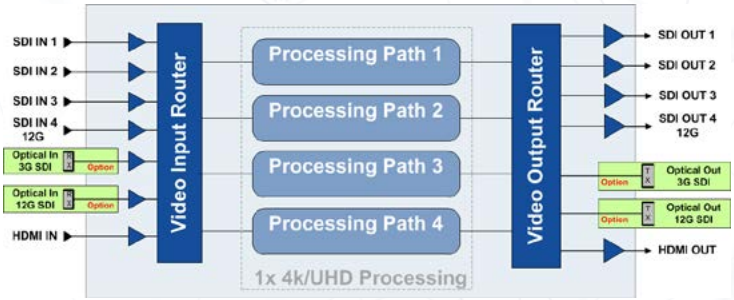
GM 6840

greenMachine® titan

Features

- 4x 3G or 1x 4K/UHD general purpose A/V processing appliance
- Internal input and output signal routers
- Compatible with all available greenMachine constellations
- Integrated control panel with color display for live image monitoring, audio level meters, status indication and menu driven control interface
- Small footprint: 1RU high x half 19” rack width
- 3x electrical SD/HD/3G SDI inputs. Level A and Level B DL
- 3x electrical SD/HD/3G SDI outputs. Level A and Level B DL
- 1x electrical SD/HD/3G/12G SDI Input. 12G Single Link / Quad Link 2SI Level A / BDL
- 1x electrical SD/HD/3G/12G SDI Output. 12G Single Link / Quad Link 2SI Level A /BDL
- 1x 4k/UHD HDMI input (1.4b) and 1x 4k/UHD HDMI output (1.4b): 4K 50/59.94/60Hz signals will be displayed in 4:2:0 color subsampling
- 1x Analog reference input and output (bi-level or tri-level sync)
- 1x Electrical LAN I/O connection
- 4x Balanced analog audio or digital AES Audio inputs
- 4x Balanced analog audio or digital AES Audio outputs
- 1x Optional MADI input/output on 3G SDI fiber interface*



- 4x GPI inputs and 4x GPI outputs
- 1x Optional SDI fiber I/O (basic fiber or CWDM): SD/HD/3G
- 1x Optional 12G SDI fiber I/O (basic fiber or CWDM): HD up to 12G
- 1x Optional Ethernet LAN fiber connection (basic or CWDM)
- Optional redundant power protection
- Optional 19” rack frame
- Nova controller included: Full remote control using greenGUI control software
- Full SNMP V2 support

Description

The greenMachine approach is unique. The hardware itself is a powerful general purpose audio and video processing appliance that can perform many different functions using one of the available greenMachine configurations (constellations), i.e. FS, UPXD, HDR etc. The user can select and licence just the constellation, or multiple constellations required at the point of order and can switch between these licenced constellations at any time. Additionally they may purchase licences for additional constellations in the future. As all constellations are pre-installed, un-licensed constellations can be deployed for testing and proof of system concept but will show watermarks at the outputs.

The greenMachine titan platform provides for simultaneous processing of up to four individual SD/HD/3G SDI signals or a single 4k/UHD SDI signal.

Input for 4k/UHD can be either 4x 3G SDI (2SI Quad Link) or 12G SDI (Single Link). Conversion between Single Link 12G SDI and 2SI Quad link signals (and vice versa) is included in the 4K/UHD constellations. Fibre SFP options are available for one SD/HD/3G SDI and one 12G 4k/UHD input and output.

The Nova controller (full remote control) is included in the basic framework

Constellations

GMC-Quad3G-FS	**Quad 3G 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.
GMC-4K-UPXD	**4K/UHD Up/Down Cross Converter** A broadcast quality 4K/UHD Up/Down/Cross converter that provides a multitude of conversion and scaling possibilities. The powerful input cropping functionality enables a full Region of Interest (ROI) selection and in addition, the output image size can be adjusted.
GMC-TESTOR-titan	**4K/UHD or 4x3G Audio & Video Test Generator** This provides a powerful audio & video test generator for a single 4K/UHD channel or 4 channels of up to 3G SDI. A wide range of test patterns are availble pre-installed, but the user can easily load own test patterns or images through the greenGUI.

(Examples only, more are available, ask your local LYNX representative)

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

www.lynx-technik.com

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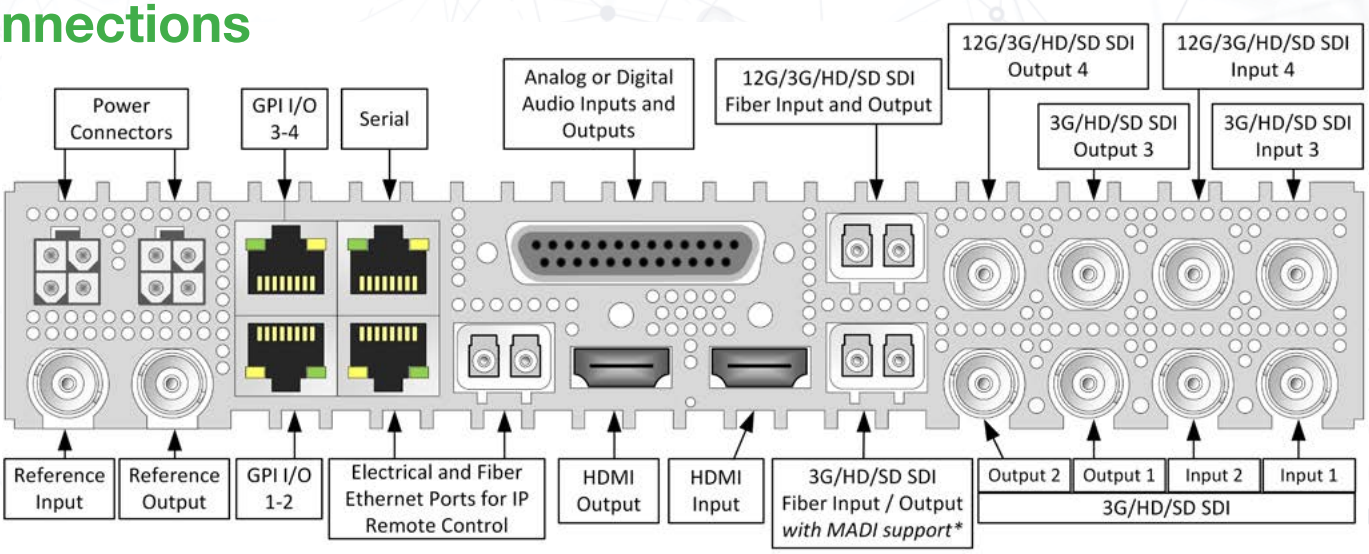
Connections



Specifications

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 6GHz; >4dB to 12GHz
SDI Outputs	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 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 6GHz; >4dB to 12GHz
SDI Input	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
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
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
	*64 channel MADI supported on selected constellations
Power	12VDC @ 45W nominal (supports 7 - 24VDC input range)
	2x power connections for redundant power supply
Mechanical	W: 218mm (1/2 19"), H: 44mm (1.75"), 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
Includes	greenMachine hardware, primary power supply and AC power cord, quick reference guide

Supported SDI Formats

SDTV Formats	525 / 59.94Hz 625 / 50Hz		
HDTV Formats	1080i / 50Hz 1080i / 59.94Hz 1080i / 60Hz 1080p / 23.98Hz 1080p / 24Hz 1080p / 25Hz 1080p / 29.97Hz	1080p / 30Hz 1080psf / 23.98Hz 1080psf / 24Hz 1080psf / 25Hz 720p / 23.98Hz 720p / 24Hz 720p / 25Hz	720p / 29.97Hz 720p / 30Hz 720p / 50Hz 720p / 59.94Hz 720p / 60Hz
3GBit/s Formats Level A and B	1080p / 50Hz 1080p / 59.94Hz 1080p / 60Hz		

12GBit/s Formats Single Link	3840 x 2160p / 50Hz 3840 x 2160p / 59.94Hz 3840 x 2160p / 60Hz
12GBit/s Formats Quad Link 2SI Level A and b (4 x 3Gbit/s)	3840 x 2160p / 50Hz 3840 x 2160p / 59.94Hz 3840 x 2160p / 60Hz

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Options

ABS Case for greenMachine

The transport case is perfect to keep your greenMachine®, cables and documents organized and in one place, while also protecting it from enviromental influences. With it's study design, our ABS Case is the ideal partner to transport your greenMachine® whenever it is not wired in a rack, standalone or any other system you can think of. The hard shell case protects your greenMachine® from most impacts in an average, busy work environment, while the inner foam coating prevents it from being scratched by cables, connectors or other equipment that can also be stored inside the case.

SFP Options

Basic 3G SDI Video Fiber Transmitter		Power	
OH-TX-1-Y-LC/ST/SC	SDI Fiber TX SFP - LC/SC or ST - 1310nm	-5dBm	
Basic 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 - LC - 1310nm	-5dBm	-18dBm
OH-TR-0-850-MM	SDI Fiber Transceiver, Multimode - LC - 850nm	-5dBm	-15dBm
12G SDI Video Fiber (support 1.5G/3G/6G and 12G SDI)		**Power / Sensitivity**	
OH-TR-12G-LC	12G SDI Fiber Transceiver, Singlemode - LC - 1310nm	-5dBm	-12dBm
OH-TX-12G-LC	12G SDI Fiber Transmitter, Singlemode - LC - 1310nm	-5dBm	–
OH-RX-12G-LC	12G SDi Fiber Receiver, Singlemode - LC	–	-12dBm
CWDM SDI Video Fiber Transmitter (TX) and Transceiver (TR)		**Power / Sensitivity**	
OH-TR-12G-XXXX-Y-LC **XXXX** = Wavelength	12G SDI Fiber Transceiver - CWDM capable - 10km* - LC 18 wavelengths acc. to ITU T G692.2 1270nm through 1610nm.	-2...+3 (dBm)	-10dBm (6G,12G) -14dBm (1.5G,3G)
OH-TX-12G-XXXX-LC **XXXX** = Wavelength	12G SDI Fiber Transmitter - CWDM capable - 10km* - LC 18 wavelengths acc. to ITU T G692.2 1270nm through 1610nm	-2...+3 (dBm)	–
OH-TX-4-XXXX-Y-LC **XXXX** = Wavelength	SDI Fiber Transceiver, Singlemode - CWDM capable - 40km* - LC 18 wavelengths acc. to ITU T G692.2: 1270nm through 1610nm.	-1dBm	–
12G SDI Video Fiber Bidirectional Transceiver		**Power / Sensitivity**	
OH-BD-12G-1270-LC	SDI Fiber Bidirectional Transceiver - WDM capable - 10km* - LC OH-BD-12G-1330-LC required at opposing end	-3...+3 dBm	-10dBm (6G,12G) -14dBm (1.5G,3G)
OH-BD-12G-1330-LC	SDI Fiber Bidirectional Transceiver - WDM capable - 10km* - LC OH-BD-12G-1270-LC required at opposing end	-3...+3 dBm	-10dBm (6G,12G) -14dBm (1.5G,3G)
Basic Ethernet Fiber Transceiver		**Power / Sensitivity**	
OH-TR-51-LC	Ethernet Fiber Transceiver, Singlemode - 10km* - LC - 1310nm	-3dBm	-21dBm
CWDM Ethernet Fiber Transceiver		**Power / Sensitivity**	
OH-TR-54-XXXX-LC **XXXX** = Wavelength	Ethernet Fiber Transceiver, Singlemode - CWDM capable - 40km* - LC 18 wavelengths acc. to ITU T G692.2 1270nm through 1610nm.	0dBm	-21dBm

* Distance is an approximation. Actual distances achieved can be longer or shorter depending on the type of fiber cable and accumulated optical losses in the fiber link. Determine link losses and perform optical budget calculations to ensure correct operation.

More SFP options are available, depending on your chosen constellation.

RFR 6000 - 1RU 19" Rack Mount Chassis

Rack mounting hardware which can accommodate one or two greenMachines in 1RU of rack space which also securely mounts the power supplies.

Note: Two power supplies can be mounted onto one RFR 6000. Please see more information in the RFR 6000 quick reference guide.

One greenMachine in Rack Mount

RXT 6001 19" Rack Extension for RFR 6000

The greenMachine is ideally suited for standalone applications but this powerful processing platform reaches its full potential when used within a system design.
The RXT 6001 is a compact and flexible rack extension for RFR 6000. It can be setup to hold up to four RPS A100 power supplies.

RXT 6001 installed in RFR 6000

RPS A100 - AC to DC Power Supply 12V/8A

The RPS A100 AC to DC Desktop power supply unit provides 100 watts of continuous output power. The power supply is equipped with IEC320-C14 AC inlet.

Plugs are available for regions EU, US and UK as well as an option without a power plug (N). When ordering just add the region shorthand at the end of the module name.

Ordering Information

greenMachine Titan Hardware		
GM 6840-1 **(N/EU/US/UK)**	**greenMachine titan (Processor, OS and NOVA)** Power plug Variants (please specify when ordering) GM 6840-1 N Power Supply without Power Cord GM 6840-1 EU Power Supply with EU Power Cord GM 6840-1 US Power Supply with US Power Cord GM 6840-1 UK Power Supply with UK Power Cord	EAN: 4250479327672
Accessories and Power Supply		
RFR 6000	1 RU 19" Rack Mount Chassis	EAN: 4250479324466
RXT 6001	19" Rack Frame Extension for RFR 6000	EAN: 4250479326507
RPS A100 **(N/EU/US/UK)**	AC to DC Desktop Power Supply Module 12V/8A (with None / EU / US / UK plug)	EAN: 4250479327955

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 A100 power supply (EA11011D-1200) complies with the following safety standards:
UL/cUL 62368-1, TUV EN 62368-1, CB IEC 62368-1, FCC, CE, BSMI, PSE, RCM, IRAM

Rev 2.7 - Specifications subject to change

RFR 6000

greenMachine® Rack Frame

greenMachine RFR 6000

19” Rack Frame for 1 or 2 greenMachines

Features

- Compact 1 RU design
- Accomodates one or two greenMachines
- Innovative mounting for up to two RPS A100 power supplies
- Rack position adjustable to Recessed, Flush or Protruded

Description

The greenMachines are ideally suited for standalone applications but these powerful processing platforms reach their full potential when used within a system design.

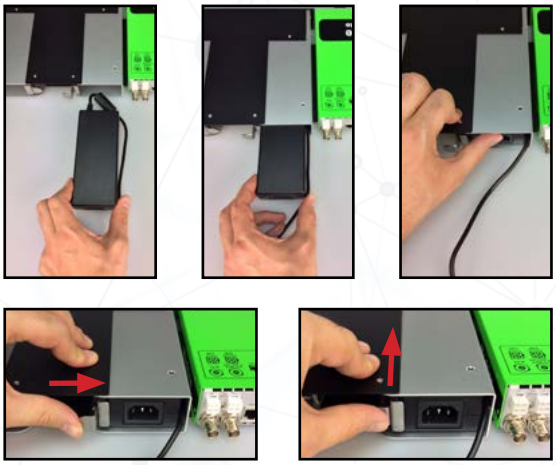
The RFR 6000 is a compact and flexible rack mounting solution. It can be setup to hold up to two greenMachines. Regardless which setup, the
RFR 6000 also provides an innovative mounting solution for two RPS A100 power supplies.

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

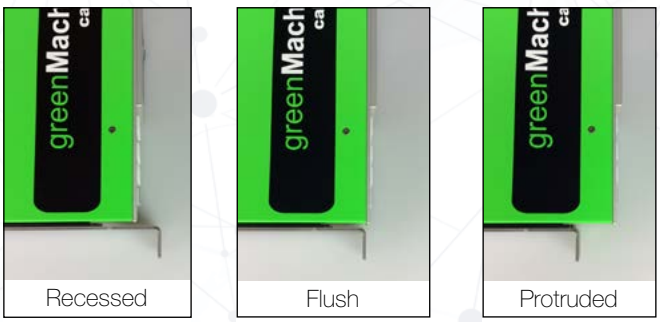
Specifications

Height	1RU
Width	19" rack mount
Depth Single Module	29.7cm (11.69")
Depth Two Modules	44.7cm (17.59")
Weight	1.5 kg (3.31 Lbs)
Model #	RFR 6000 - (EAN# 4250479324466)
Includes	RFR 6000 rack frame, Phillips screwdriver and quick reference guide.

Two greenMachines setup



Power supply mounting



Adjustable mounting position