

FERROVOX

Ferrovox is a Kontakt sample instrument designed for characterful organs and textured pads, with extensive tone blending and deep modulation for a wide range of sound.





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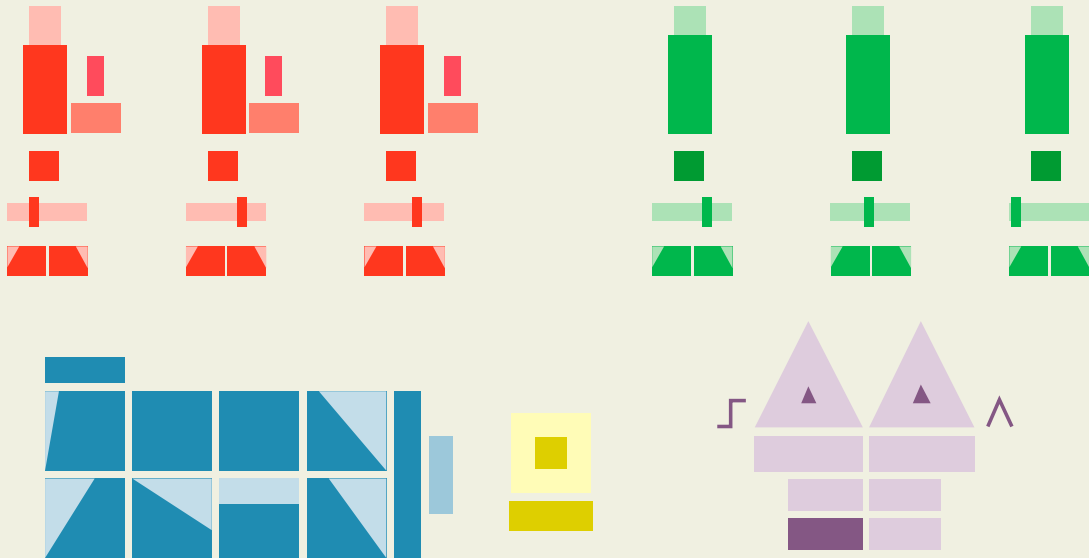
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1. At a Glance



Sound Engine

- 3 main sample variations
- 3 tones per variation, recorded with different microphones
- Individual volume, pan, high-pass & low-pass filters for every variation and tone
- Independent pitch tuning & octave selection for each variation
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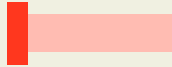
Performance & Modulation

- Switchable attack samples
- Velocity-sensitive filtering & round-robin-style sample variation
- 2 ADSR envelopes for the global amplifier & filter
- 2 LFOs, each with 7 waveforms
- 33 independently assignable destinations
- LFO self-modulation & cross-modulation

Additional Features

- 8 convolution reverb spaces
- 16 integrated presets
- Built for future sample-set expansion

1.1 - Why



The initial idea for the Ferrovox was to create a sample instrument with an organic and characterful base sound, which could quickly be molded into different shapes in terms of tone and dynamics; somewhere in-between a tonewheel organ and a classic synthesizer.

Having this in mind, it was further decided that the samples should be recorded with a non-traditional instrument (from a western perspective) played with a non-traditional technique.

The samples have been hand tuned to not be clinically perfect in terms of pitch; to add thickness and movement when multiple notes are played simultaneously. Furthermore the playing technique added an additional layer of instability in pitch and timber.

1.2 - How

At its core, Ferrovox is a Baby Guzheng - A small version of a traditional chinese zither, played with a device called Ferrous - A handheld rotating magnetic resonator.

The Guzheng is a long, wooden hollow body zither with a bright but full-bodied sound when plucked. As mentioned, the one used for Ferrovox is a small version, but was strung with strings meant for a full sized version, resulting in somewhat softer sound with a pronounced sympathetic resonance.

The Ferrous is a boutique device, built by [Landscape](#) - a company out of Brooklyn, New York. When using it on a stringed instrument, it's easy to think of the Ebow, in terms of how it also excites steel strings in a sustained way. But the Ferrous is a fair bit more intricate and interesting than that.

It works by having six magnets on a spinning disc create magnetic fields which excite the strings. By varying the speed and the distance/angle to the strings, it can produce a wide range of complex sine-like waveforms that can be rich in overtones.

The Ferrovox was recorded playing multiple single notes over three separate variations:

***Main** - Ferrous fixed statically above the strings resulting in a stable note.*

***Vibrato** - After initial excitation, the strings were made to slightly fluctuate in pitch by controlling the rotational speed of the Ferrous via its CV input, creating vibrato.*

***Harmonic** - By moving across multiple strings close to the bridge of the Guzheng, an evolving bowed-like sound, rich in varying overtones was achieved.*

Additionally, three “tones” per variation were recorded using three microphones.

***I** - Small lavalier microphone placed inside the body of the Guzheng, at the lip of the sound hole, resulting in a resonant mid-heavy sound with subdued high and low end.*

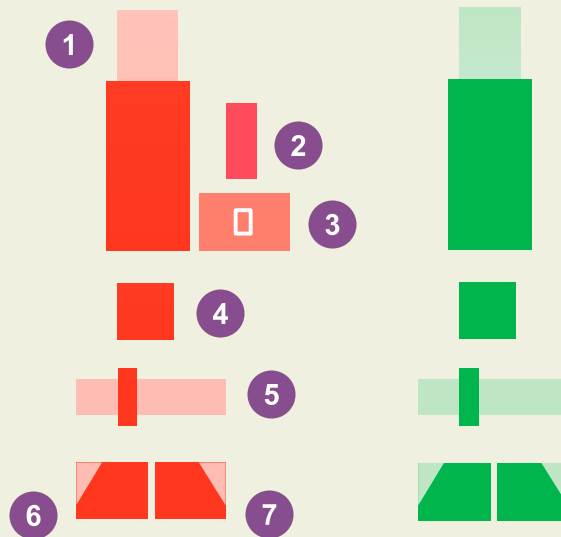
***II** - Condenser microphone placed above the guzheng resulting in a full and natural sound.*

***III** - Piezo microphone attached underneath the guzheng close to the bridge, resulting in a sharp, metallic sound with a fair bit of the mechanical rotation sound from the Ferrous poking through.*



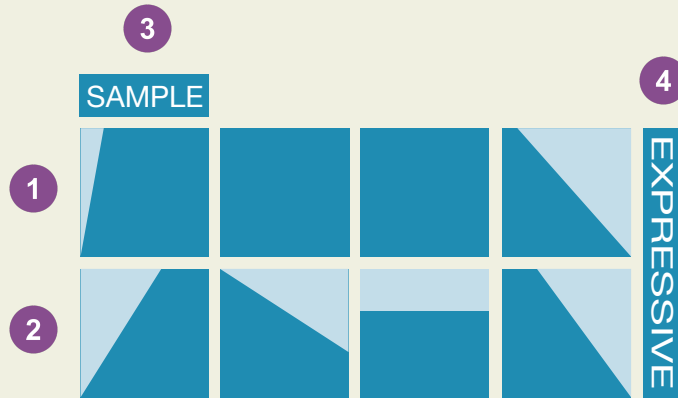
2. Interface & Functions

2.1 - Variations & Tones



- 1 Volume**
Relative volume between Variations and Tones.
- 2 Tuning**
Small pitch adjustments in cents from -6.00 st to +6.00 st (12 semi-tones.)
Hold down SHIFT for extra fine tuning.
- 3 Octave**
Selects the octave of the Variations from -2 to +2 octaves..
- 4 On/Off**
Acts as a mute switch but also saves resources by not triggering the samples when OFF.
- 5 Pan**
Standard left-to-right panning.
- 6 High-Pass Filter**
Low-cut below set frequency.
Slope: 24db/oct. Frequency range: 25hz-1.7khz.
- 7 Low-Pass Filter**
High-cut above set frequency.
Slope: 24db/oct. Frequency range: 55hz-15khz.
Both filters used together act as an adjustable-bandwidth, band-pass filter.

2.2 - Envelopes & Dynamics



- 1 VCA**
Envelope for the global amplifier with four stages - *Attack, Decay, Sustain & Release*.
- 2 VCF**
Envelope for the global filter with four stages - *Attack, Decay, Sustain & Release*.
- 3 Attack Sample**
Decides whether the attack stage includes the naturally recorded attack or not.
All three Variations were recorded with a natural attack capturing the initial excitation of the strings.
When this switch is set to OFF, the sample starts 1 second into the recording, thereby skipping the natural attack of the instrument and allowing for a very fast, artificial attack.
- 4 Expressive Playing**
Allows for a more performance oriented and dynamic response of the sound.
When ON, two things happen:

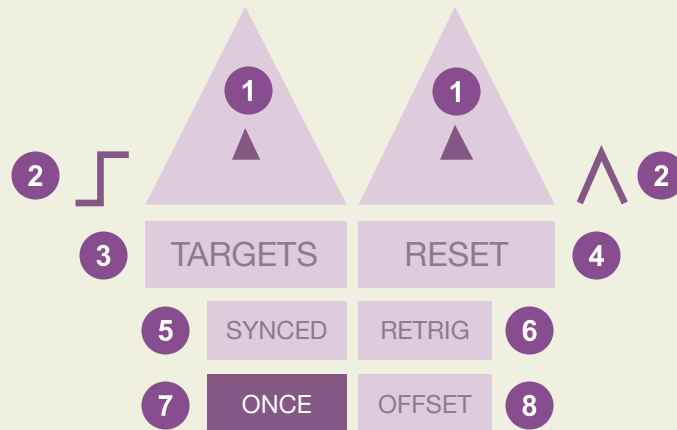
First, velocity controls a global low-pass filter, producing a darker sound from softer notes and a brighter sound from harder notes.

Second, while notes are held, each new note starts at a different position within a continuous sample-offset loop instead of at the beginning of the sample. This creates a one-sample round-robin effect, adding variation to repeated notes.

The loop remains active for 200 ms after the final note is released. Notes played within this window—such as during fast arpeggios—continue using the changing sample offsets.

The envelopes are unaffected and restart with every new note.
- 5 Mono**
Monophonic voicing.
The envelopes do not retrigger when a new note is played while another note is held.

2.3 - LFOs



1 Speed

Sets the speed of LFO1 and LFO2.

Range when free: 0.01 Hz - 25 Hz.

Range when synced: 32/1 - 1/32 with dotted and triplets in between.

2 Waveform

Selects 1 of 7 available waveforms for LFO1 and LFO2.

Waveforms: Triangle, Sine, Ramp Down, Ramp Up, Square, Stepped Random & Smooth Random.

3 Targets

Shows/Hides the LFO targets amount sliders.

See 2.4 for more information.

4 Reset

Resets all target LFO ranges to zero, effectively stopping all modulation.

5 Synced

When ON, LFOs are synced to BPM.

When OFF, LFOs run freely.

6 Re-trigger

When ON, both LFOs restart whenever a new note is triggered.

When OFF, they cycle independently of note triggers, unless *Once* (7) is ON.

7 Once

When ON, both LFOs run only one full cycle and *holds* the final value.

When OFF, both LFOs keep cycling; unless *Re-trigger* (6) is ON.

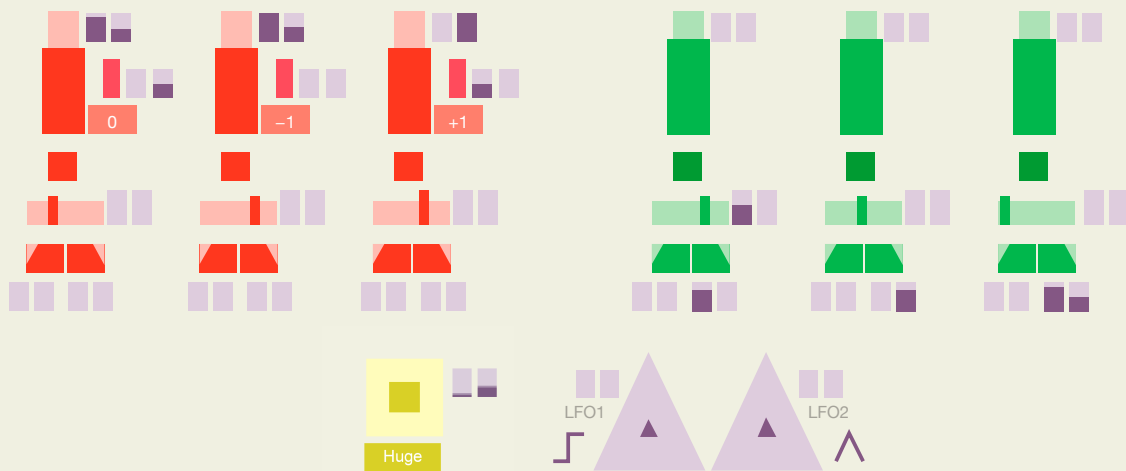
8 Offset

When ON, a staggered phase offset is added to all Variations and Tones targets.

When OFF, all Variations and Tones start from the beginning of the cycle.

LFO phase offset when ON: Main 0°, Lavalier 60°, Vibrato 120°, Condenser 180°, Harmonics 240°, and Piezo 300°. Every target within a group—volume, pan, filters, etc.—uses the same offset.

2.4 - Modulation



Targets

LFO1 and LFO2 can independently modulate each group's *Volume*, *Pan*, *High-pass Filter*, and *Low-pass Filter*. The three Variation groups also support *Tune* modulation. Space can have the dry/wet Mix modulated.

The LFOs can also modulate their own or each other's speed, enabling effects from subtle drift and changing speed to complex, chaotic movement.

Modulation Logic

Each purple slider sets the modulation *Range* for the nearby parameter. There are two sliders per parameter: one for LFO1 and one for LFO2.

The parameter's own control sets the *centre value* of its modulation while the purple *range* slider sets how far the LFO can move above and below that value. If the LFO tries to move beyond a parameter's minimum or maximum, it is *clipped*: held at that limit until the LFO waveform returns within range.

For users familiar with modular synthesis & control voltage: imagine the LFOs sending bipolar CV, with a ± 5 V range; the purple range sliders act as *attenuators*, while the ordinary interface controls act as *offsets*.

Example

Volume has a range of 0–100%.

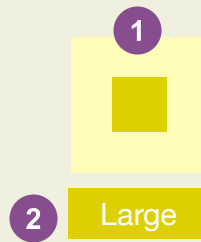
With the volume set to 50% and the adjacent LFO1 Range set to 100%, a triangle wave moves the volume from 0% through 50% to 100%, then back through 50% to 0%.

This is one full LFO cycle.

With the volume set to 75% and LFO1 Range set to 100%, a triangle wave would theoretically rise to 125%. As volume cannot exceed 100%, it clips there until the LFO falls back within range.

*Note: for usability, some controls in the graphical interface use a non-linear response: an equal visual movement does not always produce an equal numerical change. Refer to the **Parameter Feedback (see section 2.6)** for the exact value.*

2.5 - Space



1 Wet/Dry Mix

Sets the amount of Space effect in relation to the original dry sound.

2 Space Type

Selects 1 of 8 available Space types from a dropdown menu.

Here's a list of the available Space alternatives with approximate effective decay times.

Tiny - Small room - 0.2s

Small - Recording studio - 0.5s

Chamber - Echo chamber style room - 1.3s

Plate - Medium Stereo plate reverb - 2.3s

Spring - Long stereo spring reverb - 3.5s

Large - Church - 5s

Huge - Cathedral 8s

GOD - Sustained hyperspace 13s

2.6 - Presets, Parameter Feedback & Labels



1 Presets Dropdown Menu

Ferrovox comes with a small selection of 16 presets, meant to serve as a starting point or as inspiration. The presets are read-only.

Preset 1 “-INIT-” is to be seen as the “blank slate” starting point whenever you want to create your own sounds from scratch.

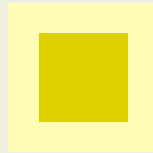
2 Parameter Feedback

Whenever you touch a control, the name and value will be shown here. This can be especially helpful when setting up modulation.

Hold down SHIFT for fine adjustments of parameters.

3 Labels

Shows/Hides labels for interface and functions.



3. MIDI, Tech & Credits

3.1 - MIDI Control

Ferrovox includes five MIDI-controlled functions whose behaviour is not otherwise exposed in the user interface.

Scripted functions are hardcoded for specific behavior and cannot be reassigned or modified.

User functions have exposed Kontakt assignments and can be reassigned or modified.

Note that Ferrovox is not currently MPE compatible.

Source	Name	Type	Description
CC66	Sostenuto	Scripted	Notes held at the moment you press the pedal keep sounding; notes played afterward behave normally.
CC1	Mod Wheel	Scripted	Crossfades between Main and Vibrato variations*
CC16	EQ Shelf	User	Brighter or darker tone (pre-Space)**
Channel Pressure	Aftertouch	Scripted	Brighter or darker tone (Additive to CC16)***
CC4	Foot Controller	User	Volume/Expression (pre-Space)
Note Velocity	Velocity	Hybrid	Controls a low-pass filter cutoff when “Expressive Playing” is on.****

* Equal-power cross-fade. The volume set for Main decides the max volume for Vibrato.

** Sets the gain of a 4 kHz high-shelf EQ, from -20 dB to +20 dB.

*** Adds gain to CC16’s high-shelf setting, up to a maximum of +20 dB.

**** See section 2.2 point 4.

3.2 Requirements & Compatibility

Ferrovox requires the *full version of Kontakt 5.6 or later*. It can also be opened in the free Kontakt Player, but runs in demo mode and is therefore subject to Kontakt Player's time limitation.

The self-contained release folder can be stored anywhere on an internal or external drive; no library registration or installation is required. Open the included .nki file by double-clicking it or dragging it into Kontakt. Keep all files and subfolders intact within the release folder; do not move its contents separately.

For the best loading and sample-streaming performance, store Ferrovox on a fast local or external SSD. The release amounts to approximately 300 MB, most of which is sample content.

CPU-use depends primarily on polyphony and active modulation.

As a reference, testing on a MacBook Pro with an M3 processor produced approximately 30–40% CPU use in Kontakt at the maximum 196 simultaneous sample streams.

Typical playing uses substantially less CPU.

3.3 - Credits

Ferrovox was created by [Henrik José](#) under the [Sympathetic Drift](#) umbrella.

Special thanks to Fredrik Segerfalk from [Analog Sweden](#) for lots of feedback and testing.

Additional thanks for testing & feedback:

[Hannes Kretzer](#)

[Will Pankiewicz](#)

[Rutger Muller](#)

[Jonas Meyer](#)

Check out the [Ferrous](#) and Landscape.

For updates, information and future projects, visit the [Ferrovox webpage](#).

Bug reports, suggestions and friendly/unfriendly messages are welcome at hello@sympatheticdrift.com

