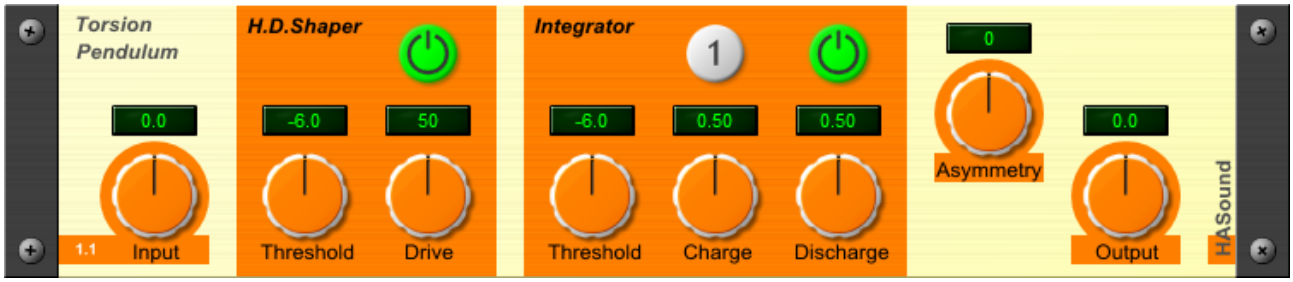
HASound

Torsion Pendulum

Simulator of nonlinearity

User manual



HASound

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Chapter 1 - Introduction

1.1 Welcome

Thank you for choosing HASound audio software. Please read this user manual before you start using our signal processor.

If after reading you still have questions, you can always ask for help at: support@hasound.com

We also recommend to follow the HASound news and software updates using our RSS feed:
http://www.hasound.com/rssfeed.php

Audio Unit version implemented using Symbiosis from NuEdge Development.

1.2 Product Overview

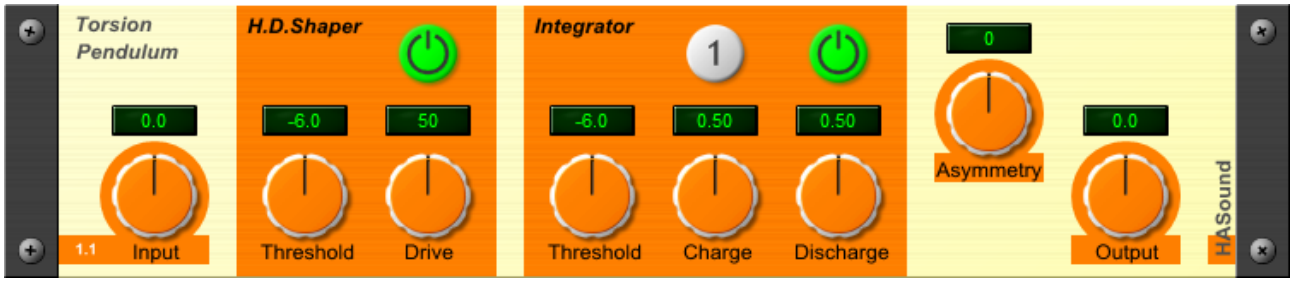
HASound Torsion Pendulum is a simulator of nonlinearity. It can be used for distortion audio signal and harmonics saturation. There are two algorithms used for simulation of nonlinearity:

H.D.Shaper (Shaper of Harmonic Distortion) – simulates an overloading from small to hard clipping distortion.

Integrator - simulates the distortions introduced by the charge/discharge of the RC circuit which a described by $U = U_0 e^{(-t/RC)}$.

Chapter 2 - Interface and Controls

2.1 Controllers



Input - input gain (to +6 dB).

Output - output gain (to +6 dB).

Asymmetry - Determines how will distort the positive and negative half-cycles of the sound wave. When is set to center, that both half-cycles of the sound wave treated identically.

H.D.Shaper section

Threshold - the threshold at which the nonlinearity distortion.

Drive - Level of distortion.

Green button – bypass.

Integrator section

Threshold - the threshold at which the nonlinearity distortion.

Charge – RC time constant during charging a capacitor.

Discharge – RC time constant during discharging a capacitor.

Green button – bypass.

«1» button - Integrator stands in the signal chain earlier than H.D.Shaper

2.2 Version History

Version 1.1

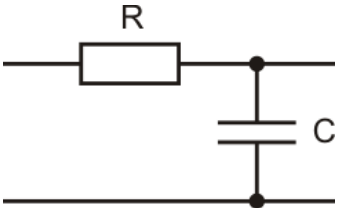
- FIX: Crash when used with «Ableton Live» and with some other VST hosts.

Version 1.0

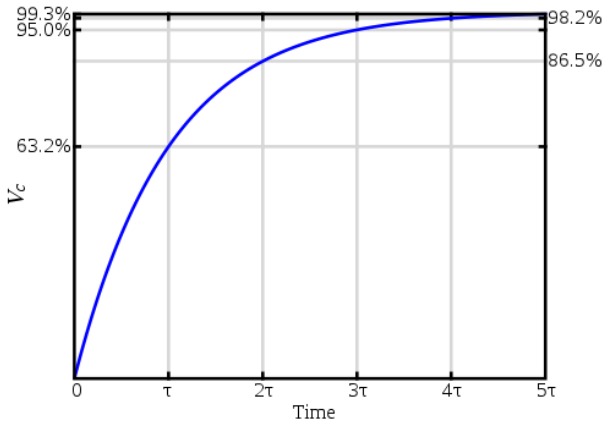
- First release

Appendix. What is RC circuit?

RC circuit is an electric circuit composed of resistor and capacitor.



Capacitor charging process can be described by $V_c = V_{in}e^{(-t/RC)}$, where R·C is a time constant **τ**.



Reaction of RC circuit to pulsed signal: