

# Amplitude Modifier

Audio Signal Modification Unit  
User Manual And Technical Reference

ACOUSTIC RESEARCH





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*James Chaffinch*  
James Chaffinch, CEO

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# 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;

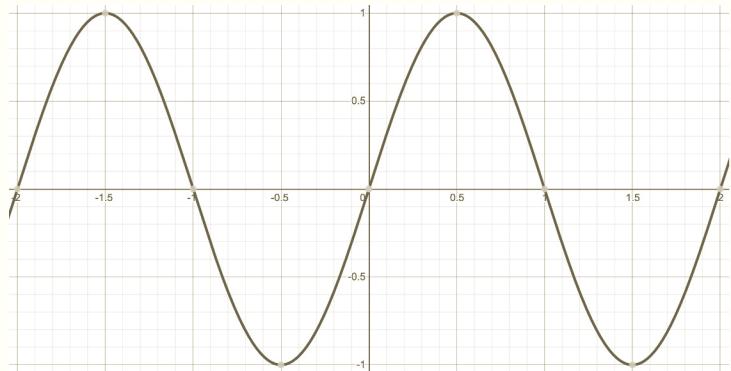
$$\text{output} = \left( \text{sign} \times \frac{\text{input}}{\text{divisor}} \right) + \text{offset}$$

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

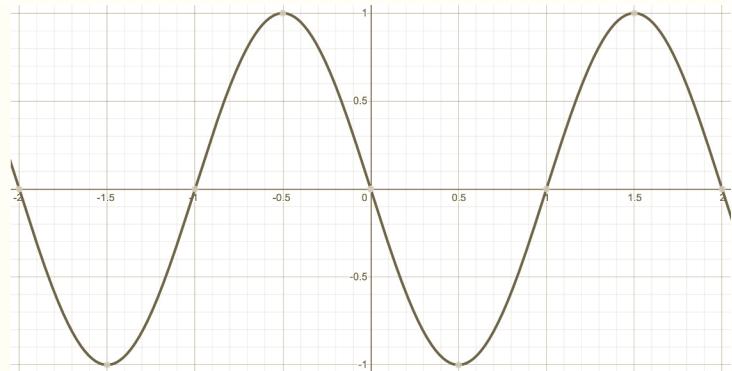
$$\text{output} = \begin{cases} \text{input} >= \text{upper limit} : \text{upper limit} \\ \text{input} <= \text{lower limit} : \text{lower limit} \\ \text{else: input} \end{cases}$$

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

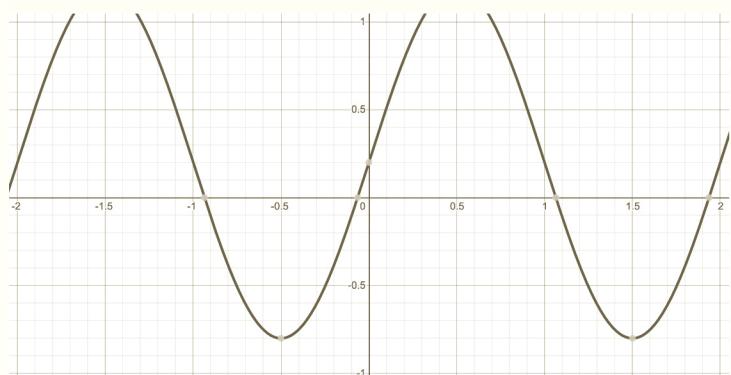
# Demonstration Of The Result Of Adjustment Of Various Values



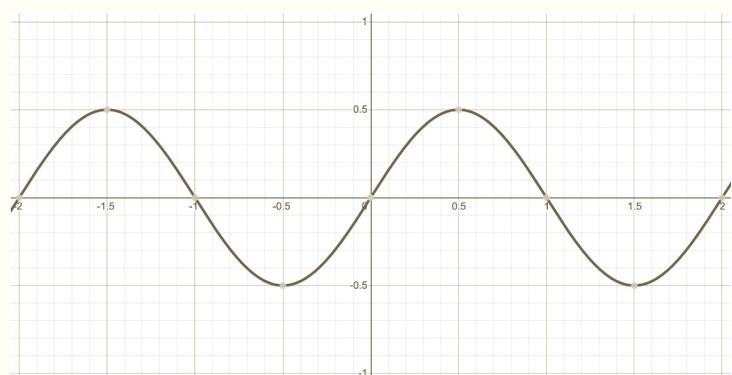
Input Signal



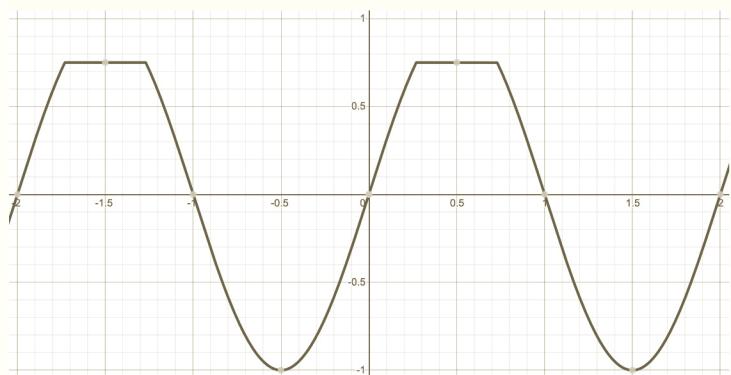
Signal Inverted



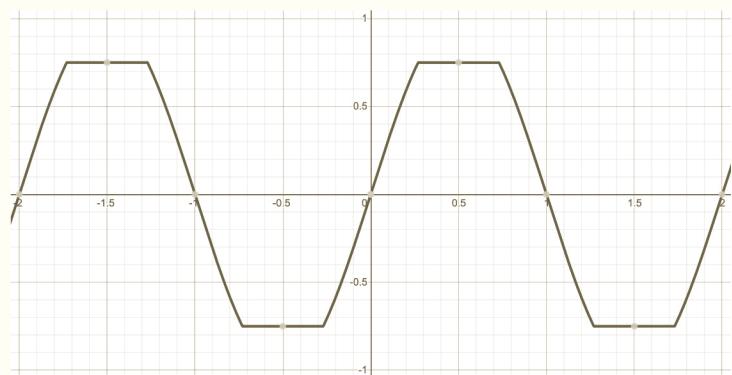
Offset: +0.2



Divided By: 2

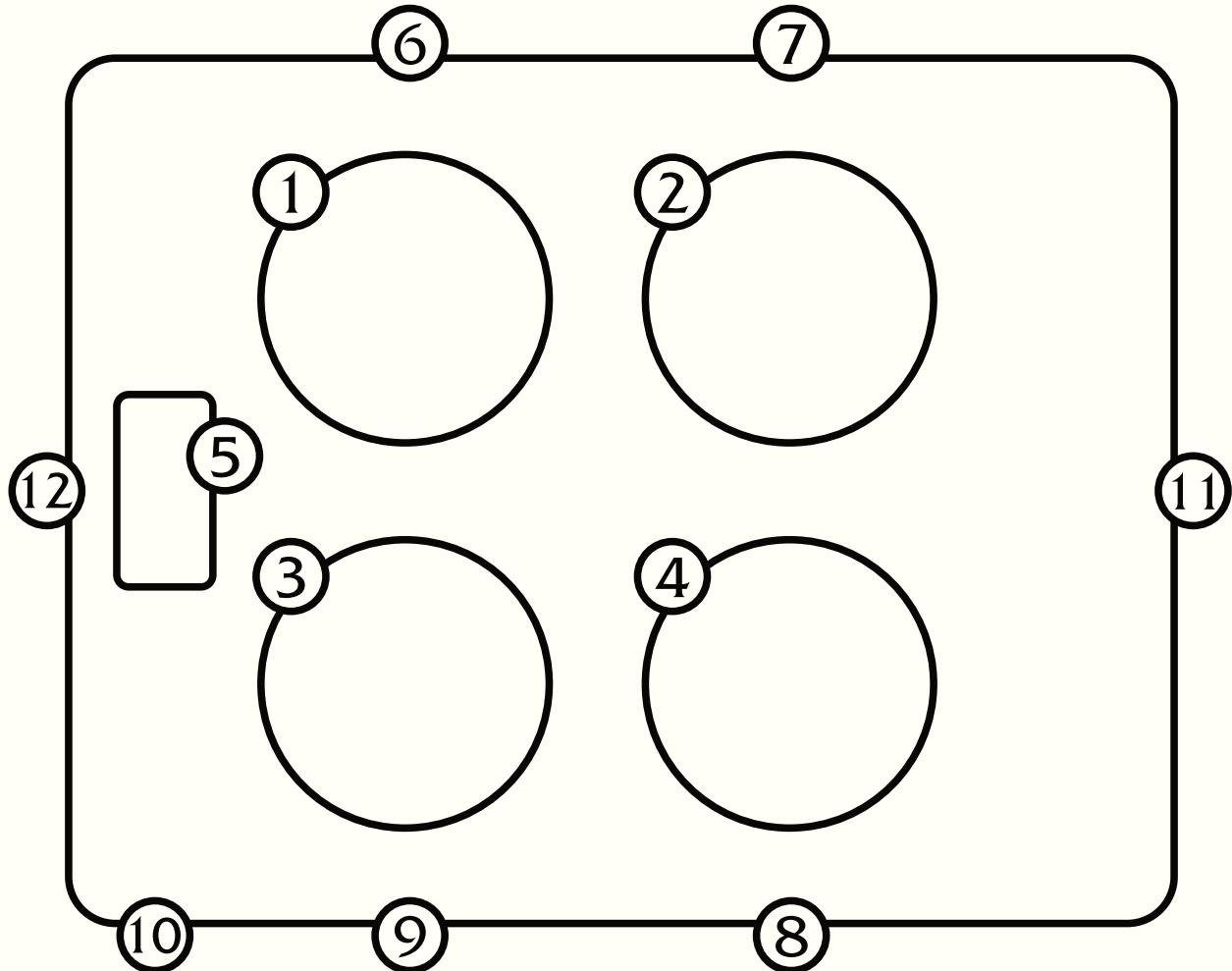


Upper Limit: 0.75



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

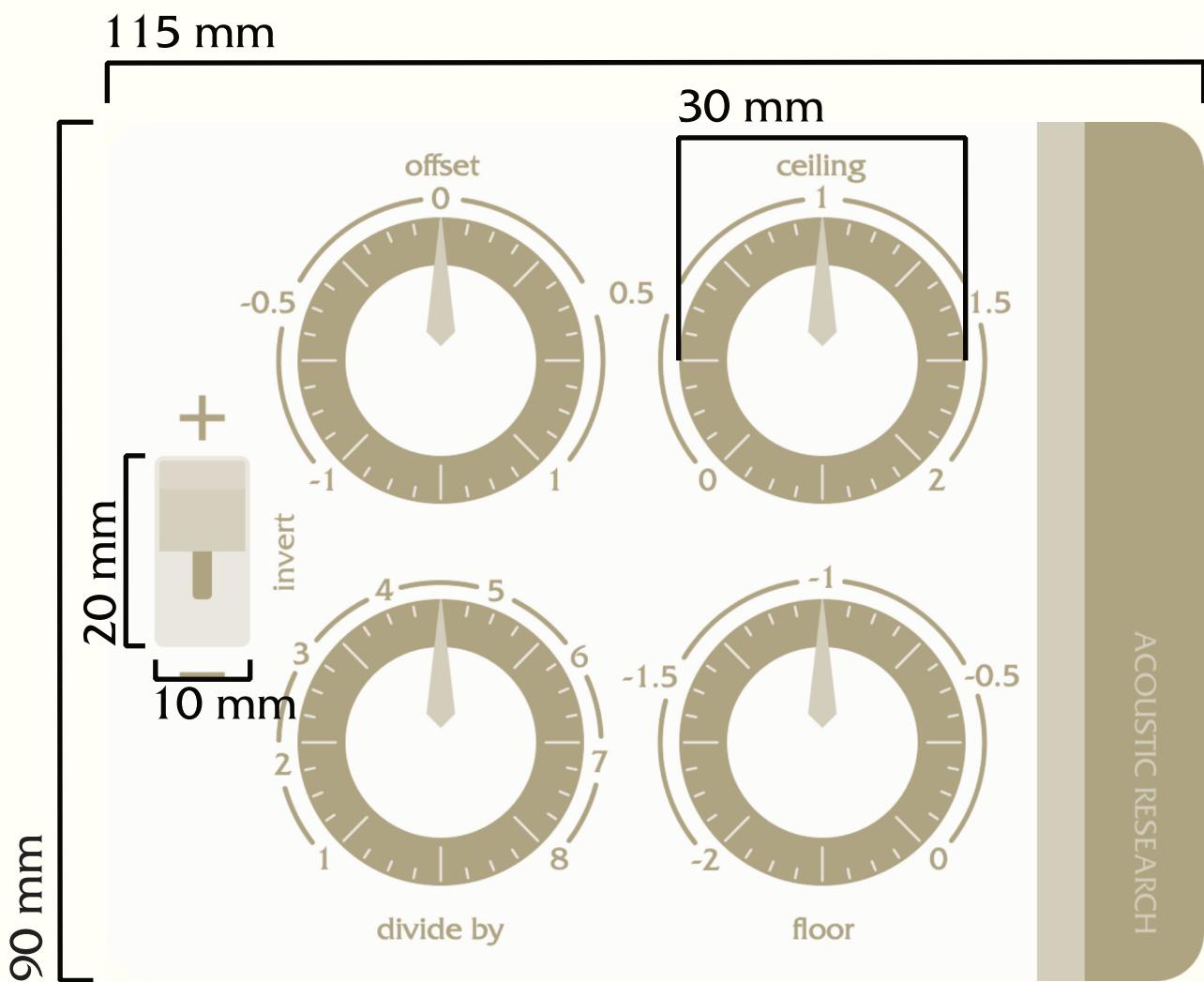
CUIS type: Orange

**12. Audio Signal Output**

The audio signal output connection

CUIS type: Orange

# Unit Specifications





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