

## 3Gbit SDI Frame Synchronizer with Up/Down/Cross Converter

- Supports SDI 3G (level A+B)/HD/SD formats (auto-detect)
- Up/Down/Cross Converter with selectable fast scale mode
- Converter automated by AFD, WSS or VI mode
- Region of Interest scaler
- Converts between 3G Level A and B Dual Link or vice versa
- Optional fiber I/O
- Auto changeover or GPI switch between electrical and optical input
- Robust "flywheel" synchronization for problematic sources
- "Cross lock" compatible reference input
- All 16 channels of audio de-embedded from SDI input
- Audio delayed to match video processing delay and re-embedded
- Integrated test pattern generator
- Up to 30 frames of programmable delay (for timing)

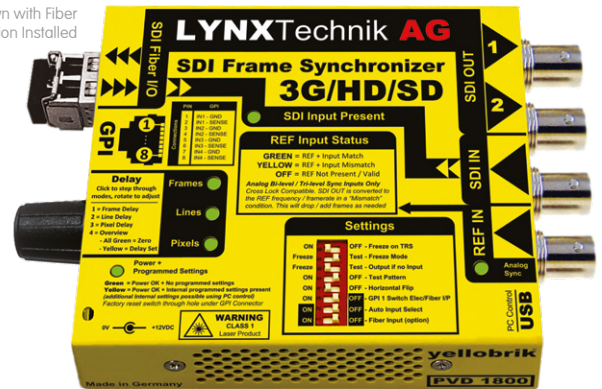
The PVD 1800 is a broadcast quality compact SDI frame synchronizer with high quality Up/Down/Cross converter and scaler for professional applications in the Broadcast, Post Production and Pro A/V industry.

The frame synchronizer utilizes robust "flywheel" algorithms that will accommodate a wide variety of low quality asynchronous SDI sources. All embedded audio is extracted and delayed automatically to match the video processing delay. The module also provides up to 30 frames of programmable output delay, adjustable in frames, lines and pixels.

The Up/Down/Cross converter can convert between 3G/HD/SD video standards and has a selectable fast scale mode (<10 lines delay). In addition, the converter has a powerful Region of Interest (ROI) scaler that allows the user to extract a specific region of the incoming video and to output this as a full format SDI output.

The module is fully compatible with the yelloGUI software package, so the module can be configured, controlled and updated using a PC or MAC.

Shown with Fiber SFP Option Installed



### Technical Specifications

<b>SDI Input</b>	1 x 75 Ohm BNC electrical SDI input + 1 x optional fiber SDI input
	Serial digital video SMPTE, 292M, 424M, 259M with automatic video format and standard detection
	SMPTE 424M, SMPTE 292M, SMPTE 259M 3G Level A & B-DL & B-DS according to SMPTE ST 425-1 with image formats 1280 x 720 and 1920 x 1080
	For a detailed list of supported formats please refer to the correlating article in our knowledge base ( <a href="http://www.lynx-technik.com">www.lynx-technik.com</a> > support > tech.support)
	Electrical Return Loss: >15dB from 5MHz to 1.5GHz, >10dB from 1.5GHz to 3GHz
<b>SDI Outputs</b>	2 x 75 Ohm BNC electrical SDI outputs. SMPTE, 292M, 424M, 259M 1 x optional fiber SDI output SDI output follows input format
	Electrical Return Loss: >15dB from 5MHz to 1.5GHz, >10dB from 1.5GHz to 3GHz
	Timing Jitter: <0.2 UI @ 270Mbit/s, <1.0 UI @ 1.5Gbit/s, <2.0 UI @ 3Gbit/s
	Alignment Jitter: <0.2 UI @ 270Mbit/s, <0.2 UI @ 1.5Gbit/s, <0.3 UI @ 3Gbit/s
	Automatic cable EQ (Belden 1694A cable) 340m @ 270Mbit/s, 150m @ 1.5Gbit/s, 110m @ 3Gbit/s
<b>Fiber I/O</b>	Optional plug in SFP for optical SDI I/O (see fiber options table) SMPTE 297M - 2006
<b>Reference Input</b>	SDTV: Analog 525 or 625 bi-level sync HDTV: All tri-level sync standards (exceptions 1080p 50/59.94/60Hz) Cross lock compatible
	SMPTE 274M, SMPTE 296M - 75 Ohm BNC connector
<b>Video Delay</b>	Timing Adjustment: Up to 30 frames. Manually adjustable in frame / line / pixel increments
<b>GPI</b>	Connector: RJ45 with 4 x External GPI inputs: <b>GPI 1</b> - used for Electrical / Optical SDI changeover <b>GPI 2</b> - used to "freeze" the SDI output <b>GPI 3</b> - (low) enable "latch" mode <b>GPI 4</b> - (low) disables "latch" mode
<b>USB</b>	Mini "Type B" connection used for yelloGUI PC control and firmware updates
<b>Power</b>	+12VDC @ 5.8W nominal (without SFP) - (supports 7 - 24VDC input range)
<b>Physical</b>	Size: 138mm x 90mm x 22mm (5.43" x 3.54" x 0.86") including connectors Weight: 230g (8.11oz)
<b>Ambient</b>	5 - 40°C (41 - 104°F) 90% Humidity (non condensing)
<b>Model #</b>	PVD 1800 - (EAN# 4250479324596)
<b>Includes</b>	Module, AC power supply, USB cable

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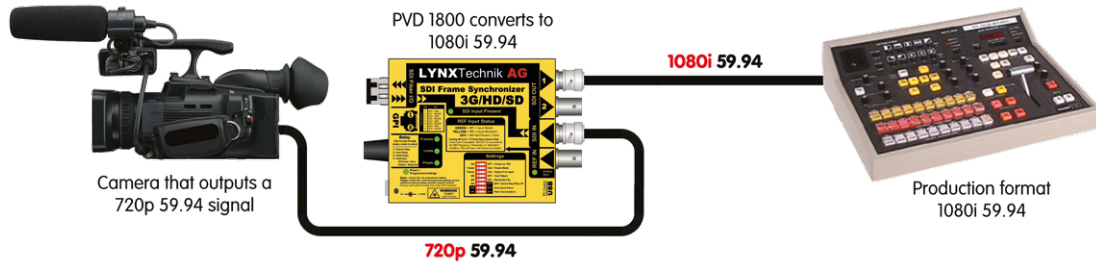
SDI Fiber Transmitter Options			
Model	Description	Power	
OH-TX-1-LC / ST / SC	SFP Fiber TX - Singlemode - LC, ST or SC conn. - 10km	-5dBm (1310nm)	
SDI Fiber Receiver Options			
Model	Description	Sensitivity	
OH-RX-1-LC / ST / SC	SFP Fiber RX - Singlemode - LC, ST or SC connector	-18dBm	
SDI Fiber Transceiver Options			
Model	Description	Power	Sens
OH-TR-1-LC	SFP Fiber RX/TX - Singlemode, LC connector - 10km	-5dBm	-16dBm
OH-TR-0-850-MM	SFP Fiber RX/TX - Multimode, LC connector - 300m	-5dBm	-15dBm
SDI CWDM Fiber Transmitter Options			
Model	Description	Power	
OH-TX-4-XXXX-LC	CWDM SFP Fiber TX - Singlemode LC conn. - 40km XXXX=Wavelength. 18 according to ITU T G692.2 1270nm through 1610nm	-1dBm	
SDI CWDM Fiber Transceiver Options			
Model	Description	Power	Sens
OH-TR-4-XXXX-LC	CWDM SFP Fiber RX/TX - Singlemode LC conn. - 40km XXXX=Wavelength. 18 according to ITU T G692.2 1270nm through 1610nm	-1dBm	-20dBm

### Up/Down/Cross Converter and Scaler

The PVD 1800 includes an integrated broadcast quality Up/Down/Cross Converter that converts between 3G, HD and SD formats. The converter uses the same state of the art technology that is used in the greenMachine® products. A selectable fast scale mode will deactivate the frame synchronizer and can reduce the processing delay to less than 10 lines, a fraction of a frame. In addition, the converter can be automated by the incoming format description of the SDI (AFD, WSS or VI).

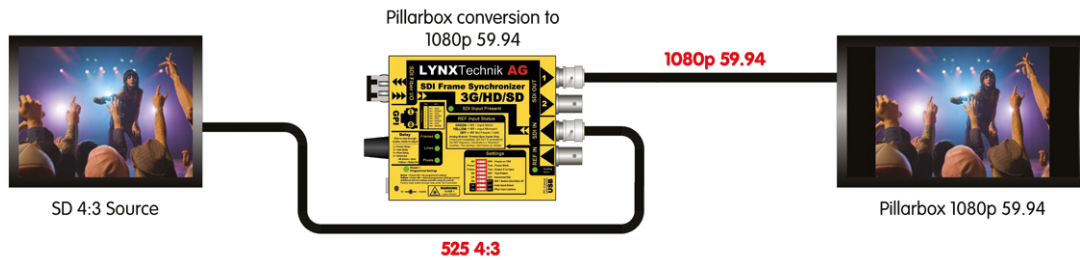
#### Cross convert between HD and 3G standards

With the cross conversion functionality of the PVD 1800 can convert between 720p, 1080i and 1080p resolutions.



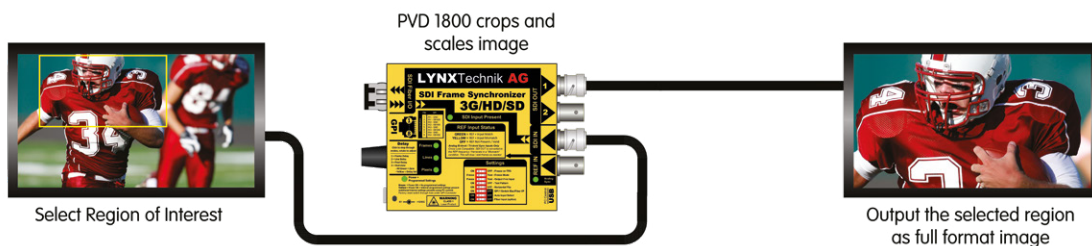
#### Up or down convert between SD and 3G/HD standards with aspect ratio conversion

The PVD 1800 can up or down convert between SD SDI and 3G/HD and will aspect ratio convert if required.



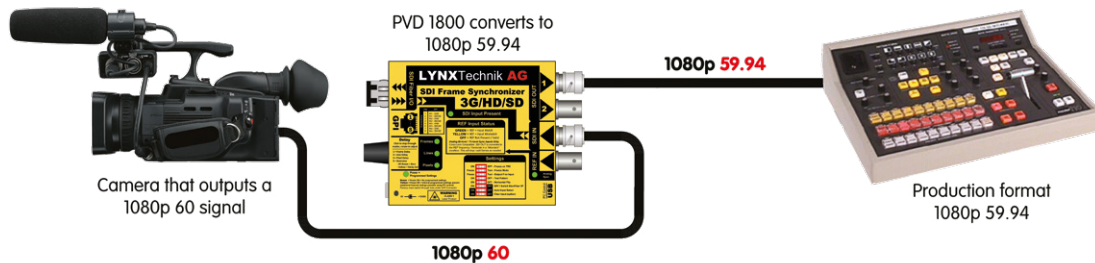
#### Region of Interest (ROI) scaler

The scaler of the PVD 1800 allows for a Region of Interest (ROI) selection. The user can select any region of the incoming video signal for output as a full video signal. The size and position of the output image can be freely adjusted.



#### Frame Rate Converter

The converter of the PVD 1800 can perform a simple frame rate conversion by adding or dropping frames.



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### Cross Lock and Frame Rate Conversion

The frame synchronizer is fully cross lock compatible, meaning it can cross lock between different standards. With a specific reference signal connected and the converter in bypass mode, the synchronizer will drop or add frames to achieve a correctly synchronized (frame rate converted) SDI output. During all conversions, precise audio video timing is preserved and no "pops" or "clicks" or any audio disturbances will be present (even while dropping and adding frames).

**Note:** This conversion simply drops and adds frames to achieve the desired output frame rate and will not provide the performance typical of a fully featured standards converter.

Please refer to the tables below for the conversion possibilities.

SDI inputs with @ 23.98/29.97/59.94Hz Frame Rates

Reference Signal	23.98Hz		24Hz	
	29.97Hz	30Hz	25Hz	
	59.94Hz	60Hz	50Hz	
SDI Input	SDI Output Formats			
525 / 59.94Hz	525 / 59.94Hz	525 / 60Hz	625 / 50Hz	
720p / 59.94Hz	720p / 59.94Hz	720p / 60Hz	720p / 50Hz	
720P / 29.97Hz	720p / 29.97Hz	720p / 30Hz	720p / 25Hz	
720p / 23.98Hz	720p / 23.98Hz	720p / 30Hz	720p / 24Hz	
1080i / 59.94Hz	1080i / 59.94Hz	1080i / 60Hz	1080i / 50Hz	
1080p / 59.94Hz	1080p / 59.94Hz	1080p / 60Hz	1080p / 50Hz	
1080p / 29.97Hz	1080p / 29.97Hz	1080p / 30Hz	1080p / 25Hz	
1080p / 23.98Hz	1080p / 23.98Hz	1080p / 30Hz	1080p / 24Hz	

SDI inputs with @ 24/30/60Hz Frame Rates

Reference Signal	23.98Hz		24Hz	
	29.97Hz	30Hz	25Hz	
	59.94Hz	60Hz	50Hz	
SDI Input	SDI Output Formats			
525 / 60Hz	525 / 59.94Hz	525 / 60Hz	625 / 50Hz	
720p / 60Hz	720p / 59.94Hz	720p / 60Hz	720p / 50Hz	
720P / 30Hz	720p / 29.97Hz	720p / 30Hz	720p / 25Hz	
720p / 24Hz	720p / 23.98Hz	720p / 30Hz	720p / 24Hz	
1080i / 60Hz	1080i / 59.94Hz	1080i / 60Hz	1080i / 50Hz	
1080p / 60Hz	1080p / 59.94Hz	1080p / 60Hz	1080p / 50Hz	
1080p / 30Hz	1080p / 29.97Hz	1080p / 30Hz	1080p / 25Hz	
1080p / 30Hz	1080p / 23.98Hz	1080p / 30Hz	1080p / 24Hz	

SDI inputs with @ 25/50Hz Frame Rates

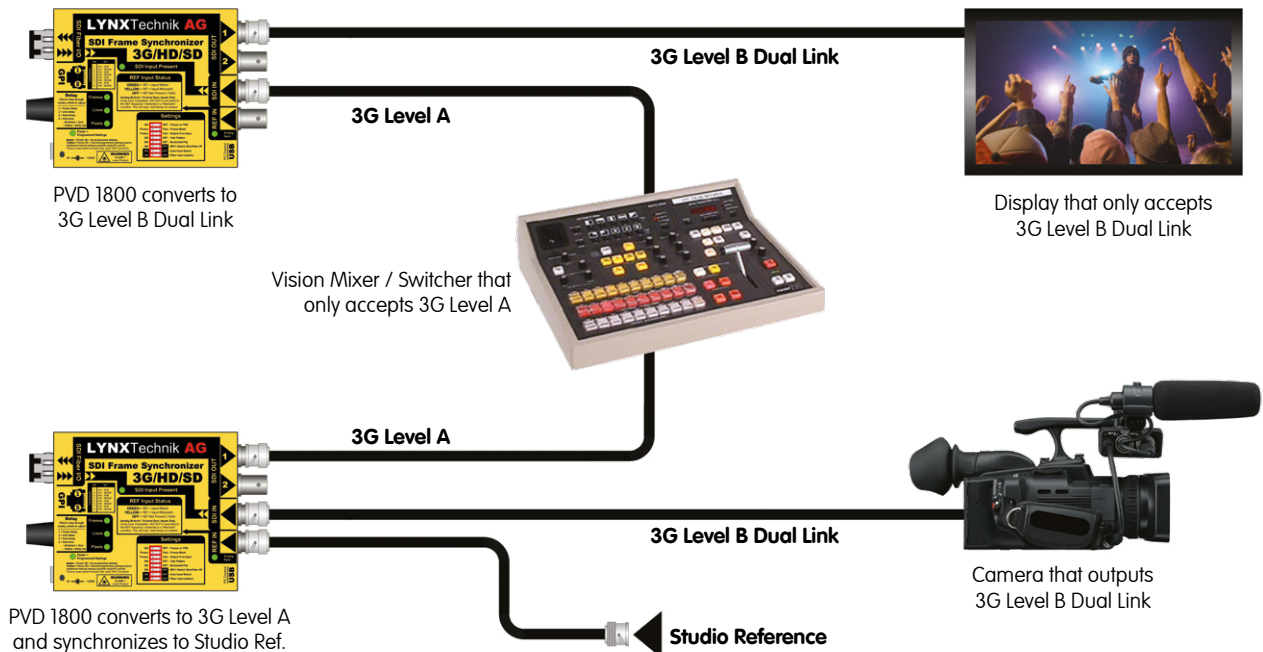
Reference Signal	23.98Hz		24Hz	
	29.97Hz	30Hz	25Hz	
	59.94Hz	60Hz	50Hz	
SDI Input	SDI Output Formats			
625 / 50Hz	525 / 59.94Hz	525 / 60Hz	625 / 50Hz	
720p / 50Hz	720p / 59.94Hz	720p / 60Hz	720p / 50Hz	
720P / 25Hz	720p / 29.97Hz	720p / 30Hz	720p / 25Hz	
1080i / 50Hz	1080i / 59.94Hz	1080i / 60Hz	1080i / 50Hz	
1080p / 50Hz	1080p / 59.94Hz	1080p / 60Hz	1080p / 50Hz	
1080p / 25Hz	1080p / 29.97Hz	1080p / 30Hz	1080p / 25Hz	

DROP FRAME CONVERSION

ADD FRAME CONVERSION

### 3G Level A to Level B Dual Link Conversion (or vice versa)

The PVD 1800 frame synchronizer is also a 3G Level A and Level B Dual Link converter. This is especially convenient since broadcast equipment is typically only compatible with either Level A or Level B. 3G Level A and Level B Dual Link are not compatible with each other, therefore making the PVD 1800 Frame Synchronizer + Converter an invaluable problem solver.



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