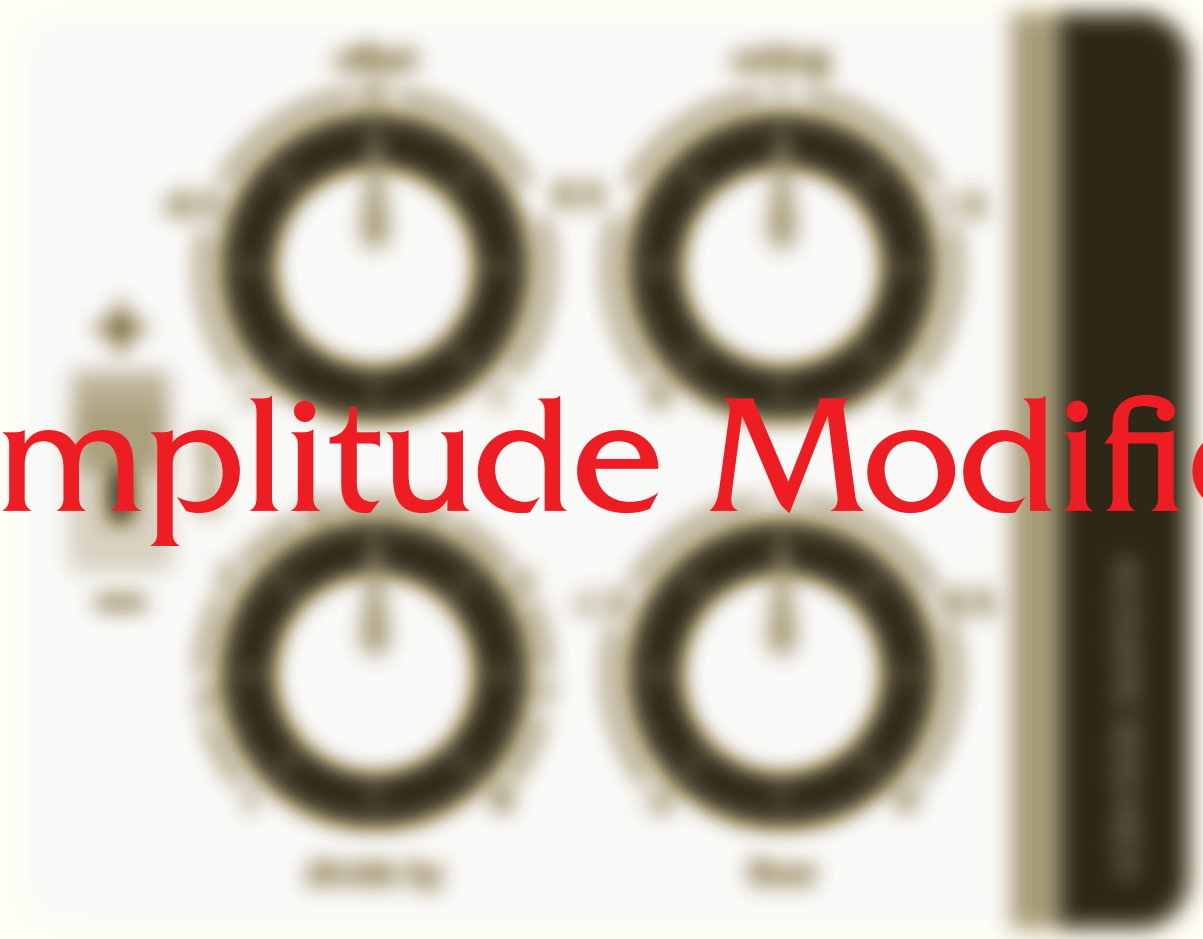

# Amplitude Modifier

Audio Signal Modification Unit
User Manual And Technical Reference

ACOUSTIC RESEARCH

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I wish you the greatest success in your research

James Chaffinch

James Chaffinch, CEO

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 Document version 1.12

# Contents

# Description

The Amplitude Modifier unit is an audio signal modification device which implements an equation made of basic mathematical operations, allowing the user to modify the incoming signal.

The equation is defined as such;

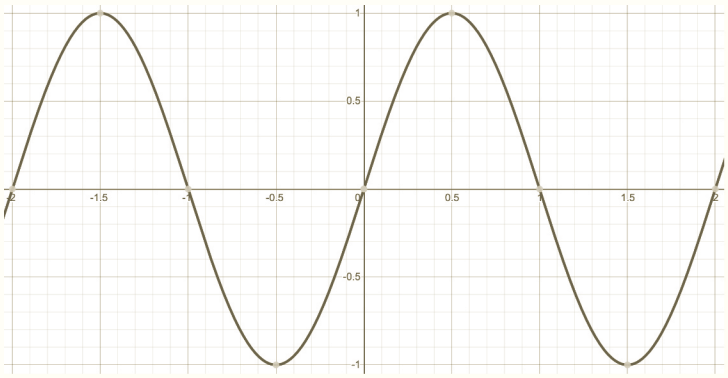
$$\text{output} = \left( \text{sign} \times \frac{\text{input}}{\text{divisor}} \right) + \text{offset}$$

The output from this equation is then passed to a simple limiting function. The limiting function is defined as such;

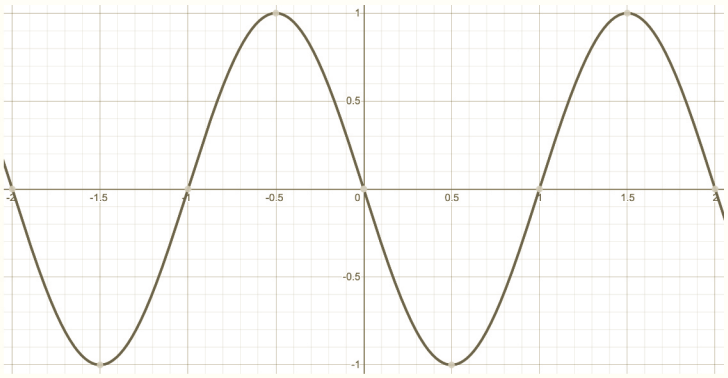
$$\text{output} = \begin{cases} \text{input} >= \text{upper limit} : \text{upper limit} \\ \text{input} <= \text{lower limit} : \text{lower limit} \\ \text{else: input} \end{cases}$$

The seven value of these equations correspond to the seven value sources on the device. See the ‘Interface’ section for details.

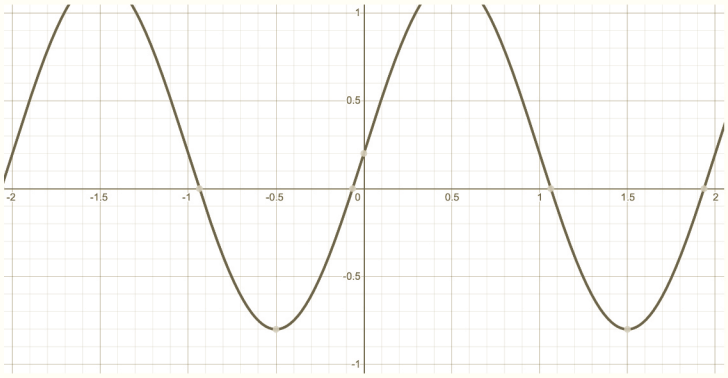
# Demonstration Of The Result Of Adjustment Of Various Values



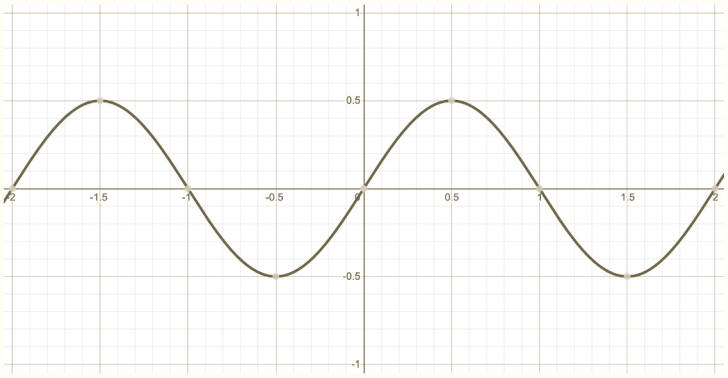

Input Signal



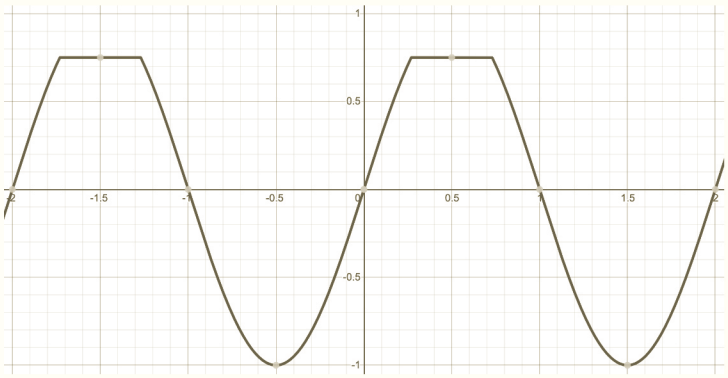

Signal Inverted



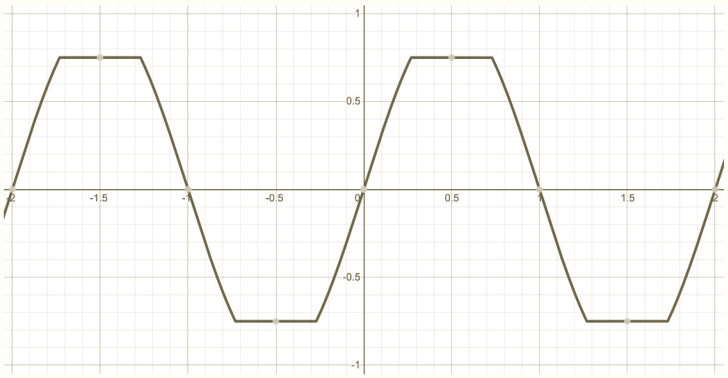

Offset: +0.2




Divided By: 2

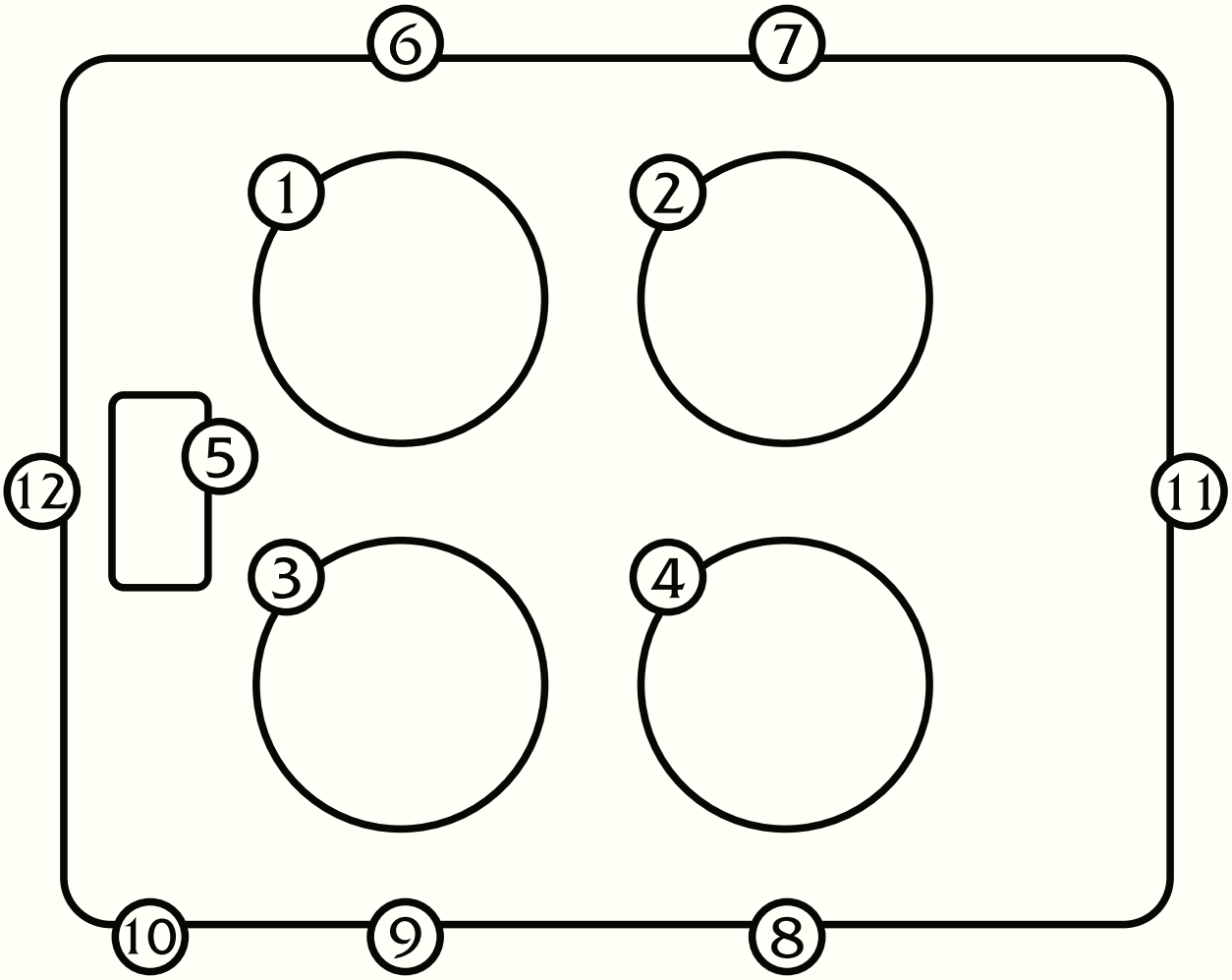



Upper Limit: 0.75




Upper Limit: 0.75, Lower Limit: -0.75

# Interface




1. Offset Dial
   Used to shift the signal up or down, adding a number between -1 and 1. This value is added after multiplication of the sign value, and as such is never inverted.

2. Ceiling Dial
   Used to define the maximum value a signal can reach, and clamp the outgoing value to the defined value should it be exceeded. Values range between 0 and 2. Defined in the equations from the 'Description' section as "upper limit".

3. Divide By Dial
   Used to set the value that the signal will be divided by. Values range between 1 and 8. Defined in the equations from the 'Description' section as "divisor".

4. Floor Dial
   Used to define the minimum value a signal can reach, and clamp the outgoing value to the defined value should it be exceeded. Values range between -2 and 0. Defined in the equations from the 'Description' section as "lower limit".

5. Invert Switch
   Used to invert the signal, switching between “1” and “-1”. Defined in the equations from the ‘Description’ section as “sign”.

6. Offset Dial Voltage Control
   A voltage control input connection port which directly modifies the Offset Dial (1). Control is between the values of -1 and 1.

   CUIS type: Green

7. Ceiling Dial Voltage Control
   A voltage control input connection port which directly modifies the Ceiling Dial (2). Control is between the values of 0 and 2.

   CUIS type: Green

8. Divide By Dial Voltage Control
   A voltage control input connection port which directly modifies the Divide By Dial (3). Control is between the values of 0 and 7.

   CUIS type: Green

9. Floor Dial Voltage Control
   A voltage control input connection port which directly modifies the Floor Dial (4). Control is between the values of -2 and 0.

   CUIS type: Green

10. Invert Switch Signal Control
    A signal control input connection port which directly modifies the Invert Switch (5). Active signals toggle this value.

    CUIS type: Red

11. Audio Signal Input
    The audio signal input connection

    CUIS type: Orange

12. Audio Signal Output
    The audio signal output

    CUIS type: Orange

# Unit Specifications