



fSat

Multi-Mode Saturation

Plugin

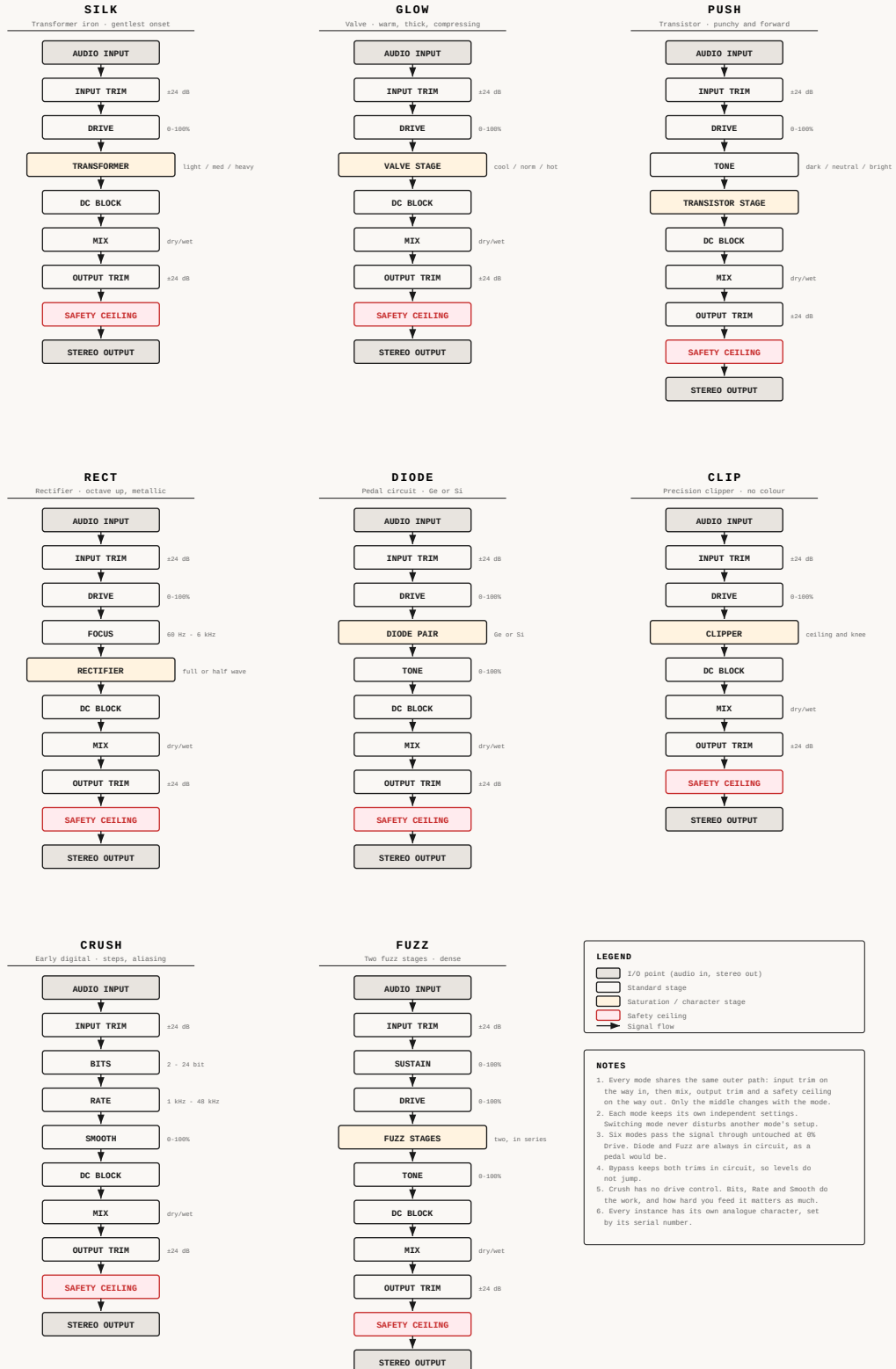
Product Manual

Build 1.0

by flakebelly
fboxaudio.com

fSat - SIGNAL FLOW

SILK · GLOW · PUSH · RECT · DIODE · CLIP · CRUSH · FUZZ



What fBox Is

fBox is a complete analogue mixing ecosystem - individual plugins, a universal rack processor, and a full 32-channel mixing console with built-in tape machine - built around a single idea: every piece of hardware that ever left a factory floor had its own personality, and your plugins should too.

Most plugin companies model hardware. They pick one unit, capture it as accurately as they can, and sell that one model to everyone. Your copy is identical to mine. The compressor on your kick is the same compressor on your vocal. It has always worked this way - and it is the reason in-the-box mixes sound in the box.

fBox is built on the opposite principle. Every plugin instance carries a unique serial-seeded analogue character, generated the moment it is created. Load three fComps in one session and you have three different compressors, each with its own voice. That serial is fixed to the instance forever - it never resets, and it travels with the session.

The choice is yours. Open a fresh instance whenever you like and it is a different unit with its own voice - or find one you love and keep it. Save it, recall it, and mix through it for as long as you like: the same character, every time. Learn how it sounds and it becomes an instrument you know. And a unit you keep is yours alone - its serial exists on no one else's machine, the same way a piece of hardware you buy is one specific unit and no other. Bought once, owned permanently, no subscription.

This is not emulation. This is character at the instance level.

What fSat Is

fSat is a multi-mode mono/stereo saturator: eight different ways of bending a waveform in one box, from a transformer barely leaning on the signal to a fuzz circuit tearing it apart. **Silk** is transformer iron and the gentlest thing here. **Glow** is a valve. **Push** is a transistor amplifier driven hard. **Rect** folds the waveform to throw an octave over the source. **Diode** is a pedal. **Clip** takes the tops off peaks and touches nothing else. **Crush** is early digital, broken on purpose. **Fuzz** is two fuzz stages stacked in series.

It is not eight plugins sharing a front panel. Each mode is a complete signal path with its own character stages, and each keeps its own independent settings, so switching mode never disturbs another mode's setup.

fSat is the tool you load when shaping the harmonics is the job itself. fPre colours a signal because that is what a preamp does on the way past. fTape colours it because that is what a tape machine does. The fBox Rack and Console colour everything running through them, quietly, as a desk does. fSat is the one you reach for when you have decided, deliberately, that this signal wants more harmonics than it currently has - and then chosen which kind.

Every instance of fSat generates a unique serial number that defines its hardware character - the specific set of manufacturing tolerances that make this unit sound like this unit and no other. No two instances sound exactly alike, just like no two real units do.

fSat runs as a plugin inside your DAW, on a channel or bus in the fBox Console, in the dawless fBox Console Standalone, or in a slot in the fBox Rack. It registers as an effect, works on mono or stereo tracks, and every parameter is automatable from your DAW.

Getting Started

1. Insert fSat on a track. 2. Pick a mode - Silk is the safest place to start and Glow is the friendliest. 3. Turn Drive up until you hear it working. 4. Bring the level back with Output. 5. A/B against Bypass.

Every mode starts at 0% Drive, so a fresh instance is deliberately doing very little until you move something. Six of the eight pass the signal through untouched at 0%. Diode and Fuzz are the exceptions - both are already distorting before you touch anything, because a pedal that is switched on is distorting whether or not you have turned it up.

New to saturation?

When a circuit is asked for more than it can cleanly give, it stops reproducing the waveform exactly and starts rounding it off instead. Those rounded edges are new harmonics that were not in the source, and they are what makes a sound seem warm, thick, present, aggressive or broken, depending on how the rounding happens and what gets emphasised around it.

That is the whole idea. There is no correct setting and no meter that tells you when you have arrived. Turn Drive up until you like it, then set the output level to match what you started with, and check it against the dry signal.

Louder almost always sounds better, which is the single biggest trap in this kind of processing. If the driven version is 3 dB louder than the clean one you will prefer it whether or not it is actually better. Set Output Trim so the two match before you decide.

Tip: *Mix is the other half of the trick and the fastest way to make any mode usable. Drive hard, then bring Mix back to 40-60%. You get the harmonics with the original transients still intact underneath, which usually sounds bigger than either extreme.*

Interface

The window is a single row of controls for whichever mode you have selected, with the header above it and meters down both sides. A resize button in the bottom-right corner offers three sizes: Small (75%), Medium (100%) and Large (150%). Double-click a knob to return it to its default; the two-position switches toggle on a single click.

Header

Control	What it does
Serial number	The unit's serial, shown at the far left. This is the identity of the analogue character you are hearing (see Analogue Character).
Unit	Opens the unit menu - roll a new unit, save or recall one, and pin a default (see Units and Patch Cards).
fSat title	Centre of the header.
Quality	Eco, Studio or Master (see Quality).
Mode	Silk, Glow, Push, Rect, Diode, Clip, Crush or Fuzz. The panel changes to match.
Reset Engine	Clears any fault and resets the internal DSP without changing your control values.
Fault indicator	A red RESET appears beside Reset Engine if fSat has caught a problem and reset itself. Click Reset Engine to clear it.
Help	Opens the in-app manual.

The control row

Each control sits in its own labelled section: INPUT, BYPASS, DRIVE, then whatever that mode adds, then OUTPUT, MIX and I/O LNK. At the right-hand end is a stack of three buttons - Reset, Save Patch Card and Load Patch Card.

Switching mode swaps the whole row for that mode's controls. Clip is the only mode that changes the window itself: it is taller, because it carries a scope underneath the controls.

Meters

Stereo input meters sit on the left (IL, IR) and stereo output meters on the right (OL, OR). They are covered in their own chapter.

Signal Flow

Understanding the order of stages helps explain why some control combinations interact the way they do. Earlier stages feed later ones, so a change up top changes how everything below it behaves.

#	Stage	Notes
1	Audio input	Mono or stereo accepted
2	Input trim	-24 to +24 dB, feeding the saturated path
3	Drive	Pushes the signal into the stage. How much gain that represents differs per mode
4	Saturation stage	The mode's own nonlinearity, and its main character
5	Mode character stages	Weight, bias, tone, type, focus, ceiling, knee and the rest, where the mode has them
6	DC block	Removes any offset the non-linear stages introduced
7	Mix	Blends the processed signal against your untouched input
8	Bypass	Soft bypass; both trims stay in circuit
9	Noise floor	This unit's own, always present
10	Output trim	-24 to +24 dB
11	Safety ceiling	Always active
12	Stereo output	

Where the modes differ

Mode	Key elements
Silk	Transformer core, weight-selectable low-end resonance, progressive top-end softening
Glow	Valve stage, level-following compression, low-level bloom, midrange lift that climbs with drive
Push	Pre-saturation tilt, asymmetric-to-symmetric clipping, transient lift, presence lift
Rect	Focus pre-filter, full or half-wave fold, resonant ring
Diode	Germanium or silicon clipping, post-clip tone control, fixed midrange voice
Clip	Clipper with adjustable ceiling and knee. Nothing else at all
Crush	Step reduction, sample holding, reconstruction blend
Fuzz	Two stacked fuzz stages, resonance, level-dependent fade, tone tilt

Common Controls

All eight modes share these controls. Everything else is specific to the mode and is covered in that mode's chapter.

Input

Range: -24 to +24 dB in 0.5 dB steps. Default: 0 dB. Level going into the saturator. It sets how hard the stage is hit, so it doubles as a drive control: raise it and you get more colour at the same Drive setting, without changing the mode's character on the way. Double-click to reset to 0 dB.

Drive

Range: 0 to 100%. Default: 0%. The main control: how hard the signal is pushed into the nonlinearity. The amount of gain that represents differs per mode, which is why the same number sounds mild in one and savage in another - Silk pushes least, Push and Diode push hardest. Each mode's chapter says what to expect.

In several modes Drive changes the character as well as the amount - Push hardens, Glow compresses, Rect folds more in. Those are covered per mode.

Bypass

Default: Off. Mutes the saturation and passes your signal through. The Input and Output trims stay active, and so does the unit's own noise floor, so levels do not jump. For a completely untouched signal, use your host's own bypass.

Output

Range: -24 to +24 dB in 0.5 dB steps. Default: 0 dB. Final level, always active. Double-click to reset to 0 dB.

Mix

Range: 0 to 100%. Default: 100%. Dry/wet blend. At 100% you hear the saturator alone; at 0% you hear your untouched input. In between is parallel saturation.

I/O Link

Default: Off. Links Input and Output inversely - drive the input harder for more colour while the output level stays put. The Output knob is disabled while the link is on.

Tip: *I/O Link is the honest way to audition a mode. With it on you can push Input up and down freely and hear only what the extra drive is doing, rather than being fooled by the level change that comes with it.*

Headroom

fSat keeps a safety ceiling on its output so a hard-driven setting cannot blow up your monitors. It can still get very loud inside that ceiling, and it is possible to exceed 0 dBFS: watch the output meter and use Output to manage your headroom.

The Eight Modes

Mode	Character	Drive push	Reach for it when
Silk	Transformer iron. Even-order warmth, softening top	Gentlest	You want to flatter something without changing it
Glow	Valve. Warm, thick, alive, breathing	Moderate	The source needs weight and forgiveness
Push	Transistor. Punchy, forward, aggressive	Hardest	Attack matters and you want more of it
Rect	Rectifier. Octave up, metallic ring	Moderate	You want a sound to become an effect
Diode	Pedal. Warm or bright clipping with a mid voice	Hardest	It should sound like a stompbox
Clip	Precision clipper. No colour at all	Moderate	You want peaks gone, not tone changed
Crush	Early digital. Steps, aliasing, lo-fi	None	You want it broken on purpose
Fuzz	Two stacked fuzz stages. Dense, singing	Small	You want the loudest noise in the building

Each mode keeps its own independent settings, so switching mode never disturbs another mode's setup. You can dial a Silk mix bus and a Fuzz guitar sound in the same instance and flip between them.

Important: Six modes pass the signal through untouched at 0% Drive. Diode and Fuzz do not - both are distorting from the first sample, because their circuits are in the path whether or not you have turned anything up. In Diode, use Input Trim to control how hard it is being hit while keeping the tone where it is. In Fuzz, use Mix if you want it subtle.

Note: Because each mode keeps its own trims as well, switching mode recalls that mode's levels rather than carrying the current ones across. If the level jumps when you change mode, that is why - set the trims per mode.

Silk Mode

A vintage broadcast transformer being leaned on, and the gentlest mode here by a distance. The low half of the Drive range thickens and rounds without really sounding like distortion, which makes it the one to put across a mix bus, a vocal or anything you want to flatter rather than change. Push it to the top and it does distort - evenly and without harshness, but it distorts.

Controls

Drive

Range: 0 to 100%. Default: 0%. The smallest push of any mode, so the whole range is usable and the top of it is thick rather than broken. Even-order warmth builds steadily as you climb, and the top end softens progressively at the same time. That softening is the "silk".

Weight

Light, Med or Heavy. Default: Med. Chooses how big and how low the iron's low-end resonance sits, and how much body the mode adds underneath. Light is the smallest transformer, tight and highest. Heavy is the biggest and lowest, and adds the most weight.

Important: *Weight is drive-dependent. At 0% Drive all three settings sound identical, because there is nothing exciting the iron yet. Bring Drive up and they separate quickly. If you are switching Weight and hearing nothing, turn Drive up first.*

Character

Two things happen together as you climb: the low end fills out around the resonance Weight has chosen, and the top end rolls gently away. That combination is why Silk reads as "expensive" rather than "distorted".

Tip: *On a mix bus, Drive 15-30% with Weight Med adds glue and weight without anyone being able to point at what you did - the setting to leave in place rather than reach for. On a thin vocal, Weight Heavy with Drive around 40% puts the chest back without EQ. If it gets dull, that is the top end softening under drive rather than a fault: back Drive off rather than adding EQ to put back what you asked it to remove.*

Glow Mode

A valve driven into saturation. Warm, thick and alive - it does not just distort, it responds to how hard you hit it, squeezing the loud parts and opening up on the quiet ones. Vocals, bass, brass and drum buses - anything that should sound recorded rather than typed in.

Controls

Drive

Range: 0 to 100%. Default: 0%. Even-order warmth to start with, thickening steadily. Two other things build alongside it: the valve's natural compression comes on harder and earlier the further you push, and a midrange emphasis climbs up the spectrum as you go. That is why low settings sound warm and thick while high settings sound present and forward - it is not just more of the same thing.

Bias

Cool, Norm or Hot. Default: Norm. The valve's operating point. Cool is the cleanest and most symmetrical, with the least compression and the least bloom. Norm is the standard setting. Hot runs the valve harder: saturation starts earlier, there are more even harmonics, and the compression grips sooner.

Character

At low levels this mode does something the solid-state modes do not: quiet material opens up and breathes slightly rather than being squeezed. It needs Drive to appear - at 0% there is none of it - and it is a lot of why quiet passages sound alive through this mode rather than merely quieter.

The compression is doing more work than people expect. It is not a stage you can switch off - it is part of how the valve responds, and it grows with Drive. At high settings you are hearing a compressor as much as a saturator.

Tip: Bias HOT with Drive around 30% on a vocal is the sound most people are chasing when they say "valve": warm, forgiving, and the compression rides some of the performance for you. On a drum bus, Drive 20-25% with Mix at 70% gives glue with the transients still living in the dry signal. If it sounds squashed rather than warm, that is the compression - drop Drive, or switch to Cool.

Push Mode

A transistor amplifier being driven into clipping. Fast, punchy and forward - the one for drums, guitars and anything that should get louder and more aggressive without getting softer. Where Silk and Glow round things off, Push sharpens them.

Controls

Drive

Range: 0 to 100%. Default: 0%. The widest push in the plugin, shared with Diode. The character changes as you climb rather than just the amount: at low settings the stage is slightly asymmetric and produces warm even harmonics; as you push it becomes symmetrical and hard, with odd-order grit and a presence lift on top.

Tone

Dark, Neutral or Bright. Default: Neutral. This is a tilt before the saturation, so it changes what gets distorted rather than filtering the result afterwards. Dark feeds the stage more low end and gives a thicker, heavier distortion. Bright feeds it more top and gives a sharper, more aggressive one. Neutral feeds it everything.

Important: *Tone is drive-dependent. At 0% Drive all three settings sound identical, because nothing is being driven yet.*

Character

There is a transient lift built into this mode that peaks around the middle of the Drive range and fades away at both ends. It is why Push at 40-50% sounds punchier than Push at 90%, even though 90% is obviously more distorted. If what you want is attack, work in the middle of the knob. If what you want is density, go past it.

Because Tone acts before the distortion, it is a bigger control than a tone knob usually is. Dark on a bass does not just darken the result - it moves the distortion onto the low end.

Tip: *On a drum bus, Drive 45% with Tone Neutral is the punch setting - louder, punchier, still fast. On guitars, Drive 70% with Tone Bright cuts through a dense mix without raising the fader. On bass, Tone Dark with Drive around 60% and Mix at 70% keeps the weight clean while the grit sits underneath it.*

Rect Mode

A rectifier: it folds the waveform so the output runs at twice the frequency of the source. That gives you an octave above the note and a metallic ring - the mode that turns a sound into an effect rather than colouring it.

Controls

Drive

Range: 0 to 100%. Default: 0%. Here Drive is how much of the folded signal replaces the original. At 0% the signal passes through untouched. The fold is essentially complete by about two thirds up; past that, Drive pushes harder into it. The ring grows the whole way.

Type

Full or Half. Default: Full. Full folds both halves of the waveform upward - the strongest octave-up, bright and metallic. Half throws the lower half away instead - darker, buzzy, more of a broken-speaker sound, and heavier on even harmonics.

Focus

Range: 60 Hz to 6 kHz. Default: 800 Hz. Chooses which part of the spectrum gets folded. Low settings fold the bass and leave the top alone; high settings fold the upper mids for a thinner, more vocal ring. Some of the original always passes through alongside.

Important: *Type and Focus both need Drive up before they do anything, because at 0% there is no folded signal for them to shape.*

Character

An octave-up effect works best on material with a clear pitch - single notes, bass lines, synth leads, a snare. On a dense chord or a full mix it clashes rather than producing a musical octave.

Tip: *This is the mode that wants Mix. Full-wave at Drive 80%, Focus around 1 kHz and Mix 40-50% puts an octave over a bass or a synth while the fundamental stays intact underneath. Half-wave with Focus low is the dirty-amp sound - try it on a synth bass at Mix 50%. Sweep Focus at Mix 100% to find where the source has a strong fundamental, then bring Mix down.*

Diode Mode

A pedal circuit. Two diodes deciding how loud the signal is allowed to get, with a tone control after them and a midrange voice of its own. Guitars, keys, drums, bass, anything that should sound like it went through a stompbox.

Controls

Drive

Range: 0 to 100%. Default: 0%. The widest push in the plugin, shared with Push. Note that this mode clips whatever you feed it even at 0% Drive - the diodes are always in circuit, exactly as they would be in a pedal that is switched on. Drive decides how far past them you go.

Type

Ge or Si. Default: Ge. Germanium clips earlier and rounder - warm, soft and forgiving. Silicon holds on longer and then clips harder - brighter, sharper, more aggressive. Ge for warmth, Si for bite. The difference is bigger at high Drive settings than low ones.

Tone

Range: 0 to 100%. Default: 50%. The tone control after the clipping. 0% is dark and woolly, 100% is fully open with all the harmonics through, and the default sits in the middle where most pedals live.

Character

Because Diode is distorting from the first sample, Input Trim is the control to reach for when you want to change how hard it is being hit while keeping the tone where it is. Turning Drive down does not make it clean; it just moves you back down its own range. There is a fixed midrange voice here that no control moves. It is what makes Diode sound like a pedal rather than a clean clipper, and the main thing separating it from Clip.

Tip: Drive 40%, Type Ge, Tone 40% is the classic warm overdrive - guitars, electric piano, anything that wants pushing. Si with Tone at 70% and more Drive is the fuzzier, nastier end. Diode at 100% wet on a drum bus is usually too much, but at Mix 50% it adds real bite without losing the kick.

Clip Mode

A precision clipper. No tone shaping, no compression, no frequency-dependent behaviour of any kind: it takes the tops off peaks and leaves everything else exactly as it was. Use it before a limiter, to tame transients stealing your headroom, or to add density without adding colour.

Controls

Drive

Range: 0 to 100%. Default: 0%. Pushes the signal up into the ceiling. More Drive means more of the signal sits above the ceiling and therefore more of it gets clipped.

Ceiling

Range: -12 to 0 dB. Default: -3 dB. Where the clipping starts. Anything below the ceiling passes through completely untouched. Set it just under your peaks to catch only the worst of them, or well down to clip everything.

Knee

Range: 0 to 100%. Default: 50%. The shape of the corner. 0% is a brick wall - sharp, and the most harmonics. 100% is the softest bend, which starts rounding before the ceiling is reached and sounds much closer to compression than to clipping. The default sits halfway.

The scope

Clip is the only mode with a scope, and the one place in fSat where watching is as useful as listening. It shows the incoming waveform with the clipped result over the top and the ceiling marked across it, so you can see exactly what is being taken off. A transfer curve inset shows the knee bending as you turn the knob, a gain reduction meter shows how hard it is working, and red tags appear whenever more than 1 dB is being removed.

Tip: For peak taming, leave Drive at 0%, set Ceiling just below your peaks and Knee low, then watch the scope - if the red tags are constant you are clipping too much. For density on a drum bus, Ceiling -3 with Knee around 60% and a little Drive sounds like gentle compression with no attack time to get wrong. Small amounts, often, is how clipping stays invisible: a dB or two on several sources beats six dB on the mix bus.

Crush Mode

Early digital: not enough bits, not enough sample rate, and no attempt to hide either. Vintage samplers, cheap converters, handheld recorders, and the aliasing that came with them. Deliberately crude, and the only mode here that is not trying to sound good.

Controls

Bits

Range: 2 to 24 bit. Default: 16 bit. How many steps the waveform is allowed to be described in. Fewer steps, coarser signal.

Setting	Character
24 bit	Transparent - you will barely hear it
16 bit	A fine grain over the top
12 bit	Clearly lo-fi, vintage sampler territory
8 bit	Classic retro
4 bit	Extreme destruction
2 bit	Barely recognisable, close to a square wave

Below 16 bit the steps also start to hold for longer, so they read as an audible staircase rather than dissolving into hiss.

Rate

Range: 1 kHz to 48 kHz. Default: 22.05 kHz. How often a new sample is taken. Lower means longer steps, a duller sound, and the ringing, metallic aliasing that lo-fi is loved for. Below about 8 kHz it starts to sound like a broken toy.

Important: *Bits wins over Rate. At low Bits settings the holding is already coarser than most of the Rate knob's range, so Rate changes nothing until you bring it right down. If the Rate knob seems dead, that is why - keep going down until you hear it move.*

Smooth

Range: 0 to 100%. Default: 0%. How much of the staircase gets smoothed off afterwards. At 0% you hear the raw steps in full. Turning it up rounds them into something closer to a real vintage sampler - the same crushing, but polite about it. This knob does not add gain.

How hard you feed it

How hard you feed this mode matters as much as the Bits knob. The steps sit at fixed heights and do not move with your signal, so a loud signal spans plenty of them and rides them fairly smoothly, while a quiet one spans only a few and comes out coarse and blocky.

That makes Input Trim a second crush control, and it works backwards from what you would expect: turn Input down for more crush, up for less. Push Input too far up instead and the crusher clips, which is a usable sound as long as you know that is what you are hearing.

Important: *If it goes silent, turn Input up. Below the height of the smallest step there is nothing left to describe, so quiet material fades out rather than getting louder - which is exactly what real bit reduction does. The lower the Bits, the hotter the signal has to be to survive: around 8 bit a signal under about -49 dBFS disappears, and at 4 bit anything under about -24 dBFS is gone. Bring Input up until it comes back, or raise Bits. Quiet passages dropping out while loud ones play is this, and not a fault.*

Tip: *I/O Link makes the input level a proper crush control. With the link on, pulling Input down brings Output up by the same amount, so you get more grit at the same level out instead of a quieter, crunchier signal. It is at its most dramatic up at 16 bit and above, where the step grain is all you are hearing and a big Input cut transforms it. Further down the knob the holding dominates and the same move is subtler, though still worth having.*

Character

Crush is also the one mode where the Quality setting makes no audible difference. Crush is meant to be crude, so there is nothing there to refine.

Tip: *12 bits with Rate down around 8 kHz and Smooth about 70% is a convincing vintage sampler on drums - drop Bits to 8 for the cheaper machine. For destruction, 4 bits with Rate as low as it goes and Smooth at 0%. Mix is your friend here: 30-40% of a thoroughly destroyed signal under the clean one is usually more useful than the destroyed signal on its own, and it keeps the low end intact.*

Fuzz Mode

Two fuzz stages stacked in series, feeding each other. This is the loudest, densest, least polite mode in the plugin, and how abruptly notes cut off as they fade is part of its character. Guitars, synths, bass, drums, and vocals if you are brave.

Controls

Sustain

Range: 0 to 100%. Default: 20%. The main control. It sets how hard the fuzz is fed, so the sound gets denser and more compressed as it rises - and it decides what happens as a note dies away. Turned down, notes fuzz and then stop dead, leaving silence between phrases. Turned up, they hang on and keep fuzzing as they fade, for as long as you want.

Drive

Range: 0 to 100%. Default: 0%. Additional gain on top of Sustain. Its range is small because Sustain does the heavy lifting - use Drive to fine-tune once Sustain has set the character.

Tone

Range: 0 to 100%. Default: 50%. A tilt after the fuzz. 0% is dark and woolly, 50% is neutral, 100% is bright and cutting. Fuzz generates a great deal of top end, so this control matters more here than anywhere else in the plugin.

Character

Fuzz is never clean. Even with Drive and Sustain at 0% the two stages are still in circuit and still saturating, exactly like a fuzz pedal that is switched on. If you want it subtle, use Mix rather than turning things down.

Important: *If notes are cutting off when you did not want them to, turn Sustain up. That is the control deciding how long a note survives as it fades, and low settings cut hard.*

Tip: *Sustain 70% with Tone at 60% is the singing lead sound - long, dense and thick. Sustain 10% with more Drive is the splattering end, where notes cut off abruptly as they decay: excellent on synth stabs and drums. On bass, keep Tone low and Mix around 40% so the fundamental survives underneath.*

Actions and Header Controls

Reset

Returns the current mode's controls to their defaults. Other modes, the Quality setting and the unit's serial (its character) are kept.

Save Patch Card / Load Patch Card

Save Patch Card writes the whole unit - every setting across all eight modes, plus the serial - to a patch card file. Load Patch Card reads one back in and, if the card carries a serial, asks whether to recall that whole unit or just apply its settings (see Units and Patch Cards).

Note: *If the saturator sounds different after reloading a session, the serial is saved with the session so the character should be identical - check whether a patch card was loaded with Apply Settings Only, which keeps your current unit rather than restoring the saved one.*

Header controls

Mode selects Silk, Glow, Push, Rect, Diode, Clip, Crush or Fuzz, and the panel changes to match. Quality selects Eco, Studio or Master (see Quality). Reset Engine clears any fault and resets the DSP without changing your control values. The fault indicator beside it shows a red RESET if fSat has caught a problem and reset itself.

Meters

Stereo input meters sit on the left (IL, IR) and stereo output meters on the right (OL, OR), showing the levels in real time. Click a meter to switch it between Peak and RMS - the label reads PK or RMS to show which mode it is in. Each meter toggles on its own.

Peak follows the instantaneous highest sample level, so it jumps with every transient and shows the true maximum the signal reaches. RMS shows the average energy over a short window, so it sits steadier and reads much closer to how loud the signal actually sounds - the classic VU-style reading.

The small red LED at the top of each meter lights when that side reaches full scale, and holds briefly so you catch it. The input meters read after Input Trim, so they show what the saturator is actually being fed.

Tip: Use Peak to watch headroom and make sure nothing is clipping. Use RMS to judge loudness and to balance one part against another by how loud they actually sound. Peak for safety, RMS for balance.

Automation

Every on-screen control in every mode is exposed to your DAW and can be written and read through its automation lanes like any other parameter, including the Mode selector itself. The Quality selector is the one exception - it is a CPU setting rather than a mix control, so it is deliberately kept out of the automation lanes. The complete state of all eight modes, including the serial, is saved with your session.

Recipes

Starting points, not rules. Every unit is a little different, so trust your ears and move from here.

Each recipe starts from defaults: pick the mode first, then hit Reset - Reset only clears the mode you are on. Then set only the controls listed; everything else stays where it is. Drive starts at 0% in every mode. Every recipe gets louder as you dial it, so set Output Trim before you judge the sound.

Expensive mix bus (Silk)

Drive 20, Weight Med. Glue and a hint of weight that nobody can point at. Leave it there.

Chest on a thin vocal (Silk)

Drive 40, Weight Heavy. Body underneath, top end softened just enough to take the edge off.

Valve vocal (Glow)

Drive 30, Bias Hot. Warm, thick and forgiving, with the compression doing some of the ride for you.

Breathing drum bus (Glow)

Drive 22, Bias Norm, Mix 70%. Glue with the transients still living in the dry signal.

Drum punch (Push)

Drive 45, Tone Neutral. The transient lift is at its strongest here - louder, punchier, still fast.

Forward guitar (Push)

Drive 70, Tone Bright. Hard, present and odd-order. Cuts through a dense mix without extra level.

Heavy bass grind (Push)

Drive 60, Tone Dark, Mix 70%. The weight stays clean, the grit sits underneath it.

Octave over a bass (Rect)

Drive 80, Type Full, Focus 1 kHz, Mix 45%. An octave up on top with the fundamental untouched.

Broken speaker (Rect)

Drive 65, Type Half, Focus 300 Hz, Mix 50%. Buzzy, dark and wrong in the useful way.

Warm overdrive (Diode)

Drive 40, Type Ge, Tone 40. The classic soft-clip pedal. Guitars, keys, anything that wants to be pushed.

Nasty bite (Diode)

Drive 60, Type Si, Tone 70. Sharper and harder. Try Mix 50% on a drum bus for bite without losing the kick.

Peak tame (Clip)

Drive 0, Ceiling -1, Knee 20. Take the tops off the worst transients and nothing else. Watch the scope.

Density without colour (Clip)

Drive 20, Ceiling -3, Knee 60. Clipping that behaves like gentle compression. Small amounts, often.

Vintage sampler (Crush)

Bits 12, Rate 8 kHz, Smooth 70. Convincing early-sampler drums. Rate has to sit low to bite at 12 bits.

Total destruction (Crush)

Bits 4, Rate 1.5 kHz, Smooth 0, Mix 60%. Raw steps and aliasing under the clean signal. Needs a healthy input - below about -24 dBFS a 4-bit signal fades out.

Grain on a clean source (Crush)

Bits 16, Rate 48 kHz, Smooth 0, I/O Link on, then ride Input down. Nothing but the step grain, and the link holds the level still while you sweep how gritty it is.

Singing fuzz (Fuzz)

Sustain 70, Drive 40, Tone 60. Dense, endless sustain. The lead sound.

Splat and stop (Fuzz)

Sustain 10, Drive 60, Tone 40. Notes cut off hard as they decay. Excellent on synth stabs and drums.

Two-saturator stereo

Two fSat instances on a stereo pair, hard left and right, same mode and same settings. Each unit's own character makes the two sides differ slightly, which widens the image in a way a single stereo instance cannot.

Units and Patch Cards

fSat's character lives in its serial number. There are two ways to keep and move your work: units (the character) and patch cards (the whole setup).

The unit menu

A unit is fSat's character on its own - its serial and the analogue voice that serial produces, with no settings attached. The Unit button by the serial opens the menu:

Menu item	What it does
New Unit	Roll a fresh unit with a new serial and a new voice. Your settings stay put; only the personality changes.
Save Unit...	Save the current unit so you can recall it later. Saved units live in Documents/fBox Units/fSat.
Load saved unit	Recall a unit you saved, or browse for a unit file.
Recall my pinned unit	Jump back to your pinned default - handy if you rolled a new one by mistake, or after unpinning.
Pin this unit as my default	Make this unit the one every new instance opens with. This is how you keep one unit for good.
Use a new unit each time	Go back to a fresh unit on each new instance. Your pinned unit is not deleted, just set aside.

Patch cards

A patch card is a portable copy of the whole unit - its serial and every setting across all eight modes - written to a single file. Your unit is also saved with your session; a patch card is for carrying a unit between instances and projects. Save Patch Card writes the current unit to a patch card, a file you choose the home for. Load Patch Card reads one back in: if the card was saved on a different unit, it asks how to bring it in:

Option	What it does
Recall Unit	Bring back the exact unit the card was saved on - its character and all its settings, the box as it was saved.
Apply Settings Only	Keep your current unit and drop the saved settings on top. Same knobs, your machine.

A patch card carries its identity, so a card saved for a different fBox product is refused with a note.

Important: *In one line: a unit is the character; a patch card is the character plus every setting on top of it. Both save the serial, so the exact voice comes back with them.*

Quality

The Quality selector trades CPU against fidelity on the analogue path:

Tier	Use
Eco	Full analogue character at the lowest CPU. Great for tracking and dense sessions.
Studio	Higher-fidelity processing throughout, with richer saturation on the analogue path. The default, and the sweet spot for most work.
Master	The highest quality, and the most CPU. For final mixes and mastering.

Tip: *Studio for normal work, Eco if your machine is struggling, Master for the final print.*

Note: *Crush is the exception - it sounds the same on all three settings. Crush is meant to be crude, so there is nothing there to refine.*

Performance and CPU

The quality of the analogue stages costs CPU. fSat gives you the same Eco / Studio / Master control the rest of the range uses, so you can mix light and render heavy. Mix at Studio, or drop to Eco if your machine struggles - the sound still plays, just at lighter quality - then switch to Master when you render.

Cost also varies by mode, since each one runs a different signal path. Crush is the cheapest by some distance and Clip is the most expensive at a given tier. If you are running fSat on a lot of tracks and your machine is complaining, the mode you chose matters as well as the quality tier.

Tip: Close editor windows you are not using, and freeze or bounce tracks (a DAW feature that temporarily renders a track to audio to save CPU) once you have committed to a sound. If you hear clicks or pops, increase your DAW's buffer size or drop to Eco.

What fSat Writes To Your Computer

For transparency, here is everything fSat writes and where. It writes nowhere else, and sends nothing anywhere unless you choose to.

Folder	Contents
Documents/fBox/Diagnostics	Plain-text diagnostic logs, a folder per product, kept so a crash can be worked out afterwards. Loaded inside the Console or the Rack, fSat logs alongside that host.
Documents/fBox/Units/fSat	Your saved units, so you can find, back up and share them.
AppData/Roaming/fBoxAudio (Windows)	Your licence, and a small settings file recording which unit you have pinned.

Patch cards go wherever you save them. The unit's own state lives in your session, not in a file of its own. Nothing is filed away somewhere you did not pick, and nothing is written to your Desktop.

When something goes wrong

Diagnostics are written automatically as fSat runs and survive a crash or freeze. If you hit a problem, zip the whole Documents/fBox/Diagnostics folder and email it to support@fboxaudio.com - send the entire folder, since what else was running alongside fSat often explains the problem. Tell us what you were doing, what you expected, and what happened. The logs are plain text; you are welcome to read them, but you do not need to.

Analogue Character

Every instance of fSat generates a unique serial number, shown in the watermark at the far left of the header. It defines the unit's hardware character throughout the signal path.

On real analogue hardware, no two units off the same line sound identical. Drive two saturators to the same setting and one breaks up before the other. The point where clean becomes coloured sits in its own place. The iron has its own resonance and its own weight down the bottom. The diodes let go at their own thresholds, the fuzz stages are mismatched their own way, and each unit has its own quiet self-noise underneath it all. Fuzz is the wildest of the eight - real fuzz circuits were the most inconsistent things ever built, and so are ours.

fSat models these variations throughout. No single one is obvious in isolation. The cumulative effect is what gives each unit its voice - the same serial always produces the same unit, different serials produce different units, and the serial is saved with your session (DAW, Console, Standalone or Rack) and with any unit or patch card you keep.

Tip: *You cannot dial a unit's character to order any more than you can a real one - but you can learn it, and you can keep it. Find one you love, pin it, and it is the saturator you open every time. If you want two identical units, save a patch card from one and load it into the other with Recall Unit.*

fboxaudio.com