



Sigmoid's Affector

Audio Signal Modification Unit
User Manual And Technical Reference

ACOUSTIC RESEARCH



In this our 20th year of operation, and on behalf of the entire company; I would personally like to express my deepest gratitude for your continued support of our products and services.

Here at Acoustic Research, we pride ourselves in the quality of our instruments and ensure that every one meets the high standards that our customers deserve. I have no doubt, that the equipment that you have received today will meet those standards just as they did 20 years ago.

I wish you the greatest success in your research

James Chaffinch
James Chaffinch, CEO

References in this publication to Acoustic Research products, programs, or services do not imply that Acoustic Research intends to make these available in all countries in which Acoustic Research operates. Any reference to an Acoustic Research product, program or service is not intended to state or imply that only Acoustic Research's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of Acoustic Research's intellectual property rights or other legally protectable rights may be used instead of the Acoustic Research product, program, or service. Evaluation and verification of operation in conjunction with other products, programs, or services, except those expressly designated by Acoustic Research, are the user's responsibility.

Acoustic Research may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to an Acoustic Research authorized dealer or your Acoustic Research marketing representative, who will be able to forward on the request.

The following terms in this publication are trademarks of Acoustic Research Inc. In the European Union and/or other countries / economic areas.

- Acoustic Research
- Sigmoid's Affecter

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Acoustic Research may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time.

It is possible that this publication may contain reference to, or information about, Acoustic Research products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that Acoustic Research intends to announce such Acoustic Research products, programming, or services in your country.

Requests for technical information about Acoustic Research products or services for those products, whether they be repair, maintenance or upgrade; should be made to your Acoustic Research authorized dealer or your Acoustic Research marketing representative.

This product's connections follow the Coordinated Universal Interworking Standard (CUIIS) and as such can be used with any other product from any manufacturer that also adheres to this standard.

Contents

Description	1
Demonstration Of The Result Of Adjustment Of The Sharpness Value Over A Range Of Values	2
Interface	3
Unit Specifications	5

Description

The Sigmoids Affecter unit is an audio signal modification device which implements a modified version of the sigmoid function.

$$y = \frac{x}{1 - |x|}$$

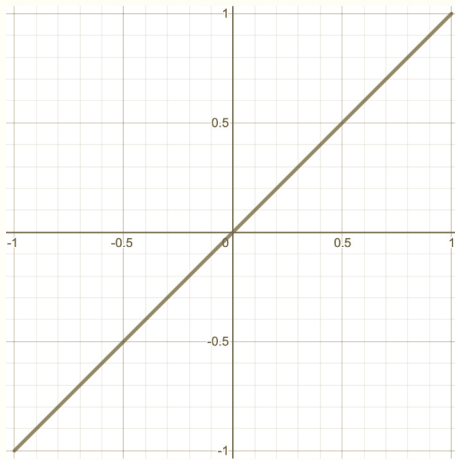
Modifications are made to this equation which enable the shape of the resulting curve to be adjusted, as well as the resulting output to be scaled.

$$\text{output} = \frac{\text{gain} \times \text{input}}{1 - \text{sharpness} + \text{sharpness} \times |\text{input}|}$$

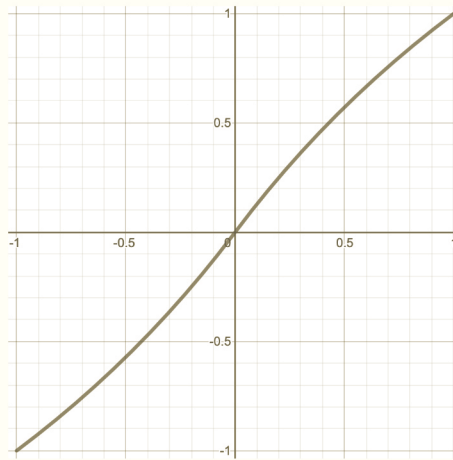
The effect of this equation, is to amplify the affect of signal change. With a higher 'sharpness' value, lower input signal strengths will result in stronger output signals. While higher strength input signals will also result in strong output signals; the relative difference will be lesser. See the figures on the facing page for example 'sharpness' values and their outputs.

Note: with a 'sharpness' value of 1, any input signal will result in an output signal with the maximum signal strength. As such one should take great care with this setting, which is only accessible after switching the 'Sharpness Adjust Dial Modifier A' switch to the 'on' position.

Demonstration Of The Result Of Adjustment Of The Sharpness Value Over A Range Of Values



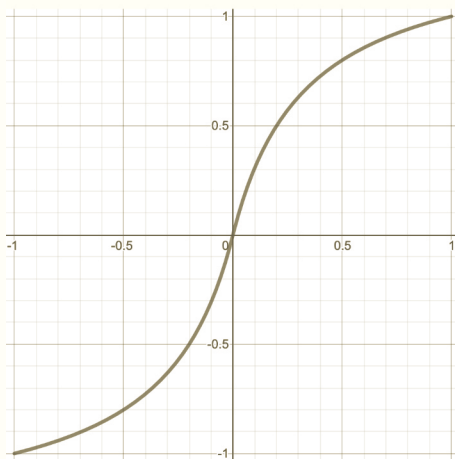
Sharpness: 0



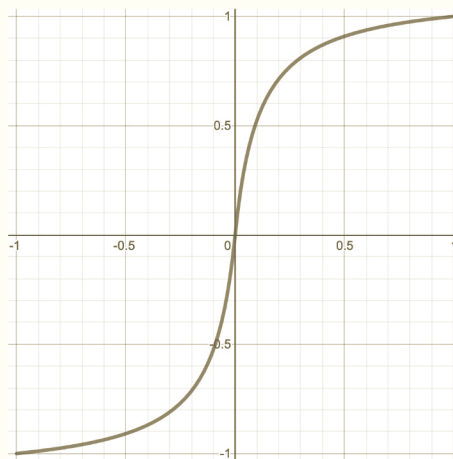
Sharpness: 0.25



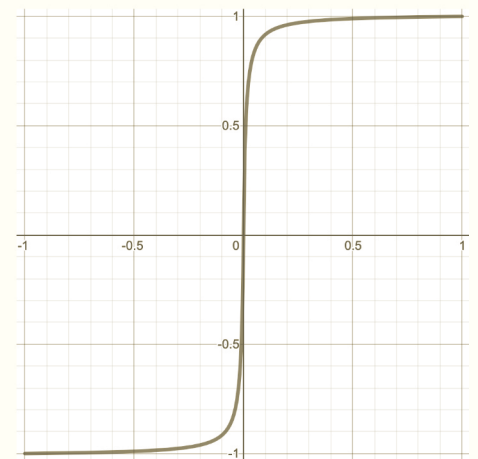
Sharpness: 0.5



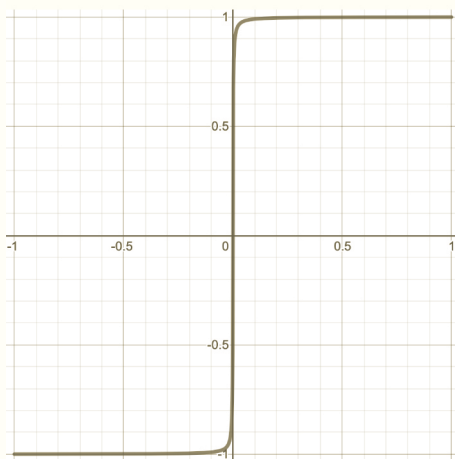
Sharpness: 0.75



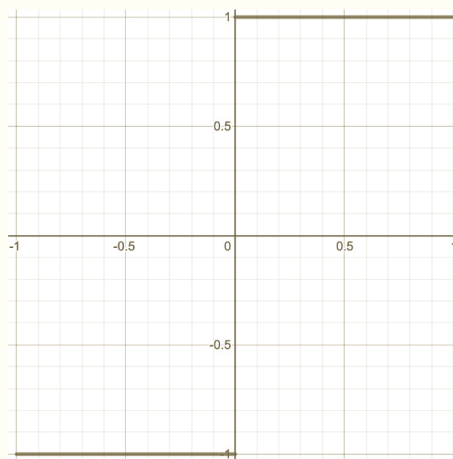
Sharpness: 0.9



Sharpness: 0.99

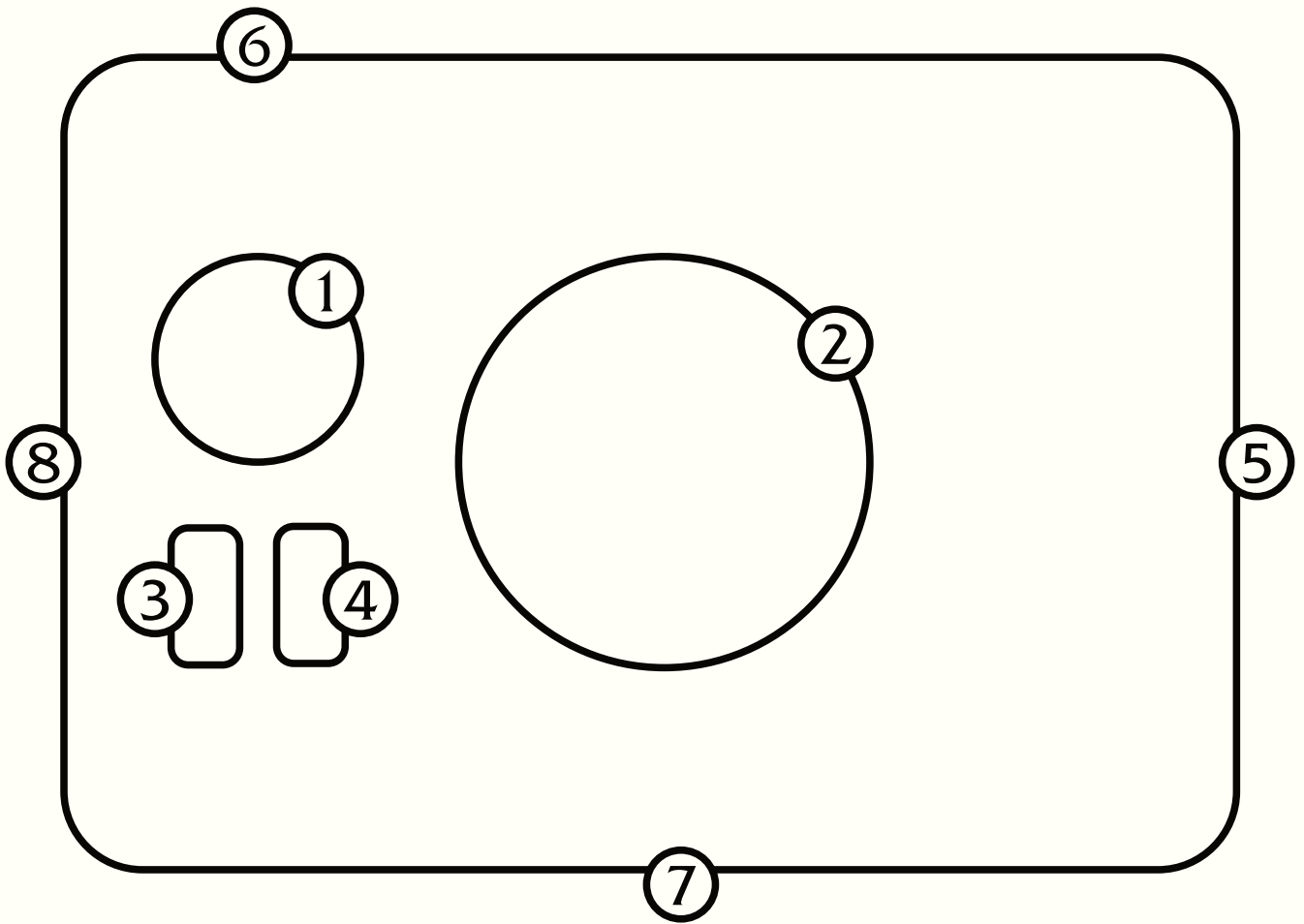


Sharpness: 0.999



Sharpness: 1.0

Interface



1. Gain Adjust Dial
Used to modify the amplitude of the signal resulting from the main modification circuitry, multiplying it by a number between 0 and 1.
2. Sharpness Adjust Dial
Used to set the “sharpness” value of the circuit
3. Sharpness Adjust Dial Modifier A
The Sharpness Adjust Dial has a safety mechanism which prevents the “sharpness” value from being set to ‘1’, instead limiting the value to ‘0.999’. This switch removes that limit.
4. Sharpness Adjust Dial Modifier B
Switches the value progression of the Sharpness Adjust Dial from linear (the outer ring of numbers seen around the Sharpness Adjust Dial) to exponential (the inner ring)
5. Audio Signal Input
The audio signal input connection

CUIS type: Orange
6. Gain Adjust Dial Voltage Control
A voltage control input connection port which directly modifies the Gain Adjust Dial (1). Control is between the values of 0 and 1.

CUIS type: Green
7. Sharpness Adjust Dial Voltage Control
A voltage control input connection port which directly modifies the Sharpness Adjust Dial (2). Control is between the values of 0 and 1.

CUIS type: Green
8. Audio Signal Output
The audio signal output

CUIS type: Orange

Unit Specifications

