

The TBS190BD is a multi-standard broadcast quality synchronizer, aspect ratio converter, noise reducer and time base stabilizer with SDI, composite and YC interfaces. Embedded audio is processed as well as providing analog audio interfaces. Featuring 12-bit sampling, 10-bit processing and rugged inputs, the TBS190BD is equally suited to digitizing broadcast grade sources as with unstable, noisy sources.

The Kudos Plus TBS190BD has a DC input for redundant PSU capability and is provided in a compact half rack width housing with remote control capability via Ethernet.

## Kudos Plus TBS190BD

### SDI & Composite Synchronizer & Time Base Stabilizer with Analog & Embedded Audio



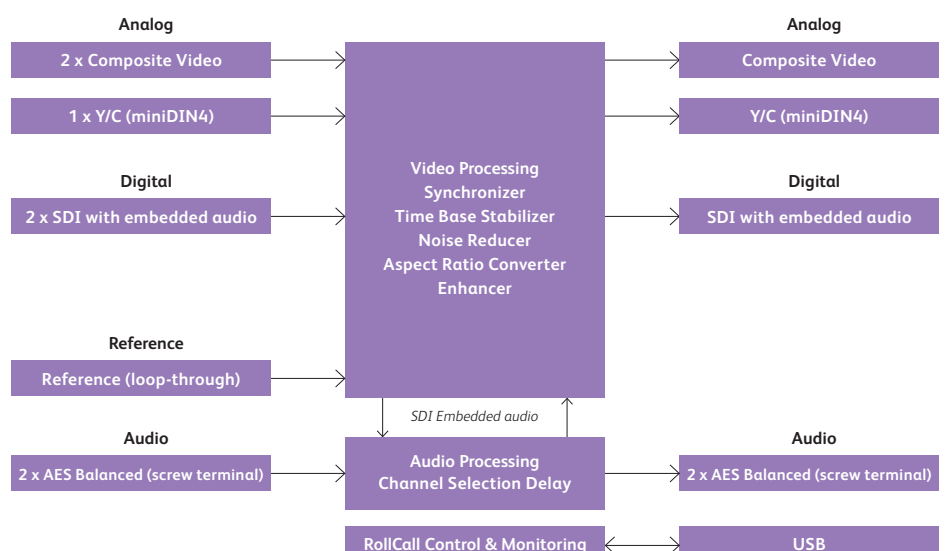
#### Features

- SDI, composite & YC synchronization
- Time base stabilization
- Aspect Ratio Converter (ARC) with presets and size controls
- Adaptive recursive noise reduction with automatic noise level detection
- 12-bit decoding with 5-line comb filter
- 12-bit encoding
- Inputs PAL, NTSC, NTSC-J, NTSC4.4, PAL-N, PAL-M, SECAM with automatic input detection
- Outputs PAL, NTSC, NTSC-J, PAL-N, PAL-M
- 4 channel (2 pair) embedded audio processing

- Seamless PCM audio tracking delay with manual offset – up to 2.5s
- Pass through for all HANC/VANC data
- Composite inputs tolerant to noise & errors
- Unique genlock 'Floating Mode'\*
- RollCall compatible via USB link
- Optional external PSU for redundancy

#### Applications

- Universal analog / digital interface
- Audio embedding & extraction
- Satellite down-link & radio links
- Ingest / PC capture pre-processing
- Duplication
- VHS dubbing
- Format conversion



TBS190BD SDI & Composite Synchronizer

## Full Product List

Base Model  
**Kudos Plus TBS190BD**  
(3548603)

The TBS190BD is a multi-standard broadcast quality synchronizer, noise reducer and time base stabilizer with SDI, composite and YC interfaces, 12 bit sampling and 10 bit processing featuring embedded and balanced AES audio.

Option  
**Rack mount kit**  
(INSY-MNT-KIT)

Rack mount kit to mount one or two units in a 19" rack.

**Redundant PSU**  
(INSY-PSU-EXT)

External PSU, provides redundant PSU operation.

## Technical Specification

<b>Video Input</b>	
2 x SDI	525/625 line with automatic detection(BNC)
2 x Composite	27MHz, 12-bit sampling PAL, NTSC, NTSC-J, NTSC4.4, PAL-N, PAL-M, SECAM with automatic detection(BNC)
1 x YC	27MHz, 12-bit sampling PAL, NTSC, NTSC-J, NTSC4.4, PAL-N, PAL-M with automatic detection (Mini DIN4)
Reference	Composite or Y (BNC loop-through)

<b>Video Output</b>	
2 x SDI	525/625 line(BNC)
2 x Composite	27MHz, 12-bit D to A. Output Formats PAL, NTSC, NTSC-J, PAL-N, PAL-M(BNC)
1 x YC	27MHz, 12-bit D to A. Output Formats PAL, NTSC, NTSC-J, PAL-N, PAL-M (Mini DIN4)

<b>Audio Inputs &amp; Outputs</b>	
2 x AES input	Balanced (2-part screw terminal) 32-96kHz PCM audio
2 x AES output	Balanced (2 part screw terminal) 48kHz PCM audio
Remote control	RollCall via USB link to a PC

<b>Control Features</b>	
Input select	SDI A,B; Composite A, B; YC
Audio source (1)	SDI pair 1-8; External 1-2
Audio source (2)	SDI pair 1-8; External 1-2
Audio destination	SDI group 1-4
Add audio delay	0ms to +2.5s
Noise reduction	Y;C (Off; 1; 2; 3; Max)
Split screen	Off/On (view noise reduction)
Vertical enhance	Off; 1; 2; 3 (max)
Horizontal enhance	-2; -1; 0; 1; 2; 3 (max)
ARC enable	Off/On
ARC H size	50% to 200% (0.5% steps)
ARC V size	50% to 200% (0.5% steps)
ARC H pan	+360 to -360 input pixels
ARC V tilt	+150 to -150 input field lines
ARC presets	Normal; 8 fixed presets
Input standard	NTSC, NTSC-J
Composite output	PAL, NTSC, NTSC-J, PAL-N, PAL-M
Freeze	Freezes next frame (sync mode)
Field freeze	Freezes next field
Luminance gain	Preset; ± 6dB
Chrominance gain	Preset; ± 6dB
Black level	Preset; ± 100mV
NTSC hue	Preset; ± 30 degrees
Genlock phase	Preset; approx. ±1 line

Genlock mode	Lock to reference; Lock to input; Float (stabilized) – if same line standard; Free-run
Output pattern	Black; Color Bars
Default output	When input is lost; go to black; go to color bars
Decoder / Encoder	AGC, ACC, comb, DNR, CTI

<b>Indication/Monitoring</b>	
Input standard	Present; Standard
Reference	Present; Error (Error indicated if the reference is not the same line standard as the input)
Power	Standby

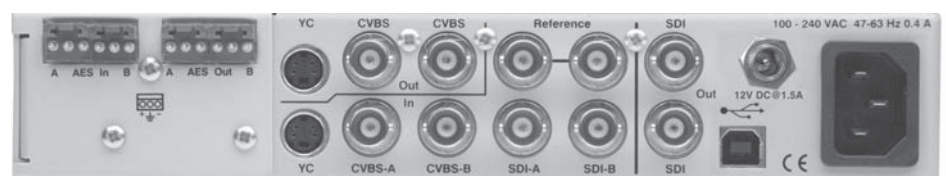
**Rollcall**  
All Control features available from rollcall via PC USBshare application. Indication/monitoring parameters are available for Logging and Rolltrack.

<b>System Parameters</b>	
Processing	≥10 bit
SDI input switch	Tolerant to SMPTE RP168 vertical interval switch.
SDI data	All HANC & VANC data passed
Vertical Interval	All luminance data passed when input & output are the same standard
Reference lock range	Greater than ±80ppm

<b>Power</b>	
Input voltage range (Primary)	100-240 VAC, 47-63Hz 0.4a
Input voltage range (Secondary)	12 DC @ 1.5A via 2.1mm ring lock jack

<b>Mechanical</b>	
Dimensions	½ 1RU rack (44x220x250mm)
Temperature	0°C to 35 °C operating -20 °C to +70 °C storage

**\*Floating Mode**  
Without a reference the output will either free-run or lock to a stabilized input sync if operating in synchronize mode. In this stabilized or 'floating mode' the output will always follow shortly after the input, so preventing lip-sync errors and frame drop/repeat. The inputs are highly tolerant to unstable and noisy sources, while the synchronizer always creates correctly aligned images, even during sync disturbances and asynchronous input switches.



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