

# Frequency Generator

Audio Signal Generation Unit  
User Manual And Technical Reference

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I wish you the greatest success in your research

*James Chaffinch*  
James Chaffinch, CEO

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# Description

The Frequency Generator is a waveform generator, which allows a user to select and produce waveform of a specific frequency, with detail of as little as 1/1000th of a Hz.

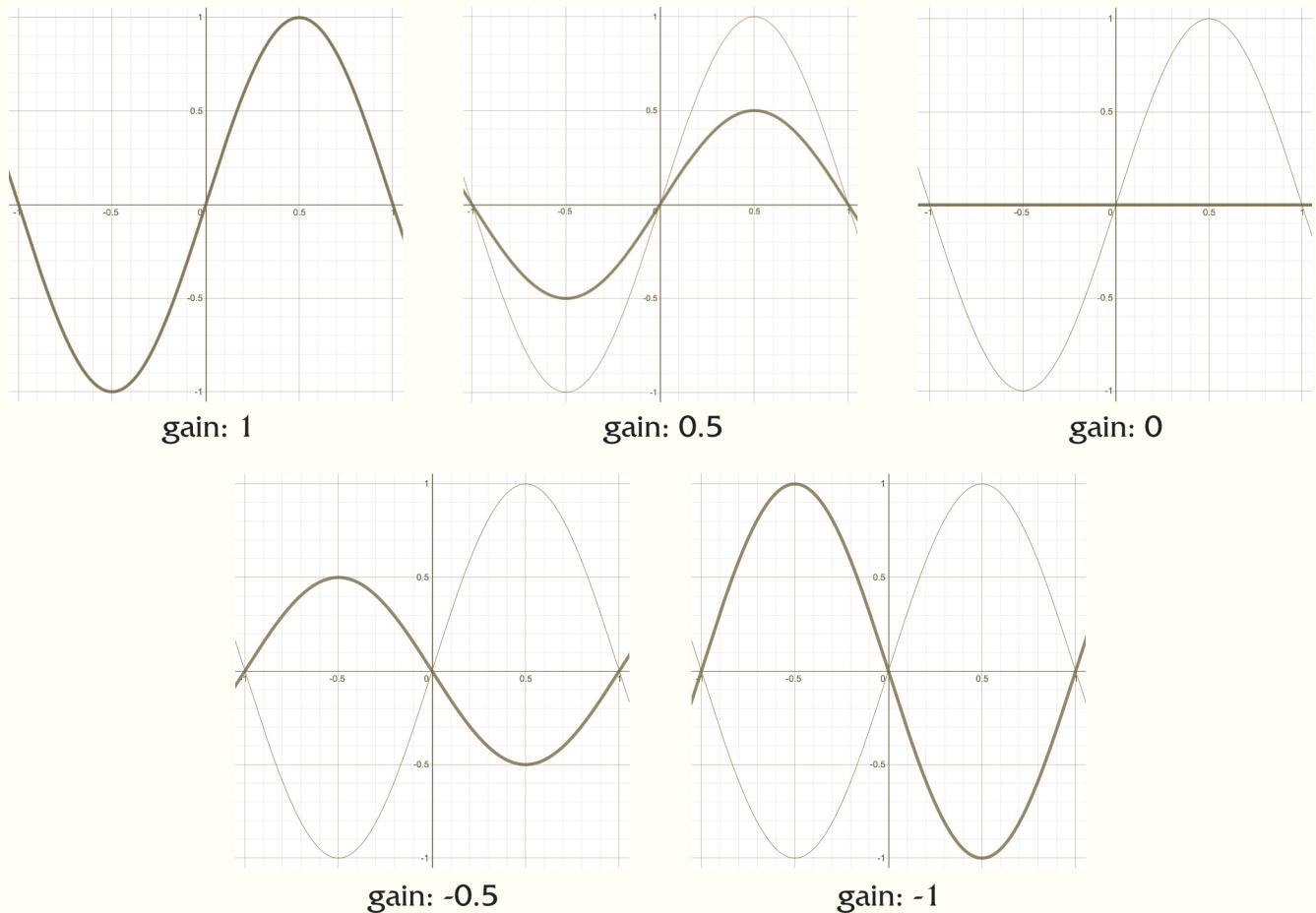
In addition, the unit provides the ability to modify the generated waveform in a number of ways; selection of wavetype, gain control, detune control and adjustment for wavetypes which will modify those types in a manor consistent with their nature.

Most powerfully, these attribute values can be defined using audio signals, allowing for detailed and swift modification of the produced waveform. One can even use the output of the same unit as an input for these values, producing self-referential waveforms.

The following sections discuss these aspects in more detail.

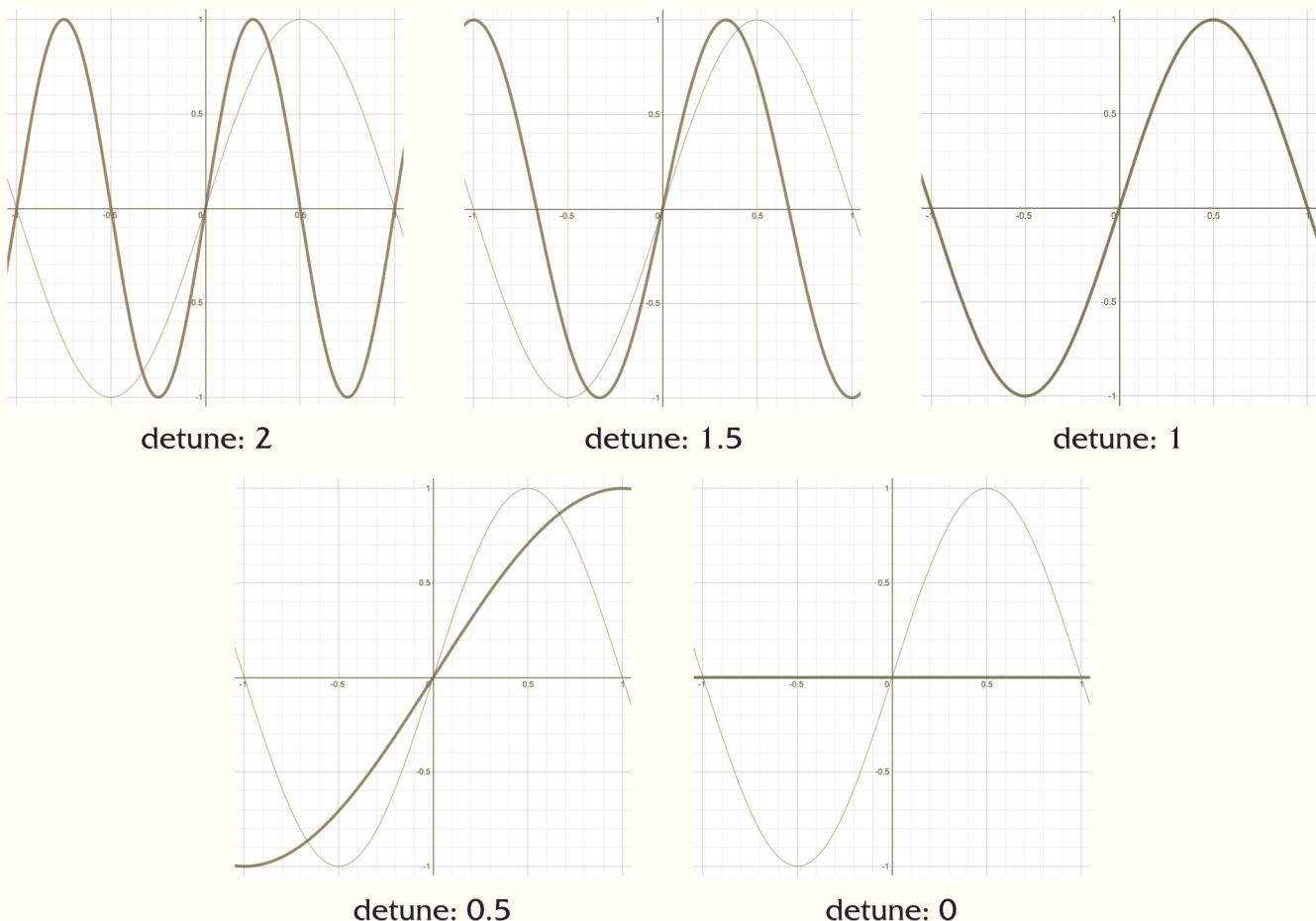
## Gain

This attribute defines the value that will be used to determine the size of the generated waveform. Its range is from positive 1 to negative 1, which allows for the waveform to be inverted.



# Detune

This attribute defines modifies the selected frequency of the generated waveform. Its range is from 0 to 2. The generated frequency is a product of the selected frequency multiplied by this value. For example; with a setting of '1' the generated frequency will match the selected frequency. With a setting of '2' the generated frequency will be twice the selected frequency. With a setting of '0' the generated frequency will be zero.



# Wavetypes and Adjust

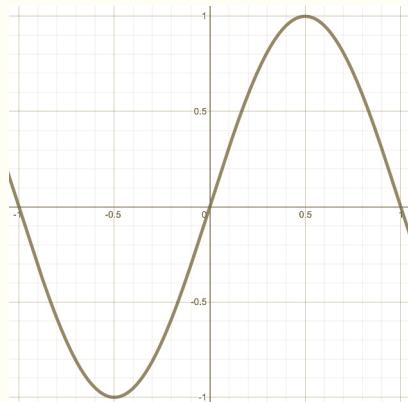
There are three main wavetypes available; Sine, Triangle and Square. The Adjust dial is used to modify the wavetypes in different ways. The manner of the modification is related to the wavetype.

The wavetype can be selected either with the three Waveform Select Buttons, or using the Waveform Select Toggle port.

The Adjust value can be set in three ways; either manually with the dial, using the Voltage Adjust Control, or with the Audio Signal Adjust Control. The dial and the Voltage Adjust Control port are tied internally, and adjusting the voltage will move the dial. The Adjust Control Select switch is used to select between using the dial/voltage input pair, or Audio Signal Adjust Control input.

## Sine

A simple Sine wave. The Adjust dial has no effect on this wavetype.



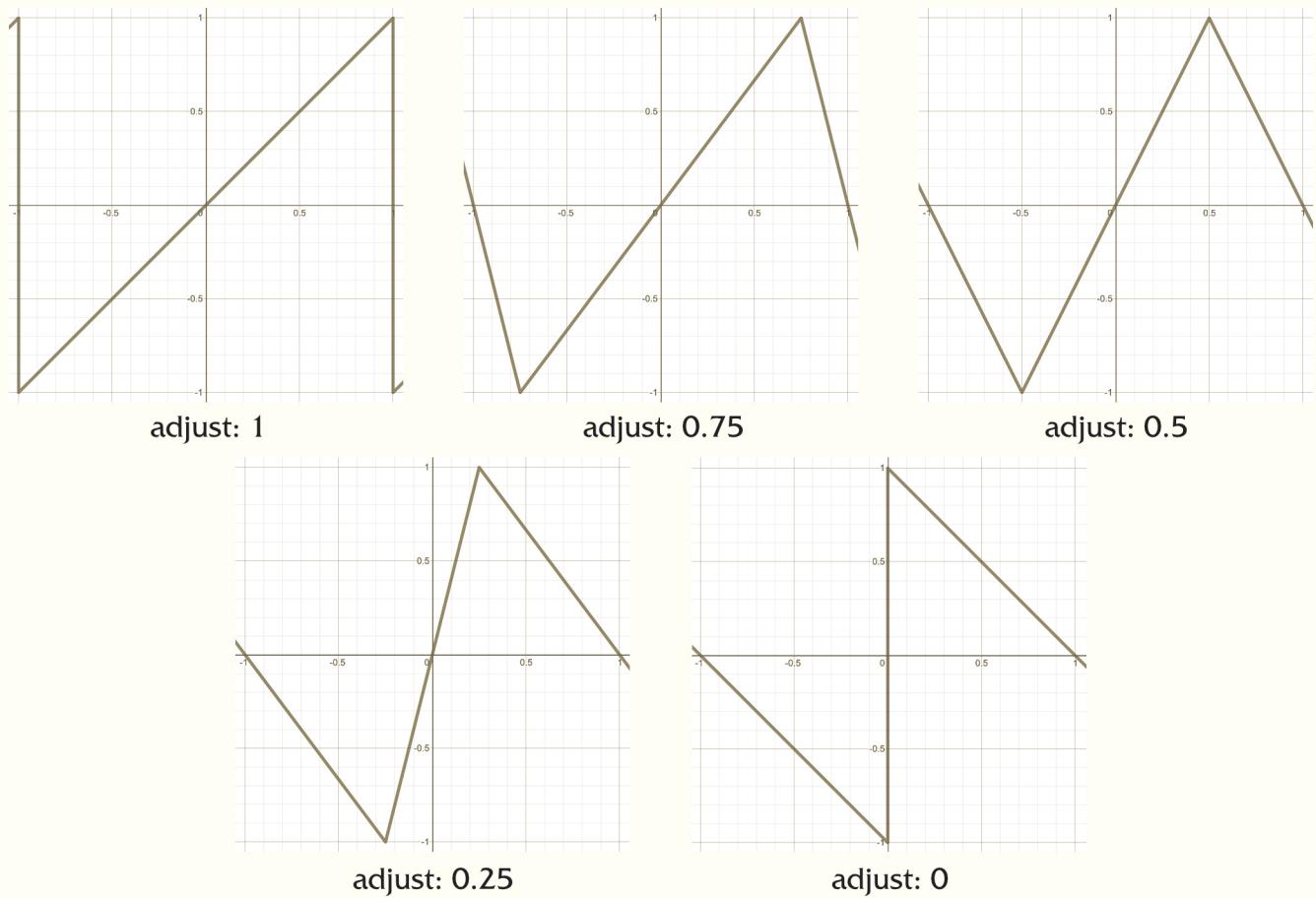
a simple sine wave

## Triangle

A linear ‘rise-and-fall’ waveform. In a Triangle wave both the ‘rise’ and ‘fall’ periods take 50% of the wave cycle time. The Adjust dial will modify these percentages.

For example, setting the dial to ‘zero’ will result in the ‘rise’ period taking 0% of the wave cycle time, while setting the ‘fall’ period to 100%. Such an arrangement results in a “Negative Ramp Saw Wave”. Setting the dial to ‘one’ will reverse the ‘rise’ and ‘fall’ values, resulting in a “Positive Ramp Saw Wave”.

Interstitial values will result in proportional ‘rise-and-fall’ percentages.

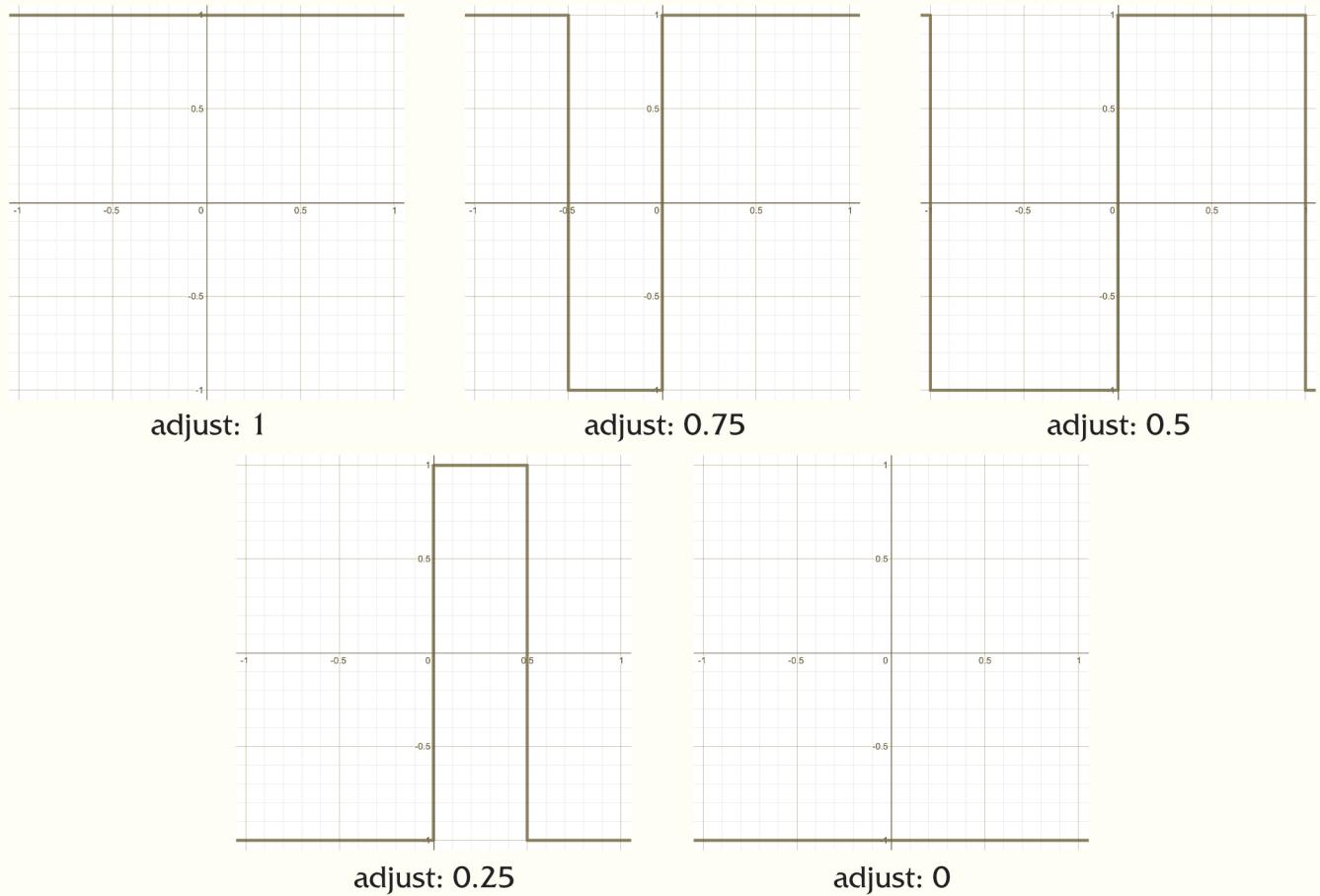


## Square

A logical ‘up-and-down’ waveform. In a Square wave both the ‘up’ and ‘down’ periods take 50% of the wave cycle time. The Adjust dial will modify these percentages.

For example, setting the dial to ‘zero’ will result in the ‘up’ period lasting 0% of the wave cycle time, while setting the ‘down’ period to 100%. Such an arrangement would result in the generated signal only consisting of the lower value of the waveform; essentially a constant value. Setting the dial to ‘one’ will reverse the ‘up’ and ‘down’ values, resulting in a constant higher value.

Interstitial values will result in proportional ‘up-and-down’ percentages.



# Interface

## 1. Gain Control Select

This switch is used to select between using the dial/voltage input pair (2 and 11), or Audio Signal Gain Control input (10)

## 2. Gain Dial

## 3. Detune Control Select

This switch is used to select between using the dial/voltage input pair (4 and 13), or Audio Signal Detune Control input (12)

## 4. Detune Dial

## 5. Adjust Control Select

This switch is used to select between using the dial/voltage input pair (6 and 15), or Audio Signal Adjust Control input (14)

## 6. Adjust Dial

## 7. Frequency Selector

## 8. Waveform Select Buttons

## 9. Audio Signal Output

The audio signal output

CUIS type: Orange

## 10. Audio Signal Gain Control

CUIS type: Orange

## 11. Voltage Gain Control

CUIS type: Green

## 12. Audio Signal Detune Control

CUIS type: Orange

## 13. Voltage Detune Control

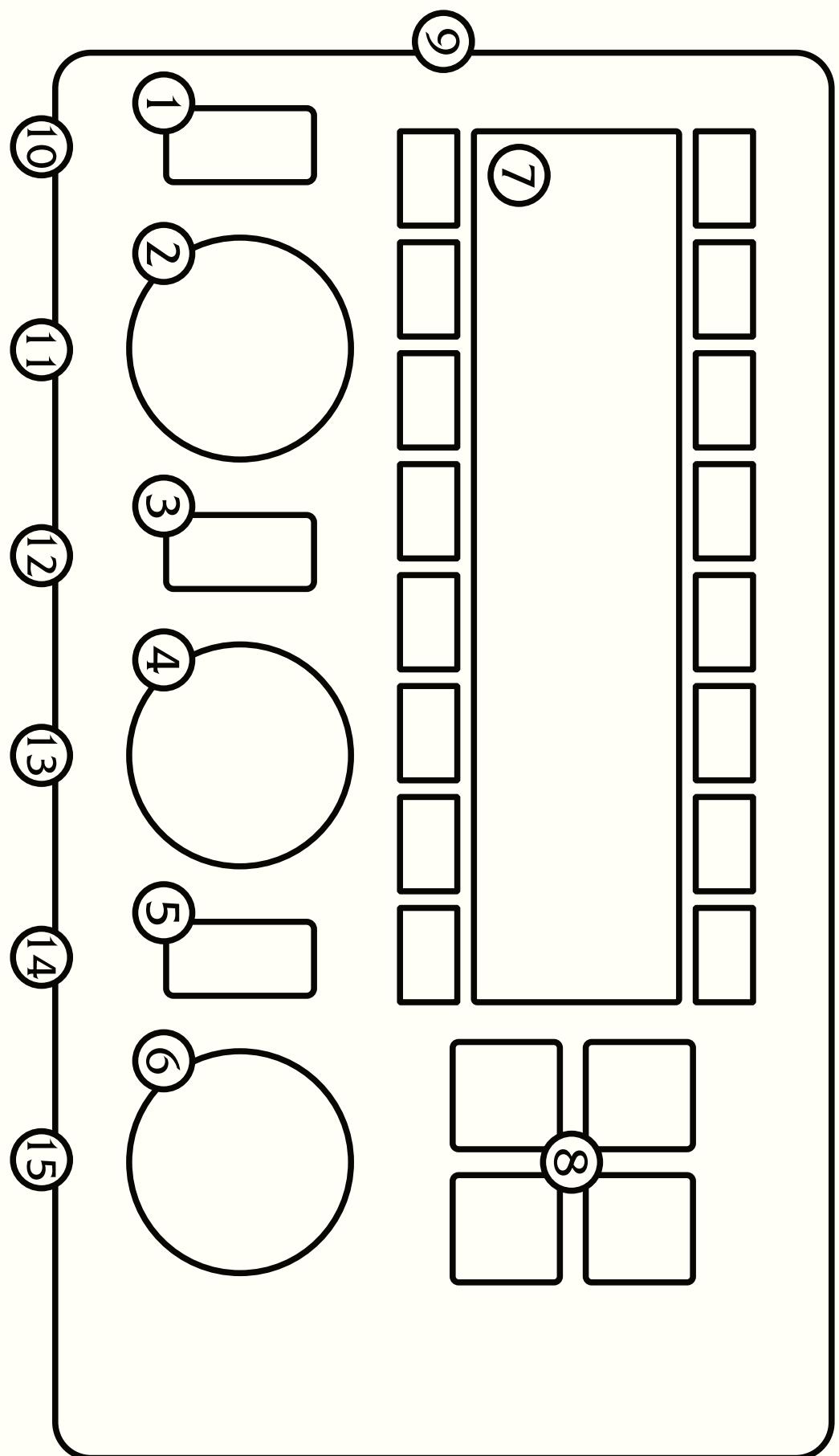
CUIS type: Green

## 14. Audio Signal Adjust Control

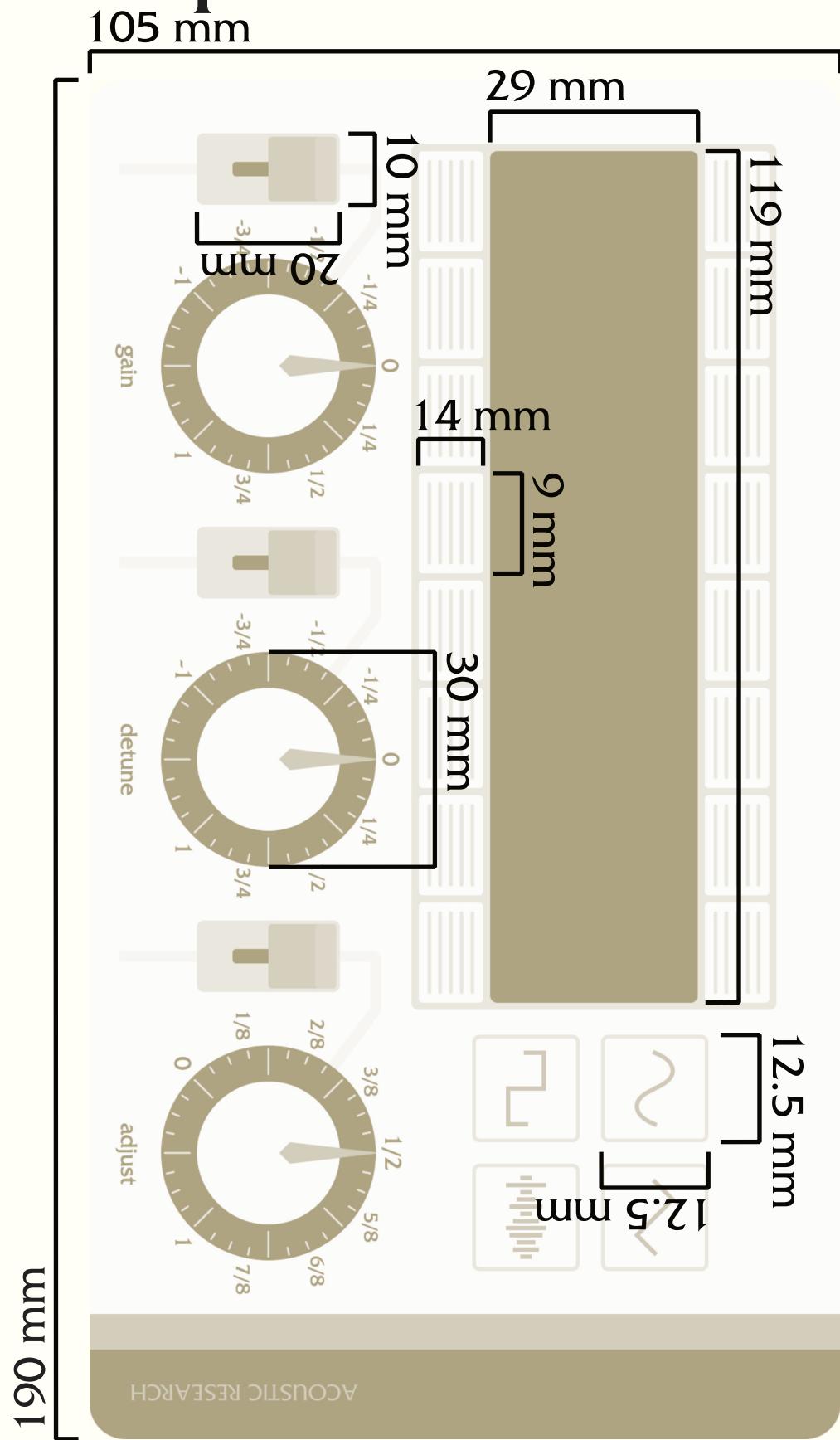
CUIS type: Orange

## 15. Voltage Adjust Control

CUIS type: Green



# Unit Specifications





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