MPEG-2 Software Defined Broadcast Decoder is a broadcast-grade multi-standard decoder designed to meet the most stringent requirements for today's broadcasters. It supports MPEG-2 and AVC (H.264), with resolution optionally up to 4K, as well as offering a full complement of audio decoding capabilities. The 9992-DEC is an industry standard openGear® card module and provides an ideal platform for transitioning to state-of-the-art decoding capabilities.

## FEATURES

**Future-Proof** – The 9992-DEC Decoder supports MPEG-2, MPEG-4 AVC (H.264) and (optionally) HEVC (H.265), so it can be deployed today and upgraded as your needs change.

**Industry Standard Form-Factor** – The 9992-DEC is offered in the industry-standard openGear format, and is compatible with existing deployed openGear frames.

**High Density** – The 9992-DEC supports a 1080p60 input stream (two independent streams with +AVC option), or (optionally) a single UHD 4Kp60 input stream. One openGear frame can support up to 10 cards, for a total of 20 HD or 10 UHD 4K channels.

**Full Audio Support** – The 9992-DEC supports MPEG-1 Layer II, AAC-LC, HE-AAC, Dolby AC-3/EAC-3 and LPCM (SMPTE-302M), as well as Dolby AC-3/EAC-3 pass-thru. With an optional audio board, the decoder can support up to 16 audio channels with each video service.

**Ultra Low Latency** – Low latency modes available

### Base Unit Features –

Supports all popular formats: 480i, 576i, 720p, 1080i, 1080pSF, 1080p

Support for one decode channel up to 1080p60

Support for MPEG-2 and MPEG-4 AVC (H.264)

Support for 4:2:0 8-bit/10-bit decoding

Full ancillary data support

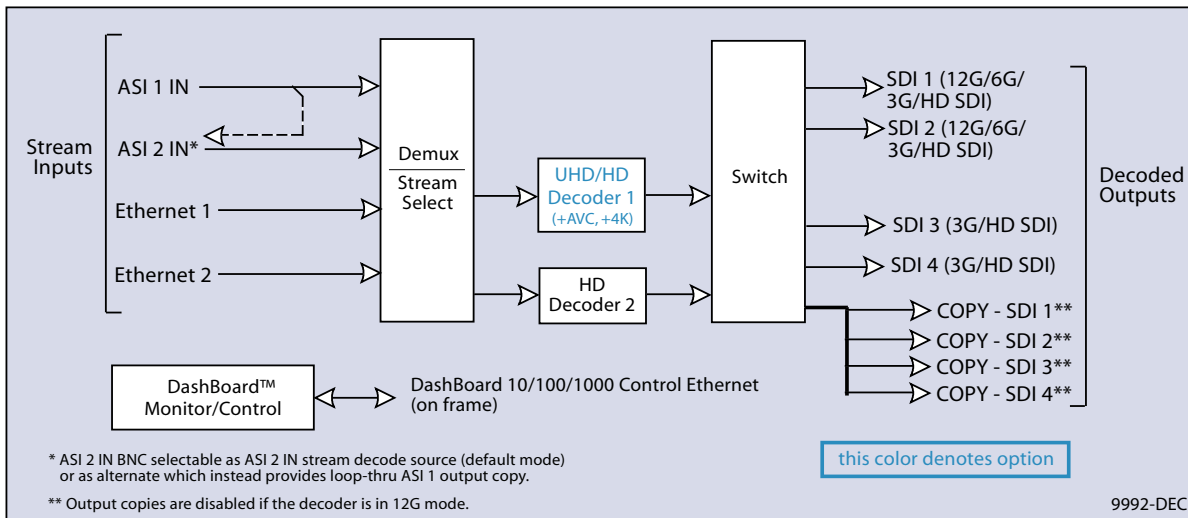
Support for 4 stereo pairs (8 audio channels) in any combination of MPEG-1 Layer II, AAC-LC, and HE-AAC (v1/v2) modes

Supports UDP and RTP. Other protocols available as options.

Remote control/monitoring via Dashboard™ software

Hot-swappable

Five-year warranty



## SOFTWARE LICENSABLE OPTIONS

**+HEVC-DEC** Enables HEVC decoding on one AVC encode engine (up to 2 licenses max per unit).

**+AVC-DEC** Additional 1080p60 decoder channel with MPEG-2, MPEG-4 AVC, HEVC (up to one additional channel, for a total of 2 channels per unit). Includes support for two additional stereo pairs in MPEG-1 Layer II, AAC-LC, and HE-AAC (v1/v2) modes.

**+4K-DEC** 4K support. Requires +AVC-DEC and +HEVC-DEC license on card.

**+422** 4:2:2 decoding support (per unit)

**+DEC-2.0** Dolby Digital/Dolby Digital Plus stereo audio decoding license

**+DEC-5.1** Dolby Digital/Dolby Digital Plus 5.1 Surround Sound audio decoding license

**+FEC-DEC** Add SMPTE-2022 support (per unit)

**+TSMON** – Adds continuous monitoring of current transport stream being decoded. Provides a list of all PIDs available in the transport stream, their current individual bit rates, and keeps numerical track of any continuity counter errors. Can also be configured to watch up to 8 PIDs and issue an alarm if PID disappears for a configurable amount of time. (If SNMP is available, this alarm is also provided as a trap.)

**+GENLOCK** Add Genlock support (license is per channel)

**+MP1L2-AAC-DEC** MPEG-1 Layer II, AAC-LC, and HE-AAC audio decoding per pair. Three AAC licenses can be combined to allow one 5.1 surround decode.

**+RIST/ARQ-DEC** RIST RTP/ARQ support (per unit)

**+RIST/ENCRP-DEC** RIST Encryption/Authentication Support (per unit). (Requires the +RIST/ARQ-DEC license to also be present on the decoder.)

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### SPECIFICATIONS

#### Inputs

- (2) DVB-ASI inputs
- (2) Gigabit Ethernet ports for IP input, supporting the following protocols:
  - UDP unicast/multicast
  - RTP unicast/multicast with optional SMPTE-2022 FEC
  - HTTP Live Streaming
  - RIST for contribution over the Internet
- Optional SMPTE-2110 baseband video over IP turnaround\*
  - \* Future release availability

#### Outputs

- (2) SDI outputs each supporting 12G-SDI, 3G-SDI, HD-SDI and SD-SDI
- (2) SDI outputs each supporting 3G-SDI, HD-SDI and SD-SDI
- Support for all standard frame rates (interlaced and progressive): 23.98, 24, 25, 29.97, 30, 50, 59.94, 60

#### Video Post-Processing

- Support for up/down/cross conversion of output video (independent of incoming stream)\*
- Conversion between interlaced and progressive
- Frame rate conversion
- High Dynamic Range (HDR) support\*
  - \* Future release availability

#### Video Decoding

- Decoding Standards:
  - MPEG-2
  - MPEG-4 AVC (H.264)
  - HEVC (H.265) (Option)
- Support for one 1080p60 decode session (dual 1080p60 decode session support optional)
- Support for UHD decoding (option) in AVC and HEVC modes (Maximum resolution 3840x2160p60)
- Support for 4:2:0 and 4:2:2 (option) color spaces in all modes
- Support for 8-bit / 10-bit decoding in all modes
- Low latency decoding supported

#### Audio Decoding

- Decoding Standards:
  - MPEG-1 Layer II
  - AAC-LC
  - HE-AAC (v1/v2)
  - Dolby AC-3 / EAC-3
  - LPCM (SMPTE-302M)
  - Dolby AC-3/EAC-3 pass-thru support
- (5.1-Surround decoding available for AAC-LC, HE-AAC, Dolby AC-3 and Dolby EAC-3; subject to licensing)
- Maximum number of channels supported (subject to licensing):
  - MPEG-1 Layer II: 16 stereo pairs (32 audio channels)
  - Dolby AC-3: 16 stereo pairs (32 audio channels)
  - Dolby EAC-3: 8 stereo pairs (16 audio channels)
  - AAC-LC: 8 stereo pairs (16 audio channels)
  - HE-AAC (v1/v2) 8 stereo pairs (16 audio channels)
- Optional support for 5.1 Surround Sound decoding, in AAC and Dolby modes.
- Optional audio module: increases the capacity to 32 stereo pairs (64 audio channels), allowing full 16-channel support for the four HD inputs, in all compression modes\*
  - \* Future release availability

#### Ancillary Data Support

- Closed-Captioning: SMPTE-334M (EIA-608 and EIA-708 supported), Line 21 (SD sources)
- OP-47/SMPTE RDD-08 teletext subtitles\*
- AFD: SMPTE-2016, Line 20/22 WSS (SD sources)
- SCTE-35 to SCTE-104 conversion
- SMPTE-2038 generic ancillary data transport (timecode, KLV, etc.)
  - \* Future release availability

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## ORDERING INFORMATION

**Note:** For Software Options and Upgrades, as well as Hardware Options, please see the respective Options sections listed above.

**9992-DEC** Single-channel AVC / MPEG-2 Software Defined Broadcast Decoder (includes (1) +AVC and (2) +MP1L2-AAC licenses)

### Option Licenses:

- +HEVC-DEC Enable HEVC decoding on one AVC encode engine (up to 2 licenses max per unit).
- +AVC-DEC Additional 1080p60 decoder channel with MPEG-2, MPEG-4 AVC, HEVC (up to one additional channel, for a total of 2 channels per unit).
- +4K-DEC Add 4K support. Requires +AVC-DEC and +HEVC-DEC license on card.
- +422 Add 4:2:2 decoding support (per unit)
- +DEC-2.0 Dolby Digital/Dolby Digital Plus stereo audio decoding license
- +DEC-5.1 Dolby Digital/Dolby Digital Plus 5.1 Surround Sound audio decoding license
- +FEC-DEC Add SMPTE-2022 support (per unit)
- +TSMON - Adds transport stream continuous monitoring
- +GENLOCK Add Genlock support (license is per channel)
- +MP1L2-AAC-DEC MPEG-1 Layer II, AAC-LC, and HE-AAC audio decoding per pair
- +RIST/ARQ-DEC Add RIST RTP/ARQ support (per unit)
- +RIST/ENCRP-DEC Add RIST Encryption/Authentication Support (per unit). (Requires the +RIST/ARQ-DEC license to also be present on the decoder.)

### Rear I/O Modules:

**RM20-9992-DEC-B** 20-Slot Frame Rear I/O Module (Standard-Width) (2) ASI Input BNCs, (2) GigE Ethernet Media Ports, (2) 12G/6G/3G/HD-SD-SDI Coaxial Outputs, (2) 3G/HD/SD-SDI Coaxial Outputs, (4) Output Copy Coaxial Outputs, COMM/GPIO Port (All SDI coaxial connectors HD-BNC. See Notes in illustration regarding port functions and limitations.)

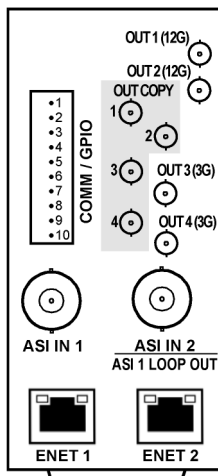
- 1 - GPI 1
- 2 - GPI 2
- 3 - GPO 1
- 4 - GPO 2
- 5 - GPO COM
- 6 - GND
- 7 - RS232-A RX / 422 RX(-)
- 8 - RS232-B RX / 422 RX(+)
- 9 - RS232-A TX / 422 TX(-)
- 10 - RS232-B TX / 422 TX(+)

**Note:** Output ports marked as "12G" can output 12G and lower SDI media.

Output ports marked as "3G" are compatible only with 3G or lower SDI media.

**Note:** ASI IN 2 BNC can be DashBoard selected to function as an ASI copy of ASI IN 1.

**Note:** OUT COPY ports are disabled when card is in 12G mode.



**RM20-9992-DEC-B-HDBNC**