C DX 5624

HD Down Converter with Digital and Analog Outputs

DOWN CONVERSION

Down conversion is a widespread functionality required in the migration from SDTV to HDTV infrastructures. To ensure a smooth transition LYNX Technik™ provides a variety of solutions including a broadcast quality HD down converter and de-embedder which provides SDTV audio and video outputs in both analog and digital formats.

Multiformat operation and flexibility allows the module to be used in a variety of functional applications. With a SDTV input the module functions as a D/A converter, de-embedder and digital distribution amplifier. With a HDTV input the module will provide broadcast quality down converted video outputs in both analog (composite) and digital (SDI) formats with analog and digital (AES) audio outputs.

Automatic video format and video standard detection allows the module to detect and re configure itself for the connected input format, perfect for todays multi-format environments.

Down conversion is full broadcast quality with a choice of output formats of either *16:9 Letterbox*, *4:3 Stretch to Fill* or *4:3 Center Cut*. Built in 709>601 color space conversion ensures legal color reproduction in SDTV and adjustable horizontal aperture correction is provided to add (or remove) sharpness from the converted outputs.

All audio (8xAES) is de-embedded from each input, delayed 1 frame to compensate for the video processing delay and then re-embedded back into the down converted digital outputs.

Two digital AES outputs plus two stereo pair analog audio outputs are provided which can be taken from any of the 8 internal de-embedded audio streams.

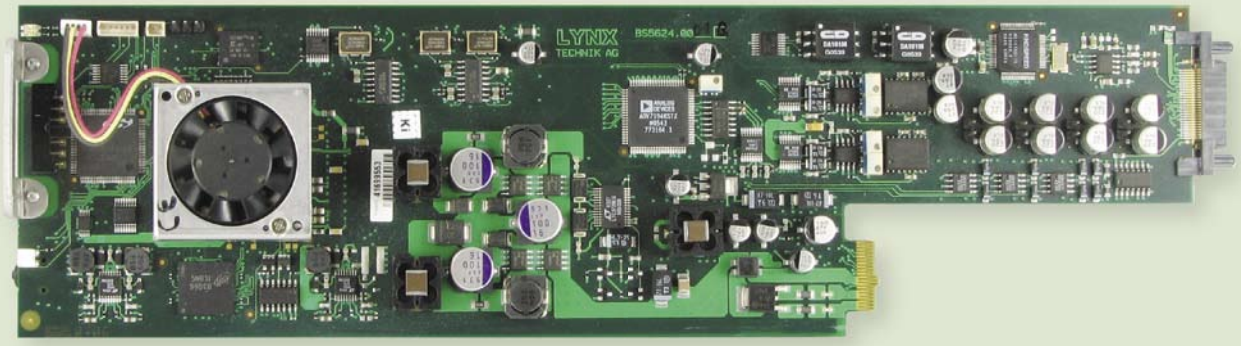
Local control is provided via the matrix display and user menu system and full remote control is possible when using a LYNX control system option.

LYNX TECHNIK AG

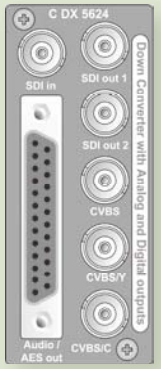
DOWN CONVERTERS

C DX 5624

SD/HD SDI Digital Down Converter with Analog and Digital Audio + Video Outputs.



CONNECTION PANEL



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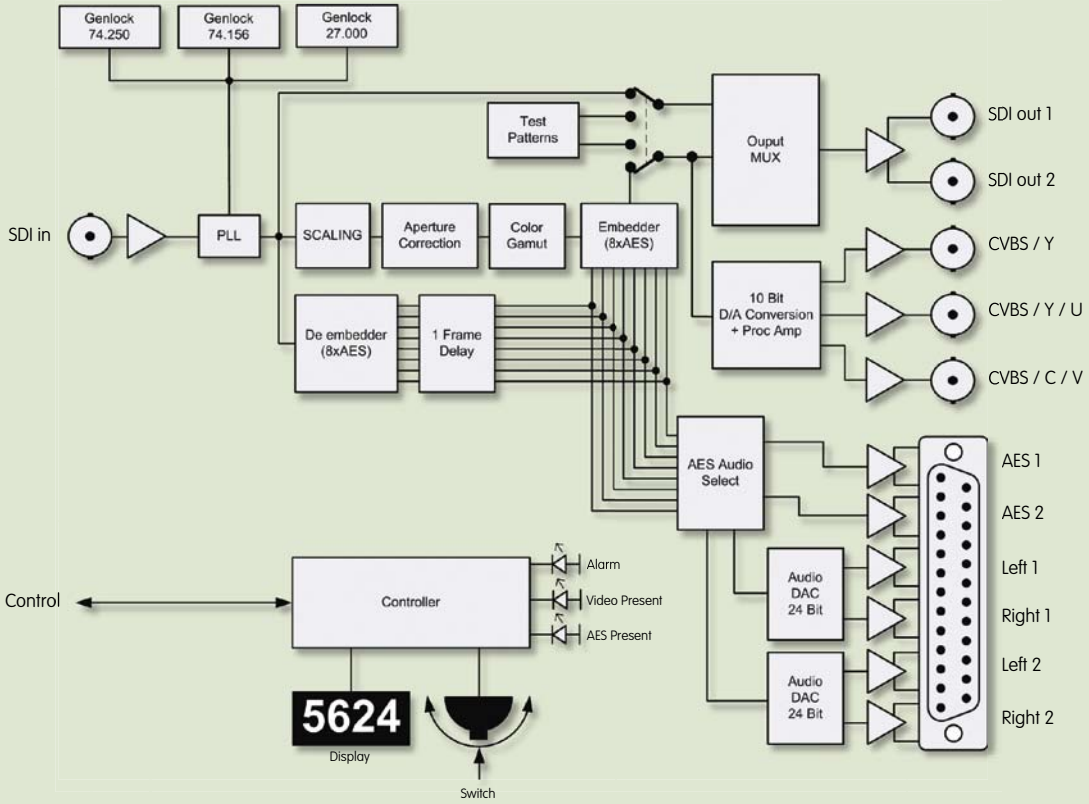
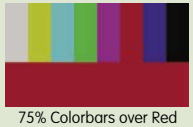
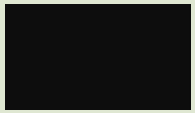


75% Colorbars



75% Colorbars over Red

Pathological EQ/PLL



Black

Blue Screen

Test Patterns

The module has an integrated test pattern generator which allows the module to be used as a diagnostic tool. The five basic patterns shown are provided.

With no input connected the module can be used as a stand alone test generator and provide patterns in any of the supported video formats.

Simultaneous test pattern outputs are provided in both HDTV and SDTV formats and are available as analog and digital outputs from the module.

The module can also be configured for *"Auto Test Pattern."* When the input signal is removed (or lost) then the selected test pattern will be switched on automatically on all module outputs (HDTV and SDTV, analog and digital). When the signal returns the pattern is automatically removed and the input signal displayed.

DOWN CONVERSION MODES

Converted Output Mode

HDTV Source

Embedded Audio (8x AES)
709 Color Space
1080i or 720P /50/60/59.94Hz

CENTER CUT
Embedded Audio (8x AES)
601 Color Space
Aperture Correction
525 or 625

LETTERBOX
Embedded Audio (8x AES)
601 Color Space
Aperture Correction
525 or 625

STRETCH TO FILL
Embedded Audio (8x AES)
601 Color Space
Aperture Correction
525 or 625

Flexibility

The module will automatically detect the connected video standard and format and configures the module input stage for operation in this format. If a SDTV input source is detected then the module will function as a high quality SDTV video D/A converter. With a HDTV source connected the moduel functions as a broadcast quality down converter. Three preset conversion modes, *letterbox, center cut* and *stretch to fill* addresses any down conversion application.

The module provides both analog and digital outputs in all modes of operation. The digital SDI outputs can be configured as down converted outputs or two re-clocked input signals.

When a HD source is connected 709 >601 color space conversion is automatic and the function is user selectable. This can be bypassed (transparent) or configured to process the chrominance portion of the signal only. The Integrated horizontal aperture correction allows the converted image to be sharpened or softened as the application requires.

Support for DolbyE is provided and any embedded DolbyE streams are processed transparently and delayed one frame to compensate for the video processing delay (maintaining correct guard band timing). All audio is re-embedded into the digital SDTV down converted outputs.

Digital to analog conversion is of the highest quality for both video and audio with adjustable Luma Gain / U Gain / V Gain / Black Level / Sharpness and Hue for the analog video outputs and adjustable left and right audio gain / channel swap / mute and de-emphasis for the analog audio outputs.

The module has full local controls via the integrated menu display and also supports a full GUI interface when used with the LYNX centralized control system.

Features

- Compact down converter and audio/video D/A converter
- Digital and analog audio and video outputs
- Multi-rate operation, auto detect input video format. Supported formats:
  - **SDTV:** 525/59.94Hz, 625/50Hz.
  - **HDTV:** 1080i / 59.94Hz/ 60Hz / 50Hz. 720P / 59.94 Hz / 60Hz / 50Hz
- Three modes of operation
  - SDTV De-embedder and D/A converter
  - HD De-embedder / Down Converter and D/A Converter
  - Multiformat Analog and Digital Video Test Pattern Generator
- Broadcast quality Down Conversion
- Three selectable Preset Down Conversion Modes
  - 16:9 Letterbox
  - 4:3 Center Cut
  - 4:3 Stretch to Fill
- Color Space conversion, user selectable
  - 709>601 Color Space Conversion
  - 709>601 Chroma Only color space conversion
  - Bypass (Transparent)
- De-embed complete audio payload from the SDI input (8 x AES)
- Audio delayed to match video processing and re-embedded into converted outputs
- One frame (fixed) processing delay
- 2 x balanced AES3 outputs (user selectable)
- 3 x CVBS or 1 x CVBS and 1 x YC or 1 x YUV analog video outputs
- 2 x Stereo pair balanced analog audio outputs (user selectable)
- 2 x Digital SDI outputs (configurable as converted outputs or reclocked input signals)
- Full video processing for analog video outputs providing adjustable:
  - Luma gain / U gain / V gain / Black level / Sharpness / Hue
- Full Audio processing for analog audio outputs providing:
  - Adjustable left and right audio gain levels
  - Left + Right channel swap / mute and de-emphasis
- Integrated test pattern generator, following patterns provided:
  - 75% Colorbars
  - 75% Colorbars over Red
  - Full Field Black
  - Pathological PLL/EQ
  - Full Field Blue (Blue Screen)
- Test patterns provided on all outputs (Digital and Analog video outputs)
- Selectable auto test pattern mode if input is lost
- Adjustable Horizontal Aperture Corrector for converted outputs
- Passes any embedded DolbyE streams transparently to converted outputs
- Audio is delayed to match video delay automatically
- All settings accessible through the LYNX control system using windows GUI
- All settings stored in internal flash RAM and are preserved through power cycles

DX 524

Specifications

Video Input	
Signal Type	Serial digital video SMPTE 292M, 344M, 259M-C
Input standards	HDTV: 1080i 59.94Hz / 60Hz / 50Hz / 720P 59.94Hz / 60Hz / 50Hz SDTV: 525 59.94Hz / 625 50Hz. (Field upgradable for additional format support)
Connector	BNC
Impedance	75 Ohm
Cable Equalization	Up to 250m Belden 8281 (270MHz) Up to 140m Belden 1694A (1.485GHz)
Return Loss	> 15 dB (270MHz) > 10dB (1.485GHz)
Digital Video Outputs	
Signal Type	Serial digital video SMPTE 292M, 344M, 259M-C
Output standards	1080i 59.94Hz / 60Hz / 50Hz 720P 59.94Hz / 60Hz / 50Hz 525 59.94Hz / 625 50Hz.
No. Of outputs	2 (either down converted outputs or reclocked inputs)
Connector	BNC
Impedance	75 Ohms
Jitter	< 0.2 ui (270MHz) < 0.25 ui (1.485GHz)
Return Loss	> 15 dB (1.5GHz)
Analog Video Outputs	
Modes	3 x CVBS or 1 x CVBS + YC (S-VHS) or 1 x YUV Component Analog
Return Loss	>35dB (5.75MHz)
Signal to Noise	> 60dB
D/A Conversion	10 bits and 54 MHz (4x over sampling)
Video Proc Functions	Luma gain / U Gain / V gain / Black level / Sharpness / Hue
Digital Audio Outputs	
Signal	AES3 (balanced)
Impedance	110 Ohms
Connectors	25 pin female SubD
Mode	Select any 2 AES signals from de-embedded audio (8xAES)
Analog Audio Outputs	
Signal	4 x Balanced analog audio (2 x Stereo L+R)
Connector	>90dB
Signal to Noise	>85dB
Conversion	24 bit
Output level	-39dB.....+24dB in 0.5dB increments (default 18dB)
Audio Proc Functions	Adjustable gain (left / right) / channel swap / mute / de-emphasis
Video Processing / Down Conversion	
Processing delay	1 Frame (fixed)
Conversion Modes	16:9 Letterbox 4:3 Center Cut 4:3 Stretch to Fill (User selectable)
Aperture correction	Horizontal only, adjustable for each output channel
Color space conversion	709 > 601 full (or chroma only) or transparent

Audio Processing	
De-embedder	De-embed all audio (4 audio groups = 8xAES) from each input source.
Audio delay	All Audio is delayed one frame to match video processing delay
Embedder	All audio is re-embedded into converted outputs
DolbyE	Transports embedded DolbyE streams transparently
Control	
Local Controls	Local alphanumeric display with integrated menu system for setting module parameters
Remote Control	Comprehensive remote control and status monitoring supported when used with a LYNX Controller option
Electrical Specifications	
Operating Voltage	12 VDC
Power Consumption	9 W
Safety	IEC 60950/ EN 60950/ VDE 0805
Mechanical	
Size	283mm x 78mm
Weight	Card/Module 150g, connector plate 70g
Rack space	Requires 1 slots in standard rack frame (max 10 modules per frame)
Ambient	
Temperature	5°C to 40°C Maintaining specifications
Humidity	90% Max non condensing

All specifications are subject to change without notice
Dolby and DolbyE are registered trade marks of Dolby Laboratories

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Headquarters
LYNX Technik AG.
Brunnenweg 3
D 64331, Weiterstadt
Germany
PH +49 (0) 6150 1817 0
FX +49 (0) 6150 1817 10

USA Headquarters
LYNX Technik Inc.
26366 Ruether Ave
Santa Clarita, CA 91350
USA
PH +1 (661) 251 8600
FX +1 (661) 251 8088

www.lynx-technik.com