

## BBG-1002-2UDX-DI • 3G/HD/SD-SDI Standalone Dual-Channel De-interlacing Up-Down-Cross-Converter / Frame Sync



The Cobalt® **BBG-1002-2UDX-DI 3G/HD/SD-SDI Standalone Dual-Channel De-interlacing Up-Down-Cross-Converter / Frame Sync** offers **two independent signal paths** of up/down/cross conversion (including independent per-path de-interlacing) and frame sync in a single unit.

The BBG-1002-2UDX-DI provides high-density that offers unprecedented multi-input support and flexibility. Dual independent up/down/cross convert scalers are specifically designed for broadcast video formats, with full ARC control suitable for conversions to or from 4:3 and 16:9 aspect ratios. AFD processing can detect an incoming AFD code and correspondingly set scaling and ARC to track with AFD. This processor also allows independent custom ARC to be applied for each incoming AFD code, and set the desired AFD code to be inserted on the output, even if there is no code detected on the input. Bulk and per-channel audio delay controls easily address lip-sync issues.

A convenient input crosspoint can select from up to four SDI inputs to be applied to either of the unit's two processing paths. The input crosspoint allows manual or failover to alternate inputs on loss of input conditions. With option **+ANC**, the BBG-1002-2UDX-DI offers full VANC/HANC ancillary data packet de-embedding and 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-1002-2UDX-DI can be remote-controlled using DashBoard™. GPIO allows direct input routing control and status monitoring. The compact standalone form factor allows desktop usage, as well as the 1/3-rack size of the BBG-1002-2UDX-DI 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

Independent Up/Down/Cross Conversion with independent de-interlacing for each path

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

Multi-input RP168 clean switch, with manual selection or GPI controlled input selection. Path inputs can also be sourced from opposite path output with no external patching.

Auto-Changeover can be set to invoke failover for basic input loss.

Frame Sync with full H/V offset and manual/LOS video pattern generator. Pattern generator for each channel can provide raster/test pattern and patterns for LOS failover

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

Video options include color correction

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.

Remote control/monitoring via DashBoard™ software, OGCP-9000 Remote Control Panel, or Web Browser User Interface

Five year warranty

### OPTIONS

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

Ancillary Data Processor (**+ANC**) - Provides full user VANC/HANC packet insertion/extraction access to DID/SDID ancillary data

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.

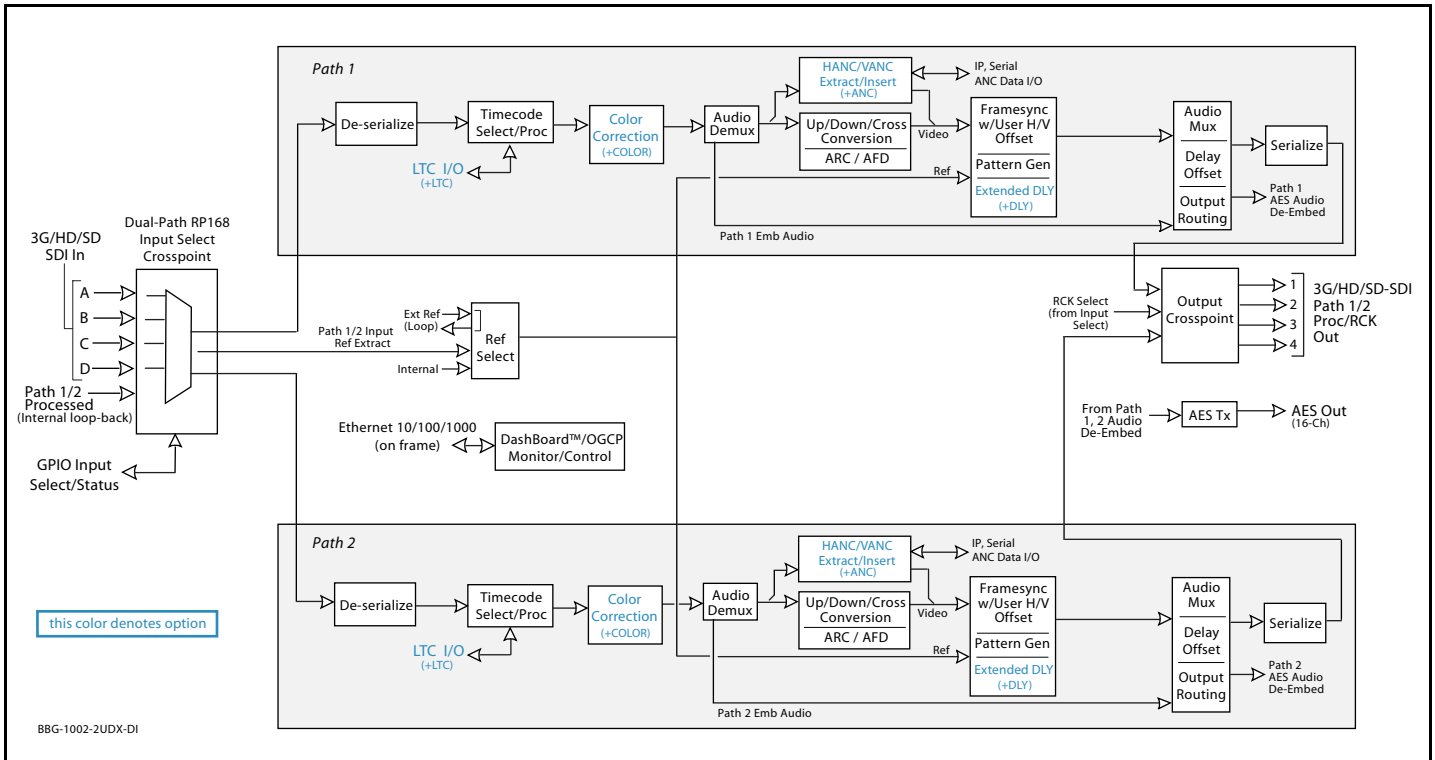
Expanded Delay (**+DLY**) - Increases frame buffer to provide adjustable audio/video delay buffer capacity to over 9 seconds for SD video, 1.5 seconds for HD video, or 0.8 seconds for 3G video.

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

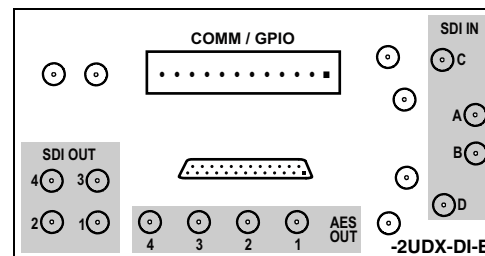
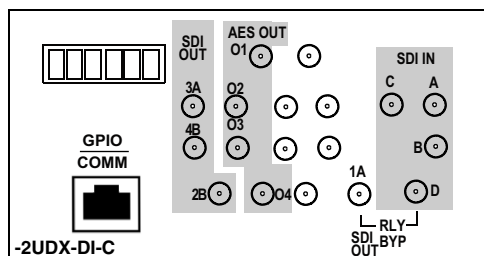
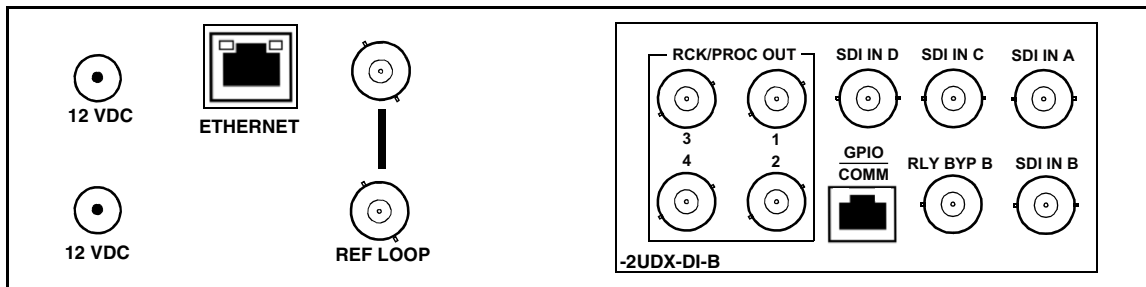
1RU Mounting Tray (supports 3 units) (**BBG-1000-TRAY**)



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**Rear Panel**



**Note:** Some rear panels for various models shown here are equipped with connectors for signals not supported by this device (such as multi-wire balanced audio connections, CVBS I/O, and AES IN). These connections (shown unlabeled here) are N/C when used with the respective device.

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## SPECIFICATIONS

**Note:** Standard I/O capabilities are limited to those shown in Rear Panel diagrams and listed in Ordering Information. Where specifications below list other I/O types and/or complements, some combinations other than shown for standard models may be available as special order. Inquire with Sales for alternative I/O availability.

### 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 Path 1 or Path 2, or selected input relocked)  
 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)

### 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

### 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-1002-2UDX-DI** 3G/HD/SD-SDI Standalone Dual-Channel De-interlacing Up-Down-Cross-Converter / Frame Sync available in the following rear-panel I/O configurations:

**BBG-1002-2UDX-DI-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-1002-2UDX-DI-C-DIN** (4) 3G/HD/SD-SDI 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-1002-2UDX-DI-C-HDBNC** (4) 3G/HD/SD-SDI Inputs, (4) 3G/HD/SDI Outputs w/ (1) relay protect, (4) AES Outputs, GPIO/COMM (RJ-45 connector). (All coaxial connectors HD-BNC)

**BBG-1002-2UDX-DI-E-DIN** (4) 3G/HD/SD-SDI Inputs, (4) 3G/HD/SDI Outputs, (4) AES Outputs, GPIO/COMM. (All coaxial connectors DIN 1.0/2.3), Gigabit Ethernet, Looping Reference and Redundant DC Power Inputs (includes one BBG-1000-PS Power Supply)

**BBG-1002-2UDX-DI-E-HDBNC** (4) 3G/HD/SD-SDI Inputs, (4) 3G/HD/SDI Outputs, (4) AES Outputs, GPIO/COMM. (All coaxial connectors HD-BNC), Gigabit Ethernet, Looping Reference and Redundant DC Power Inputs (includes one BBG-1000-PS Power Supply)

### Options and Accessories:

**+ANC** Ancillary Data Processor Option

**+COLOR** Color Correction Option

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

**+CQS** Clean and Quiet Switching Option

**+DLY** Extended Frame Sync Delay Option

**BBG-1000-PS** Redundant Power Supply Module

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