greenMachine® Datasheet

titan GM 6840

Description

The greenMachine titan is a general-purpose hardware that comes pre-loaded with at least one license constellation (a constellation enables a pre-defined set of features). The greenMachine titan can process either four 3G-SDI inputs or a single 12G-SDI input. It supports up to UHD 3840×2160 @60 Hz and converts between single-link 12G-SDI to/from quad-link 3G-SDI (2SI). Loaded with the appropriate license it will handle color correction, routing, up down cross conversions, dynamic and static HDR conversions, frame sync and generate a myriad of test signals.

Constellations are perpetually owned software licences. They can be purchased separately at any time and exchanged between greenMachines. These constellations include extensive Up/Down/Cross converters (UPXD), Dynamic Segmented HDR to SDR Down Conversion (HDR Evie+), Test Pattern generator with multi Channel AV Delay Measurement & Correction (Testor AV) and more. Constellations can be deployed via LynxCentraal if they are not owned to test in a live system (watermarks will be applied to outputs).

Bi-Directional conversion between Single Link 12G-SDI and 2SI Quad link signals (and vice versa) is included. Optional fiber SFP options are available for one 3G-SDI and one 12G-SDI input and output.

Features

- 4x Full HD or 1x UHD general purpose AV processing platform
- Internal input and output signal routers
- 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 3G-SDI BNC inputs (Level A and Level B DL)
- 3x 3G-SDI BNC outputs (Level A and Level B DL)
- 1x 12G-SDI BNC Input
- 1x 12G-SDI BNC Output
- Bi-Directional 12G-SDI Single Link / 3G-SDI Quad Link 2SI
- 1x UHD HDMI input (1.4b) and 1x UHD HDMI output (1.4b): UHD 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 RJ45 LAN I/O connection
- 4x Balanced analog audio or digital AES Audio inputs
- 4x Balanced analog audio or digital AES Audio outputs
- 4x GPI inputs and 4x GPI outputs
- Optional MADI input/output on 3G-SDI fiber interface*
- Optional 3G-SDI fiber I/O (basic fiber or CWDM)
- Optional 12G-SDI fiber I/O (basic fiber or CWDM)
- Optional Ethernet LAN fiber connection (basic or CWDM)
- Optional secondary power supply for redundancy
- Optional 19" rack frame
- Full remote control via LynxCentraal
- Full SNMP V2 support

Functional Diagram

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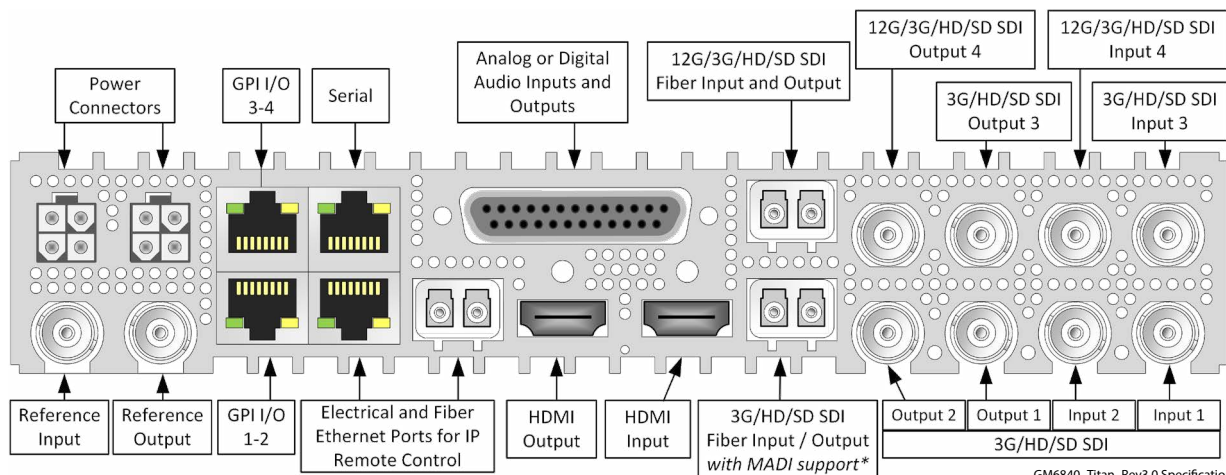
Hardware Specifications

SDI Input	1x 12G-SDI video on 75 Ohm BNC connector SMPTE 292M, 424M, 259M, 2082 with automatic video format and standard detection	**Optical Ethernet (Optional)**	IEEE 802.3z 1000Base-X Gbit/s Ethernet over Fiber at 1 Gbit/s (125 MB/s)
	Return Loss: same as 3G-SDI; >7dB to 6GHz; >4dB to 12GHz	**GPI I/O**	4x general purpose inputs - RJ45 Connectors
	3x 3G-SDI video on 75 Ohm BNC connector - SMPTE, 292M, 424M, 259M with automatic video format and standard detection		4x general purpose outputs - RJ45 Connectors
		Reference Input	1x analog video reference on 75 Ohm BNC connector
	Return Loss: >15dB from 5MHz to 1.5GHz, >10dB from 1.5GHz to 3GHz		Analog bi-level (SDTV) or tri-level (HDTV) auto detect
	Automatic cable EQ (Belden 1694A): 340m@270Mbit/s, 150m@1.5Gbit/s, 110m@2.97Gbit/s	**Reference Output**	1x analog video reference throughput (75 Ohm BNC connector)
			Analog bi-level (SDTV) or ri-level (HDTV), cross lock capability
SDI Outputs	1x 12G-SDI on 75 Ohm BNC connector (SMPTE 292M, 424M, 259M, 2082) Return Loss: same as 3G-SDI; >7dB to 6GHz; >4dB to 12GHz	**Serial Data**	EIA/ETA RS232C / RS422 /RS 485 (selectable through LynxCentraal)
			RJ45 connector ESD protection for up to 16kV
	3x SDI video on 75 Ohm BNC connector (SMPTE, 292M, 424M, 259M)	**Audio I/O**	4x input and 4x output on 25 pin D-Sub female connector
	Timing jitter: <0.2 UI @ 270Mbit/s, <1.0 UI @ 1.5Gbit/s, <2.0 UI @ 2.97Gbit/s		Analog: input impedance >10k Ohm, Output Impedance 150 Ohm
	Alignment jitter: <0.2 UI @ 270Mbit/s, <0.2 UI @ 1.5Gbit/s, <0.3 UI @ 2.97Gbit/s		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
	Return Loss: >15dB from 5MHz to 1.5GHz, >10dB from 1.5GHz to 3GHz		64 channel MADI supported on selected constellations
HDMI Input / Output	1x HDMI 1.4b Input. Support up to UHD 10-bit	**Power**	12VDC @ 45W nominal (supports 7 - 24VDC input range)
	1x HDMI 1.4b Output. Support up to UHD 10-bit		2x power connections for redundant power supply
Optical I/O (Optional)	1x 3G-SDI SFP Transceiver (SMPTE 297M - 2006)	**Mechanical**	W: 218mm (1/2 19"), H: 44mm (1.75"), D: 225mm (8.86") - incl. connectors
	1x 12G-SDI SFP Transceiver (SMPTE 292M, 424M, 2082) - no SD SDI		Weight: 1.4kg (3.09lb)
Ethernet (LAN)	1x 10/100/1000 BaseT RJ45 Connector	**Ambient**	Temperature: 5°C to 40°C (41°F to 104°F) maintaining specification
			Humidity: 90% maximum, non-condensing

Supported SDI Formats

SDTV Formats	525 / 59.94Hz 625 / 50Hz			**3G-SDI Formats Level A and B**	1080p / 50Hz 1080p / 59.94Hz 1080p / 60Hz
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	**12G-SDI Formats Single Link**	3840 x 2160p / 50Hz 3840 x 2160p / 59.94Hz 3840 x 2160p / 60Hz

Backplane View

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Options

RFR 6000 - 1RU 19" Rack Mount Chassis

Rack mount designed to accommodate one or two greenMachine units within 1RU of rack space, while also providing secure mounting for the associated power supplies.

One greenMachine in Rack Mount

Note: Two power supplies can be mounted into one RFR 6000. For more information please refer to the RFR 6000 quick reference guide.

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 as part of a wider system.

The RXT 6001 is a power supply rack extension for RFR 6000. It can accommodate 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.

EU, US and UK plugs available.

ABS Case for greenMachine

The transport case is perfect to protect and keep your greenMachine®, cables and documents organized and in one place. With Its sturdy design, the ABS Case is ideal to transport your greenMachine up and down the country.

The hard shell case protects your greenMachine® from impacts in busy work environments, while the inner foam coating prevents it from being scratched by cables, connectors or other equipment stored inside the case.

Fiber Options

The GM 6840 is equipped with three SFP sockets to accommodate a variety of plug-in fiber SFP options. We recommend specific SFPs for different constellations. Please refer to the constellation datasheets for more information.

Reccommendations below are for optional ethernet communicatuion via fiber.

Basic Ethernet Fiber Transceiver		Power	Sensitivity
OH-TR-51-LC	Ethernet Fiber Transceiver, Singlemode - 10km* - LC - 1310nm	-3dBm	-21dBm
CWDM Ethernet Fiber Transceiver			
OH-TR-54-XXXX-LC **XXXX** = Wavelength	Ethernet Fiber Transceiver, Singlemode - CWDM capable - 40km* - LC	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.

Ordering Information

greenMachine titan Hardware		EAN	
GM 6840 EU/UK/US	greenMachine titan GM6840 Processing Platform, RPS A100 Power Supply	EU	4250479328501
		UK	4250479328518
		US	4250479328525

greenMachine titan Constellation Licenses (no Hardware included)		EAN
GMC-4KUPXD	**4KUPXD Constellation License:** 1x 12G-SDI Up/Down/Cross Converter	4250479326064
GMC-3GUPXD	**3GUPXD Constellation License:** 4x 3G-SDI Up/Down/Cross Converter, Frame Sync,	4250479326521
GMC-TestorAV	**Testor AV Constellation License:** 1x 12G-SDI and 4x 3G-SDI Test Pattern Generator & AV Delay Measurement and Correction	4250479929364
GMC-Testor	**Testor Constellation License:** 1x 12G-SDI and 4x 3G-SDI Test Pattern Generator	4250479326101
GMC-HDR-EVIE+-titan	**HDR Evie+ Constellation License:** 1x 12G-SDI and 4x 3G-SDI HDR to SDR Dynamic Segmented Converter (includes GMC-HDRS)	4250479327252
GMC-HDRS	**HDR Static Constellation License:** 1x 12G-SDI and 4x 3G-SDI Bi-Directional HDR/SDR Converter	4250479326118

greenMachine titan Packages (Includes License, GM6840, RFR6000, 2x RPS A100, RBO A025)		EAN
GMPT-UPXD	greenMachine titan 4KUPXD and 3GUPXD	4250479929333
GMPT-TestorAV	greenMachine titan TestorAV Package	4250479929357
GMPT-Testor	greenMachine titan Testor Package	4250479327900
GMPT-HDR Evie+	greenMachine titan HDR Evie+ and HDR Static Package	4250479327870
GMPT-HDR Static	greenMachine titan HDR Static Package	4250479327863

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

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