GMP 4kUPXD

greenMachine® titan

greenMachine titan Package

4k UHD Up/Down/Cross Converter

1x greenMachine titan

- 1x Frame Synchronizer + 1x 4k Frame Synch Extension
- 1x Scaler + 1x 4k Scaler Extension
- 1x Deinterlacer, 1x 3G Level A/B
- 1x Embed/De-embed + 1 x 4k Embed/De-embed Extension
- 1x Audio Proc
- 1x Timing
- 1x Video Adjust + 1x 4k Video Adjust Extension
- 1x Test Gen + 1 x 4k Test Gen Extension
- 1x Metadata
- 1x MiniNova

Features

- One channel of 4k UHD scaling incl. ROI functionality
- Deinterlacer for interlaced SD or HD input signal
- Supports video formats up to 4kUHD / 12Gbit/s (auto-detect)
- Bi-Level or tri-level reference input, auto detect
- Robust "flywheel" frame synchronizer functionality
- Up to 30 frames of output delay per video channel
- 4 Audio inputs and outputs switchable between analog and digital
- Up to 1.3s of programmable audio delay per audio pair
- HDMI 1.4b input and output
- Test signal generator per video processing channel
- Optional 3G SDI video fiber I/O, basic fiber or CWDM with all 18 wavelengths selectable
- Optional Ethernet LAN Fiber connection (basic or CWDM)
- Integrated local control panel for configuration and monitoring
- Extensive monitoring features such as image previews and audio level meters available on the local control panel and control software (greenGUI)
- Optional 12G SDI interface (BNC and fiber)
- Optional QuadLink<>Single Link Conversion APP
- CustomControl Panels (MiniNova Server Option)
- Full SNMP v2 support
- Full remote control using greenGUI control software
- Optional redundant power protection
- Optional 19" rack frame

Description

The greenMachine 4k Up/Down/Cross Converter Package includes a greenMachine titan hardware appliance and the necessary APPs to form a fully featured broadcast quality up/down/cross converter supporting formats up to 4k UHD.

This package is designed for applications that require dependable broadcast quality up/down/cross conversion and frame synchronization with full audio processing capability. The converter includes powerful scaling capabilities that allow a versatile Region of Interest selection.
The included 3G Level A/B APP makes the module compatible with either 3G SDI standard (Level A or Level B).

The module also supports 4x3G SDI (Quad Link) or 12G SDI (SIngle Link) input and outputs for 4k UHD signals.With the optional APP QuadLink<>SingleLink Conversion singlas can be interchanged in between the single link and quad link.

The extensive audio processing capability de-embeds all audio as well as providing support for four external audio inputs or outputs which individually can be configured to be analog or digital interfaces. Multiple internal crossbars allow for extensive audio shuffling. It also provides DolbyE synchronization, full audio processing as well as multiple adjustable user delays.

The greenMachine titan hardware comes with a fully featured local control interface with an LCD which displays image previews and audio level meters of the processed video paths in addition to the graphical user interface.

This greenMachine 4k UPXD Package also includes the MiniNova APP which enables the module to be remotely controlled and monitored via third party master control software.

Get the full story at **www.green-machine.com**

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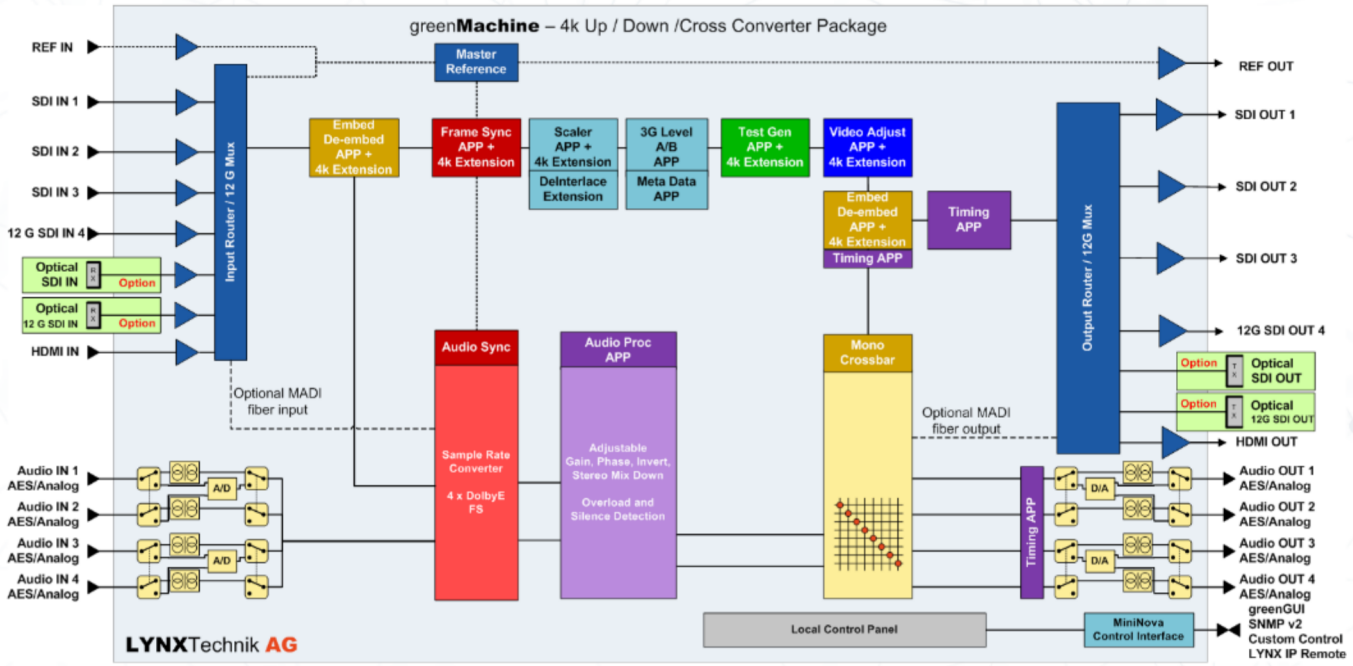
Functional Diagram

(With all APPs in the package deployed)



Included APPs

(More APPs are available at the greenStore™)

1x Scaler + 1x 4k Scaler Extension
The Scaler APP is a high quality broadcast video converter with powerful Region of Interest (ROI) selection. In addition to this the output image size can be adjusted just as flexible.
The 4k Extension enables processing of 4k UHD signals.

1x DeInterlace The DeInterlace APP is an extension for the scaler APP which will perform a broadcast quality deinterlacing for incoming interlaced video formats up to 3Gbit/s.
This APP extension performs a motion adaptive filtering which results in superb image quality.

1x Frame Synch + 1x 4k Frame Synch Extension
This utilizes robust "flywheel" synchronization for SDI sources up to 4k UHD. All embedded audio is extracted and delayed automatically to match the video processing delay. Audio is free from disturbances.
The 4k Extension enables processing of 4k UHD signals.

1x Embed/De-embed A high quality multi-format audio embedder and de-embedder application which can embed and / or de-embed all audio channels from the input SDI channel. The embedder can also embed DolbyE signals which in conjunction with the Frame Synchronizer APP will always maintain the guardband.

1x Test Gen The test generator APP is a basic audio & video test signal generator with a wide range of still video test patterns. The test generator can be configured to work in conjunction with the Frame Synchronizer APP to output a test pattern on TRS errors.
The 4k Extension enables generation of 4k UHD test signals.

1x Audio Processing This APP provides a multitude of audio processing functionality. Each mono audio channel has gain adjustment, mute, inversion, stereo to mono mix-down. In addition each mono channel has a silence and overload monitoring as well as a 1 kHz test signal generator.

1x 3G Level A/B The 3G Level A/B Converter APP can convert a 3G Level A input signal (acc. to SMPTE ST425-1 / 4:2:2, 10 Bit) into a 3G Level B Dual Link output signal (and vice versa). This is useful for upconversion of Level B input signal or fter downconvesion to output Level B signals.

1x MetaData The MetaData APP is a powerful tool to manage the embedded metadata of the video signals. Time Code, Closed Captions and Teletext can be monitored and/or converted. When using this APP the embedded metadata will first be blanked on the respective processing channel.

1x Video Adjust + 1x 4k Video Adjust Extension
The Video Adjust APP provides a range of video processing functionalities. These include saturation, gain, black and hue adjustments, blanking interval deletion and more. The 4k Extension enables processing of 4k UHD signals.

1x Timing The Timing APP is a powerful video and audio delay tool. Each video and AES audio channel can be individually delayed. The available video delay per channel is 30 frames and is adjustable in pixel, line and frame increments or milliseconds. The available audio delay is 1.3 seconds per AES audio channel.

1x MiniNova The MiniNova APP adds the remote interfaces including full SNMP v2 as well as LYNX IP remote control protocol. MiniNova also includes CustomControl which enables the user to design customized control panels. The custom panels can be accessed from a computer or an iPad.

For more details and to see the complete portfolio of APPs available, please visit:
www.lynx-technik-greenstore.com

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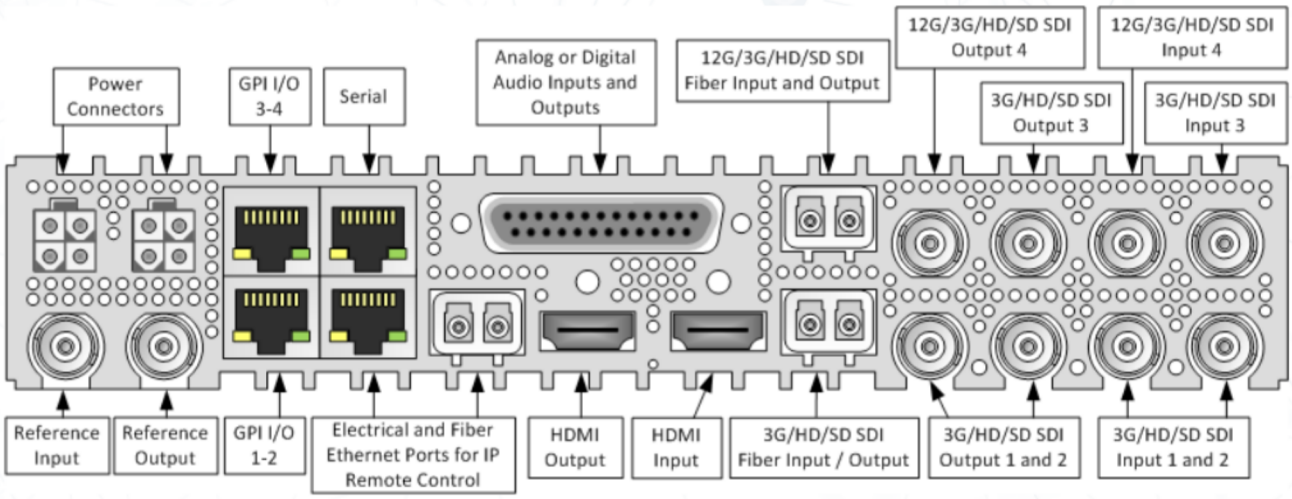
Connections



Options

RFR 6000 - 1RU 19” Rack Mount Chassis

The RFR 6000 is a compact 19” rack mounting solution occupying 1RU of vertical rack space. It can be configured to accommodate one or two greenMachines. In either configuration the RFR 6000 also provides innovative mounting options for one or two of the external RPS 6120 “brick” power supplies both of which can be securely mounted within the 19” 1RU footprint.

RPS 6120 - Redundant Power Supply

Each greenMachine includes the RPS 6120 primary power supply, an external desktop “brick” style power supply. An optional second power supply can be added for redundant protection.

The greenMachines support seamless auto changeover between primary and redundant power supply. LEDs on the front control panel of the greenMachine hardware indicate the status of the supplies.

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Fiber Options

The greenMachine titan is equipped with three SFP sockets. Two sockets are for SDI connectivity and the other is for Ethernet. They can accommodate a variety of plug in SFP fiber I/O options.

SFPs for simple point to point connections (singlemode or multimode versions) as well as SFPs for multiplexed bidirectional CWDM applications with up to 18 wavelengths are available.

Fiber options can be added at any time.

Basic 3G SDI Video Fiber Transmitter		Power	
OH-TX-1-Y-LC/ST/SC	SDI Fiber TX SFP - LC / SC or ST -1310nm	-5dBm	
3G SDI Video Fiber Receiver		**Sensitivity**	
OH-RX-1-LC/ST/SC	SDI Fiber RX SFP - LC / SC or ST (1270-1610nm)	-16dBm	
Basic 3G SDI Video Fiber Transceiver		**Power / Sensitivity**	
OH-TR-1-LC	SDI Fiber Transceiver Singlemode (1310nm)	-5dBm	-18dBm
OH-TR-0-850-MM	SDI Fiber Transceiver Multimode (850nm)	-5dBm	-15dBm
12G SDI Video Fiber Transceiver		**Power / Sensitivity**	
OH-TR-12-LC **OH-TX-12-LC** **OH-RX-12-LC**	12G SDI Fiber Transceiver, Singlemode (TX 1310nm) 12G SDI Fiber Transmitter, Singlemode (1310nm) 12G SDI Fiber Receiver, Singlemode Support 1.5G/3G/6G and 12G SDI	-5dBm (TX, TR)	-12dBm (RX,TR)
CWDM SDI Video Fiber Transitter (TX) and Transceiver (TR)		**Power / Sensitivity**	
OH-TR-4-XXXX **OH-TX-4-XXXX**	SDI Video Fiber Transceiver SFP CWDM (singlemode) 18 wavelengths available according to ITU T G692.2 1270nm through 1610nm. **XXXX** = wavelength	-1dBm	-20dBm (TR only)
Basic Ethernet Fiber Transceiver		**Power / Sensitivity**	
OH-TR-51	Ethernet Fiber Transceiver. Singlemode - 1310nm	-3dBm	-21dBm
CWDM Ethernet Fiber Transceiver		**Power / Sensitivity**	
OH-TR-54-XXXX	Ethernet Fiber Transceiver SFP CWDM (singlemode) 18 wavelengths available according to ITU T G692.2 1270nm through 1610nm. **XXXX** = wavelength	0dBm	-21dBm

For greenMachine the following regulatory and safety standards apply:

CE: EN 55103-1/1996, EN 55103-2 /1996, EN 60950-1/2006
Following the provisions of 2004/108/EC and 2006/95/EC directives.

FCC: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B of the FCC Rules.

The RPS 6120 power supply (EA11011H-120) complies with the following safety standards: **UL**, **CCC**, **PSE**

Specifications

SDI Inputs	3x 3G SDI video on 75 Ohm BNC connector - SMPTE, 292M, 424M, 259M with automatic video format and standard detection
	Return Loss: >15dB from 5MHz to 1.5GHz, >10dB from 1.5GHz to 3GHz
	Automatic cable EQ (Belden 1694A): 340m@270Mbit/s, 150m@1.5Gbit/s, 110m@2.97Gbit/s
12G SDI Input	1x 12G SDI video on 75 Ohm BNC connector - SMPTE 292M, 424M, 259M, 2081, 2082 with automatic video format and standard detection Return Loss: same as 3G SDI; >7dB to 6GBit/s; >4dB to 12GBit/s
HDMI Input / Output	1x 10 bit HDMI 4k/UHD 1.4b
Optical I/O (Optional)	1x 3G SDI SFP Transceiver (SMPTE 297M - 2006) 1x 12G SDI SFP Transceiver (SMPTE 292M, 424M , 2081 2082) - no SD SDI (270MBit)
Ethernet (LAN)	1x 10/100/1000 BaseT RJ45 Connector
Optical Ethernet (Optional)	IEEE 802.3z 1000Base-X Gbit/s Ethernet over Fiber at 1 Gbit/s (125 MB/s)
GPI I/O	4x general purpose inputs + 4x general purpose outputs - RJ45 Connectors
Reference Input	1x analog video reference on 75 Ohm BNC connector
	Analog bi-level (SDTV) or tri-level (HDTV) auto detect
SDI Output	3x SDI video on 75 Ohm BNC connector (SMPTE, 292M, 424M, 259M)
	Timing jitter: < 0.2 UI @ 270Mbit/s, < 1.0 UI @ 1.5Gbit/s, < 2.0 UI @ 2.97Gbit/s
	Alignment jitter: < 0.2 UI @ 270Mbit/s, < 0.2 UI @ 1.5Gbit/s, < 0.3 UI @ 2.97Gbit/s
	Return Loss: >15dB from 5MHz to 1.5GHz, >10dB from 1.5GHz to 3GHz
12G SDI Output	1x 12G SDI video on 75 Ohm BNC connector - SMPTE 292M, 424M, 259M, 2081, 2082 Return Loss: same as 3G SDI; >7dB to 6GBit/s; >4dB to 12GBit/s
Serial Data	EIA/ETA RS232C / RS422 /RS 485 (selectable through greenGUI) - RJ45 connector ESD protection for up to 16kV
Reference Output	1x analog video reference on 75 Ohm BNC connector
	Analog bi-level (SDTV) or ri-level (HDTV), cross lock capability
Audio I/O	4x input and 4x output on Sub-D 25 female connector
	Analog: input impedance >10k Ohm, Output impedance 150 Ohm
	Analog I/O full scale level: selectable 12, 15, 18, 20, 22, 24 dBu
	Digital: AES3 balanced transformer isolated; Digital output level: 4V peak to peak nom
Power	12VDC @ 45W nominal (supports 7 - 24VDC input range)
	2x power connections for redundant power supply
Mechanical	W: 218mm (1/2 19"), H: 44mm (1./5"), D: 225mm (8.86") - including connectors Weight: 1.4kg (3.09lb)
Ambient	Temperature: 5°C to 40°C (41°F to 104°F) maintaining specification
	Humidity: 90% maximum, non-condensing
Model #	GMP 4kUPXD EU - (EAN# 4250479325234)
	GMP 4kUPXD UK - (EAN# 4250479325241)
	GMP 4kUPXD US - (EAN# 4250479325258)
Includes	greenMachine, primary power supply and AC power cord, SubD 25 audio adapter PCB and quick reference guide (APPs not included - purchased separately from greenStore®)

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Rev 1.0- Specifications subject to change