

IQDNC01

3G/HD/SD-SDI Downconverter with Analog Monitoring Outputs

The IQDNC01 provides down conversion for 3Gbps SDI, and HD-SDI digital video signals. Using high quality motion adaptive de-interlacing and flexible scaling technology the IQDNC01 is a high quality conversion module featuring analog monitoring outputs with comprehensive audio and video processing to provide an efficient monitoring and processing package.

To allow the module to be further tailored to system requirements a series of software options is available to provide color correction for video, and advanced audio processing features such as stereo to 5.1 upmixing and loudness processing, using industry recognised technology from Linear Acoustic.

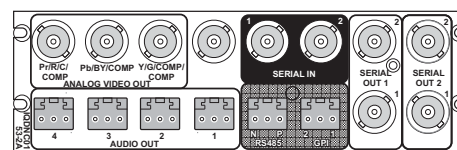
Features

- High quality down conversion for 3G/HD-SDI video inputs with additional Component, YC or composite outputs
- De-multiplex existing audio channels and output them as analog audio with 24-bit resolution
- Dual SDI inputs with auto switching on pre-defined input errors
- Standards supported: 3G-SDI to SMPTE 424M/425M level A compatible, HD-SDI to SMPTE292M/274M/296M, SD-SDI to SMPTE259M-C
- Aspect ratio conversion including 9 preset ARC maps, up to 22 ARC memories, selectable border color and pan, tilt, size, and input crop adjustments
- Video proc. features include: gain, offset, hue, horizontal picture enhancement, RGB gamut legalization and noise reduction
- In-built test pattern generator and 2 x 16 character caption generator
- Processed and reclocked signal paths allow the selected SDI input to be converted or passed through at the same format
- Processing for 16 channels of embedded audio present on the incoming SDI stream with no disturbance during video synchronizer frame wraps or drops
- Audio proc. features including: channel routing, gain, invert, fixed and tracking delays, mixing, synchronizer wrap/drop processing and eight internal tone generators
- Dolby E support – Detection of PCM/non-PCM audio to SMPTE 337/338M, pair routing and Dolby E header alignment
- Advanced audio processing options from Linear Acoustic for stereo upmixing to 5.1 surround sound and loudness level measurement and control
- 16 x user memories and 2 GPI/O ports
- Rollcall control and monitoring compatible with standard logging and reporting features
- RollTrack triggers available for detected module states including: PCM/non-PCM audio and input loss/freeze

Why should you choose this module?

- Analog video and audio outputs make this module ideal for local monitoring applications
- High quality down conversion technology provides sharp SD outputs suitable for broadcast applications
- Comprehensive audio processing functions allow complete control over embedded audio feeds
- Full RollCall and SNMP compatibility allows easy integration with Snell or third party network management systems providing an all-inclusive monitoring and control solution

Order codes



IQDNC0153-2A

HD/SD-SDI Down converter with analog outputs. 2 SDI inputs, 4 selectable main or bypassed SDI outputs, 1 component or 3 composite PAL/NTSC outputs, 4 analog audio outputs, 2 GPI/O

IQDNC0153-2A3 Includes 3G-SDI functionality

IQDNC01-3G Software upgrade for 3G-SDI operation

Software Options

IQOPTA-LOUD51 Software option to add Linear Acoustic AeroMax 5.1 loudness processing

IQOPTA-LOUDA2 Software option to add first channel of Linear Acoustic AeroMax 2.0 loudness processing

IQOPTA-LOUDB2 Software option to add second channel of Linear Acoustic AeroMax 2.0 loudness processing

IQOPTA-UPMIX Software option to add Linear Acoustic UPMAX stereo to 5.1 upmixing

IQOPTA-CC Software option to add color correction

For more details on enclosure types please refer to Frames & Hardware section.

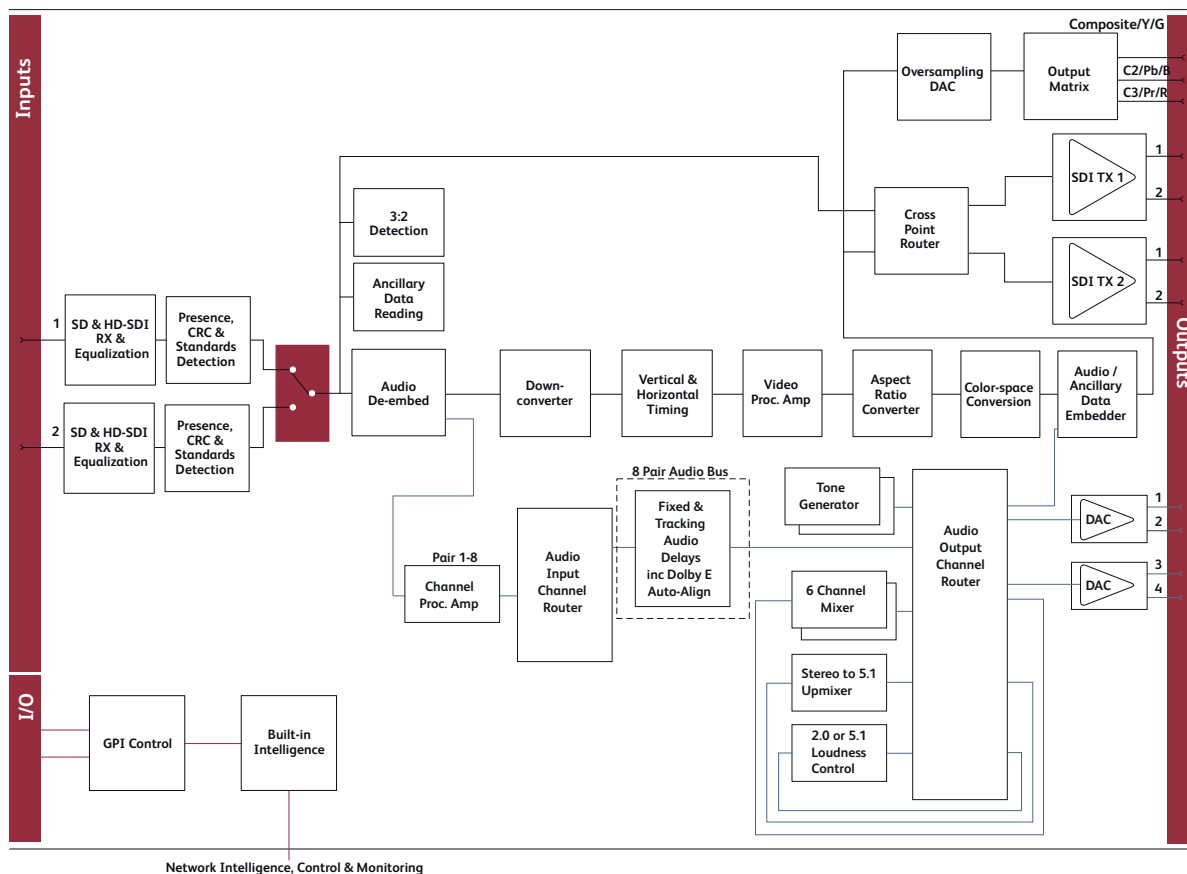
Map of input to output standards		Output								
		25		50		29.97		59.94		
		576i	1080i	720P	1080P	480i	1080i	720P	1080P	
Input	25	576i	✓	✗	✗	✗	✗	✗	✗	✗
		1080i	✓	✓	✗	✗	✗	✗	✗	✗
	50	720P	✓	✗	✓	✗	✗	✗	✗	✗
		1080P	✓	✗	✗	✓	✗	✗	✗	✗
29.97	480i	✗	✗	✗	✗	✓	✗	✗	✗	
	1080i	✗	✗	✗	✗	✓	✓	✗	✗	
59.94	720P	✗	✗	✗	✗	✓	✗	✓	✗	
	1080P	✗	✗	✗	✗	✓	✗	✗	✓	

Format Conversion I/O Grid

Company policy is one of continuous product improvement. Specifications are therefore provisional and subject to change without notice. All other trademarks mentioned herein are duly acknowledged.

IQDNC01

3G/HD/SD-SDI Downconverter with Analog Monitoring Outputs



Block Diagram for IQDNC0153-2A

Technical Specification

Inputs & Outputs

Video Signal Inputs

SDI Inputs 2x
 Input Cable Length Up to 80m Belden 1694A @ 3 Gbit/s
 Up to 180m Belden 1694A @ 1.5 Gbit/s
 >350m Belden 1694A @ 270 Mbit/s

Video Signal Outputs

SDI Outputs x 4
 Analog Outputs x 3 composite outputs,
 x 1 YC,
 x 1 component output, YPbPr or GBR

Control Interface

GPI 2 x Closing contact I/O interface (ST)

Controls

Video Delay

Video H-Delay 0 – 1 Line in pixel clock steps
 Video V-Delay 0 – 1 Frame in 1 line steps
 Video Delay Frames 0 – 12 Frames
 Dolby E auto line select Std, user select
 Dolby E auto align On/Off

Video Controls

Input Select Input 1, Input 2
 Input Backup Enable On/Off
 Priority None, Master (input 1), Backup (input 2)
 Change-over Parameters Carrier Loss, Standard mismatch, CRC and ANC
 Error, Embedded audio loss

Change-over Time Delay 0s to 10s
 Reversion Delay 0 to 100s
 Down Conversion 1080p, 1080i, 720p, SD
 Default Video Output Type Pattern, Freeze, Black
 Pattern Select 100% Color Bars, 75% Color Bars, SMPTE Bars,
 Tartan Bars, Black, Pluge, Ramp, H Sweep, Pulse
 & Bar, Multi-burst
 Output Routing Processed, Reclocked Bypass
 Analog Output Select Composite, YC, YPbPr, GBR
 Analog Output Standard SMPTE, Betacam
 NTSC Pedestal On/Off
 Output Mode Input, Black, Freeze, Pattern
 Colorimetry Auto, None, Rec601, BT709
 H Enhance Frequency Off, Low, Medium, High
 H Enhance Presets Low, Medium, High, Super, Custom
 Borders R/G/B 0-255 in steps of 1
 Border Adjust Left, Right, Top, Bottom
 RGB Legalizer 700 mV, 721 mV, 735 mV, 746 mV
 Black Level ±200 mV in steps of 1 mV
 Hue Adjust ±180° in steps of 1°
 Master Video Gain +6 to -120 dB
 Y-Gain +6 to -120 dB
 Cb/Cr Gain +6 to -120 dB
 Caption Enable On/Off
 Edit Caption 16 characters
 Caption Adjust X-Y Size & Position

IQDNC01

3G/HD/SD-SDI Downconverter with Analog Monitoring Outputs

Technical Specification cont...

Controls contd.

Aspect Ratio Conversion

Select from 9 standard preset conversions:

Full Frame
 Box 16:9 top > 16:9
 4:3 box 14:9 top > 16:9
 Box 16:9 > 16:9
 Box 4:3 > 4:3
 4:3 > box 16:9
 16:9 > box 4:3
 4:3 box 14:9 > 16:9
 16:9 box 14:9 > 4:3

Display Memories 32 User configurable ARC display memories
 Size 60% to 150% in 0.1% steps.
 Aspect 60% to 200% in 0.1% steps.
 Pan / Tilt $\pm 75\%$ in 0.1% steps
 Input crop Left / Right / Top / Bottom

Audio Controls

Audio In - Embedded

Audio In-Disembed Pairs 1-8
 Channel 1 – 16 Mute On/Off
 Channel 1 – 16 Polarity Inv On/Off
 Channel 1 – 16 Gain +12 dB to -80 dB in 0.1 dB steps
 Pair 1 – 8 Stereo Link channel pairs

Audio Out - Embedded

Group 1 -4 Enable On/Off
 Audio Out-embed Pairs 1-8
 Channel 1 – 16 Mute On/Off
 Channel 1 – 16 Gain +12 dB to -80 dB in 0.1 dB steps
 Pair 1 – 8 Stereo Link channel pairs

Audio Out - Analog

Channel 1 – 4 Mute On/Off
 Channel 1 – 4 Gain +12 dB to -80 dB in 0.1 dB steps
 Analog 1 – 2 Stereo Link Channel Pairs

Audio Routing

Input routing Bus 1-8 Disembed 1-8,
 Output routing embed 1-8 Bus 1-8, Mixers 1-4, Downmixer 1-2, silence,
 Tones 1-8

Audio Setup Controls – Bus 1-8

Delay Add-In Bulk, RollTrack, current video On/Off
 Bulk Manual Delay -520ms to +2s in 0.17ms steps
 Coarse Manual Pair Delay $\pm 1.995s$ in 1ms steps
 Fine Manual Delay $\pm 5ms$ in 0.02ms steps
 Fast or smooth delay limit 5ms to 80ms
 Silence Detect -2dBFS to -128dBFS in steps of 1dB
 Signal Overload Detect -1dBFS to -127dBFS in steps of 1dB
 Warning Timer 1 to 20 seconds in steps of 1 second
 Tone Frequency 1-8 100Hz to 16kHz in 100Hz steps

Audio Mixers

Mixer Select 1-4, Downmix 1 -2
 Source select Bus 1-8, Silence, Tones 1-8
 Source Gain 12dB to -80dB in 0.1dB steps
 Mixer 1-4 invert On/Off

Mixer 1-4, Downmix 1-2 Mute On/Off
 Downmix Configuration LoRo, 4 level selections

Other Controls

GPI input High/Low Select Input 1-2, Black, Freeze, Pattern, User Memories 1-16, ARC Display Memories 1-32
 GPI Level Invert High/Low
 GPI Output Source Current input OK, Input 1-2 OK, Input 1-2 Selected, Black, Freeze, Pattern, No User Memories Selected, User Memories 1-16, No ARC Display Memories Selected, ARC Display Memories 1-32
 User Memories Save/Recall/Rename
 Memory Naming User configurable naming of Memories 1 – 16
 Information Window Video Input Status, Audio Input Status, EDH/CRC & ANC Status
 EDH/CRC Reset Resets all EDH/CRC counts
 RollTrack Index Allows up to 70 destinations
 RollTrack Sources Unused, Video Delay, Audio Delay, Input Present (1-2), Input Loss (1-2), Output Std, Input selected (1-2), Output Black, Freeze or Pattern on, Output Black, Freeze or Pattern off, Output Caption on, Output Caption off, Embedded Audio (Pairs 1-8) PCM, Embedded Audio (Pairs 1-8) Non-PCM, Embedded Audio (Pairs 1-8) Loss,
 Factory Default Resets all module settings to factory specified default values and clears memories
 Default Settings Resets all module settings to factory specified defaults but does not clear user memories
 Restart Software reset of module
 Module Information Reports: Product Name
 Software version, Serial number, Build number, KOS version, PCB version, Licensed Options
 Input Names 19 Character editable name

Specifications

Electrical 3Gbit/s SDI, SMPTE 424M 1.5Gbit/s HD-SDI, SMPTE 292M 270 Mbit/s SDI, SMPTE 259M-C / DVB-ASI
 Connector / Format BNC/ 75ohm panel jack on standard IQ connector panel
 Return loss > -15dB (270Mbit/s, 1.5Gbit/s) > -10dB (3Gbit/s)
 Output Jitter SD-SDI 0.2 UI (10Hz) / 0.2 UI (1KHz), 3G/HD-SDI 1.0 UI (10Hz) / 0.2 UI (100KHz)
 Video Standards 1125(1080)/50p, 1125(1080)/59p, 750(720)/50p, 750(720)/59p, 1125(1080)/25i, 1125(1080)/29i, 625(576)/25i, 525(480)/29i
 Embedded audio handling HD - 24-bit synchronous 48 kHz to SMPTE 299M, SD - 20-bit synchronous 48 kHz to SMPTE 272M-A

Analog Audio Outputs

Output Level Adjustable +12 dBu to +24 dBu
 Output Impedance ~ 25 Ohms
 THD+N -97 dB at 18 dBu, typical at 1 kHz
 Conversion 32-bit sampling @ 48kHz – 107 dB dynamic range typical

Power Consumption

Module Power Consumption 29 W Max