green**Machine callisto Package**
Dual 3G/HD/SD Up/Down/Cross Converter

1x greenMachine callisto

	2x Scaler
	2x DeInterlace
	2x Frame Synchronizer
	2x 3G Level A/B
	2x MetaData
	2x Video Adjust
	2x Test Gen
	2x Embed/De-embed
	1x Audio Proc
	1x Timing
	1x MiniNova

Features

- Dual channel broadcast quality up/down/cross converter
- Versatile scalers with Region of Interest
- Supports video formats up to 3Gbit (auto-detect)
- Dual channel frame synchronizer
- Bi-Level or tri-level reference input, auto detect, cross lock compatible
- 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 input and output
- Test signal generator per video processing channel
- Optional 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
- CustomControl Panels
- Full SNMP v2 support
- Full remote control using greenGUI control software
- Optional redundant power protection
- Optional 19" rack frame

Description

The greenMachine Dual Up/Down/Cros Converter Package includes a greenMachine callisto hardware appliance and the necessary APPs to form a fully featured dual channel broadcast quality up/down/cross converter.

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

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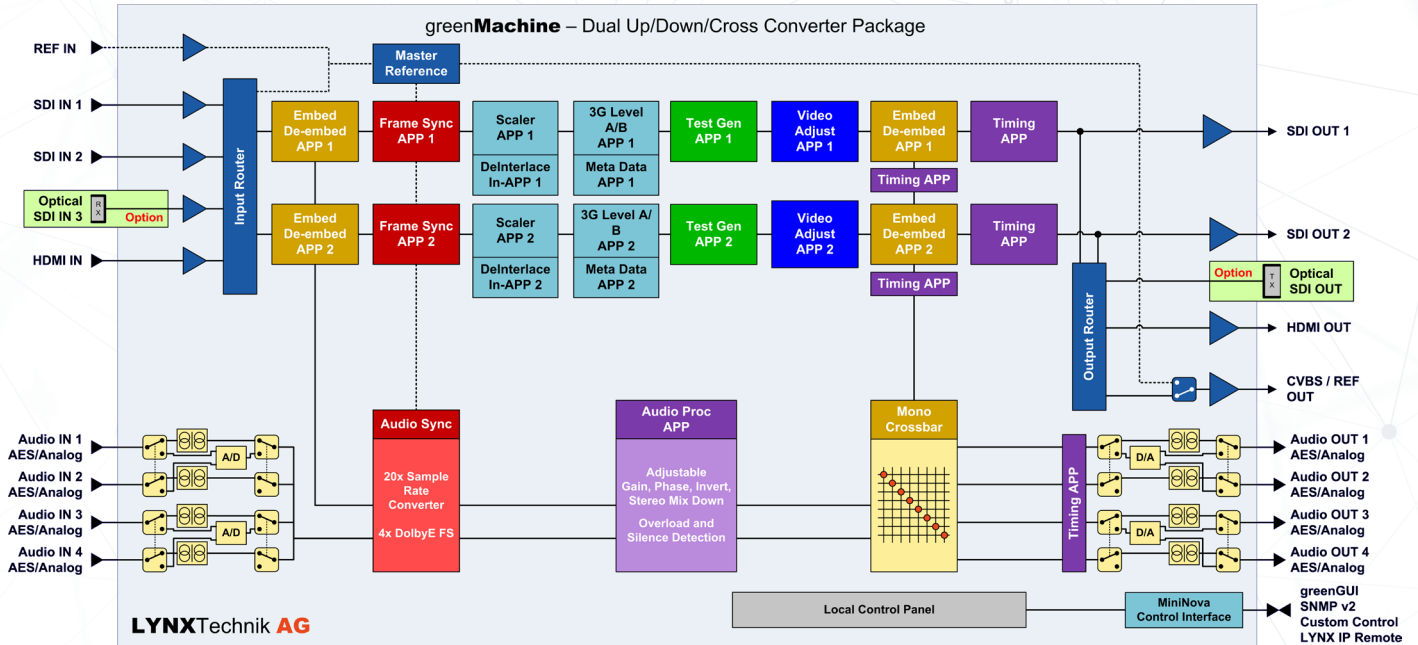
The greenMachine callisto hardware comes with a fully featured local control interface with an LCD which displays image previews and audio level meters of the processed video paths in addition to the graphical user interface.

This greenMachine Dual 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**

Functional Diagram
(With all APPs in the package deployed)

green**Machine** – Dual Up/Down/Cross Converter Package

Included APPs
(More APPs are available at the greenStore™)

2x Scaler The Scaler APP is a high quality broadcast video converter with powerful input cropping functionality which enables a full Region of Interest (ROI) selection. In addition to this the output image size can be adjusted just as flexible.
The Scaler can also be used as a simple frame rate converter.

2x DeInterlace The DeInterlace APP is an extension for the scaler APP which will perform a broadcast quality deinterlacing for incoming interlaced video formats.
This APP extension performs a motion adaptive filtering which results in superb image quality.

2x Frame Synchronizer This utilizes robust "flywheel" synchronization 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. Audio is free from disturbances even when dropping and adding frames.

2x Embed/De-embed A high quality multi-format audio embedder and de-embedder application which can embed and / or de-embed up to 16 mono audio channels of the SDI channel. The embedder can also embed DolbyE signals which in conjunction with the Frame Synchronizer APP will always maintain the guardband.

2x Test Gen The test generator APP is a basic audio & video test signal generator with a wide range of still video test patterns available for each processing channel. The test generator can be configured to work in conjunction with the Frame Synchronizer APP to output a test pattern on TRS errors.

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.

2x 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) even without the Video Converter/Scaler APP activated.
The 3G Level A/B APP is available per channel.

2x 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.

2x Video Adjust The Video Adjust APP provides a range of video processing functionalities. These include saturation, gain, black and hue adjustments, blanking interval deletion, horizontal image flip, aperture correction and YCrCb headroom clipping.
The Video Adjust APP can be used for each processing channel.

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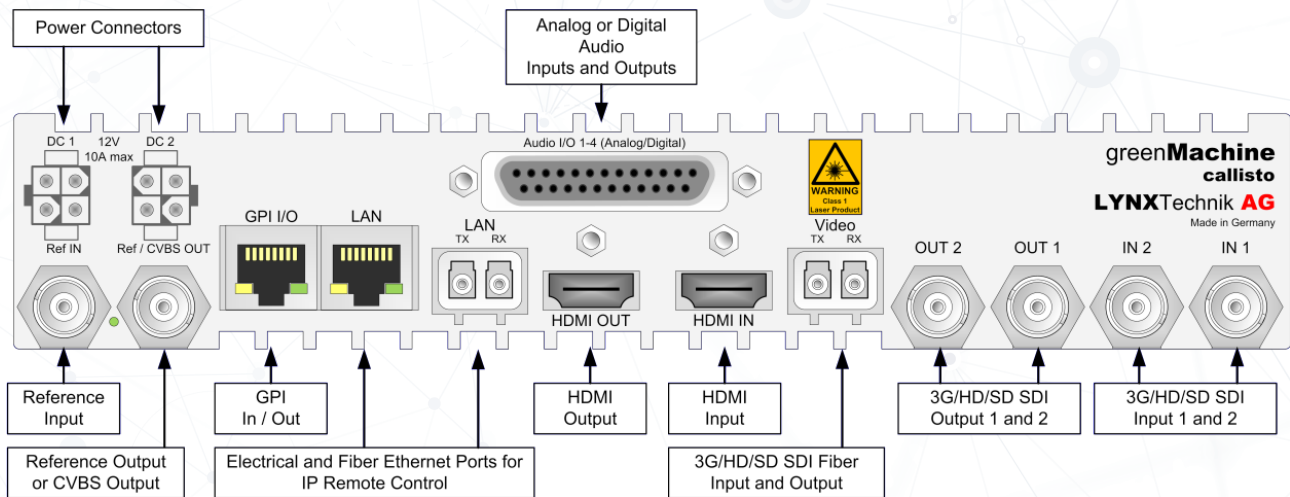
1x MiniNova The MiniNova APP adds the remote interfaces including full SNMP v2 as well as LYNX IP remote control protocol. MiniNova also includes CustomControl which enables the user to design customized control panels. The custom panels can be accessed from a computer or an iPad.

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

Connections

Power Connectors

Analog or Digital Audio Inputs and Outputs

DC 1 12V 10A max DC 2

Audio I/O 1-4 (Analog/Digital)

green**Machine**
callisto
LYNXTechnik **AG**
Made in Germany

Ref IN   Ref / CVBS OUT

GPI I/O   LAN

LAN
TX   RX

Video
TX   RX

OUT 2   OUT 1   IN 2   IN 1

WARNING Class 1 Laser Product

HDMI OUT   HDMI IN

Reference Input

GPI In / Out

HDMI Output

HDMI Input

3G/HD/SD SDI Output 1 and 2

3G/HD/SD SDI Input 1 and 2

Reference Output or CVBS Output

Electrical and Fiber Ethernet Ports for IP Remote Control

3G/HD/SD SDI Fiber Input and Output

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.

Fiber Options

The greenMachine callisto is equipped with two SFP sockets. One socket is for SDI connectivity and the other is for Ethernet. Both 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 SDI Video Fiber Transmitter		Power
OH-TX-1- LC / ST / SC	SDI Fiber TX SFP - LC / SC or ST (1310nm)	-5dBm

SDI Video Fiber Receiver		Sensitivity
OH-RX-1-LC / ST / SC	SDI Fiber RX SFP - LC / SC or ST (1270-1610nm)	-16dBm

Basic SDI Video Fiber Transceiver		Power / Sensitivity	
OH-TR-1	SDI Fiber Transceiver Singlemode (1310nm)	-5dBm	-18dBm
OH-TR-0-850	SDI Fiber Transceiver Multimode (850nm)	-5dBm	-15dBm

CWDM SDI Video Fiber Transmitter (singlemode)		Power
OH-TX-4-XXXX	SDI Video Fiber Transmitter SFP CWDM 18 wavelengths available according to ITU T G692.2 1270nm through 1610nm. **XXXX** = wavelength	-1dBm

CWDM SDI Video Fiber Transceiver (singlemode)		Power / Sensitivity	
OH-TR-4-XXXX	SDI Video Fiber Transceiver SFP CWDM 18 wavelengths available according to ITU T G692.2 1270nm through 1610nm. **XXXX** = wavelength	-1dBm	-20dBm

Basic Ethernet Fiber Transceiver		Power / Sensitivity	
OH-TR-51	Ethernet Fiber Transceiver Singlemode - 1310nm	-3dBm	-21dBm

CWDM Ethernet Fiber Transceiver (singlemode)		Power / Sensitivity	
OH-TR-54-XXXX	Ethernet Fiber Transceiver SFP CWDM 18 wavelengths available according to ITU T G692.2 1270nm through 1610nm. **XXXX** = wavelength	0dBm	-21dBm

Specifications

SDI Input	2x SDI video on 75 Ohm BNC connector
	SMPTE, 292M, 424M, 259M with automatic video format and standard detection
	Electrical Return Loss: >15dB from 5MHz to 1.5GHz, >10dB from 1.5GHz to 3GHz
	Automatic cable EQ (Belden 1694A cable) 340m @ 270Mbit/s, 150m @ 1.5Gbit/s, 110m @ 2.97Gbit/s
HDMI Input	1x 10 bit HDMI 1.4a
	24 bit (3x8 bit) and 30 bit (3x10 bit) deep color (R,G,B / Y,Cr,Cb / X,Y,Z)
Optical I/O (Optional)	1x Video SFP Transceiver (SMPTE 297M - 2006)
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	2x general purpose inputs + 2x general purpose outputs - RJ45 Connector
Reference Input	1x analog video reference on 75 Ohm BNC connector
	Analog bi-level (SDTV) or tri-level (HDTV) auto detect and cross lock capability
SDI Output	2x 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
	Electrical Return Loss: >15dB from 5MHz to 1.5GHz, >10dB from 1.5GHz to 3GHz
HDMI Output	1x 10 bit HDMI 1.4a
	24 bit (3x8 bit) and 30 bit (3x10 bit) deep color (R,G,B / Y,Cr,Cb / X,Y,Z)
Ref / CVBS Output	1x analog video reference on 75 Ohm BNC connector
	Analog bi-level (SDTV) or CVBS video: 525/59.94Hz, 625/50Hz
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 nominal
Power	12VDC @ 25W nominal (supports 7 - 24VDC input range)
	2x power connections for redundant power supply
Mechanical	W: 218mm (1/2 19"), H: 44mm (1.75"), D: 225mm (8.86") - incl. connectors Weight: 1.1kg (2.43lb)
Ambient	Temperature: 5°C to 40°C (41°F to 104°F) maintaining specification
	Humidity: 90% maximum, non-condensing
Model #	GMP DualUPXD EU - (EAN# 4250479324824)
	GMP DualUPXD UK - (EAN# 4250479324831)
	GMP DualUPXD US - (EAN# 4250479324848)
Includes	greenMachine, primary power supply and AC power cord, SubD 25 audio adapter PCB and quick reference guide

Rev 1.0 - Specifications subject to change