

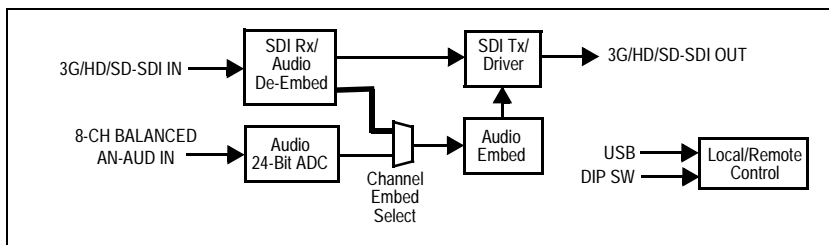


# BBG-EM-AA

3G/HD/SD Analog Audio Embedder

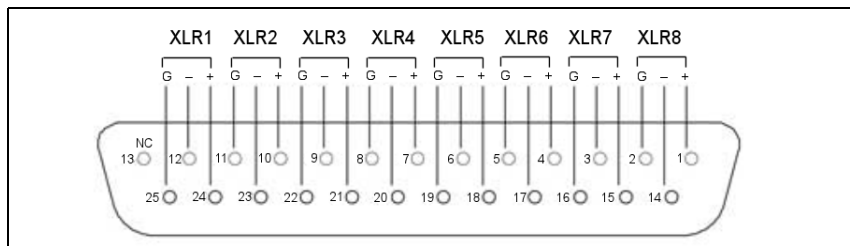
The BlueBox™ **BBG-EM-AA 3G/HD/SD Analog Audio Embedder** (hereinafter “BBG-EM-AA”) provides embedding of professional balanced audio at pro 24 dBu levels to up to 0 dBFS to using full 24-bit conversion. BBG-EM-AA accommodates up to eight balanced analog audio inputs over “XLR1” thru “XLR8” (via a DB-25 connector and an accessory XLR breakout adapter cable, PN BBG-CA-110-XLRF) that can embed any of these eight analog channels into SDI embedded channels 1 thru 8 as desired.

The embed select can be performed using a DIP switch on the bottom of BBG-EM-AA, or via a free remote control application that can be downloaded from [cobaltdigital.com](http://cobaltdigital.com) > Support. This application then allows GUI control of BBG-EM-AA via a USB connection. Refer to the “Installing and Using BBGConfig” sheet provided with this unit if USB remote control is desired.



## Connecting BBG-EM-AA

1. Connect the supplied AC adapter to BBG-EM-AA DC power input **5-16VDC PWR**.
2. Connect SDI input and output.
3. Connect embed audio as follows:
  - If using accessory breakout cable BBG-CA-110-XLRF, connect this cable between the **ANALOG AUDIO IN** DB-25 connector on BBG-EM-AA and your devices requiring any of the eight XLR embed inputs.
  - If it is desired to connect to your own analog audio DB-25, make certain pinouts conform to those shown below (view shows “looking into” BBG-EM-AA connector). This pinout conforms to the “Tascam” standard and is common throughout the pro A/V environment.



## Embed Select Using DIP Switch Bank

BBG-EM-AA can be used in a local control mode using DIP switches to configure embedding, or via USB remote control. Refer to diagram on rear page or unit label for switch positions.

- **If using DIP switch control**, make certain switch SW1 is set to **ON**. USB remote control is locked out in this mode.
- **If using USB remote control**, make certain switch SW1 is set to **OFF**. DIP switch local control is locked out in this mode.

## Unbalanced Audio Connections and This Device

Any of the XLR inputs can be used to receive unbalanced analog audio by utilizing the **+** pin and **G** pin for any input. If an input is wired driven by half of a balanced audio source, a 6 dB loss should be expected. To compensate for this, the upstream gain should be increased by 6 dB where headroom is available.

## Status Indicator

BBG-EM-AA has a **Status LED** on the side of the unit which functions as follows:

- **Solid ON** – Input lock OK
- **Slow Flash** – Unlocked to input video; input video not present

## Specifications

Item	Description/Specification
Standards supported:	SMPTE 259M, 292M, 424M
Inputs:	(1) 3G/HD/SD-SDI, 75Ω BNC (1) DB-25 (male) accommodating eight, 3-wire balanced embed inputs conforming to Tascam standard (1) DC Power (+5-16 VDC)
Outputs:	(1) 3G/HD/SD-SDI, 75Ω BNC. GRP1-2 embedded channels can be replaced with embedded input channels or passed. GRP 3-4 channels are passed unmodified.
Audio conversion format:	48 kHz sampling, 24-bit. +24 dBu analog level conforming to 0 dBFS
Power source:	5-16 VDC, <5 W. Powered using corded AC adapter (included).
Dimensions (WxHxD):	5.5" x 3" x 1" (including connector projections) (139 x 77 x 26 mm)
EMC Compliance	FCC "Code of Federal Regulations" Title 47 Part 15, Subpart B, Class A ICES-003 CISPR 24:2010 IEC 61000-4-2:2008 IEC 61000-4-3:2006 with A1:2007 and A2:2010 IEC 61000-4-4:2004 IEC 61000-4-6:2008 CISPR 22:2008

## Warranty and Service Information

### Cobalt Digital Inc. Limited Warranty

This product is warranted to be free from defects in material and workmanship for a period of five (5) years from the date of shipment to the original purchaser, except that 4000, 5000, 6000, 8000, and Blue Box series power supplies, and Dolby® modules (where applicable) are warranted to be free from defects in material and workmanship for a period of one (1) year.

Cobalt Digital Inc.'s ("Cobalt") sole obligation under this warranty shall be limited to, at its option, (i) the repair or (ii) replacement of the product, and the determination of whether a defect is covered under this limited warranty shall be made at the sole discretion of Cobalt.

This limited warranty applies only to the original end-purchaser of the product, and is not assignable or transferrable therefrom. This warranty is limited to defects in material and workmanship, and shall not apply to acts of God, accidents, or negligence on behalf of the purchaser, and shall be voided upon the misuse, abuse, alteration, or modification of the product. Only Cobalt authorized factory representatives are authorized to make repairs to the product, and any unauthorized attempt to repair this product shall immediately void the warranty. Please contact Cobalt Technical Support for more information.

To facilitate the resolution of warranty related issues, Cobalt recommends registering the product by completing and returning a product registration form. In the event of a warrantable defect, the purchaser shall notify Cobalt with a description of the problem, and Cobalt shall provide the purchaser with a Return Material Authorization ("RMA"). For return, defective products should be double boxed, and sufficiently protected, in the original packaging, or equivalent, and shipped to the Cobalt Factory Service Center, postage prepaid and insured for the purchase price. The purchaser should include the RMA number, description of the problem encountered, date purchased, name of dealer purchased from, and serial number with the shipment.

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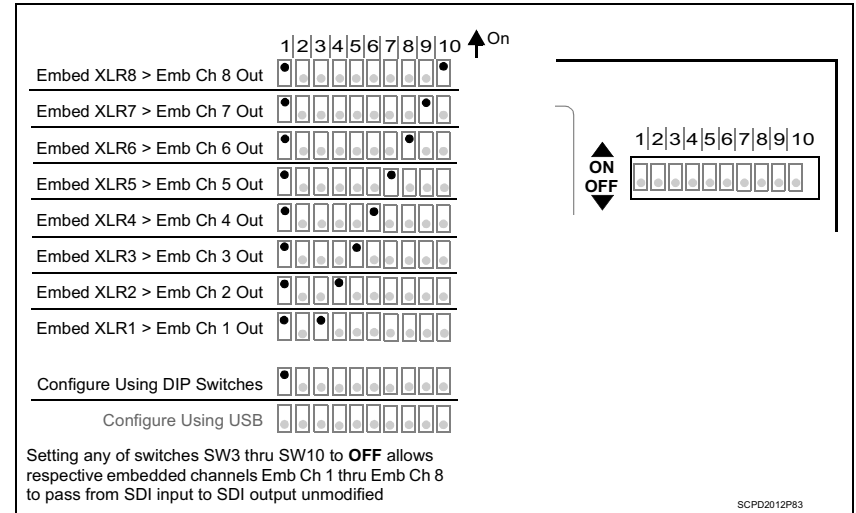
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# Installing and Using BBGConfig

USB PC Remote Control User Interface for BBG-EM-AA

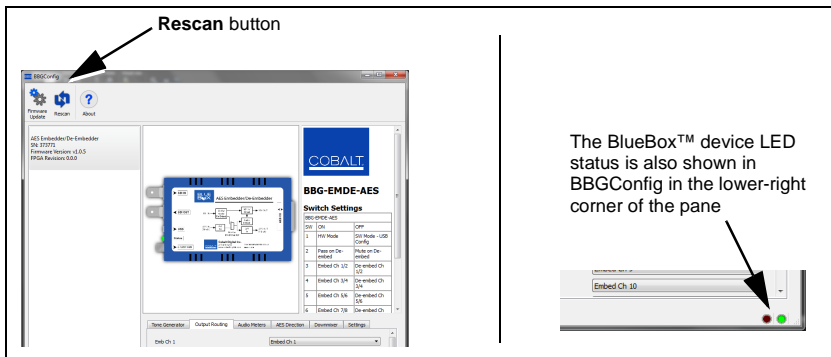
**BBGConfig** is a program that allows output audio routing and source selection, as well as other user functions, via a user GUI app that runs on a PC and communicates settings to the USB-connected BlueBox™ device. After settings are performed, the USB connection can be removed if desired, with the BlueBox™ device retaining these settings (even after power-down of the device) unless later changed. BBGConfig avails many more control functions than that available using only the BlueBox™ device DIP switches.

- Note:**
- BBGConfig can currently be installed and used **only** on the following Windows® platforms:
    - Windows® Vista
    - Windows® 7
    - Windows® 8
    - Windows® 8.1
    - Windows® 10
  - BBGConfig is usable only with the following BlueBox™ models: BBG-DE-AA, BBG-EM-AA, BBG-EMDE-AES.

## Installing BBGConfig on PC

**Note:** Do **not** connect BlueBox™ unit to PC at this point.

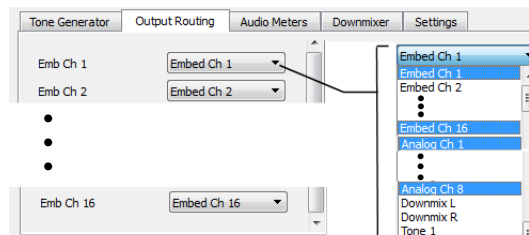
1. Download the **BBGConfig** file to your PC. Go to the **Support>Firmware Downloads** link at [www.cobaltdigital.com](http://www.cobaltdigital.com) and download the install file at **BBGConfig App** in the BlueBox™ section, then follow the instructions below.
2. Double-click on the file to start and run the Installer. Follow prompts to install in desired folder and complete the installation. After installation is complete, click Close to exit. **BBGConfig** is now ready to connect to compatible BlueBox™ device via a USB connection.
3. On the BlueBox™ device, **make certain DIP switch SW1 is set to OFF**. This allows **BBGConfig** to be used for control instead of the other DIP switches.
4. Connect the BlueBox™ device to the PC using a USB cable (supplied). Open **BBGConfig**; the device now appears in the app as shown in the example. If **No Units Connected** is displayed, click the **Rescan** button in the upper right corner of the opening screen.



## BBG-EM-AA BBGConfig GUI Controls

**Making certain DIP switch SW1 is set to OFF**, BBG-EM-AA can now be controlled using the following **BBGConfig** GUI controls. As long as switch SW1 is left in the OFF position, any settings performed using the **BBGConfig** GUI will be persistent (even through power cycles). When settings are as intended, the USB cable can be disconnected and **BBGConfig** can be closed.

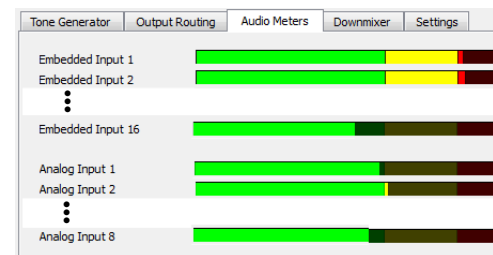
### Audio Output Routing/Embed Controls Tab



Using the **Output Routing** drop-down list for each embedded output channel, selects the audio input source to be routed to the corresponding embedded output channel from the following choices:

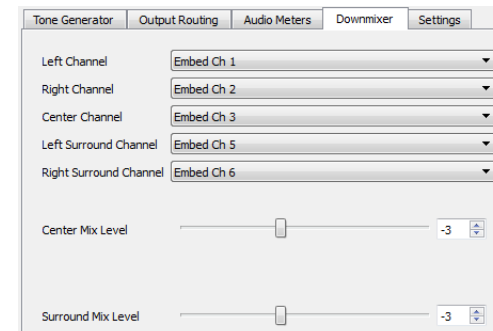
- Emb Ch 1 thru Ch 16
- Analog input channel 1 thru 8
- Built-in Tone generators Tone 1 thru Tone 8
- Downmix L or R
- Silence

### Audio Meters Tab



Relative signal levels can be checked for all embedded and analog audio inputs using the **Audio Meters** tab.

### Downmixer Tab

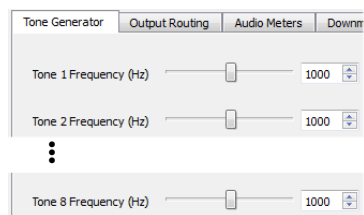


Left Channel Input thru Right Surround Channel Input select the five audio source channels to be used for the downmix. Downmix channels Downmixer L and Downmixer R are available as sources for the embedded outputs using the Output Routing controls described above.

**Center Mix Level** adjusts the attenuation ratio of center-channel content from 5-channel source that is re-applied as Lt and Rt content to the DM-L and DM-R stereo mix.

**Surround Mix Level** adjusts the attenuation ratio of surround-channel content from 5-channel source that is re-applied as Lo and Ro content to the DM-L and DM-R stereo mix.

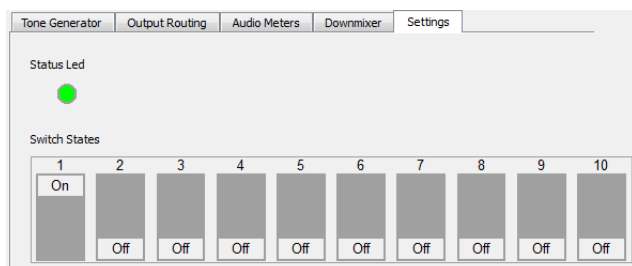
## Tone Generators Tab



Individual tone generators Tone 1 thru Tone 8 can be set for desired frequencies and routed to an embedded output channel using the Output Routing controls. Tone 1 thru Tone 8 all provide a -20 dBFS level.

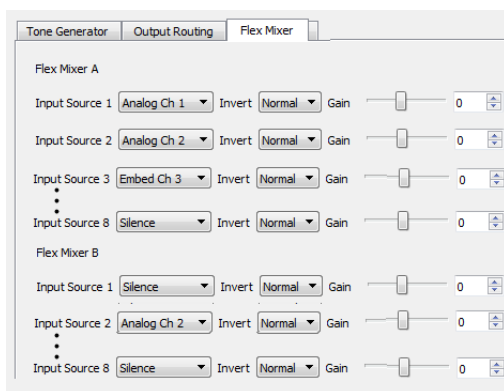
**Note:** Multiple tone generators, even if set to the same frequency, may not exhibit phase coherence. If identical tones with frequency and phase coherence are required, use a single tone generator (e.g., "TG1") across multiple channels instead of multiple generators set to the same frequency.

## Settings Tab



The **Settings** tab shows the current settings for the 10-position DIP switch located on the bottom of the BBG-EM-AA unit. The **Status LED** mirrors the status shown on the LED on the edge of the BBG-EM-AA unit.

## Flex Mixer Tab



The **Flex Mixer** tab provides two independent 8-channel mixers in which each of the eight selected inputs can be mixed onto two independent output summing nodes (Flex Mix A and/or Flex Mix B). The Flex Mix A and/or Flex Mix B summed nodes can be used as output channel source selections just like any other source channel.

Each Flex Mixer input source selection can be adjusted for independent gain and normal/invert phase.

**Note:** Unused mixer inputs should be set to Silence.

## Powering Down BBG-EM-AA with Custom GUI Settings

BBG-EM-AA requires the AC adapter to make certain adequate power is supplied to the unit. To make certain BBG-EM-AA powers-down as intended and properly saves any custom settings, power-down as follows:

- 1 After settings have been made, wait until the **STATUS** LED on the unit stops flashing amber and is solid green. (Flashing amber state means BBG-EM-AA is currently saving custom settings; green means state has been saved in memory and unit can be powered down.)
2. Disconnect the USB connection.
3. Disconnect the AC adapter from the AC line or the unit itself. BBG-EM-AA are now saved and will re-appear upon next power-up. Unless the settings need to be changed, only the AC adapter connection is necessary for powering BBG-DE-AA in field use.



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