

# MaxSynths

## DSP-1

DYNAMIC SIGNAL PROCESSOR

### User Manual



- DSP-1 Interface -

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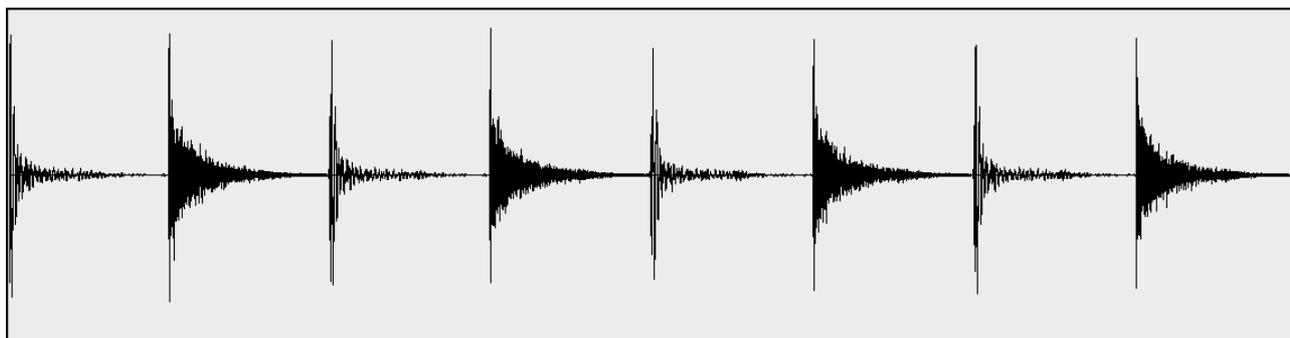
## Introduction

Welcome and thank you for purchasing MaxSynths' DSP-1!

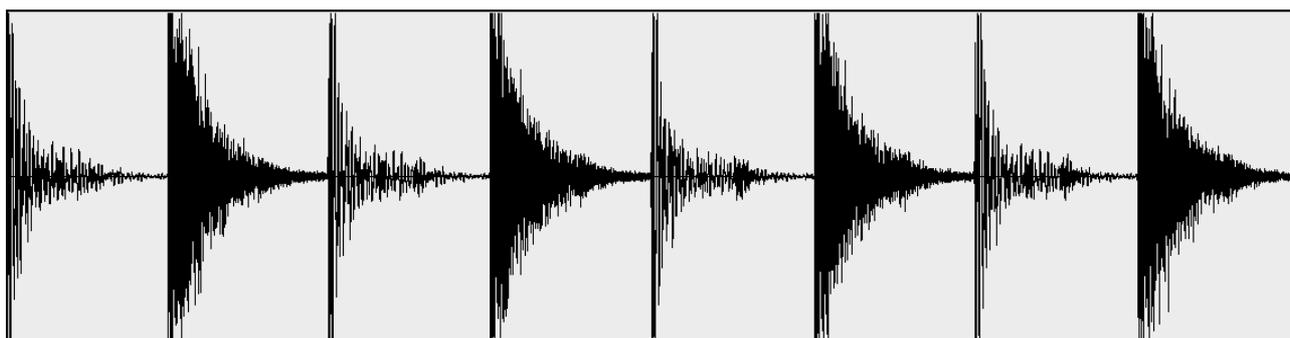
DSP-1 is a high performance dynamic signal processor specifically designed to process drum tracks. DSP-1 can be used as an insert effect on single drum channels (bass drum, snare drum, overheads, etc.) or to process to entire drum bus.

The aim of this effect is to increase the perceived level of the processed audio without introduce too much color or artifacts and, above all, avoiding distortion. With DSP-1 it's very easy to maximize the audio level of your drum track without make it sound over compressed or distorted.

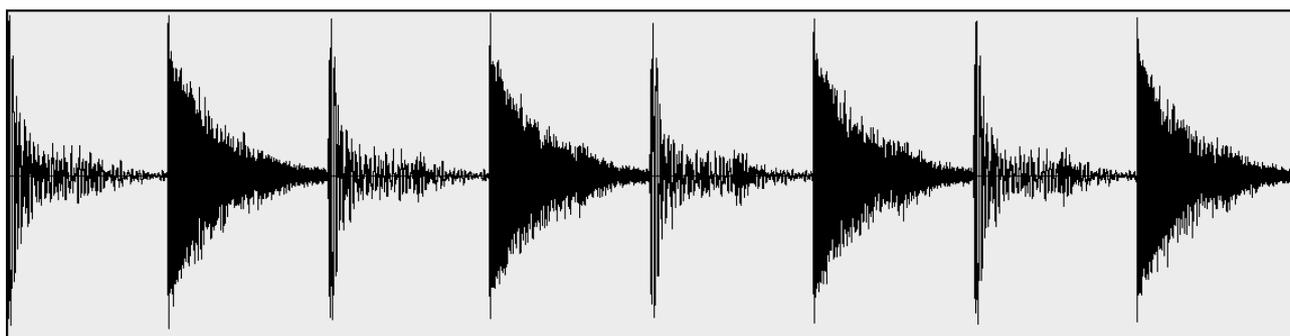
The pictures below shows the difference between a drum track processed by a common limiter and the same track processed with DSP-1 (saturation type B, mid boost):



*- Original waveform -*



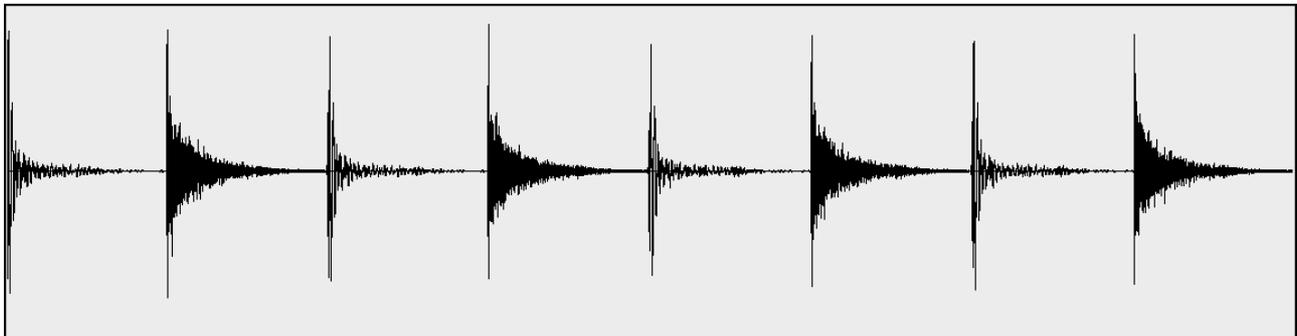
*- Typical limiter boost -*



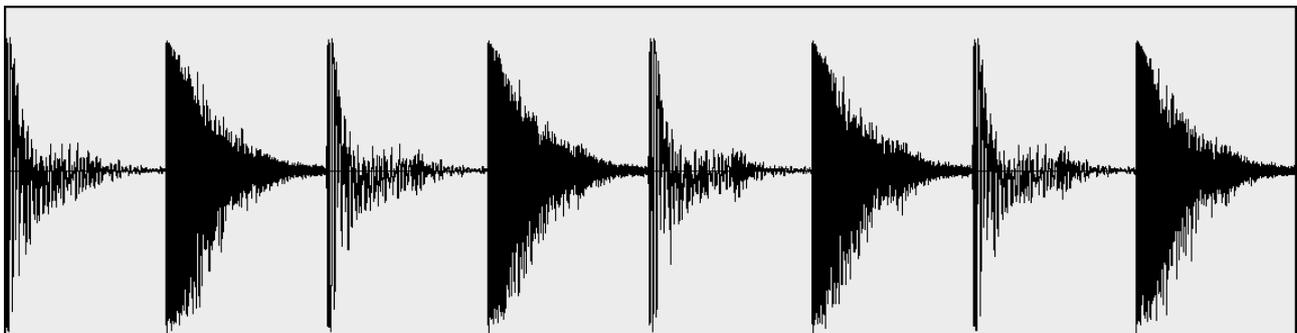
*- DSP1 -*

As you can see DSP-1 can provide the same amount of boost (or even more!) without introduce any distortion to the signal compared with the limiter (the even beats in the second picture clearly shows how the signal processed with the limiter is heavily distorted).

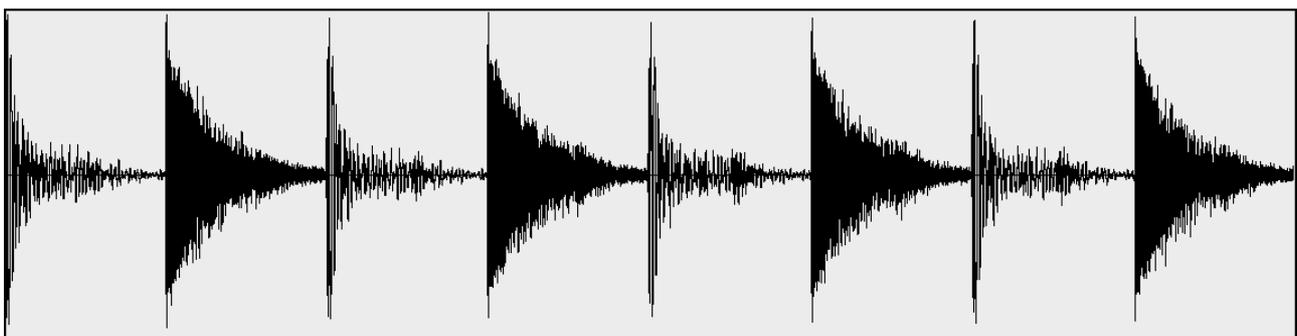
Also compared with usual saturation effects the waveform processed with DSP-1 clearly shows less artifacts:



- Original waveform -



- Typical saturator -



- DSP1 -

(the audio files for the above examples are available in the "Audio Examples" folder)

Note again how the waveform processed by a typical saturator has a less precise shape, and the huge amount of distortion introduced in the peaks area.

So what is the main difference between a typical limiter, a saturator and DSP-1? From a technical point of view DSP-1 could be considered as a compressor, an expander, a peak limiter and a saturator; by the way it works in a slightly different way. DSP-1 exploit and combine the characteristics of these effects in a very discrete way allowing to achieve similar results but without damaging the audio material.

The internal circuit of DSP-1 is divided in two parts:

- The first component is the **IDP** (Intelligent Dynamic Processor). This is a sort of compander (compressor/expander) unit which is able to automatically program itself depending on the speed of the song and the kind of audio material which is feeded into it. This means that if you are working on a slow rock ballad, for example, the dynamic processor automatically set his internal settings to work with this kind of audio material.
- The second part of the internal audio engine is the saturator. The saturator works in three different modes: A, B and C (soft, hard1 and hard2). These three operative modes emulate different saturation types and provide a different amount of saturation at the input stage. Type A is modeled as a soft tape saturation; type C is a tube emulation and type B is a balanced mix between tape and tube saturation.

The amount of saturation for the different modes can be set by the dedicated knob. At this point the audio signal is feeded back to the dynamic processor and the overall level of the processed signal is adjusted according to the internal settings of the IDP.

While the graphical user interface is very simple and easy to operate, the truth is that there's a lot of work going on under the surface! The GUI also features a high precision VU meter to monitor the overall boost amount and a led indicator to prevent digital clipping.

DSP-1 is the result of a lot of hours of work and research. I really hope it can be useful in order to help people to produce better recordings and improve their production experience!

*Massimo Bosco*

## *Features*

- Intelligent Dynamic Processor (IDP)
- Saturator with three different operation modes
- Transparent increment of the perceived volume level
- Automatic peak limiter
- High precision input/output VU-meter
- Low CPU usage

## *System Requirements*

MINIMUM SYSTEM REQUIRIMENTS: PC running WinXP, Vista or W7, CPU 1Ghz with SSE2 support, 512MB RAM, soundcard with ASIO drivers, compatible ASIO host.

## *Installation*

1. Close your host (Cubase, Sonar, etc.).
2. Copy the content of the the zip archive into your VST plugins folder (for example: "*C:\Program Files\VSTPlugins*"). Be sure to copy both the dll file and the "DSP-1" folder.
3. Run your host and do a plugin rescan (refer to your DAW manual).

## *Credits*

Concept, programming GUI design and manual by Massimo Bosco.

Additional Modules by David Haupt and Daz Disley.

VST Plugin Technology by Steinberg.

VST is a trademark of Steinberg Media Technologies GmbH.

# User Interface



**VU-Meter:** it's used to monitor the averaging level and reflects the perceived loudness of the material. The VU-Meter is calibrated at -14dBFS (a 1000hz sinusoid waveform at -14dB move the needle to 0).

**I/O Selector:** can be used for comparison purposes, to monitor the difference in the perceived loudness between the unprocessed (in) and processed (out) sound.

**Saturation Level:** set the desired amount of saturation. The typical usage for common and average level boosts is from "minimum" to middle position (50%). Above the middle position the saturation begins to be more prominent; these kind of settings are recommended only for extreme purposes.

**Saturation Type:** selects the saturation model between A (soft), B (hard1) and C (hard2). The different saturation types can produce different results depending on the kind of audio material and desired results. Since there are a lot of subjective and variable factors it is very difficult to draw strict rules concerning the use of the different saturation types. However this brief description of the different emulation models can be followed as a reference when choosing the most appropriate saturation type:

- **Type A (soft):** soft tape saturation
- **Type B (hard1):** a mix between tape and tube saturation
- **Type C (hard2):** hard tube saturation

**Output Level:** set the output level of the effect. The default position (no boost) is in the middle (the knob indicator is red). When the dynamic processor is used for extreme loudness purposes (specially with saturation type C) use this knob to raise the overall signal near the 0dB limit (until the clip indicator turns red).

**Clip indicator:** when on indicates that the output signal is above 0db (digital clipping). To avoid unpleasant results it's very important to check the clip indicator and reduce the overall output level if necessary.

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## **Contact**

For any kind of problem feel free to contact us through our website:

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*Milano, ITALY - December 2012*

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