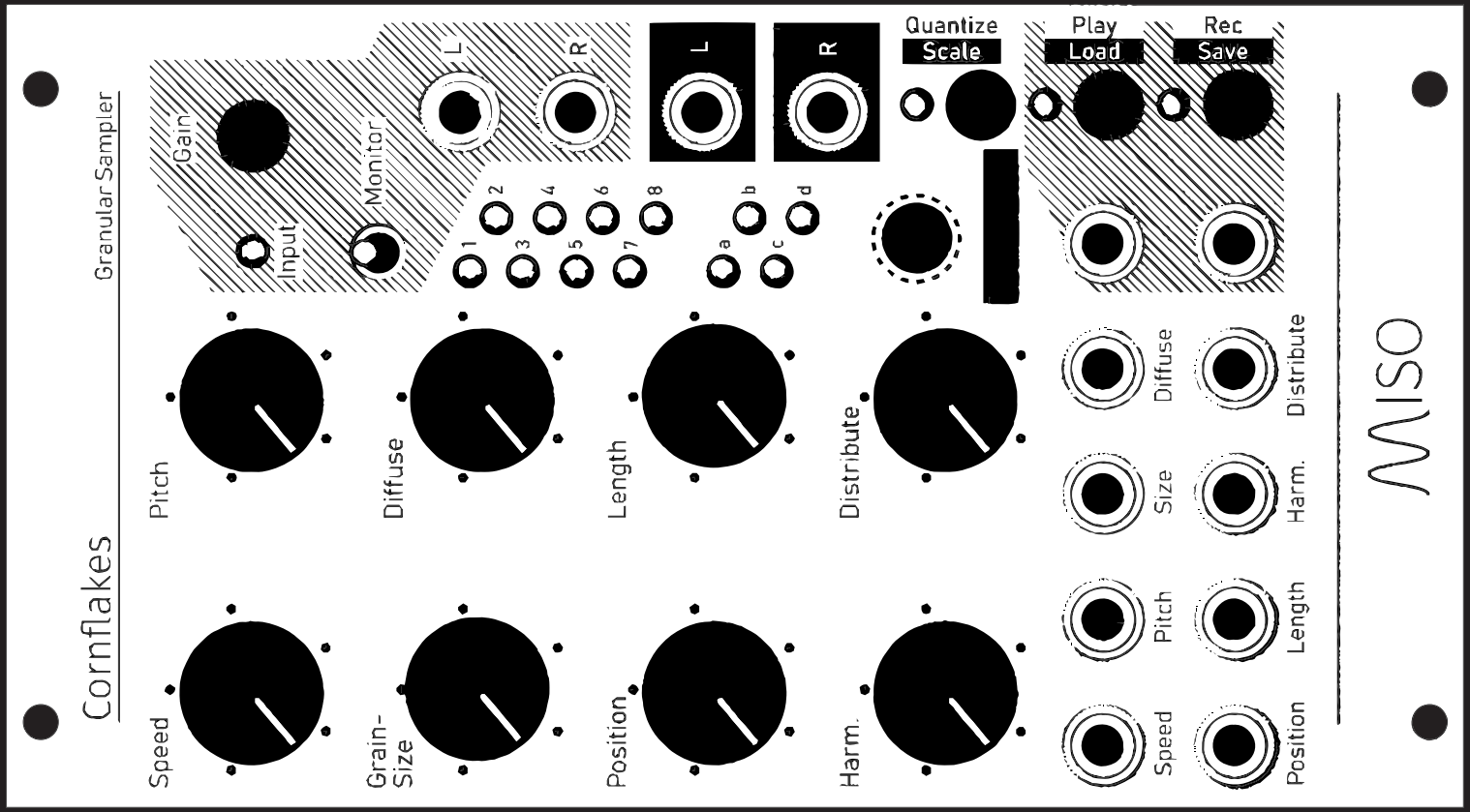
MISO

Cornflakes
Granular sampler

G02-M06-C02-S21-01

v070722



Cornflakes
Granular Sampler

CV-controlled sampler/looper/granulator with harmonization features.

Audio format:
- Stereo
- 48khz, 24-bit sampling.
- >100dB dynamic range
- THD+N: -95dB
- =~ 40 sec. recording duration.

Power consumption (typical):
- 150mA @ +12v
- 40mA @ -12v

Size:
- 14HP
  (128.5mm x 70.8mm)

In the box:
- Cornflakes Granular Sampler
- Power cable
- 4 mounting screw
- Manual

N.B.: SD-card is not included.

Cornflakes is a stereo sampling effect for the Eurorack modular synthesizer system,
It is meant for manipulation of sounds that can either be recorded directly on the module, or loaded from a SD card.

The module is a granular effect meaning, that instead of playing its samples back conventionally, it will split the recording into smaller pieces, called grains.
Cornflakes always plays back a multitude of grains at once. The size, pitch and structure of these grains determines the effect it will produce. Such effect could be: time stretch, pitch shift, harmonization or any combination of those.

Cornflakes has a fast internal memory which makes it possible for it to operate with very little latency. For this reason, stored sounds from SD card are always transferred to the internal memory before they are played back. Cornflakes can likewise store its internal memory onto a SD card in one of the 32 slots available. The slots are divided into four banks of eight.

There are manual and CV control over Speed, Diffusion, Harmonics, Pitch, Grain Size, Position, Trim and Distribution.

The controls on Cornflakes are optimised to be intuitive, fast and responsive.

Module overview:

1: **Speed:**
0x - 2x.

2: **Pitch:**
-2 oct to +2 oct.

3: **Grain Size:**
<10ms - buffer length.

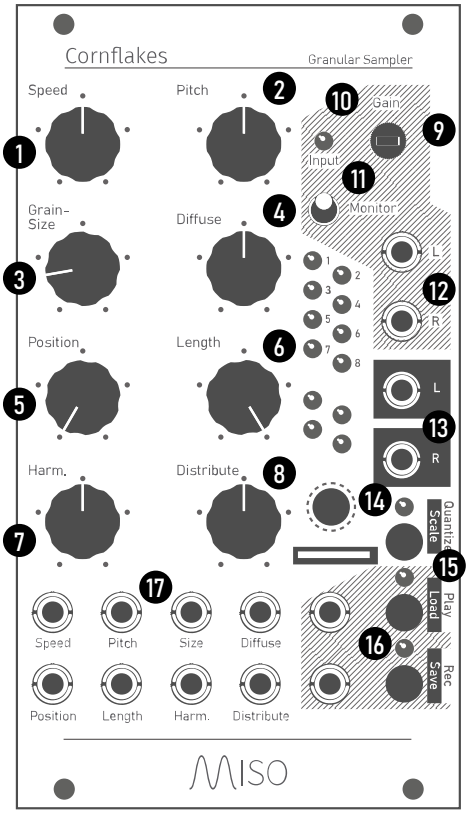
4: **Diffuse:**
Randomizes sample position and grain lengths

5: **Position:**
Start position in buffer.

6: Loop **length** adjust.

7: **Harmonize:**
Harmonic tilt.
-2 oct to +2 oct.

8: **Distribute**:
linearity of harmonization.



9: **Gain**:
-18dB -+6dB

10: **Input monitor LED**. Red = signal clipping.

11: **Monitor switch**: Toggle input monitoring.

12: **Inputs**
left and right. (Normalized)

13: **Outputs**
left and right.

14: **Function button**. Toggles slot and bank selection.

15: **Quantize toggle**.

16: **Play and Rec buttons.**
(Also functions as buttons for saving and loading).

17. CV specifications:

- **Speed:** -5v - +5v, 0x - 2x speed.
- **Pitch:**-3v - +3v, 1v/oct. 6 oct. range
- **Grain Size:** -5v - +5v, <10ms – full sample length
- **Diffuse:** -5v - +5v. Randomizes grain position and length.
- **Position:** -5v - +5v, Full range of buffer. Relative to playback position.
- **Trim:** -5v - +5v. Grain-size – buffer length.
- **Harm.(Harmonization):** -3v - +3v. 1v/oct. 6 oct. range.
- **Distribute:** -5v - +5v. Distribution of harmonic voices.

Getting started:

Press record to record a sample
Press record again to stop recording; Playback will start automatically and play in a loop.

Playback behaviour:

Manual sampling. (Playback and record buttons ⓰)

- **New recording:**
  When a recording is started without playback enabled, the recording will clear the buffer and start recording from the beginning. The length of the loop is determined by the length of the recording.
  The record led will light up with a steady light during recording.
- **Replace audio:**
  When record is pressed while playback is enabled; recording will start at the position of the playhead and progressively replace the recorded buffer.
  The record led will blink while replacing the audio.

If the play button is pressed during recording, the module will start playback of the recorded buffer in a constantly growing loop increasing with the recording.

If the recording is left on, it will stop automatically when the buffer is full.

Controlling the module with trigger- or gate signals:

The play- and rec-CV inputs ⓰ follows same logic as the buttons, but changes function depending on the state of playback/recording.

When the playback/recording has not been enabled by buttons, the jack inputs works as logical gates, with a logical HIGH enabling the function and LOW disabling it.

When playback or recording is started by button press, a gate signal from the CV-inputs will work as triggers to reset the position of the play-head:

A trigger on the play-CV will reset the play-head to the position determined by the position-knob.

A trigger on the record-CV will reset the play-head to the position of the recording head.

Example: Live Mode

It is possible to use Cornflakes as a realtime effect by following these steps:

- Make sure playback and recording is inactive.
- Record a loop – the length of the recording defines the input delay/ buffer length.
- Put the module into replace mode by pressing the record-button while playback is enabled.

The recording will now continously replace the existing audio in the buffer.

Pitch Quantization:

The quantize-button ⓯ toggles between three modes of operation:

· **LED off**: no quantization

· **LED on**: quantization enabled for the harmonizer.

· **Flashing LED**: quantization enabled for both harmonizer and master pitch.

Scale:

By default, the pitch quantization is set to force the master pitch and the pitches of the harmonizer into the nearest note in a 12 tone equal temperament scale.

Other tunings can be loaded from scala-format files on the SD-card.

Scala files should be placed in a folder on the SD card called **"scala"**. The filename defines the bank (A-D) and slot (1-8) on the module e.g. " **A1.scl**".

To load a user scale from the SD-card: select the slot and bank to recall, and hold function-button⓮ while short-pressing the quantize button⓯.

The tunings are defined by the format of the scala file. Visit this link or scan this QR-code to read more about the format:

Harmonization:

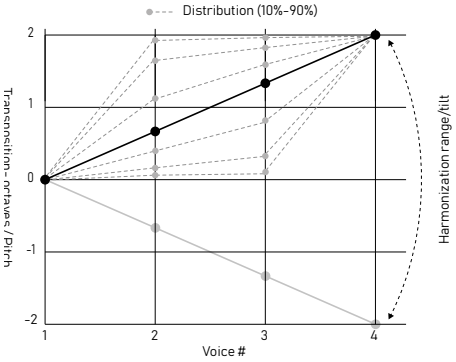
Cornflakes, being a granular effect, does not play its samples back conventionally, but split them into smaller bits called grains.

Furthermore, the grains are divided into four simultanious voices to allow for polyphonic pitch control or harmonization.

There are two controls for the harmonization:

· Harm. ❼: This controls the harmonic tilt of the voices. It also equals the harmonic position of the 4th voice. The range scales from -2 oct. to 2 oct.

· Distribute❽: This parameter controls the distribution of two voices between the fundamental and the 4th voice. At 12 o'clock the distribution is linear.



A video about harmonization is available via this link or by scanning the QR-code found here:

Loading and saving:

A short press on the function-button ⓬ toggles the upper LEDs and its corresponding storage slots.

(NB: The function-button responds on release!)

A longer press will toggle the lower LEDs and the corresponding storage bank.

To save the recorded buffer to SD-card: select desired slot and bank hold the function-button while short-pressing the save-button.

To load a sample from the SD-card: select the slot and bank to recall, and hold function-button while short-pressing the load-button.

Transfer files to and from SD-card:

- Use a SD-card with up to **32GB** capacity, **speed class 10** or higher, formatted as **FAT32**.
- Files are in **wave** format, **mono** and **16bit/48kHz**.
- Files are split in left and right channel for all banks/slots (this method was chosen to speed up the reading process of loading files into the internal memory).
- **Files are named after the bank, slot and channel**.
  E.g.: a1l.wav and a1r.wav corresponds to left and right channel of bank a, slot 1.

Fimware Update

NB: Do not follow the instructions, printed or digital, prior to this version!*

1. Download the new firmware and transfer it to SD-card.
2. Power down the module/system.
3. Insert the SD-card with firmware into the module.
4. Press and hold the record button while powering on the module to enter Bootloader mode.
   The module will boot instantly and the record button can be released.
   The record LED will be lit to indicate bootloader mode.
   NB! It is very important to hold only the record-button when booting!*
5. When in bootloader mode: Press the play-button to start updating. The play LED will start blinking rapidly.
6. Press play-button again to confirm the update. The play-LED will stay on while the firmware is flashed Once the update has completed, the play-LED will turn off and the rec-LED will turn on.
7. Power cycle the module after updating.

*Firmware updating is at the risk of the end user. Incorrect button combinations during boot-up can lead to errors and could leave the module in need of factory recalibration.
Such repairs and recalibrations is not covered by Miso ApS and is only performed at the expense of the end user.

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