

PVD 5660 D/B

Dual Channel SD/HD SDI Frame Synchronizer with full audio support

FLEXCARD

Flexibility is a key component in the migration from SDTV to HDTV infrastructures. To ensure a smooth transition LYNX Technik™ provides a range of flexible frame synchronizer solutions which can be configured to serve a multitude of applications in broadcast.

From simple frame synchronizer applications to simultaneous up and down conversion capability with full embedded and external audio support we have a *FLEXCARD* solution which can be configured to meet your needs.

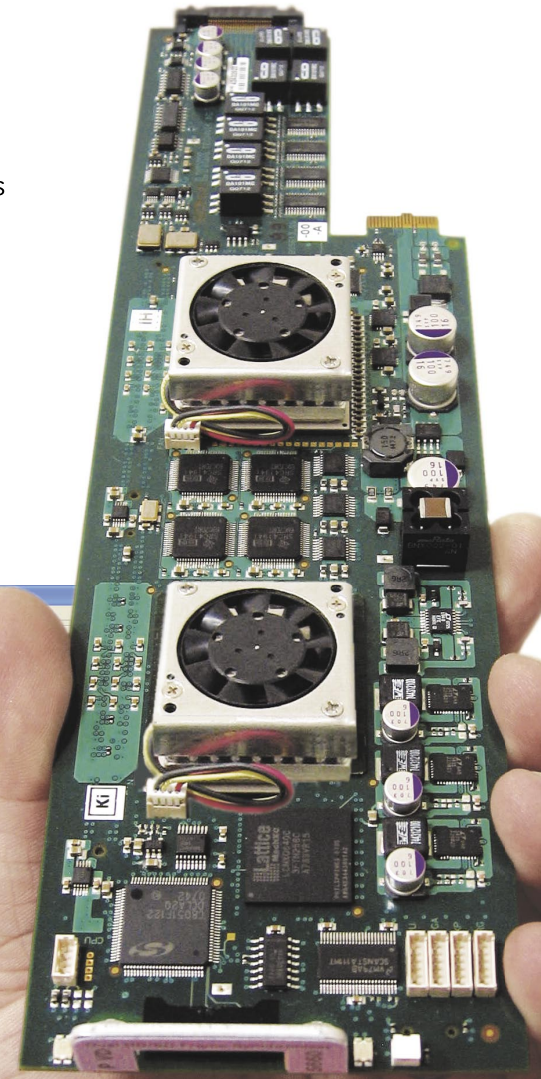
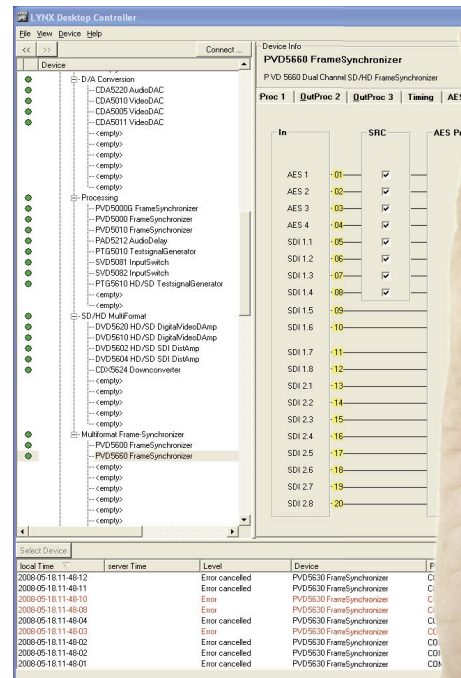
The PVD 5660 is an extremely compact frame synchronizer providing two independent frame synchronizer channels with four user mapped output channels on a single card, saving on valuable rack space and system cost.

Full embedded and external AES audio support adds to the modules flexibility and when combined with the optional up / down and cross conversion capability you have a truly versatile solution.

Maintaining full compatibility with existing LYNX Series 5000 rack frames and accessories with the ability to mix and match any LYNX modules in a single card frame means updating to SD/HD multi-rate capability is simple.

Using fully programmable technology and modern fabrication techniques LYNX provides one of the most advanced and compact solutions available on the market today.

Up to five PVD 5660 FLEXCARD modules can be accommodated in a single rack frame, providing 10 frame synchronizer channels with integrated up / down and cross conversion capability in 2RU of rack space. Ideally suited for outside broadcast applications or anywhere space is at a premium.

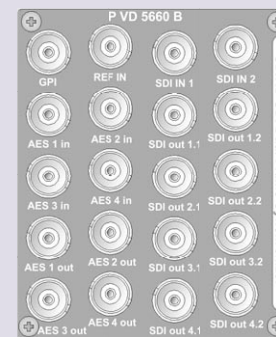
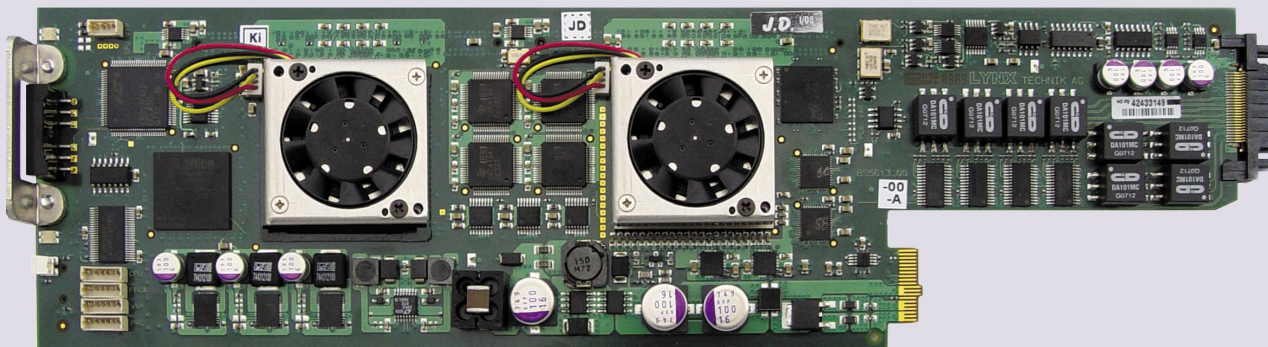


FRAME SYNCHRONIZER

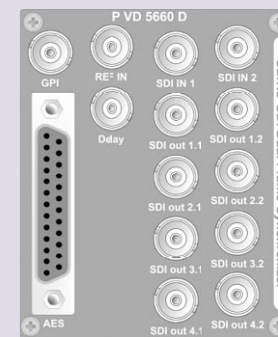
P VD 5660

Dual Channel SD/HD SDI Frame Synchronizer + ARC
with full embedded and external audio support

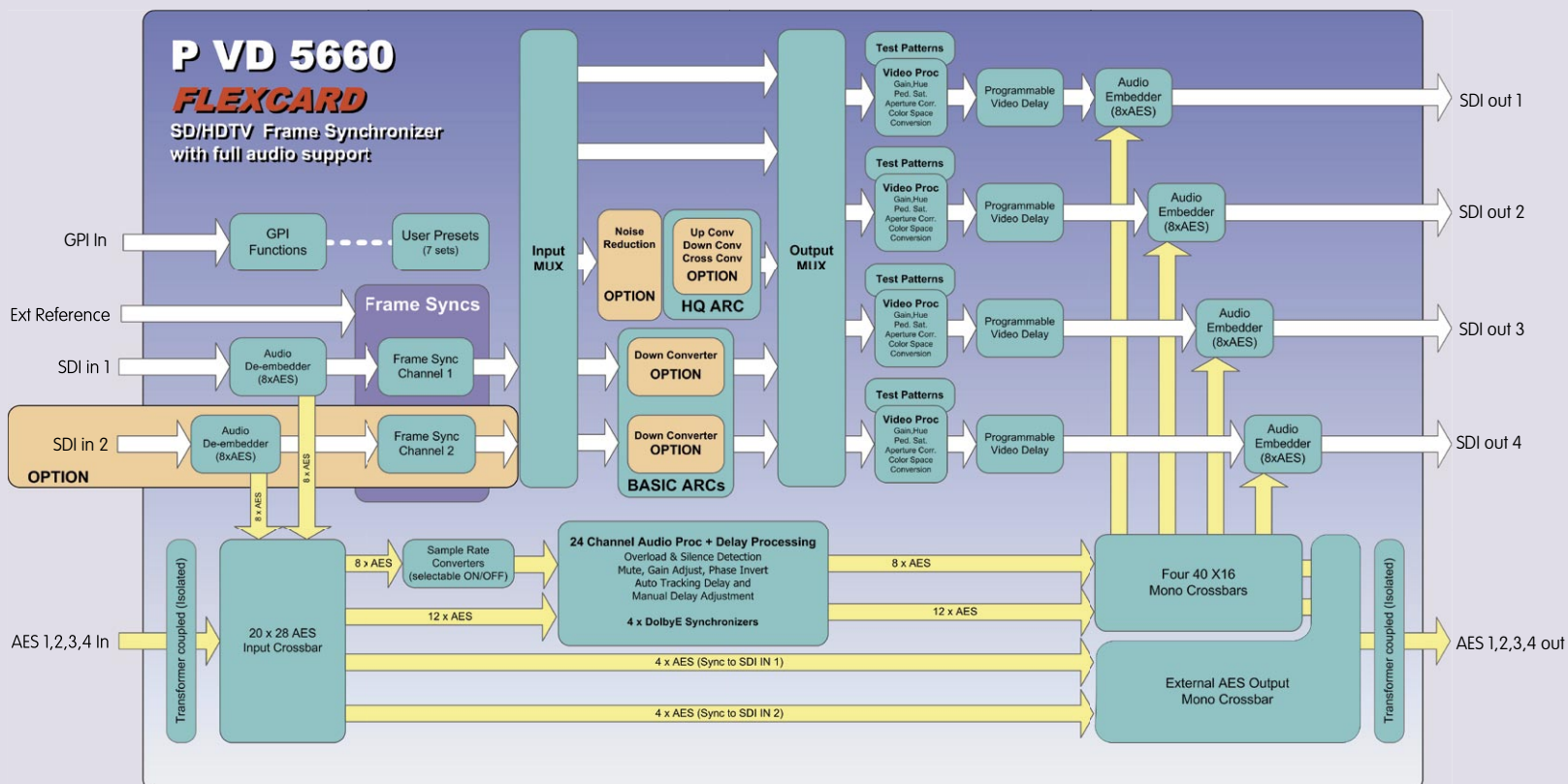
CONNECTION PANEL OPTIONS



P VD 5660 B



PVD 5660 D



Flexibility

Enabling the user to fully configure and control the modules many functions brings unrivaled flexibility to the modules applications. All aspects of the modules operation can be configured and controlled using the LYNX control system and all settings are automatically stored in module flash ram.

Flexible Options

The firmware options for the PVD 5660 module allow the module to be configured to match the required application and budget. Options can be added easily by simply purchasing a license code, no hardware to install, and no re-programming is required.

Flexible Inputs

Inputs can be SD or HDTV, the input standard and format is automatically detected. Add the optional second input and it can be used as a dual channel frame synchronizer with support for seamless input switching via GPI input or the control system.

Flexible Reference

Genlock to the common rack reference, one of the input sources or an external reference input. SDTV bi-level and HDTV-tri level sync sources are supported, with automatic detection of the connected reference standard. Cross locking capability allows the module to cross lock between compatible frequencies.

Flexible Audio Processing

Support for embedded audio and external audio inputs is comprehensive. Multiple audio crossbars in the audio pathways provides for complete control over audio mapping. 4 assignable DolbyE synchronizers will maintain guard band alignment with auto tracking delay and several user adjustable audio delay offsets. A fully featured 24 channel audio processing stage provides adjustable gain / phase / mute capability as well as overload and silence detection. Each of the 4 outputs has a dedicated 16 channel audio embedder with its own 24 x 16 mono crossbar.

Flexible Video Processing

Each of the 4 outputs has its own dedicated test pattern generator providing a number of test pattern choices. Individual digital video processing stages provides for the adjustment of gain / hue / pedestal as well as selectable color space conversion and adjustable aperture correction. Each channel also has a programmable video delay of up to 3 frames adjustable in frame, line and pixel increments for precise output timing.

Flexible Internal Signal Routing

Two internal signal routers allows the modules three internal ARCs [aspect ratio converters] and the optional down converters, cross converter and up converter to be mapped across any input and output combination providing complete flexibility over module function.

Flexible Applications

With the level of flexibility offered in this compact module it can be easily tailored to address almost any application in broadcast, from a simple single channel frame synchronizer + ARC, to a complex dual channel frame sync and conversion product outputting perfectly timed simultaneous up/down/cross conversions, all with their own embedded audio combinations mapped onto its four SDI outputs.

Possibilities are endless.....

Features

- Compact dual channel frame synchronizer module
- Includes Basic and Advanced ARC (Aspect Ratio Conversion) in SDTV mode
- Supports SDI video standards up to 1.5Gbit
- Bi-level or tri-level reference input, auto detect, cross lock compatible
- Robust "flywheel" frame synchronizer functionality
- Seamless switching between input sources (with second input option)
- Firmware plug in options:
 - OC-5660-SCND** - Second Input Option
 - OC-5660-DWN** - Basic Down Converter (2 for dual inputs)
 - OC-5660-UPXD** - HQ UP/DOWN/CROSS conversion capability
 - OC-5660-NR** - Noise reduction
- 4 independent outputs, user mapped to any internal resource
- Each output (4) has independent 10 bit digital video processing providing:
 - Adjustable Gain, Saturation, Pedestal and Hue
 - Adjustable Aperture correction
 - Color space conversion (601 > 709 and 709 > 601 or transparent)
 - Integral test pattern generator with multiple patterns
 - Adjustable video timing delay
- De-embedd complete audio payload from each SDI input (16 channels)
- 4 x external AES inputs and outputs (transformer coupled)
- 20 x 28 AES audio input crossbar
- Selectable audio pathways through synchronizer
 - 8 x AES through sample rate converters (selectable on/off)
 - 12 x AES - including 4 DolbyE synchronizers
 - 4 x AES bypass channel synchronized to SDI input 1
 - 4 x AES bypass channels synchronized to SDI input 2
- 24 channel audio processing with adjustable gain / phase / mute
- Audio is delayed to track video synchronizer automatically
- User adjustable audio delays in multiple zones
- DolbyE Synchronizers automatically maintain Guard Band timing
- No "pops and clicks" in audio even when frames are dropped / added
- 4 Independent output embedders (16 channel) for each output
- 4 independent 24 x 16 mono output crossbars
- 40 x 8 mono crossbar for external AES outputs
- Store 7 module user presets, and switch between 2 with GPI
- External GPI input user configurable:
 - Seamless switch between inputs (with second input option)
 - Freeze input 1 (or 2 with second input option)
- AFD / Closed caption and timecode transcoding through format converters
- All settings accessible through the LYNX control system using windows GUI
- All settings stored in internal flash RAM and are preserved through power cycles
- Error reporting / logging and full SNMP support with control system options

Specifications (PVD 5660 D / PVD 5660 B)

Video Inputs

Signal Type	Serial digital video SMPTE 292M, 344M, 259M-C
Input standards	SDI video formats up to 1.5Gbit - see table*
No. Of inputs	1 (standard) and 1 optional input for dual channel operation
Connector	75 Ohm BNC
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)
Connection	75 Ohm BNC

Video Outputs

Signal Type	Serial digital video SMPTE 292M, 344M, 259M-C
Output standards	SDI video formats up to 1.5Gbit - see table*
No. Of outputs	4 with 2 x SDI out of each output.
Connector	75 Ohm BNC
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 4 outputs
Video adjustments	Gain / Saturation / Hue / Pedestal
Aperture correction	Adjustable for all four output channels independently
Color space conversion	601 > 709 or 709 > 601 or transparent (selectable)
Test Generator	Independent multi-format video test generator for each output (4) provides the following user selections: Full screen Red, Green, Blue, Yellow, Magenta, Cyan, Black, White, 15% grey, Pathological EQ, Pathological PLL, Pathological PLL/EQ, 75% color bars, Color bars on red.

AES Audio Inputs / outputs

Signal	<i>PVD 5660 B</i> = AES3 id unbalanced, <i>PVD 5660 D</i> = AES3 balanced
No. of inputs / outputs	4 x AES in and 4 x AES out (assignable)
Connectors	<i>PVD 5660 B</i> = BNC 75 ohm, <i>PVD 5660 D</i> = Female 25 pin SubD, 110 ohm
Coupling	Transformer (isolated)

Audio Processing

De-embedder	De-embed all audio (4 audio groups = 16 channels) from each input source.
Audio input matrix	20 x 28 AES input crossbar for channel shuffle / routing prior to proc stages.
Audio pathways	Multiple internal paths: • 8 x AES into SRC (sample rate converters) - selectable ON/OFF • 12 x AES with no SRC (DolbyE transparent) <i>Above includes 24 channel (mono) audio processing with adjustable gain / phase / mute with overload and silence detection.</i> • 4 x AES bypasses all processing synchronized to input 1 • 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. Advanced audio processing removes "pops and clicks" even when frame sync drops/adds frames. Manually adjustable audio delays (max 330ms) provided in the following areas: • Post de-embedding for each SDI input, (global) • External AES input, individual (4) • Pre-Embedding for each SDI output (4) (global) • External AES outputs, (global)

Audio Processing (cont.)

Output Crossbars	• 4 independent 24 x 16 mono output crossbars feeding embedders for each o/p • 1 mono output crossbar (40x8) for 4 external AES outputs
Audio Embedder(s)	Independent for each output channel (4) embedding 16 audio channels.

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. Note: Due to the extensive user settings provided the Control system is MANDATORY to use this module
External GPI	Single GPI input on BNC connector. (Function configurable) • Seamless input switching (if second input option fitted) • Freeze input 1 (or input 2 if second input option fitted) • Toggle through 2 user saved presets (4 total) - option

Electrical Specifications

Operating Voltage	12 VDC
Power Consumption	19 W
Safety	IEC 60950/ EN 60950/ VDE 0805

Mechanical

Size	283mm x 78mm
Weight	CardModule 200g, connector plate 100g
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

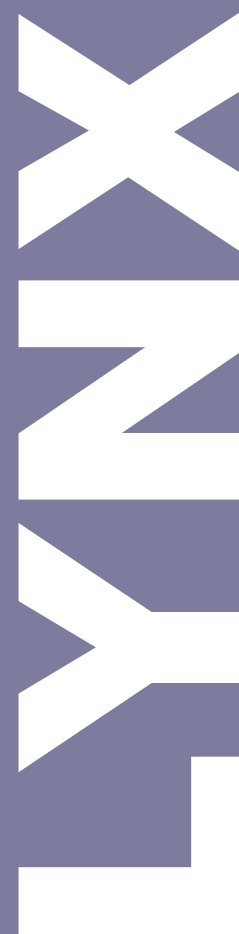
* Supported Video Standards

Bits / Color	10 Bit / 4:2:2 (Y,Cr,Cb)
Formats : SDTV	525 / 59.94Hz, 625 /50Hz
Formats : 1.5 Gbit	720p / 60 / 59.94 / 50 / 30 / 29.97 / 25 / 24 / 23.98 Hz 1080i / 60 / 59.94 / 50 Hz 1080p / 30 / 29.97 / 25 / 24 / 23.98 Hz 1080psF / 25 / 24 / 23.98 Hz Level A

Ordering Information

Part Number	Model	Description
5155015660	P VD 5660 D	SD/HD Frame Synchronizer and ARC (balanced AES3 I/O)
5155025660	P VD 5660 B	SD/HD Frame Synchronizer and ARC (unbalanced AES3id I/O)
Options (licence codes, field installable)		
1000000010	OC-5660-SCND	Second input option
1000000011	OC-5660-DWN	Basic down converter (2 required for 2nd input)
1000000017	OC-5660-UPXD	HQ Up/Down.Cross converter
1000000012	OC-5660-NR	Nose Reduction

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