

Data Controlled Frequency Generator

Audio Signal Generation 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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Description

The Data Controlled Frequency Generator is a waveform generator, which accepts data transmissions of the “midinumber” format to define which frequencies to produce. 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 manner consistent with their nature.

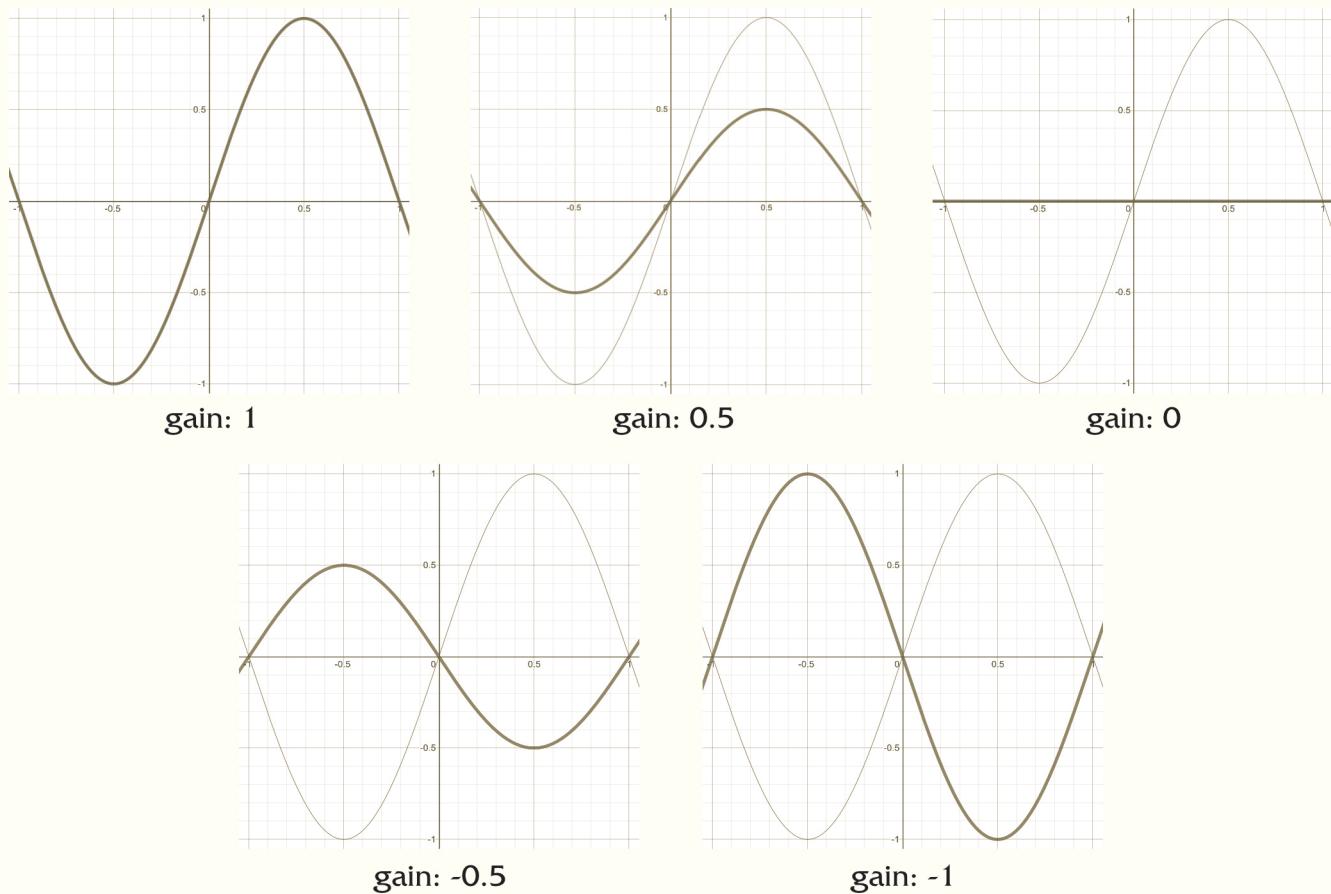
Most powerfully, these attribute values can be defined using audio signals, allowing for detailed and swift modification of the produced waveform. One can even use the output of the same unit as an input for these values, producing self-referential waveforms.

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

The following sections discuss these aspects in more detail.

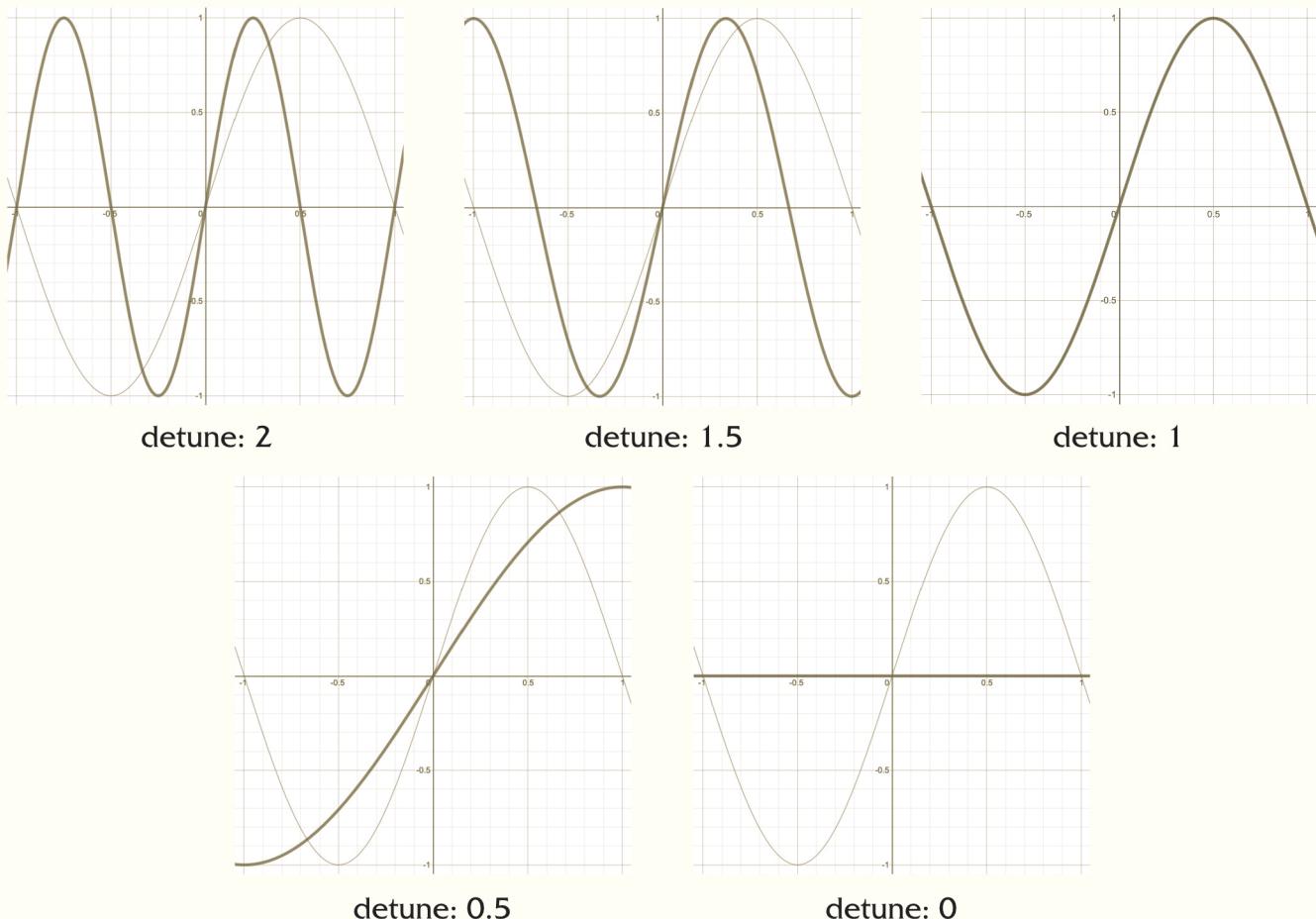
Gain

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.



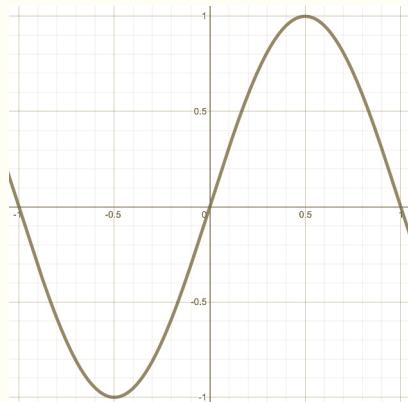
Wavetypes and Adjust

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.

Sine

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



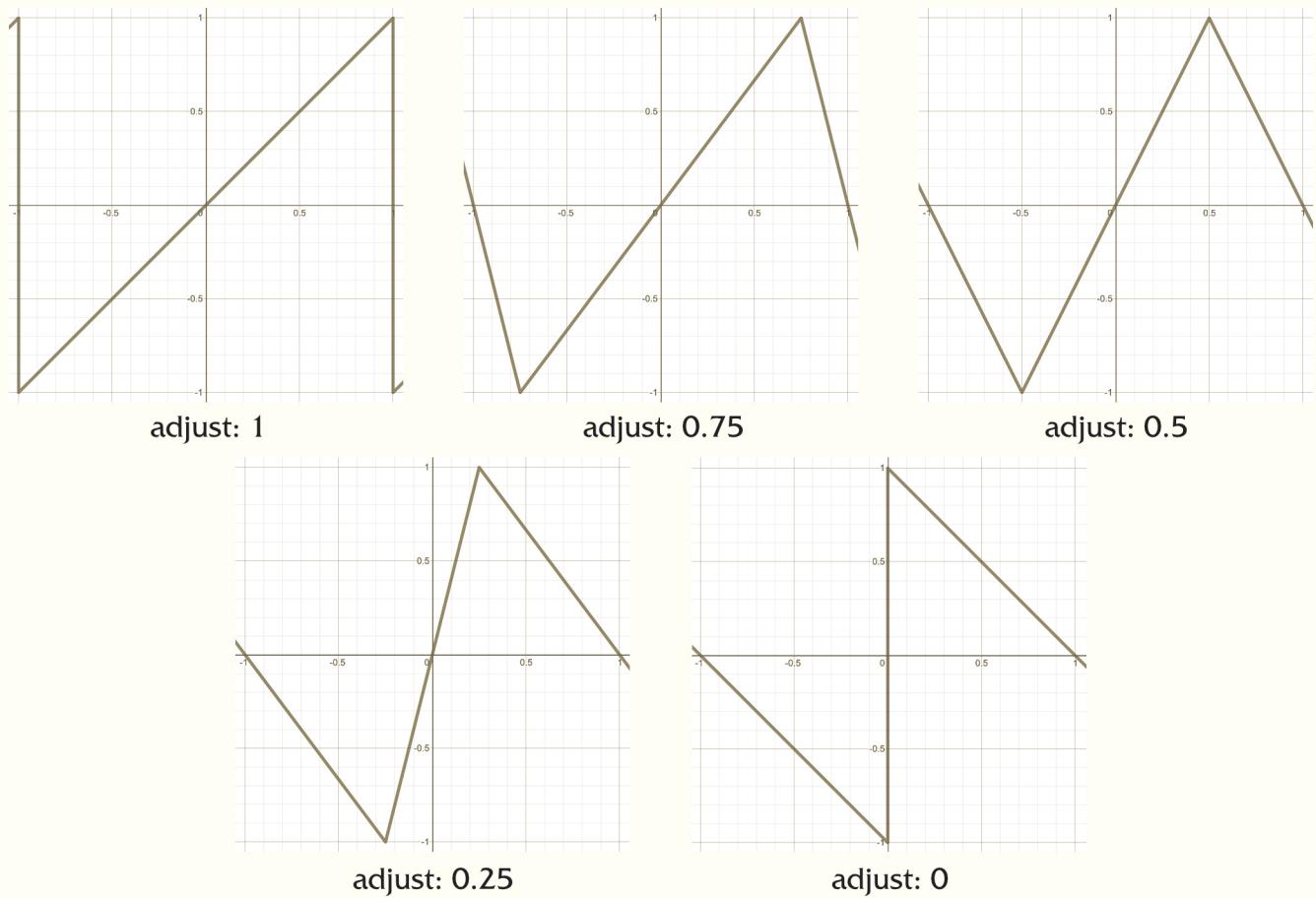
a simple sine wave

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.

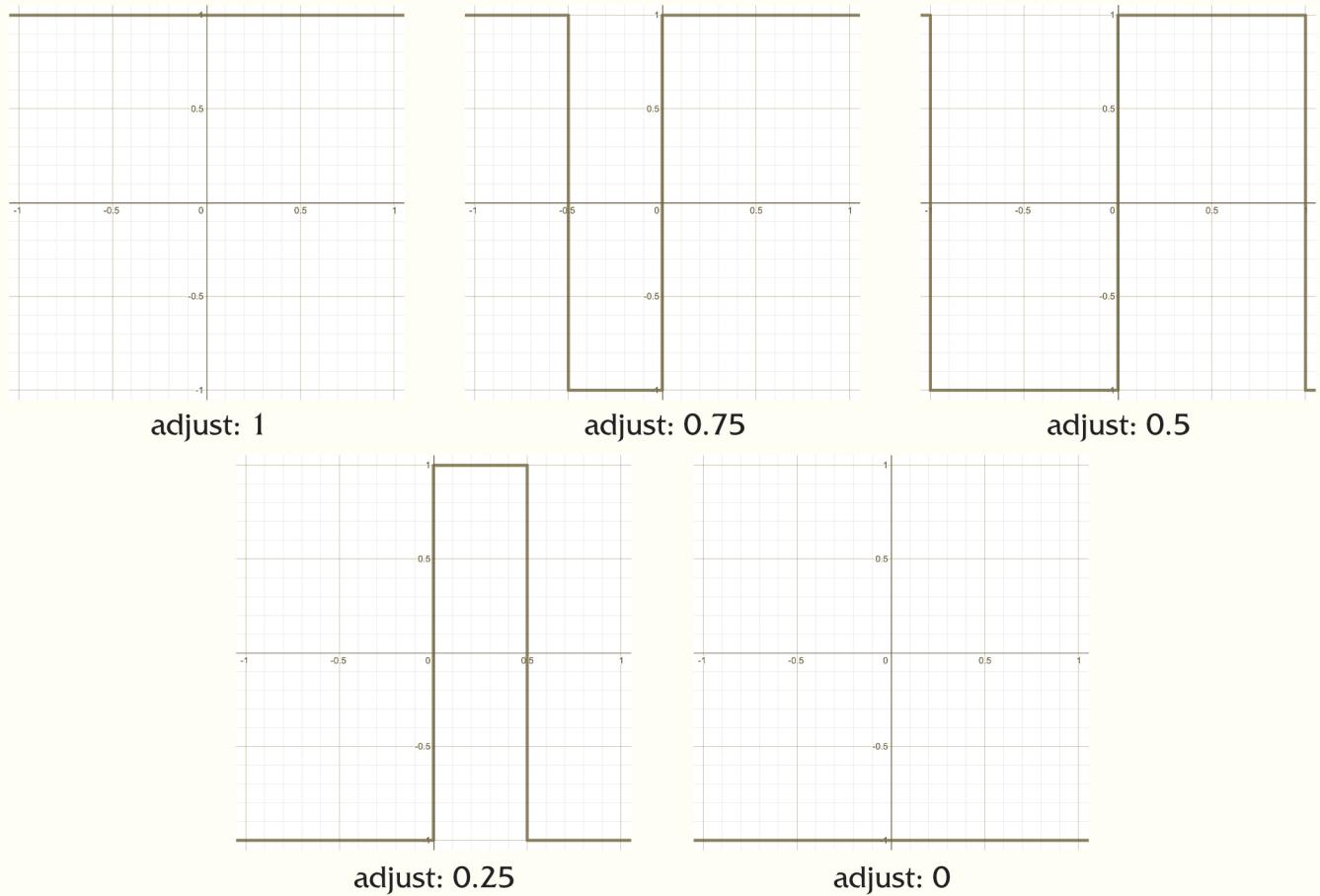


Square

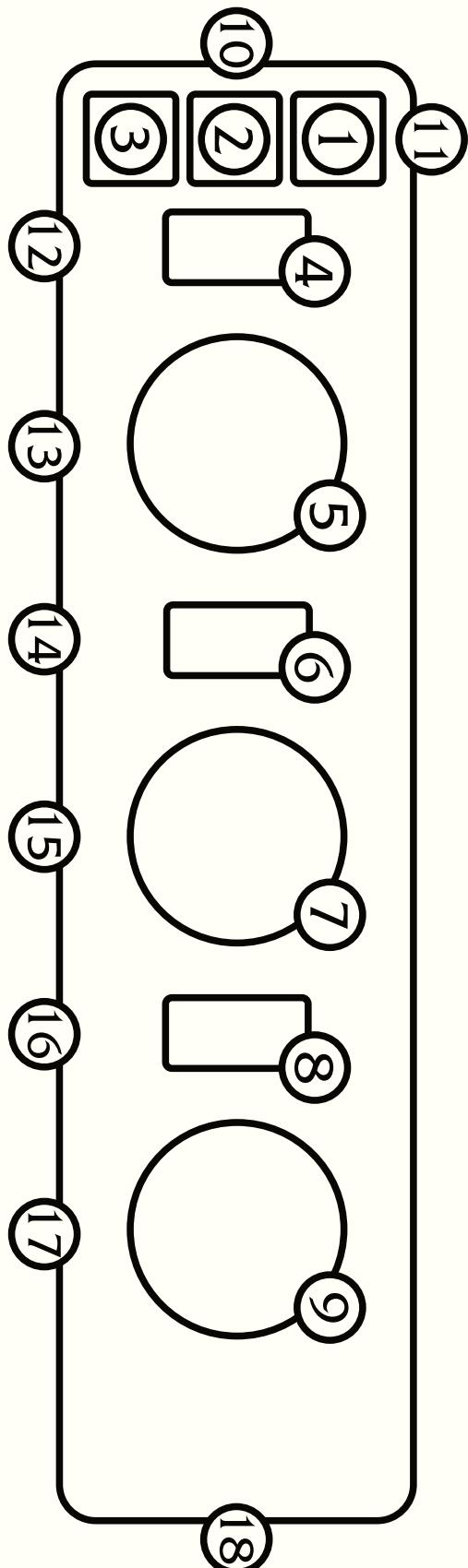
A logical ‘up-and-down’ waveform. In a Square wave both the ‘up’ and ‘down’ periods take 50% of the wave cycle time. The Adjust dial will modify these percentages.

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. Sine Waveform Select Button
2. Triangle Sine Waveform Select Button
3. Square Sine Waveform Select Button
4. Gain Control Select
This switch is used to select between using the dial/voltage input pair (5 and 13), or Audio Signal Gain Control input (12)
5. Gain Dial
Used for manually selecting the gain value
6. Detune Control Select
This switch is used to select between using the dial/voltage input pair (7 and 15), or Audio Signal Detune Control input (14)
7. Detune Dial
Used for manually selecting the detune value
8. Adjust Control Select
This switch is used to select between using the dial/voltage input pair (9 and 17), or Audio Signal Adjust Control input (16)
9. Adjust Dial
Used for manually selecting the adjust value
10. Audio Signal Output
The audio signal output connection

CUIIS type: Orange
11. Waveform Select Toggle
Used to externally select the waveform.
Repeated “Active” signals will cycle through all options in a loop

CUIIS type: Red
12. Audio Signal Gain Control

CUIIS type: Orange

13. Voltage Gain Control

CUIS type: Green

14. Audio Signal Detune Control

CUIS type: Orange

15. Voltage Detune Control

CUIS type: Green

16. Audio Signal Adjust Control

CUIS type: Orange

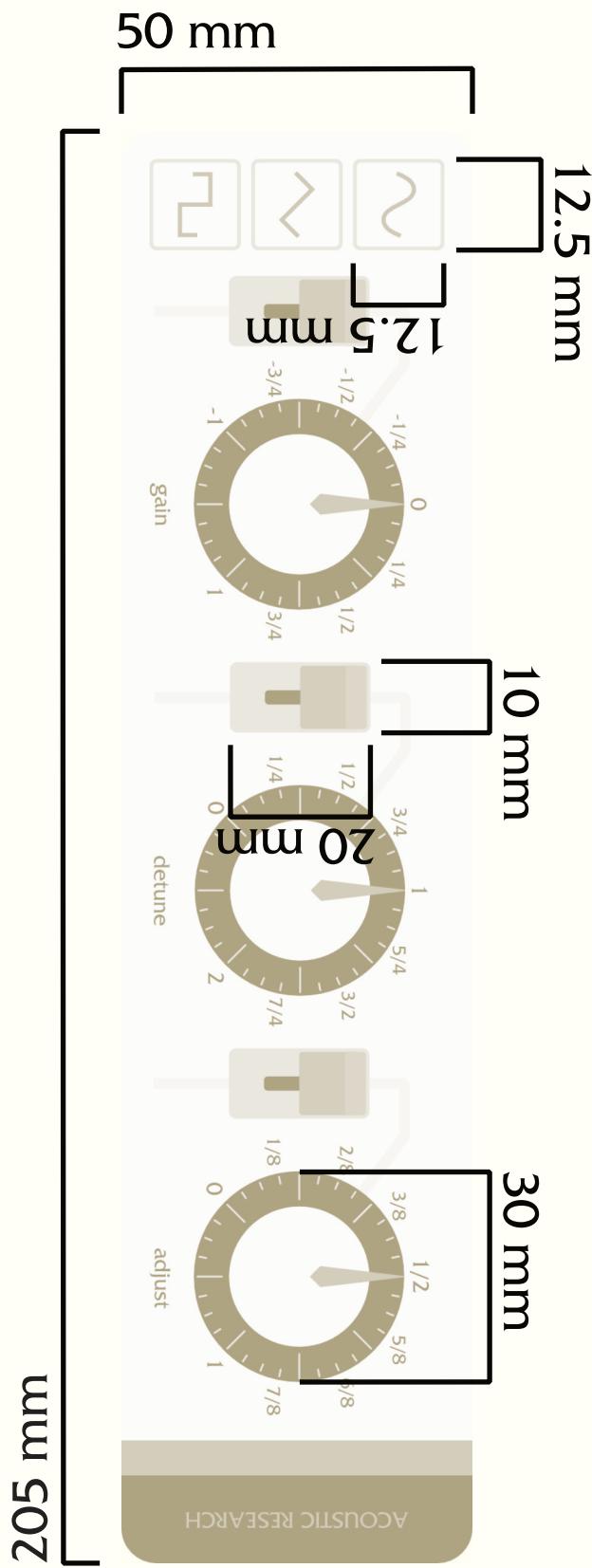
17. Voltage Adjust Control

CUIS type: Green

18. Musical Note Data Input

CUIS type: Blue

Unit Specifications



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