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SIGNAL PROCESSING

Cobalt openGear Video Processing Equipment

by Joey Gill

As our industry leaps forward on the technology front, it seems as though more and more broadcast tools are becoming modular. The days of discrete chassis assemblies designed for single duties are all but gone. Although the modular trend is not new, it seems that manufacturers are pushing the feature sets to almost extreme levels. With so many features and options available on each card, managing the function and control of the cards can be an intimidating task. However, with a little planning and proper preparation, the whole process can actually take you to a better place than you ever imagined.

When I was approached about a product review of Cobalt Digital's, openGear 8310 Chassis and the accompanying 9000 control panel, it sounded pretty straightforward.

FAST FACTS

Application

HD-SDI video processing, audio Processing

Key Features

Remote control panel, Dashboard, multifunction, compact, HD-SD/SDI

Price

MSRP as tested: 8310-C, \$1,190; OGCP-9000, \$2,695; 9084, \$4,295; 9061, \$4,995; 9305, \$2,295.

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However, it quickly became apparent that something remotely related to broadcasting had to actually be happening for the story to make any sense. After all, an empty chassis (no matter how sexy) just won't hold a reader's interest. It was then decided that we should add a few cards to the mix. What better products to test drive at a modern HD broadcast facility than an audio embedder w/delay



Cobalt Digital openGear processing modules card frame

(9305), an HD color corrector (9084) and an up/down/crossconverter (9061). This cornucopia of Cobalt Digital's product line represents but a small sample of their offerings.

FEATURES

The Cobalt 8310C is a 10-slot, 2RU openGear frame for housing their 9000

series signal processing cards. The frame features all-aluminum construction, along with front mounted cooling fans for optimum air flow. Dual hot-swappable power supplies are an option, and power cords are locked in place by cord retainers. Two independent looping reference inputs feed all module slots, and there's a power switch accessible from the front of the unit. As tested, the 8310C was equipped with the optional Ethernet frame

controller card for remote setup, monitoring and control using either the RCP or Dashboard software.

The front of the unit contains LED alarms for errors and fan failure.

For remote control of the 9000 series sig proc cards, the 2 RU unit OGCP-9000 offers ease and simplicity. The OGCP-9000 has a simple keypad layout on

its front left side, along with USB connectivity, and eight active displays (on two screens) with eight scroll/action knobs associated with each LCD screen located on the mid-right section of the front panel. The rear of the OGCP contains an additional port, as well as Ethernet and DB-9 connectors. There's also a plethora of GPI/GPO connectors. Connectivity with the 8310 frame is achieved via an optimized high-

speed openGear Ethernet control protocol. The OGCP-9000 works seamlessly with the Dashboard application, allowing changes to be reflected immediately on either control surface.

The 9061 card is an up/down/cross converter with analog/SDI input, audio embedding/disembedding, frame sync, with time-code and closed captioning support. The 9061 features 12-bit conversion and provides AFD functions, along with standard video signal processing controls, such as white level, black level, color gain and phase, audio routing, and frame sync. Other features include 3:2 pull-down and reverse 3:2 conversions, safe title and center cross overlays. It offers 24-bit analog audio/AES conversion, audio channel mapping, audio offset adjustment for lip-sync alignment and audio level control.

The 9305 card is an embedded audio delay processor, and includes an optional audio up-mixer.

Features include HD/SD-SDI input de-embedding of all audio data, independent delay of each channel, and re-embedding of processed audio data. The optional upmixer software features Linear Acoustic technology to provide a stereo signal that's representative of the 5.1 surround signal.

The 9084 card is an HD/SD-SDI RGB color corrector with YCbCr video proc and frame sync controls. The RGB processing provides full offset, gain and gamma adjustments, and the YCbCr proc controls provide lift, gain, saturation, phase, white clip (hard and soft), black clip and color saturation clip. A full-featured frame sync provides compatible reference matching with only three lines of delay, and it can be bypassed for operation in synchronous environments.

IN USE

Upon opening the 8310 frame package, I found the 9061, 9305, and 9084 cards had been preinstalled in the openGear frame. The cards appeared much like those in any other high quality professional tray card: there's an edge connector, some programming switches on the front, and a small dis-

play of LEDs, which give a fair display of abbreviations during manual programming. The 8310 frame appears very robust and has a nice overall physical appearance. The front panel is hinged and swings neatly out for card access. When the front panel is latched, a battery of cooling fans pulls air across the modules for proper air flow.

The OGCP-9000 remote control panel came in its own box.

As I couldn't wait to get all of these units up and running, I set up the openGear tray and remote panel on a table in my tech operations area, which provided access to LAN and HD video/audio IO. I provided an HD/SDI signal source with embedded audio, and connected the module outputs to a 12x2 router feeding a converter that displays SMPTE 292 on a PC monitor.

While I felt very comfortable connecting the signal cables, every manufacturer's IP connectivity is just a bit different. Since I don't have a very long attention span, I decided to call Cobalt at this point to help me get the units talking. After about 30 seconds, their representative had me connect the 8310 frame, my laptop and the OGCP-9000 remote panel to a small FS105 NetGear Ethernet router that was already in place. After poking in a few IP addresses, the remote panel came to life, as did the Dashboard application on my laptop. Operation of the remote control panel could not have been easier. The knobs on the RCP are laid out just right, with very intuitive operation. Menu trees are easy to navigate, and they are not intimidating.

Accessing the 9061 card via the remote control panel, I was able to display the video proc menu, which contains luma gain, luma lift, color gain and color phase, and other controls. Each had a knob associated with it, and turning the knob affected the signal just as you would expect. There was no delay in response and a percentage readout followed changes in the signal. For ease of operation, the keypad allows direct value entry. Just type in the value you want, and press enter. The process is very simple. Pressing the "Select Device" button

allows instant access to any card in the chassis.

I accessed the 9084 card and decided to try out the elaborate RGB color correction features. Once again, response to changes in each control setting was immediate and linear. My adjustments were reflected on my monitor. Accessing the 9305 module was just as easy; however I didn't really have a test setup to measure the amount of delay I was adding to, or subtracting from, audio sources. The changes I made were reflected in milliseconds on each channel's control screen.

Next, it was time to try out the browser-based Dashboard controls. After opening the Dashboard application, connectivity was a snap. The tray description is displayed, along with all of the modules that populate the tray. While the OGCP-9000 offers ease of use along with convenience, the Dashboard app is very empowering. The status of any aspect of any card is only a mouse click away.

Just for fun, I accessed the "Video Proc" tab on the 9061 card. This revealed virtual slider bars for Luma Gain, Luma Lift, Color Gain, and Color Phase. Just as with the remote control panel, sliding the bars produced immediate results in the video signal being output. And as with the RCP, a value could be typed in and entered as well.

SUMMARY

I let the chassis and cards cook for several weeks during this review and observed that connectivity was always easy to accomplish with either the OGCP-9000 or the Dashboard application and found the cards were always operating and responsive. The 9000 series cards are flexible and packed full of features. The only way to make these products better would be for the company to combine every function on a single card.

Joey Gill is chief engineer at television station WPSD in Paducah, Ky. He has been with the station for 25 years and has worked in broadcasting since 1977. He may be contacted at respond2jgill@yahoo.com.