LYNXTechnik AG

Broadcast Television Equipment

Reference Manual

P DX 3362

SD/HD Analog and Digital Audio Deembedder

Revision 1.1
September 2007

LYNX Technik AG
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Germany
www.lynx-technik.com

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: **P DX 3362**

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, September 2007

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

RoHs Conformity

The RoHS Directive stands for "the restriction of the use of certain hazardous substances in electrical and electronic equipment". This Directive bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.

This product conforms to EU RoHs Directives 2002/95/EC

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 P DX 3362 is a high quality multi-format deembedder providing 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

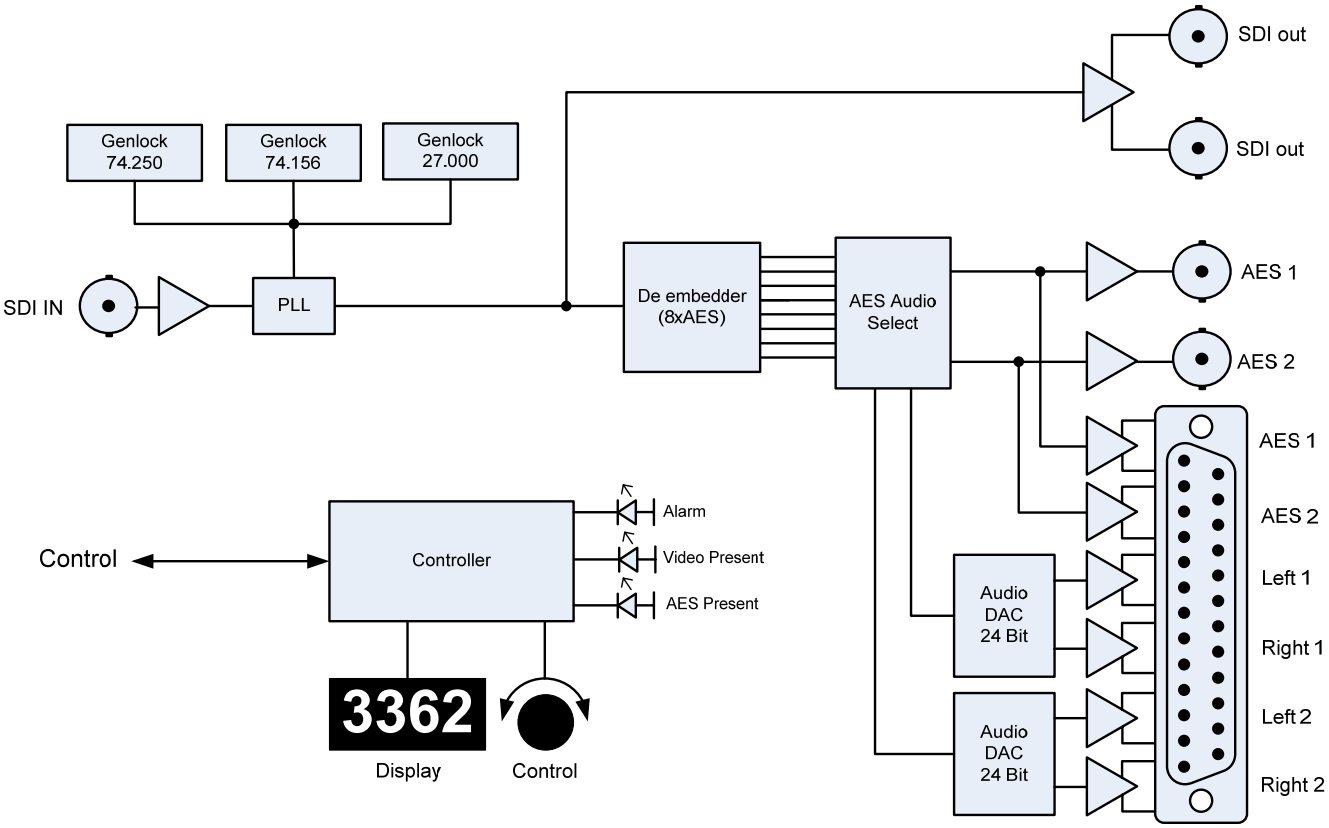
Output Formats

Two serial digital outputs are provided for 2 x re-clocked copies of the input signal (1>2 distribution amplifier)

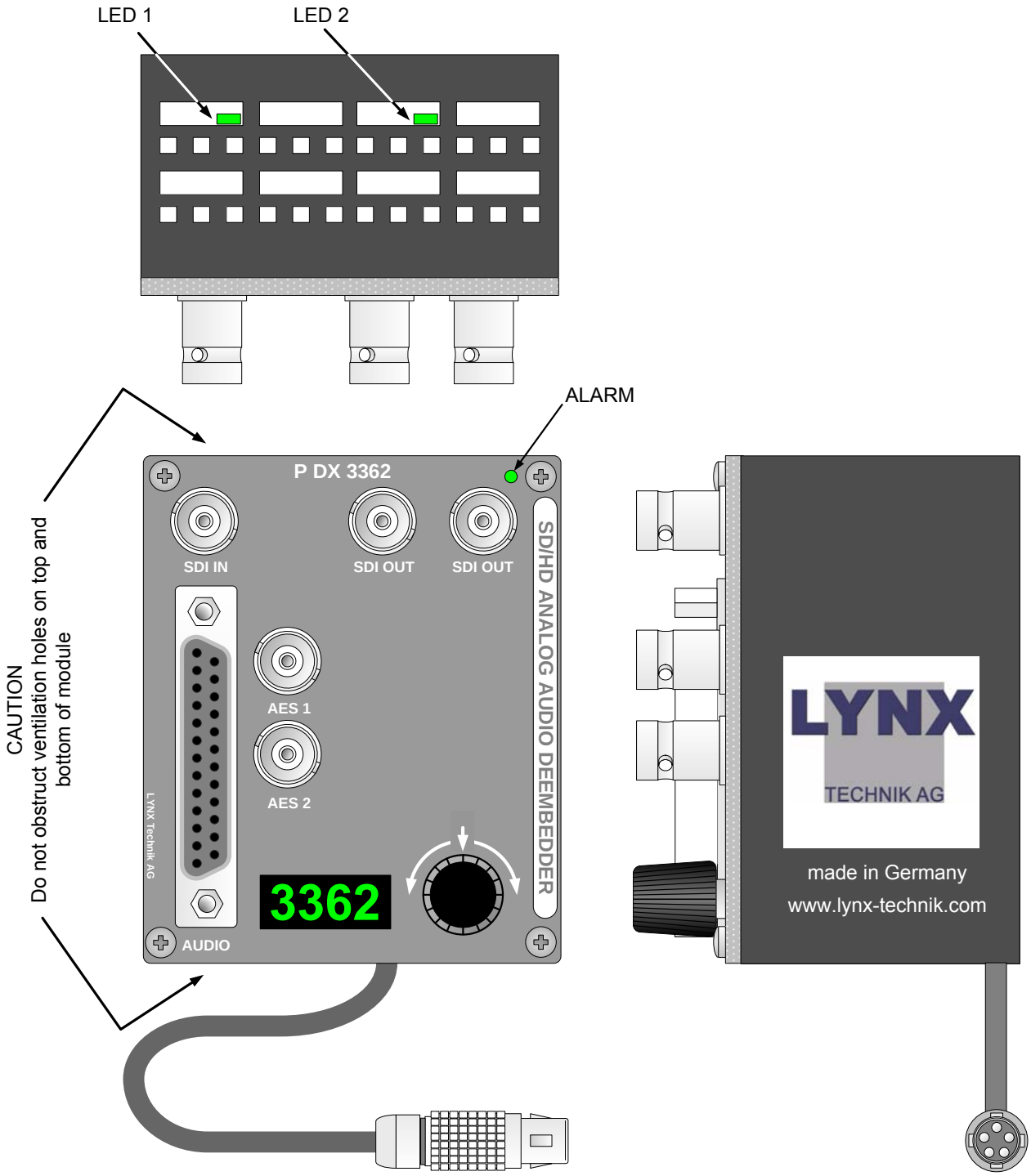
Audio Processing

The module provides will de-embed the complete audio payload (8xAES) from the incoming SDI signal.
Any two of 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). Two additional AES signals can be selected and output as balanced analog outputs 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.

Functional Diagram



Module Layout



Connections

Video

The P DX 3362 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 (1.485Gbits/s)

Audio

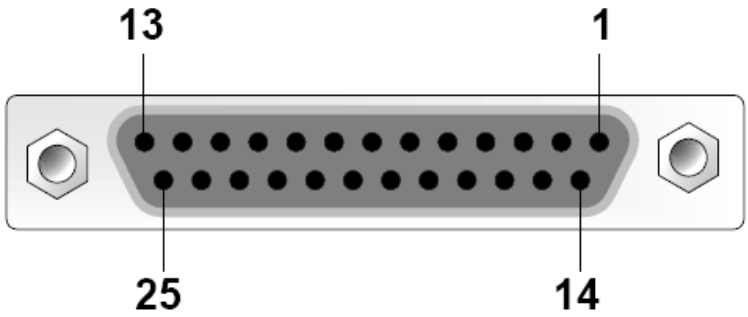
Digital Audio (AES)

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)		



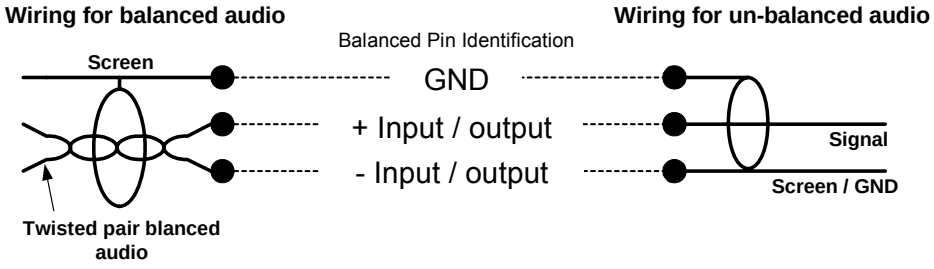
View looking INTO connector as seen on module

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.*

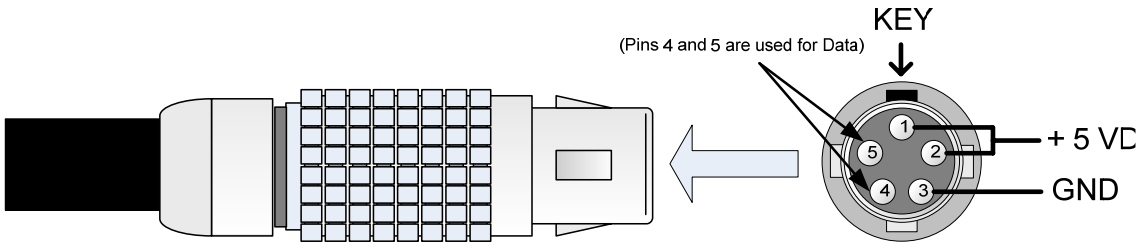


Power

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.



View Looking INTO Connector

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

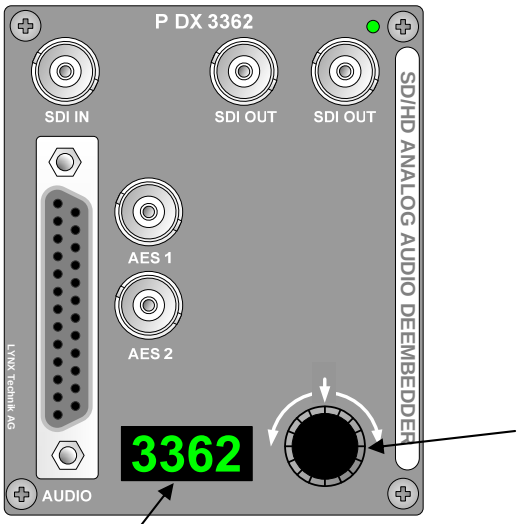
RFR 3004 - Wall mounting bracket for 2 MiniModules. This bracket can be secured on the rear or side to any surface and will accommodate two modules. Modules mount using spring clips and can be removed and installed with no tools

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.



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.

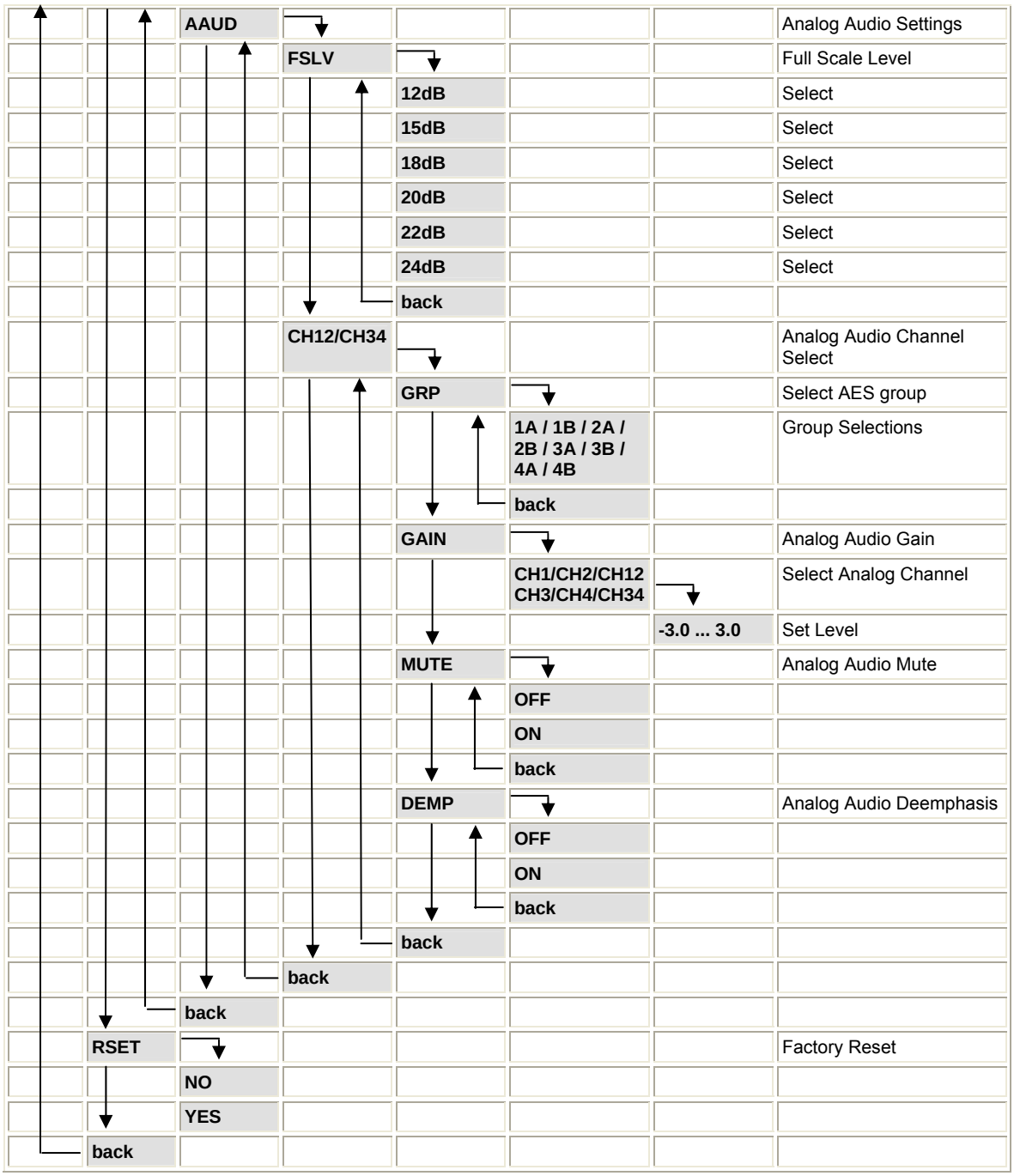
Control Knob
Rotate left and right to navigate through settings.
Push to make a selection.

Local Display

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
3362							Root Display
	OUT						Outputs
		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					
	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 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

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

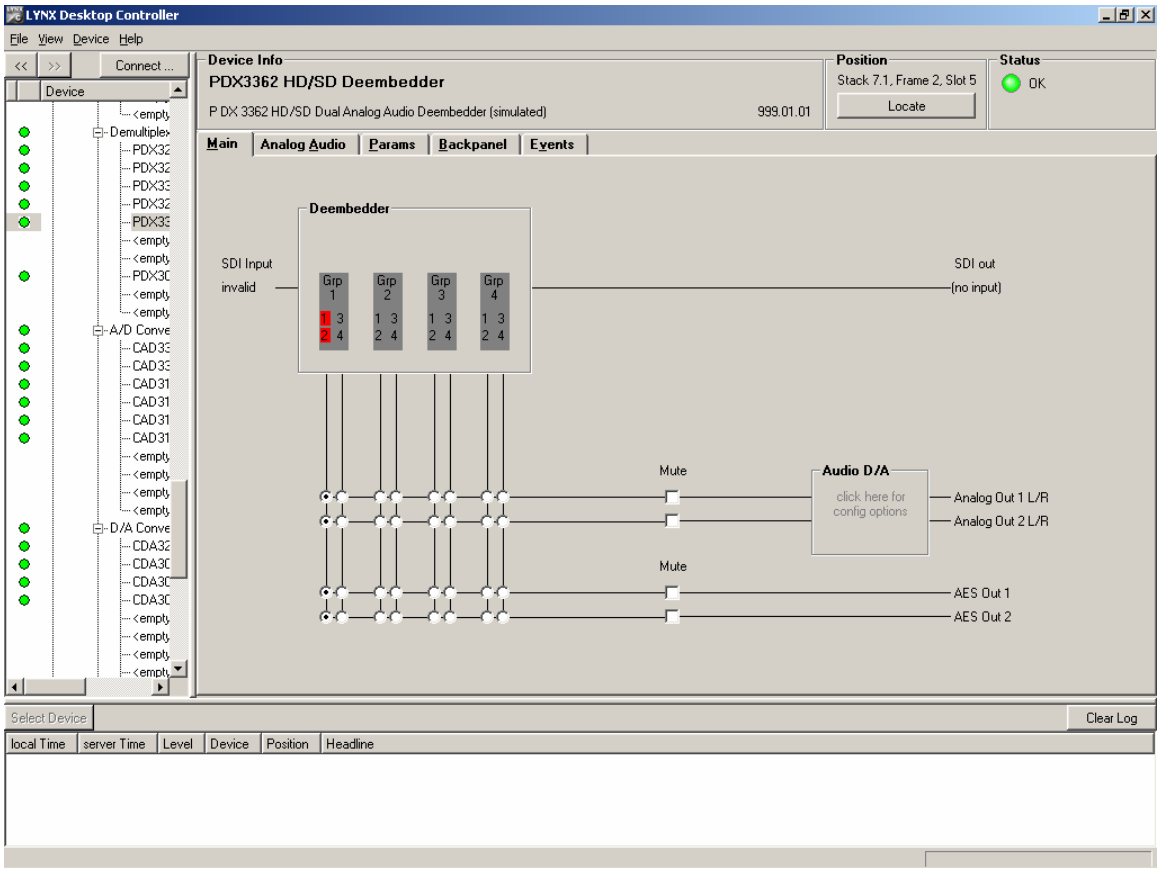
GUI Operation

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 P DX 3362 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 timestamped and entered into the log (as long as the controller / adapter is connected)

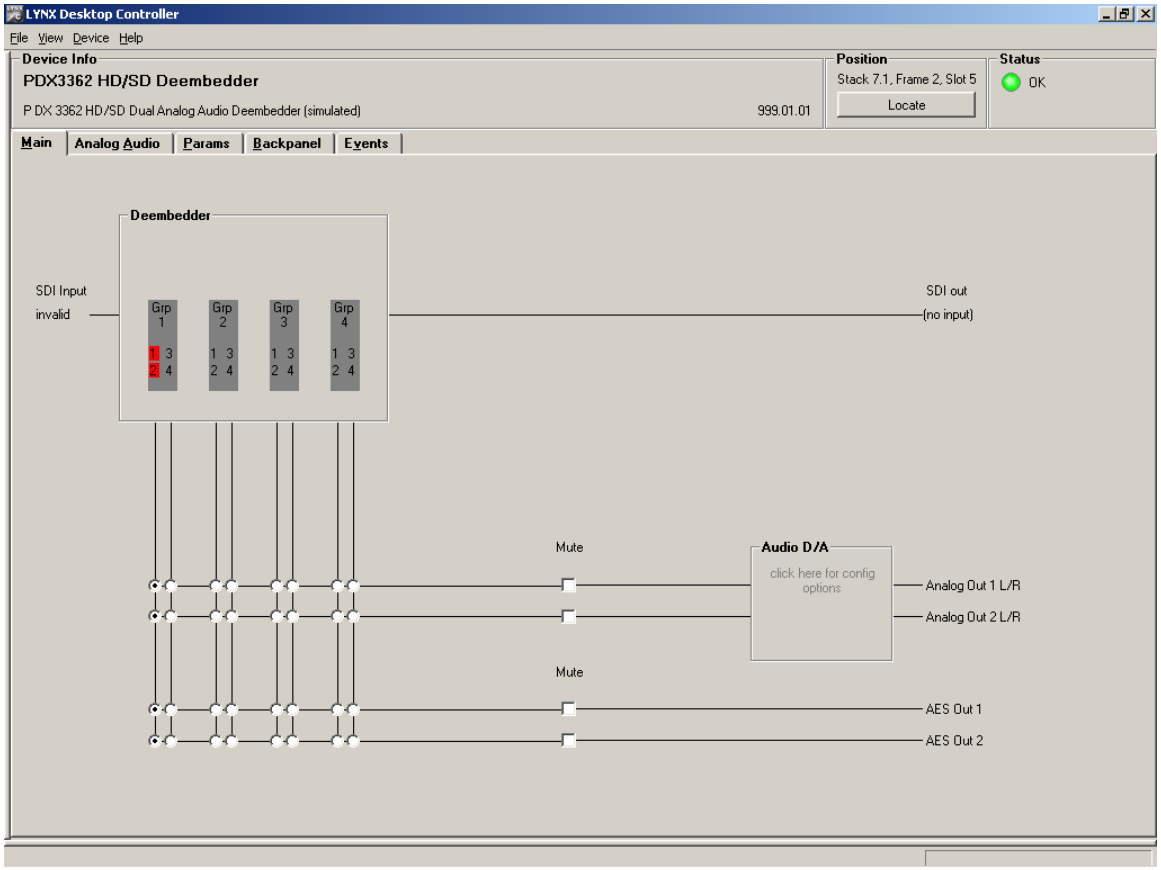
There are a number of Tabs associated with each Module which splits up the modules settings into a number of separate screens. The various GUI screens and functions are described below.

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

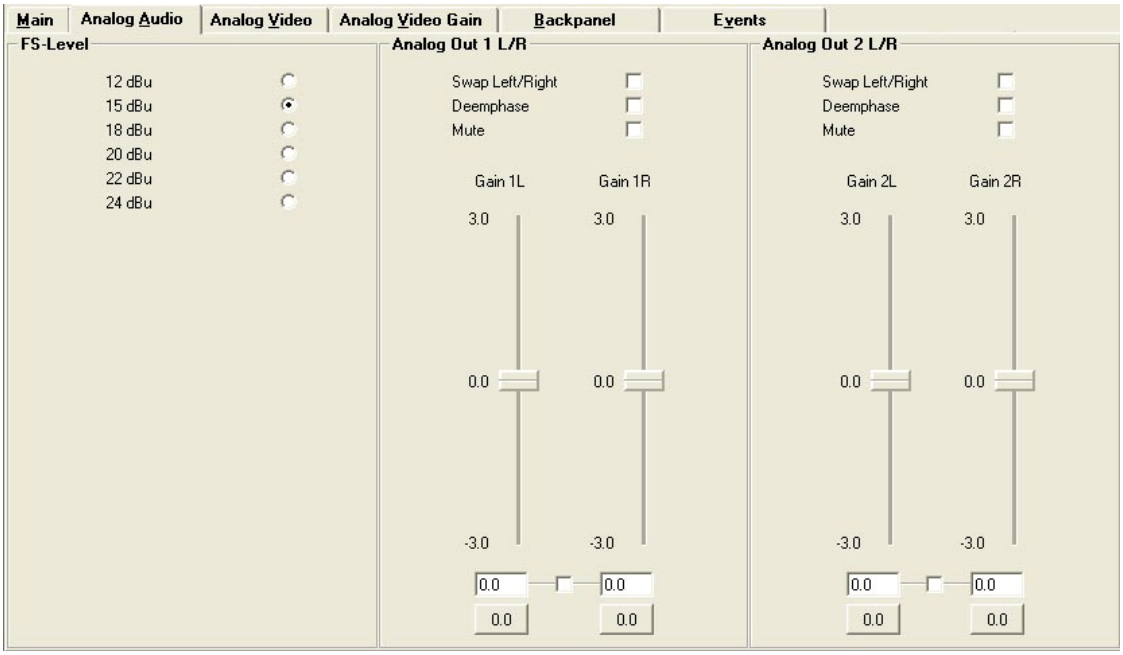
This screen is the main GUI interface and is presented first when the module is displayed in the GUI. The layout replicates function and the signal flow if from left to right. Selections are made using onscreen sliders, radio buttons, drop down selections and checkboxes.



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

Deembedder
The 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 an 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.

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)
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	6 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.