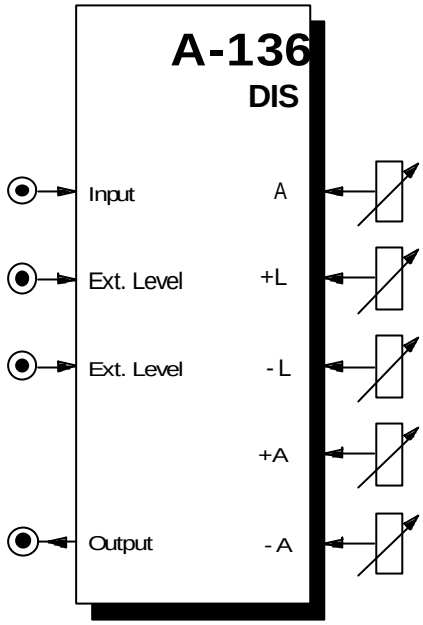


1. Introduction

Module **A-136** is a **distortion** and **waveshaping** module with extensive control possibilities. Different settings of 5 distortion/waveshaping parameters enable a lot of very complex and extreme waveform modifications.

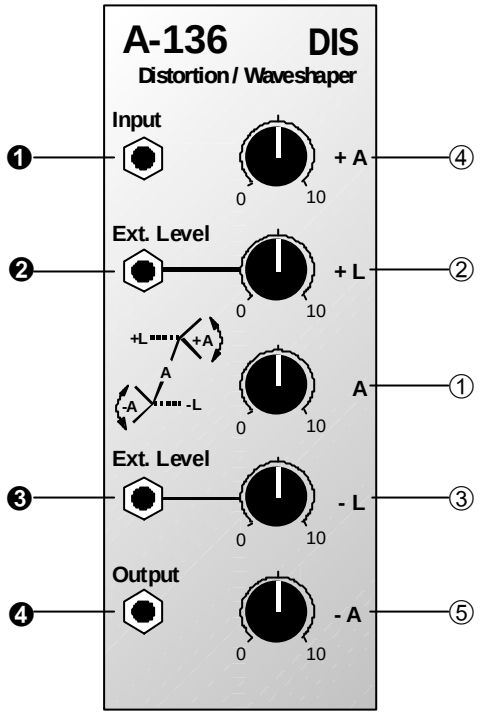
The incoming audio or cv signal is divided into 3 sections: original, positive and negative component. For the positive and negative component, clipping levels (L) are defined. Only voltages beyond this level effect the output signal. For each of the three sections the positive or negative amplification (A) can be adjusted.

External control voltages can be used to alter both clipping levels so that dynamic waveform changes are possible.

The range of modification goes from simple soft or hard clipping to completely altered waveforms where the original signal is no longer recognizable.

Typical applications are audio distortion, and waveform modification for audio signals as well as for control voltages (LFO, ADSR, random etc.).

2. DIS - Overview



Controls:

1 **A** : Amplification control for original signal

2 **+ L** : Clipping control for positive signal component

3 **- L** : Clipping control for negative signal component

4 **+ A** : Amplification control for positive signal component (above the positive clipping level)

5 **- A** : Amplification control for negative signal component (below the negative clipping level)

In / Outputs:

! **Input** : Signal input

" **Ext. Level** : ext. CV input for positive clipping level

§ **Ext. Level** : ext. CV input for negative clipping level

$ **Output** : Signal output

3. Controls

1 A

Control 1 defines the **amplification A** of the original signal. The range of the amplification factor is about -4...+4. This means that one can obtain actual amplification (range +1...+4), or attenuation (range 0...+1) or even inversion of the original signal (range -4...0). The table below shows the approximate assignment of some control settings and the corresponding amplification factors:

Control setting	Amplification factor	Explanation
0	about -4	maximum negative amplification
3,5	about -1	same amplitude as input signal but inverted
5	about 0	suppression of input signal
6,5	about 1	same amplitude as input signal
10	about 4	maximum positive amplification

Tab. 1: How control settings affect amplification factors

2 +L • 3 -L

Controls 2 and 3 adjust the **positive** (+L) and **negative** (-L) **clipping levels** respectively.

In the positive signal section only signal voltages above the positive clipping level +L are affected by the amplification control +A.

In the negative signal section only signal voltages below the negative clipping level -L are affected by the amplification control -A.

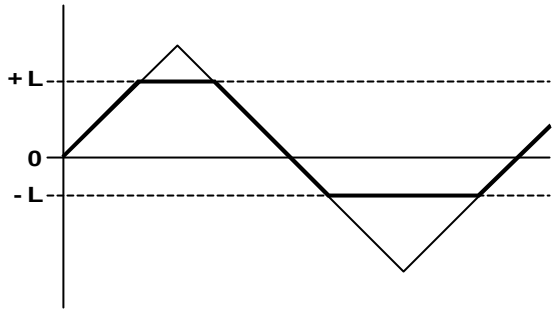


Fig. 1 how the clipping levels work (input signal = triangle)

H When an external control voltage is patched to the normalled socket " (or § respectively) control +L (or -L respectively) has no function. In this case the clipping level is determined only by the external control voltage. This feature enables the dynamic change of clipping levels by external control voltage sources.

4 **+A** • 5 **-A**

With controls 4 and 5 respectively, the **amplification** factors of the **positive (+A) and negative (-A) parts of the signal** past the corresponding clipping level thresholds are adjusted. The assignment of control positions to amplification factors is the same as for the original amplification control A (refer to tab. 1).

4. In / Outputs

! Input

Socket ! is the **signal input** of the A-136.

" Ext. Level • § Ext. Level

If you want to control one or both of the clipping levels from external control voltage sources (e.g. LFO, ADSR, Random, Theremin, Sequencer, MIDI, and so on) the normalled sockets " and § are used.

The clipping control +L (or -L respectively) sets the clipping level unless an external control voltage is patched into the **Ext.Level "** socket (or § respectively). Please note that the positive (+A) section of the A-136 takes effect only if the incoming signal voltage is temporarily higher than the positive clipping voltage. For the negative section the same applies: the negative (-A) section of the A-136 takes effect only if the incoming signal voltage is temporarily less than the negative clipping voltage. If unsuitable external control voltages are applied the A-136 may not work properly.

$ Output

Socket $ is the A-136 output.

5. User Examples

Different settings of the 5 parameters enable a lot of **very complex and extreme waveform modifications**. The range of modifications varies from simple soft or hard clipping to completely altered waveforms where the original signal is no longer recognizable. The sketch below shows a few examples when a triangle signal is used as input.

An oscilloscope would be a good tool to see and understand the waveform modifications resulting from different parameter settings.

Typical applications of module A-136 are:

- Audio distortion (especially interesting in combination with filters), whereby the features of the A-136 far exceed those of conventional distortion or fuzz boxes
- Waveform modifications for control signals (e.g. new control waveforms derived from LFO, ADSR, Random and so on)

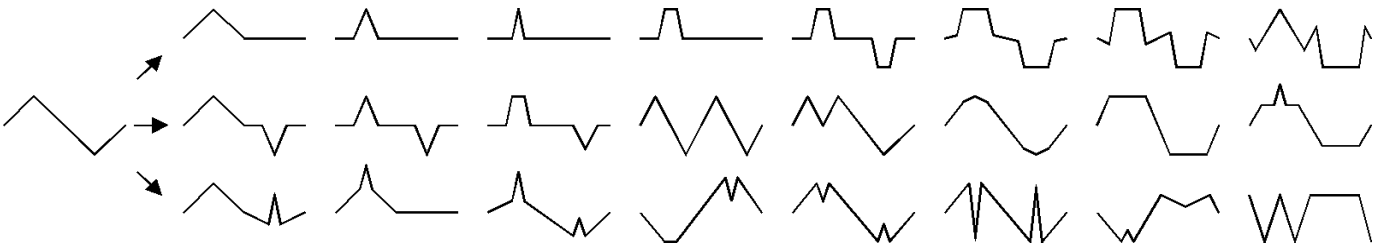


Fig. 2: Examples for new waveforms derived from a triangle input with different parameter settings

6. Patch-Sheet

The following diagrams of the module can help you recall your own **Patches**. They're designed so that a complete 19" rack of modules will fit onto an A4 sheet of paper.

Photocopy this page, and cut out the pictures of this and your other modules. You can then stick them onto another piece of paper, and create a diagram of your own system.

Make multiple copies of your composite diagram, and use them for remembering good patches and set-ups.

P
- Draw in patchleads with colored pens.
- Draw or write control settings in the little white circles.