LYNXTechnik AG

Broadcast Television Equipment

Reference Manual

P VD 5630 D

P VD 5630 B

Dual Channel SD/HD Multi-rate Frame Synchronizer with Full Embedded and External AES Audio Support

Revision 2.4 - June 2008

This Manual Supports Device Revisions:	
P VD 5630 Firmware Revision	210
Control System GUI Release	4.2.0

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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: **P VD 5630 B / PVD 5630 D**

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, May 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

Most CardModules are installed into the rack frames and system tested in the factory. If this is an upgrade part (or service exchange item) then the module is supplied in a padded cardboard carton which includes the CardModule, rear connection plate and mounting screws.

Packaging

The shipping carton and packaging materials provide protection for the module during transit. Please retain the shipping cartons in case subsequent shipping of the product becomes necessary. Do not remove the module from its protective static bag unless observing adequate ESD precautions. Please see below.

ESD Warning

This product is static sensitive. Please use caution and use preventative measures to prevent static discharge or damage could result to module.

Preventing ESD Damage

Electrostatic discharge (ESD) damage occurs when electronic assemblies or the components are improperly handled and can result in complete or intermittent failure.

Do not handle the module unless using an ESD-preventative wrist strap and ensure that it makes good skin contact. Connect the strap to any solid grounding source such as any exposed metal on the rack chassis or any other unpainted metal surface.

Caution

Periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 Megohms.

Product Description

The P VD 5630 is a high performance dual channel SD/HD frame synchronizer (second input is optional) with full embedded and external AES audio support. Firmware options provide the ability to easily add integral Down Conversion for each channel.

Basic Product and Options

The PVD 5630 has flexible configurations and can be used as a single channel device with a single input user mapped into three independent outputs or a dual channel device with the 2 inputs user mapped into the three available outputs.

Basic Module

The basic unit is supplied as a single channel multi-format SD/HD from Synchronizer with integrated ARC functionality (in SDTV mode). The single input can be mapped to all three outputs; each output has an independent (8xAES) audio embedder which can be user configured.

All audio is de-embedded from the input signal and full audio proc functionality is provided including support for DolbyE de-embedded audio streams.

PVD SCND option

This firmware option enables the second channel on the module providing dual channel functionality. Also provides a second audio de-embedder to de-embed all audio and expands the audio input crossbar.

PVD DWN Option

This option provides selectable high quality down conversion capability with color space conversion. If the PVD SCND option is installed then two instances of the PVD DWN option are required which will provide two independent channels of conversion capability, one for each input (or the two converters can be user mapped to a single input for simultaneous multi-format output capability)

Note. *The PVD SCND and PVD DWN options are pre-installed into all modules and simply requires the purchase and entry of license codes for activation. These options can be added at any time. No hardware modifications are required and the module need not be taken out of service for option activation*

Input Video Formats

The module has two multi-format serial digital inputs (second input is optional) 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

Note. As the synchronizer uses a single studio reference input both input signals should be the same input frequency (frame rate) as the reference for normal operation. (Formats can be different but the frame rate must match for example:

Input 1 = 1080i/59.94Hz and Input 2 = 525 59.94Hz with a 59.94Hz reference is valid.
Input 1 = 1080i/59.94Hz and Input 2 = 720P/50Hz with a 59.94Hz input is not valid and input 2 will be converted to a 59.94Hz output (basic conversion adding and dropping frames and / or fields)

Output Video Formats

The module provides six SDI outputs, user assignable in three sets of two outputs; these sets can be mapped independently to any of the two input channels. Supported output video formats are:

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

The output format frequency (or frame rate) is determined by the connected reference signal and the output will remain fixed to this reference regardless of the connected input signals. For mismatches in the input to output frame rates (standards) the module will perform a very basic internal format standards conversion to ensure frame rate continuity is always maintained on the module outputs.

Input Reference Signals

The module has a very flexible input reference stage which facilitates the use of either SDTV analog bi-phase sync (i.e. Black) or HDTV analog tri-level sync. The reference input is “cross lock” compatible so a SDTV reference can be used to frequency lock HDTV signals (and visa versa). The connected reference is auto detected and the synchronizer automatically configures the three available outputs to the frame rate of the connected reference signal.

Supported reference signals are shown below.

SDTV Analog Bi-Level Sync	HDTV Analog Tri-Level Sync
525 / 59.94Hz	1080i / 59.94Hz
625 / 50Hz	1080i / 60Hz
	1080i / 50Hz
	720P / 59.94Hz
	720P / 60Hz
	720P / 50Hz

Frame Synchronization

Each input channel has a independent frame synchronizer. The algorithms used are extremely robust and very tolerant of poor input signals. The Synchronizers use a "Flywheel" functionality. This allows the module to recover from any missing sync pulses on the input signals by predicting where they should be and then re-inserting them.

Audio Processing

The module will de-embed the complete audio payload from each incoming SDI stream (4 AES groups = 8 AES = 16 audio channels). Audio is de-embedded from both input SDI signals passed to an audio input matrix along with 4 External AES inputs.

The AES input matrix has 20 selectable input channels. There are 4 separate audio pathways through the frame synchronizer, each one selected according to the application and requirements for audio processing. Any of the 20 AES channels can be mapped into any of the 4 audio pathways.

The audio streams can be individually delayed at various positions (see GUI section).

Audio proc functions include individual Gain / Invert / Mute / Phase adjustments as well as integrated overload and silence detection for each audio channel. (20 channels)

Pathway 1

This audio pathway is scaled 8 AES wide (16 channel). The audio is fed through selectable sample rate converters (SRC's) where the audio is re-sampled, synchronized and then fed into full a full audio processing stage, which includes mono gain adjust, mute, phase inversion, silence and overload detection

Audio using this pathway will be free from any audio interference ("pops and clicks") when frames are dropped or repeated by the frame synchronizer.

> ***Note.*** *This pathway should not be used with the SRC's on for encoded DolbyE audio.*

Pathway 2

This pathway is scaled 12 AES wide (24 channels) and bypasses any sample rate conversion so any of these channels are DolbyE transparent through the synchronizer. It is assumed the audio is already synchronous to the connected reference signal (no audio synchronization is performed by the Synchronizer(s) on these audio channels)

Pathway 3 and Pathway 4

Each of these two pathways are 4 AES wide (8 channel) and these bypass all internal audio processing and audio synchronization. These channels are simply de-embedded and maintain their synchronization to the respective incoming SDI stream. These channels **cannot** be re-embedded back into the output SDI signals but can be routed to the external AES outputs using the output matrix for external processing.

Pathways 1 and 2 are fed into an audio output matrix which provides three 8 x AES (16 channel) outputs into three separate embedders, one for each of the three SDI outputs. There is also a 4 x AES (8 channel) external output from the matrix if required.

Note. *All external AES connections are isolated through transformer coupling.*

DolbyE

Note. The module will support DolbyE in a future release. When implemented the module **will not** be providing DolbyE encoding or decoding capability, but have the capability to de-embed synchronize / delay and re-embed any existing DolbyE signals through the module transparently (while preserving guard band timing).

Audio Delay

The frame synchronizers will auto-track the audio delay to match the video delay. User adjustments are provided for a programmable manual delay which will serve as a fixed offset to the auto tracking delay. Adjustment range is 0.332 seconds total (adjustable in ms). Its possible to delay the audio channels in various locations in the audio processing chain. Please refer to the GUI > Audio Delay Tab section of this manual for more information.

Down Conversion (Optional)

For HDTV to SDTV down conversion functionality the PVD DWN option is required. Without this option installed the frame synchronizer passes the video in the connected input format. SDTV Aspect Ratio Conversion is part of the basic unit.

Note. *For a dual channel Module using the second input option (PVD SCND) then 2 instances of the PVD DWN option are required, one for each channel.*

Basic function (with PVD DWN conversion option installed and conversion selected)

With a 59.94Hz Reference Signal Connected (Bi-level or Tri-level)

Input Format	Output
525 / 59.94Hz	525 / 59.94Hz
1080i / 59.94Hz	525 / 59.94Hz
720P / 59.94Hz	525 / 59.94Hz

With a 50Hz Reference Signal Connected (Bi-level or Tri-level)

Input Format	Output
525 / 59.94Hz	625 / 50Hz (drop frames / fields)
625 / 50Hz	625 / 50Hz
1080i / 50Hz	625 / 50Hz
720P / 50Hz	625 / 50Hz

With a 60Hz Reference Signal Connected (Bi level or Tri level)

Input Format	Output
525 / 59.94Hz	525 / 60Hz (adding frames / fields)
1080i / 59.94Hz	1080i / 60Hz (adding frames / fields)
1080i / 59.94Hz	525 / 60Hz (adding frames / fields)
1080i / 60Hz	525 / 60Hz
720P / 59.94Hz	720P / 60Hz (adding frames)
720P / 59.94Hz	525 / 60Hz (adding frames / fields)
720P / 60Hz	525 / 60Hz

Down Conversion Modes

Each channel has a selectable independent down converter and this will convert the connected HD input standard into a SDTV output signal. Modes supported are as follows:

4:3 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.

4:3 Center Cut

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

4:3 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

SDTV Aspect Ratio Conversion

Each channel has a selectable independent SDTV Aspect Ratio converter and this will convert the connected SD input standard either from a 4:3 input signal to a 16:9 output or a 16:9 input signal to a 4:3 output signal.

Modes supported are as follows:

Conversion from 16:9 to 4:3 Aspect Ratio

4:3 Letterbox

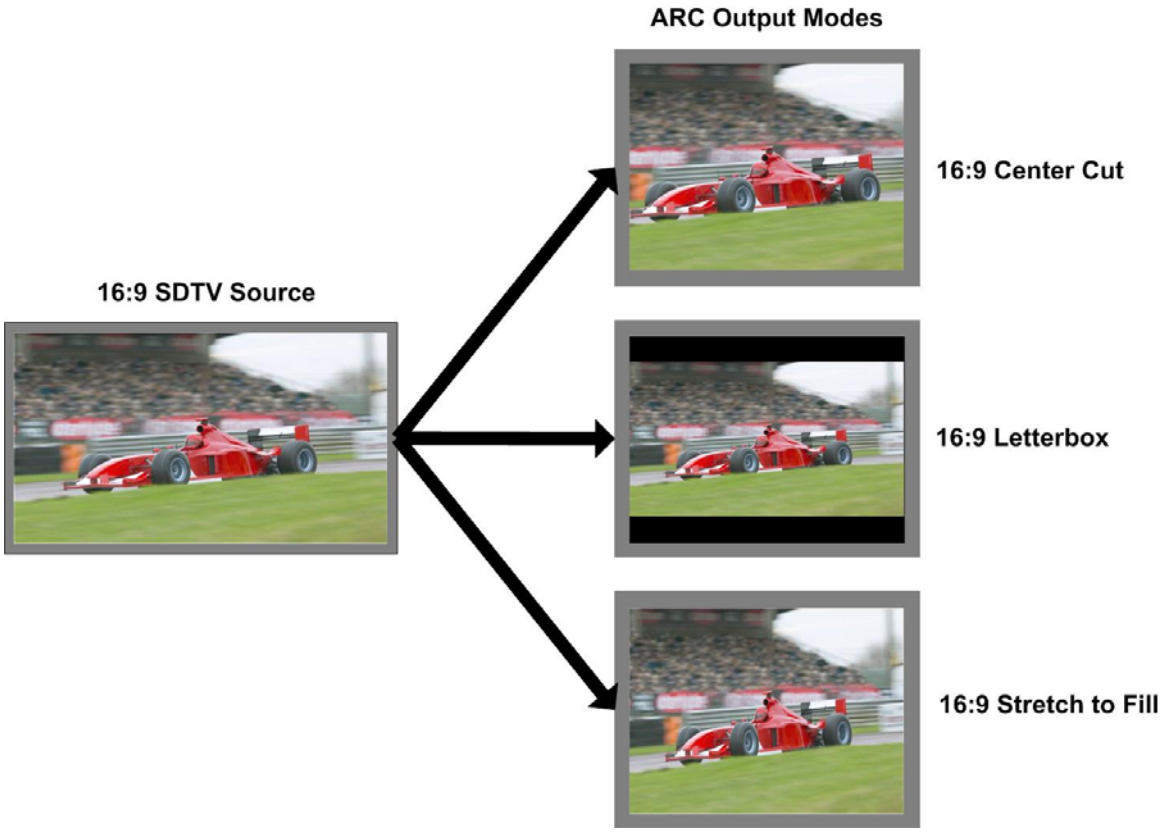
This takes the 16:9 aspect ratio of the input signal and fits it into the 4:3 SD aspect ratio screen with black bars at the top and bottom of the image.

4:3 Center Cut

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

4:3 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.



Conversion from 4:3 to 16:9 Aspect Ratio

16:9 PillarBox

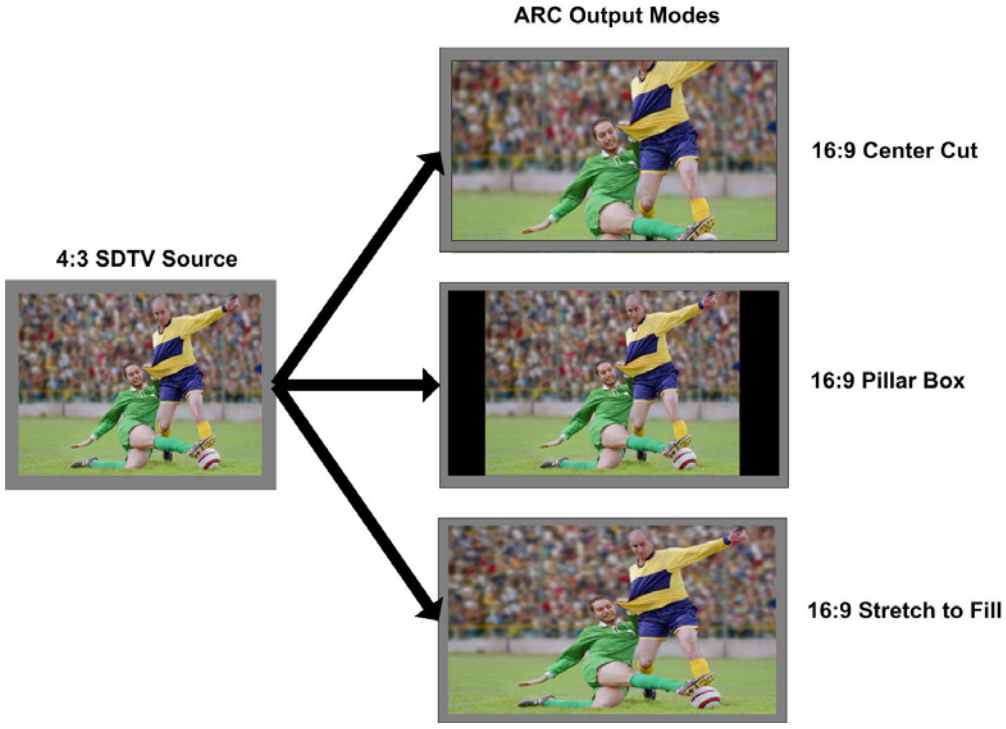
This takes the 4.3 aspect ratio of the input signal and fits it into the 16:9 SD aspect ratio screen with black bars at the left and right of the image.

16:9 Center Cut

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

16:9 Stretch to Fill

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



Color Space Conversion

The Conversion options also provide integrated color space conversion capability which will automatically compensate for the conversion of the wider 709 HD color space into the more narrow 601 SDTV color space ensuring legal color reproduction. *(Color space conversion is supplied as part of the UP/DOWN/CROSS/ARC conversion option)*

> **NOTE.** *Color space conversion can be bypassed or set to only process chrominance if desired.*

Video Processing

Proc Amp Functions

Each of the three output channels has an associated video proc amp which provides user adjustable ***Gain*** / ***Saturation*** / ***Black Level*** and ***Hue*** using on screen sliders.

Aperture Correction

An adjustable horizontal aperture corrector is provided for each of the three output channels. This can be used to add (or remove) image sharpness as required.

> ***Note.*** *When using the down converter the filtering process results in a very slight loss of high frequency information (which is normal), the aperture corrector can be used to compensate for this slight loss.*

Test Patterns

Each of the three output channels has its own independent test pattern generator which provides a wide selection of test patterns which can be switched into each output. *(The Test pattern will follow the selected output standard selected for each channel).*

The selected test pattern is also available as one of the modes the synchronizer will switch to when excessive video TRS errors are encountered. Possible synchronizer actions when the input video errors become excessive are:

- Freeze Field 1
- Freeze Field 2
- Freeze Frame
- Selected Test Pattern
- Black

Programmable Video Delay

Each of the three SDI outputs has separate programmable video delays which can be set (independently) between 0 and 3 frames (max). The adjustment is available in pixel, line and full frame increments.

> **Note** *The Synchronizer (including the conversion options, if installed) has a fixed one frame delay. The 0 > 3 frame user adjustment is additional delay relative to the fixed one frame delay.*

This adjustment will delay the video output relative to the connected reference by the delay setting specified. (+ 1 frame fixed delay)

Input Select with GPI (General Purpose Input)

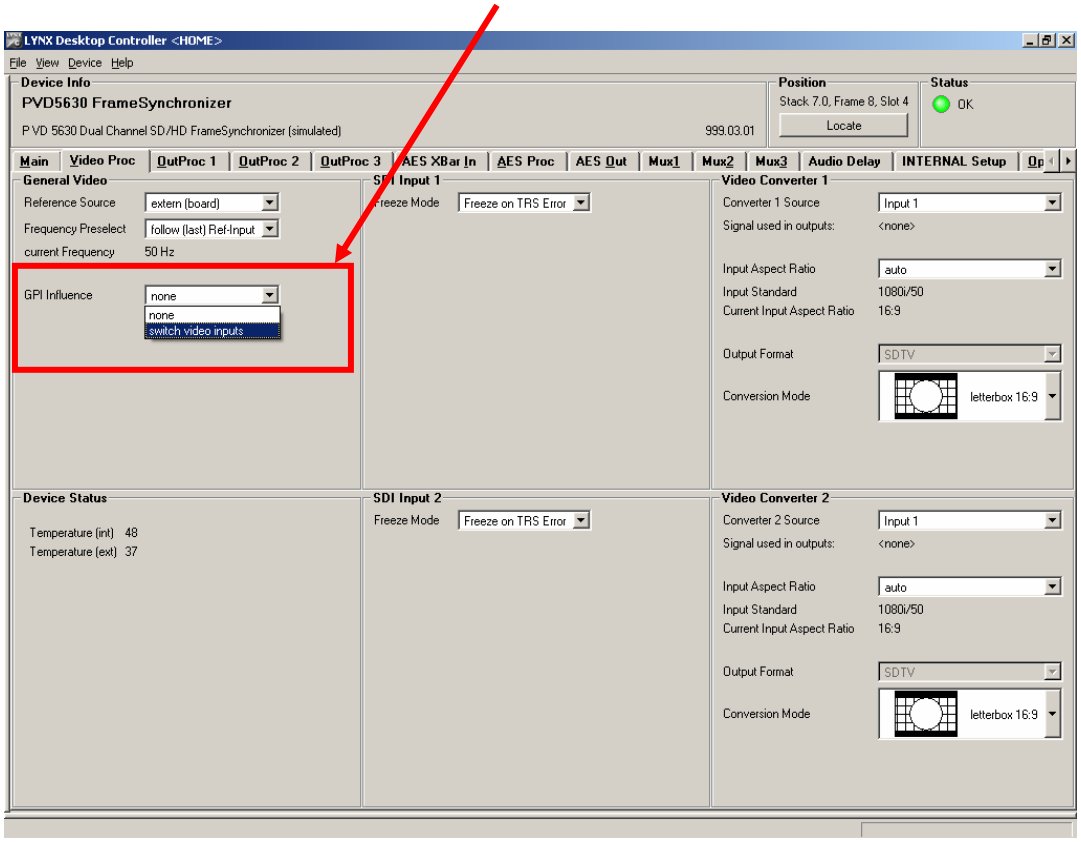
If using the PVD SCND (second input option) then the GPI control is active. The module has a single GPI input which can be used to switch between the two inputs. As the switch is performed after the frame synchronizers the switch is clean (seamless) and can replace a signal router input stage.

GPI Enable

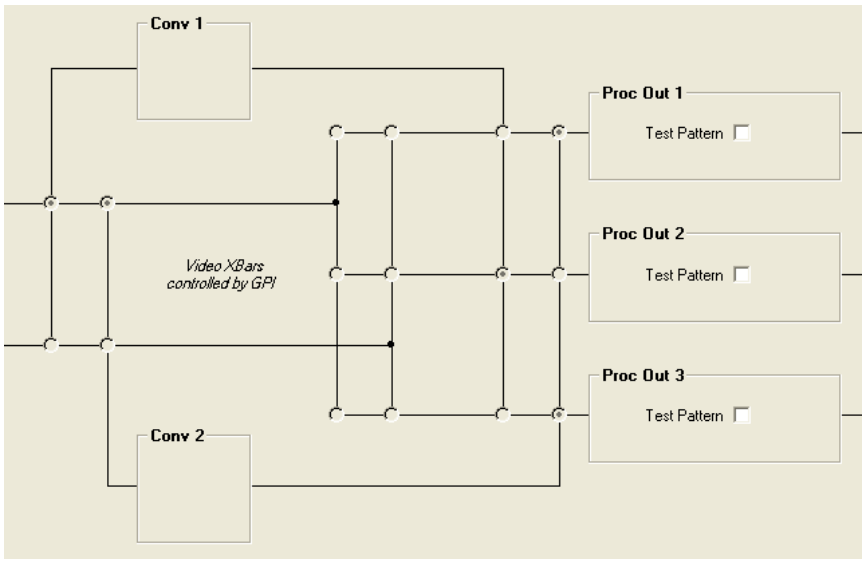
Under the video proc tab in the GUI the GPI control can be enabled, it has two possible settings:

None No action taken if a GPI signal is connected and received
Switch Video Inputs When a GPI signal is received the video inputs will switch

GPI Influence control

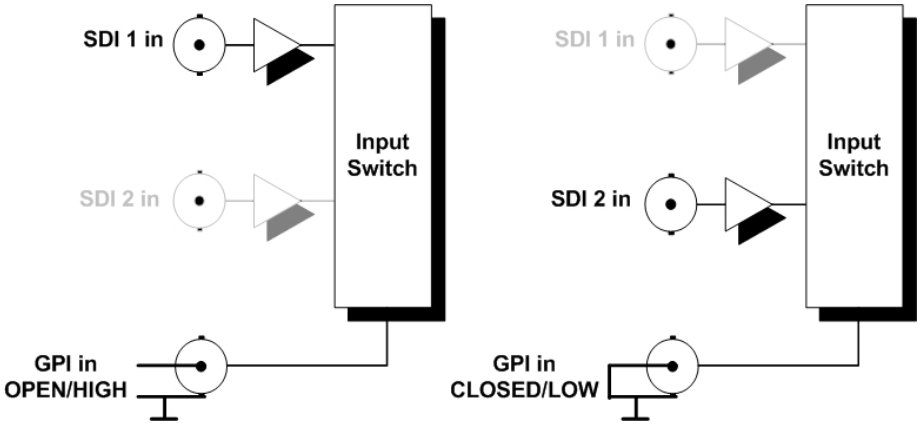


With GPI control enabled, the internal video cross bars are greyed out in the GUI and cannot be changed manually any longer, as the GPI control will steer the internal router to route the second input into the three available outputs so the output format configurations remain fixed – the only functional change is that the outputs are now being fed from the second input not the first. While not user accessible, the current status of the internal router can still be observed. See below.



GPI Switching Logic

The GPI input is a open / closed switch input. With the GPI input open circuit (high) then input 1 is selected, with the GPI closed circuit (low) then input 2 is selected.



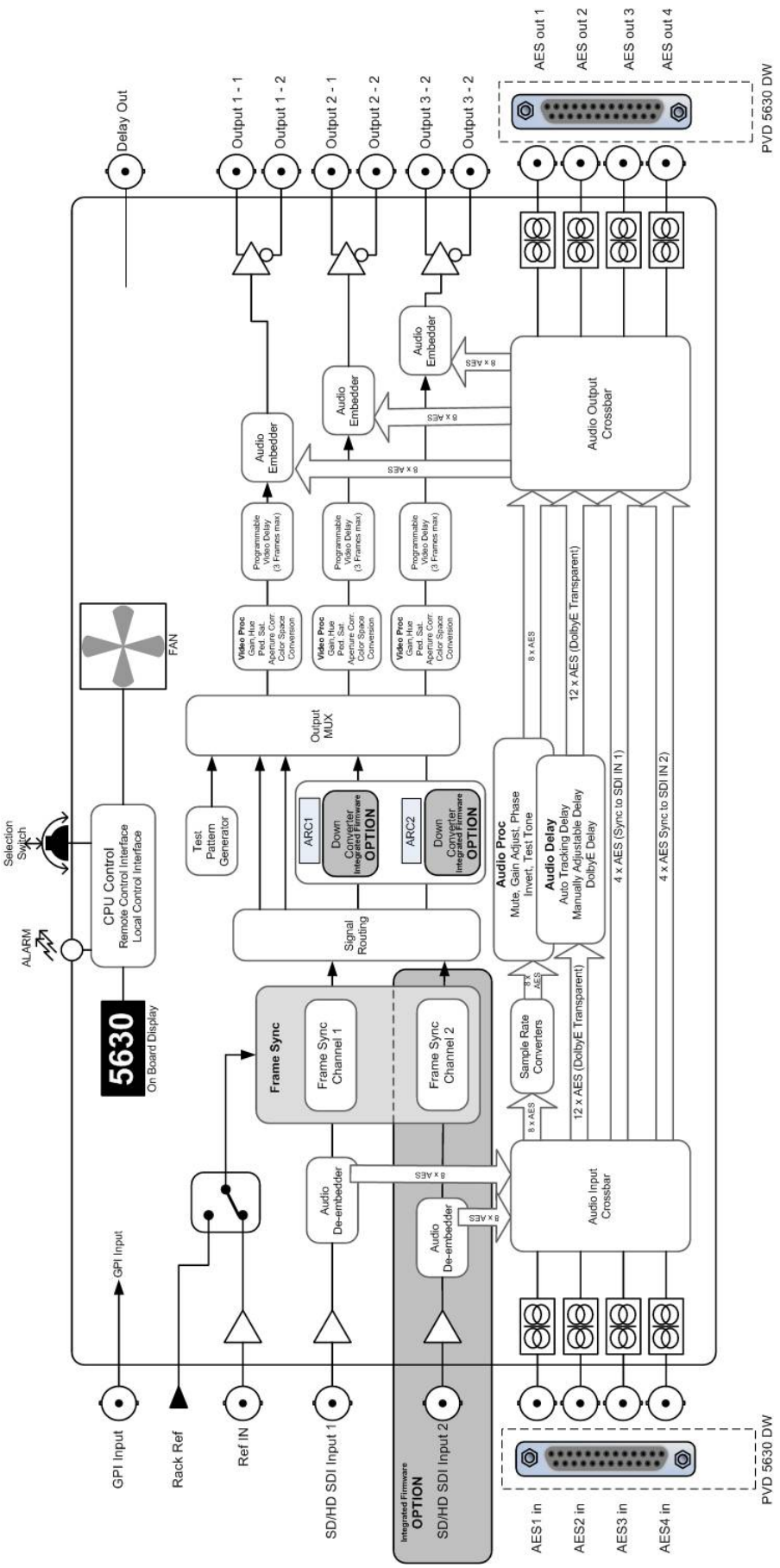
GPI Connections

The PVD 5630 B version uses the BNC connection on the rear panel.

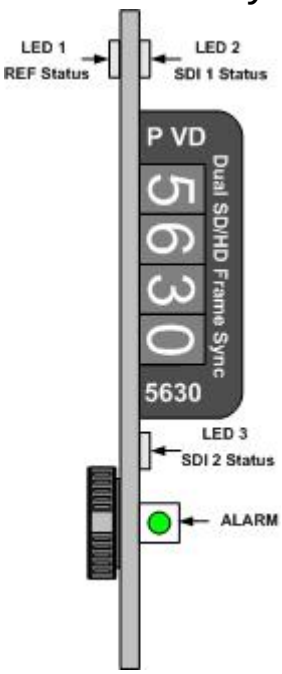
The P VD 5630 D version uses a pin on the 25 pin Sub D as the GPI input connect pin 13 of the audio ground connections to close the GPI contact. (please refer to the *Connections* > *External Audio AES* section of this manual for connection details)

Functional Diagram

A functional diagram of the PVD 5630 is shown on the next page.


Delay Out
Output 1 - 1
Output 1 - 2
Output 2 - 1
Output 2 - 2
Output 3 - 2
Output 3 - 2
AES out 1
AES out 2
AES out 3
AES out 4
PVD 5630 DW
Audio Embedder
8 x AES
Audio Output Crossbar
Programmable Video Delay (3 Frames max)
Video Proc Gain, Hue Ped. Sat. Aperture Corr. Color Space Conversion
FAN
Output MUX
8 x AES
12 x AES (DolbyE Transparent)
4 x AES (Sync to SDI IN 1)
4 x AES Sync to SDI IN 2)
Test Pattern Generator
ARC1
ARC2
Down Converter Integrated Firmware OPTION
Audio Proc
Mute, Gain Adjust, Phase Invert, Test Tone
Audio Delay
Auto Tracking Delay
Manually Adjustable Delay
DolbyE Delay
Selection Switch
ALARM
CPU Control
Remote Control Interface
Local Control Interface
5630
On Board Display
Signal Routing
Frame Sync
Frame Sync Channel 1
Frame Sync Channel 2
Sample Rate Converters
8 x AES
12 x AES (DolbyE Transparent)
Audio De-embedder
Audio Input Crossbar
GPI Input
Rack Ref
Ref IN
SD/HD SDI Input 1
Integrated Firmware OPTION
SD/HD SDI Input 2
AES1 in
AES2 in
AES3 in
AES4 in
PVD 5630 DW

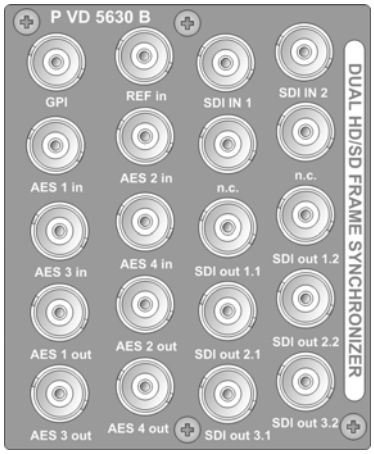
Module Layout

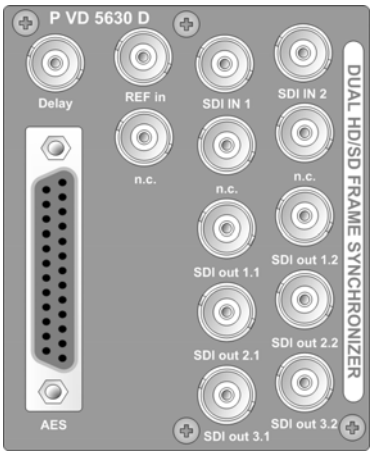


Module Front Panel

Two versions of the PVD 5630 are available:

PVD 5630 BW = BNC connectors for unbalanced AES3id
PVD 5630 DW = SubD connector for balanced AES3





Module Rear Termination Panels

CardModule Layout

Note. *Cooling fan operation is monitored and alarmed with the module alarm LED and also within the LYNX control system.*

Connections

Video

The PVD 5630 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)

> ***Note.*** *Due to the compact design of the connection plate it will be necessary to use a connection tool to secure the BNC video connectors.*

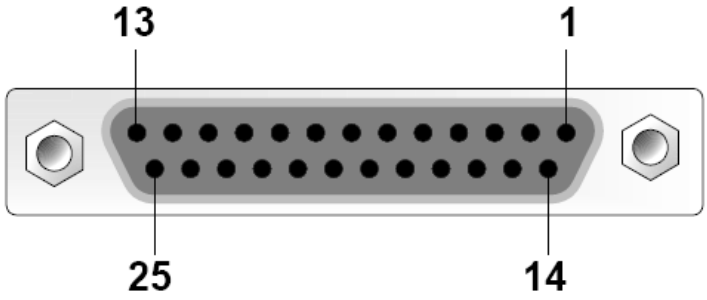
External Audio (AES)

The module provides for both Unbalanced (AES3id) and Balanced (AES3) external audio connections.

The **PVD 5630 B** version provides BNC connections for unbalanced AES3id
The **PVD 5630 D** version provides a SubD connector for balanced AES3

Connections for the SubD connector are provided below

Pin Number	Connection	Pin Number	Connection
1	AES 4 out +	14	AES 4 out -
2	AES 4 out GND	15	AES 3 out +
3	AES 3 out -	16	AES 3 out GND
4	AES 2 out +	17	AES 2 out -
5	AES 2 out GND	18	AES 1 out +
6	AES 1 out -	19	AES 1 out GND
7	AES 4 in +	20	AES 4 in -
8	AES 4 in GND	21	AES 3 in +
9	AES 3 in -	22	AES 3 in GND
10	AES 2 in +	23	AES 2 in -
11	AES 2 in GND	24	AES 1 in +
12	AES 1 in -	25	AES 1 in GND
13	GPI (input select)		



View looking INTO connector as seen on module

We recommend you use high quality screened (twisted pair) cable for the balanced audio connections.

Installation

If this module was supplied as part of a system it is already installed in the rack enclosure. If the module was supplied as a field upgrade please follow the installation procedure below.

***NOTE** Observe static precautions when handling card. Please see ESD warnings on Page 5.*

This module has a double width rear connection panel, meaning it will occupy two slots of a standard Series 5000 Card Rack. This is to accommodate the additional connections needed for this module and to also provide adequate space for cooling in the rack. Up to five P VD 5630 modules can be accommodated in a single Series 5000 rack frame.

> **NOTE.** *When using this module we highly recommend the use of the **R FR 5011 Fan Front Rack Frame** which provides additional airflow into the rack. If you plan to install this module into empty slots in an existing rack with no fan front cover - then please purchase the **R FR 5001 Fan Front update kit.***

Each Card Module is supplied with a rear connection panel and mounting screws. Please follow the procedure below for the installation of the card module into the Series 5000 Card Frame.

We recommend you power the rack down before installing any additional modules into an existing card frame.

1. Select a free two slot space in the card frame where the CardModule will be located.

2. Remove the blank connection panels from the rear of the rack (if fitted)

3. Install the rear connection panel using the screws supplied. Do not tighten the screws fully

4. Slide the card module into the card frame and carefully check the CardModule connects to the rear connection plate. The card should fit easily and should not require excessive force to insert - if you feel any resistance, there could be something wrong with the rear connection panel location. **Do not** try and force the connection this may damage the connectors. Remove the rear connection panel and check alignment with the CardModule.

5. Insert and remove the CardModule a few times to ensure correct alignment and then tighten the two screws to secure the rear connection plate.

6. Power up the rack and check the module LED's and matrix display illuminate. Check the module is automatically logged into the control system device tree. *(It may take a few seconds for the control system to "discover" the new module)*

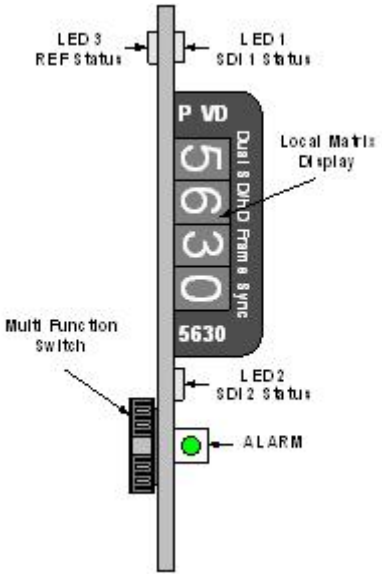
> ***NOTE.** The use of the optional control system is **mandatory** for the control and setup of this module. If you do not have the control system, then please contact your LYNX representative for details on how to upgrade your rack with the LYNX control system.*

Settings and Control

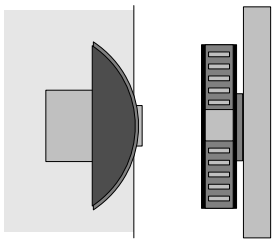
The P VD 5630 module has an integrated micro-controller, which enables the module to be configured and controlled locally using the multifunction switch and 4 character dot matrix display, or from remote using a GUI interface when using one of the optional controllers and control software.

NOTE. *This module is extremely compact and flexible with hundreds of possible user settings. It is not practical to make all these settings available on the local dot matrix display. The use of the control system is* ***mandatory*** *to access the vast array of settings possible. Please refer to the GUI section of this manual for details on the control provided. Some basic module settings are possible via the local controls, which are detailed below.*

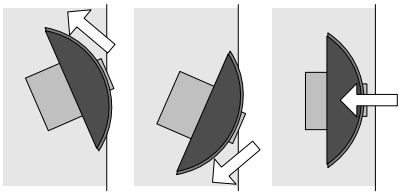
Once set, all settings are automatically saved in non-volatile internal memory. (Flash RAM) The module will always recall the last used settings.



Multi-function Switch



Switch Operations



Multi Function Switch

The CardModule is equipped with a multi-function switch located on the front bottom edge of the card. (See above)

Using the Local Display Menus

Making local adjustments to the module is done using the multifunction switch and the integrated 4-character dot matrix display. The menu system is layered, and navigation through the system is done using the **UP** and **DOWN** functions of the switch. **ENTER** is used to move between menu levels and also enter a selection.

Switch Function	Operation
UP	Move UP within a level
DOWN	Move down within a level
ENTER	Change levels / Make selection

Menu Structure

The Menu structure is defined in the next table, and can be used to help navigating through the menu system.

ENTER moves between levels

UP/DOWN moves between items within the level

When a new setting is entered the system will jump back one level in the menu system.

- The “back” selection in the menu structure will take you back one level when selected.
- When an item is selected which has several setting possibilities the first value displayed will be the value currently stored in the system. The order of the available settings for any menu item in the table supplied does not represent the order the settings will actually be displayed.
- If left unattended, the menu will default to the root display after a short timeout.

LEVEL 1	LEVEL 2	LEVEL 3	Notes
P VD 5630			***Root Display***
	REF		*Reference Selection*
		EXT	*Reference taken from module rear connection panel*
		INT	*Reference taken from common rack reference*
		back	
	FPS		***Output frame rate selection***
		60	*All outputs jammed to 60Hz frequency frame rate**
		59	*All outputs jammed to 59.94Hz frequency frame rate**
		50	*All outputs jammed to 50Hz frequency frame rate**
		AUTO	*Output frame rate is derived from connected reference (default)*
		back	
	RSET		***Reset Factory Defaults***
		NO	
		YES	*Reset factory defaults*
		back	
	back		

LED Status Indicators

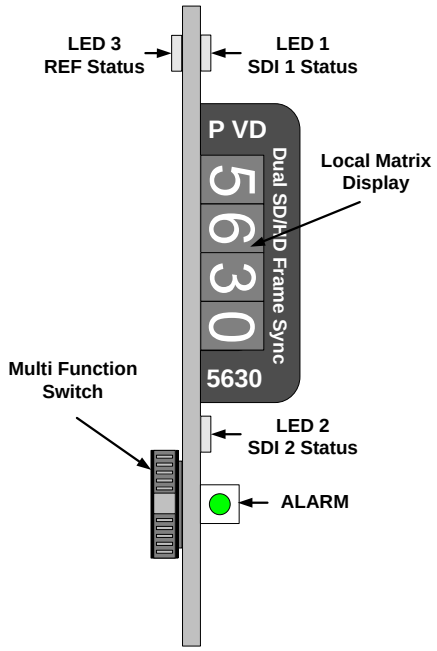
The P VD 5630 module has LED indicators that serve as alarm and status indication for the module. Function is described below.

SDI 1 Status LED 1

LED Color	Indication
Green	SDI 1 Present and OK
Yellow	SDI 1 Frame Rate Mismatch *(Mismatch between the fixed output frame rate and the SDI input. Conversion taking place)*
Red	No SDI 1 Signal Connected

SDI 2 Status LED 2

LED Color	Indication
Green	SDI 2 Present and OK
Yellow	SDI 2 Frame Rate Mismatch *(Mismatch between the fixed output frame rate and the SDI input. Conversion taking place)*
Red	No SDI 2 Signal Connected



Ref Status LED 3

LED Color	Indication
Green	Reference Present
Yellow	Reference Present, but not used *(Module is set to free run with no lock to external reference)*
Red	Reference not present – but required (Module is set to “lock to reference”)

ALARM LED

LED Color	Indication
Green	Normal Operation
Yellow	Problem with one of the SDI inputs
Red	Problem with both SDI inputs
Red Flashing	Cooling Fan Failure

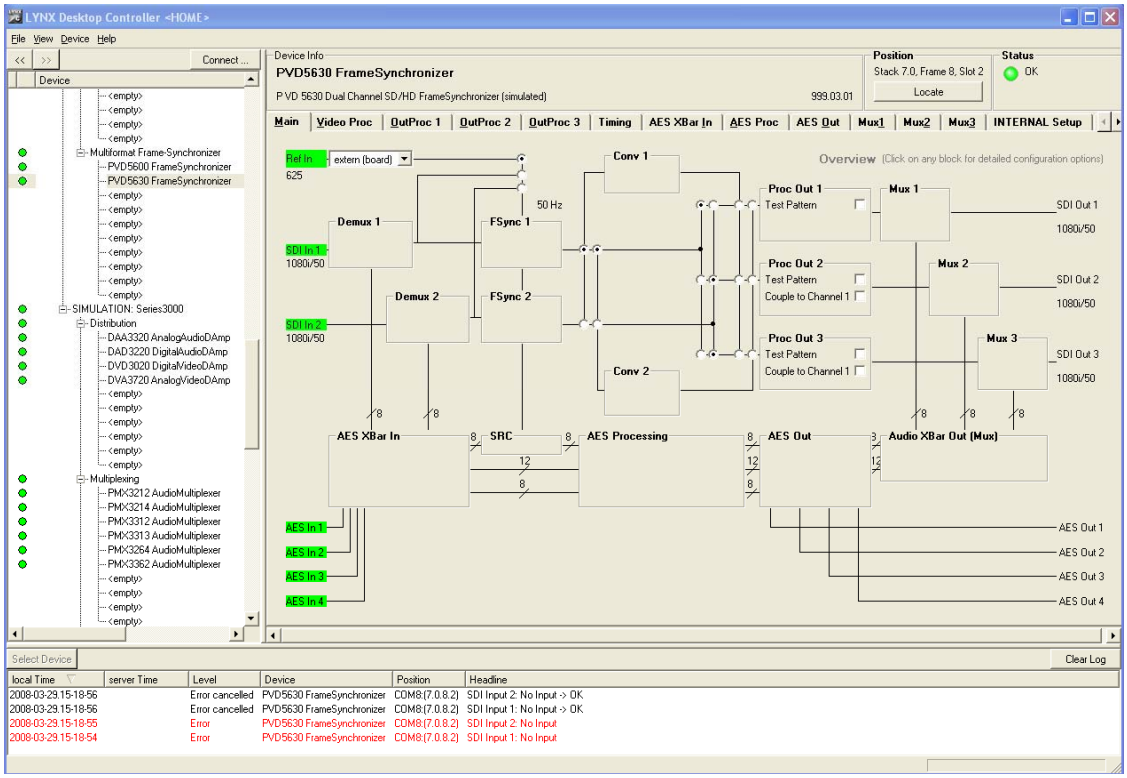
Note. *The Alarm LED can be seen with the rack front cover fitted*

Control System GUI

All LYNX CardModules 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. The complex nature and extensive user settings provided on the PVD 5630 **requires** the use of the control system.

> ***Note.*** *Any settings made using the control system 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 following GUI screenshots and descriptions shown below describe the settings and adjustments possible for the PVD 5630 CardModule.



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. (This does not effect module operation)*

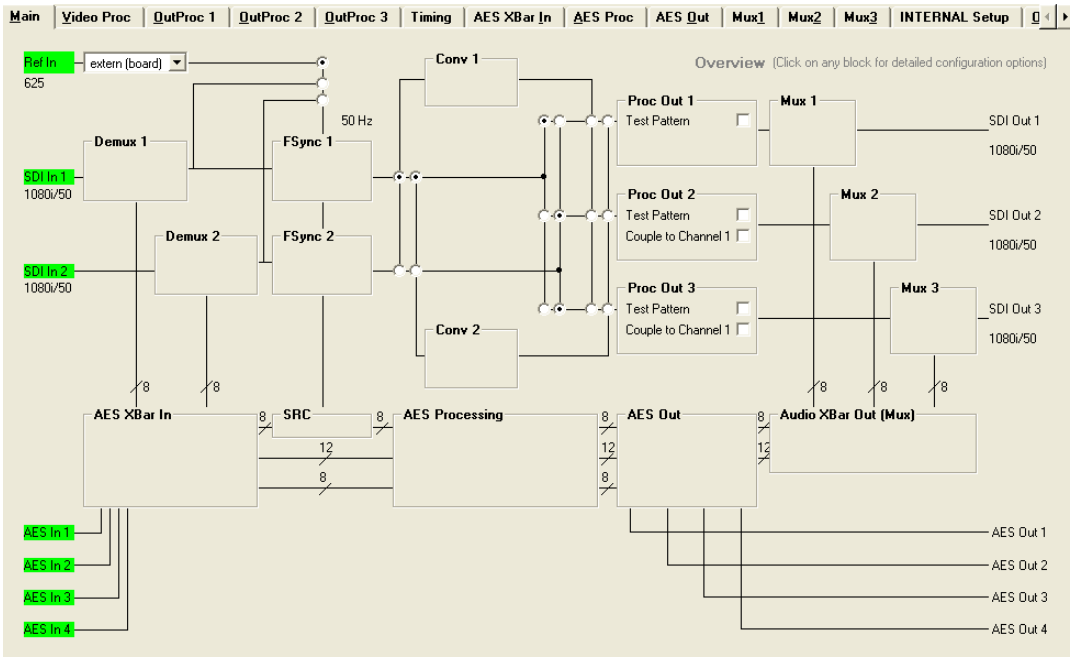
The first screen displayed when the module is selected is the ***Main Tab*** this is a graphical representation of the modules overall function and signal flow (left to right). Clicking on the processing boxes will link to other GUI screens with more controls for these specific functions.

The area at the bottom of the screen is the error log. Any fault condition (or event) will be time stamped and entered into the log.

There are a number of “Tabs” along the top of the screen which splits up the module settings into a number of logical displays. The various GUI screens and primary functions are described below.

Main Tab

This screen is the main interface and is presented first when the module is displayed in the GUI. The layout replicates module “block” functions and signal flow from left to right.



The primary purpose of this screen is to show the overall signal flow through the module and allow easy navigation to other areas. Input standards and formats are auto detected and displayed in the GUI. Parameters will be annunciated in different colors to show status (green = good, red = problem, yellow = caution etc).

REF in Select

There is a select list next to the **REF in** connection. This selects if external reference is to be used from the common rack reference input or the board connection plate reference input.

With the selection above the FSYNC boxes the reference for the frame synchronizer can also be derived from the digital input 1 or 2 (second input iss optional). This is useful for applications, where the P VD 5630 is used as a video delay line.

Signal Routing

In the center of the screen there is an area where the internal signal routing can be changed. This area is fundamental to the modules basic function. Here the internal video signals can be routed through (or bypassing) the down conversion options. Selecting a cross point via the radio button closes the connection (operation is self explanatory)

Note. The internal router will be greyed out if the GPI input is enabled.

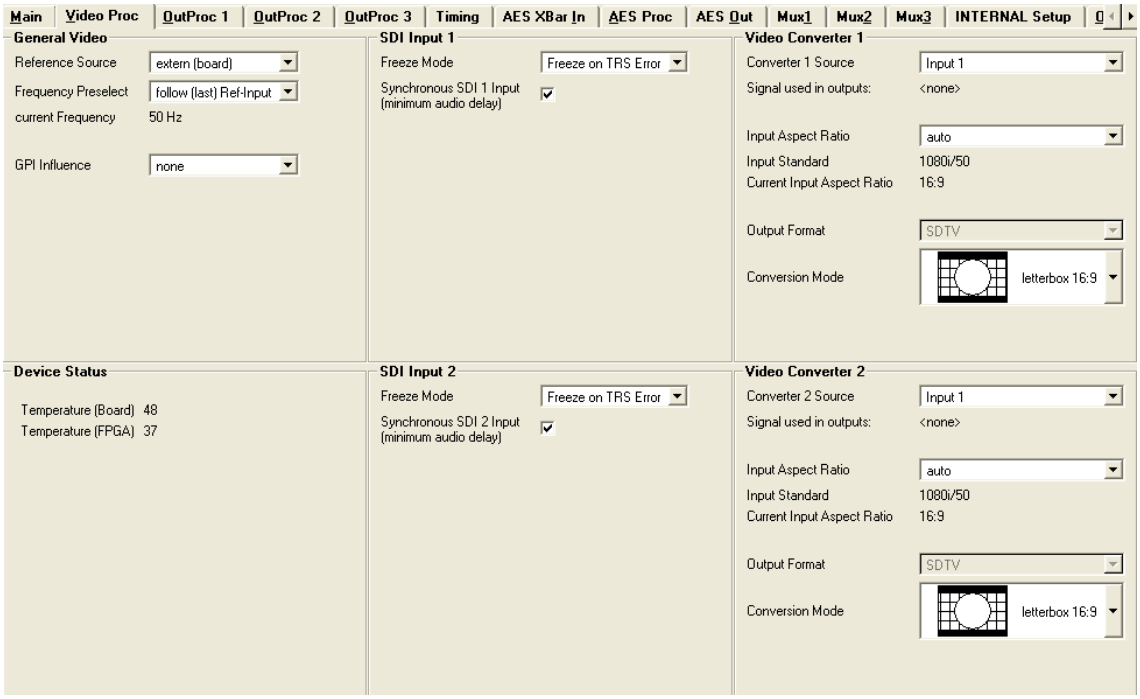
Test Patterns

In each of the three output channels it's possible to switch the test pattern on from the main tab if required. (Also selectable from the individual **Proc Out** GUI screens)

Video Proc Tab

This tab will bring up the configuration screen for the two conversion options (if fitted) this screen can also be accessed by clicking on the "*Conv 1*" or "*Conv 2*" boxed in the flow diagram on the main GUI screen.

> **Note.** *If the conversion options have not been installed then the selections in the Video Converter 1 and Video Converter 2 box will be grayed out.*



General Video Settings

The first area covers some General setup parameters for the frame sync operation.

External Reference Source

It is possible to take the external reference signal from two sources. Either from the common rack reference (*an external reference connection to the rack frame which is fed to all cards installed in the rack*) or via the BNC connection provided on the module rear connection panel. Selections provided are:

- External (board) = Via module rear connection panel
- Internal (rack) = Common rack reference

Frequency Pre-select

This is where the Frame synchronizer output frequency (or frame rate) is selected. This can be jammed into a format which will never change (regardless of the connected reference or the connected input video source). If a signal with an incompatible frame rate is connected then a rudimentary standards conversion will take place to maintain a

constant output frame rate. This conversion process drops and repeats fields/frames and **should not** be considered broadcast quality.

> **Note.** *For systems without the up/down/cross conversion option fitted then this conversion will only take place between compatible video formats.*

It is also possible for the synchronizer to configure the output frame rate based upon the connected reference. This is the default setting for the module. Possible settings are:

- 50Hz
- 59.94Hz
- 60Hz
- Follow (last) reference (default)

> **Note.** *The synchronizer is supplied from the factory with the last stored reference as 50Hz. With no reference connected its possible to change the last stored reference to something else. Simply select the desired fixed frequency and then re-select follow last reference. Now the module will use this new setting through a power cycle*
>
> *Also, this value will not be restored to 50Hz following a "Restore Factory Defaults" operation, the stored setting is preserved.*

The "Current Frequency" area in the GUI is showing the frequency the frame synchronizer is running in currently (useful if the *follow last reference* selection is made)

GPI Influence

This selection is only active if the second input option is installed (PVD SCND) and allows the seamless switching between the two connected input signals on activation of the GPI. Two modes of operation are provided.

- None – GPI has no influence module functions as normal
- Switch Video Inputs – The GPI status (high or low) will determine which input is used

Please refer to the GPI section of this manual for a more information on the function of the GPI input

Device Status

This area is used to show the detected internal and external temperature of the Module. If the internal temperature exceeds 80ºC then the module will log a "over temperature" event in the control system error log.

SDI 1 and 2 Inputs (Input 2 is optional)

The next section on the GUI is sectioned SDI 1 and SDI 2. This is where the reaction of each channel is defined in case of excessive video errors. The output can be configured to "freeze" or pass the input signal transparently when errors are encountered. If configured to pass the video transparently then all video errors and disturbances are passed to the output.

The synchronizer is very robust in its ability to handle poor quality input signals but there may be occasions where excessive errors cannot be recovered by the synchronizer. This is generally qualified by TRS errors. TRS means "Timing Reference Signals" and is a sequence of digital values embedded in the SDI data streams. If the frame synchronizer cannot recover these errors, then the channel will freeze the video until the errors can be recovered. One function of the synchronizer is to repair any bad TRS values ensuring a

stable and technically correct video stream is delivered on the outputs. Selections for each channel are as follows:

- Freeze on TRS errors
- Transparent

  Note. *The function of the freeze operation is defined in each output video proc stage.*

Video Down Converter 1 and 2 (Optional)

This Down Converter in this section will only be active if the Down conversion (PVD DWN) option is purchased.

Options are installed via a license strings (purchased separately) these are entered into the module to activate the options. Option licenses are managed / entered using the **Options Tab** in the GUI.

Converter Source

It's possible to select the signal source into each converter. This is done using the in the first drop down box "Source" This can be Input 1 or Input 2 (Input 2 is optional) . (This can also be changed using the signal router on the Main Tab)

Down Converter Mode

The down converter provides three modes which can be selected using the drop down selections provided:

- Letterbox 16:9
- Center cut 4:3
- Stretch to Fill

The "Input format" and the "signal used for the outputs" indicate which input format is routed to the specific conversion channel, and also indicates which of the three outputs the converter output is routed to. (These will change if the internal signal routing is changed).

SDTV Aspect Ratio Converter Mode

The Aspect Ratio converter provides three modes for 16:9 to 4.3 conversion and three modes for 4.3 to 16:9 conversion, which can be selected using the drop down selections provided:

16:9 to 4:3 conversion

- Letterbox
- Center cut
- Stretch to Fill (vertical)

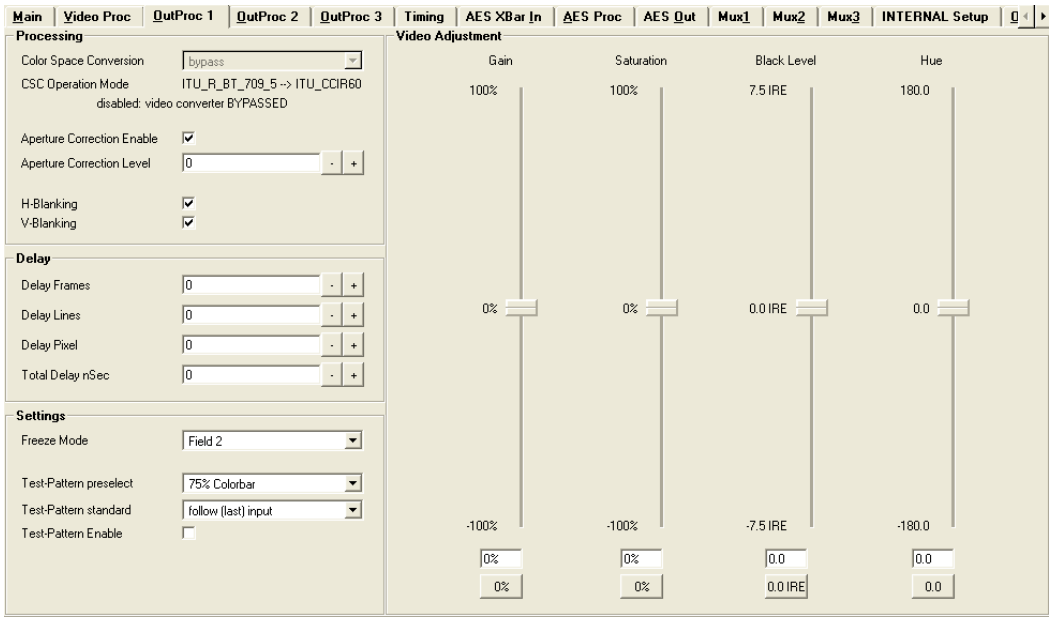
4:3 to 16:9 conversion

- Pillar Box
- Center cut
- Stretch to Fill (horizontal)

The “Input format” and the “signal used for the outputs” indicate which input format is routed to the specific conversion channel, and also indicates which of the three outputs the converter output is routed to. (These will change if the internal signal routing is changed).

Video Output Proc Tabs

There are three “Out Proc” tabs provided, one for each of the three outputs provided. This is where the individual video processing functions are set for each channel. All three “Out Proc” tabs have identical adjustments.



Color Space Conversion

Note. This is only active when the conversion option(s) are installed
This is where the color space conversion functionality is configured. This is used to ensure correct color reproduction on the outputs. HD color space is wider than SDTV color space so there is the possibility of some illegal colors being reproduced if the color space is not converted. Possible selections are:

- Convert *(convert the video signal)*
- Bypass *(perform no conversion)*
- Luma in Bypass (*only convert Chroma portion of signal*)

Aperture Correction

Horizontal aperture correction is provided for each output channel, which can be used to sharpen or soften the video signal. (This is sometimes required for down converted video signals as the filtering process rolls off the high frequency very slightly). If adjusted in the positive direction this will increase sharpness, if adjusted in the negative direction this will soften the image.

There is a check box to switch aperture correction ON and OFF and an adjustment range The numerical adjustment range provided is + 80 to -30, and is changed by clicking on the “+” or “-“ Buttons.

> **Note.** *Aperture correction OFF is the same as a Zero setting in the adjustment range*

H and V Blanking

A checkbox selection is provided for H (Horizontal) and V (Vertical) blanking. When selected the video output will have new blanking applied in both of these areas (which will overwrite any information in the vertical and horizontal blanking intervals).

Video Delay Adjustment

Each video output can be delayed relative to the reference sync up to a maximum of 3 frames. This is usually used for downstream system timing applications. The delay is adjustable in the following increments:

- Frames
- Lines
- Pixels
- Time (ns)

Depending on preferences you can use one or all of the adjustments provided to set the total video delay.

> **Note.** *The adjustable delay applied is **in addition** to the fixed one frame processing delay of the module.*

Settings

This area is where the freeze function is defined and also the action (and settings) of the integrated test pattern generator. (Each channel has its own independent test pattern generator)

Freeze Mode

When the synchronizer encounters excessive TRS errors it can be set to freeze or pass the video transparently (selected on the Video Proc tab). If Freeze is selected then the behavior of the freeze function is selected using the drop down selections. These are:

- Freeze Field 1
- Freeze Field 2
- Freeze Frame
- Display (pre selected) Test Pattern
- Black

> **Note.** *If the pres selected test pattern is selected this will be used in the respective channel video format and **NOT** influenced by the "Test Pattern Standard" selection mentioned below.*

Test Pattern Pre-select

A wide range of patterns is provided which can be selected using the drop down selection provided. The pre-selected pattern will be used if the freeze mode is set to "test pattern" and will also the pattern used if "test pattern on" is selected. Patterns provided are:

- Full field Black
- Full field White
- Full field Yellow
- Full field Cyan

- Full field Green
- Full field Magenta
- Full field Red
- Full field Blue
- 15% Grey (full field)
- 75% Color bars
- 75% Color bars over Red
- Pathological PLL/EQ

Test Pattern Standard

With no input signal connected the module can be used a stand alone test generator using this selection is possible to configure the test pattern into any of the supported standards, or it can be set to follow the last input standard. Settings provided are:

- Follow last input (default)
- SDTV
- 720P
- 1080i

Note. Signal Frame rate (or frequency) is set on the **Video Proc** Tab (this is the pre selected frequency)

Test Pattern Enable

This checkbox simply switches on the pre-selected test Pattern. (The same can be done using the Test Pattern checkbox on the **Main** Tab)

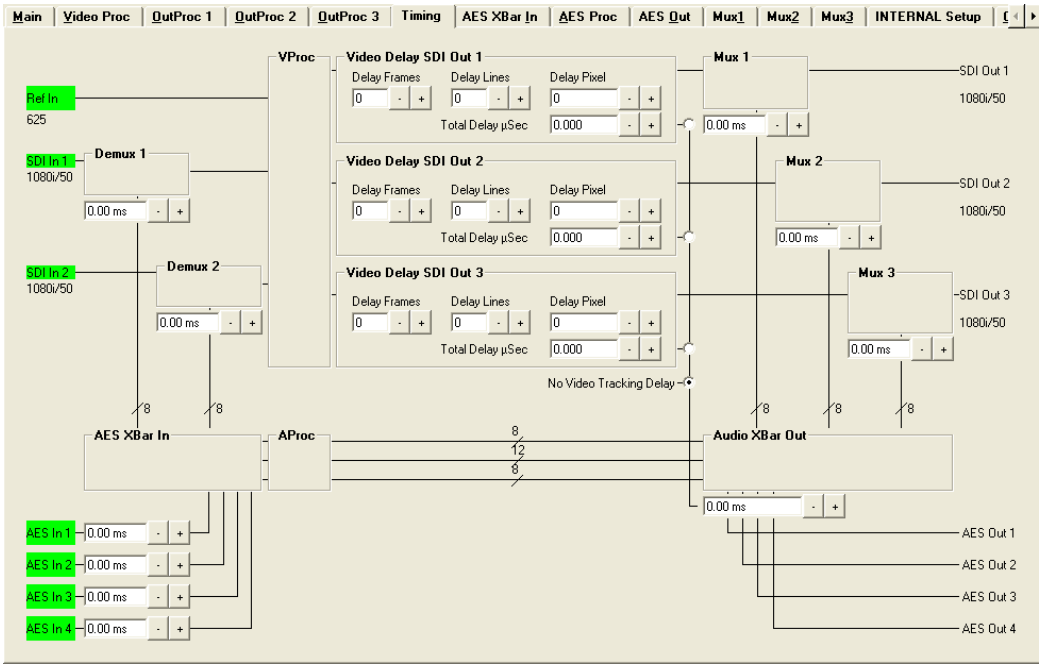
Video Adjustments

Four on screen sliders are provided to allow for the adjustment of individual video parameters. Separate sliders are provided for video Gain, Saturation, Black Level and Hue.

Default (null) settings are 0% (this is the default). Sliders can be quickly returned to the factory null (or transparent) settings using the buttons provided at the bottom of each slider.

Timing Tab

The Timing Tab provides a graphical overview showing the location of the various audio and video timing adjustments on the module. All delays can be adjusted from this GUI display. (The video delay settings are also adjustable on the individual video Proc tabs)

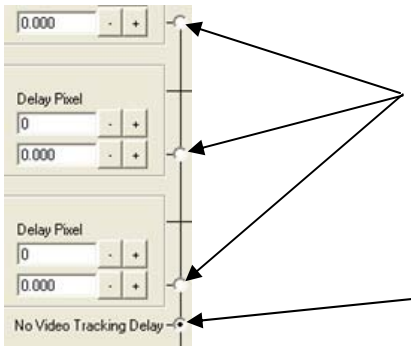


Audio Delay Settings

Note: The Synchronizer will auto track the audio delay to the frame synchronizer video delay variable. The adjustments provided here are offsets relative to the internal tracking delay.

The audio delay offset can be set at various positions as shown in the audio processing chain. Clicking the + and – buttons adjusts the setting. Audio Delay Range is 0.330 seconds total (set in ms)

The external AES outputs can be linked to the auto tracking delay of any of the three SDI outputs using the radio buttons shown, or disabled using the "***no video tracking delay***"" radio button.



Use the radio buttons provided to link the four external AES outputs to the required SDI output channel auto tracking delay

Select this to disable auto tracking delay for the External AES outputs

Video Delay Settings

The selections shown here are also duplicated on the “Output Proc” tabs for each individual channel. They are also grouped here for convenience to have all adjustable timing parameters on a single screen.

Each video output can be delayed relative to the reference sync up to a maximum of 3 frames. This is usually used for downstream system timing applications. The delay is adjustable in the following increments:

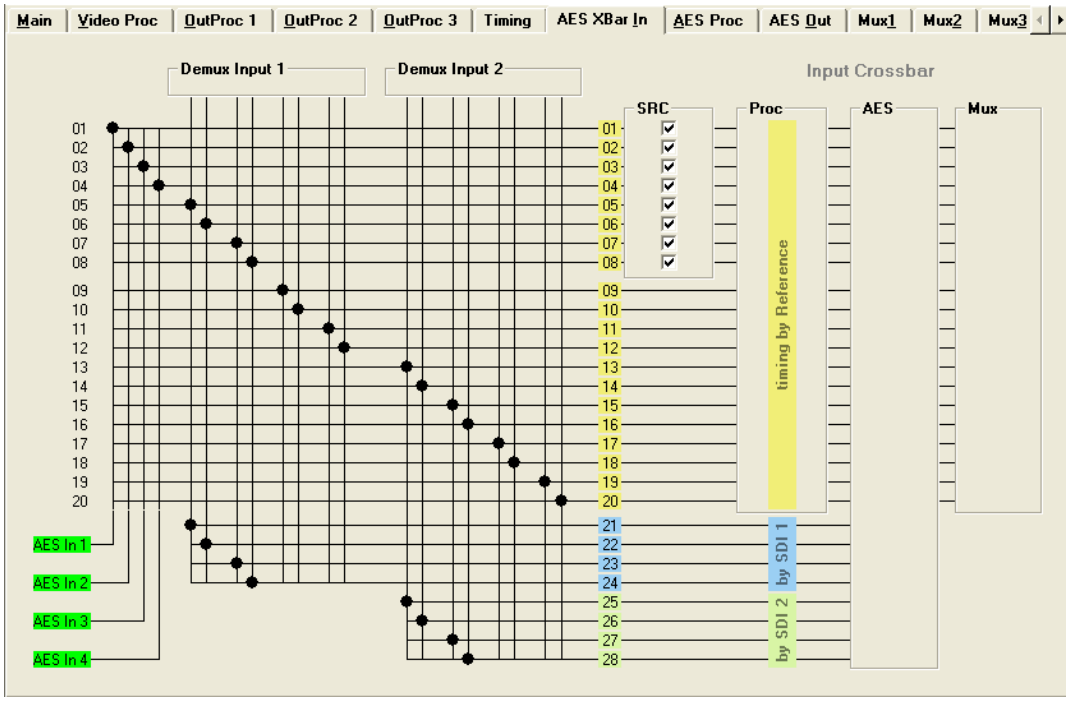
- Frames
- Lines
- Pixels
- Time (ns)

Depending on preferences you can use one or all of the adjustments provided to set the total video delay.

> **Note.** *The adjustable delay applied is **in addition** to the fixed one frame processing delay of the module.*

AES Input Crossbar Tab

The complete audio payload (8 x AES) is de-embedded from each input channel and 4 external AES inputs can be applied to the module. All the audio is fed into an AES audio cross bar which is configured using the GUI below.



The crossbar arrangement is simple, the inputs from the two de-embedders for each SDI signal come in from the top. The external AES inputs come in from the bottom. All audio inputs are the vertical component of the crossbar. The audio pathways out of the crossbar are horizontal. Routing an AES pair is achieved by clicking on the cross point with the mouse cursor.

Pathway 1

The first 8 AES signals out of the crossbar (01…08) represent “Pathway 1” through the Frame Synchronizer. These audio signals are fed through sample rate converters, (which can be turned on and off using the check boxes).

This pathway also has audio proc functions available downstream in the module.

> **Note.** *This pathway is not recommended for DolbyE or any encoded audio bit streams. If the sample rate converters (SRC’s) are “on” this will corrupt (destroy) the audio stream.*

Pathway 2

The next 12 AES outputs from the crossbar (09…20) represent “Pathway 2” through the synchronizer. These channels do not pass through any sample rate converters, and audio passed through this pathway is assumed to be synchronous with the connected reference signal (no audio synchronization is performed in the frame sync)

Pathway 3 and 4

The next 4 AES signals from the crossbar (21..24) is “Pathway 3” and is dedicated to SDI input 1. Any 4 of the 8 de-embedded AES streams can be selected and fed through this pathway. The audio maintains its synchronization and timing references to the input SDI signal and is not re-synchronized or processed by the module. The module is simply de-embedding the audio and making it available as external signals.

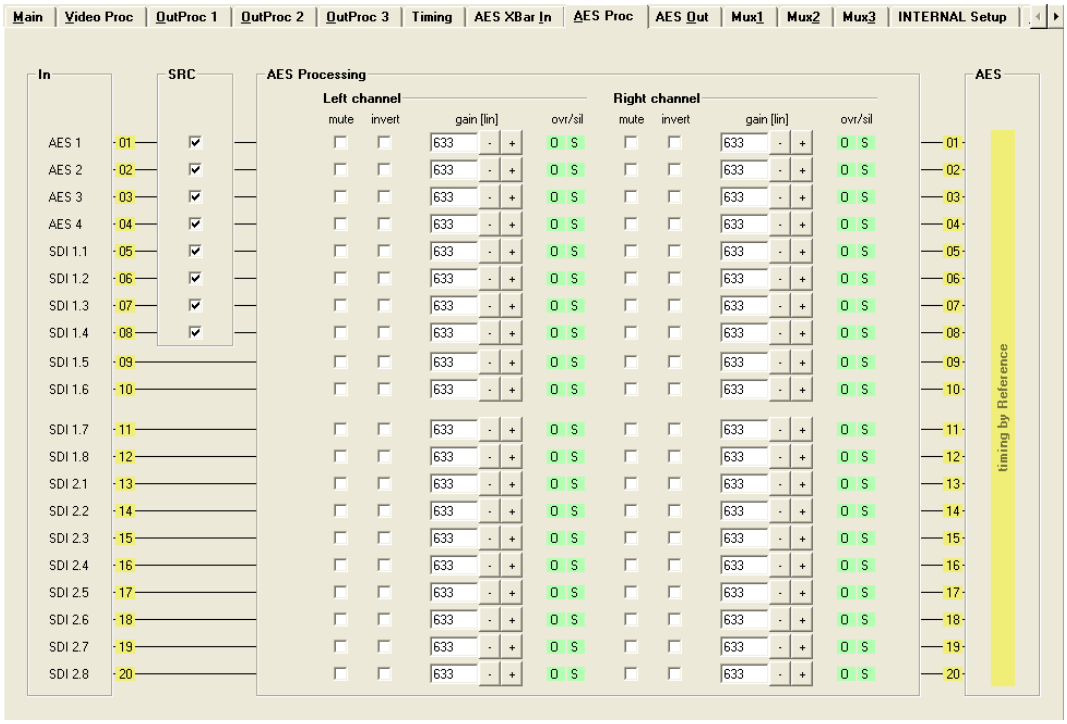
Audio using these pathways **can only** be fed to the external AES outputs and cannot be embedded back into the output video. (*For example, you could use this pathway to de-embed DolbyE and then feed it to an external DolbyE decoder)*

“Pathway 4” is identical in function to Pathway 3 but dedicated to the second SDI input.

AES Proc Tab

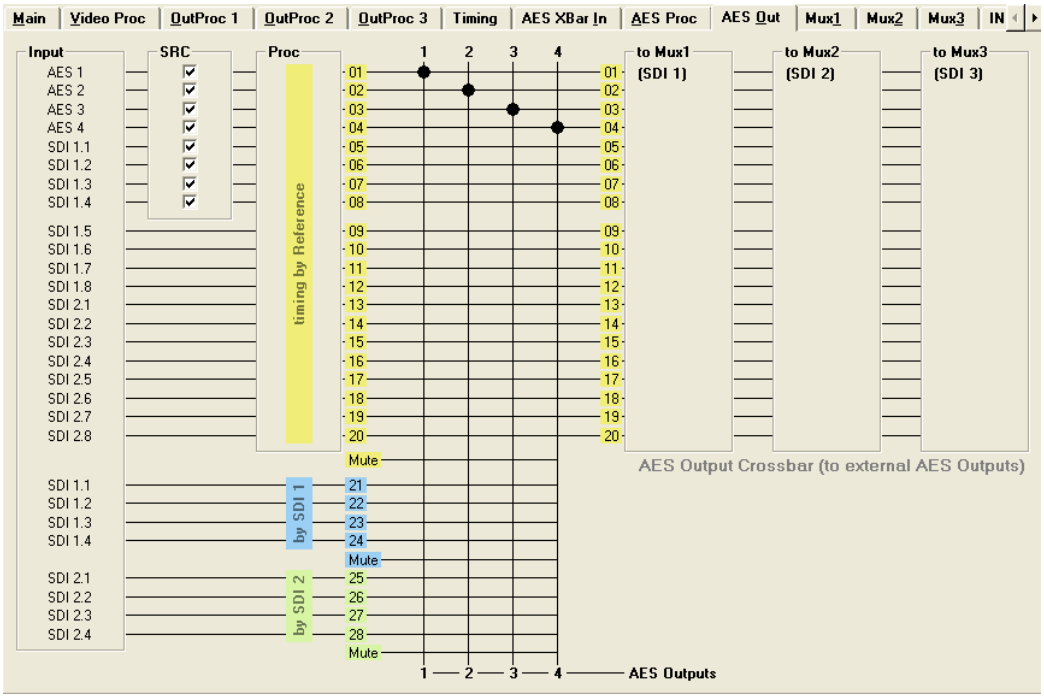
This provides access to the internal audio processing functions such as audio gain / mute / phase invert / overload and silence detection per audio mono channel (overload and silence are indicated by color of the respective symbol: Green = OK Red = overload or silence.

Sample rate converters can also be selected or bypassed which are provided for the first 8 AES streams derived from the input audio crossbar



AES Out Tab

This section is used to configure the external AES outputs. 4 outputs are provided and any of the internal audio signals can be routed to the external outputs if required.



All inputs to the crossbar are shown horizontally and the 4 x External AES outputs are shown at the bottom of the screen. Selecting a cross point will route the required signal to the selected AES output. There is also a “mute” function for each AES output if required.

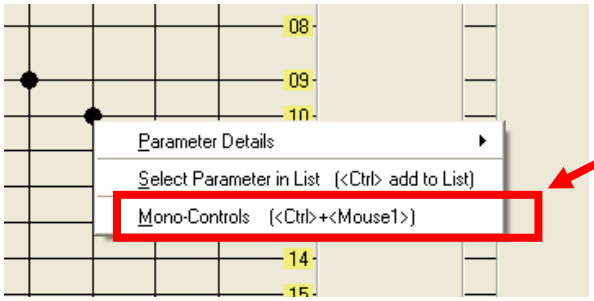
When a cross point is selected it will select the AES pair (left and right channel) However, these cross points are Mono in nature. Please refer to the section “Setting Mono Cross Points” below for details on how to use the mono cross point functionality.

Setting Mono Cross Points

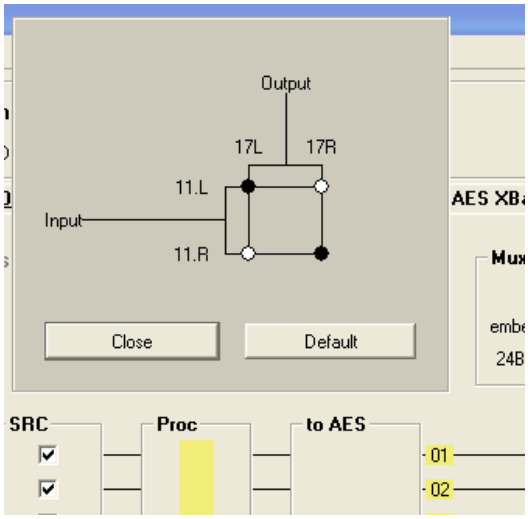
This technique of selecting mono cross points is patent pending

To keep the GUI simplified the default operation of the External AES output crossbar and the three individual output embedder cross bars are AES in nature, meaning selecting a cross point with the mouse will switch both channels (left and right) in the AES pair. Mono selections are possible, instructions below.

With the cursor positioned over the required cross point, click the right button on the mouse to display a submenu:



Select “Mono Controls” from this small submenu and a new mini cross point control box is displayed

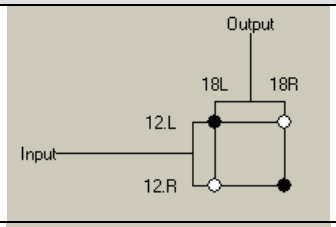
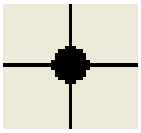
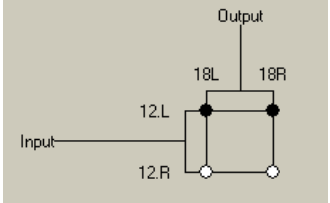
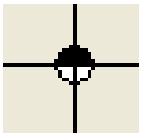
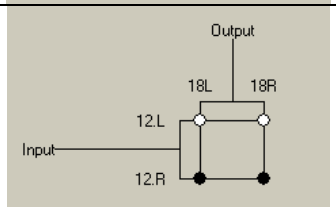
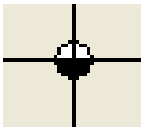
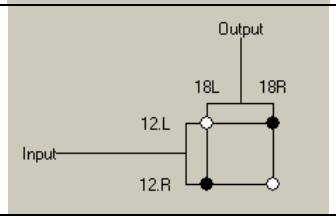
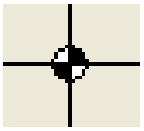


The Mini cross bar looks like shown, and permits full control over the routing of the left and right audio channels within the AES cross point selected.

Simply select the desired routing by clicking the mouse on a cross point and then click “close” to apply the selection and close the dialog.

The default button will return the selection to the standard “default” settings

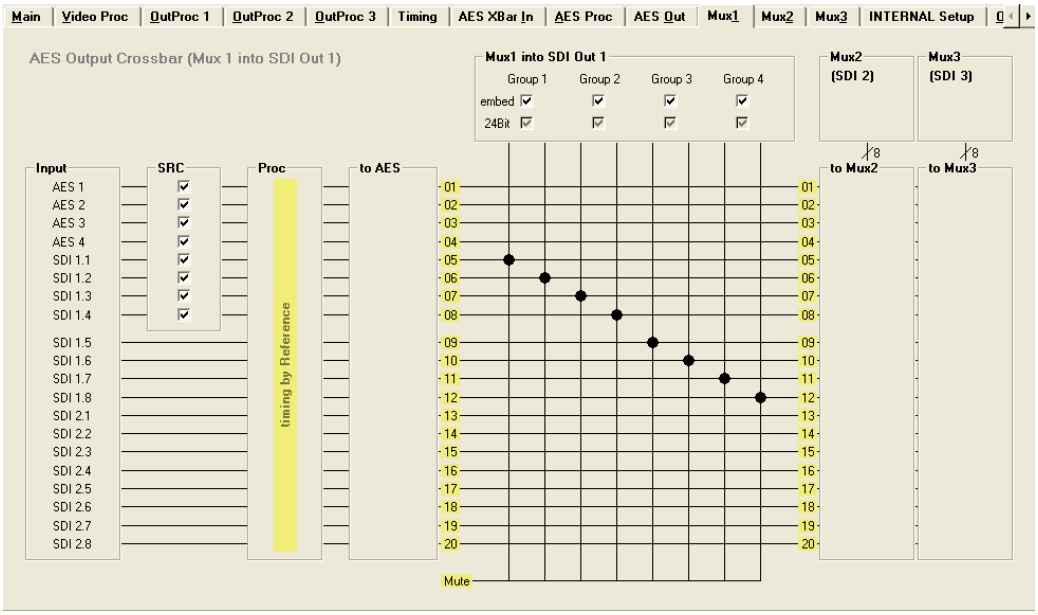
When a cross point has been changed, the graphical cross point selection changes to indicate the underlying configuration. This is shown below:

Status	Cross Point Selection	GUI Indication
Default		
Left input channel into both output channels		
Right input channel into both output channels		
Left and right channel swapped		

If the mouse pointer is positioned on the cross point using the “ctrl” key and left mouse button click will toggle the settings. Use of this function takes a little practice - as the position of the pointer on the correct cross point quadrant is critical. We recommend you select the mini crossbar as specified above, as this provides the most precise control.

Output Mux Tabs

Each output has a separate embedder, which can embed the full AES payload (8xAES) back into the output SDI signals. A separate tab is provided for each embedder.



All of the internal audio from pathways 1 and 2 are made available as inputs to each embedder. The embedder can be seen at the top of the GUI and it's possible to quickly disable or enable an individual AES "Group" using the checkbox provided.

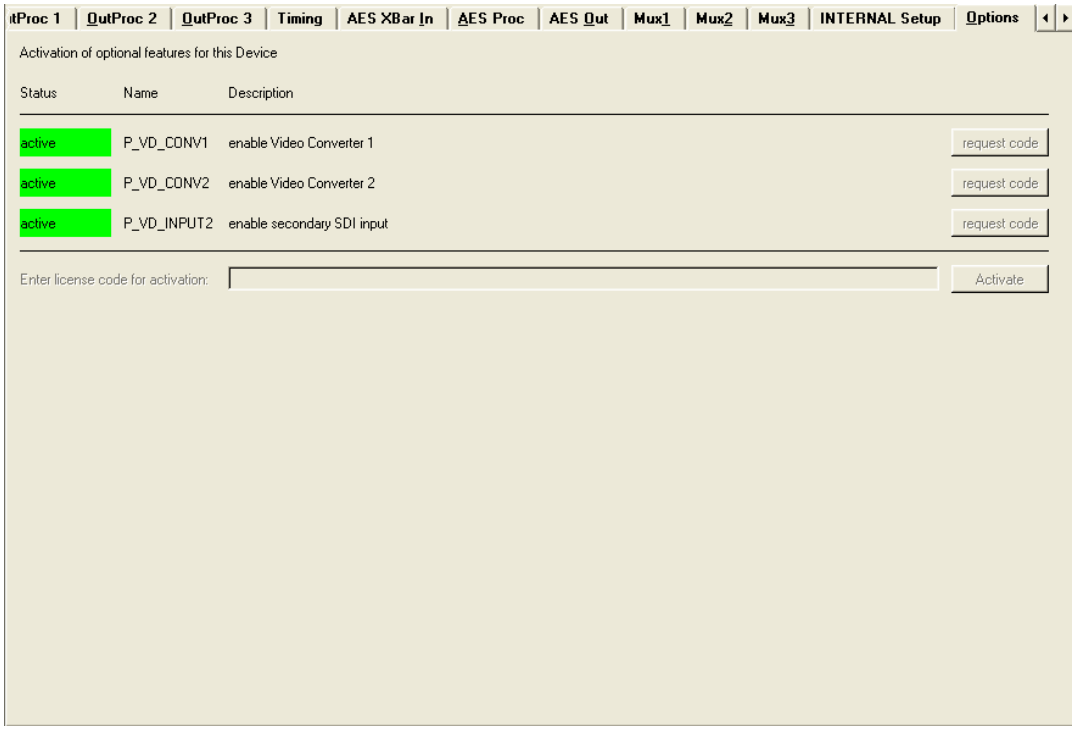
These cross points also provide full mono control; please refer to the previous section "Setting Mono Cross Points" for details.

Each channel into the embedder can be individually "muted" as required using the "mute" cross bar selections at the bottom of the GUI.

The remaining 2 embedders (Mux 2 and Mux 3) are identical in operation.

Options Tab

One tab on the GUI is reserved for Options. This is where the license codes are entered to unlock the embedded firmware options. Options currently available are PVD SCND for the second input and PVD DWN for the down conversion options *(2 PVD DWN options are required if the PVD SCND input option is installed)*



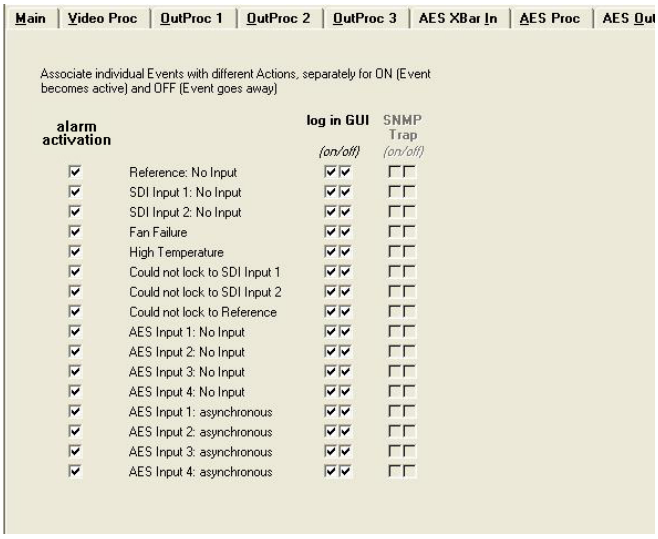
If the module was purchased with options pre-installed then you will see the option status as green (Active).

If you would like to purchase this option after delivery, then you will need to purchase the license codes from LYNX Technik.

Click the “request code” button next to the channel you wish to activate. A number will be displayed, Please forward this number with your purchase order to your authorized LYNX dealer or representative. When you receive the license string simply type it (or paste it using the windows clipboard) into the area provided and press “activate”. Activation is confirmed when the option status turns green.

Events Tab

The Events Tab is where the module alarming and error notifications are configured for the module.



The GUI has an integrated error log, which is a simple text log file stored in the controller PC. This will record an event and timestamp it. The log can be seen at the bottom of the GUI screen and can be scrolled through using the scrolling bar.

Log in GUI Function

Events are selectable, you can chose if you want to record a particular event in the log (or not) or configure it to only record one side of the event. (*For example you might want to log when a SDI input was removed but do not want to log when it came back*). The ON/OFF trigger can be configured for each of the available events shown in the list and is setup using the checkboxes provided.

Alarm Activation

By default all alarm conditions are activated (checked), by de-selecting a specific alarm condition I this column you are telling the module to ignore this condition completely. It will not color the alarm LED, log and event in the GUI or send a SNMP trap. This is useful if for example you never have anything connected to input 2 and want the card to ignore this input condition completely you would simply de-select “SDI Input 2 No Input” and it will be ignored.

SNMP Support

If the system is using a RCT 5030 Master Controller and the SNMP option is installed then the “SNMP Trap” columns become available.

Here you can configure what events you would like to transmit a “SNMP trap” for over the network. (This has no impact or influence over the internally error log maintained by the LYNX control system)

(Internal LYNX error logging and external SNMP traps can be configured independently).

> **Note.** *The simulated event is part of the GUI simulator and allows us to force a particular error condition for testing and demonstration purposes.*

Specifications

Video Inputs	
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 upgradeable for additional format support in future)
No. Of inputs	2 inputs each with re-clocked loop output**, second input optional**
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)
Reference Input	
Signal Type	Analog Bi-level / Tri-level (auto detect) cross lock compatible
No of inputs	1 x External or internal rack reference (selectable) (PVD 5630 DW provides a loop out of reference)
Connection	BNC
Impedance	75 Ohm
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	3 separate outputs with 2 x SDI out of each output (6 total) (mapped to any input channel)
Connector	BNC
Impedance	75 Ohms
Jitter	< 0.2 ui (270MHz) < 0.25 ui (1.485GHz)
Return Loss	> 15 dB (1.5GHz)
Video Processing	
Delay adjustment range	Up to 3 frames of programmable delay in pixel / line / frame increments. Independent for all 3 outputs
Minimum delay	1 Frame (including up/down/cross conversion options)
Video adjustments	Gain / Saturation / Hue / Black Level
Aperture correction	Horizontal only, adjustable for each output channel (3)
Color space conversion	601 > 709 or 709 > 601 or transparent (selectable) **Note.** Requires conversion option(s)
AES Audio Inputs / outputs	
Signal	PVD 5630 BW = AES3 id un-balanced PVD 5630 DW = AES3 balanced
No. of inputs / outputs	4 x AES in and 4 x AES out (assignable)
Connectors	PVD 5630 BW = BNC 75 ohm PVD 5630 DW = Female 25 pin SubD, 110 ohm
Coupling	Transformer
Audio Processing	
De-embedder	De-embed all audio (4 audio groups = 8xAES) from each input source.
Audio input matrix	20 channel AES audio input crossbar provides channel assignment prior to processing.
Audio pathways	Multiple internal paths: **Pathway 1**= 8 x AES routed through SRC (sample rate converters) and full audio processing (gain / phase invert / mute / overload and silence detection) Audio delay

	Pathway 2 =12 x AES routed through delay only **Pathway 3** = 4 x AES bypasses all processing synchronized to input 1 **Pathway 4** = 4 x AES bypasses all processing synchronized to input 2
Audio delay	Audio is delayed to match the video delay and will automatically track the frame synchronizer. User adjustment of 0.330 second (in ms) is provided
Audio Embedders	Independent embedders apply 4 audio groups (8 AES) into each output channel. User selectable. (Pathway 1 and 2 only)
Operating Modes	
Frame Sync	Basic SD / HD Multi-rate Frame Synchronizer
Down conversion + ARC + frame sync	Requires Firmware option for Down Conversion
Control	
Local Controls	Local alphanumeric display with integrated menu system for setting “basic” module parameters.
Remote Control	Comprehensive remote control and status monitoring supported when used with a LYNX Controller option. The use of the control system is mandated for this module
External GPI	Single GPI input on BNC connector. Input Switching is triggered if GPI active and Low
Electrical Specifications	
Operating Voltage	12 VDC
Power Consumption	15 W
Safety	IEC 60950/ EN 60950/ VDE 0805
Mechanical	
Size	283mm x 78mm
Weight	CardModule 120g, connector plate 50g
Rack space	Requires 2 slots in rack frame (max 5 modules per frame)
Ambient	
Temperature	5°C to 40°C Maintaining specifications
Humidity	90% Max non condensing

Service

Parts List

Due to the very dense design and high level of integration there the module is not user serviceable. Please contact LYNX for repairs or to request an exchange unit.

There is one consumable part used on this module which is the cooling fan. A service kit is available to exchange the fan. Ordering information below.

Part type: ***Cooling Fan Service Kit Series 5000 CardModules***

Technical Support

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

Technical support is also available from our website.

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