

20 CELEBRATING
20 YEARS
OF INNOVATION

VIDEO TRANSPORT
IP / FIBER / COMPRESSION

COBALT



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OF INNOVATION

VIDEO TRANSPORT

ENGINEERING BEYOND THE SIGNAL STARTS WITH INNOVATION.

We are passionate about moving high-quality audio, video, and data signals around inside and outside of the building. Cobalt's line of video transport products provide the professional level signal transport and processing tools you need to optimize your work flow at just about any stage in the path. These products represent the most comprehensive lineup of fiber optic converters, MPEG encoders, decoders, transcoders and IP gateways in the openGear® platform. Highly scalable and cost effective, Cobalt's signal transport and processing systems offer a unique set of features that provide benefit in a wide range of applications.

COBALT

openGear

BBG000

BLUE
BOX



VIDEO TRANSPORT SOLUTIONS IP / FIBER / COMPRESSION

The Cobalt lineup of MPEG2 and H.264 products offer a comprehensive solution for transporting audio and video signals over virtually any type of network. Broadcast and Enterprise signal contribution via the Internet is made possible with end-to-end support for RTMP and RTSP streaming protocols and with support for industry standard Multicast, UDP/RTP, and DVB-ASI interfaces. Cobalt's DTV products can easily be integrated into traditional broadcast system architectures.

Cobalt continues to expand its line of video and audio transport products with the addition of ST 2110 & ST 2022-6 Encapsulators / De-Encapsulators for openGear® and the compact BBG form factor. For enhanced value and system design possibilities, the openGear® version is built on Cobalt's flexible 3G/HD/SD-SDI AES/Analog Audio/Data Embedder and De-Embedder platform.

All Cobalt fiber optic transport cards are available with CWDM lasers for optimized fiber strand utilization and the 9490 Series of openGear card CWDM multiplexors can support 16 wavelengths in just 4 cards. These Muxes and De-Muxes are fully passive and support high-capacity, bi-directional transport over one fiber.

9220

IP/ASI Bi-Directional Media Gateway

9223

MPEG-4 AVC Broadcast Encoder

9990-ENC-H264-IP

Streaming Encoder

9990-TRX-MPEG

Broadcast Transcoder

9990-DEC-MPEG

MPEG-2 & MPEG-4 AVC Decoder

9991-SDI-TO-IP-10GE

3G/HD/SD-SDI To IP Encapsulator with AES / Analog Audio Embed / De-Embed and 10GigE IP Optical Interface

9991-IP-TO-SDI-10GE

3G/HD/SD-SDI From IP De-Encapsulator with AES / Analog Audio Embed / De-Embed and 10GigE IP Optical Interface

9410DA Series

3G/HD/SD-SDI / ASI / MADI Fiber Optic Transmitters, Receivers, & Transceivers

9415DA-SFP

Configurable SFP Transceiver

9433-EMDE Series

3G/HD/SD-SDI with Analog & AES Embedding / De-Embedding

9450GT

Fiber Ethernet Switch Transceiver

9490CWDM

Multi-Channel Fiber Optical Multiplexers and De-Multiplexers

9490-OS Series

Fiber Optic Passive Splitters

9220

IP/ASI BI-DIRECTIONAL MEDIA GATEWAY

The 9220 Media Gateway is the market-leading high-availability solution, enabling transmission of real-time video over IP networks. The flexible openGear® platform provides operators with a powerful, cost effective solution for processing or format converting DVB transport streams. The 9220 Media Gateway module is a high-performance real-time MPEG video processing solution that supports bi-directional Transport Stream to IP encapsulation as standard.

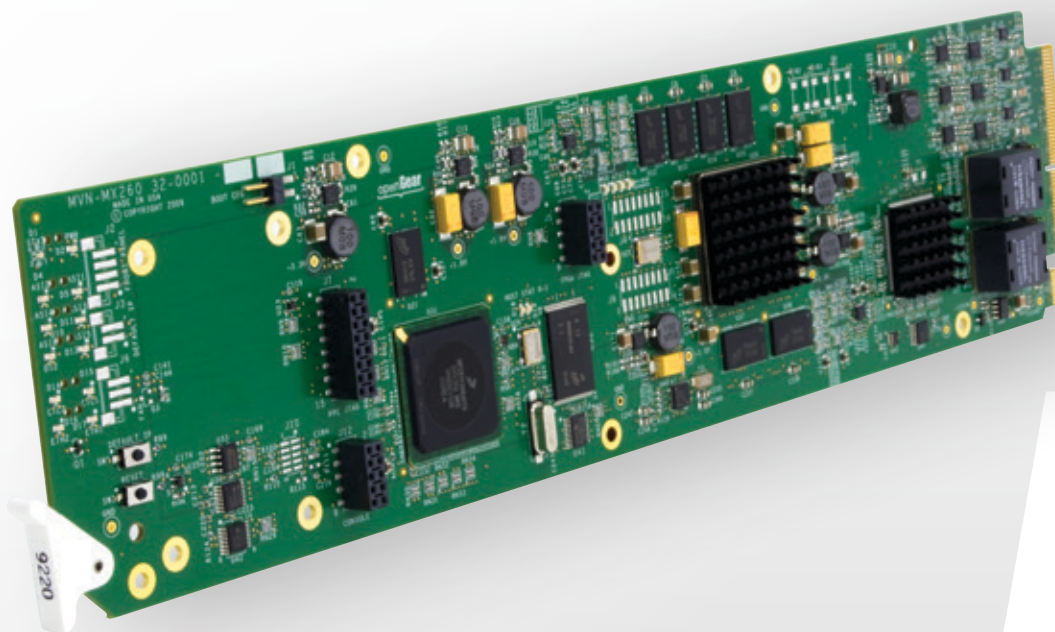
The 9220 is fully bi-directional in both the ASI and IP domain and can be software licensed to enable enhanced Transport Stream processing and multiplexing functions. State-of-the-art processing combined with the unique MediaCore processing core enables new system architectures to be created allowing content to be freely distributed over IP networks.

Based on the openGear® architecture, the 9220 has been designed to meet the demanding requirements of post-production, contribution, and distribution applications enabling multiple MPEG transport streams to be transported through Gigabit Ethernet connections over an IP network.

The 9220 enables operators to take advantage of the associated cost savings by deploying IP networks while increasing flexibility and reliability.

KEY FEATURES

- IP transmission using unicast or multicast
- IP/ASI redundancy features
- Multicast IGMP v1,v2 and v3 support
- Independent redundant control ports
- Management and control via Dashboard or SNMP



9223

MPEG-4 AVC BROADCAST ENCODER

The 9223 AVC Encoder is a high-performance real-time MPEG-4 SD and HD video encoding solution that is future proofed by design. Based on the openGear architecture the 9223 has been designed to meet the demanding requirements of the IPTV, Telco, professional broadcast, enterprise video delivery, and streaming video markets.

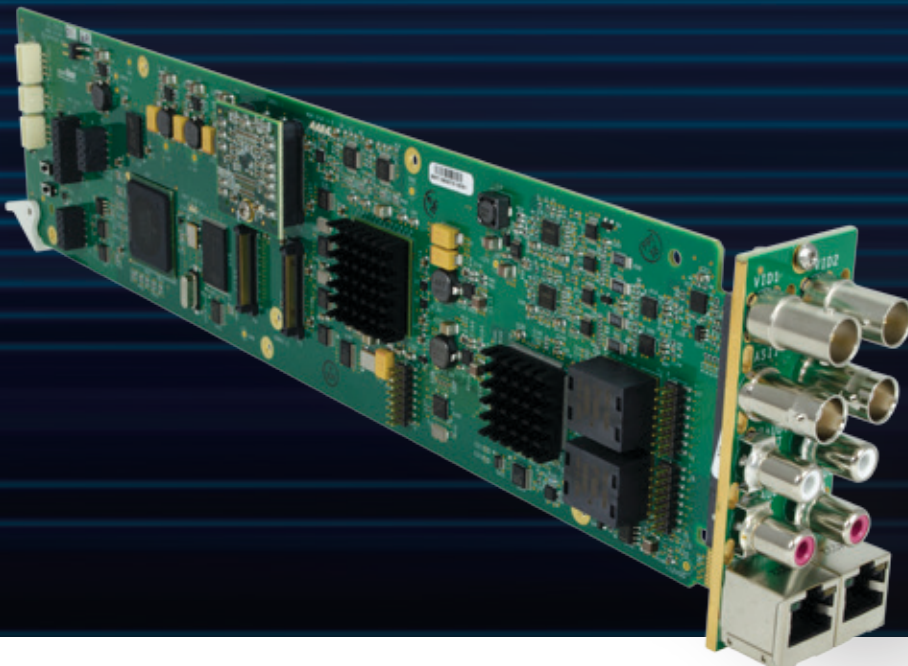
The 9223 is a feature-rich high-performance dual-channel MPEG-4 AVC HD and SD video encoder that delivers up to 20 individual or simulcast HD/SD channels in a completely hot-swappable, stackable, and fault-tolerant chassis. Operators can take advantage to deliver multiple High Definition and Standard Definition video services simultaneously with our unique video encoding design.

The broadcast encoder is equipped with the latest advances in video compression technology to deliver unsurpassed video quality at ultra low bitrates. State of the art video processing combined with unique encoding technology enables new open system architectures to be created. Simultaneous support of DVB-ASI, broadcast video over IP with RTP/UDP, RTMP or HTTP Live Streaming allows content to be freely distributed over virtually any video network.

BBG000 Standalone **BBG-1123** Available

KEY FEATURES

- ARQ & SMPTE 2022 FEC
- DVB-ASI and IP output (RTP/UDP, RTMP, HLS and HTTP Direct)
- Support for up to 8 Audio Channels
- ST 2038 VANC Data Support
- 20 Channels in 2RU
- Management and control via Dashboard or SNMP



9990-ENC-H264-IP STREAMING ENCODER

The 9990-ENC-H264-IP Streaming Encoder streams live video at unrivaled HD and SD video quality. When combined with the flexible openGear® platform, the solution provides the most powerful, cost-effective architecture in the industry for delivering IP streaming video.

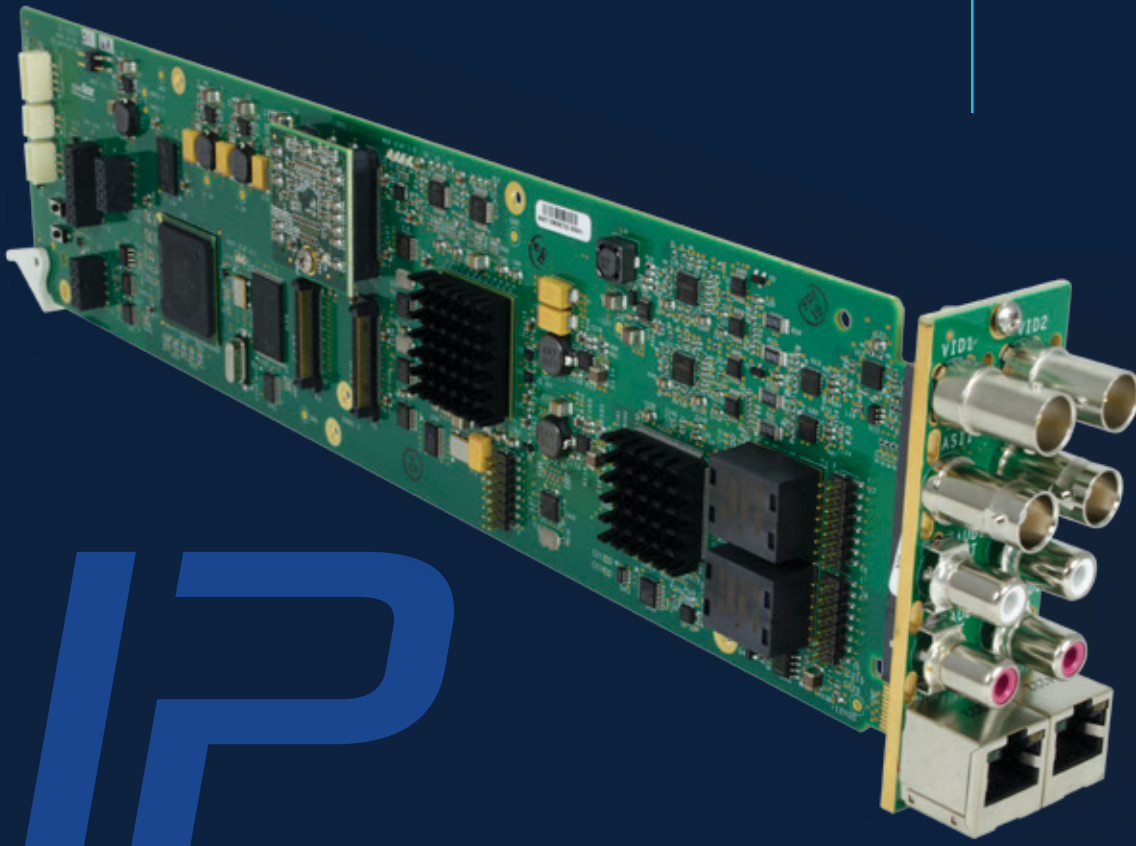
The 9990-ENC-H264-IP enables OPEX savings by running dense, low power open architecture solutions and reliable broadcast quality “burst free” transmission of content over IP networks and is achieved through direct processing technologies. This delivers precise packet timing and buffer management, reducing IP jitter and delay.

Applications range from streaming to CDNs; Akamai, UStream, YouTube, Wowza Cloud services to enterprise corporate network streaming to PCs, Set Top Boxes and media servers.

BBG9000 Standalone **BBG-1090-ENC-H264-IP** Available

KEY FEATURES

- Protocol support for web streaming, IPTV and media servers
- Reliable, burst free packet transmission
- SDI and Composite Video inputs
- Closed-Caption Support
- UDP multicast or unicast, RTMP and HLS protocols



9990-TRX-MPEG BROADCAST TRANSCODER

The 9990-TRX-MPEG is a powerful and flexible real-time transcoding solution supporting MPEG-2 and MPEG-4 AVC video codecs and a wide variety of audio codecs. It is ideally suited for any content repurposing, edge transcoding, monitoring or video distribution application. The product has been designed to meet the demanding requirements of the IPTV, professional broadcast, enterprise video delivery, and streaming video markets.

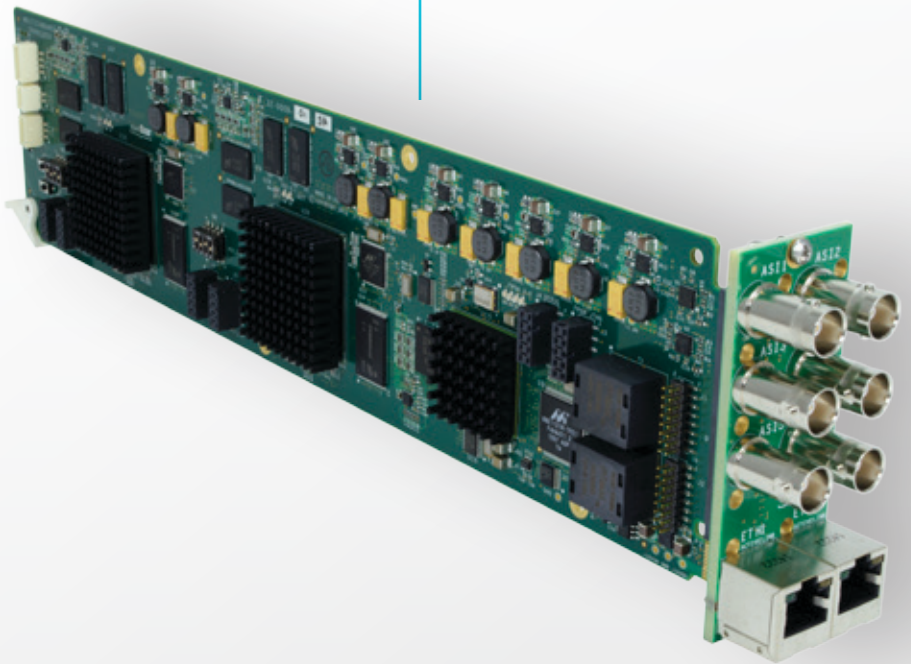
The 9990-TRX-MPEG is a feature-rich high-performance quad-channel video transcoder that delivers up to 40 individual HD/SD channels in a completely hot-swappable, stackable, and fault-tolerant chassis. Using Cobalt's unique transcoding architecture, operators can transcode multiple High Definition and Standard Definition services in a compact modular unit.

Cobalt's multistandard broadcast transcoder is equipped with the latest advances in video compression technology to deliver excellent video quality at low bitrates. State-of-the-art video processing combined with our unique encoding technology enables new open system architectures to be created. Simultaneous support of DVB-ASI and IP networks allows content to be freely distributed over virtually any type of video network.

BBG4000 Standalone **BBG-1090-TRX-MPEG** Available

KEY FEATURES

- Adapts services from both MPEG-2 and MPEG-4 AVC systems
- 2x DVB-ASI I/O and IP transmission using unicast or multicast
- MPEG-1 Layer II, AAC-LC, and Dolby AC-3 input audio
- Pass-through, MPEG-1 Layer II or Dolby AC-3 output audio
- SNMP is also supported with a complete MIB



9990-DEC-MPEG

MPEG-2 & MPEG-4 AVC DECODER

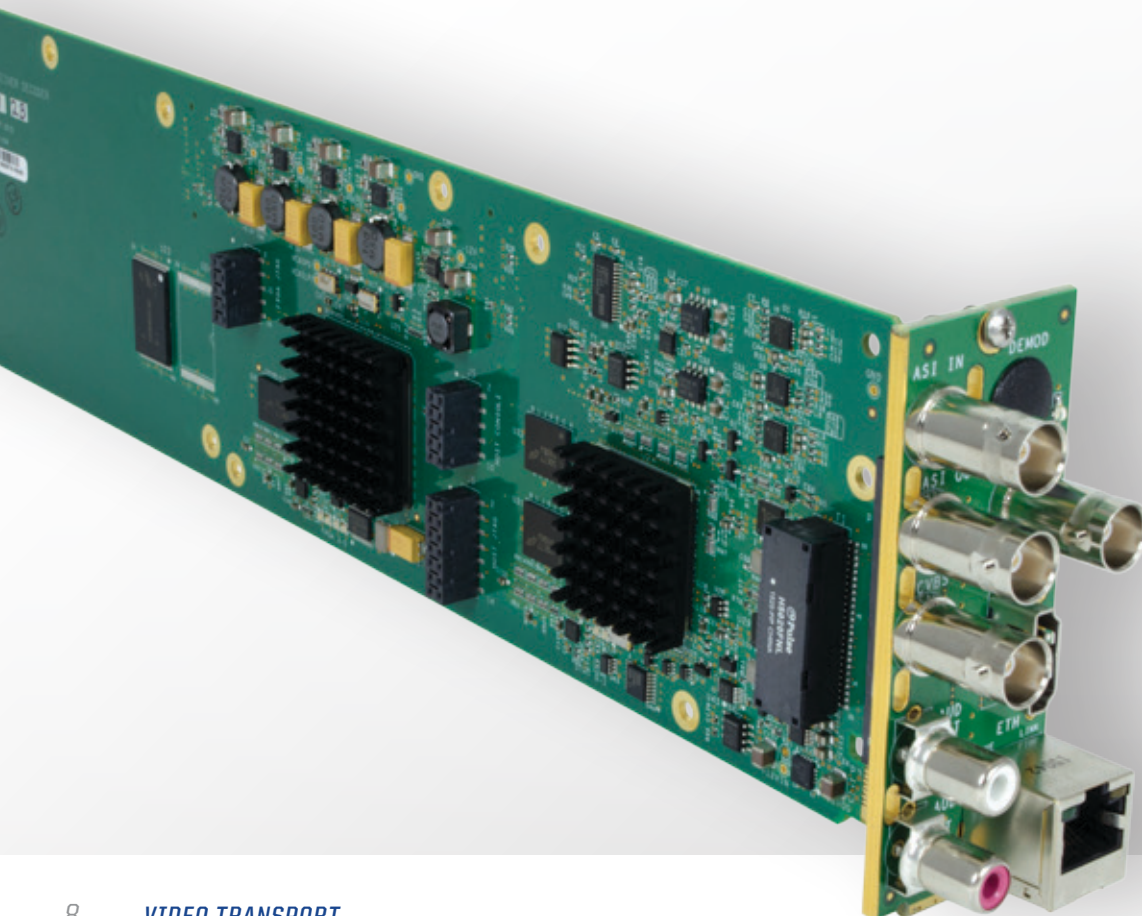
The 9990-DEC-MPEG openGear Receiver Decoder is a high-performance real-time MPEG-2 and H.264 SD and HD video decoding solution that is future proofed by design. It is the first professional broadcast decoder that can decode the traditional video formats such as UDP and RTP (MPEG Transport Stream) as well as Internet and Mobile formats such as RTMP (Adobe Flash) and HLS (Apple's HTTP Live Streaming). Camera formats such as RTMP and RTSP are also supported.

The 9990-DEC-MPEG is a feature-rich high-performance video decoder that provides support for traditional MPEG broadcast formats as well as Internet formats at unrivaled SD and HD video quality. The decoder has been designed to meet the demanding requirements of the IPTV, Telco, professional broadcast, enterprise video delivery, and streaming video markets and to be the most flexible and cost-effective architecture for broadcast and streaming applications.

KEY FEATURES

- Supports RTMP, RTSP, HLS in addition to UDP & RTP
- ARQ & SMPTE 2022 FEC RTP/ARQ
- Decodes MPEG-2 and H.264
- ASI and IP outputs and inputs
- HDMI and SDI outputs
- Genlock reference Input

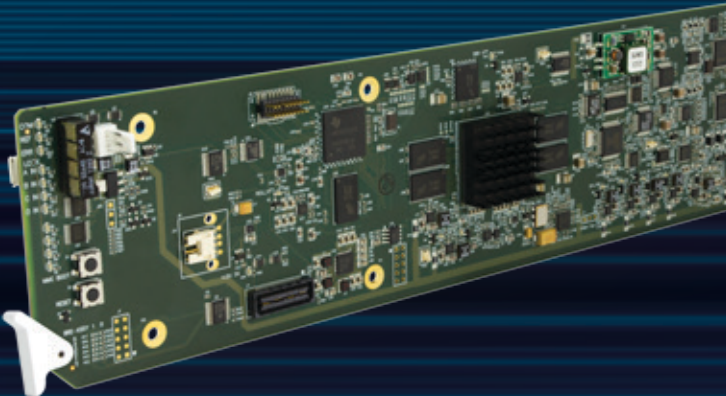
BBG4000 Standalone BBG-1090-DEC-MPEG Available



9991-SDI-TO-IP-10GE

**3G/HD/SD-SDI TO IP ENCAPSULATOR WITH
AES / ANALOG AUDIO EMBED / DE-EMBED
AND 10GIGE IP OPTICAL INTERFACE**

The 9991-SDI-TO-IP-10GE 3G/HD/SD-SDI to IP Encapsulator with AES / Analog Audio Embed / De-Embed and 10GigE IP Optical Interface offers full-flexibility AES and analog audio embedding/de-embedding with SMPTE 2022-6 or 2110 IP encapsulation in a basic, economical, high-efficiency openGear® card. More than only a basic embedder/de-embedder, the 9991-SDI-TO-IP-10GE offers the flexibility of SDI-to-IP as well as providing fully flexible AES and analog audio embedding/de-embedding.



KEY FEATURES

- SMPTE 2022-6 and SMPTE 2110 Options
- 10GigE over Duplex LC Multi-Mode fiber
- 16 Channel Embedding & De-Embedding
- Adaptive Sample Rate Converters & Audio Processing
- Serial Data Insertion & Extraction

BLUE BOX Similar features available in
BBG-SDI-TO-IP-10GE Throwdown units

9991-IP-TO-SDI-10GE

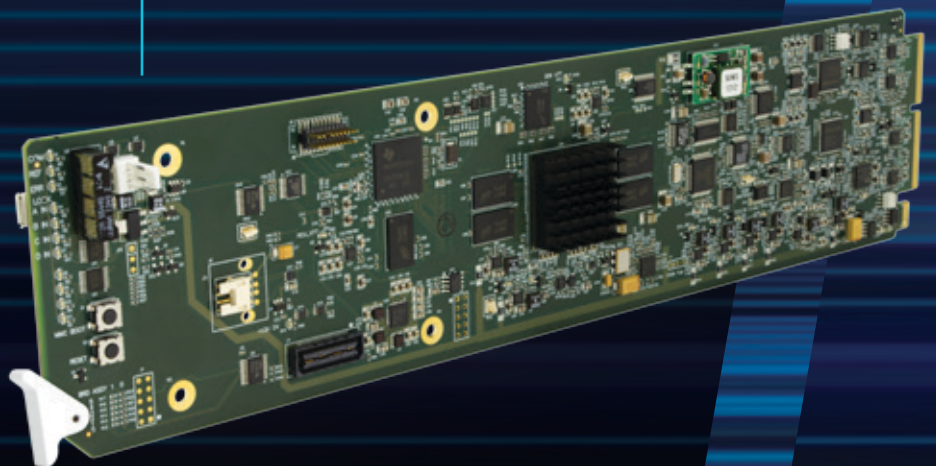
**3G/HD/SD-SDI FROM IP DE-ENCAPSULATOR
WITH AES / ANALOG AUDIO EMBED / DE-EMBED
AND 10GIGE IP OPTICAL INTERFACE**

The 9991-IP-TO-SDI-10GE 3G/HD/SD-SDI from IP De-Encapsulator with AES / Analog Audio Embed / De-Embed and 10GigE IP Optical Interface offers full-flexibility AES and analog audio embedding/ de-embedding with the built-in versatility of both coaxial and fiber SDI inputs in a basic, economical, high-efficiency openGear® card. More than only a basic embedder/de-embedder, the 9991-IP-TO-SDI-10GE offers the flexibility of SMPTE 2022-6 or 2110 IP-to-SDI as well as providing fully flexible AES and analog audio embedding/de-embedding.

KEY FEATURES

- SMPTE 2022-6 and SMPTE 2110 Options
- 10GigE over Duplex LC Multi-Mode fiber
- 16 Channel Embedding & De-Embedding
- Adaptive Sample Rate Converters & Audio Processing
- Serial Data Insertion & Extraction

BLUE BOX Similar features available in
BBG-IP-TO-SDI-10GE Throwdown units



IP

9410DA SERIES

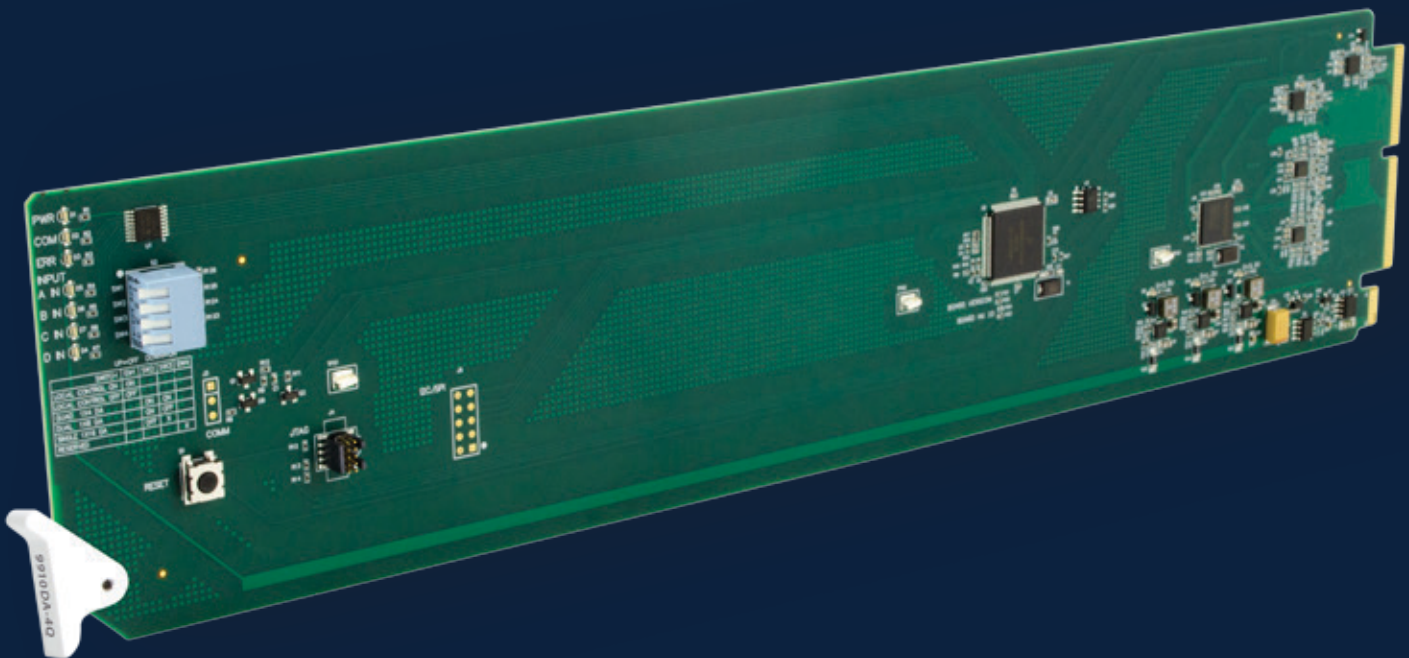
3G/HD/SD-SDI / ASI / MADI FIBER OPTIC TRANSMITTERS, RECEIVERS, & TRANSCEIVERS

The 9410DAs are designed for high-density conversion between coax and fiber, as well as coaxial distribution. The 9410DA is multi-rate, and supports SDI and ASI/DVB with all non-inverting outputs and comes in multiple, single and dual channel configurations. CWDM transmitter options make the 9410DA the key component of Cobalt's high-density signal transmission platform.

BLUE BOX Similar features available in
BBG-MK2 Throwdown units

KEY FEATURES

- Full support of 3G/HD/SD-SDI ASI/DVB and MADI
- Flexible coaxial crosspoint/DA provides up to 9 copies per card
- Crosspoint can select from any card input.
- Automatic reclocking for all SDI data rates (auto-bypass for non-SDI data rates)
- CWDM Versions available



9415-SFP

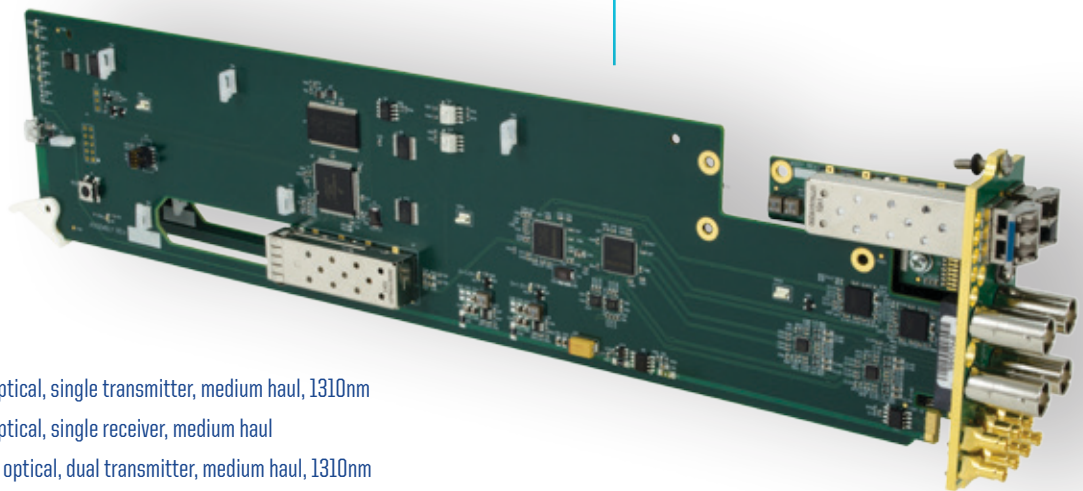
CONFIGURABLE SFP TRANSCEIVER

The 9415-SFP openGear card expands Cobalt's Video-SFP module (Small Form-Factor Pluggable) options by hosting the SFP on the back panel of the card. This design allows users to remove the card from the front of the frame without disconnecting the optical connection and also makes maintenance easier if a SFP module needs to be replaced or repurposed.

Another benefit of this configuration lets the user pick from a range of Cobalt supported Embrionix emSFPs which have copper/electrical interfaces and range from dual CVBS (Composite Analog) to SD-SDI Decoders and Dual SD-SDI to CVBS Encoders to MADI Coaxial Transceivers. SFPs are sold separately.

KEY FEATURES

- Fully flexible coaxial crosspoint/DA provides up to 10 copies per card. Crosspoint can select from any card input.
- All outputs are non-inverting - ASI can be outputted on any output.
- External access SFP+ cage supports Fiber, HDMI, and SMPTE IP



- SFP-EO** 3G/HD/SD-SDI/ASI video SFP optical, single transmitter, medium haul, 1310nm
- SFP-OE** 3G/HD/SD-SDI/ASI video SFP optical, single receiver, medium haul
- SFP-2EO** 3G/HD/SD-SDI/ASI video SFP optical, dual transmitter, medium haul, 1310nm
- SFP-2OE** 3G/HD/SD-SDI/ASI video SFP optical, dual receiver, medium haul
- SFP-E00E** 3G/HD/SD-SDI/ASI video SFP optical, transceiver, medium haul, 1310nm
- SFP-EO-CWDM-xx** 3G/HD/SD-SDI/ASI video SFP optical, single transmitter, long haul
- SFP-2EO-CWDM-xx-xx** 3G/HD/SD-SDI/ASI video SFP optical, dual transmitter, long haul
- SFP-E00E-CWDM** 3G/HD/SD-SDI/ASI video SFP optical. Transceiver, long haul.
- SFP-CVBS-ENC2** Dual SD-SDI to CVBS video SFP (emSFP) converter, HD-BNC
- SFP-CVBS-DEC2** Dual CVBS to SD-SDI video SFP (emSFP) converter, HD-BNC
- SFP-MADI-COAX-TRX** MADI Audio SFP Transceiver, DIN 1.0/2.3
- SFP-S-H** SDI to HDMI/DVI Video SFP converter, single transmitter, Type D with retention clip
- SFP-H-S** HDMI/DVI to SDI video SFP converter, single receiver, Type D with retention clip
- SFP-SDI-TO-IP-2022** 3G/HD/SD-SDI to IP (ST-2002-6) Encapsulator SFP. 10GigE Multi-Mode Optical Interface with Female LC Duplex Connectors
- SFP-IP-TO-SDI-2022** IP (ST-2002-6) to 3G/HD/SD-SDI De-Encapsulator SFP. 10GigE Multi-Mode Optical Interface with Female LC Duplex Connectors
- SFP-SDI-TO-IP-2110** 3G/HD/SD-SDI to IP (ST-2110) Encapsulator SFP. 10GigE Multi-Mode Optical Interface with Female LC Duplex Connectors
- SFP-IP-TO-SDI-2110** IP (ST-2110) to 3G/HD/SD-SDI De-Encapsulator SFP. 10GigE Multi-Mode Optical Interface with Female LC Duplex Connectors

9433-EMDE SERIES

3G/HD/SD-SDI WITH ANALOG & AES EMBEDDING / DE-EMBEDDING

The 9433-EMDE is built on a 3G/HD/SD-SDI Analog and AES Audio Embedder / De-Embedder platform and can be ordered in two versions. The ADDA version supports 8 Balanced Analog In or Out and up to 8 Unbalanced AES In or Out and the 75/110 version supports 8 Balanced AES In or Out and 8 Un-Balanced AES In or Out. These cards support CWDM and can be ordered in EO and OE single transmit and receive or in EOOE transceiver configurations. The +DT option adds the ability to send Serial RS-232/422 and GPIO over the bi-directional link.

KEY FEATURES

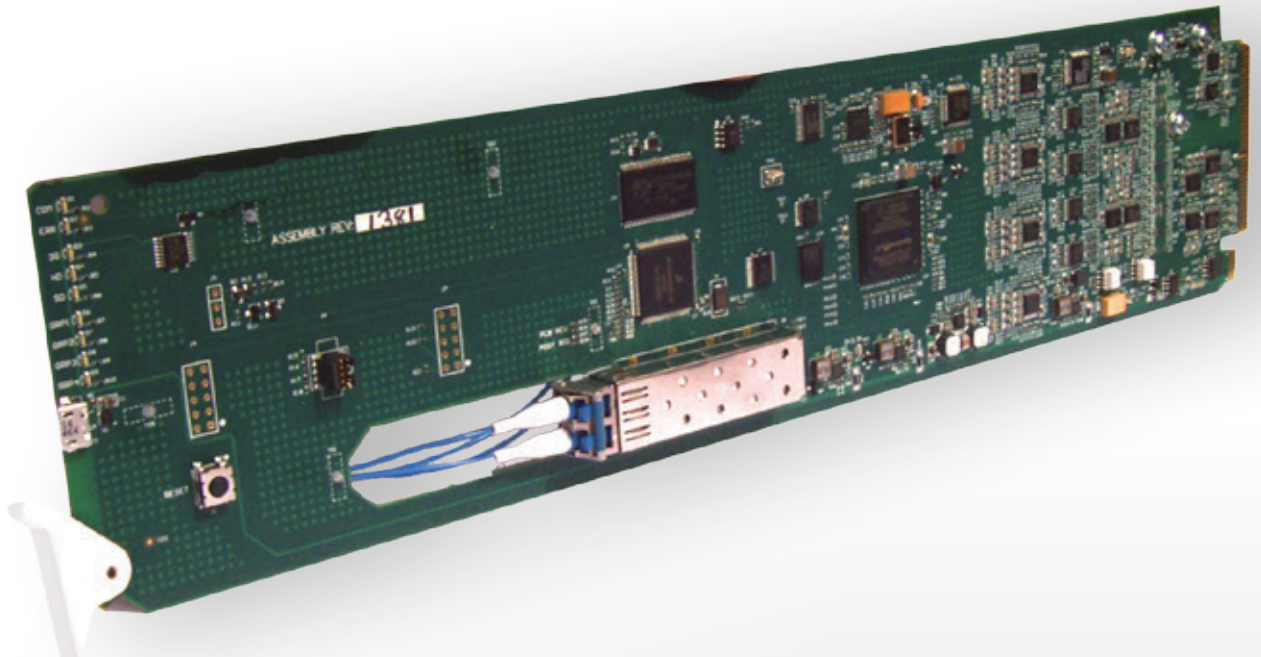
- Adaptive Sample Rate Converters with Dolby Bypass
- Per-Channel Gain, Mixing and Routing
- Serial Data Transport
- CWDM Versions Available

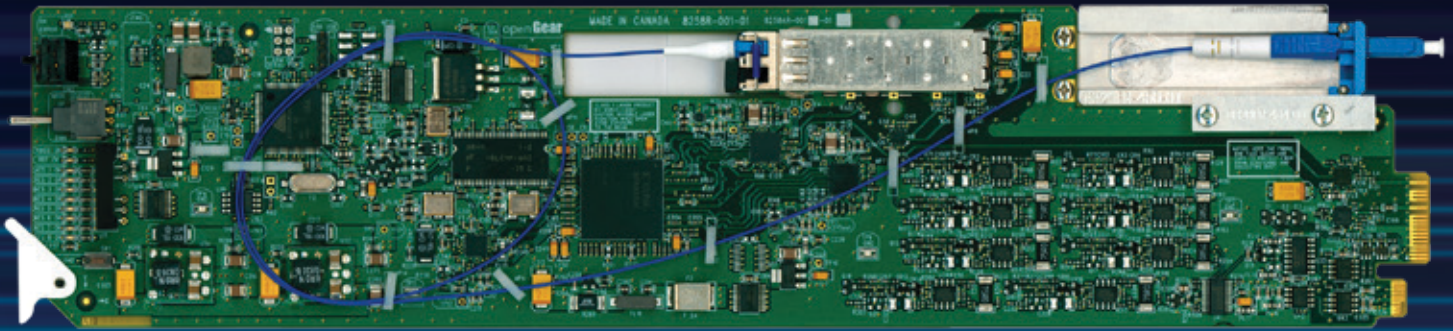
9433-EMDE-ADDA

3G/HD/SD-SDI, 8-Pair AES and 8-Channel Analog Audio Transmitters, Receivers, and Transceivers

9433-EMDE-75/110

3G/HD/SD-SDI, 8-Pair Un-Balanced and 8-Pair Balanced AES and Transmitters, Receivers, and Transceivers





9450GT

FIBER ETHERNET SWITCH TRANSCEIVER

The 9450GT series of Gigabit Ethernet switches are available without fiber (9450GT-NF) and in several fiber optic versions providing various link lengths including 20km, 40km, and 80km. The switch provides four Ethernet ports via RJ-45 connectors on the rear module and a fifth port provides connection to the internal GigE bus in the OG3-FR openGear frame. Standard 1310nm and CWDM models are available.

KEY FEATURES

- Four independent copper Gigabit Ethernet ports supporting DHCP, ARP, Multicast/Broadcast
- 1310nm Point-to-point and CWDM configurations available.
- Non-Fiber version for openGear® system design flexibility
- Supports DashBoard™ and SNMP

9490CWDM

MULTI-CHANNEL FIBER OPTICAL MULTIPLEXERS AND DE-MULTIPLEXERS

The 9490 series of CWDM passive multiplexers (mux) and de-multiplexers (demux) offer an openGear based, cost-effective solution to mux and demux up to 16 fiber channels onto a shared fiber trunk. Used in conjunction with our fiber EO and OE converter cards, digital video, audio, and IP can all be carried over a shared fiber. Units are available in 4 and 8 channel configurations and can be ordered with expansion ports enabling 12 and 16 channel systems.

9490CWDM-4MX-LC 4-Channel Optical Mux with expansion port

9490CWDM-8MX-LC 8-Channel Optical Mux with expansion port

9490CWDM-8M-LC 8-Channel Optical Mux

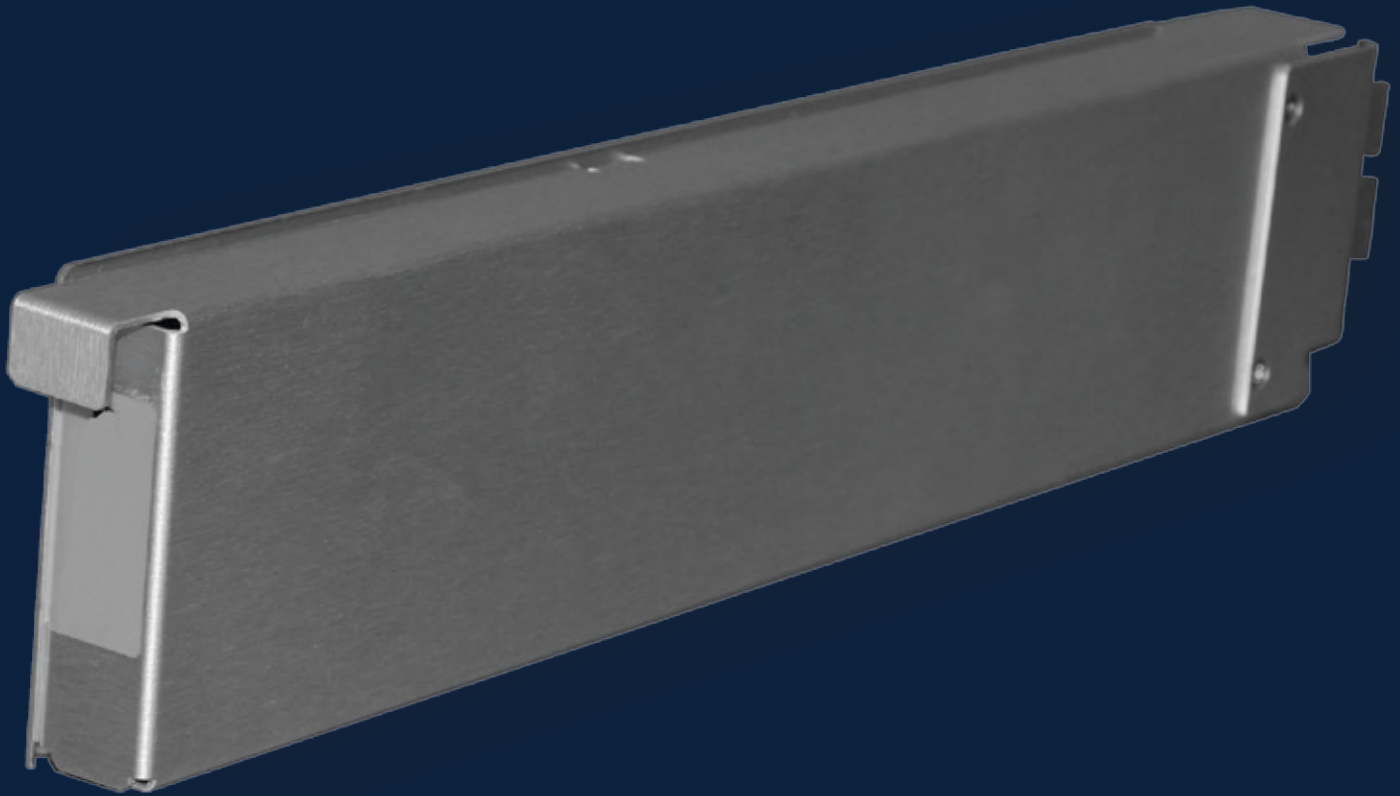
9490CWDM-4DX-LC 4-Channel Optical De-Mux with expansion port

9490CWDM-8DX-LC 8-Channel Optical De-Mux with expansion port

9490CWDM-8D-LC 8-Channel Optical De-Mux

KEY FEATURES

- Passive CWDM optical MUX and DEMUX modules contain no active components
- Expandable from 4 or 8 to 12 or 16 channel systems
- Fully Bi-Directional



9490-OS SERIES

FIBER OPTIC PASSIVE SPLITTERS

The 9490-OS series of passive splitters offer a flexible, cost-effective solution of fiber distribution using our HPF-9000 or OG3-FR 20-slot frames. Similar to a DA, these splitters provide branching of optical signals. Fully passive with low-loss optics, the devices require no frame power or communications for operation.

The 9490-OS models are available in 1x2, 1x4, and 1x8 splitting fan-outs. Fully passive operation helps ensure the utmost in reliability. Each device occupies 2 frame slots.

- 94900S-1X2-LC** Optical 1x2 Splitter
- 94900S-D1X2-LC** Dual Optical 1x2 Splitter
- 94900S-1X4-LC** Optical 1x4 Splitter
- 94900S-D1X4-LC** Dual Optical 1x4 Splitter
- 94900S-1X8-LC** Optical 1x8 Splitter

KEY FEATURES

- Modular, scalable design allows easy expansion. Available in several 1x2, 1x4, and 1x8 versions.
- Fully passive design using low-loss filters. Requires no frame power or communications.
- Supports single-mode fiber
- Wavelength agnostic operation - supports 1270nm thru 1620nm signals
- Fits 20-slot openGear frames using blindmate-connection rear I/O modules

Cobalt Digital Inc. designs and manufactures award-winning 3G/HD/SD conversion, throwdown, and multiviewer technology for the broadcast television environment. As a founding partner in the openGear® initiative, Cobalt offers a full range of openGear-compliant solutions as well as video and audio processing cards for closed-caption compliance, production trucks, master control, HD news, signal transport, audio loudness, and color correction. Cobalt's Blue Box Group™ line of interface converter boxes streamlines and simplifies a wide range of 3G/HD/SD conversion tasks. In addition, the company's multi-image display processors enable multiviewer capabilities in the most demanding studio and remote broadcasting environments. Cobalt Digital products are distributed through a worldwide network of dealers, system integrators, and other partnerships.

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