

1 Introduction

Stripbus is a bundle of two virtual effects. It requires a compatible host to run. It is available as VST for Windows 32 and 64bit, VST and AU for Mac systems. VST and AU for Mac 64bit systems and RTAS for Pro-Tools systems will be available shortly. VST, AU, Windows, Mac, RTAS, Pro-Tools are trademarks of the respective owners. This manual is referred to version 1.0.2.

2 General description

Stripbus is a bundle of two effects built to emulate a full analog mixing console.

Several side-effects from recording on a real analog mixing console, from "old days" school, are considered as interesting and useful to compensate for sometimes excessive transparency and dynamics (or loss-of) from digital recording.

The sound from recording and mixing through a real mixing console is often heard as more "round", "punchy", "coloured", "dynamic", "crisp", "deep", "organic", "controlled" and more.

Using and managing a real mixing console isn't so simple and cheap and, while the interesting effects above are guaranteed (in good maintenance conditions and with good technical skills), more effects like analog noise cannot be avoided.

Main advantages from an emulation are:

- it is very cheap
- doesn't require maintenance
- infinite instances ("tracks") are available
- results beyond real world devices can be obtained
- great versatility (emulating several consoles, compressors, working conditions)

Two effects are included in this bundle:

- channel strip
- stereo bus and compressor

They can be used as parts of a full mixing console emulation.

Both effects are based on measurements and tests on real analog devices, trying to translate the effect of analog recording and mixing to digital "in the box" processing. The effects are not a simple distortion or coloration, more concepts like dynamics, frequency interaction, channel interaction, core saturation and more have been modeled.



All models include input stages (with transformers), console power supply and more.

3 Channel strip

The channel strip (Strip) has been built to emulate the effect of a channel strip on an audio track.

The concept behind this emulation is focused on:

- circuit saturation (transistors, tubes)
- core saturation (transformers)
- power available from power supplies
- inter-channel interaction

Analog devices have been analyzed to design a virtual analog model.

The model has been "smoothed" to remove discontinuities and simplified to achieve fast processing.

Restoring dynamics has been part of the modeling, in an effort to get that "real life" feeling that sometimes is missing in digital processing, describes as "static", "too perfect", "lifeless", "cold".

Two models have been included in this version:

- Console A - a british tube console has been used
- Console B - a german solid state console has been used

The concept requires a bit of work to be understood. A channel strip isn't an overdrive, great consoles don't distort so easily and that's not what they are good at.

Insert the strip on all channels or groups for a full emulation. The interaction among the instances is an important part of the emulation.

The Strip unit works even without the Bus unit. The first Strip instance gets control in background and synchronizes the "console".

3.1 Bypass menu

All Strip instances are linked for a common active/bypass control.

This function provides an easy way to check how the console emulation is affecting the whole mix.

Select "disable console" to set all the active instances to bypass. Select "active" to activate the whole set of instances.

This control is a menu instead of a simple button because new modes could be added to future releases.



3.2 *Meter*

This version includes a VU and peak combined meter.

No fancy old-style VU meter with annoying reflections has been included. A full range 30dB scale is included, instead.

The meters are 0dB calibrated, they show the real output dBfs (decibel from full scale) value.

A multi-mode selectable meter is planned for the next update.

3.3 *Gain and Volume*

These two control knobs let the user adjust the behaviour of the channel strip.

Gain knob increases the input level before the processing. It affects signal saturation, dynamics, and more.

The Volume knob let the user compensate for Gain setting.

3.4 *Equalizer*

The channel strip includes a three bands dynamic equalizer.

The equalizer needs some use for a full understanding.

It is designed to help while looking for a final mix balance.

The bands are very wide and the gain values are dynamic (they change with incoming signal level).

Sculpt the sound of the audio track by means of host's equalizers or "surgical" equalizers, until the desired sound is achieved.

Use the strip's equalizer to balance the overall sound of the track in the mix.

Experiment with the equalizer to take control of its behaviour.

It is a "weak" equalizer. While the incoming signal level increases, the action of the equalizer decreases.

3.5 *Ducking*

The channel strip includes an inter-track ducking system.

The concept behind this is:

- some slow ducking helps "glueing" the tracks
- automatic ducking sets "priorities", to take control on heavy bus compression effects

This is not a tight ducking system. Don't look for something like bassdrum-bass ducking.

Use it to set interaction among main tracks, instead, like voice and background guitars.

Each strip includes a small menu in its upper right part. That is the channel identifier. Use it to identify a "ducker" channel.



The "ducked" menu (lower part of the interface) sets which track the strip is ducked by. The knob sets the amount of ducking action received.

Rotate the knob to zero when you don't want the ducking action or while the channel isn't linked to a ducking channel, you'll get a random ducking otherwise.

3.5.1 Oversampling modes

The channel strip includes an optional 4x oversampling mode. It is useful for a better signal quality from hard-pushed channels.

Available options:

- normal: no oversampling
- Hi-Q Now: oversample while listening and while exporting
- Hi-Q Export: oversample while exporting (select this one for low cpu-load while listening/mixing and high quality on export)



4 Stereo bus and compressor

The bundle includes a stereo bus and compressor unit (Bus).
This unit Includes:

- stereo bus emulation
- a set of stereo compressors

The compressors have been designed after test and measurements on two very famous compressors.

Starting from the emulations, a different twist has been added for increased versatility and control.

Even though it has been designed with the main bus of a mixing console in mind, it can be used as a general purpose mono/stereo compressor on any track/group.

The Bus unit includes a fixed 4x oversampling mode.

It is fixed because even if a low amount of harmonics can be generated, the action of the compression required high sampling rates for a good quality "analog" compression sound (mainly on attacks and with fast attack and release settings).

4.1 Meter

This version includes a dual function meter. One needle (black) shows the signal level going into compressor detector. The other needle (red) shows the amount of compression being applied to the signal.

Being this one a mid-side set of compressors (see below), it requires a bit of use to take full control of its behaviour. I.e. if the compressor is set to "side" on a centered mono signal, no compression takes place.

4.2 Signal path

The full signal path inside the unit must be understood for a good use of the Bus emulation and compressor.

The incoming signal is split in its Mid and Side components.

A combination of these parts is summed and sent to the compressor's detector.

The compressed signal is then amplified by the makeup control, summed to the missing part (extracted by the mid-side control), mixed with the dry signal (wet-dry knob) and sent to the output.

The bus emulation is inside the compressor circuitry and cannot be separated. This is why the unit defaults to full wet with ratio at 1:1 for a neutral sound.



4.3 *Device menu*

This unit includes two console models (solid state and tube) and two compressor models (both solid state), for a total number of four hybrid models.

4.4 *Sat knob*

Being this unit a stereo bus unit, the circuits have been designed for a rather clean saturation.

The Sat knob sets the amount of distortion being added to the signal. It is NOT an input gain control.

4.5 *Makeup*

The signal coming from the compression stage is amplified through this control, to compensate for the level loss due to the compression.

Please note: makeup control is NOT an output gain. It affects just the compressed part of the signal. Use it to balance mid and side if you are operating in a mid/side compression mode (mid-side knob different from halfway).

4.6 *Threshold*

This control sets the threshold above which the signal starts being compressed.

The real hardware units modeled feature compression curves with threshold varying with ratio setting. This makes threshold absolute value meaningless. Look at compression needle for the compression applied to the signal.

4.7 *Max-GR*

This control allows the user to set a ceiling for the amount of compression applied to the signal. A value of Max-GR compression is applied when the requested compression is above it.

It is very useful for a transparent compression. A value of Max-GR just below the requested compression preserves the peaks.

Another use is for "upward compression". A very low threshold with the right amount of Max-GR gives the result of increasing low levels instead of decreasing high levels.

Refer to the website for examples.

Mix

This is a phase and sample aligned wet-dry mix control.

"NY style" compressions consists of a mix of compressed and dry signal. This kind of effect, while useful and interesting, requires a precise phase and sample alignment to work. This unit includes an internal alignment path for clean mixing.



4.8 Ratio

This control selects the ratio between signal level increase above the threshold and output level increase.

1:1 ratio corresponds to a pass-through (no effect).

The hardware units modeled in this effect have discrete ratio selections, starting from values above 1.

In this effect the models have been extended, to include continuous values starting from 1. Please note: the compression curves have been modeled to intersect at 0dBfs. Refer to the website for more details.

4.9 Attack

This is the attack time of the gain stage in the compressor. It controls the time needed by the compressor to apply the full compression required.

4.10 Release

This is the release time of the automatic gain stage. It sets the amount of time needed by the compressor to restore its unity gain (no compression).

A special auto mode can be selected by means of the small menu below release knob.

Auto mode is a special function which controls release time in a program-dependant mode.

Where short transients are contained in the signal it sets the release time selected by the knob. Where the signal contains an high steady-state component it changes to faster values. This mode helps in preventing pumping and artefacts.

While auto mode is an option in the first modeled hardware device and is a fixed feature in the second one, it has been left user selectable for both.

4.11 Side-Lo

This is the first of the special controls of the compressors.

It activates a low frequencies preservation path. It is not a simple sidechain hi-pass equalizer. It splits, processes and mixes components of the signal to get a better low frequencies region response.

4.12 Side-Hi

This control corresponds to the previous one, but preserves high frequencies. Increase it for a brighter and more natural signal.

4.13 M-S

This control is the key to a very special compression mode.



The signal is split in its mid and side components before the compressor. Only the components selected by this control go through the compressor. The remaining part of the signal is untouched and mixed back to the signal.

Set it halfway for common, full signal ("full"), compression.

Set it to side to get a side component compression and leave the mid component untouched.

Set it to mid to compress just the mid component and leave side untouched.

Select any value in between for infinite combinations.

Note: mid-side compression requires mid and side balancing. Use make-up control for this.

Note: a centered mono signal doesn't include any side component.

5 Tips and tricks

- Insert an instance of the strip on each track in a simple project to test the system and grasp the concepts behind it
- Strip: play with input and volume for different results
- Strip: mix in the bus compressor (high compression) and play with ducking to understand why the ducking system is useful to control "priority" of the tracks. Play with low ducking values to give a slight "movement" to the mix
- Strip: test mixed signals (like a drumset) to get control on "bass frequencies" saturation characteristics (the low frequencies get the space)
- Strip: change input gain to get control on the action of the equalizer (no action with too hot input levels)
- Bus: use the first compressor for a cleaner mix, the second one for a dirtier one. Use tube models for more harmonics in mid range.
- Bus: set mid-side to full mid to leave the side component "alive". Balance mid and side with makeup.
- Bus: set mid-side to full side (on a stereo signal) to get a more present side signal (ambients, reverbs, delays)
- Bus: set mid-side control a bit toward side to give back some movement and stereo ambience to the mix
- Bus: set lo-side to a high value for cleaner low frequencies. Set hi-side to a high value for cleaner and brighter high frequencies.
- Bus: use mix control for fast NY-style compression
- Bus: use upward compression instead of classic downward compression. Set a good amount of Max-GR (i.e. 15dB). Set threshold and signal levels to get a compression that stops at -15dB (peaks pass untouched, low levels are raised). Set low ratio and slow attack/release to avoid pumping (auto release mode can help, too)

More models are being developed for future versions.

Connect to www.sknote.it or the sknote forum for tips, feature requests, reporting.

Have fun!

