green**Machine titan** HDR EVIE HDR > SDR Converter

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) Each constellation includes a combination of processing functions to perform high level processing including FS, UPXD, HDR etc.

greenMachine titan

The greenMachine HDR EVIE Package consist of the greenMachine titan HW and the HDR EVIE constellation.

Below you can find some basic information about the greenMachine titan.

For more information about the greenMachine titan please visit:

www.lynx-technik.com

Description

The greenMachine HDR EVIE Constellation is a fully featured broadcast quality real time frame by frame HDR to SDR converter, with a frame sync and 4K UHD scaler supporting formats up to 4K UHD (3840x2169).
The HDR EVIE Constellation must be used on the greenMachine titan 4-channel HW platform. It provides either a single 12G 4K-UHD processing channel, or four independent processing channels for SDI signals up to 1080p 3Gbit/s.

Modern image sensors offer significantly wider dynamic color ranges than classic TV devices can reproduce. The color ranges are defined as High Dynamic Range (HDR) and Standard Dynamic Range (SDR). SDR describes the older dynamic range in SD and HD-TV standards. With HDR there are completely new possibilities for broadcast and AV productions to provide an increased dynamic range for the viewer, including brighter highlights and more details in the dark areas of the image resulting in more brilliant and realistic images. One of the major challenges when introducing HDR with its tremendous image enhancements is to maintain good backward compatibility with existing SDR displays and receivers.

HDR Evie is the world's first system using advanced algorithms which automatically analyze and apply optimal corrections in real time on a frame by frame bases. This unique capability is unlike any solution today and is the perfect real time production tool for sports or any live broadcast event needing high quality real time HDR to SDR conversions.

Typically, HDR to SDR conversion is achieved using a single static correction for the entire production, which can be accomplished with LYNX Technik's greenMachine HDR Static Conversion solution. This is effective for fixed, predictable applications such as TV studio production. However, for more dynamically demanding and unpredictable content, such as live sports or news broadcasts, the analysis and corrections must be adapted on a frame by frame basis to cope with challenging lighting conditions, brightness levels and image composition. Until now "frame by frame" corrections were only possible by manually applying correction metadata to each frame which is then utilized during live playback; a non-real-time process, both time consuming and expensive.

This greenMachine HDR EVIE constellation also includes spatial Up, Down and Cross conversions for 4K UHD, audio processing and shuffling, color correction, timing adjustment, Meta Data processing and the Nova controller which enables the greenMachine to be remotely controlled and monitored via third party master control software. CustomControl is also included providing simplified customised screen panels offering direct access to user selected parameters.

green**Machine**®
Package

Included Features

HDR > SDR Conversion
Allows for dynamic HDR to SDR, conversions. Supports Gamma, PQ, HLG and SLog3.
Supported Color spaces: Rec. 601, Rec.709 and Rec. 2020.

4K UHD Scaler
The Scaler is a high quality spatial converter with powerful Region of Interest (ROI) selection and scaling.

Frame Synchronizer
The Frame synchronizer utilises an external Ref. with a robust "flywheel" function for synchronization of SDI sources up to 4K UHD. All embedded audio is extracted and delayed automatically to match the video processing delay, then embedded via a matrix into the SDI output.

Embedding / De-embedding
A high quality multi-format audio embedder and de-embedder which can access all audio channels in the input SDI channel(s), shuffle and embed them in to the output(s). It can also embed DolbyE™ signals which in conjunction with the Frame Synchronizer will always maintain the guardband. It is also possible to incorporate separate AES and/or analogue audio inputs and outputs.

Basic Audio & Video Test Generator
The test generator is a basic audio & video test signal generator with a wide range of still video test patterns. It can be configured to work in conjunction with the Frame Synchronizer to output a test pattern on TRS errors.

Audio Processing
Each mono audio channel has gain adjustment, mute, inversion and stereo to mono mix-down. In addition, each mono channel has silence and overload monitoring as well as a 1 kHz test signal.

MetaData Management
The MetaData function manages the embedded metadata of the video signals. Time Code, Closed Captions and Teletext can be monitored and/or converted.

Video Adjustments
Video Adjustments include saturation, gain, black and hue adjustments, blanking interval deletion, and more.

Color Matching
This feature provides gain and offset adjustment for:
Red, Green, Blue, Cyan, Magenta, Yellow and Black.
This makes it the ideal tool to correct the color balance of monitors for example.
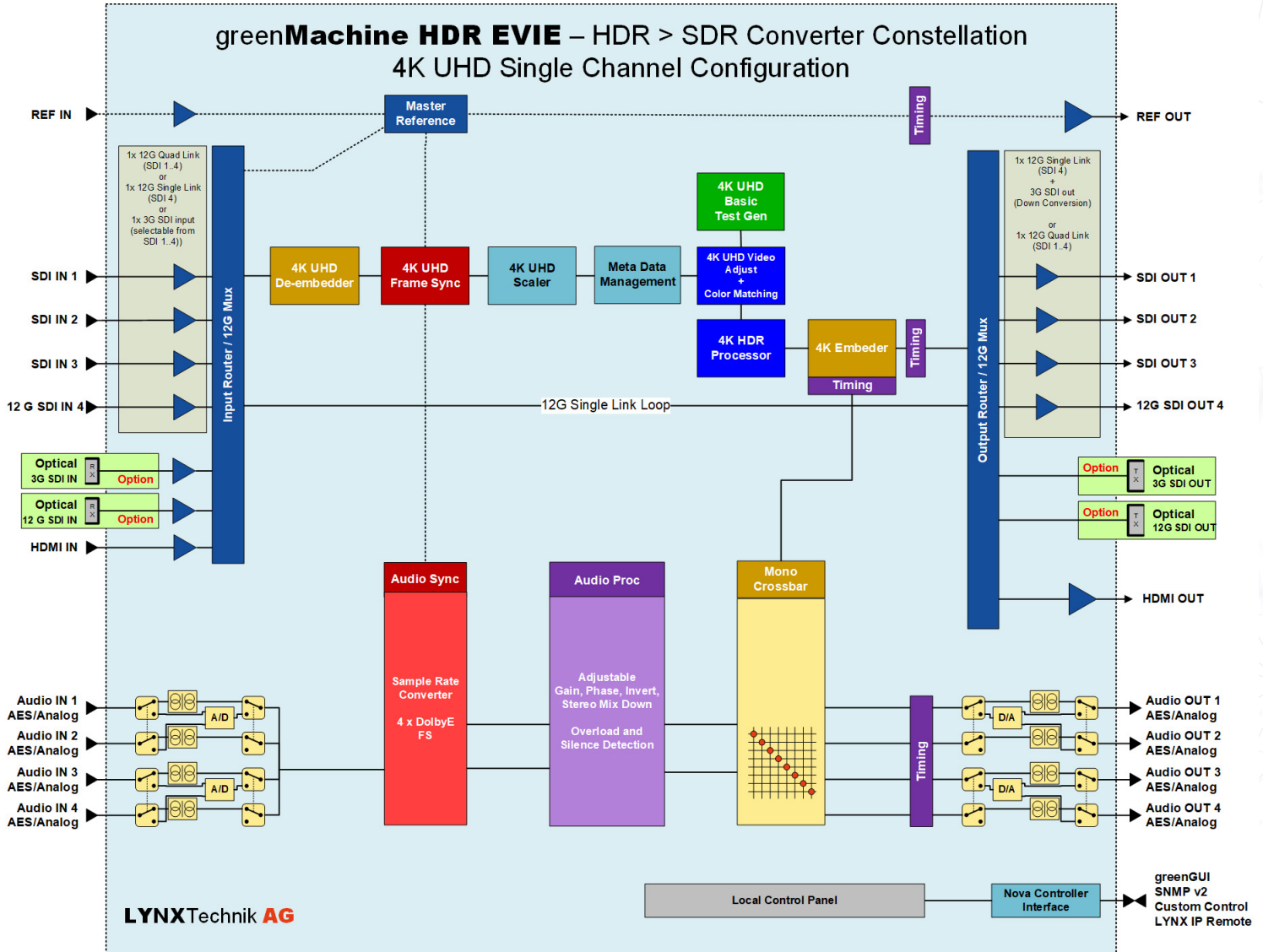
Timing
Each video and AES audio channel can be individually delayed. The available video delay per channel is 30 frames, the available audio delay is 1.3 seconds per AES audio channel.

Nova Controller (included in basic GM hardware)
This adds full SNMP v2 as well as LYNX IP remote control protocol. Mini-Nova also includes CustomControl which enables the user to design customized control panels for a computer or an iPad, giving simplified direct access to user selected parameters. CustomControl is particularly useful in live environments where instant access to a regularly used set of parameters is required without the distraction or risk of accessing all the system settings.

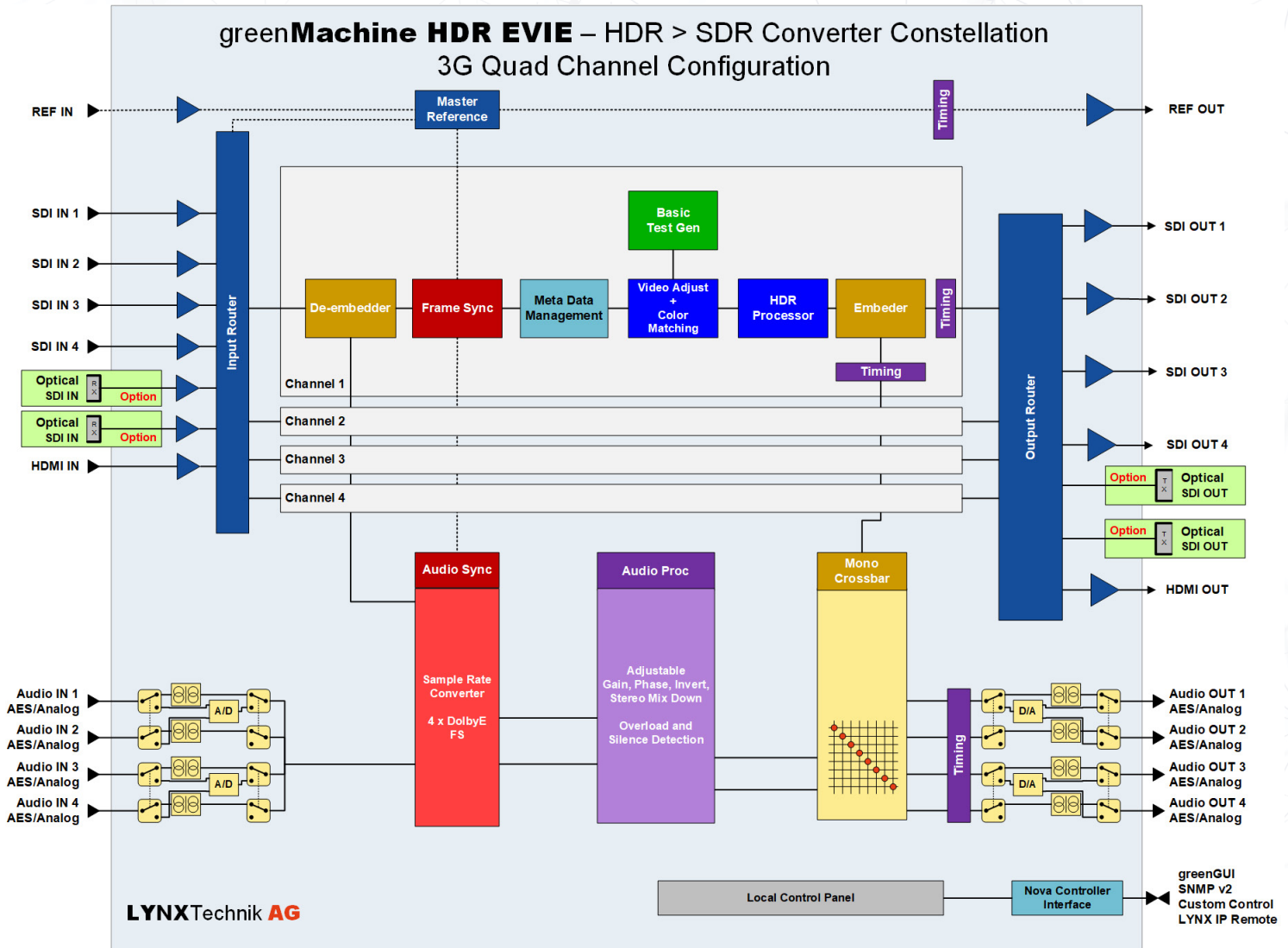# Functional Diagram Single 4K UHD Channel

The greenMachine HDR STATIC - HDR <> SDR Converter Consteallation consists of two individual Configurations. One for a single 12G 4K-UHD processing channel, the other for four independent 3G processing channels of SDI signals up to 3Gbit/s configuration.

When deploying this constellation the user will be asked what configuration (4K UHD or 4x3G) he would like to deploy.
The user can deploy the constellation via the greenMachine front panel or within the greenGUI running on a network connected PC or MAC.

The NOVA controller is already included in the basic GM hardware.

Functional Diagram Quad 3G Channel

green**Machine HDR EVIE** – HDR > SDR Converter Constellation
3G Quad Channel Configuration