IE

Iron Ether FrantaBit Owner's Manual

The FrantaBit is a true digital bit crusher and sample rate reducer. It offers a wide array of glitchy digital tones, lo fi crunchiness, video game synth sounds and buzzsaw harmonics. It includes an expression jack which can be assigned to bit depth, sample rate, both, or the mix of clean signal to crushed signal, expanding performance possibilities in a live environment and in the studio.

Controls

Samples knob: **This control allows the user to lower the sample rate of the analog-to-digital conversion from 32khz down to <100hz, creating so-called aliasing effects – frequencies from the instrument begin to "fold" back downward, creating new harmonics and subharmonics.**

The frequency response is lowered as sample rate lowers, but instead of simply removing higher frequencies, they are mirrored back downward, to create strange harmonies and overtones.

Bits knob: **From a pristine 24 bits down to a gated, fuzzed-out 1 bit, the Bits control introduces digital distortion artifacts, as the instrument's amplitude is quantized into progressively fewer volume "bins".**

With this type of distortion, the instrument actually becomes cleaner as it gets louder – the opposite of traditional harmonic distortion. Dynamic fuzz tones, digital destruction, and chiptune synths

can be dialed in with this control.

Mix knob: **Controls the relative volume of the clean and effect signals.**

Volume knob: **Controls overall volume.**

Exp knob: **This knob acts as a limiter on the expression pedal, setting how far the expression pedal can shift the parameter(s) it's controlling.**

Expression Mode rotary switch: **This 4-way switch allows the user to assign the expression pedal to any of the following:**

S: Samples
B: Bits
+: Controls both Samples and Bits at the same time
M: Mix

Degrade/Obliterate switch: **This switch controls the behavior of the sample rate reduction, as explained on the following pages.**

Degrade mode

In Degrade mode, the Samples knob varies how often the digital conversion samples the input. This can be thought of somewhat like a lowpass filter - the sample rate is like the cutoff frequency. However, where a lowpass filter removes frequencies above this point, the FrantaBit's Degrade mode will fold these frequencies back down onto the signal.

The results are strange new subharmonics and overtones. Setting the sample rate to be in tune with your playing can create some very unique effects - tremolo that has a different speed on each note of the scale, and combined with the bit crushing, very bizarre pitch-related fuzz/filter/digital glitch tones.

In Degrade mode, turning Samples all the way up will bypass the sample aliasing sounds completely. Turning Bits up completely bypasses the bit crushing. Because bit crushing and sample rate reduction can each be used alone, or combined, these two controls can create

an enormous array of sounds.

The most extreme sounds come from using both together - the sample rate reduction contributing inharmonic new frequencies, and the bit reduction contributing harmonically-related grimy digital octave fuzz.

Obliterate mode

Obliterate mode is an emulation of analog aliasing effects – a harsh, harmonically rich "pixellated" sound, similar to square wave ring modulation, which creates synthy atonal waveforms. There is no "clean" setting for Obliterate mode - it spans from fuzzed out square wave tremolo at the lowest frequency settings, up through robotic digital synths, and with sample rate all the way up, it sounds like squawky cyborg crickets.

Because of how far Obliterate mode mutates a signal, you'll usually want to mix in some clean signal when in this mode, to maintain the tonality of the instrument. Other times, it might be more

useful to completely destroy the input notes, in which case setting the mix fully clockwise will do the trick.

At the low end of the Samples knob in this mode, there's a nice tremolo. This is accentuated by setting the Mix knob around the center - experiment in this range to find different depth settings for the tremolo. Turning the bits down in this setting makes for an interesting pulsating synth effect.

As in Degrade mode, tuning the Samples knob to be in tune with your playing can generate many useful sounds in Obliterate mode. Notes become more inharmonic as they get farther from the root or fifth scale degree. This can be used to make pulsating digi-fuzz tones which mutate differently on each note. A pitch-dependent tremolo can also be created this way.

Expression pedal use

When using an expression pedal, the expression value will be added to the assigned parameter's on-board knob. The Exp knob limits how far the expression pedal can sweep from the value set by the Bits, Samples, and/or Mix knob.

For example, if the Bits knob is set all the way down, and the Exp knob all the way up, the expression pedal will sweep through the full range - from 1 bit, up to 24 bits. If the Bits knob is set to center and the Exp knob to 8 o'clock, the expression pedal will sweep within a narrower, medium range, from about 4 bits to 6 bits.

Power supply

The FrantaBit is powered by the industry-standard 9 volt DC center-negative power supply (2.1mm jack). It draws 85 mA of current. Use a power supply that can source at least this much.

Warranty

Your FrantaBit is warranted for materials and manufacturing for one year from the date of purchase. The warranty is void if you use the wrong type of power supply, take the pedal apart, attempt to modify it, or use it in a way not intended.

Bypass

The FrantaBit features a relay-based true bypass system. When the pedal is bypassed, the signal is connected directly from the input jack to the output jack via a mechanical switch, and does not pass through any buffers, electronic (FET) switching, or other circuitry that could have an effect on sound fidelity. It's different from the more common true bypass in that instead of a 3PDT stomp switch, this uses a mechanical relay designed specifically for low-voltage signals like audio. This makes for a quieter switch, greater reliability, and the bonus of automatically going into bypass if power to the pedal is lost.