LYNXTechnik AG

Broadcast Television Equipment

Reference Manual

C DX 3624

SD/HD Monitoring Down Converter with Embedded Audio Support and Video and Audio D/A Conversion

Revision 1.2
December 2006

LYNX Technik AG
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Contents

Warranty

LYNX Technik AG warrants that the product will be free from defects in materials and workmanship for a period of two (2) year from the date of shipment. If this product proves defective during the warranty period, LYNX Technik AG at its option will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, customer must notify LYNX Technik of the defect before expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by LYNX Technik, with shipping charges prepaid. LYNX Technik shall pay for the return of the product to the customer if the shipment is within the country which the LYNX Technik service center is located. Customer shall be responsible for payment of all shipping charges, duties, taxes and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure, or damage caused by improper use or improper or inadequate maintenance and care. LYNX Technik shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than LYNX Technik representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non LYNX Technik supplies; or d) to service a product which has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty servicing the product.

THIS WARRANTY IS GIVEN BY LYNX TECHNIK WITH RESPECT TO THIS PRODUCT IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. LYNX TECHNIK AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. LYNX TECHNIK`S RESPONISIBILITY TO REPAIR AND REPLACE DEFECTIVE PRODUCTS IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THIS WARRANTY. LYNX TECHNIK AND ITS VENDORS WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTIAL, OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER LYNX TECHNIK OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

Regulatory information

Europe

Declaration of Conformity

We LYNX Technik AG
Brunnenweg 3
D-64331 Weiterstadt
Germany

Declare under our sole responsibility that the product

TYPE: **C DX 3624**

To which this declaration relates is in conformity with the following standards (environments E1-E3):

EN 55103-1 /1996
EN 55103-2 /1996
EN 60950 /2001

Following the provisions of 89/336/EEC and 73/23/EEC directives.

Winfried Deckelmann

Weiterstadt, November 2006

Place and date of issue *Legal Signature*

USA

FCC 47 Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense

Getting Started

Packaging

The shipping carton and packaging materials provide protection for the module during transit. Please retain the re-useable shipping cartons for a period of time in case subsequent shipping of the product becomes necessary. Please read this manual before attempting operation of the module.

Product Description

The C DX 3624 is a high quality multi-format monitoring down converter providing down converted digital and analog video outputs + analog and digital audio outputs.

Input Formats

The module has one multi-format serial digital input with automatic input detection. The module will detect the following input standards and configure the input stage automatically for operation in the connected format.

SDTV Formats	HDTV Formats
525 / 59.94Hz	1080i / 59.94Hz
625 / 50Hz	1080i / 60Hz
	1080i / 50Hz
	720P / 59.94Hz
	720P / 60Hz
	720P / 50Hz

Output Formats

The module provides analog and digital video outputs. The analog video outputs are SDTV only and the available 3 BNC connections can be configured to provide the following analog video outputs.

3 x CVBS (composite)
1 x YUV Component analog video
1 x YC (S-VHS) + 1 x CVBS (composite)

Two serial digital outputs are also provided which can be configured to provide 2 x digital down converted outputs or 2 x re-clocked copies of the input signal (1>2 distribution amplifier)

Conversion Modes

HDTV Inputs > Down Conversion

With a compatible HD source connected the module only supports down conversion between divisible frame rates. For example If a frame rate of 59.94Hz is connected to the input then the module can only output a down converted 59.94Hz output. This module will not function as standards converter.

Please refer to the table below which shows compatible conversion modes

Input Signal	Converted Output	Notes
1080i / 50Hz	625 / 50Hz	
1080i / 59.94Hz	525 / 59.94Hz	
1080i / 60Hz	525 / 59.94Hz	59.94Hz output will drop frame
720P / 50Hz	625 / 50Hz	
720P / 59.94Hz	525 / 59.94Hz	
720P / 60Hz	525 / 59.94Hz	59.94Hz output will drop frame

Note. *It is possible to convert between 60Hz and 59.94Hz. The resulting cumulative error will result in dropped frames on the converted outputs.*

SDTV Inputs

When a SDTV input is detected the module functions as a D/A converter + distribution amplifier providing analog and digital outputs of the connected SDTV input signal.

Aspect Ratios

The module supports three aspect ratio conversion modes which can be user selected using dip switches or preset with the optional control system.

Letterbox

This takes the 16:9 aspect ratio of the input HD signal and fits it into the 4:3 SD aspect ratio screen with black bars at the top and bottom of the image.

Center Cut

This mode cuts the center portion of the 16:9 input signal and fills the 4:3 SD aspect ratio screen.

Stretch to Fill

This mode takes the 16:9 input signal and distorts (vertically stretches) the image to fit the available 4:3 SD aspect ratio space.

16:9 HDTV Source

4:3 Center Cut

4:3 Letterbox

4:3 Stretch to fill

Video Processing

Note. All digital signal processing and D/A conversion is 10 bit.

Video Proc Amp

A basic video proc amp is provided for video adjustments. This provides for adjustable Luminance Gain / Chrominance Gain and Pedestal (Lift).

> ***Note.*** *Proc amp functions are preset to null. These parameters are only adjustable via the local control, central control system or by using the RCT 3002 Service Adapter. Please refer to page 17 for illustrations of the available GUI controls*

Aperture Correction and Color Space Conversion

Adjustable horizontal aperture correction is provided as well as selectable 709 > 601 color space (gamut) conversion. Color space conversion can be set to convert or transparent modes. In transparent mode the color space is passed from the input to the output.

> ***Note.*** *Horizontal Aperture correction is factory preset for a flat frequency response on the SDTV outputs. (The down conversion filtering process results in a slight roll off in high frequencies). The amount of aperture correction applied is user adjustable via the local controls or via the central control system or RCT 3002 Service Adapter. Please refer to page 17 for illustrations of the available GUI controls.*

All module settings are automatically stored in internal flash ram and will survive power cycles and long term storage.

Note. *Settings will be written to flash RAM automatically after 10 seconds with no activity. This can be observed by the alarm LED flashing yellow three times. If power is removed before the settings have been stored the module will revert back to the previous settings when powered up*

Audio Processing

The module provides full audio support and will de-embed the complete audio payload (8xAES) from the incoming SDI signal. This audio is delayed to match the video processing delay (1 frame) and then re-embedded into the digital down converted outputs.

Any two or the de-embedded AES signals can be selected and output as external digital AES signals (unbalanced AES3id on BNC connectors and balanced AES3 signals on the SubD connector). Balanced analog outputs of the same signals are also provided via high quality 24 bit Audio D/A converters. Full scale ranging, adjustable gain and de-emphasis is provided for each analog audio output. Balanced analog audio outputs are provided on the integrated 25 pin SubD connector.

DolbyE

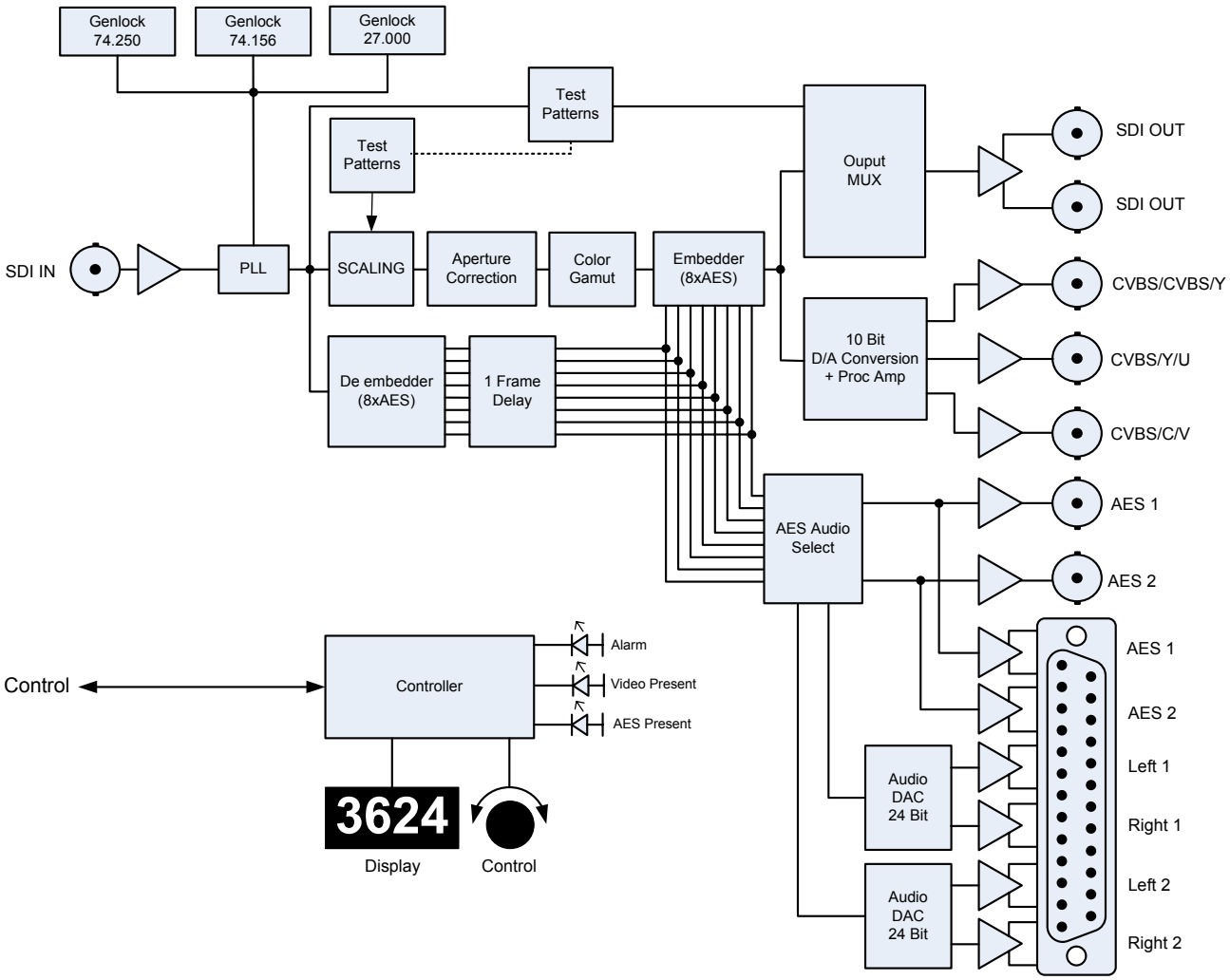
If the incoming SDI signal has an encoded DolbyE stream this will be de-embedded, delayed one frame and re-embedded into the same channels on the down converted SDI outputs. Providing the Dolby “Guard Band” was timed correctly on the input then the SDI outputs will have the correct DolbyE audio timing and guard band timing will be preserved.

Test Patterns

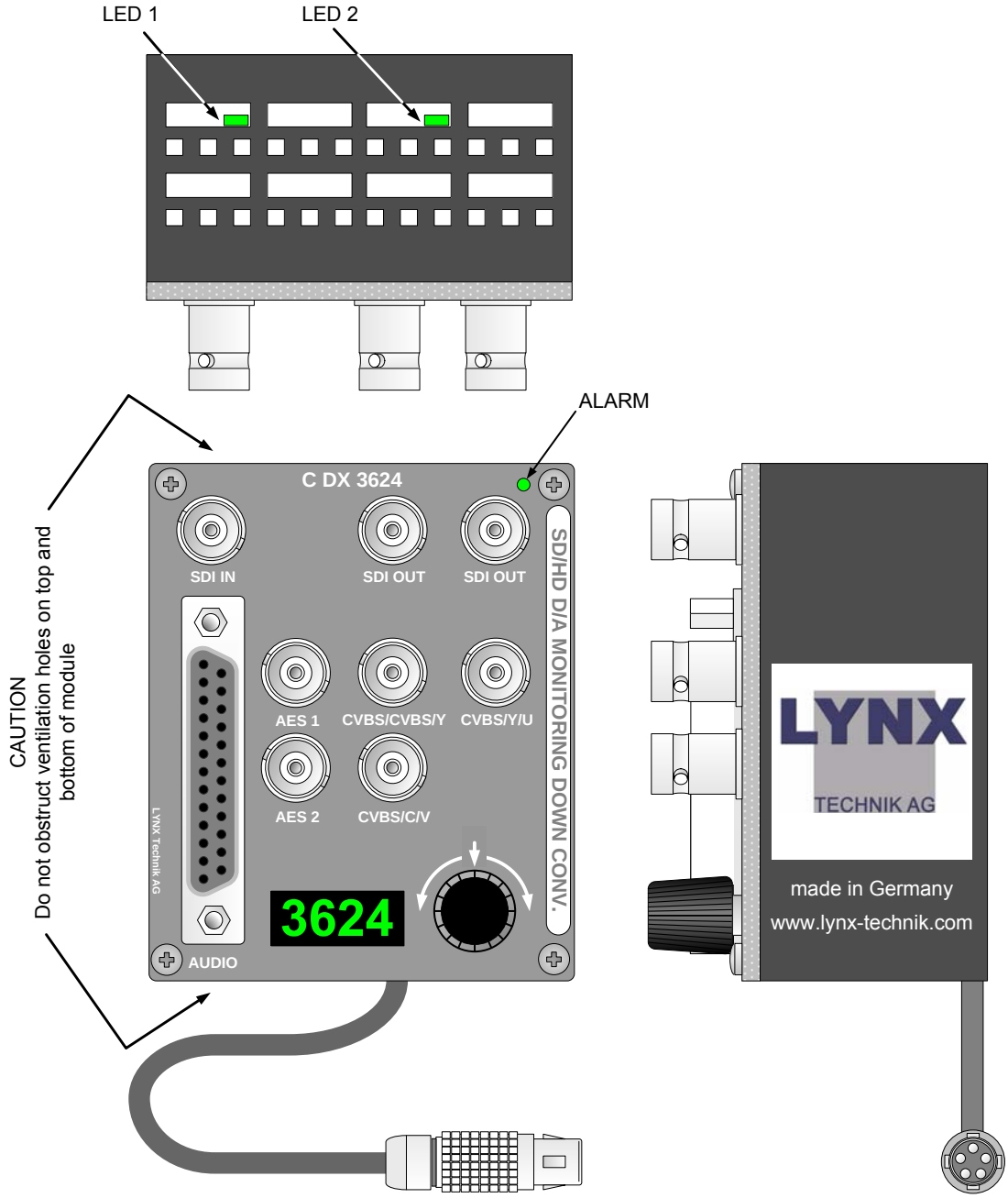
The module contains a selection of video test patterns which can be used for testing and fault finding. Patterns provided are 75% Colorbars, 75% Colorbars over Red, Full Field Black, Pathological PLL/EQ and Full field Blue (blue screen). Test patterns are provided on the analog and Digital video outputs in the selected format. If configured to pass the input HDTV to the digital outputs then both a Digital HD Test patterns and an Analog SDTV patterns are provided.

By pre-selecting the input format (with no input connected) the Module can be used as a stand alone multi-format Test Pattern Generator.

Functional Diagram



Module Layout



Connections

Video

The C DX 3624 uses standard 75 Ohm BNC connectors. We recommend the use of high quality video cable for digital video connections to reduce the risk of errors due to excessive cable attenuation. Max cable lengths the module will support are shown below.

SDTV = 250m Belden 8281 (270Mbits/s)
HDTV = 140m Belden 1694A (1.4Gbits/s)

Audio

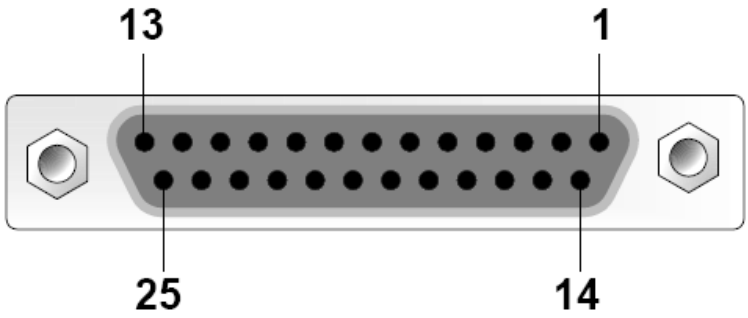
Digital Audio (AES)

The module provides for both Unbalanced (AES3id) and Balanced (AES3) connections. Unbalanced connections are made using the two BNC connectors (AES 1 and AES2) Balanced connections are made via the 25 pin SubD connector. Connection details shown below.

Analog Audio

Balanced analog audio connections are made using the 25 pin SubD connector. Connection details shown below.

Pin Number	Connection	Pin Number	Connection
1	Analog 1 L +	14	Analog 1 L -
2	Analog 1 L GND	15	Analog 1 R +
3	Analog 1 R -	16	Analog 1 R GND
4	Analog 2 L +	17	Analog 2 L -
5	Analog 2 L GND	18	Analog 2 R +
6	Analog 2 R -	19	Analog 2 R GND
7	AES 1 +	20	AES 1 -
8	AES 1 GND	21	AES 2 +
9	AES 2 -	22	AES 2 GND
10	(n.c)	23	(n.c)
11	(n.c)	24	(n.c)
12	(n.c)	25	(n.c)
13	(n.c)		



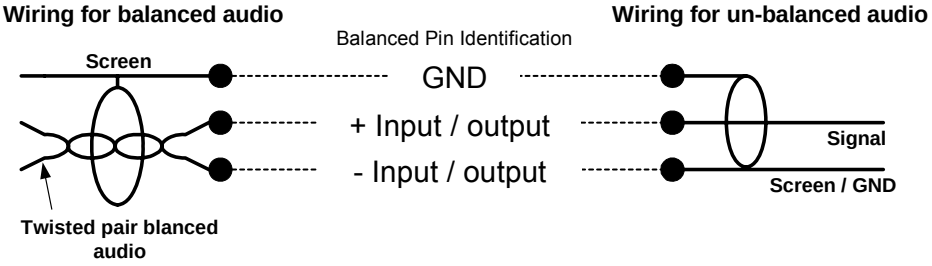
View looking INTO connector as seen on module

We recommend you use high quality screened (twisted pair) cable for the balanced audio connections. LYNX has an optional audio breakout cable which will bring out all audio connections to in line XLR connectors. Model number **R AC M25-8**

Audio Output Connections (un-balanced)

Although the module is designed primarily for balanced line audio connections it is possible to make un-balanced audio connections to the module.

***NOTE**. When used in this manor certain technical specifications of the module cannot be maintained.*

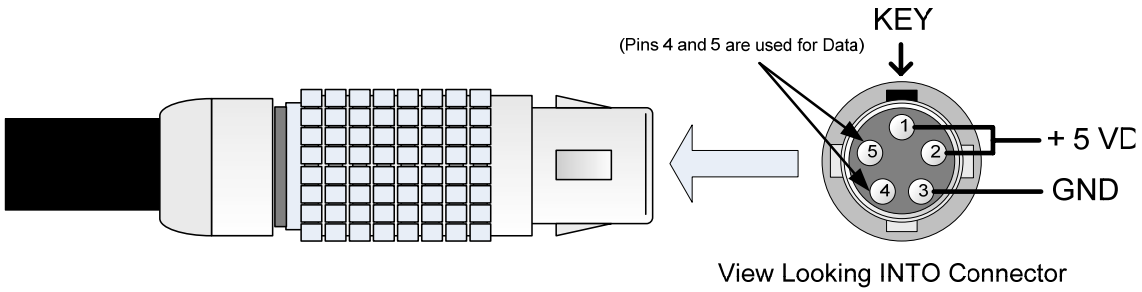


Power

The module requires a + 5VDC power supply. There are various power options available by LYNX which includes AC power adapters and various battery adapters. Please refer to the LYNX catalog for more details on available power supply options.

The connector used on the module is a LEMO connector which connects both power and data connections to the module. Connection information is shown below. The data interface is used for the optional central control system or RCT 3002 USB Service Adapter.

The LEMO connector has a metal key and can be aligned by using the red dots on both connectors and then pushed together until locked into place. When connected correctly this will provide a secure mechanical connection.



If you are providing your own power source please ensure it can provide enough power and provides a clean + 5VDC supply with a tolerance of + 4.95VDC to +5.10VDC (under load measured at the connector). We recommend the use of screened power cable connecting the screen to the ground pin.

DO NOT MAKE ANY CONNECTIONS TO PINS 4 and 5 AS THESE ARE FOR DATA CONNECTIONS (LYNX USE ONLY). CONNECTING POWER TO THESE PINS WILL RESULT IN MODULE DAMAGE.

A suitable mating connector may be purchased directly from LYNX or LEMO directly www.lemo.com. Lemo Part number for mating connector is **FGG.0B.305.CLAD42**

Note
Any failure or damage to the module resulting from the use of a non LYNX supplied power source (or adapter) is not covered under warranty

Installation

The MiniModule can be used standalone in any suitable location. The location should be free from any moisture and excessive sources of heat. The ventilation holes in the top and the bottom of the module should be kept un-obstructed at all times or module overheating may occur and result in module damage.

> ***Note.*** *The module may run warm to the touch, this is normal. The module case is used to shunt heat from some internal components.*

We provide a number of Module mounting options and we recommend the use of these to ensure the module is mechanically secured. These include

R FR 3020 - Individual Mounting Brackets. These may be secured to any surface with mounting screws

RFR 3004 - Wall mounting bracket for 2 MiniModules. This bracket can be secured on the rear or side to any surface and will accommodate two modules. Modules mount using spring clips and can be removed and installed with no tools

RFR 3005 - 19” Rack plate for 5 MiniModules. This rack plate is designed to fit in a standard 19” rack space and is typically installed in the rear of a equipment rack The plate is hinged to allow access to the rear of the equipment rack. Up to 5 MiniModules can be accommodated. Modules mount using spring clips and can be removed and installed with no tools. This can be used in combination with the **RFR 3010** Central power supply and control chassis to provide centralized power (with optional redundant power protection) as well as accommodation for a rack controller for connection into the LYNX centralized control system.

Please refer to the LYNX catalog or the website www.lynx-technik.com for more information on these options.

Local Control

The module has an integrated 4 digit alphanumeric display and a control knob which is used for changing module settings. The control knob is used for navigation through a menu structure and making selections.

Local Display

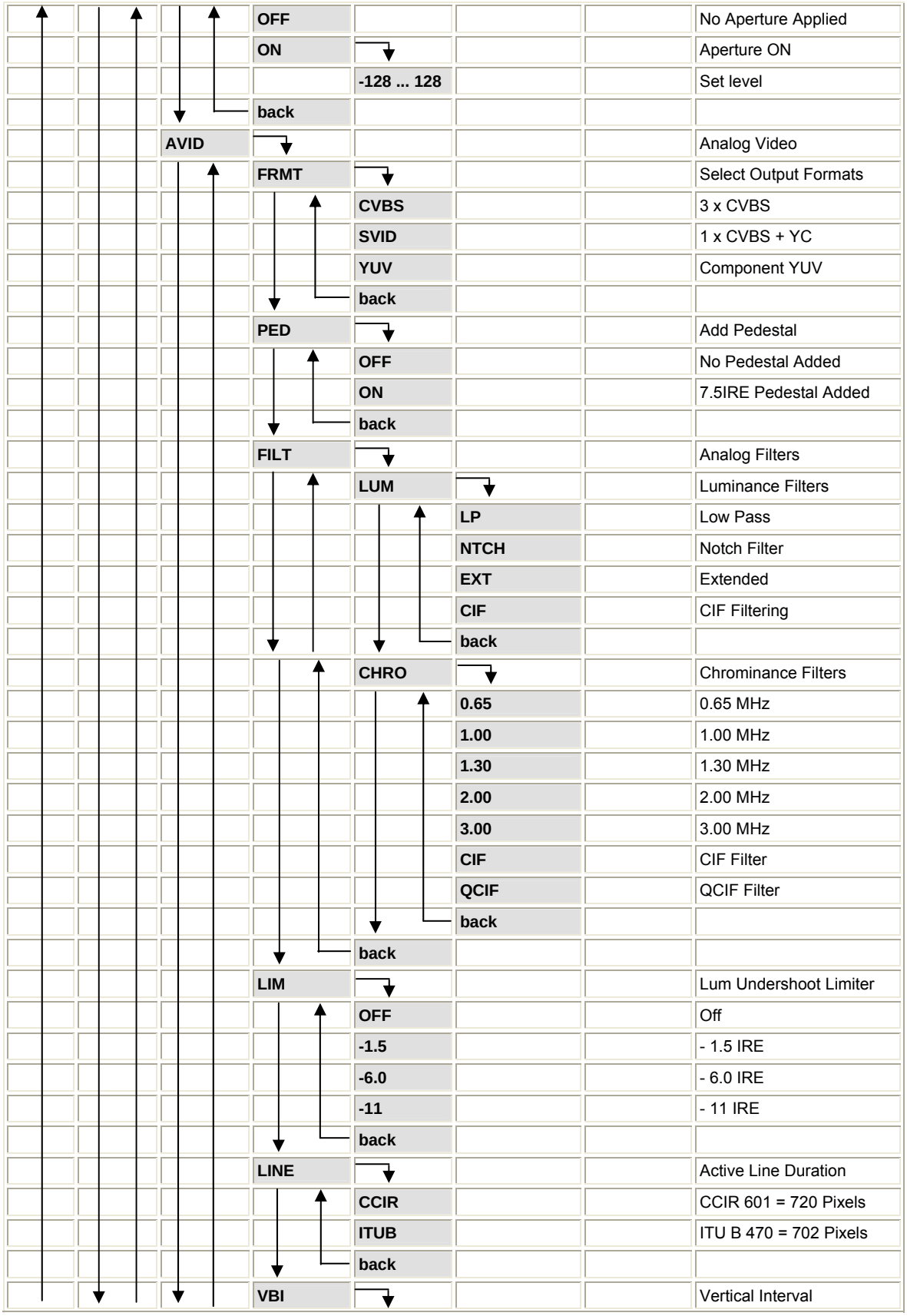
Note
All settings are stored in flash RAM and will survive power cycles and long term storage. Settings are stored automatically after 10 seconds of inactivity (Indicated by the alarm LED flashing yellow three times). If the module is powered down before the settings are automatically stored then any recently changed settings will be lost.

Control Knob
Rotate left and right to navigate through settings.
Push to make a selection.

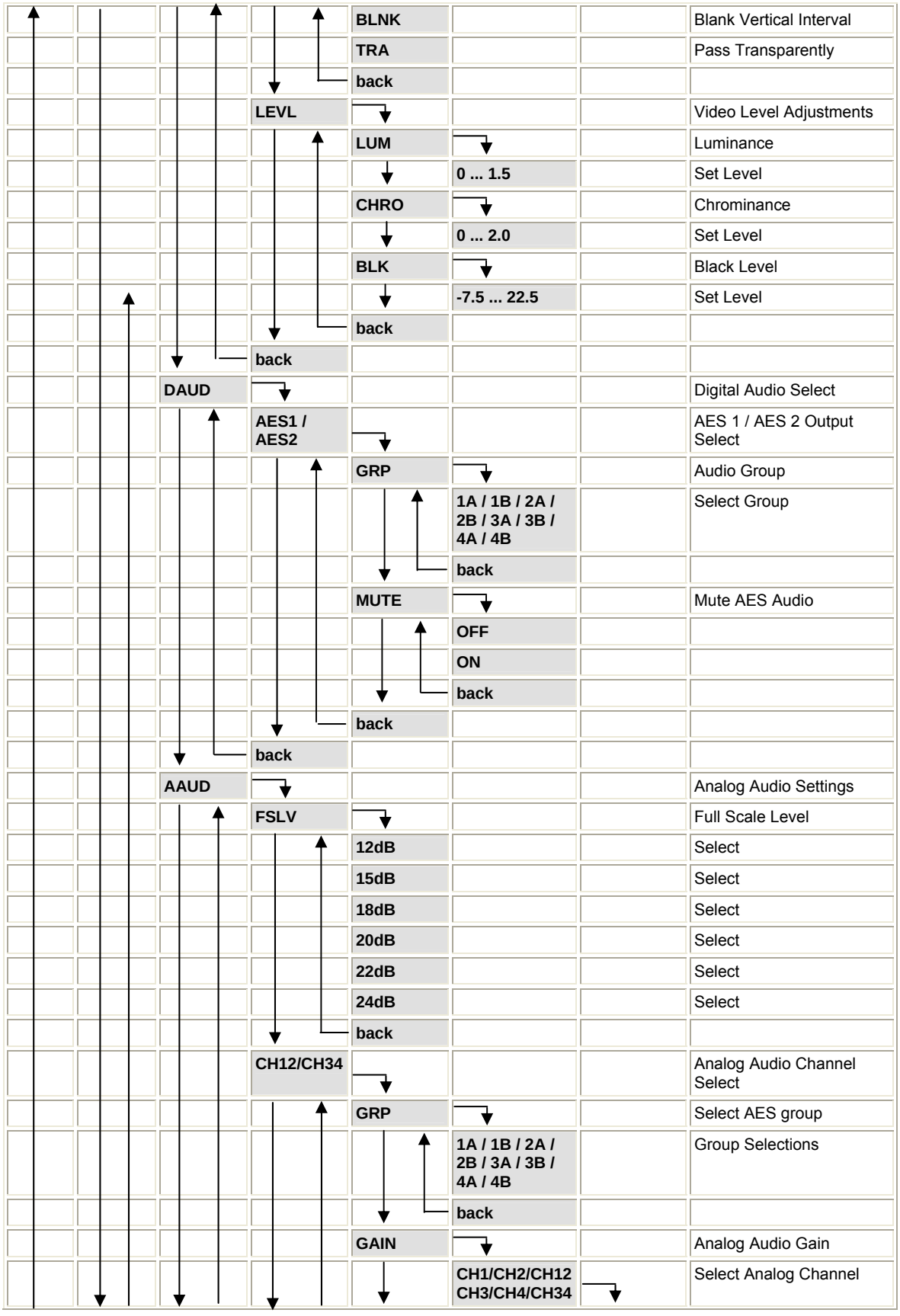
Local Control Menu Structure

Find below the local menu structure and navigation aid.

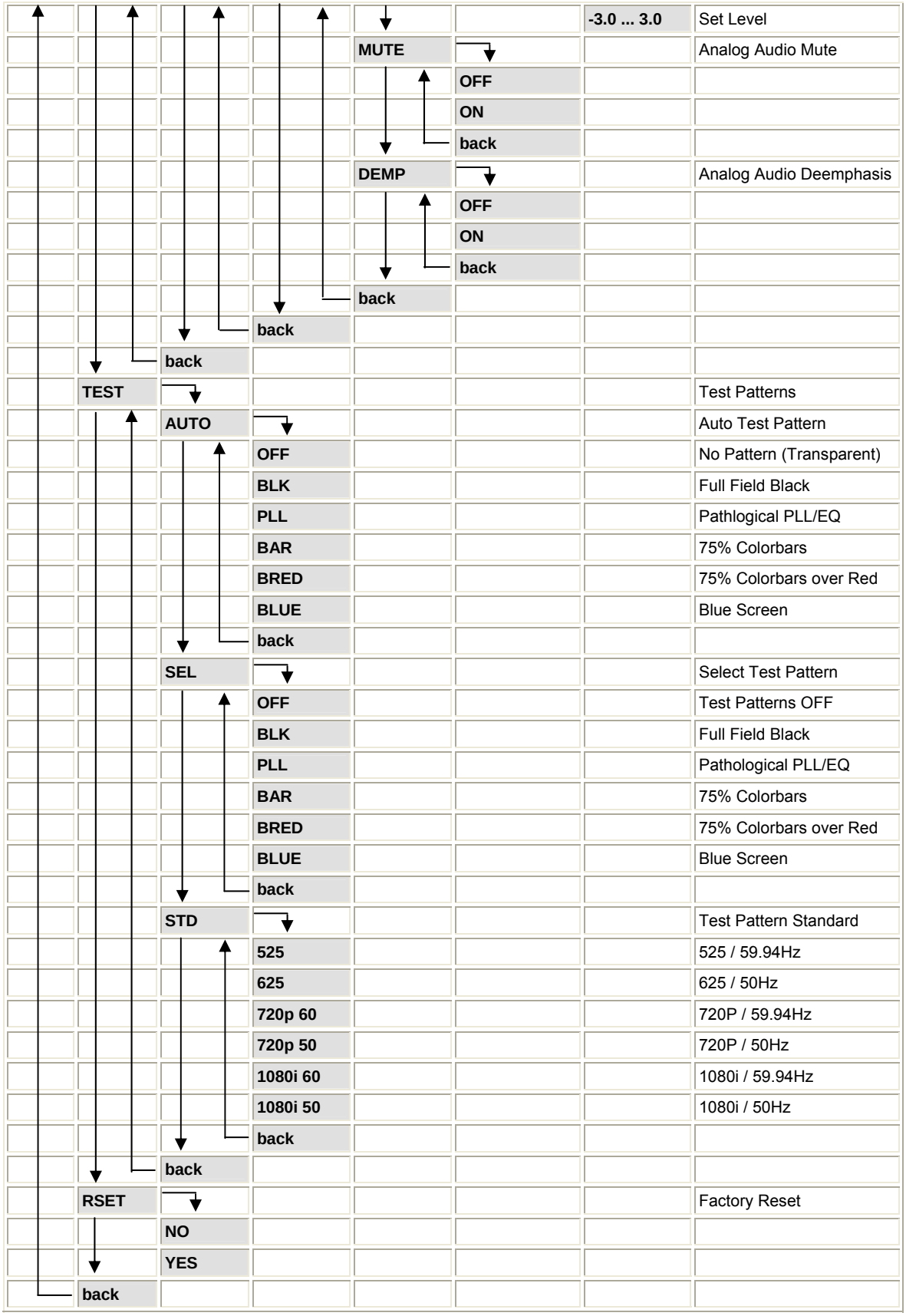
Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Description
3624							Root Display
	OUT						Outputs
		DVID					Digital Video Outputs
			SD				SDTV
			S/HD				Input loop through
			back				
		DNCV					Down Converter Mode
			LBOX				Letterbox
			FILL				Stretch to Fill
			CCUT				Center Cut
			back				
		CSCV					Color Space Conversion
			OFF				Transparent
			ON				709>601 Conversion
			LUMA off				Convert only Chroma
			back				
		APRT					Aperture Correction



		OFF				No Aperture Applied
		ON				Aperture ON
			-128 ... 128			Set level
		back				
		AVID				Analog Video
		FRMT				Select Output Formats
			CVBS			3 x CVBS
			SVID			1 x CVBS + YC
			YUV			Component YUV
			back			
		PED				Add Pedestal
			OFF			No Pedestal Added
			ON			7.5IRE Pedestal Added
			back			
		FILT				Analog Filters
			LUM			Luminance Filters
				LP		Low Pass
				NTCH		Notch Filter
				EXT		Extended
				CIF		CIF Filtering
				back		
			CHRO			Chrominance Filters
				0.65		0.65 MHz
				1.00		1.00 MHz
				1.30		1.30 MHz
				2.00		2.00 MHz
				3.00		3.00 MHz
				CIF		CIF Filter
				QCIF		QCIF Filter
				back		
			back			
		LIM				Lum Undershoot Limiter
			OFF			Off
			-1.5			- 1.5 IRE
			-6.0			- 6.0 IRE
			-11			- 11 IRE
			back			
		LINE				Active Line Duration
			CCIR			CCIR 601 = 720 Pixels
			ITUB			ITU B 470 = 702 Pixels
			back			
		VBI				Vertical Interval



				BLNK			Blank Vertical Interval
				TRA			Pass Transparently
				back			
			LEVL				Video Level Adjustments
				LUM			Luminance
					0 ... 1.5		Set Level
				CHRO			Chrominance
					0 ... 2.0		Set Level
				BLK			Black Level
					-7.5 ... 22.5		Set Level
				back			
			back				
		DAUD					Digital Audio Select
			AES1 / AES2				AES 1 / AES 2 Output Select
				GRP			Audio Group
					1A / 1B / 2A / 2B / 3A / 3B / 4A / 4B		Select Group
					back		
				MUTE			Mute AES Audio
					OFF		
					ON		
					back		
				back			
			back				
		AAUD					Analog Audio Settings
			FSLV				Full Scale Level
				12dB			Select
				15dB			Select
				18dB			Select
				20dB			Select
				22dB			Select
				24dB			Select
				back			
			CH12/CH34				Analog Audio Channel Select
				GRP			Select AES group
					1A / 1B / 2A / 2B / 3A / 3B / 4A / 4B		Group Selections
					back		
				GAIN			Analog Audio Gain
					CH1/CH2/CH12 CH3/CH4/CH34		Select Analog Channel



						-3.0 ... 3.0	Set Level
				MUTE			Analog Audio Mute
					OFF		
					ON		
					back		
				DEMP			Analog Audio Deemphasis
					OFF		
					ON		
					back		
				back			
			back				
		back					
	TEST						Test Patterns
		AUTO					Auto Test Pattern
			OFF				No Pattern (Transparent)
			BLK				Full Field Black
			PLL				Pathlogical PLL/EQ
			BAR				75% Colorbars
			BRED				75% Colorbars over Red
			BLUE				Blue Screen
			back				
		SEL					Select Test Pattern
			OFF				Test Patterns OFF
			BLK				Full Field Black
			PLL				Pathological PLL/EQ
			BAR				75% Colorbars
			BRED				75% Colorbars over Red
			BLUE				Blue Screen
			back				
		STD					Test Pattern Standard
			525				525 / 59.94Hz
			625				625 / 50Hz
			720p 60				720P / 59.94Hz
			720p 50				720P / 50Hz
			1080i 60				1080i / 59.94Hz
			1080i 50				1080i / 50Hz
			back				
		back					
	RSET						Factory Reset
		NO					
		YES					
	back						

Factory Default Settings

The module is shipped with the following settings programmed. If these are the settings you require then no changes to the switch settings are required

Digital Video Outputs	SD Down Converted
Down Conversion Mode	Center Cut
Color Space Conversion	ON
Aperture Correction	ON
Analog Video Outputs	3 x CVBS
Add Pedestal	ON
Luminance Filter	Extended
Chrominance Filter	3.0 MHz
Lum Undershoot Limiter	OFF
Active Line Duration	ITU B 470
VBI	Transparent (for bypass channels)
Video Levels	Set to null
Digital Audio	AES1/2 Group 1
Mute	OFF
Analog Audio Full Scale Level	18 dBu
Analog Audio Channel Select	AES1/2 Group 1
Analog Gain	Set to null
Analog Audio Mute	OFF
Analog Audio Deemphasis	OFF
Auto Test Pattern	OFF
Test Pattern	OFF

Indicators

Alarm indicator

An Alarm indicator is provided on the front of the module (refer to module layout diagram) this LED has three states. Alarm conditions shown below.

LED Color	Status
Green	Video Present PLL Locked
Yellow	Test Pattern Selected
Red	No Signal and/or PLL unlocked

LED 1

LED1 is visible through the top of the module case (refer to module layout diagram). Conditions shown below

LED Color	Status
Green	Input SDI Present
Red	Input SDI missing

LED 2

LED2 is visible through the top of the module case (refer to module layout diagram). Conditions shown below

LED Color	Status
Green	AES 1 and AES 2 Present
Yellow	Only one AES Present
Red	No Audio

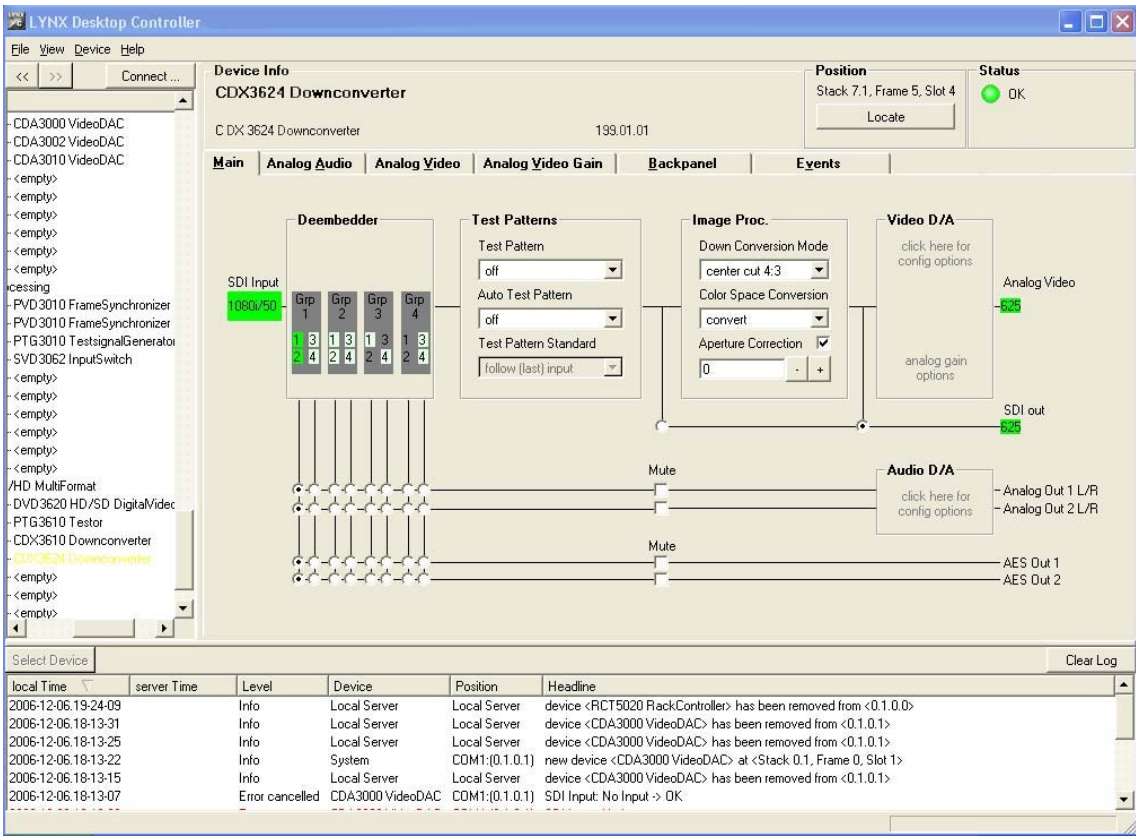
GUI Operation

All LYNX MiniModules support a computer interface which allows setting the modules parameters using a simple GUI interface. Access to all standard features (and in some cases) extended features is possible using this interface.

Access to the GUI requires the use of the optional LYNX central control system of via the optional RCT 3002 USB Service Adapter and desktop controller software (one Service Adapter will support all LYNX MiniModules using a simple Plug and Play interface)

> ***Note.*** *Any settings made using the control system or Service Adapter overrides any local settings made on the module. All settings are stored in internal flash ram and will survive power cycles and long term storage.*

The GUI screenshots below show the settings and adjustments possible for the C DX 3624 MiniModule.



The above screenshot shows the complete module GUI. The Device info area contains information about the module including name and firmware revision. If used as part of a larger system (using the LYNX central control system) the modules position and physical location is displayed above the “locate” button.

> ***Note.*** *The Locate function us a tool used to quickly identify a module in larger systems. Selecting “locate” will flash the module alarm LED yellow. (does not effect module operation)*

The first screen you see when the module is selected is the ***Main*** tab this is a graphical representation of the modules function and signal flow (left to right). Clicking on processing boxes where shown will link to other GUI screens with controls for these specific functions.

The area at the bottom of the screen is the error log. Any fault condition will be timestamps and entered into the log (as long as the controller / adapter is connected)

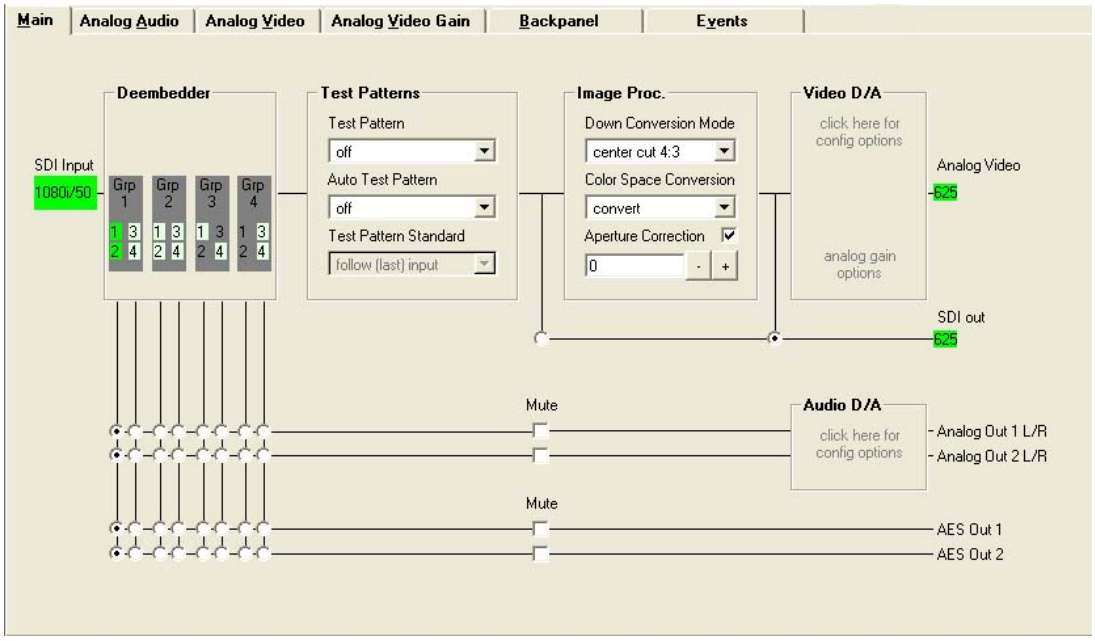
There are a number of Tabs associated with each Module which splits up the modules settings into a number of separate screens. The various GUI screens and functions are described below.

Note. *If using the RCT 3002 USB Service Adapter the settings will be written to flash RAM automatically after 10 seconds with no activity on the GUI. This can be observed by the alarm LED flashing yellow three times. We recommend you "RELEASE" the module from the GUI before unplugging. This will write all the settings to flash RAM and prepare the module for unplugging.*

This can be done by selecting the ***"Device>Release"*** *from the drop down menus*

Main Tab

This screen is the main GUI interface and is presented first when the module is displayed in the GUI. The layout replicates function and the signal flow if from left to right. Selections are made using onscreen sliders, radio buttons, drop down selections and checkboxes.



Input Detection

On the left the SDI input is detected and the format displayed on screen (in green)

Deembedder

The first stage is the audio deembedder. The four audio groups are represented by the dark grey boxes and the individual audio signals within each AES channels are shown as being present when highlighted green. This is a good reference for checking embedded audio status on the incoming SD/HDTV SDI stream.

Each AES channel (8) is available on a audio crossbar which permits selection of AES channels for the digital and analog audio output stages. (Selected using the radio buttons). Each selected AES stream can be individually muted using the checkboxes provided.

Although not graphically shown, all AES channels (8) are fed through a fixed 1 Frame delay and embedded back into the down converted digital outputs.

Test Pattern
This is where the internal test pattern can be switched on via the drop down selections. This will override any input signal and is present on all outputs (analog and digital). Selections provided are:

- OFF *(default)*
- Color bars
- Color Bars over Red
- Full field Black
- Pathological PLL/EQ
- Blue Screen

Auto Test Pattern
When the input signal is lost you can configure the module to automatically switch in a test pattern. Selections provided are.

- OFF *(default)*
- Color bars
- Color Bars over Red
- Full field Black
- Pathological PLL/EQ
- Blue Screen

Test Pattern Standard
Using this drop down selection it's possible to configure the standard of the internal test signal. This can be preset to follow the last input standard connected or forced into any independent standard which is useful if using the module as a test pattern source. Possible standard selections are:

- Follow Last Input *(default)*
- 525 / 59.94Hz
- 625 / 50 Hz
- 1080i / 59.94Hz
- 1080i / 60Hz
- 1080i / 50Hz
- 720P / 59.94Hz
- 720P / 60Hz
- 720P / 59.94Hz

Down Converter Mode
This drop down selection defines the aspect ratio reproduction for the converted outputs Selections are

- Center Cut 4:3 *(default)*
- Letterbox
- Stretch to Fill

Color Space Conversion
This drop down selection configures the color space converter. There are three possiblke settings

- Bypass (Passes the color space on the input)
- Convert (Performs a 709>601 color space conversion)
- Luma in bypass (Only converts the chrominance portion of the signal)

Aperture Correction
We provide a horizontal aperture corrector for the converted outputs which permits the sharpening or softening of the SDTV outputs (a slight roll off in high frequency is a normal part of the down conversion filtering process). The checkbox can be used to switch aperture ON and OFF. (ON= Default). When set to ON a small preset amount of correction is applied to produce a flat frequency response on the outputs. When set to OFF all Aperture correction is removed.

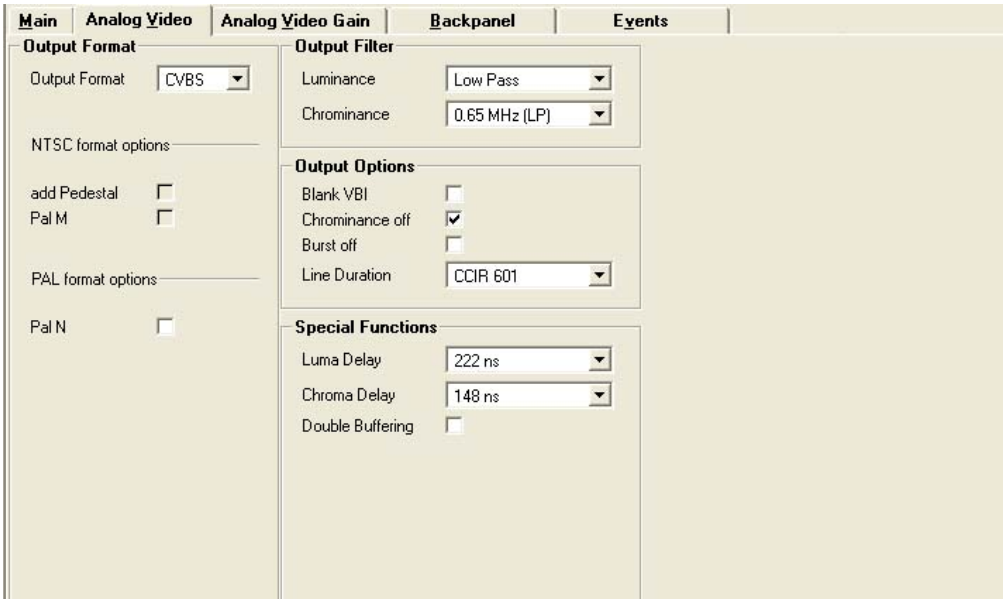
The amount of aperture correction is adjustable (from the factory preset)
range + 30 to -80. Adjustments in the positive direction will sharpen the image and the negative direction will soften the image.

SDI output routing
There are two small radio buttons which can be used to change the SDI digital outputs. One selection takes the signal before the down converter and will provide two re-clocked outputs of the incoming SDI signal. The other selection (default) provides two converted digital outputs.

Output Standard
The output standard is indicated in green for the analog and digital outputs.

> ***Note***
> *The down converter will automatically select the correct output standard depending on the connected input standard. For example if a 50Hz input signal is detected then a 625 PAL output will be provided. Likewise if a 59.94Hz or 60Hz input is detected then a NTSC 59.94Hz output will be provided.*

Analog Video Tab



This GUI screen is where you would access all the controls for the analog to digital conversion and proc functions

Output Format
Use this drop down selection to configure the analog outputs. Selections are

- 3 x CVBS
- 1 x CVBS + YC
- YUV

The “Add Pedestal” function is enabled when a NTSC is being provided and checking this box will add a 7.5IRE Pedestal to the analog outputs.

NTSC Output Options
There are two check boxes provided which are for configuration of the video signal when in NTSC (525) output mode.

Add pedestal (when selected) will add a 7.5IRE pedestal to the analog outputs.

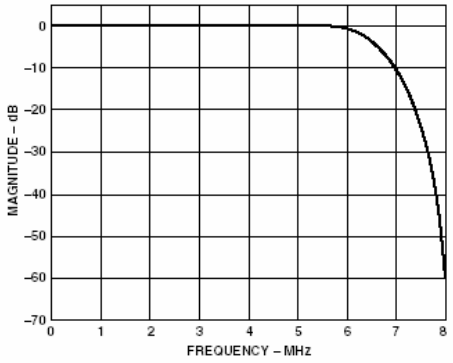
PAL M will configure the NTSC outputs to the PAL M standard.

PAL Output Options
There is one selection possible when in PAL (625) mode. When selected this will format the outputs into the PAL N video standard.

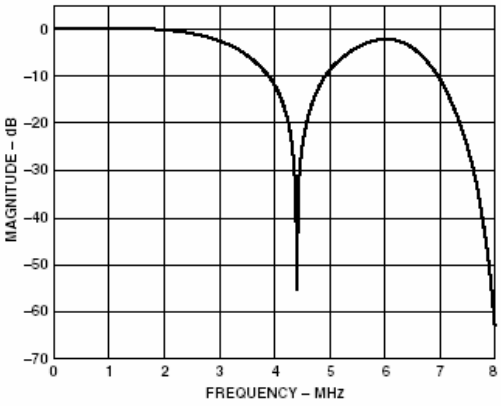
Luminance Output Filter
This drop down selection allows the selection of the Luminance filtering characteristics for the analog to digital converter. Settings are listed below followed by the filter response characteristics.

- Extended Mode (default)
- Notch Filter
- Lowpass
- CIF

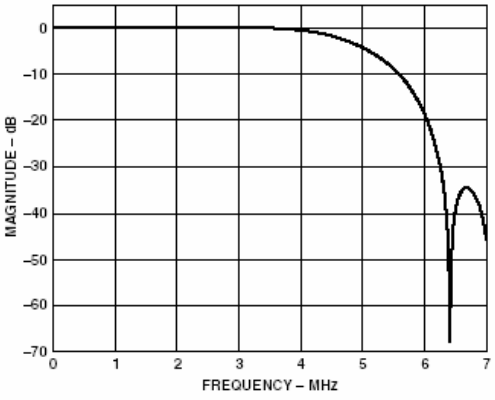
Extended Mode (Default)



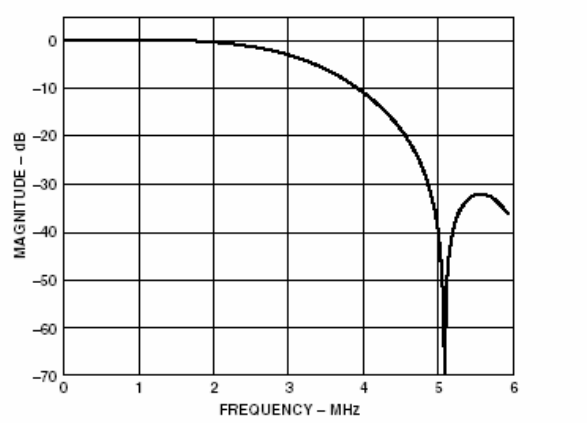
Notch Filter (PAL)



Low Pass (PAL)



CIF (PAL)

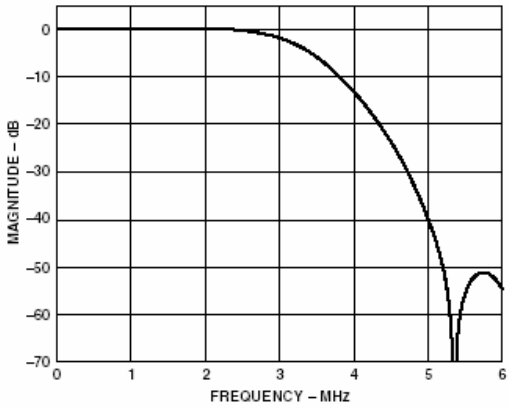


Chrominance Filter

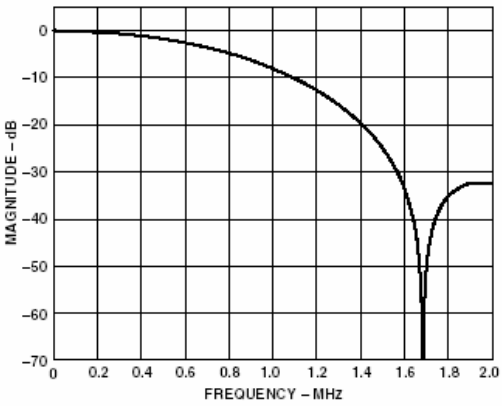
It's also possible to configure the filter response for the chrominance portion of the signal. The drop down box provides the following selections and the filter characteristics are shown for each.

- 3.0 MHz (default)
- 0.65 MHz
- 1.0 MHz
- 1.3 MHz
- 2.0 MHz
- CIF
- QCIF

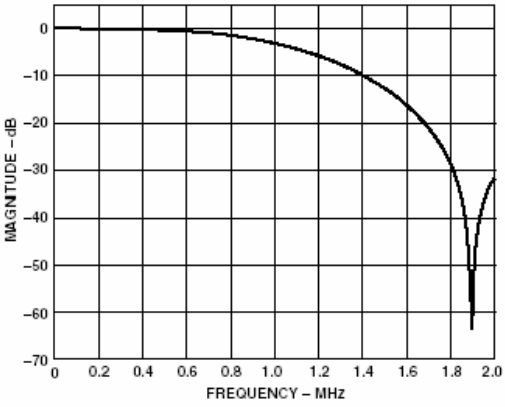
3.0 MHz (Default)



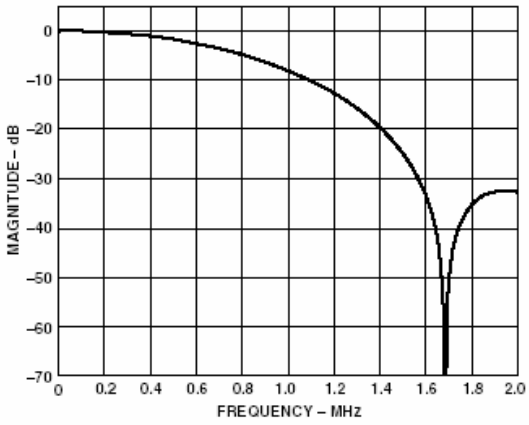
0.65 MHz



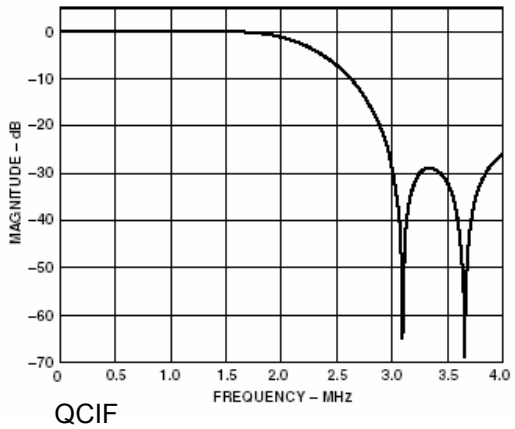
1.0 MHz



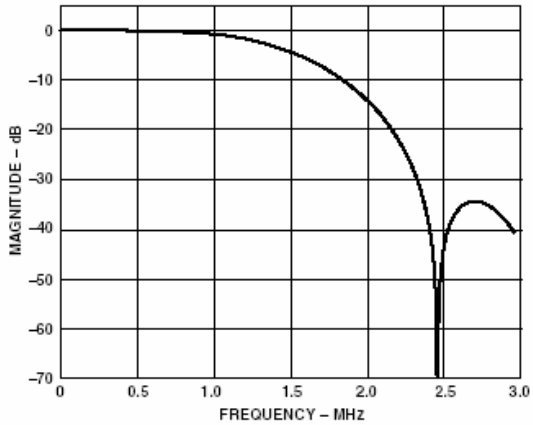
1.3 MHz



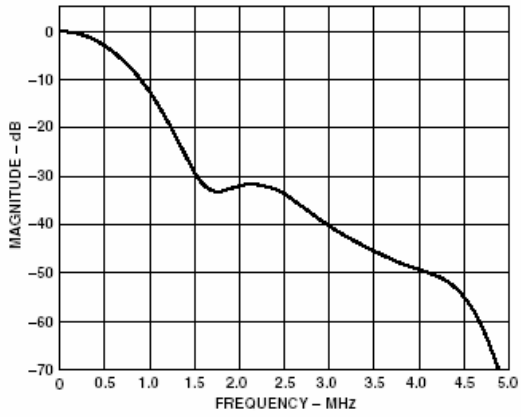
2.0 MHz



CIF



QCIF



Output Options

Blank VBI – When selected this will completely blank any information in the vertical interval. Left unchecked the module will pass any VBI information transparently. (only valid for the bypass channel, processed outputs (down converted) will have the vertical interval blanked)

Chrominance off – When selected this will turn off the chrominance part of the signal and a luminance only (black and white) image will be provided.

Burst off – When in composite mode this will remove the burst portion of the composite signal from the composite outputs.

Active Line Duration
The active line length can be switched between analog and digital blanking. Selections provided are:

- ITU-B 470 (702 pixels active) = analog blanking
- CCIR 601 (720 pixels active) = digital blanking

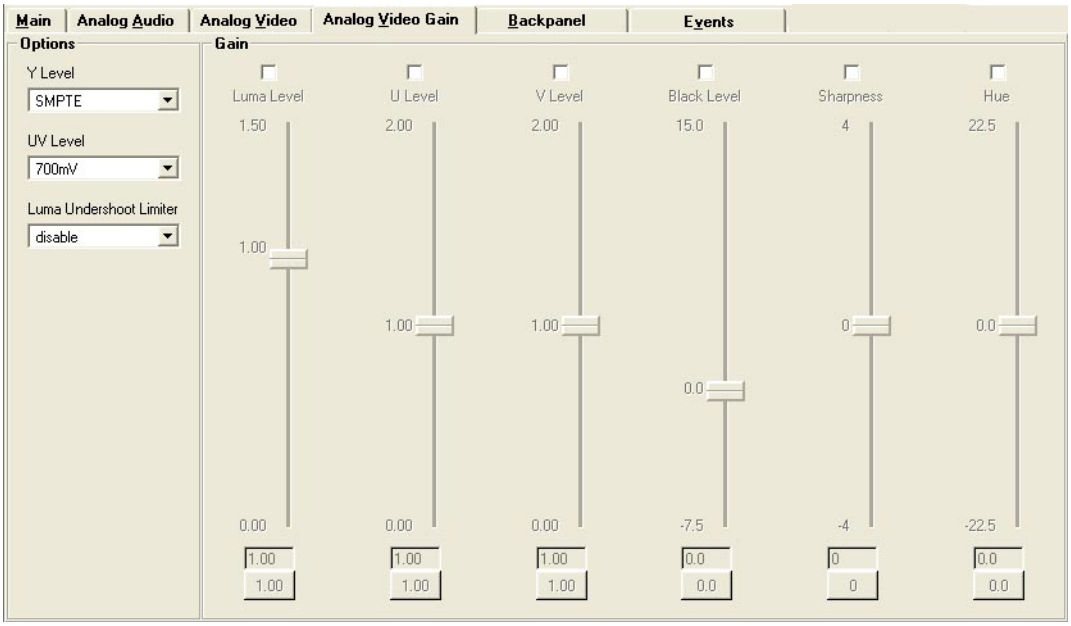
Special Functions
These functions are for specialized use only and should be left set to the factory defaults unless you are sure you need to adjust these parameters.

Luminance Delay – This allows for the delay of the Luminance signal relative to sync (and Chroma) by the time period specified (default 0)

Chrominance Delay – This allows for the delay of the Chrominance signal relative to sync (and Luma) by the time period specified (default 0)

Double Buffering – This is double buffers the video signal so that any changes made to the module settings over the remote Ic2 interface occurs in the vertical blanking interval.

Analog Video Gain Tab



This GUI screen provides access to the internal video processing amplifier where gain levels can be adjusted and set. Default is a null setting for all adjustments.

> ***Note.*** *The buttons at the bottom of each slider will return the settings to the factory preset null setting.*

Options

Y level – The Y level can be changed, which depends on the application. Possible settings are:

- SMPTE (default)
- BETACAM

UV Level – The UV levels used can be preset which depends on the application. Possible settings are

- 700mv
- 1000mv
- 648mv

Luminance Undershoot Limiter
With this selection is possible to limit the undershoot of the luminance portion of the signal. The following limits are possible selected by the drop down box:

- Disable (default)
- -1.5 IRE
- -6.0 IRE
- -11 IRE

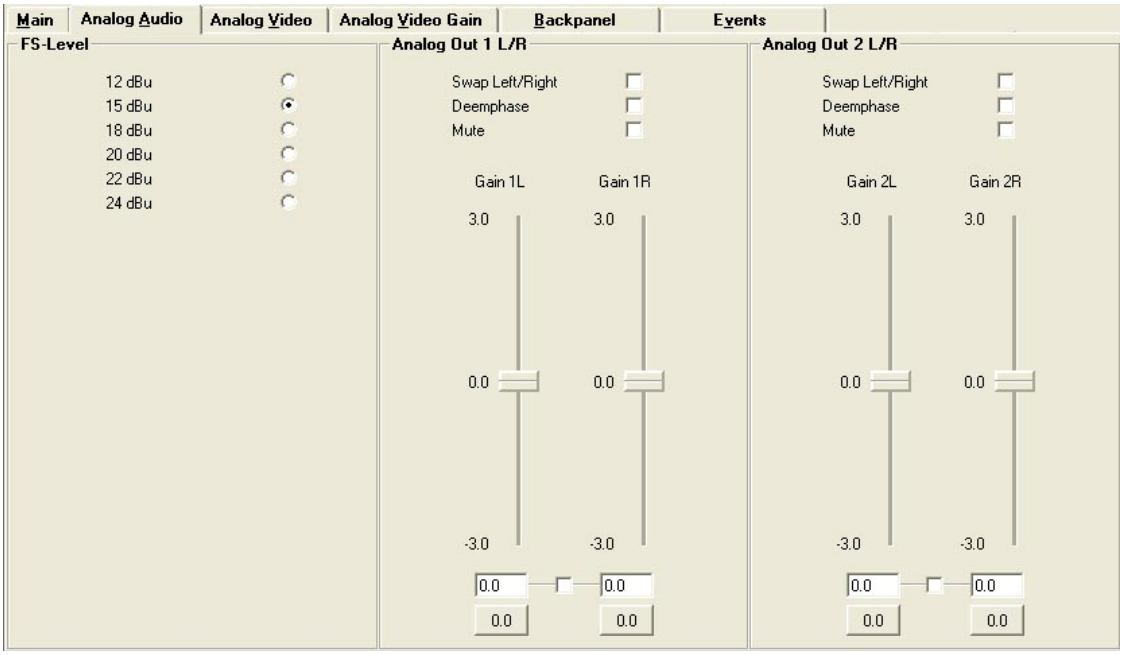
Video Adjustments
A bank of six on screen sliders is provided for the adjustment of various video parameters. These settings apply only for the analog video outputs. Settings provided are:

- Luma Level
- U Level
- V Level
- Black Level
- Sharpness
- Hue

To operate a slider it must be enabled by selecting the check box above, dragging the slider will change the desired level. To return a slider to the factory default (null) setting click the button below the slider.

> ***Note.*** *Sharpness is a different adjustment to the Horizontal Aperture Correction provided earlier in the processing chain.*

Analog Audio Gain Tab



This GUI screen provides access to all the analog audio adjustments and settings. The gain adjustment provided is +/- 3dB from the selected Full Scale Level (FS Level)

FS Level
This sets the full scale level (scaling) of the analog audio signal. This can vary by region and installation. Please check with your studio engineer what FS level is defined as standard and make the appropriate selection. Default in 18dB (which is typical for European markets)

Analog Out 1 and 2 Left and Right Adjustments
Two identical adjustment panels are provided for the stereo analog audio outputs.

Swap Left and Right – When selected this will swap the left and right channels

Deemphasis – When selected this will apply deemphasis to the audio output.

Mute – When selected this will mute the analog audio outputs (silence)

Gain Adjustments
Adjustable gain is provided via two sliders, one for the right and one for the left channel. These can be moved on screen to the desired settings. The two sliders can be ”ganged” together at any time by selecting the linking checkbox below the sliders. The return the sliders to 0 (null) press the button below the sliders.

> ***Note.*** *The zero or null setting for the sliders will set the audio to the FS level defined. The adjustment provided is +/- 3dB from the selected FS level.*

Reset Factory Defaults
If you are unsure of the settings or have managed to set the module into a strange mode of operation and wish to recover the factory defaults - this can be done by selecting ***Device > Reset Factory Defaults*** from the Device drop down menu at the top of the GUI.

Note. *If using the RCT 3002 USB Service Adapter the settings will be written to flash RAM automatically after 10 seconds with no activity on the GUI. This can be observed by the alarm LED flashing yellow three times. We recommend you “RELEASE” the module from the GUI before unplugging. This will write all the settings to flash RAM and prepare the module for unplugging. (This also applied to modules used in the central control system)*

This can be done by selecting the ***“Device>Release”*** *from the drop down menus*

Specifications

Video Input	
Signal Type	Serial Digital Video (SDI) SMPTE 292M, 344M, 259M with automatic input standard detection
Supported Formats	525/59.94Hz 625/50Hz 1080i/59.94Hz/60Hz/50Hz 720P/59.94Hz/60Hz/50Hz
Input Imedance	75 Ω
Input Level	0.8v
Connector	BNC
Return Loss	>15dB (270Mbits) >10dB (1.485Gbits)
Digital Video Ouputs	
Signal	2 x Serial Digital Video (SDI) SMPTE 292M, 344M, 259M
Output Imedance	75 Ω
Output Level	0.8v pp +/- 10%
Return Loss	> 15dB (1.5 Ghz)
Connection	BNC
Jitter	<0.20 UI (270 Mbits) <0.25 UI (1.485Gbits)
Analog Video Outputs	
Modes	3 x CVBS or 1 x CVBS + YC or YUV
Return Loss	>35dB (5.75MHz)
Signal to Noise	> 60dB
D/A Conversion	10 bits and 54 MHz (4x over sampling)
Digital Audio Outputs	
Signal	AES3id (unbalanced) and AES3 (balanced)
Impedance	75 Ω (AES3id) and 110 Ω (AES3)
Connectors	BNC (AES3id) and 25 pin SubD (AES3)
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	25 pin SubD
Dynamic Range	>90dB
Signal to Noise	>85dB
Conversion	24 bit
Output level	-39dB…..+24dB in 0.5dB increments (default 18dB)
Electrical	
Operating Voltage	+ 5 VDC
Connector	Lemo 5 pin locking connector
Power Consumption	8 W
Safety	IEC 950 / EN 60950 / VDE 0805
Mechanical	
Size	85.5mm x 71mm x 41.5mm + connections
Weight	320g
Ambient	
Temperature	5ºC – 35ºC Maintaining Specifications
Humidity	80% non condensing

Service

Parts list

There are no user serviceable parts for the MiniModule. Please refer to the service section of this manual for details on how to obtain repairs.

Note

Do not remove the covers or otherwise disassemble the MiniModule.
This will void Warranty

Technical Support

If you are experiencing problems, or have questions please contact your local distributor for further assistance.

Technical support is also available from the LYNX website.

Please do not attempt to return products directly to LYNX without an RMA. Please contact your authorized dealer or reseller for details.

More detailed product information and product updates may be available on our web site:

www.lynx-technik.com

Contact information

Please contact your local distributor; this is your local and fastest method for obtaining support and additional sales information.

LYNX Technik can be contacted directly using the information below.

Address LYNX Technik AG
Brunnenweg 3
D-64331 Weiterstadt
Germany.

Website www.lynx-technik.com

E-Mail info@lynx-technik.com

LYNX Technik manufactures a complete range of high quality modular products for broadcast and Professional markets, please contact your local representative or visit our web site for more product information.