

# SDI-To-HDMI Converter

3G/HD/SD-SDI-to-HDMI with Audio  
De-Embedder  
BBG-S-TO-H

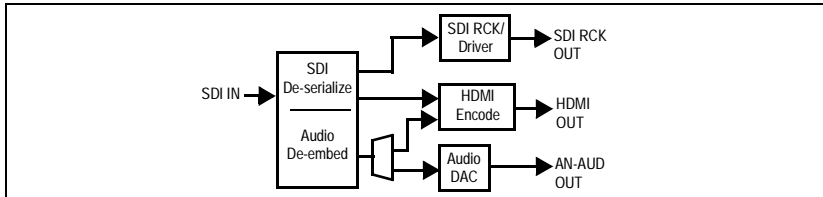
The **BlueBox™ SDI-To-HDMI Converter** (hereinafter “BlueBox™ S-TO-H”) provides a small “throwdown” package that offers 3G/HD/SD-SDI to HDMI conversion, with direct conversion from SMPTE 259M, 292M and 424M SDI to HDMI. True 1080p5994/50 conversion is available when using a 3G source. The supported SDI input formats are listed below.

- 1920 x 1080p50/5994/60  
4:2:2 (SMPTE 425M (3G))
- 1920 x 1080i50/5994/60  
1920 x 1080p2398/24/25/2997/30  
1920 x 1080psf25/2997/30  
1280 x 720p50/5994/60
- 720 x 480i5994  
(SD-NTSC)
- 720 x 576i50  
(SD-PAL)

**Note:** For all formats, only 10-bit protocols are supported.

**Note:** BlueBox™ S-TO-H does not perform format cross, up, or down-conversions.

The unit receives its DC power from either connecting its USB port to associated equipment, or by the supplied AC adapter.



## Connecting BlueBox™ S-TO-H

- 1 Connect BlueBox™ S-TO-H to DC power using either or both the USB port or the supplied AC adapter. Dual source (simultaneous) use provides power redundancy.

**Note:** USB connection derives only DC operating power from USB port. This connection does not provide remote control or monitoring.

2. Connect SDI input and HDMI output. This provides the basic conversion connections. Other connections do not require termination if unused.

## Status Indicator

BlueBox™ S-TO-H 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.
- **Rapid Flash** – Detected input video is of format specifically not supported.

## Audio De-Embedding

BlueBox™ S-TO-H provides de-embedding from the SDI input to analog audio outputs. Refer to illustration on rear page of this manual or label on unit for switch positions.

- SDI channels Emb 1-8 are normally routed to HDMI channels 1-8.
- SDI embedded channels 1/2, 3/4, 5/6, or 7/8 can be de-embedded to the stereo **AUDIO OUT (L/R)** RCA connectors using DIP switch bank as shown on the unit label. (Note: serial numbers 368880R and earlier do not offer Ch7/8 de-embedding)

## Unbalanced Audio Levels and This Device

The unbalanced “RCA” audio outputs on this device correspond to 2.2 Vrms output when sourced from a unity-gain 0 dBFS digital sine-wave source. Consumer audio is specified in dBV with a nominal (or recording) level of -10 dBV. The 2 Vrms maximum output level corresponds to +6 dBV. The unbalanced analog outputs on this device allow for 16 dB of headroom above the nominal -10 dBV consumer level (“headroom” is the range between the maximum and nominal audio levels). Professional balanced analog audio levels in the US typically use a +4 dBu nominal level with 20 dB of headroom (-20 dBFS). The maximum level for balanced analog interfaces is +24 dBu.

The headroom difference between consumer and professional audio will result in a lower RCA consumer level when converting from professional balanced analog audio. For example, if pro level analog audio is received and transmitted via AES or embedded SDI to a receiver converting to RCA analog audio, the output will be 4 dB lower, with a nominal level of -14 dBV.

## Channel Line-Up of HDMI vs. Standard SDI Conventions

To maintain conformance with CEA-861D HDMI audio channel line-up specifications and industry standard SDI convention, this device lines up audio as shown below with a swap between the C and LFE channels.

Signal Format/Channels	1	2	3	4	5	6
Standard SDI Convention	L	R	C	LFE	Ls	Rs
HDMI CEA-861D	L	R	LFE	C	Ls	Rs

BlueBox™ SDI-to-HDMI and HDMI-to-SDI converters bilaterally conform to the conventions shown here, with back-to-back connection resulting in proper channel line-up for HDMI and SDI.

Connection to downstream devices **not** conforming to **both SDI and HDMI** conventions may require switch **SW4** set to **ON (custom)** to swap the C and LFE channels so that HDMI has Ch 3 as C and Ch 4 as LFE.

## HDMI/DVI Mode Switches

BlueBox™ S-TO-H can typically automatically detect connection to a downstream device as either an HDMI port or a DVI (monitor) port. However, switches **SW1** thru **SW3** allow setting BlueBox to force a DVI output suitable for direct connection to monitors using a DVI input in case the connection is not detected by the monitor. (Refer to illustration on rear page of this manual or label on unit for switch positions.)

- **SW3** – Set to **ON** to allow manual control of HDMI/DVI mode.
- **SW2** – Set to **ON** to force DVI output mode.
- **SW1** – Set to **ON** to force RGB color space (intended mode for monitor usage).

**Note:** Connect monitor to BlueBox™ S-TO-H and then set switches to ensure monitor gets handshake to “see” connection.

## Specifications

Item	Description/Specification
Standards supported:	SMPTE 259M, 292M, 425M
Video Input:	3G/HD/SD-SDI, 75Ω BNC
Receive EQ Performance (1694A):	3G: up to 120m HD: up to 190m SD: > 250m
Outputs:	HDMI (HDMI 1.4 compliant); Reclocked SDI, 75Ω BNC; Analog audio out L/R pair, unbalanced “consumer” level RCA
Audio conversion format:	48 kHz sampling, 24-bit. SDI groups 1/2 to HDMI Ch 1-8.
Power source:	5-16 VDC, 2.4 W. Power-sourced directly from host equipment USB port. Can also be powered using corded AC adapter (included)
Dimensions (WxHxD):	5.5" x 3" x 1" (including connector projections) (139 x 77 x 26 mm)

## 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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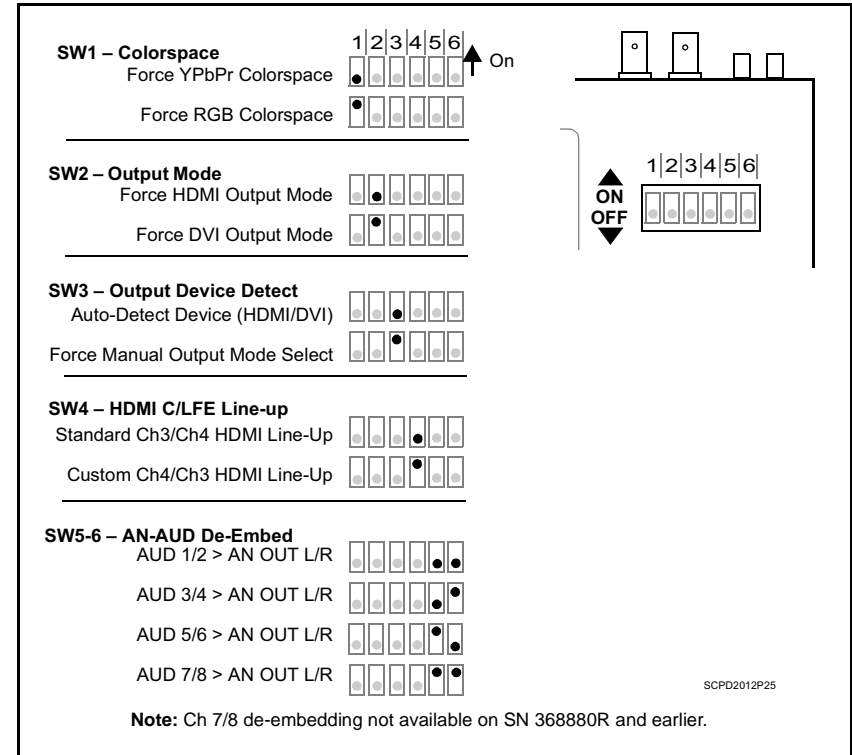
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