FIBER OPTIC TRANSPORT
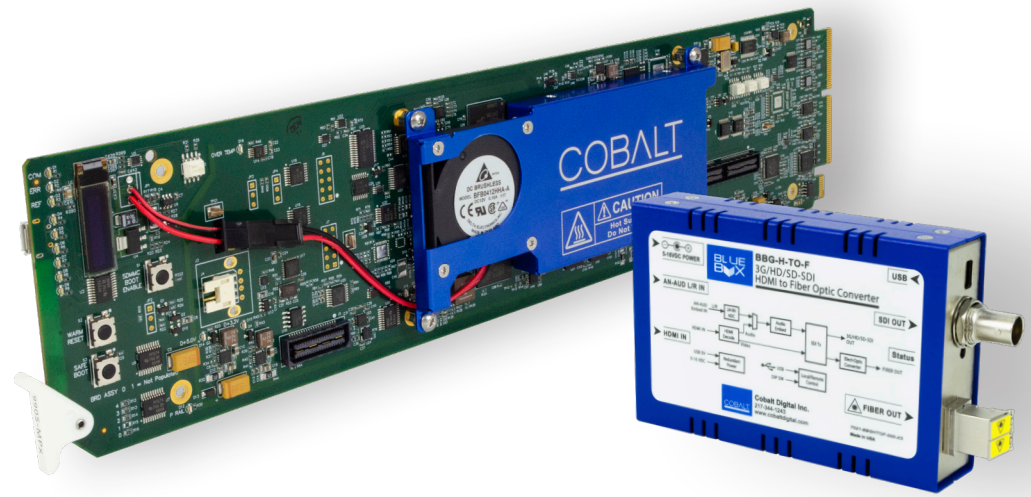
OPENGEAR® · STANDALONE · THROWDOWN

COBALT®

BEYOND THE SIGNAL

ENGINEERING BEYOND THE SIGNAL STARTS WITH INNOVATION.

Cobalt Digital has proudly provided engineering solutions to meet customers' needs since 1997. By speaking and listening closely to end users, Cobalt has developed equipment offering the answer for specific challenges. Our innovative products feature 24/7 service and support and many come with a five-year warranty, vital in today's broadcast industry. Our products are used extensively worldwide in production trucks, and by terrestrial, satellite and cable broadcasters, as well as many government facilities. As we enter our third decade of innovation and service, we reflect on how far the industry has come, and look forward to engineering products for tomorrow's broadcast and beyond.

COBALT®

IT'S NOT JUST OPTICS... FIBER DELIVERS HIGHER CAPACITY OVER GREATER DISTANCES.

WHILE OFFERING AN UNMATCHED PRICE TO PERFORMANCE RATIO.

Cobalt offers an extensive line of fiber products including converters, mux/demux, processors and compact fiber/HDMI converters available as an openGear® card, standalone, and compact throwdown form factors.

Cobalt's fiber platforms with signal processing are the latest additions to Cobalt's fiber product line. The 9904-UDX and the new 9905-MPx Multi-Path cards offer unmatched price to performance when processing and delivering signals ranging from SD-SDI to 12G-SDI bi-directionally as a single path or multi-path configuration. As an added value, these cards enable a variety of workflows that include a mix of various signals and sources to be processed and transported via fiber. Another unique feature offered by the 9904-UDX and 9905-MPx platforms is the ability to take inbound fiber signals and utilize the internal processing power to convert, process and transport any fiber signal natively to its destination.

COBALT'S FIBER PRODUCTS INCLUDE

Fiber EO/ OE /EOOE Converters with Signal Processing	*ALL-NEW*
Fiber EO / OE / EOOE Converters with Da/Router	
Fiber EO / OE / EOOE Converters with Audio Embed / De-Embed	
Throwdown Fiber Converters	
Fiber CWDM MUX/DE-MUX	
Fiber Passive Splitters	
Fiber Ethernet Switch Transceivers	

FIBER FEATURES
AVAILABLE ON THESE OPENGEAR® & BLUE BOX PRODUCTS

NAMES LINK TO PRODUCT PAGES ON COBALTDIGITAL.COM	Tx	Rx	DA-3G	DA-12G	Audio Embed	Audio De-Embed	CWDM Mux/De-Mux
9410DA-EO / 9410DA-OE	●	●	●				
9410DA-2EO / 9410DA-20E	●	●	●				
9410DA-EOOE	●	●	●				
9915DA-1x16-12G	●	●	●	●			
9915DA-2x16-XPT-12G	●	●	●	●			
9915DA-4x16-XPT-12G	●	●	●	●			
9433-EMDE-ADDA-EO 9433-EMDE-ADDA-OE	●	●	●		●	●	
9433-EMDE-ADDA-EOOE	●	●	●		●	●	
9433-EMDE-75/110-EO 9433-EMDE-75/110-OE	●	●	●		●	●	
9433-EMDE-75/110-EOOE	●	●	●		●	●	
9490CWDM							●
9450GT	●	●	●				
9904-UDX	●	●	●	●	●	●	
9905-MPx	●	●	●	●	●	●	
9490-OS Series	●	●					
BLUE BOX GROUP							
BBG-EO-MK2	●						
BBG-OE-MK2		●					
BBG-EOOE-MK2	●	●					
BBG-2EO-MK2	●						
BBG-20E-MK2		●					
BBG-SFP-SXH	●	●					
BBG-H-TO-F	●					●	
BBG-F-TO-H		●			●		
BBG-4490-CWDM							●

	Ethernet Switch	Signal Processing	Passive Splitters	Scaling	Transceiver	Crosspoint	HDMI In	HDMI Out
9410DA-EO / 9410DA-OE								
9410DA-2EO / 9410DA-2OE								
9410DA-EOOE					●			
9915DA-1x16-12G								
9915DA-2x16-XPT-12G						●		
9915DA-4x16-XPT-12G						●		
9433-EMDE-ADDA-EO 9433-EMDE-ADDA-OE								
9433-EMDE-ADDA-EOOE					●			
9433-EMDE-75/110-EO 9433-EMDE-75/110-OE								
9433-EMDE-75/110-EOOE					●			
9490CWDM			●					
9450GT	●							
9904-UDX		●		●	●			●
9905-MPx		●		●	●			●
9490-OS Series			●					
BLUE BOX GROUP								
BBG-EO-MK2								
BBG-OE-MK2								
BBG-EOOE-MK2								
BBG-2EO-MK2								
BBG-2OE-MK2								
BBG-SFP-SXH					●			●
BBG-H-TO-F							●	
BBG-F-TO-H								●
BBG-4490-CWDM			●					

SIGNAL PROCESSING

9904-UDX-4K

The award-winning Cobalt® **9904-UDX-4K 12G/6G/3G/ HD/SD UHD Up/Down/Cross Converter/Frame Sync/ Embed/De-Embed Audio Processor** is Cobalt's next generation of advanced scaler/frame synchronizer for the openGear® platform.

The 9904-UDX-4K upconverts 12G/6G/3G/HD/SD to either UHD1 3840x2160 Square DIvision Multiplex (SDM) or Two-Sample Interleave (2SI) quad 3G-SDI based formats, or can output ST 2082 12G-SDI for single-wire 4K transport. With both 12G-SDI and quad 3G-SDI inputs, the 9904-UDX-4K can downconvert 12G and quad UHD. The 9904-UDX-4K provides an HDMI 2.0 output for economical 4K video monitoring. The 9904-UDX-4K offers numerous options, including SDR-to-HDR conversion and color correction.

AVAILABLE FIBER OPTIONS ARE:
Single and Dual-Channel Video Optical Transmitters, Single and Dual-Channel Video Optical Receivers, Video Optical Transceiver, 12G/6G/3G/HD/SD-SDI Single and Dual UHD Channel Transmitters, 12G/6G/3G/HD/SD-SDI Single and Dual UHD Channel Receivers, and 12G/6G/3G/ HD/SD-SDI UHD Transceiver.

9905-MPx

The Multi-Path **9905-MPx 3G/HD/SD Quad-Path Up/ Down/Cross Converter/Frame Sync/Embed/De-Embed Audio Processor** is a Cobalt® next-generation advanced scaler/frame synchronizer for the openGear® platform. The 9905-MPx provides **four independent signal paths** of UDX / frame sync / audio embedding and de-embedding on a single openGear® card. Using our HPF-9000 20-slot frame, this provides up to 24 channels (6 cards) of processing in a single frame. The 9905-MPx represents a new level of openGear® packaging density!

AVAILABLE FIBER OPTIONS ARE:
Single and Dual-Channel Video Optical Transmitters, Single and Dual-Channel Video Optical Receivers, Video Optical Transceiver, 12G/6G/3G/HD/SD-SDI Single and Dual UHD Channel Transmitters, 12G/6G/3G/HD/SD-SDI Single and Dual UHD Channel Receivers, and 12G/6G/3G/ HD/SD-SDI UHD Transceiver.

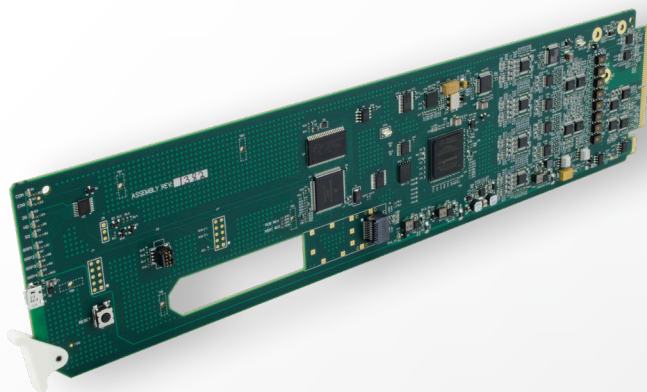*Multi-Path & Multi-Function – a New Level of openGear® Packaging Density.*

9410-EO/OE/2EO/2OE/EOOE

The Cobalt® **9410DA series of 3G/HD/SD-SDI / ASI / MADI Fiber Transport/Distribution Amplifier with Full-Flexibility Crosspoint** products provide a card-based solution for high-density conversion from coax to fiber, fiber to coax, or two independent EO or OE channels as well as coaxial distribution. The 9410DA is multi-rate, and supports SDI and ASI/DVB on all inputs and outputs with non-inverting outputs.

SFP-based EO/OE/2EO/2OE/EOOE converters provide state-of-the-art fiber performance, power consumption, and compactness. A crosspoint (which is user-configurable via DashBoard™ GUI remote control) allows the card to apply any of the card inputs to various coax DA outputs as well as a fiber output. Up to 10 flexibly-sourced coaxial DA outputs are available per each card.

Using a high-density low-power design along with a high-density split rear module, up to 20 cards to be installed in a frame, providing 40 channels of EO or OE conversion as well as up to 180 coaxial DA outputs or, with the EOOE model, providing 20 channels of EO and OE conversion as well as up to 200 coaxial DA outputs.
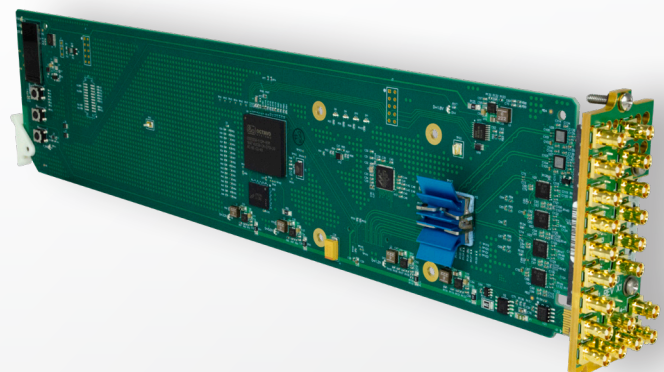
9915DA

The Cobalt® **9915DA series of 12G/6G/3G/HD/SD Multi-Rate Reclocking DA** cards can offer up to x4 Output Crosspoint supporting four input channels which can be crosspoint-routed to up to 16 DA outputs. As demand for 4K continues to rise, distribution of 12G-SDI signals within a rackspace becomes increasingly important. The 9915DA allows for copper runs of up to 45 meters, reaching most equipment within a rack room or truck. For longer runs, the optional optical inputs and outputs allow the 9915DA to connect distribution from zones of much greater distances.

AVAILABLE FIBER OPTIONS ARE:

Single and Dual-Channel Video Optical Transmitters, Single and Dual-Channel Video Optical Receivers, Single-Channel Video Optical Transceiver, 12G/6G/3G/HD/SD-SDI Single and Dual UHD Channel Transmitters, 12G/6G/3G/HD/SD-SDI Single and Dual UHD Channel Receivers, and 12G/6G/3G/HD/SD-SDI UHD Transceiver.

MODELS AVAILABLE

9915DA-4X16-XPT-12G 12G/6G/3G/HD/SD Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint

9915DA-2X16-XPT-12G 12G/6G/3G/HD/SD Dual-Channel Multi-Rate Reclocking Distribution Amplifier with x4 Output Crosspoint
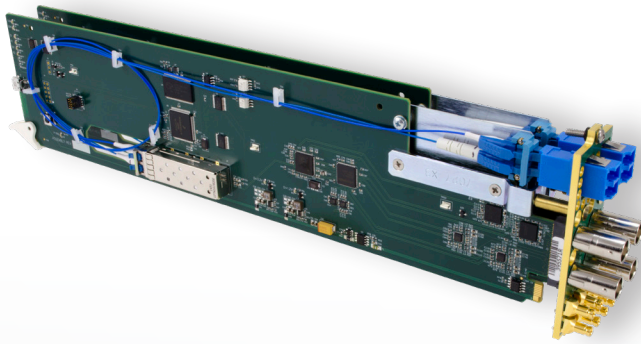
9915DA-1X16-12G 12G/6G/3G/HD/SD-SDI 1x16 Reclocking Distribution Amplifier

EMBED / DE-EMBED

ETHERNET SWITCH

9433-EMDE-ADDA and 9433-EMDE-75/100

The **9433-EMDE 3G/HD/SD-SDI Series** can be a Fiber Transmitter, Receiver or Versatile EO-OE Transceiver with fiber and coax inputs and outputs. The 9433 cards can be offered with 16-Channel AES and 8-Channel Analog Audio with Embed / De-Embed support (ADDA) or with 16-Channel AES support for both balanced and unbalanced (75/110) offered in a basic, economical, high-efficiency openGear® card.

FEATURES

- DashBoard™ status display, audio meters, tone generators. GUI audio meters provide ready assessment of content presence and line-up.
- Audio embed adaptive SRC allows asynchronous 48 kHz AES audio to automatically sync with video 48 kHz timing for glitch-free embedding. Individual, per-pair SRC auto-detects and disables SRC when a Dolby pair is detected on an input pair.
- Low-power/high-density design – less than 18 Watts per card
- Available with CWDM wavelength divisions allowing use in CWDM systems
- Remote control/monitoring via Dashboard™ software or OGCP-9000 remote control panels
- Hot-swappable
- Five year warranty

9450GT

The **9450GT** series of fiber Ethernet switch transceivers are available in several versions providing various link length support using dual-fiber Tx/Rx. (Non-fiber model **9450GT-NF** is also available.) A built-in switch accommodates four Ethernet ports. Gbit ports flexibly support most communications including IP-based video/audio, control, and other data.

RJ-45 Ethernet ports provide 1Gb/s connectivity for multiple Ethernet enabled devices or links to additional network switches. A dual-fiber optical port provides an Ethernet link over a dual fiber connection for extended distances (available in 20km, 40km, and 80km link-length versions). CWDM models are available with 16 wavelength divisions, allowing 64 discrete Ethernet ports to be muxed onto a single fiber pair.

FEATURES

- Four independent copper Gigabit Ethernet ports supporting DHCP, ARP, Multicast/Broadcast
- Dual LC Optical Connection. Blindmate connections with no active components on rear I/O module.
- Low-power, high-density design; <8 Watts
- Internal GigE midplane connection (with OG3-FR frame only)
- CWDM models available in 16 different wavelength divisions, offering up to 64 channels of discrete Ethernet port muxing
- SNMP compliant
- Available in 20km, 40km, and 80km versions using LC-terminated fiber
  - 9450GT-20KM-LC – 20km link length
  - 9450GT-40KM-LC – 40km link length
  - 9450GT-80KM-LC – 80km link length
  - 9450GT-CWDM – see Ordering Information on website for more details
- Five-year warranty

BLUE BOX

These Blue Box throwdown converter units are a part of the Blue Box Group™ of compact, rugged, and portable converter boxes. Many of the models can be configured using the device DIP switches or by using an intuitive GUI application that communicates with the unit over a PC's USB port. The GUI app allows dynamic configuration control, status display, and other advanced control functions not commonly found on "throwdown" packages. When configured using the GUI app, the USB connection can be removed with all settings held in non-volatile device memory. Some of the units receive their operating power via a USB connection or using an AC adapter connection. These power sources can be simultaneously used to provide redundant power sourcing.

BBG-2EO-MK2 3G/HD/SD-SDI / ASI / MADI Fiber Optic Dual Transport Transmitter

BBG-F-TO-H 3G/HD/SD-SDI Fiber Optic-To-HDMI Converter

BBG-H-TO-F 3G/HD/SD HDMI-To-Fiber Optic Converter

BBG-SFP-SXH 3G/HD/SD-SDI / ASI Reconfigurable Video SFP Transceiver

BBG-EO-MK2 3G/HD/SD-SDI / ASI / MADI Fiber Optic Transport Transmitter

BBG-OE-MK2 3G/HD/SD-SDI / ASI / MADI Fiber Optic Transport Receiver

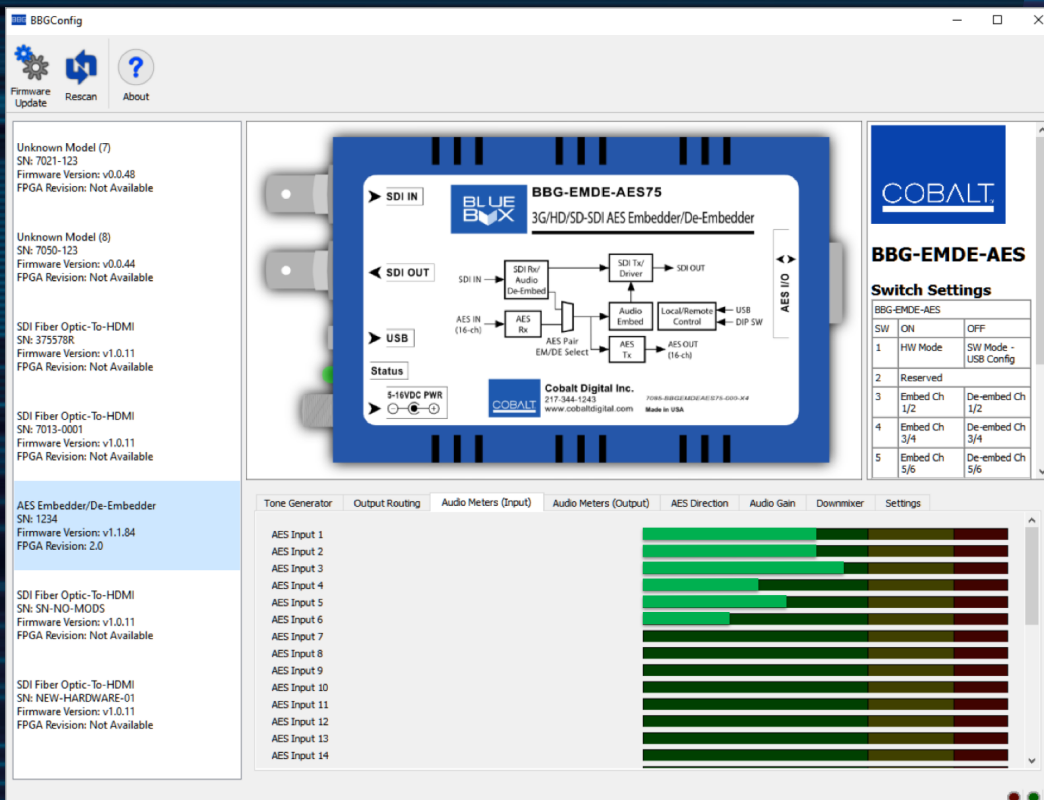*BBG-2OE-MK2* 3G/HD/SD-SDI / ASI / MADI Fiber Optic Dual Transport Receiver

BBG-EOOE-MK2 3G/HD/SD-SDI / ASI / MADI Fiber Optic Transport Transceiver

BBG-CONFIG
USB SETUP AND MONITORING SOFTWARE

BBG-CONFIG software provides an intuitive GUI for setup and monitoring of the latest series of BlueBoxGroup throwdown converters.

The feature set of these products is ever increasing in sophistication and this calls for an easy to use tool for monitoring and to provide access to controls that aren't feasible using the external dip switches.

The BBG-CONFIG communicates with the supported BBG via the integrated Mini-USB port which can also be used for Redundant Power input.

SOME BENEFITS OF USING BBG-CONFIG ARE:
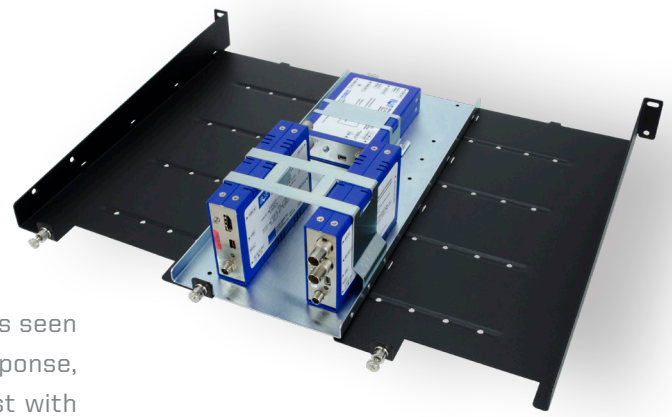
Monitors
- A/V Presence and Status
- I/O Audio Levels
- Optical Tx and Rx Power
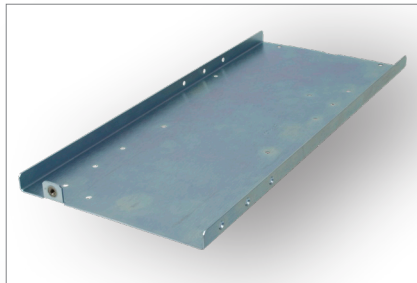
Controls
- A/V Signal Routing
- Audio Mixing and Gain
- Reclocking Modes

BBG ACCESSORIES

In our 24 years of pioneering small form-factor converters, Cobalt has seen these units in a wide range of deployments and environments. In response, multiple mounting and power options have been developed to assist with ease of use and installation.

BBG-1000 Tray

Rack Mounting Surface

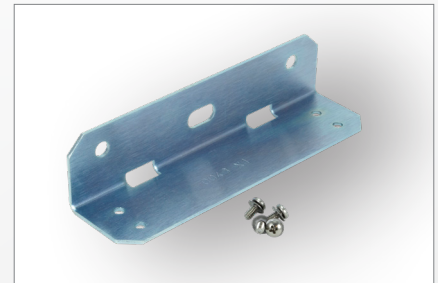**BBG-Tray**

1/3 Rack Sled securely fastens to BBG-1000 Tray

BBG-Tray-Mount V

Vertical Sled Mount

BBG-Tray-Mount H

Horizontal Sled Mount

BBG-PS4

BBG Power Supply

BBG-MB

Mounting Bracket

Silent and reliable, the BBG line of products are used everyday in mission critical applications ranging from production studios and mobile trucks to military aircraft and submarines.

Cobalt Digital Inc. designs and manufactures award-winning IP and 12G/6G/3G/HD/SD conversion, throwdown, and multiviewer technology for the production and broadcast television environment. As a founding member in the openGear® initiative, Cobalt offers a full range of openGear-compliant solutions as well as video and audio processing products for closed caption compliance, production trucks, master control, HD news, signal transport, audio loudness processing, and color correction. Cobalt's Blue Box Group™ line of interface converter throwdown boxes streamlines and simplifies a wide range of IP and 12G/6G/3G/HD/SD conversion and processing tasks. In addition, the company's multi-image display processors enable multiviewer capabilities in the most demanding studio and remote production/broadcasting environments. Cobalt Digital products are distributed through a worldwide network of dealers, system integrators, and other partnerships.

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