XHD-3903

3 Gb/s Ready, Up/Down/Cross Converter with Advanced Audio and Enhanced Aspect Ratio Management

Features

3 Gb/s-capable up-/down-/cross-converter with motion adaptive de-interlacing, mosquito noise and block artifact noise reduction and edge interpolation for superior image quality

User-selectable detail enhancement settings (edge sharpening/softening)

Automatic 2:2/3:2 pull-down detection and handling

Integrated video and audio frame sync and proc-amps, with audio tracking and delay capabilities to guarantee lip-sync

Embedded and discrete audio support with individual channel routing and sample rate conversion capability

Enhanced Aspect Ratio and AFD/WSS/VI management capabilities with full custom mapping tables to handle any scenario

User-configurable aspect ratio conversion (H/V size, H/V position) for picture resizing, with selectable internally-generated color ARC backgrounds

Automatic reconfiguration between standard conversion modes based on input standard changes

Fast switch feature to support quick transitions when switching between SD and HD inputs

Clean output on input transitions from upstream sources

Loss-of-video freeze

GPI interface and outputs for triggering ARC presets and AFD/WSS/VI code insertion

Dolby® E Guardband Adjustment

Internally-generated external ARC key channel

Additional SDI output carrying either the same program signal or the key signal

Switchable external or backplane genlock inputs

Analog composite, Tri-Level and DARS reference

EIA-608, EIA-708 closed captioning transcoding capability

Balanced or unbalanced AES input and output (XHD-3903 AES versions)

Built-in SD- and HD-SDI test generator containing 75% color bars, cross hatch pattern, frequency sweep (luma and chroma), white, black and safe area generator (SAG)

Software Upgrade Options:

3 Gb/s option for full 1080p Level A and YCbCr 4:2:2 10-bit Level B support.

Eight AES inputs/outputs

I-Wings, integrated HDTV sidebar content insertion

Integrated Dolby® decoder/encoder. Available options include Dolby® E/AC-3 decoder, Dolby® E encoder and Dolby® AC-3 encoder

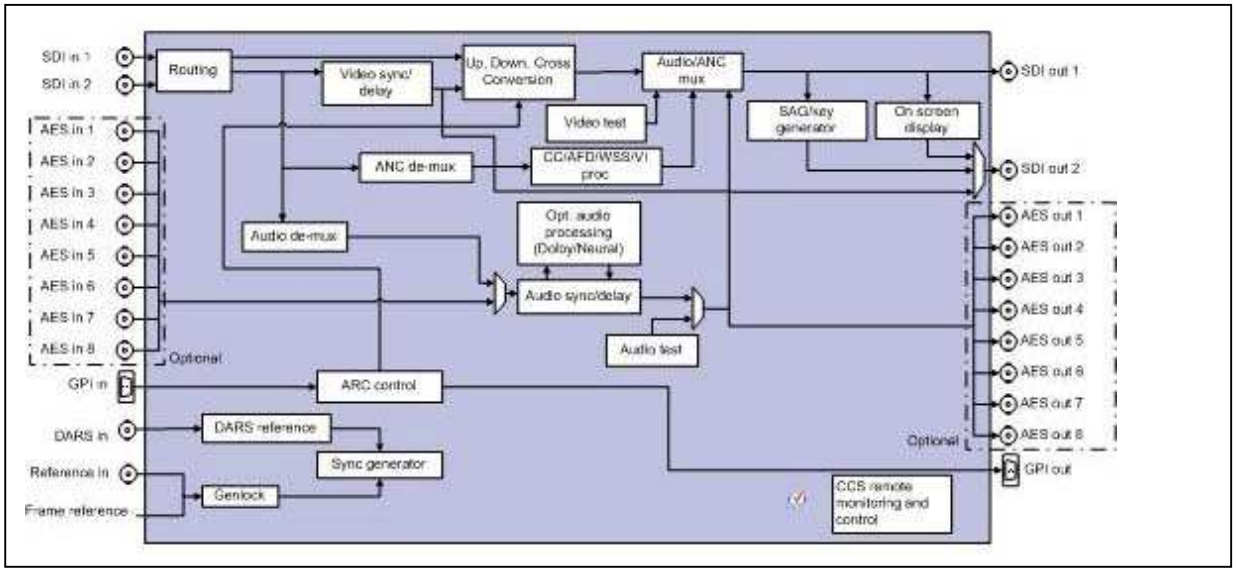
Integrated DTS Neural Surround™ UpMix, DownMix and MutliMerge as well as DTS Neural Loudness Control

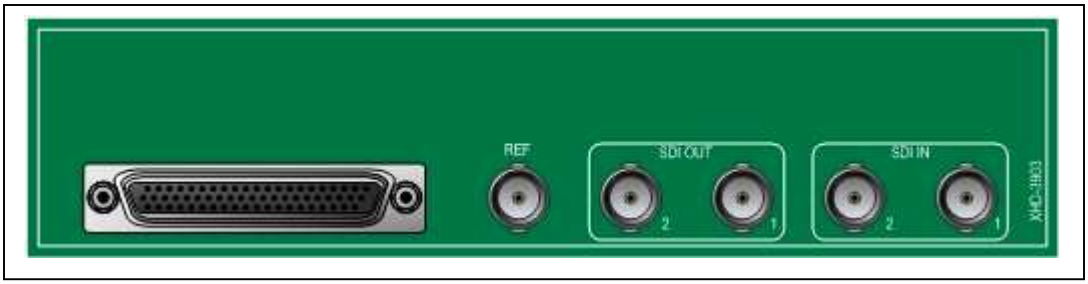
Second frame sync channel (embedded audio passes, no frame repeat/drop compensation)

Graphics keying using an onboard SD Micro Memory card

DVB-teletext conversion and insertion

Block Diagram





Specifications

SD SDI Video Input (270 Mb/s)

Standard	SMPTE 259M-C, 270 Mb/s, 525/625 component
Connector	BNC (IEC 169-8)
Impedance	75 ohms
Return Loss	>18 dB from 5 to 270 MHz
Equalization	>23 dB Belden 8281 cable

HD SDI Video Input (1.5 Gb/s)

Standard	SMPTE 292M, 1080i/59.94, 1080i/50, 720p/59.94, 720p/50, 1080p/23.98, 720p/23.98
Connector	BNC (IEC 169-8)
Impedance	75 ohms
Return Loss	>18 dB, typical, from 5 to 1485 MHz
Equalization	Adaptive cable equalization for up to 328 ft (100 m), typical, of Belden 8281 coaxial cable or 492 ft (150 m), typical, of Belden 1694A coaxial cable

HD-SDI Video (3 Gb/s)

Standard	SMPTE 424M
Connector	BNC (IEC 169-8)
Impedance	75 ohms
Return Loss	>15 dB, typical, from 5 to 1485 MHz >10 dB, typical, from 1485 to 2970 MHz
Signal Level	800 mV ±10%
D.C. Offset	0 V ±0.5 V
Rise and Fall Time	<135 ps (20/80), no differ by more than 50 ps
Overshoot	<10% of amplitude
Jitter	Timing jitter: 2 UI Alignment jitter: 0.3 UI

HD-SDI Video Output

Standard	SMPTE 292M
Quantization	10-bits
Connector	BNC (IEC 169-8)
Impedance	75 ohms
Return Loss	>18 dB, typical, from 5 to 1485 MHz
Signal Level	800 mV ±10%
D.C. Offset	0 V ±0.5 V
Rise and Fall Time	<270 ps
Overshoot	<10% of amplitude
Jitter	<135 ps pk-pk

HD-SDI Video (3 Gb/s)

Standard	SMPTE 424M
Connector	BNC (IEC 169-8)
Impedance	75 ohms
Return Loss	>15 dB, typical, from 5 to 1485 MHz >10 dB, typical, from 1485 to 2970 MHz
Signal Level	800 mV ±10%
D.C. Offset	0 V ±0.5 V
Rise and Fall Time	<135 ps (20/80), no differ by more than 50 ps
Overshoot	<10% of amplitude
Jitter	Timing jitter: 2 UI Alignment jitter: 0.3 UI

SD-SDI Output

Standard	SMPTE 259M-C, 270 Mb/s, 525/625 component
Quantization	10-bits
Connector	BNC (IEC 169-8)
Impedance	75 ohms
Return Loss	>18 dB, typical, from 5 to 270 MHz
Signal Level	800 mV ±10%

D.C. Offset	0 V ±0.5 V
Rise and Fall Time	400 to 1500 ps (20 to 80%)
Overshoot	<10% of amplitude
Jitter	<0.2 UI pk-pk

Genlock Input

Connector	BNC (IEC 169-8)
Return Loss	>40 dB, typical, to 6 MHz >35 dB, typical, to 30 MHz
Input Level	1 V pk-pk, -5 to 6 dB for NTSC/PAL-B 1 V pk-pk, -3.5 to 6 dB for tri-level sync 1080i: 59.94/50 1080p: 29.97/25 720p: 59.94*
Signal Type	NTSC/PAL-B analog composite +/-300 mV tri-level sync 1080i: 59.94/50 1080p: 29.97/25 720p: 59.94*

* 720p/59.94 reference is accepted only at 720p/59.94, 1080p/59.94, or 1080p/59.94 Level B output

GPIO Interfaces

GPI Inputs	4 Internally pulled high External contact closure to ground to trigger
GPI Outputs	5 TTL compatible Sink 64 mA, source 32 mA
Connector	DB-9

Balanced AES/DARS Inputs

Number of Inputs	8 + DARS
Standard	AES3
Connector	XLR
Sensitivity	<200 mV pk-pk (100 mV pk-pk typical)
Impedance	110 ohms ±20% (0.1 to 6 MHz)
Common Mode Rejection	0 V to 7 V (0 to 20 kHz)

Input Audio Rate	16 to 96 kHz

Unbalanced AES/DARS Inputs

Number of Inputs	8 + DARS
Standard	AES3, SMPTE 276M
Connector	BNC (IEC 169-8)
Sensitivity	<100 mV pk-pk (50 mV pk-pk typical)
Impedance	75 ohms
Return Loss	<-25 dB, 0.1 to 6 MHz (<-35 dB typical)
Input Audio Rate	16 to 96 kHz

Balanced AES Outputs

Number of Outputs	8
Standard	AES3
Connector	XLR
Impedance	110 ohms ±20% (0.1 to 6 MHz)
Jitter	<±4 ns, peak value
DC Offset	0 V ±50 mV
Rise and Fall Time	5 to 30 ns (10 to 90%) (18 ns typical)

Unbalanced AES Outputs

Number of Outputs	8
Standard	AES3, SMPTE 276M
Connector	BNC (IEC 169-8)
Impedance	75 ohms
Return Loss	<-25 dB, 0.1 to 6 MHz (<-35 dB typical)
Jitter	<±4 ns, peak value
DC Offset	0 V ±50 mV
Rise and Fall Time	30 to 44 ns (10 to 90%) (33 ns typical)

RS-232/RS-422/485

Electrical	Differential Balanced
Standard	Electrical specification EIA-232C
Connector	DB-9 RS-232/422/485 switchable RS-422/485 termination can be selected