LE-2

Multi-rate legaliser module with composite, RGB and YUV gamut correction and optional loudness control

eyeheight

Overview

The LE-2 is a multi-rate video legaliser. The incoming signal is constrained by parameters within the colour space that the user selects, RGB, YUV, composite (PAL or NTSC) or RGB and composite combined. The unit also provides eyeheight's unique clobbeRing luminance overshoot and undershoot suppression. Gain, lift and hue controls are also included. All common worldwide legalisation standards can be corrected. The LE-2 will auto detect whether the incoming video is SD-SDI or HD-SDI and switch into the appropriate format.

The LE-2 also has an out of gamut indicate output with visual severity indication which will show the user where, on the picture, any correction of the signal is being carried out.

Block diagram detail
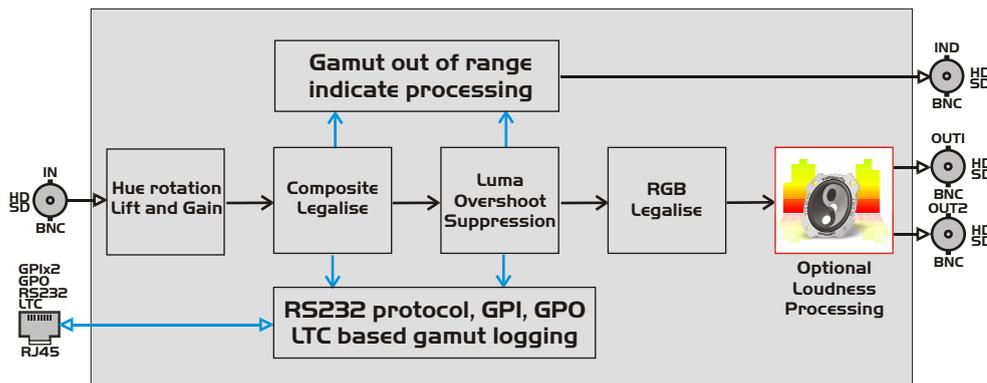
Key features

Description
- Provides legalisation of the SD-SDI or HD-SDI input signal with full 10 bit processing throughout.

Features
- Composite, YUV and RGB colour spaces and combined RGB+composite with two independent outputs for "Legalise" and user controllable "Legal/Indicate".
- Adjustable clipping levels and soft clipping knee levels.
- Integral luma and chroma gain, black level adjustment & hue rotation.
- EBU-R103 legalisation settings and 7.5 IRE or 0 IRE pedestal with 6 user memories and common presets.
- Log output with timecode and PC viewer program. Automation port using simple protocol for presets/memories
- Unique severity display mode on monitoring output.
- Firmware and software fully updatable by file upload*
- Mechanical relay bypass option available.
- Optional web based java softPanel and specific "web app" available.*

Formats
- 1080i/50/59.94, 1080p 23.976/24/25/29.97, 720p/50/59.94, 625/50, 525/59.94

*Only available on the FB-9E chassis

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KARMAudioRT option

KARMAudioRT provides automatic real-time control of perceptual loudness and true-peak using ITU-R BS.1770 multi-channel loudness and true-peak estimation algorithms coupled with proprietary correction algorithms to ensure compliance with loudness and peak-program level requirements.

KARMAudioRT continuously monitors embedded stereo or surround audio loudness and seamlessly adjusts system gain across all channels to maintain the loudness limit while preserving the audio imaging.

KARMAudioRT also performs 8x over-sampling true-peak estimation and instantaneous correction to all stereo or surround channels to ensure that peak-program level limits are adhered to.
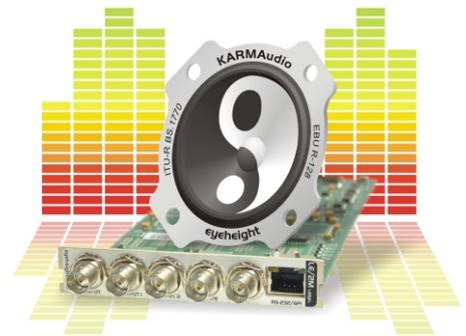
Real-time loudness correction
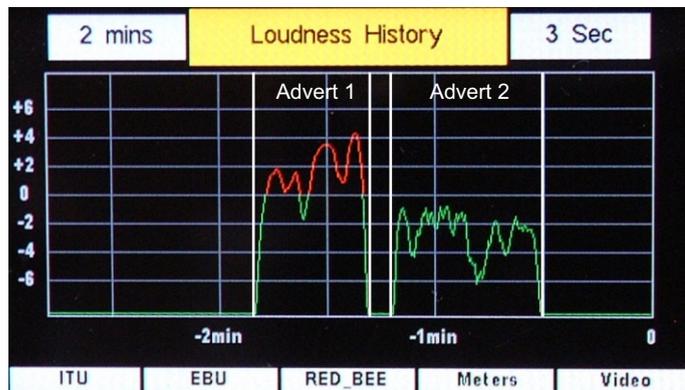
This loudness history shows the short-term perceptual loudness (using ITU-R BS.1770) of two adverts leveled using a traditional peak-program level measurement of PPM6.

Despite both hitting PPM6 it can clearly be seen that the first advert has substantially higher perceptual loudness and far exceeds the defined perceptual loudness limit of 0LU (-18LUFS in this case)
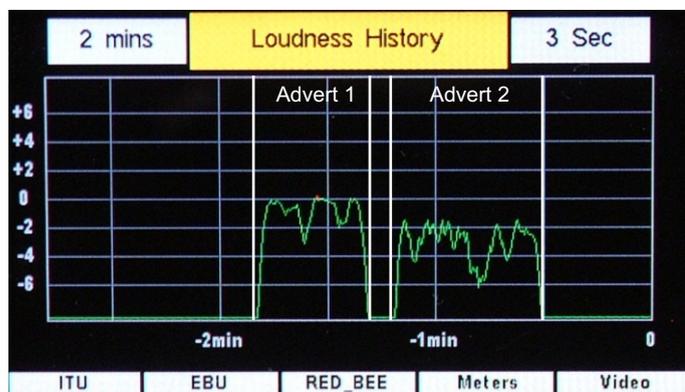
By contrast this loudness history shows the short-term perceptual loudness (using ITU-R BS.1770) of the same two adverts once they have been processed in real-time by KARMAudioRT.

The first advert now conforms to the 0LU loudness limit and the majority of the dynamics have been maintained. The second advert is untouched as it does not exceed the 0LU loudness limit.

As a result of the KARMAudioRT processing viewers will now experience much more consistent loudness between individual adverts and between adverts and program material.
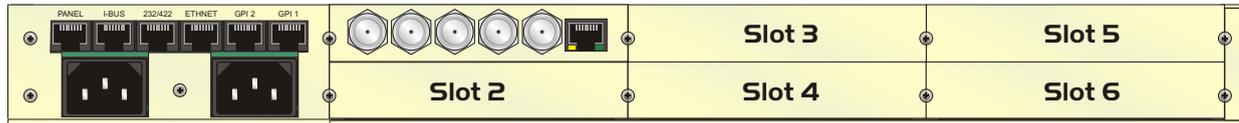
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Chassis view

PANEL	I-BUS	232/422	ETHNET	GPI 2	GPI 1

|	Slot 3	Slot 5
Slot 2	Slot 4	Slot 6

The LE-2 is plug in module for the etherBox FB-9E 1RU chassis. The basic unit takes ONE slot enabling a density of 6 units per 1RU.

Module connections

IN   OUT 1   OUT 2   INDICATE   X   RS232 GPIO TC
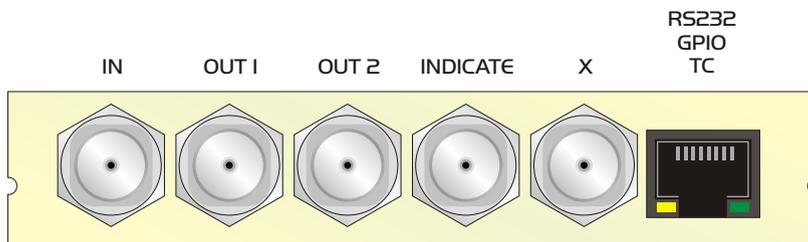
1 x SDI input
2 x SDI output
1x SDI gamut error indicate output
1 x RS232 automation port
2 x GPI selects user memory 1,2
1 x GPO indicates processing

Chassis connections

PANEL   I-BUS   232/422   ETHNET   GPI 2   GPI 1
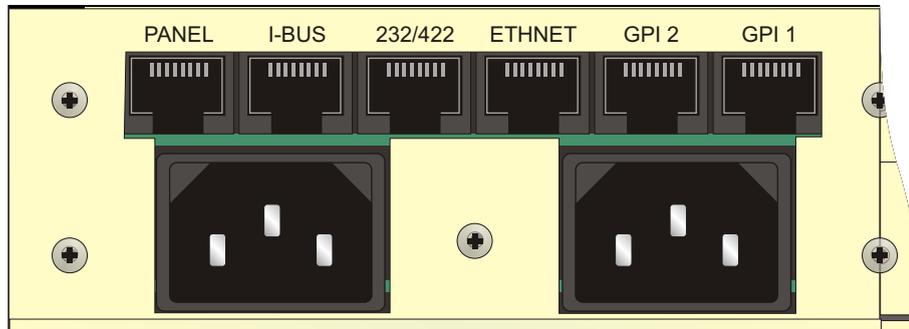
The card connections are supplemented by the chassis FB-9E connections which provides GPI inputs and outputs, an Ethernet connection which can be used for browser based chassis monitoring and optional Java control applications and an RS-232/422 automation interface. (Not available on the MX-9 chassis)

Ordering information

Order code format: LE-2X-K-R-J

X should be S for SD-SDI only version or M for multi-rate (SD-SDI and HD-SDI) version
K option for KARMAudioRT loudness and true-peak control
R optional mechanical relay bypass. (Leave blank for no relay bypass).
J optional Java web softPanel control license. (Leave blank for no option).
For example:
LE-2M-K-R is a LE-2 module for multirate operation with KARMAudioRT and mechanical relay bypass.

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RoHS Compliant