

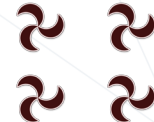
## greenMachine callisto Package Dual HD Bidirectional Transport Solution



2x greenMachine callisto



2x Dual Transport



4x Frame Synchronizer



2x MiniNova



1x Pair Bidirectional SDI SFPs



1x Pair Bidirectional Ethernet SFPs

## Features

- Dual channel bidirectional transport solution
- 2x HD Video (or 1x 3G Video) transport in both directions
- SDI and HDMI I/O
- 4x Audio transport in both directions
- 2x GPI in both directions
- 1x 1Gbit Ethernet transport
- Frame synchronizer per video channel
- Robust “flywheel” frame synchronizer functionality
- 4 Audio inputs and outputs switchable between analog and digital
- HDMI input and output
- Included SDI and Ethernet bidirectional SFP modules for full signal transport with two singlemode fiber cables
- Timed reference output
- 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 video and Ethernet CWDM fiber I/O with all 18 wavelengths selectable
- Optional redundant power protection
- Optional 19” rack frame

## Description

The greenMachine Dual Transport Package includes two greenMachine callisto hardware appliances, two Dual Transport APPs (one per greenMachine), four Frame Synchronizer APPs (one per transported video signal) and two MiniNova APPs. Additionally the package includes a set of bidirectional\* video transceiver SFP modules as well as a set of bidirectional\* Ethernet transceiver SFP modules.

*(\*The bidirectional SFP modules have an integrated WDM multiplexing and demultiplexing allowing the bidirectional signals to be transported over one singlemode fiber cable.)*

This package is a cost effective bidirectional transport solution for video, audio, Ethernet and GPI. It is a powerful and flexible solution for many Broadcast and ProAV applications that need to exchange multiple signals over only two single fiber links.

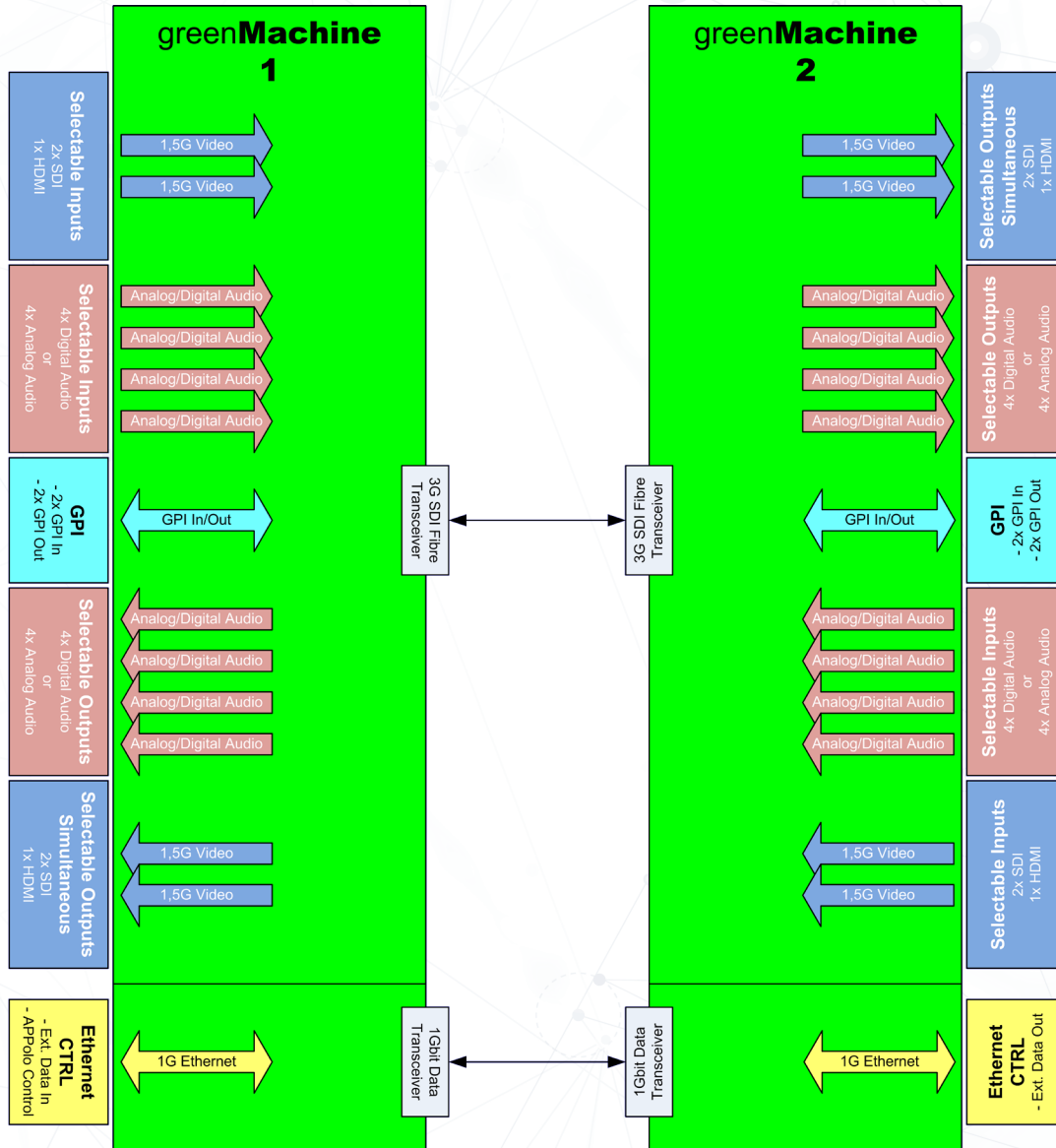
The greenMachine callisto hardware comes with a fully featured local control interface with an LCD which displays image previews and audio level meters of the processed video paths in addition to the graphical user interface.

The greenMachine Dual Frame Synchronizer 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](http://www.green-machine.com)

## Functional Diagram

(With all APPs in the package deployed)



## Included APPs

(More APPs are available at the greenStore™)



**2x Dual Transport** The Dual Transport APPs automatically pre-configures the two connected greenMachines resulting in a powerful dual transport solution. 2x HD video or 1x 3G video, 4x audio (analog or digital), 2x GPI and 1x 1Gbit Ethernet are transported bi-directionally.



**4x 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.

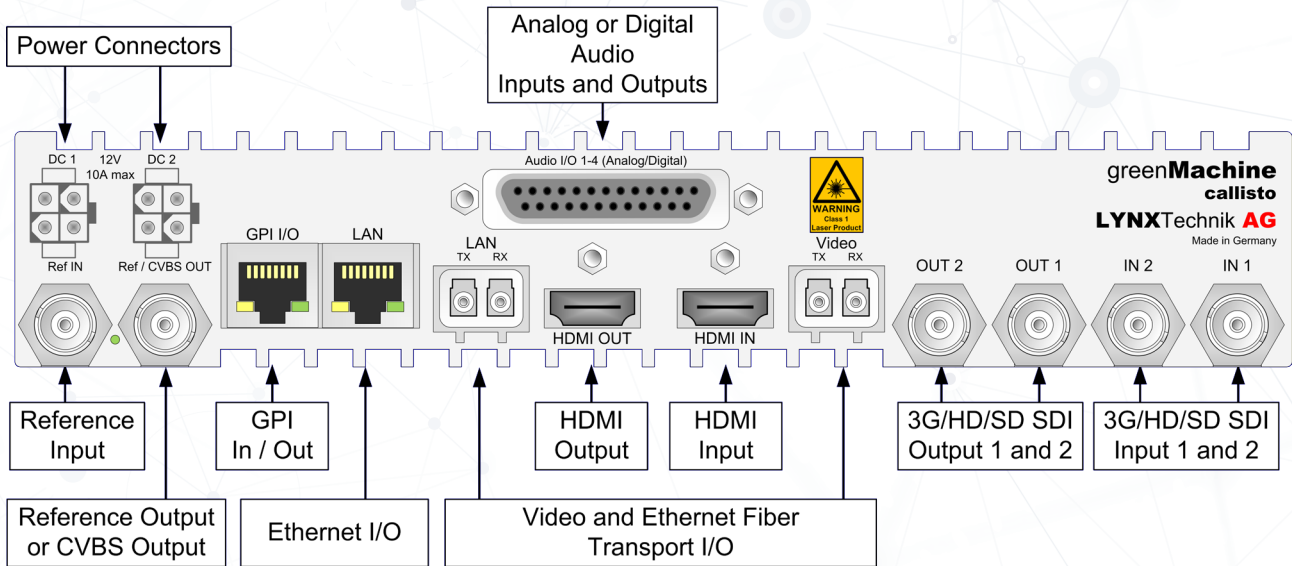


**2x MiniNova** The MiniNova APP adds the remote interfaces including full SNMP v2 as well as LYNX IP remote control protocol. MiniNova also includes CustomControl which enables the user to design customized control panels. The custom panels can be accessed from a computer or an iPad.

For more details and to see the complete portfolio of APPs available, please visit:

[www.lynx-technik-greenstore.com](http://www.lynx-technik-greenstore.com)

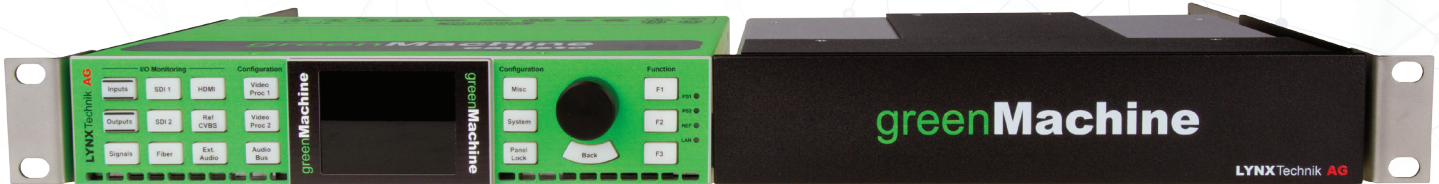
## Connections



## 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.



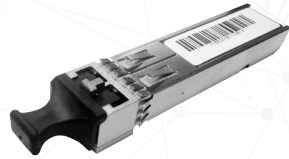
# GMP Dual Transport

# greenMachine<sup>®</sup> callisto

## Fiber Options

The greenMachine callisto Dual Transport Package comes with two sets of bidirectional SFP modules. One set for Video and one for Ethernet.

Alternatively the 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.

## Specifications

Basic SDI Video Fiber Transmitter		Power	
<b>OH-TX-1-LC / ST / SC</b>	SDI Fiber TX SFP - LC / SC or ST (1310nm)	-5dBm	
SDI Video Fiber Receiver		Sensitivity	
<b>OH-RX-1-LC / ST / SC</b>	SDI Fiber RX SFP - LC / SC or ST (1270-1610nm)	-16dBm	
Basic SDI Video Fiber Transceiver		Power / Sensitivity	
<b>OH-TR-1</b>	SDI Fiber Transceiver Singlemode (1310nm)	-5dBm	-18dBm
<b>OH-TR-0-850</b>	SDI Fiber Transceiver Multimode (850nm)	-5dBm	-15dBm
CWDM SDI Video Fiber Transmitter (singlemode)		Power	
<b>OH-TX-4-XXXX</b>	SDI Video Fiber Transmitter SFP CWDM 18 wavelengths available according to ITU T G692.2 1270nm through 1610nm. <b>XXXX</b> = wavelength	-1dBm	
CWDM SDI Video Fiber Transceiver (singlemode)		Power / Sensitivity	
<b>OH-TR-4-XXXX</b>	SDI Video Fiber Transceiver SFP CWDM 18 wavelengths available according to ITU T G692.2 1270nm through 1610nm. <b>XXXX</b> = wavelength	-1dBm	-20dBm
Basic Ethernet Fiber Transceiver		Power / Sensitivity	
<b>OH-TR-51</b>	Ethernet Fiber Transceiver Singlemode - 1310nm	-3dBm	-21dBm
CWDM Ethernet Fiber Transceiver (singlemode)		Power / Sensitivity	
<b>OH-TR-54-XXXX</b>	Ethernet Fiber Transceiver SFP CWDM 18 wavelengths available according to ITU T G692.2 1270nm through 1610nm. <b>XXXX</b> = wavelength	0dBm	-21dBm

<b>SDI Input</b>	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
<b>HDMI I/O</b>	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)
<b>Ethernet (LAN)</b>	1x 10/100/1000 BaseT RJ45 Connector
<b>GPI I/O</b>	2x general purpose inputs + 2x general purpose outputs - RJ45 Connector
<b>Reference Input</b>	1x analog video reference on 75 Ohm BNC connector Analog bi-level (SDTV) or tri-level (HDTV) auto detect and cross lock capability
<b>SDI Output</b>	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
<b>Ref / CVBS Output</b>	1x analog video reference on 75 Ohm BNC connector Analog bi-level (SDTV) or CVBS video: 525/59.94Hz, 625/50Hz
<b>Audio I/O</b>	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
<b>Optical Signal Transport</b>	1x Bidirectional singlemode fiber connection (SMPTE 297M - 2006) 1310nm and 1550nm (WDM) 11dB Optical Budget
<b>Optical Ethernet Transport</b>	1x Bidirectional singlemode fiber connection 1310nm and 1550nm (WDM) 18dB Optical Budget
<b>Power</b> (per greenMachine)	12VDC @ 25W nominal (supports 7 - 24VDC input range) 2x power connections for redundant power supply
<b>Mechanical</b> (per greenMachine)	W: 218mm (1/2 19"), H: 44mm (1.75"), D: 225mm (8.86") - incl. connectors Weight: 1.1kg (2.43lb)
<b>Ambient</b>	Temperature: 5°C to 40°C (41°F to 104°F) maintaining specification Humidity: 90% maximum, non-condensing
<b>Model #</b>	GMP DualTransport EU - (EAN# 4250479324855) GMP DualTransport UK - (EAN# 4250479324862) GMP DualTransport US - (EAN# 4250479324879)
<b>Includes</b>	2x greenMachine, 2x primary power supply and AC power cord, 1x pair of bidirectional video SFP, 1 pair of bidirectional Ethernet SFP, 2x SubD 25 audio adapter PCB and quick reference guide

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**

