

# BBG-1022-FS • 3G/HD/SD-SDI Standalone Frame Sync with Audio/Video Processing, AES/Analog Audio Embedding/De-Embedding, and CVBS I/Ot



The Cobalt® **BBG-1022-FS 3G/HD/SD-SDI Standalone Frame Sync with Audio/Video Processing, AES/Analog Audio Embedding/De-Embedding, and CVBS I/O** offers frame sync, and advanced audio and ancillary data support, plus many other powerful features. Full audio support includes per-channel audio delay. Option **+2FS** adds a second independent processing path, offering two signal paths on a single unit, with both paths providing independent frame sync and audio embedding / de-embedding.

Advanced frame sync features include per-channel audio delay and audio/video delay offset. Audio embed adaptive SRC allows asynchronous 48 kHz AES audio to automatically sync with program video 48 kHz timing for glitch-free embedding. Bulk and per-channel audio delay controls 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. Option **+EAS** provides EAS crawl burn-ins directly from industry standard EAS devices such as Sage™.

A convenient input crosspoint allows manual selection or failover to alternate inputs on loss of input conditions. Two discrete character burn strings can be inserted on output video, with each string inserted as static text and/or insert only upon LOS. With option **+T-SLATE**, import of user trouble slate graphics is also supported in addition to standard test pattern insert as an input LOS/quality event marker. A moving-box insertion can serve as a dynamic raster confidence check even when the input video image is static. Included standard is closed captioning absence/presence detection for CEA 608/708 and line 21 SD closed captioning.

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-1022-FS 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-1022-FS 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

- Supports all popular formats: 480i, 576i, 720p, 1080i, 1080pSF, 1080p
- Multi-input RP168 clean switch
- Closed-captioning absence detection
- Auto-Changeover can be set to invoke failover for basic input loss.
- Moving-box/motion insertion enable serves as a dynamic raster confidence check even in cases where the input video image is static
- Dual independent burn-in text string insertion allows condition-based insertion (such as basic ID text for valid input and different text message for failover conditions)

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

Frame Sync with full H/V offset and manual/LOS video pattern generator

Timecode processing can prioritize, filter for, and convert between specific SMPTE embedded-video or audio LTC, with output/burn-in timecode using selected format

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

Full audio crosspoint with delay control and 5.1-to-stereo downmix available for all audio outputs

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

Pattern generator can provide raster/test pattern and patterns for LOS failover insertion

Low-power/high-density design - less than 18 Watts

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

Uses DashBoard remote control (device appears as single-card frame)

Five year warranty

## OPTIONS

Dual-Channel Option (**+2FS**) - Adds a second independent processing path, offering two independent signal paths of frame sync / audio embedding and de-embedding on a single unit. (Upgrades device to full BBG-1022-2FS functionality and specifications.)

Ancillary Data Processor (**+ANC**) - Provides full user VANC/HANC packet insertion/extraction access to DID/SDID ancillary data, with insert/extract to and from IP, RS-232/RS-422 serial, and GPIO external interfaces. SMPTE 337 embed/de-embed allows serial user data to be embedded and de-embedded over unused embedded audio pairs.

Trouble Slate Import (**+T-SLATE**) - Allows uploading of up to three different user trouble slate graphic file to the BBG unit, with automated insertion controlled by GPI or other events.

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

Key/Fill Keyer (**+KEYER**)

Text-To-Speech (**+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.

Color Correction (**+COLOR**) - Full RGB color corrector (offset, gain, gamma) with extended YCbCr proc controls, white hard clip, white soft clip, black hard clip, and saturation clip.

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

Clean and Quiet Switching Option (**+CQS**) - Provides automatic audio muting during switching transitions from one SDI input source to another to provide silence between input switches.

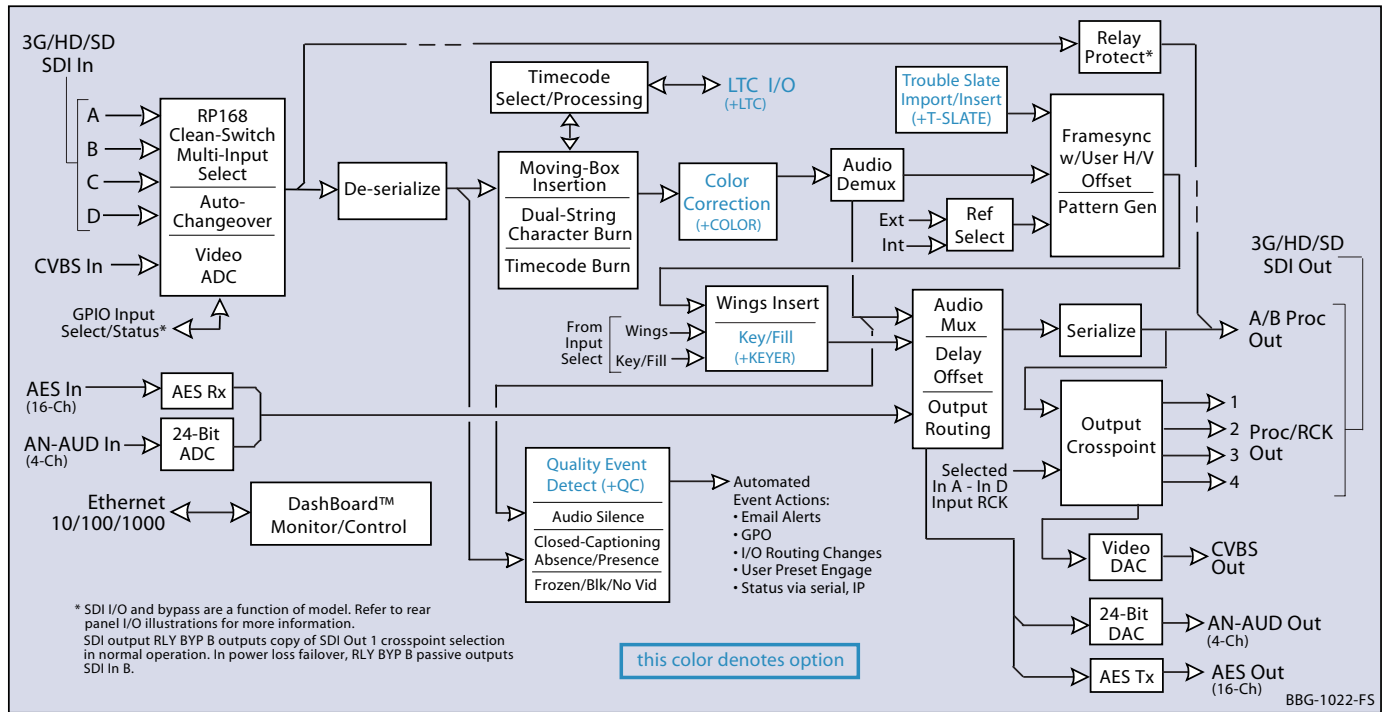
Expanded Delay (**+DLY**) - Increases frame buffer to provide adjustable audio/video delay buffer capacity to over 9 seconds for SD video, 1.5 seconds for HD video, or 0.8 seconds for 3G.

SCTE 104 Insertion (**+SCTE104**) - Provides generation/insertion of SCTE 104 data into baseband SDI. Message send can be triggered from automation GPI or other modes. Full control of splice start, end, and cancel as well as pre-roll offsets.

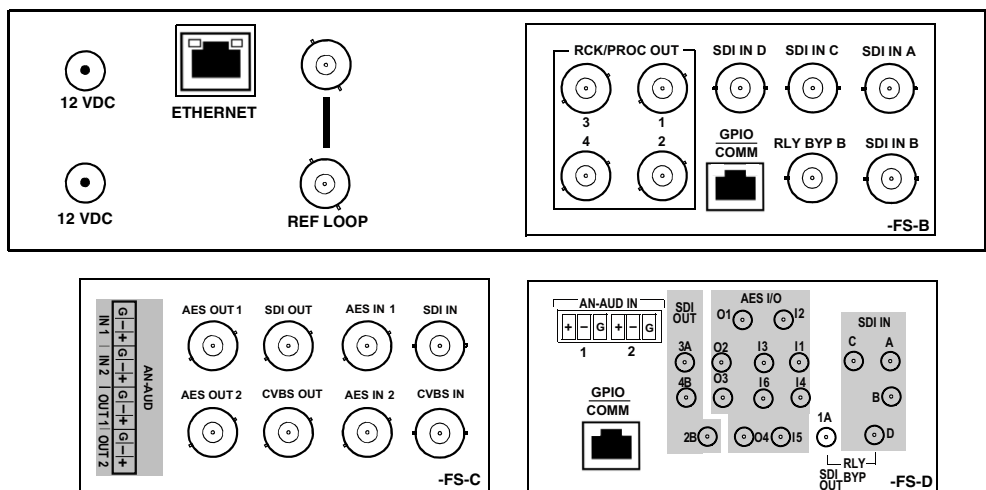
SCTE104 Frame-Accurate SCTE Trigger Insertion Option (**+SCTE104-FAST**) - Uses Time Stamp data derived from broadcast automation to provide deterministic, frame-accurate Digital Program Insertion (DPI) message embedding into SDI. The linear channel is output with precise metadata marking the beginning and ending of each program and commercial segment, optimizing it for automatic dissemination to CDN and VOD systems.

Audio LTC I/O (**+LTC**)

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**Rear Panel**



# BBG-1022-FS • 3G/HD/SD-SDI Standalone Frame Sync with Audio/Video Processing, AES/Analog Audio Embedding/De-Embedding, and CVBS I/O

## SPECIFICATIONS

### Power

< 18 Watts. Power supplied by 12VDC AC adapter, universal input (included).

### SDI Input/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 (frame sync disabled): SD: 127 pixels (9.4 us); 720p: 330 pixels (4.45 us); 1080i: 271 pixels (3.65 us); 1080p: 361 pixels (2.43 us)

### CVBS Video Input/Outputs

(1) 75Ω BNC input

(1) 75Ω BNC output. CVBS output functional only when selected path 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

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

### Text Burn-In

(2) independent strings supported. Independent insertions controls for enable/disable and enable upon LOS. User controls for text size and H/V position.

### GPIO/COMM

(2) GPI configurable to select input routing. (2) GPO configurable to invoke upon input selected. RS-232/485 comm port.

### Control/Monitor Interface

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

### Frame Reference Input

Looping 2-BNC connection. SMPTE 170M/318M "Black Burst", SMPTE 274M/296M "Tri-Level"

Return Loss: >35 dB up to 5.75 MHz

### 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-1022-FS** 3G/HD/SD-SDI Standalone Frame Sync with Audio/Video Processing, AES/Analog Audio Embedding/De-Embedding, and CVBS I/O available in the following rear-panel I/O configurations:

**BBG-1022-FS-B** (4) 3G/HD/SD-SDI Input BNCs, (4) 3G/HD/SD-SDI Output BNCs, (1) 3G/HD/SDI Output BNC (with relay bypass failover), (1) GPIO/COMM RJ-45 connector

**BBG-1022-FS-C** (1) 3G/HD/SD-SDI Input BNC, (1) CVBS Video In BNC, (2) AES In BNCs, (2) Balanced Analog Audio Inputs, (1) 3G/HD/SDI Output BNC, (1) CVBS Video Out BNC, (2) AES Out BNCs, (2) Balanced Analog Audio Outputs

**BBG-1022-FS-D-DIN** ((4) 3G/HD/SD-SDI Inputs, (2) Balanced Analog Audio In, (6) AES Inputs, (4) 3G/HD/SDI Outputs w/ (1) relay protect, (4) AES Outputs, GPIO/COMM (RJ-45 connector). (All coaxial connectors DIN 1.0/2.3)

**BBG-1022-FS-D-HDBNC** (4) 3G/HD/SD-SDI Inputs, (2) Balanced Analog Audio In, (6) AES Inputs, (4) 3G/HD/SDI Outputs w/ (1) relay protect, (4) AES Outputs, GPIO/COMM (RJ-45 connector). (All coaxial connectors HD-BNC)

### Options and Accessories:

**+2FS** Add Dual-Channel Option

**+ANC** Ancillary Data Processor Option

**+COLOR** Color Correction Option

**+KEYER** Key/Fill Keyer Option

**+LTC** Audio LTC I/O Option

**+CQS** Clean and Quiet Switching Option

**+QC** Quality Check 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

**+T-SLATE** User Trouble Slate Graphic Import Option

**+LOGO** Logo Insertion Option

**+DLY** Extended Frame Sync Delay 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)