



SVG Hausmesse '26

Standards – Cobalt's bread and butter

*ENGINEERING
BEYOND THE
SIGNAL* COBALTDIGITAL.COM



Our Cobalt home, Champaign, Illinois

Global Cobalt Customers



Cobalt OB Truck Customers

All Mobile Video
Video Spa
MTV Networks
MPS
Token Creek
IMS Productions
Crosscreek
Trio Video
Moonlink Satellite
YES Productions
Lyon Video Inc
Jones Mobile Television
Denali Video (NEP)
Sweetwater Digital
Screenworks NEP
Pacsat HD International
(SDTV) Satellite Digital
NEP MIRA
Kodiak Mobile Television
NEP Supershooters LP
Mansion Mobile

Southern Sky Satellite
Gary Britt Communications LLC
Mobile Satellite Connection
Live Mobile Group
NEP Supershooters
New Century Productions
Turner Studios
Frontline Communications
Game Creek Video
NEP Systems Integration
CSP Mobile Productions
F&F Productions
Sure Shot Transmissions Inc
Comcast-SportsNet
NEP/Denali
Admiral Video Company
NEP Visions Ltd
Chicago Uplink Trucks
NEP Chicago Field Shop
CMG Mobile Productions

Remote Digital Media
International Datacasting
AVIWEST
Liberty Uplink
Broadcast Service Group
Thistle Communications
Alaska Mobile Productions
Gerling & Associates
Control 1 Communications
ENG Mobile Systems
Mobile Television Group
Colorado Studios
Total Production Services
Arctek Satellite Productions
AVS Media Group
Skehan Communications
Metrovision Production Group
WIC Mobile Production
Dome Productions
Broadcast Sports Inc



Orbital Communications
Remote Facilities Inc
Tri-Lite TV
Peak Uplink
Talladega Superspeedway
Nascar
Calhoun Satellite Communications
Satellite Communications Services
LiveOnSite
American Satellite Uplink
21 Lakes Media Group
Talking Rock Communications
Norm Levin & Company
DTAGS
Wolf Coach L-3 Essco
Accelerated Media Technologies
New England Satellite Sys Inc

Broadcast standards

The Importance Of Standards

- No company can make complete solutions for everything
- Connecting Product A to Product B, needs common standards
- End Users benefits:



public roads/connections

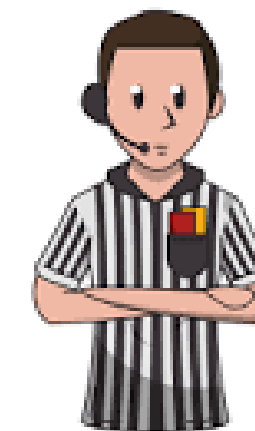


the right tools for the job



healthy competition

- Standards "referee" the rules to connection



Where Do Standards Come From?

- Standards bodies like:



- Standard bodies form Working Groups of experts from the entire broadcast community.
- Cobalt has a long tradition of supporting standards work:



Broadcast Standards (non-comprehensive list)

- **SMPTE**
 - Signal interconnection (SDI, 2110)
- **SCTE**
 - Ad insertion
- **ISO/MPEG/ITU**
 - Media compression
- **IETF**
 - Networking
- **ATSC**
 - US Digital TV
- **IEEE**
 - Networking

Industry Organizations:

- **AIMS**
 - SMPTE-2110, IPMX
- **AMWA**
 - NMOS, IPMX
- **VSF**
 - RIST, JPEG-XS, IPMX
- **openGear**

**Good products are
Standards-Compliant!**

Living by the standards

1997	Cobalt founded to build SDI to analogue converters
1998	3G-SDI standard accepted (1080P60)
2006	openGear founded by Cobalt, Ross and Ward Beck
Today	IPMX, SMPTE 2110, HDR <-> SDR, 12G, 3G, SD, etc.

Made in
USA

5-Year
Warranty

+60
Awards

+60
Countries

IPMX - AV over IP

Open Standard for Pro AV

Introduction to IPMX

- IPMX is “ST 2110 made easy” for plug-and-play operation
- It is intended for Pro-AV environments, but there are no limitations in deploying it in broadcast
- Main differences between IPMX and ST 2110:
 - IPMX requires the use of NMOS for control
 - Devices are auto-detected
 - The complexity of assigning multicasts is hidden – you just make connections
 - IPMX does not require PTP
 - Avoids the complexity of setting up a Grandmaster
 - Can use less costly switches
 - You do sample rate conversion to bring the audio to the same clock domain as the video
- JPEG-XS is an option for lower bit rate operation
 - Can even use 1Gb/s switches depending on compression level
- EBU started a IPMX certification program, securing buyers that approved devices are interoperable



Recurring question – how do you sync IPMX?

Multiple devices, i.e. cameras, how do they sync without PTP?

- Fact: You have multiple A/V streams flowing in your IPMX network, all unsynchronized, each one with its own time base.
- Sync them?
 - If you bring them back to SDI, you use a frame-sync to bring them all to house sync. The Cobalt 9904/9905 or our dedicated frame syncs 9922-FS, 9925FSx and 9935-FS, or our blueCORE's can do that.
 - In IP, if you have an end device switching between programs, switching happens at the IP layer (which doesn't care about synchronization at all).
- Joining a stream:
 - A well-designed end device, like our Cobalt SAPPHIRE BBG-2110 line, will join the new stream (make-before-break), start receiving it while still displaying the original content, and switch at a frame boundary, which does not need to align – at the end of one frame, it starts playing a frame from the other program, switching to its own clock domain, but keeping to the SDI slew rate.

IPMX Certification (EBU interoperate program)

All Cobalt IPMX-capable products passed certification during the testing event in Geneva, January 2026



Current Cobalt IPMX-Capable Products

Product		Type	Baseband Inputs	Baseband Outputs	Notes
INDIGO BIDI Gateway		openGear	4 x SDI	4 x SDI	First channel can be 4K
BBG-2110-H/S		Standalone	-	1 x SDI+HDMI	Supports up to 4K
BBG-2110-2H		Standalone	-	2 x HDMI	Supports up to 4K
BBG-2110-4Ho/4Sio		Standalone	4 x SDI	4 x HDMI+SDI	First channel can be 4K
BBG-2110-2Hi2Ho/4Sio		Standalone	2 x HDMI+SDI	2 x HDMI+SDI	First channel can be 4K
BBG-2110-4Hi/4Sio		Standalone	4 x HDMI+SDI	4 x SDI	First channel can be 4K
INDIGO + 9992-ENC		openGear	4 x SDI	-	IPMX to MPEG-2/AVC/HEVC
INDIGO + 9904/9905		openGear	4 x SDI	4 x SDI	Scaler, HDR, Audio Proc

All products support also SMPTE 2110 and include dual 10/25G Ethernet SFP cages



New Cobalt IPMX-Capable Products

Product		Type	Baseband Inputs	Baseband Outputs	Notes
INDIGO + ULL-DEC		openGear	4 x SDI	4 x SDI	First channel can be 4K
ARIA Audio Monitor		Standalone	2 x SDI	1 x SDI	Supports up to 4K
UltraBlue-SW Multiviewer		Standalone	Multiple	Multiple	Supports up to 4K
blueCORE Family		Standalone	4 x SDI	4 x SDI	Scaler, HDR, Audio Proc

All products support also SMPTE 2110 and include dual 10/25G Ethernet SFP cages



Some other Cobalt products

- openGear and Product family
- More on blueCORE
- More on ARIA Audio Monitors



openGear PROCESSING SOLUTIONS



Audio Processing

- Dolby Encoding
- Dolby Decoding
- 5.1 to 2.0 and 2.0 to 5.1
- Automatic Audio Leveling

Fiber Optic

- Optical to Electrical
- Electrical to Optical
- CWDM Mux / De-Mux
- Passive Splitters

Multiview

- Live Production
- Master Control
- Closed Captions
- Alarming

Color Correction

- Fast Responsive Control
- RGB Color Correction
- Soft and Hard Clip

Frame Sync

- Glitchless Frame Sync
- High Density
- Software Defined

Routing

- Up to 24x24 SDI Router
- 12G-SDI Capable 12x4
- MPEG-IP
- Fail-over

Conversion

- Format Conversion
- Analog Video Conversion
- Analog Audio Conversion

Compression

- MPEG 4 ENC & DEC
- HEVC Encode
- Gateway
- Transcoding

Test & Reference

- Dual SDI Test Signals
- BB or Trilevel Generation
- Tone Generation
- LTC Generation

Distribution

- Digital Video & Audio
- Analog Video & Audio
- Wordclock
- MADI

Branding

- Keying
- Logo Insertion
- Text Crawl

Compliance

- Text-to-Speech
- Audio Leveling
- EAS Insertion

Embed & De-Embed

- AES
- Analog Audio
- MADI

Metadata

- SCTE 104 Insertion
- LTC Insertion
- Caption Monitoring
- DID & SDID

4K & 12G-SDI

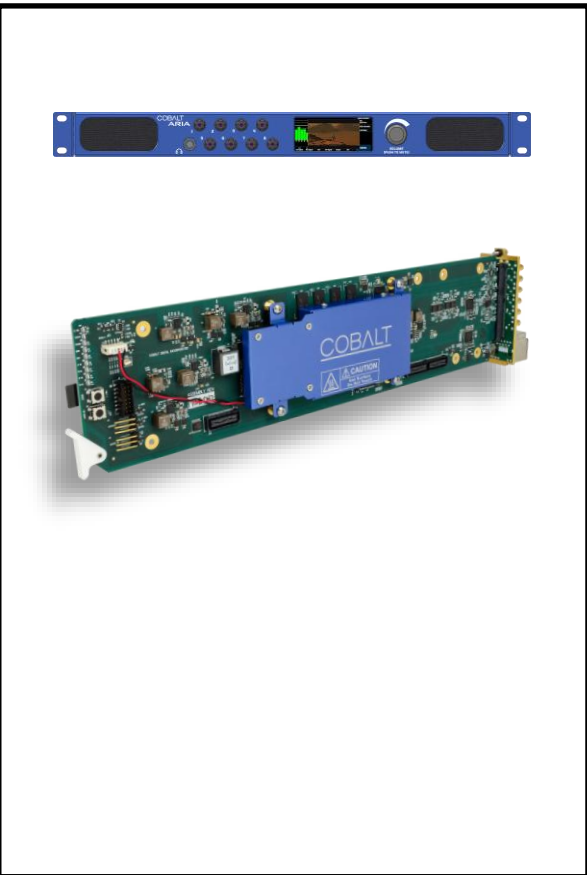
- Monitoring
- Distribution & Conversion
- SMPTE 2022/2110

COBALT Product Family

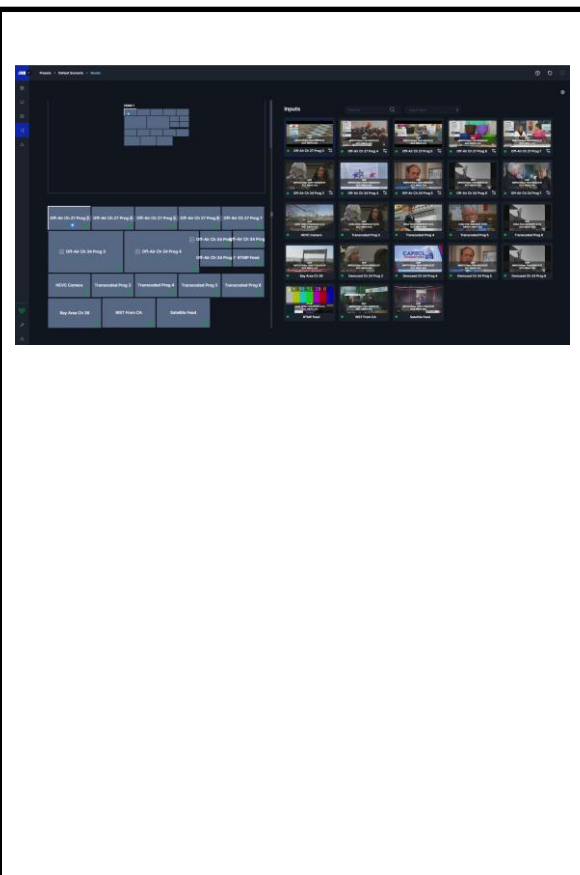
blueCORE
PROCESSORS



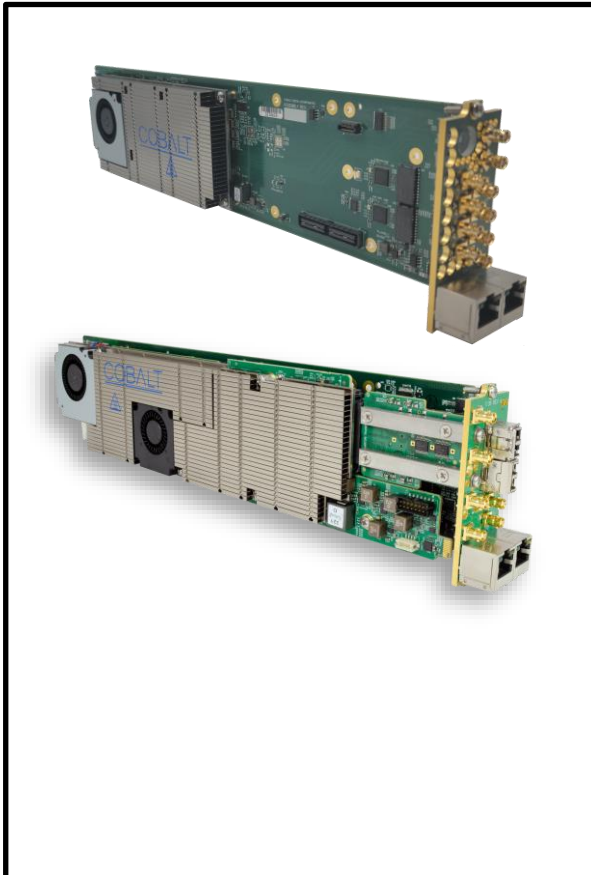
ARIA
AUDIO



UltraBlue
MULTIVIEWERS



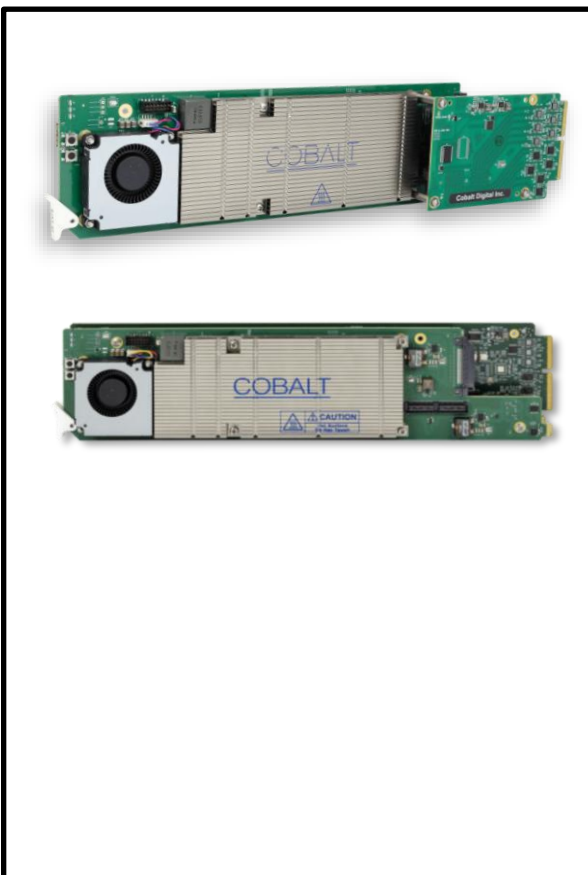
PACIFIC
COMPRESSION



SAPPHIRE
CONVERTERS



INDIGO
SERIES



TOPAZ
MULTI-PROCESSORS



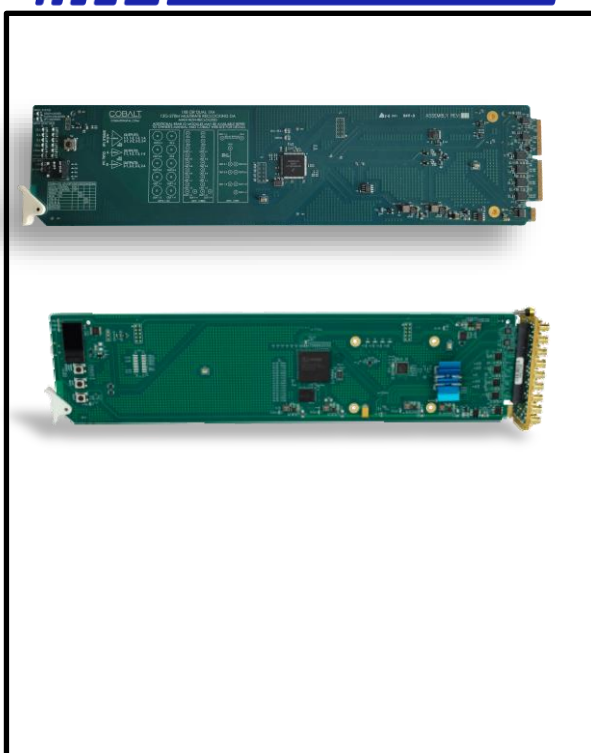
HPF MAX



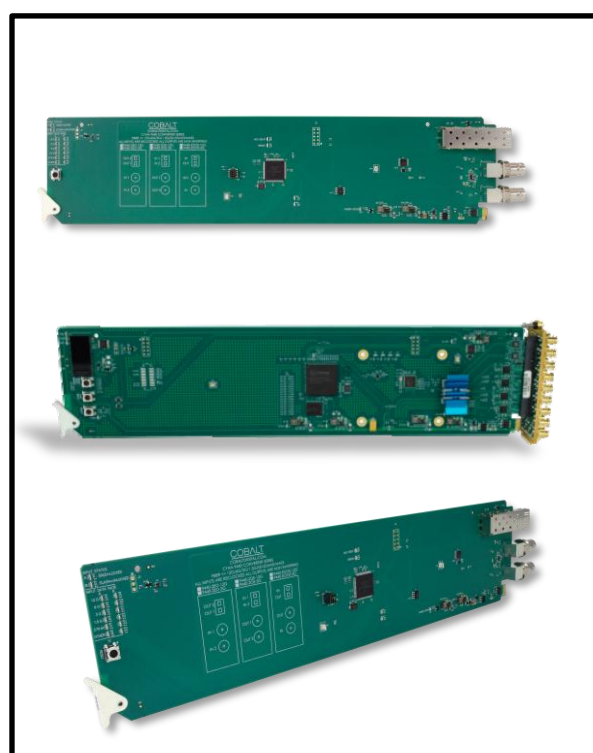
BLUE BOX



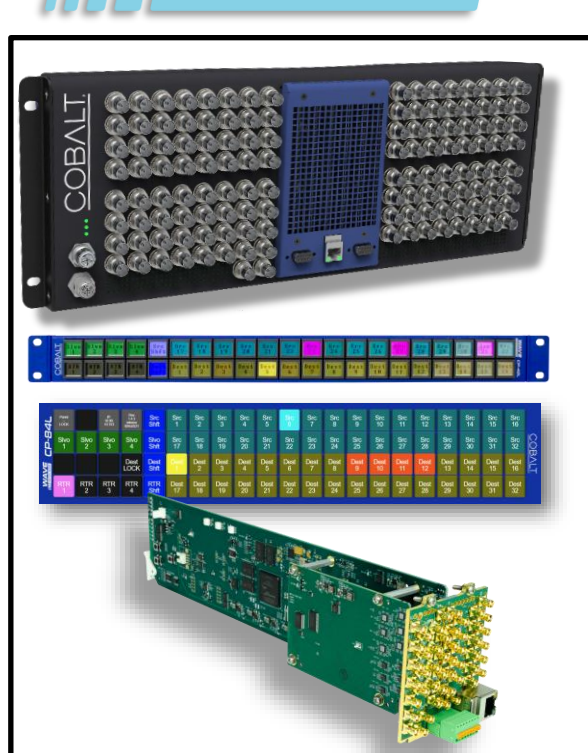
ROYAL
DISTRIBUTION AMPLIFIERS



CYAN
FIBER



WAVE
ROUTERS



blueCORE 1RU Signal Processors

blueCORE signal processors



- 1RU audio/video/ancillary data processor
- Rich functionality (UDX, Framesync, HDR, and much more)
- Support for SDI and ST 2110 inputs and outputs
- Touch-sensitive front panel
- Depth: 10" (plus 1" for knobs and BNCs in the back)
- Power:
 - SDI version: 50W
 - ST 2110 version 80W

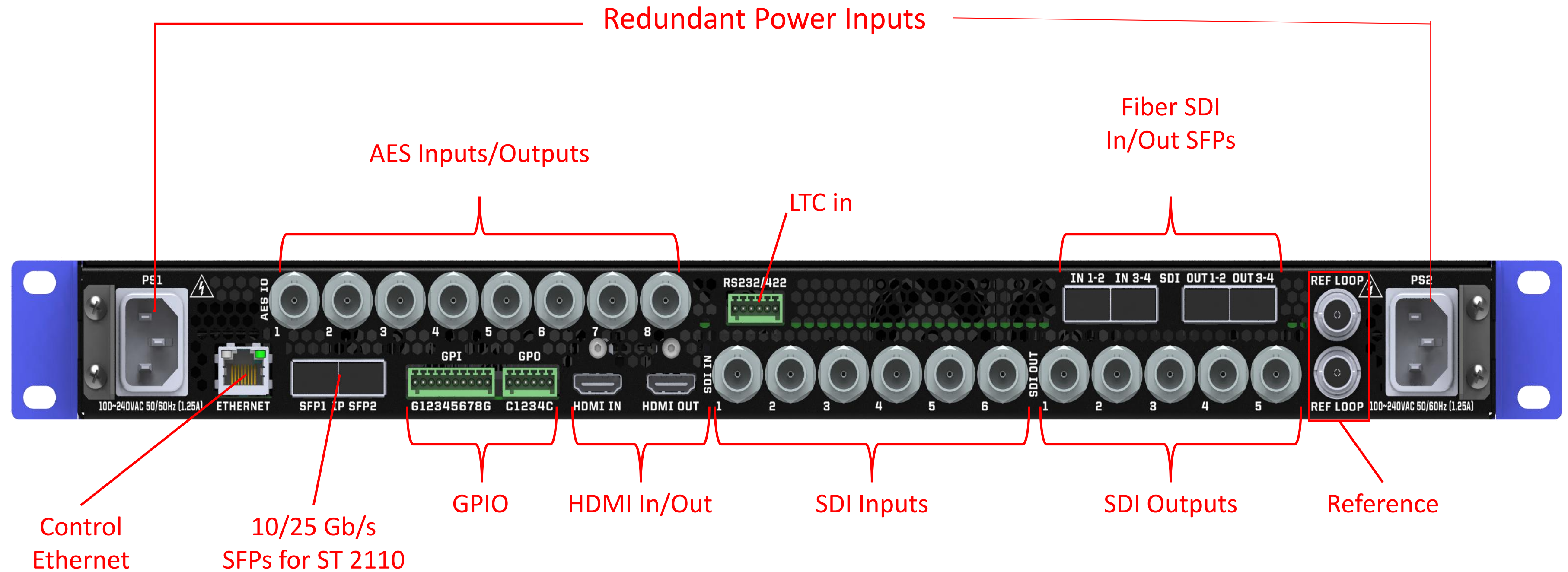
blueCORE
PROCESSORS

blueCORE Base Functionality

- Quad-path 3G or single-path 4K audio/video processor
- Base functions:
 - Up/Down/Cross conversion
 - Framerate conversion
 - Framesync
 - AES, MADI, and SDI embed/de-embed
 - Audio mixing and routing between AES, MADI, and SDI
 - Ancillary data bridging
 - Multi-input RP168 clean switch (manual selection or GPI control)
 - Supports all popular formats and frame rates
 - Dedicated SFPs for SDI over Fiber support



blueCORE Rear Panel



blueCORE
PROCESSORS

blueCORE Models

Model	SDI In/Out	ST 2110 In/Out	4K Support	HDR Support	Model Upgrade Path
blueCORE-1	✓	×	×	×	Up to blueCORE-2
blueCORE-2	✓	×	✓	✓	(none)
blueCORE-3	✓	×	✓	✓	Up to blueCORE-4
blueCORE-4	✓	✓	✓	✓	(none)
blueCORE-5	×	✓	✓	✓	Up to blueCORE-4

- **blueCORE-1** is used where 4K/HDR is not needed, and ST 2110 will never be necessary.
 - Field-upgradable to **blueCORE-2**
- **blueCORE-2** is used where 4K/HDR is needed, and ST 2110 will never be necessary.
- **blueCORE-3** is used where ST 2110 may be added in the future.
 - Field-upgradable to **blueCORE-4**
- **blueCORE-4** is used where both SDI and ST 2110 are required.
- **blueCORE-5** is used where only ST 2110 is required.
 - Field-upgradable to **blueCORE-4**

HDMI Out:

- Available on blueCORE 1, 2, 3
- Maximum resolution matches the model

HDMI In:

- Available on blueCORE 2, 3 in 4K mode.
- Maximum resolution 4K

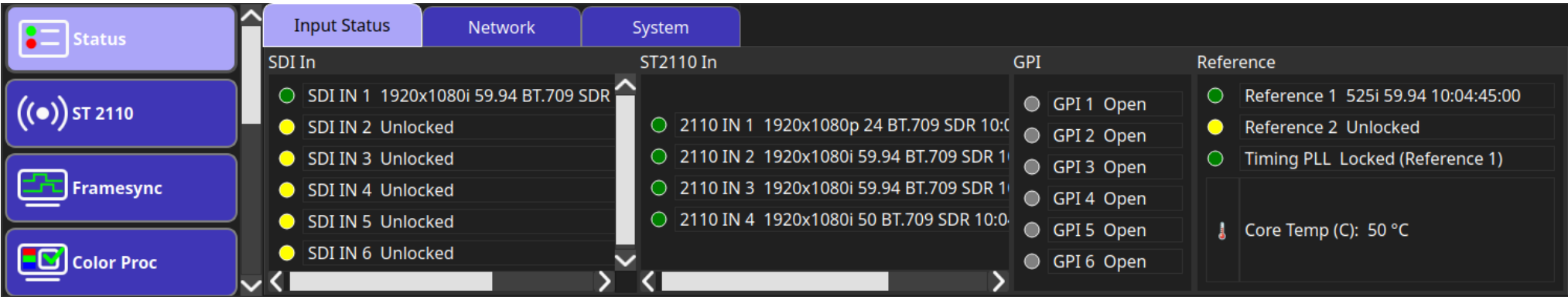


blueCORE Optional Features

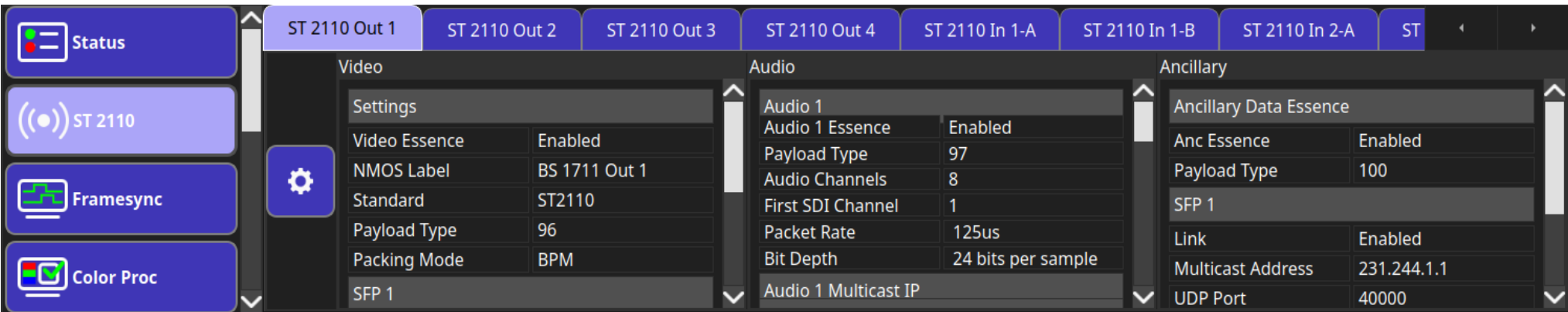
- Factory-Installed DSP Card
 - Supports Dolby encoding/decoding, loudness processing, upmixing.
- Field upgrades
 - If the DSP card is installed, individual features can be licensed:
 - Dolby encode/decode, RTLL, upmix
 - RGB Color Correction, using front panel knobs, Web UI, or the OGP-9000 panel
 - Logo insertion
 - Ancillary Data Processing
 - Audio LTC
 - Clean and Quiet Switching
 - DANTE Embed/De-Embed



blueCORE Front Panel Samples



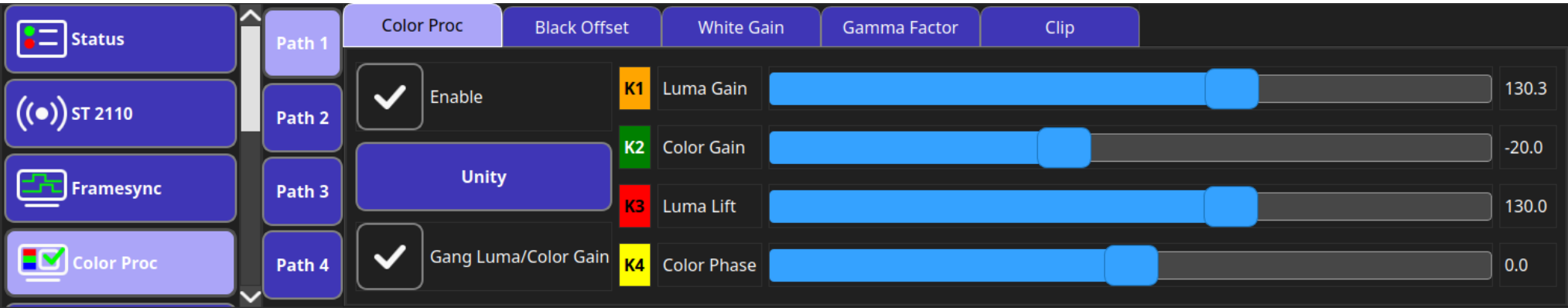
Status Screen



Sample ST 2110 Configuration



ST 2110 Audio Router



Sample Color Proc Controls



ARIA Audio Monitor Updates

ARIA Audio Monitors



- Three front panel options: ARIA-V, ARIA-1 (3.4in), and ARIA-2 (6.9in)
- 1RU rack-mountable, 4 inches deep, weight 4 lb.
- Redundant power supplies plus PoE++
- Full motion video thumbnail
- SDI and analog outputs
- Supports:
 - SDI (2 x built-in, 2 x SFP) up to 12G
 - MADI
 - DANTE **(New)**
 - Dolby (future option)



- AES
- Analog balanced
- ST 2110 (audio and video) up to 4K



ST 2110 Support

- Dual SFP cages for ST 2022-7 support, accepting both 10G and 25G SFPs
 - Standard SFPs can be used; source your own if you like.
- Support for:
 - One ST 2110-20 video essence up to 4K
 - Up to four ST 2110-30 audio essences, with 16 channels each
 - One ST 2110-40 ancillary data essence
- Besides monitoring up to 64 channels from the audio essences, the ARIA will create an SDI rendering of the input signal, saving a gateway.
 - An internal audio router is provided to select up to 16 channels to be embedded in the SDI output
- Asynchronous operation support (no PTP required) for IPMX networks.

ARIA Audio Monitor New

- Support for DANTE
 - Uses standard 1Gb/s copper SFPs
 - Field-upgradable option
 - 16x16 and 64x64 options
- New version with larger touch screen



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