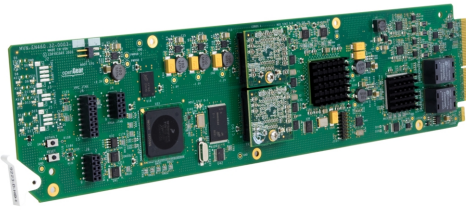# COBALT

9223-D • Dual-Channel 3G/HD/SD MPEG-4 Encoders

The **9223-D Dual-Channel 3G/HD/SD MPEG-4 Encoders** provide a card-based solution for distribution of MPEG-4 encoding. Utilizing the openGear® open-architecture platform, the 9223-D offers scalable incorporation and the easy-to-use DashBoard™ setup and control operator interface. Up to 10 of the 9223-D cards can be installed in a 20-slot frame, offering distribution delivery of up to 20 individual or simulcast channels in a single frame, using less than 150W total, for reduced operating expenses. In addition to SD/HD-SDI inputs, the 9223-D provides the flexibility of supporting SD analog composite video and an analog audio stereo pair per input channel (using MPEG-1 Layer II audio encoding as standard).

The 9223-D offers the latest advances in video compression that delivers excellent video quality at very low bit rates. Unique encoding designs allow delivery of multiple HD and SD video services simultaneously. In addition to two ASI outputs, the 9223-D provides two Ethernet outputs, supporting full-duplex 100 Mb/s and 1 Gb/s operation. Input video auto-detect mode allows encoding to automatically configure an output that correspond to the input, with resolution and frame rate same as input, and scaling set to same as input or other applicable choices.

When using the Ethernet output, the 9223-D supports the traditional UDP/RTP/SPMTE 2022 FEC protocols, as well as the HTTP Live Streaming protocol for transmitting live video over the Internet. Using HTTP Live Streaming, the 9223-D can transmit broadcast-quality video to mobile phones (Apple and Android 4.0 supported), tablets, and a variety of consumer set-top boxes (such as the Amino A140 and the Roku Player).

RTMP support allows direct publishing of real-time, live content to Adobe® Media Servers or any other servers, web sites and CDNs with RTMP ingress, such as Justin.tv, UStream, LiveStream and Akamai. Publish professional-quality real-time SD/HD content to Internet viewers (including some critical features not available in PC-based software encoders) such as ancillary data support (closed-captioning, AFD) and SD-SDI/HD-SDI video inputs with embedded audio support – all in broadcast-grade video quality. SMPTE-2038 processing allows inserting generic ancillary data packets in the transport stream, with frame accuracy. Up to four DID/SDID pairs can be supported. Full user remote monitor/control allows full card status and control access across a standard Ethernet network. Status monitoring is also available at card edge.

9223 encoders are also available in single encoding channel configuration. For 9223 single-channel encoder models information, please see **9223-S Single-Channel 3G/HD/SD MPEG-4 Encoders** web page.

FEATURES

- Card-based design allows scalability, from 2 channels to 20 channels per frame
- Input video auto-detect mode automatically configures output to correspond to input frame rate and scaling
- Low power/high-density design; only 6 Watts per card
- DVB-ASI and Ethernet outputs
- Full support of CEA-608 and CEA-708 closed captioning and PMT information. Closed-captioning filtering allows filtering to allow and use only SMPTE-334M and/or CEA-708 closed captioning.
- SCTE 104 to SCTE 35 conversion

- Support for inserting generic ancillary data packets in the transport stream using SMPTE-2038, with frame accuracy. Up to four DID/SDID pairs can be supported.
- License-based options allow tailoring functionality as needed, with upgrades available if later desired
- Built-in video/audio ADC and embedder allows direct use with SD composite video and audio analog sources
- RTMP support for publishing to Adobe® Media Server, availing SDI content to Internet viewers
- Optional support for additional audio pairs
- HTTP Live Streaming protocol allows viewing by Apple® and Android™ 3.0 (or higher) devices

- Multi-angle support allows creation of transport streams with two synchronized video PIDs
- Optional RTP/ARQ support
- Built-in Packet Test Generators allow pre-validation of transport
- Multiple pre-defined control templates provide automatic setup of popular contribution-to-distribution schemes
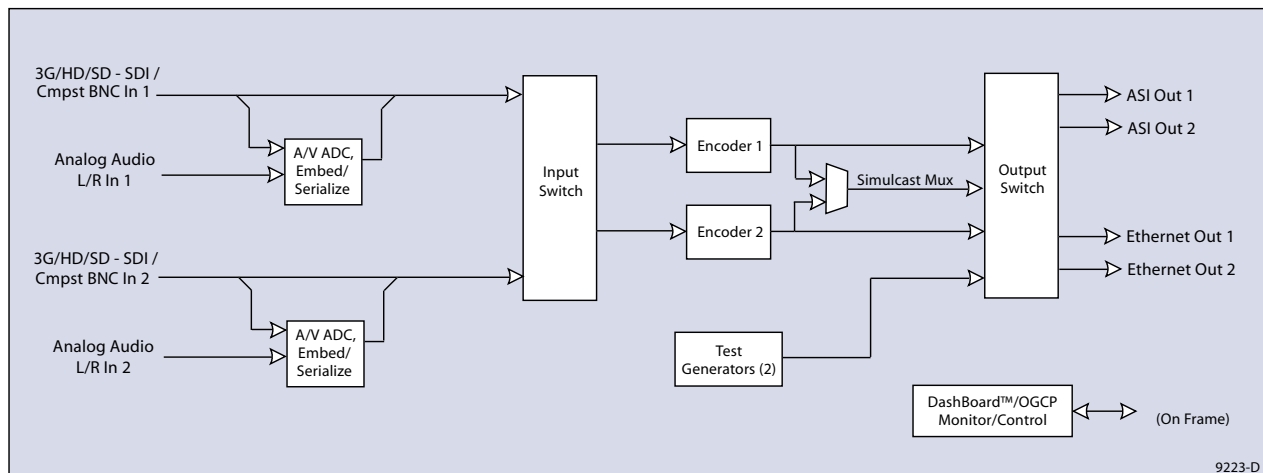- Remote control/monitoring via DashBoard™ software
- Hot-swappable
- Five year warranty

OPTIONS

Please see Ordering Information

9223-D

openGear

SPECIFICATIONS

Power
6W

3G/HD/SD-SDI Inputs
Number of inputs: (2) each configurable as:
3G-SDI (SMPTE 424M)
HD-SDI (SMPTE 292M)
SD-SDI (SMPTE 259M) with EDH
Composite analog video (PAL/NTSC)

Audio Inputs Supported
Embedded SDI, AC-3 (optional)
(2) L/R pairs (max) of analog audio embed

Video Encoding
Dual-channel HD Video:
MPEG-4 AVC High profile at level 4.2 (HP@L4.2)
MPEG-4 AVC High profile at level 4.0 (HP@L4.0)
CBR, VBR
2Mbps to 30Mbps (configurable)
Dual-channel SD Video:
MPEG-4 AVC Main profile at level 3.0 (MP@L3.0)
CBR, VBR
1.5Mbps to 10 Mbps (configurable)

Audio Encoding
MPEG-1 layer II, up to 2 stereo pairs base (Dolby® pass-thrul)
MPEG-4 AAC-LC up to 2 pairs
Lip sync adjustment

Video Resolution Supported
HD: 1920 x 1080p 60/50/30/29.97/25
1080 x 1920/1440i 30/29.97/25
1280 x 720/960/640p 59.94/50/30/29.97/25
SD: 576 x 720/528i 29.97fps
576 x 720/528i 25fps

Video Pre-Processing
Advanced adaptive spatial filtering
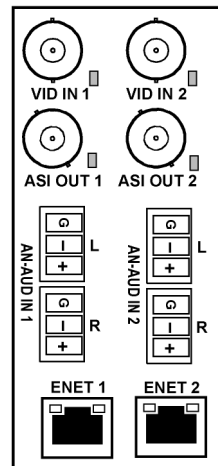Closed Captions CEA 608B and CEA-708C
WSS/AFD

ASI Outputs
Number of outputs: (2) 75Ω BNC DVB-ASI
213Mbit/s maximum ASI TS bit-rate per port
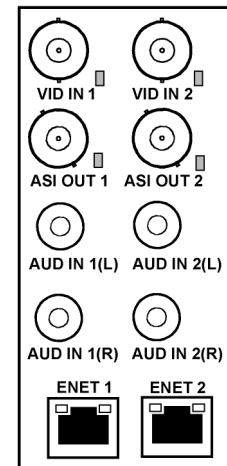
Ethernet
Number of control/monitor connections: (2) redundant 10/100Base-T RJ-45
Number of transport outputs: (2) 100/1000Base-T RJ-45
ports, auto-negotiate or fixed speed
IPv4, IPv6, UDP, RTP
SMPTE 2022 ProMPEG FEC CoP3, 'Forward Error
Correction' (Row and Column)

Regulatory Compliance
CE: CE marked in accordance with 93/68/EEC
(22/07/03) Directive
UL: UL approval
US FCC: Part 15
EMC: EN55022, EN55024, EN6100-3-2

RM20-9223-B

RM20-9223-U

ORDERING INFORMATION

9223-D Dual-Channel 3G/HD/SD MPEG-4 Encoder with H.264 SD

9223-D-HD-I Dual-Channel 3G/HD/SD MPEG-4 Encoder with H.264 SD/HD up to 1080i

9223-D-HD-P Dual-Channel 3G/HD/SD MPEG-4 Encoder with H.264 SD/HD up to 1080p

RM20-9223-B 20-Slot Frame Rear I/O Module (Standard Width) (2) 3G/HD/SD-SDI/SD BNC Composite In, (2) DVB-ASI BNC Out, (4) Balanced Analog Audio In, (2) 100/1000Base-T RJ-45 Ethernet

RM20-9223-U 20-Slot Frame Rear I/O Module (Standard Width) (2) 3G/HD/SD-SDI/SD BNC Composite In, (2) DVB-ASI BNC Out, (4) Unbalanced Analog Audio RCA In, (2) 100/1000Base-T RJ-45 Ethernet

Options:

Note: - Unless indicated as program channel or audio channel pair license, licenses below are **card-based** licenses and require **only one license per card**.
   - Options denoted as "+" are software-based options which can be fitted on new product at ordering or field-installed as a software upload upgrade. Options denoted as "-" are hardware-based options which are factory-installed upon ordering, or factory-installed by returning fielded product to Cobalt for option installation.

-D-SD-HD-I Upgrade License; Upgrade (1) SD Channel to HD up to 1080i

-D-SD-HD-P Upgrade License; Upgrade (1) SD Channel to HD up to 1080p

-D-HD-I-HD-P Upgrade License; Upgrade (1) HD 1080i Channel to HD 1080p

+RIST/ARQ-ENC Automatic Repeat Request License, Error Correction Assigned For Live Video Over IP / Internet Based on the Reliable Internet Streaming Transport (RIST) Standard

+UP-AAC AAC Audio License; Add (1) AAC-LC Stereo Channel

+2A Additional Audio Pair License

+SMPTE2022 SMPTE 2022 FEC License

— Audio Capacity (Base and with Audio Add Option Licenses +2A or +UP-AAC) —

Base – (2) standard MP1L2 encoding licenses on 2 PIDs.
Add PIDs:
– Can have 4 audio PIDs total (2 additional +2A licenses or 2 additional +UP-AAC licenses).