COBALT

BBG-1034-AUD-PRO-DSP • 3G/HD/SD-SDI Standalone Advanced Audio Processor
with DSP Audio Options Support and Full Embed/De-Embed

The Cobalt® **BBG-1034-AUD-PRO-DSP Standalone 3G/HD/SD-SDI Advanced Audio Processor with DSP Audio Options Support and Full Embed/De-Embed** provides a DSP-based platform that supports multiple audio DSP options. When optioned with various diverse audio processing options, the DSP-based processing core (which supports numerous simultaneous processing engines) uses license "credits" which allows flexible tailoring of multiple proc function instances. In this manner, the BBG-1034-AUD-PRO-DSP provides much more flexibility than other audio processors that used fixed processing assets (for example, this flexibility allows "trading" credits for more Dolby encoders while backing out of loudness processors or other engine assets).

Audio proc options include Dolby® Real-Time Loudness Leveling automatic loudness processing, Dolby® encode/decode, and Linear Acoustic® UPMAX™ automatic upmixing. DSP options can be ordered with new-device purchase, or field-installed as software option upgrades. Included as standard features are downmixing, flex mixing, and full AES and balanced analog audio embed/de-embed.

Also included standard is bulk and per-channel audio delay controls that easily address lip-sync issues. Option **+TTS** provides high-quality Text-To-Speech synthesis, directly converting EAS text to digital audio speech with no baseband signal breakouts or add-ons.

Quality Check option **+QC** allows failover to alternate inputs or other actions based on user-configurable criteria such as black/frozen frame, audio silence or CC absence. The BBG-1034-AUD-PRO-DSP also provides analog CVBS video inputs and outputs, and analog audio embedding and de-embedding.

Preset save/load allows saving custom settings while allowing one-button revert to factory settings. Layered presets allow invoking changes related only to a specific area of concern (audio routing, for example) while not changing any other processing settings or aspects. The BBG-1034-AUD-PRO-DSP can be remote-controlled using DashBoard™. The compact standalone form factor allows desktop usage, as well as the 1/3-rack size of the BBG-1034-AUD-PRO-DSP allowing 3 units to be installed in a 1RU space (an optional mounting tray is available that provides secure mounting of the units to a standard 19" frame).

FEATURES

DSP-based platform supports multiple audio DSP options, with multiple instances available using allocatable license "credits"

Dolby encoding/decoding, loudness processing, and upmixing DSP audio options available

Auto Adjust feature helps assure lip sync by assessing and alerting where DSP processing requires matching video delay

Advanced audio processing allows routing, gain, smooth delay, and flexible mixing as standard features

Full audio crosspoint with 5.1-to-stereo downmix (standard) available for all audio outputs

Supports all popular formats: 480i, 576i, 720p, 1080i, 1080pSF, 1080p

CVBS analog video I/O and analog/AES embed / de-embed available

Option **+TTS** provides Text-To-Speech synthesis, directly converting EAS text to high-quality digital audio speech with no baseband signal breakouts or add-on units

Compact footprint – up to 3 units in a 1RU space. Optional tray provides secure captive-fastener mounting of 3 units in a 1RU tray.

Remote control/monitoring via DashBoard™ software or Web Browser User Interface

Five year warranty

OPTIONS

Dolby® Real-Time Loudness Leveling Automatic Loudness Processing Options (**+DSP-RTLL**) – Provides advanced loudness processing with comprehensive parametric controls. Available as surround 5.1 and stereo 2.0. (See Ordering Information for full details.)

Linear Acoustic® UPMAX™ Upmixing (**+DSP-UPMIX-LA**) – Provides automatic 2.0-to-5.1 Linear Acoustic® UPMAX™ upmixing

Linear Acoustic® AEROMAX™ Loudness Processor Options (**+DSP-LP**) – Available as surround 5.1 and stereo 2.0. (See Ordering Information for full details.)

Audyne ITU Loudness Leveler Options (**+DSP-ITU**) – Available as surround 5.1 and stereo 2.0. (See Ordering Information for full details.)

Dolby® Encoder Options (**+DSP-ENC**) – Available as 5.1 and 2.0 Dolby Digital and Digital Plus Encode. (See Ordering Information for full details.)

Dolby® Decoder Options (**+DSP-DEC**) – Provides Dolby Digital, Digital Plus, and E Decode

Logo Insertion Option (**+LOGO**) – Allows uploading of user logo graphic file to card, with automated insertion controlled by GPI or other events.

Quality Check Option (**+QC**) – Provides failover, alert, or user presets action on criteria such as black/frozen frame, audio silence, and CC absence.

Text-To-Speech Option (**+TTS**) – Provides Text-To-Speech synthesis, directly converting EAS text to digital audio speech with no baseband signal breakouts or add-ons. High-quality Text-To-Speech from Acapela Group.

Emergency Alert System Text Crawl Generation Option (**+EAS**) – Provides a single-device solution for keying Emergency Alert System (EAS) text crawls in the active video and inserting station identification logos. Compatible with Sage™, Dasdec™, and other EAS crawl generators, with automated control insertion via presence of crawl data or GPI.

Clean and Quiet Switching Option (**+CQS**) – Provides silence between input switches from one SDI input source to another

Add Frame Sync Option (**+FS**)

Add Extended Delay Option (**+DLY**) (Available only in conjunction with option +FS)
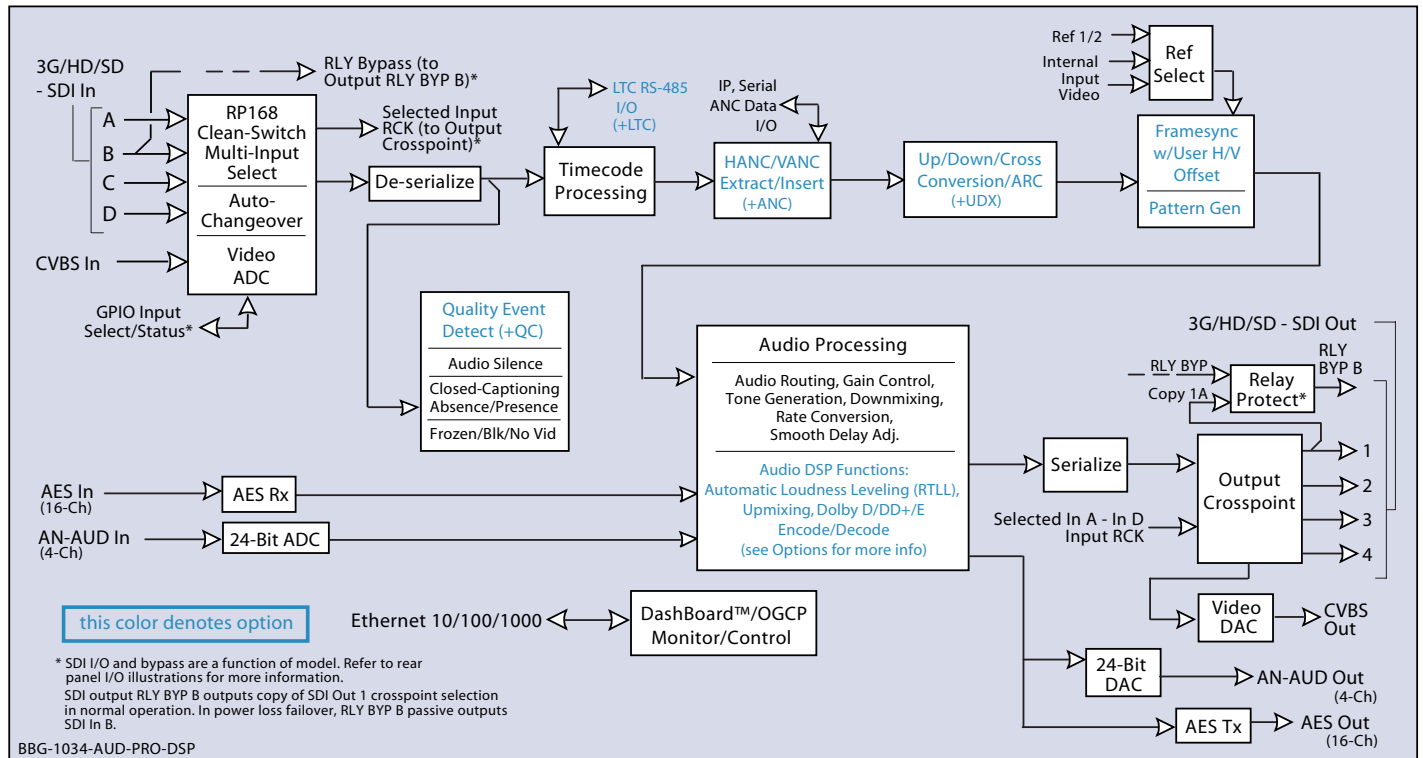
Add Up/Down/Cross Converter Option (**+UDX**)

Ancillary Data Processor Option (**+ANC**) – Provides full user VANC/HANC packet insertion/extraction access to DID/SDID ancillary data
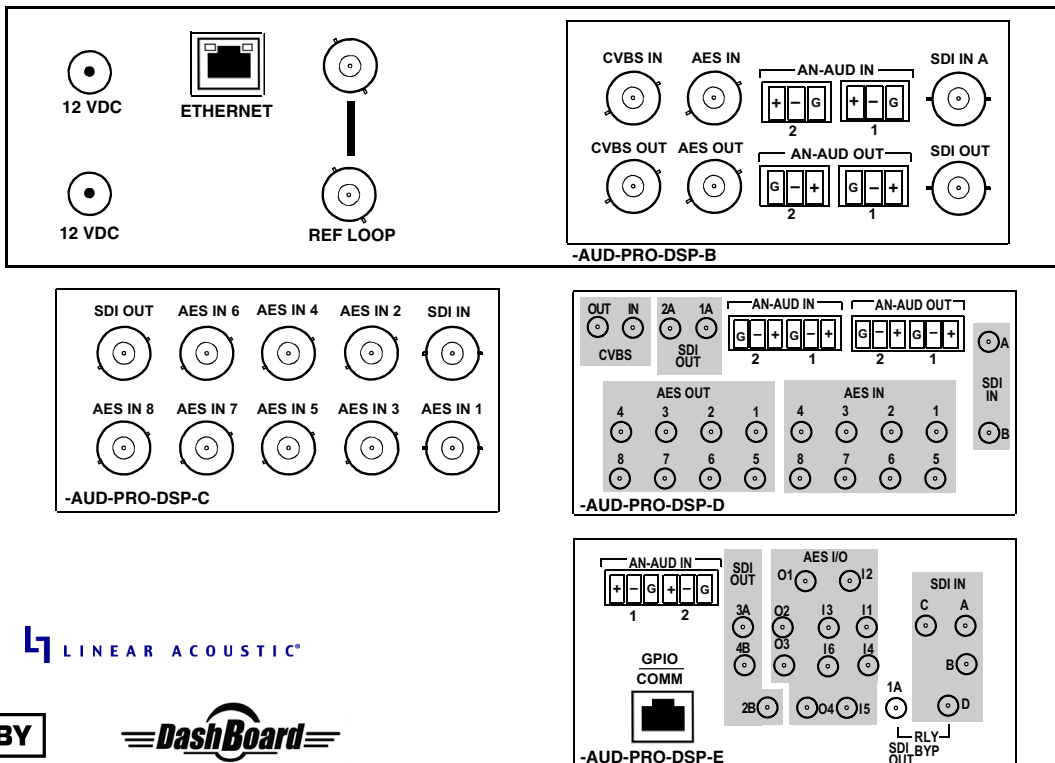
Audio LTC I/O Option (**+LTC**)

SCTE 104 Insertion Option (**+SCTE104**)

SCTE104 Frame-Accurate SCTE Trigger Insertion Option (**+SCTE104-FAST**)

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3G/HD/SD - SDI In

A
B
C
D

RP168 Clean-Switch Multi-Input Select

Auto-Changeover

Video ADC

CVBS In

GPIO Input Select/Status*

RLY Bypass (to Output RLY BYP B)*

Selected Input RCK (to Output Crosspoint)*

De-serialize

Timecode Processing

LTC RS-485 I/O (+LTC)

IP, Serial ANC Data I/O

HANC/VANC Extract/Insert (+ANC)

Up/Down/Cross Conversion/ARC (+UDX)

Framesync w/User H/V Offset

Pattern Gen

Ref 1/2
Internal Input Video

Ref Select

Quality Event Detect (+QC)

Audio Silence

Closed-Captioning Absence/Presence

Frozen/Blk/No Vid

Audio Processing

Audio Routing, Gain Control, Tone Generation, Downmixing, Rate Conversion, Smooth Delay Adj.

Audio DSP Functions:
Automatic Loudness Leveling (RTLL), Upmixing, Dolby D/DD+/E Encode/Decode
(see Options for more info)

AES In (16-Ch)

AES Rx

AN-AUD In (4-Ch)

24-Bit ADC

Ethernet 10/100/1000

DashBoard™/OGCP Monitor/Control

this color denotes option

Serialize

Relay Protect*

RLY BYP
Copy 1A

RLY BYP B

Output Crosspoint

Selected In A - In D Input RCK

3G/HD/SD - SDI Out

1
2
3
4

Video DAC

CVBS Out

24-Bit DAC

AN-AUD Out (4-Ch)

AES Tx

AES Out (16-Ch)

* SDI I/O and bypass are a function of model. Refer to rear panel I/O illustrations for more information.
SDI output RLY BYP B outputs copy of SDI Out 1 crosspoint selection in normal operation. In power loss failover, RLY BYP B passive outputs SDI In B.

BBG-1034-AUD-PRO-DSP

Rear Panel

12 VDC

ETHERNET

12 VDC

REF LOOP

CVBS IN AES IN AN-AUD IN SDI IN A

2 1

CVBS OUT AES OUT AN-AUD OUT SDI OUT

2 1

-AUD-PRO-DSP-B

SDI OUT AES IN 6 AES IN 4 AES IN 2 SDI IN

AES IN 8 AES IN 7 AES IN 5 AES IN 3 AES IN 1

-AUD-PRO-DSP-C

OUT IN 2A 1A AN-AUD IN AN-AUD OUT A

CVBS SDI OUT 2 1 2 1 SDI IN

AES OUT AES IN B

4 3 2 1 4 3 2 1

8 7 6 5 8 7 6 5

-AUD-PRO-DSP-D

AN-AUD IN SDI OUT AES I/O SDI IN

1 2 O1 I2 C A

3A O2 I3 I1

4B O3 I6 I4 B

GPIO COMM

2B O4 I5 1A D

RLY BYP
SDI OUT

-AUD-PRO-DSP-E

acapela group
Acapela Text-To-Speech from Acapela Group™

LINEAR ACOUSTIC®

DOLBY

DashBoard

SPECIFICATIONS

Note: Inputs/outputs are a function in some cases of model. See Ordering Information for details.

Power

24 Watts (includes +DSP options). Power supplied by 12VDC AC adapter, universal input (included).

SDI Inputs/Outputs

Up to (4) 75Ω BNC inputs
Up to (4) 75Ω BNC outputs (selectable as processed SDI IN or IN RCK)
SDI Formats Supported: SMPTE 259M, SMPTE 292M, SMPTE 424M
SDI Receive Cable Length: 3G/HD/SD: 120/180/320 m (Belden 1694A)
SDI Return Loss: >15 dB up to 1.485 GHz; >10 dB up to 2.970 GHz
SDI Alignment Jitter: 3G/HD/SD: < 0.3/0.2/0.2 UI
Timing Jitter: 3G/HD/SD: < 2.0/1.0/0.2 UI
Minimum Latency:
SD: 127 pixels; 9.4 us
720p: 330 pixels; 4.45 us
1080i: 271 pixels; 3.65 us
1080p: 361 pixels; 2.43 us
Note: SDI Return loss and receive cable length are affected by rear I/O module used. Specifications represent typical performance.

CVBS Video Input/Outputs

(1) 75Ω BNC input
(1) 75Ω BNC output. CVBS output functional only when selected processed signal is carrying SD-SDI.
ADC Resolution: 9-bit
Sampling Frequency: 27 MHz (2x over-sampling)
Y/C Separation: 4 line Adaptive Comb Filter
Freq. Response: ± 0.25 dB to 5.5 MHz
SNR: > 50 dB to 5.5 MHz (unweighted)
Differential Phase: < 1 degree
Differential Gain: < 1%
Nonlinearity < 1%

Discrete Audio Input/Outputs

AES-3id 75Ω inputs (8 pair (16-Ch) max)
AES-3id 75Ω outputs (8 pair (16-Ch) max)
Input AES SRC Range: 32 to 96 kHz
Balanced analog audio inputs (4-Ch max)
Balanced analog audio outputs (4-Ch max)
(I/O conforms to 0 dBFS = +24 dBu)
Analog Output Impedance: < 50 Ω
Analog Reference Level: -20 dBFS
Analog Nominal Level: +4 dBu
Analog Max Output Level: +24 dBu (0 dBFS)
Analog Freq. Response: ±0.2 dB (20 Hz to 20 kHz)
Analog SNR: 115 dB (A weighted)
Analog THD+N: -96 dB (20 Hz to 10 kHz)
Analog Crosstalk: -106 dB (20 Hz to 20 kHz)

Frame Sync Audio/Video Delay (option +FS)

Max offset: 20 frames
Latency (min): 1 frame
Option +DLY Delay (3G/HD/SD): >800 msec / >1580 msec / >9000 msec

User Audio Delay Offset from Video

Bulk delay control: -33 msec to +3000 msec.
Per-channel delay controls: -800 msec to +800 msec

GPIO

(2) GPI; (2) GPO

Control/Monitor Interface

Front panel network setup. DashBoard remote control via 10/100/1000 Ethernet port.

Physical

Dimensions (WxHxD): 5.7 x 1.4 x 14.7 in (14.5 x 3.5 x 37.3 cm) Dimensions include connector projections.
Weight: 6 lb (2.8 kg)

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ORDERING INFORMATION

BBG-1034-AUD-PRO-DSP 3G/HD/SD-SDI Standalone Advanced Audio Processor with DSP Audio Options Support and Full Embed/De-Embed, available in the following rear-panel I/O configurations:

BBG-1034-AUD-PRO-DSP-B (1) 3G/HD/SD-SDI Input BNC, (1) CVBS Video Input BNC, (1) AES Input BNC, (1) 3G/HD/SD-SDI Output BNC, (1) CVBS Output BNC, (1) AES Output BNC

BBG-1034-AUD-PRO-DSP-C (1) 3G/HD/SD-SDI Input BNC, (8) AES Input BNCs, (1) 3G/HD/SD-SDI Output BNC

BBG-1034-AUD-PRO-DSP-D-DIN (2) 3G/HD/SD-SDI Inputs, (1) CVBS Input, (8) AES Inputs, (2) Balanced Analog Audio Inputs, (2) 3G/HD/SD-SDI Outputs, (1) CVBS Processed Output, (8) AES Outputs, (2) Balanced Analog Audio Outputs (All coaxial connectors DIN1.0/2.3.)

BBG-1034-AUD-PRO-DSP-D-HDBNC (2) 3G/HD/SD-SDI Inputs, (1) CVBS Input, (8) AES Inputs, (2) Balanced Analog Audio Inputs, (2) 3G/HD/SD-SDI Outputs, (1) CVBS Processed Output, (8) AES Outputs, (2) Balanced Analog Audio Outputs (All coaxial connectors HD-BNC.)

BBG-1034-AUD-PRO-DSP-E-DIN (4) 3G/HD/SD-SDI Inputs (one 3G/HD/SDI Output with relay bypass failover), (6) AES Inputs, (4) AES Outputs, (2) Balanced Analog Audio Inputs, (4) 3G/HD/SD-SDI Outputs, (1) GPIO RJ-45 connector (All coaxial connectors DIN1.0/2.3.)

BBG-1034-AUD-PRO-DSP-E-HDBNC (4) 3G/HD/SD-SDI Inputs (one 3G/HD/SDI Output with relay bypass failover), (6) AES Inputs, (4) AES Outputs, (2) Balanced Analog Audio Inputs, (4) 3G/HD/SD-SDI Outputs, (1) GPIO RJ-45 connector (All coaxial connectors HD-BNC.)

Options and Accessories:

+DSP-RTLL-5.1 Dolby® RTLL™ 5.1-Channel Loudness Processor Option

+DSP-RTLL-2.0 Dolby® RTLL™ Stereo Loudness Processor Option

+DSP-ENCD-5.1 Dolby® Digital/Digital Plus 5.1 Encoder

+DSP-ENCD-2.0 Dolby® Digital/Digital Plus 2.0 Encoder

+DSP-DEC Dolby® Decoder

+DSP-UPMIX-LA Linear Acoustic® UPMAX™ 2.0-to-5.1 Upmixer

+DSP-LP-5.1 Linear Acoustic® AEROMAX™ 5.1-Channel Loudness Processor Option

+DSP-LP-2.0 Linear Acoustic® AEROMAX™ 2-Channel Loudness Processor Option

+DSP-ITU-5.1 Audyne ITU 5.1-Channel Loudness Leveler Option (1)

+DSP-ITU-2.0 Audyne ITU 2.0-Channel Loudness Leveler Option (1)

+LOGO Logo Insertion Option

+ANC Ancillary Data Processor Option

+FS Add Frame Sync Option

+DLY Extended Frame Sync Delay Option (available only in conjunction with option +FS)

+UDX Add Up/Down/Cross Converter Option

+QC Quality Check Option

+CQS Clean and Quiet Switching Option

+TTS Text-To-Speech Option (Acapela Text-To-Speech from Acapela Group™. Fielded units must be returned to Cobalt for installation of speech library SD memory card onto host unit as well as software upload. Please contact Support for more information.)

+2L-SPAN Add Spanish-language upgrade (add-on to option +TTS; option +TTS required)

+EAS Emergency Alert System Text Crawl Generation Option

+LTC Audio LTC I/O Option

+SCTE104 SCTE 104 Insertion Option

+SCTE104-FAST Frame-Accurate SCTE 104 Trigger Insertion Option

BBG-1000-PS Redundant Power Supply Module

BBG-1000-TRAY 1RU Mounting Tray (supports 3 units)

(1) Manufactured under license from Audyne Inc.