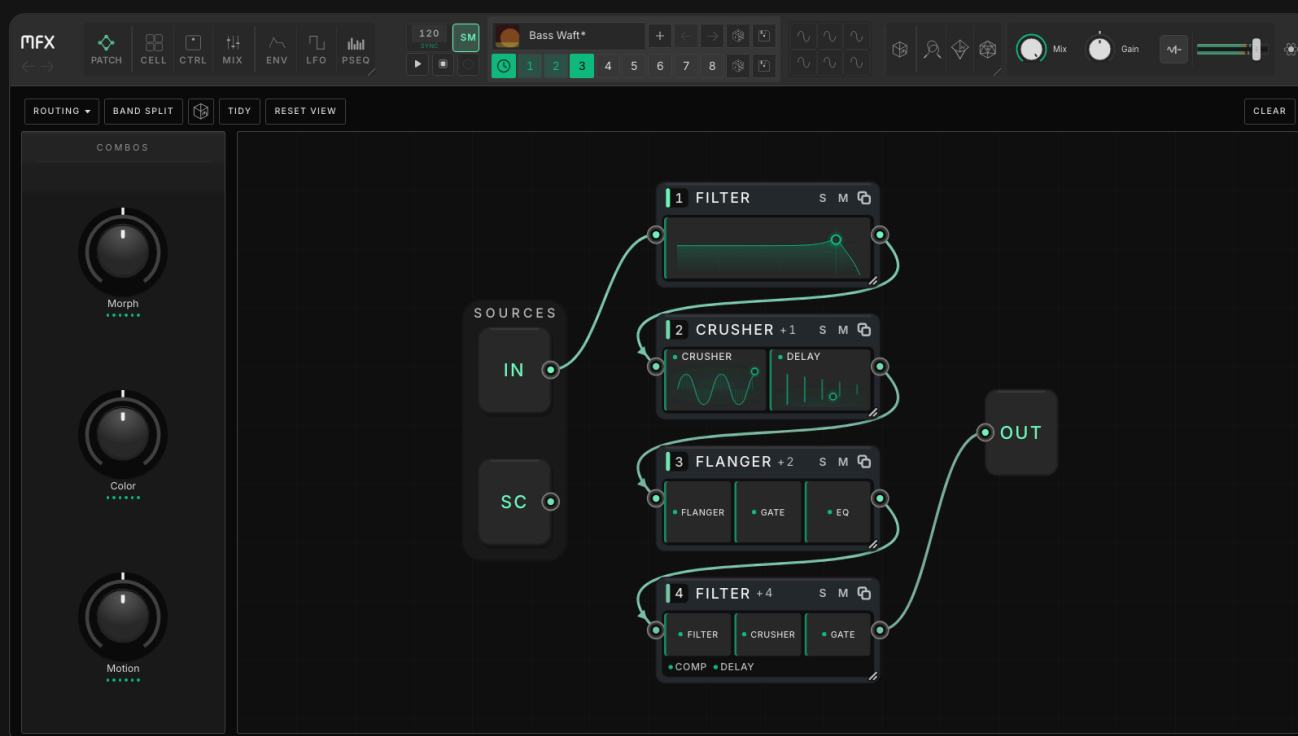




4-cell modular effects router

VST3 / AU / CLAP / Standalone · macOS / Windows
VERSION 1.1.0

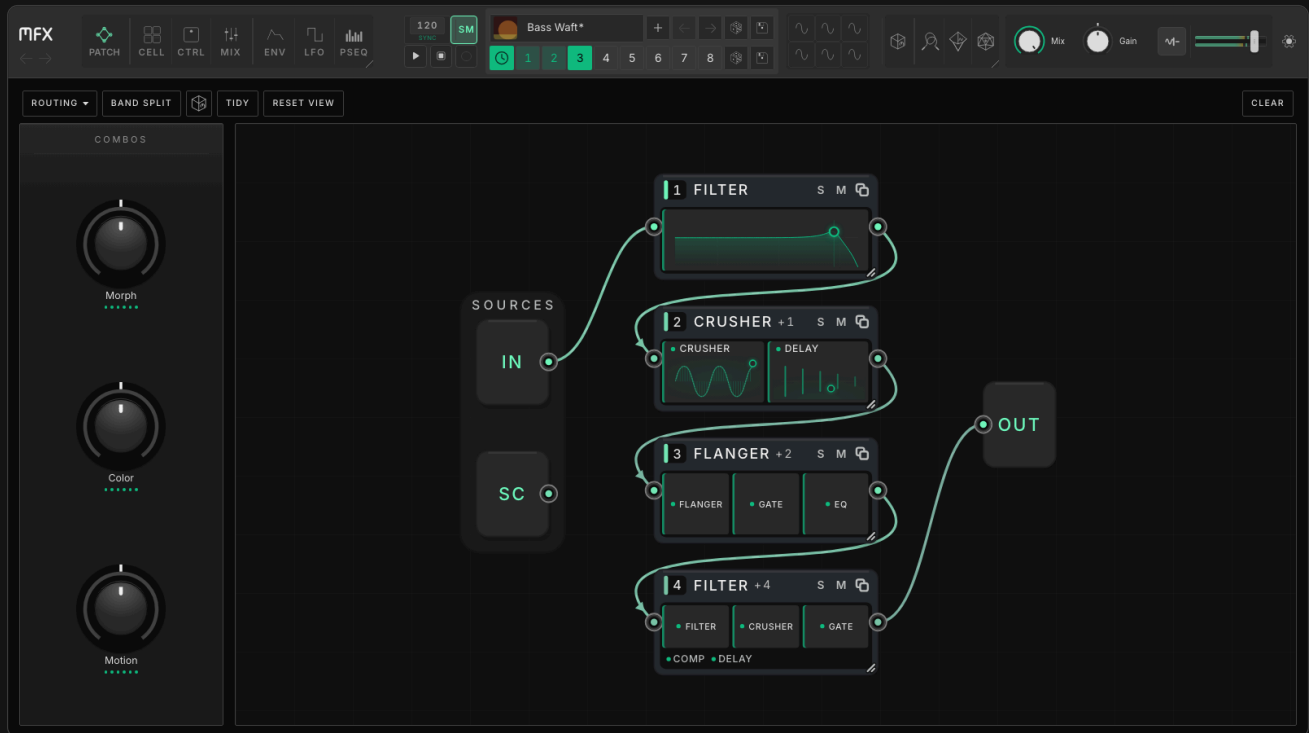


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CHAPTER 1 GETTING STARTED

MFX processes incoming audio through four cells. Each cell has 33 built-in effects, its own level and pan controls, and modulation. Cables connect the input, cells, and output. A preset stores the patch, effects, modulation, Combos, and variations.



PATCH view: sources at the left, four effect cells, and the output

YOUR FIRST PATCH

1. Add MFX as an audio effect on a track that is playing audio.
2. Open PATCH. The default serial route sends INPUT through cells 1–4 to OUTPUT.
3. Open a cell's FX rack. Enable Filter and turn Cutoff while the track plays.
4. Enable Delay in the next cell and raise Mix. Start the host transport to hear synced movement.
5. Turn the global Mix down to blend the processed patch with the input.
6. Open the preset browser and save the patch under a new name.

NOTE An unconnected cell receives silence. Enabling an effect does not connect that cell to INPUT or OUTPUT.

WHAT IS INCLUDED

MFX has PATCH, cell FX racks, CTRL, Mixer, LFO, Envelope, and ParamSeq views. It accepts MIDI for mappings and pitched effects. It has no sampler, drum synth, note-pattern editor, song arrangement, looper, or VX video engine. Use the PAM manual for those PAM features.

CHAPTER 2

INSTALLATION AND AUDIO SETUP

Download the MFX installer from your MAP Audio account. Close your DAW before installing, then rescan its plugin list if MFX does not appear. Use VST3 or CLAP in hosts that support them; AU is available on macOS. The standalone application uses the audio device selected in its settings.

ACTIVATION

Open the activation screen or Settings → Account. Sign in with the email code sent to your account, or activate with your license key. For an offline computer, use the offline request and license-file import controls. Keep the imported license file on the computer where the request was made. Account also shows activation status and device deactivation.

The MFX browser demo is available on map.audio/mfx. The desktop version of MFX has no trial.

INPUTS AND OUTPUTS

In a DAW, MFX accepts a mono or stereo main input and produces a stereo output. A separate optional sidechain input appears as SIDECHAIN in the patcher. Route audio to that input in your DAW before using it; an unconfigured sidechain is silent.

In standalone, choose the input and output device, input channels, sample rate, and buffer size in Settings. Feed audio from an interface input. Use headphones or disable unwanted hardware monitoring if the input comes from a microphone in the same room as the speakers. Standalone can also send cells to separate hardware output pairs when enough device channels are available; these direct outputs retain their own cell timing.

TEMPO AND LATENCY

In a DAW, synced delays and modulation follow host tempo and transport. In standalone, set BPM and use MFX's transport. Effects process incoming audio without a note or a running transport; tempo-synced effects and modulation follow the transport.

To tap the tempo, right-click the BPM display and tap **Tap Tempo** in time with the music, or press **B**. The fourth tap sets the tempo; further taps keep refining it. Tap Tempo is unavailable while the tempo follows the DAW or incoming MIDI clock.

Pitch in SPECTRAL mode, Transient's spectral separation, Codec (24 ms at 48 kHz) and Tape's LO-FI and BROKEN modes with Wear above 2% (12 ms) add delay. MFX aligns forward cable branches before summing them and reports processing latency to the host. Feedback cables keep their loop delay. Grain pitch shifting and ordinary Transient shaping have zero reported latency. **Latency Mode**, on the Settings tab of Settings, selects Lowest Latency or Fixed; Fixed avoids changes in the host's delay compensation while you change processing.

CHAPTER 3

PATCH CABLES AND CELLS

MAKING CONNECTIONS

Drag from an output jack to an input jack, or click the first jack and then the destination. INPUT and SIDECHAIN are sources; OUTPUT is a destination. A cell can receive more than one cable, and their audio is added together. Its outgoing audio includes its FX chain and output level. Use cable and node context menus to edit connections.

Cable gain Drag the gain value on a cable to change its level. The range is 0–150%; ordinary cables start at unity and feedback returns start lower. Several unity-gain copies of the same signal can raise the output substantially.

Cell title Open the cell editor from its title. Rename cells to describe their role in the patch, such as Low body or Echo.

M Mutes the cell's audible outgoing audio. Its processing and modulation continue. Muting a cell in a serial route also removes the input feeding the cells after it.

S Solos the cell for monitoring. Cells that feed it keep processing so a serial patch remains audible; a soloed cell can be monitored even without its own OUTPUT cable.

Remove Cell Use **x** in a cell header, right-click its number in the 1x cell strip, or choose **Remove Cell** in its PATCH menu. This removes its cables and takes the cell out of the layout while keeping its effects and settings. A serial route must be reconnected around the removed cell. Use **+** after the cell numbers, or **+** in the PATCH toolbar, to add it back, then connect the restored cell in PATCH. Removal saves with the preset and supports Undo.

Cell layout Drag cell headers to move nodes, and resize their cards to reveal more of the effect controls. Reset View restores positions, sizes, and framing. The canvas menu also has layout and fit commands.

Clear Removes the patch cables. Reconnect a source through at least one path to OUTPUT to hear the patch again.

ROUTING STARTING POINTS

Serial INPUT → cell 1 → cell 2 → cell 3 → cell 4 → OUTPUT. Every stage processes the previous one.

Parallel INPUT feeds all four cells; their outputs sum at OUTPUT. Use cable gains or cell faders to balance them.

Split / merge Cell 1 feeds separate branches through the other cells before they rejoin at OUTPUT. This splits the audio route without separating frequencies.

Feedback A serial chain with a return from the last cell to the first. Start with a quiet return.

Dry / wet A serial wet chain alongside a direct INPUT → OUTPUT cable.

GLOBAL MIX AND GAIN

Mix blends the finished patch with the main input. At 100% only the patch is heard; at 0% the input passes through. A direct INPUT → OUTPUT cable is a separate dry branch inside the patch. If you use both that cable and a lower global Mix, the signal contains both dry contributions. Keep global Mix at 100% when balancing a dry branch with its cable gain.

Gain, beside Mix in the header, sets the patch level from –24 to +24 dB before the blend. When effects make a patch louder or quieter than its input, match the two with Gain so Mix fades between equal levels. Gain never changes the input's share of the blend, and it saves with the preset. The Volume slider still sets the final output.

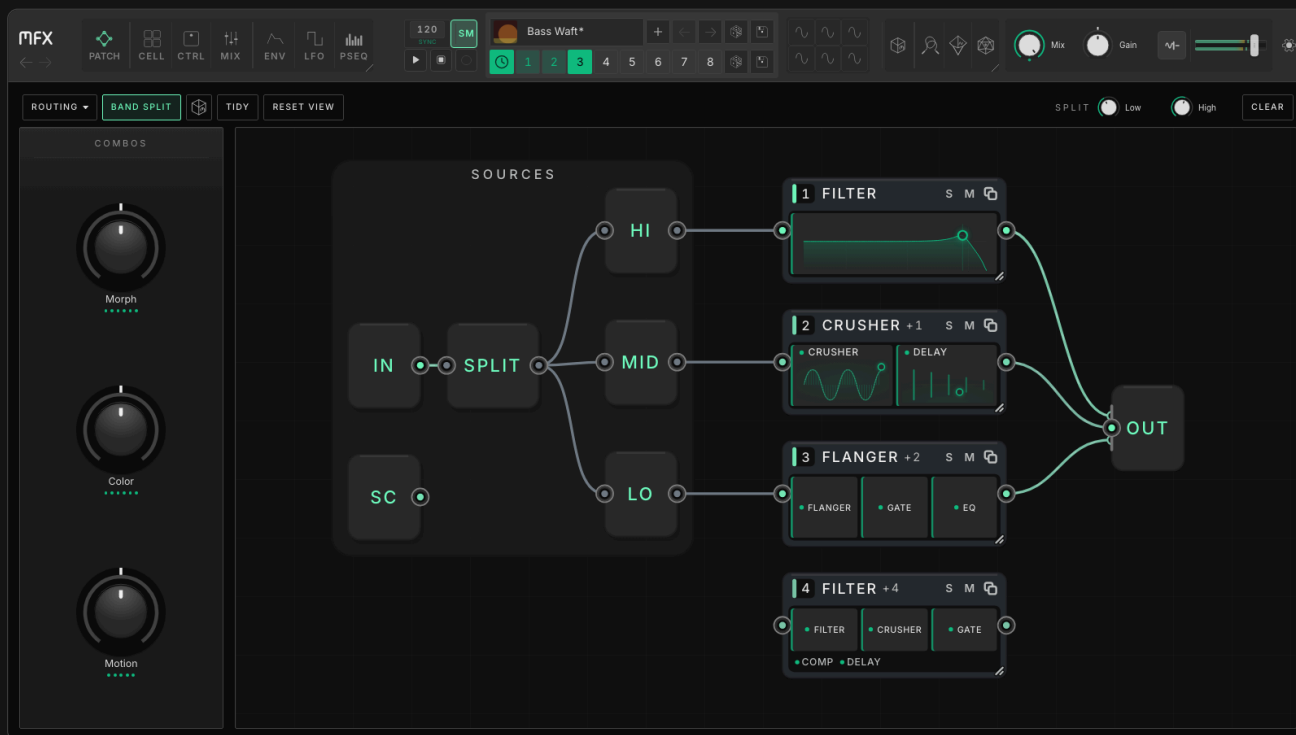
The patch dice changes routing across the cells. It preserves your choice to use Band Split, and parameter randomization leaves global Mix and Gain unchanged.

CHAPTER 4

BAND SPLIT AND FEEDBACK

BAND SPLIT

Enable Band Split in the PATCH toolbar to divide the input into LO, MID, and HI. The two frequency controls set the low/mid and mid/high boundaries. The initial corners are 88.3 Hz and 2.5 kHz.



Band Split sends high, mid, and low bands into independent cells

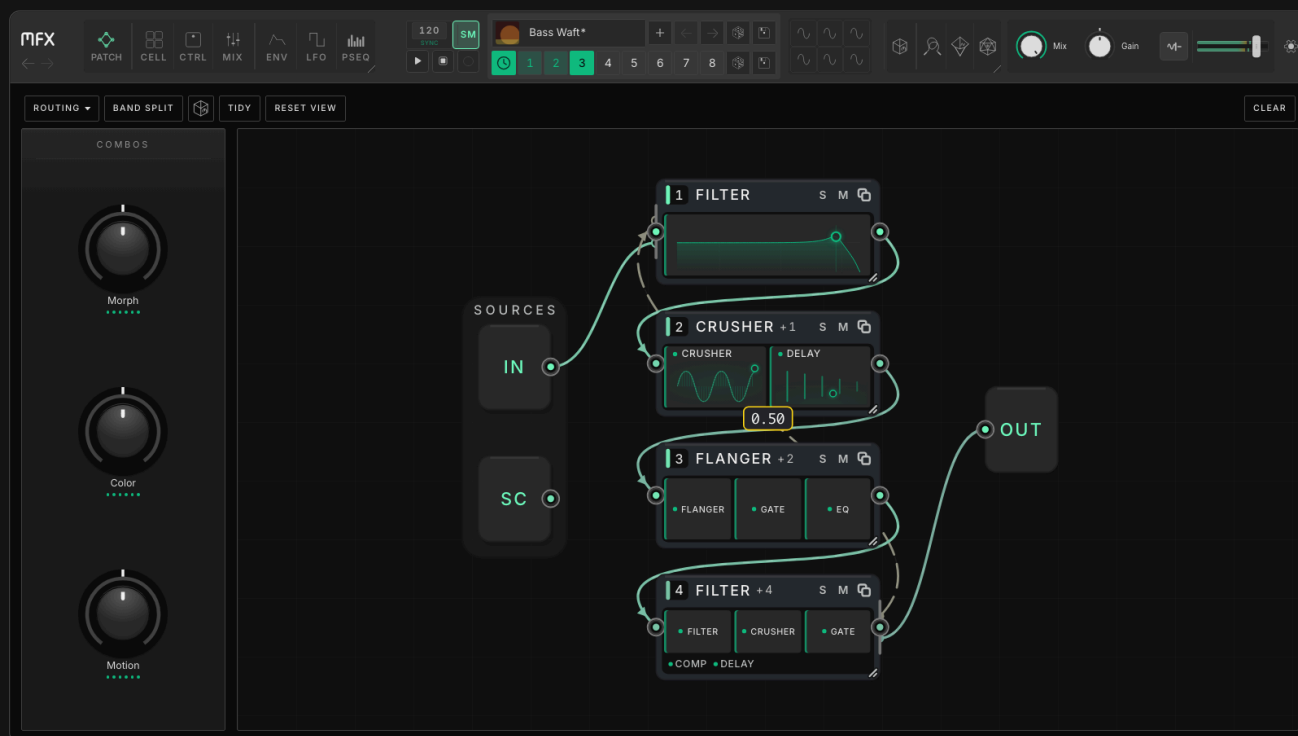
The initial split routes HI to cell 1, MID to cell 2, and LO to cell 3, with each cell going to OUTPUT. Enabling it replaces the connections around those cells. Use each cell's effects and modulation to process its band, then balance the branches at OUTPUT.

Only INPUT or SIDECCHAIN can feed SPLIT. Connect the band outputs to cells or OUTPUT; a cell cannot feed the splitter. MFX phase-matches dry branches while the splitter is connected so they can blend with its bands. The crossover adds no host latency.

TIP Try Gain or Compressor on LO, Wavefold on MID, and Chorus or Shimmer on HI. Keep the low branch centred, and add stereo movement to the upper bands.

FEEDBACK LOOPS

A feedback loop sends a cell's output back into itself, directly or through other cells. MFX inserts a short delay into a return that closes such a loop. Once loop processing is active, each delayed return adds 64 samples; the effects in the loop may add more delay and phase change.



A feedback return sends the end of a chain back into its beginning

Use a return gain below unity as a starting point. A Filter or EQ inside the loop changes the tone on every pass, and distortion can build harmonics. The return is soft-clipped and DC-filtered, but a loop can still sustain or self-oscillate. Reduce its cable gain, disconnect the return, or mute the feeding cell when you want it to die away.

CHAPTER 5

CELL EFFECTS

Open a cell's FX rack to enable effects and arrange their order. The power button bypasses an effect. Drag its block to reorder it. The Units menu's eye icon hides a block without bypassing its audio. Hide Unused hides disabled effects, and Show All reveals them. Active First moves the enabled effects to the front of the chain, onto the first page, without changing the sound. The chain button on the rack's side rail opens this menu with a left click. To jump to an effect, click the magnifier above it and type part of its name, or a word such as **bitcrusher** or **reverb**, then press Enter.



The cell FX editor, shared by all four MFX cells

Hover an effect and open its pop-out for larger controls and visualizations. Its separate-window button opens a resizable OS window. Right-click a parameter for modulation or MIDI Learn; double-click ordinary knobs to restore their defaults.

PER-CELL EFFECTS

The stereo meters in the FX toolbar, below the page controls, show the cell's output after its fader and limiter.

Each effect's pop-out has a preset bar. Its arrows and list step through the factory presets and your own. Save stores the current settings as a new preset, or updates the one you last loaded; Alt-click Save to keep both. Your effect presets can be renamed or deleted from the list, and every PAM and MFX instance on the computer shares them.

The pop-out's **Out** slider sets the effect's level after its Mix, from -24 to $+24$ dB, so an effect that makes the cell louder or quieter can be matched to the rest of the chain. Away from 0 dB, the card shows the value on its pop-out button. Bypassing the effect bypasses Out too. Compressor, EQ-8 and Squeeze have their own output controls instead.

EQ Three-band equalizer with Low, Mid, and High gains. Lo/Mid and Mid/Hi set the two crossover frequencies in the expanded editor.

EQ-8 Eight-band parametric EQ with an interactive curve display. Click empty space on the curve to create a band at that frequency and gain, drag a node to move it, scroll (or Cmd-drag) over a node to set Q, and double-click a node to remove it. Right-click a node for its **Freq**, **Gain**, and **Q** knobs, all modulatable, and the six band types: Bell, LowShelf, HighShelf, LowCut, HighCut, and Notch (the cut filters have 12 / 24 / 48 dB-per-octave slopes). Band 1 defaults to a low cut and band 8 to a high cut; an **Output** knob trims makeup gain, and the pop-out view adds per-band Solo.

Crusher Bit-depth and sample-rate reduction for lo-fi grit. **Bit** sets the depth from 1 to 16 bits, **Rate** sets the resampling frequency, **Drive** pushes the signal into the decimator, and **Mix** blends it with the clean cell.

Delay Stereo delay with Time (sync'd or free), Feedback, Tilt, and Mix. **Tilt** tips the feedback tone so each repeat grows darker (–) or brighter (+), compounding per echo. Right-click the Delay for **Ping-Pong** (echoes bounce left ↔ right across the stereo field) and **Tape Smoothing** (smooths delay-time changes like analog tape, on by default).

Flanger A short delay swept against the dry signal. **Time** sets the delay from 0.1 to 25 ms and **Freq** how fast the sweep runs, in Hz or sync'd to tempo. **Feedback** sharpens the comb peaks, and **Mix** blends it with the cell.

Filter Cutoff, Q (resonance), and Type. The Type selector picks one of nine modes:

Lowpass / Highpass / Bandpass / Peak / Notch: TPT state-variable filter.

Comb 1: forward comb. Cutoff sets the comb period for flanger sweeps and pitched metallic textures.

Comb 2: feedback comb. Resonant pitched tones and reverb-like tails.

Formant: sweeps from I through E, A, O, and U across Cutoff. Three tenor formant bands have separate levels and bandwidths; Q widens or narrows them together. Stereo.

Ladder: 24 dB/oct transistor-ladder lowpass. Approaches self-oscillation at max Q.

FDN Feedback Delay Network reverb. Size, Mod depth, Feedback, and Mix.

Gate Rhythmic gate and beat-repeat with 18 program modes (0–17). Time sets the rate (1–2000 ms unsync'd, divisions when sync'd); Program selects the pattern: 0 gate, 1 ping-pong, 2–16 scatter presets, 17 Custom.

0: 50 % duty-cycle amplitude gate.

1: ping-pong, alternating L/R with phase-shifted envelope.

2–4: eighth-note stutters; 2 re-triggers every step, 3 first step only, 4 triplet (1, 7, 13).

5–8: quarter-note repeats; 5 offbeat (2, 6); 6 + reverse on 6; 7 sparse (0, 3, 7); 8 dense (1, 2, 5, 6).

9–12: half-note repeats; 9 reverse on 3; 10 mute on 5; 11 stutter 1/4/6 + reverse on 7; 12 stutter 1/3/5/7 + reverse on 0/4.

13–16: patterns; 13 stutter (0, 8) + reverse on 12; 14 quarter stutters all reversed; 15 offbeat all reversed; 16 build (stutter 0/2/4/6, reverse on 3).

NOTE In Programs 2–16 the Time knob controls scatter density rather than gate rate.

GATE: CUSTOM PROGRAM

Set Program to 17 to author your own beat-repeat sequence. The step grid appears in the Gate's pop-out view: click a step to cycle its action (Normal → Repeat → Reverse → Pitch → Mute) while a live playhead tracks the pattern. **Randomise** fills the grid with a weighted pattern, **Clear** resets every step, and **Pitch** sets the semitone interval (±24, default +12) applied by Pitch steps. For programs 0–16 the same grid shows a read-only preview of the active pattern.

GATE: READING THE STEP GRID

Every step draws the path its read head takes through the captured audio, so you can see what a step does before you hear it. Normal rises across the step at playback speed. Reverse falls. Pitch rises at the speed its interval sets, so a step tuned up climbs steeply and runs off the top, while a step tuned down stays shallow. Repeat draws one tooth for each re-trigger, and the Time knob sets how many. Mute is a dashed line. Programs 0 and 1 gate the live signal instead of replaying a

slice, so their steps draw the open half of the gate window, and Program 1 gives the left and right channels a lane each.

While the transport runs, the top left corner of the pop-out names the step under the playhead, with the interval or the re-trigger count where there is one, and the lit step tracks the gate envelope you are hearing. The CTRL all-cells Gate view draws the same shapes, one row per cell.

Compressor Wideband dynamics compressor with Attack, Release, Threshold, Ratio, and Makeup gain. Range sets the floor of the downward expansion, from -60 to 0 dB; 0 dB disables expansion. The transfer-curve display shows the live input level riding the curve, and the patch point next to the enable button picks a sidechain source: click it to choose the external input or any cell, or drag a cell onto it. The pop-out view adds IN and OUT meters.

Pan Stereo **Balance** (left ↔ right; centre is unity) plus a mid/side **Width** control: 0% mono, 100% unchanged, 200% doubles the side signal. Unlike the Mixer's cell pan, it sits **in** the FX chain (pre-fader), so later effects in the chain hear the panned, widened signal, and it can be modulated.

Gain Level trim from -60 dB (silence) through 0 dB (unity) to +24 dB. Modulate it before a Delay or reverb to gate new input while the tail continues. **Clip** drives its clipping stage; **Mode** selects OFF, Si, Ge, or LED. The pop-out's **Out** slider adjusts the level after clipping without changing the clipping character.

Resonator Rings the cell through eight tuned partials. **Tune** sets a MIDI note or, in HZ mode, a frequency from 20 Hz to 8 kHz. **Source** selects a chord ladder or PLAYED, which captures and holds the MIDI voicing you send, while **Spread** opens the intervals. **Resonance** sets the ring time; **Drift** first detunes the partials apart, then sets them wandering; **Tone** damps the upper partials. **Model** changes the modal filterbank into a plucked-string body, and the drive selector offers Clean, Soft, and Hard colour at matched loudness.

Ring Mod A carrier multiplies the cell signal. Choose **Sine**, **Noise**, **External**, or another cell in the header. **Freq** runs from sub-audio tremolo to metallic sidebands; the Tune selector switches it to a MIDI **Note**. **Mix** moves from unchanged at 0%, through amplitude modulation at 50%, to carrier-suppressed ring modulation at 100%. **Spread** widens the effect in the selected stereo mode: Phase offsets the right carrier, Detune places the carriers slightly flat and sharp around the set pitch, and Mono Safe widens without breaking mono. **Bias** and **Rectify** reshape the carrier.

Vinyl Brake A gate-driven turntable brake. **Engage** starts the selected gesture when it crosses 50%; HOLD restores its previous value on release, while LATCH keeps it engaged. **Slow** sets the time to stop and **Rise** sets recovery, in milliseconds or independent tempo divisions. **Mode** selects STOP (brake while held), CUT (brake then return to live), START (begin stopped and spin up), or DIP (play a complete brake-and-recover from one trigger). **Curve** changes how early or late the platter moves, and **Mix** blends the braked copy with the live signal. Press the record label to engage the brake or drag the vinyl to write the **Scratch** parameter; a fast pull can reverse the groove. **Engage Quantize** holds a new brake until the next 1/16, 1/8, 1/4, 1/2, bar, or two-bar boundary. Releasing before that boundary cancels the pending brake; release itself is immediate.

Transient **Attack** sharpens or softens the start of a hit, **Sustain** opens or dries its body, and **Speed** sets the shaping response. The lower row has **Harm**, **Perc**, and **Other** levels for harmonic, percussive, and residual sound, each from 0% to 200%. The expanded editor adds SOFT, FIRM, and HARD separation choices. Leaving all three at 100% keeps the ordinary shaper at zero latency. Moving a split level engages spectral separation and its reported latency.

Pitch Changes pitch without changing playback speed. **Pitch** moves ±24 semitones and **Fine** adds ±100 cents. **Snap** leaves the interval free or quantizes it to chromatic, major, or minor steps. Choose GRAIN for a granular sound with zero reported latency, or SPECTRAL for formant control and a smoother sustained shift. **Formant** changes vocal character in Spectral mode and has no effect in Grain mode. Spectral processing reports 150 ms while a pitch or formant shift is active; neutral settings pass cleanly. **Mix** blends dry and shifted audio. Positive **Regen** repeats the same shifted pitch; negative Regen shifts again

on every trip through the feedback loop. **Time** sets FREE spacing from 60 to 2000 ms or SYNC divisions from 1/16 to one bar, capped at ten seconds. **Damp** darkens repeats.

Wavefold Folds peaks back into the waveform to add harmonics. **Drive** sets the input level, **Fold** sets folding depth, and **Texture** moves between evenly and unevenly spaced folds. **Symmetry** offsets the waveform for asymmetric colour, **Motion** lets the input level push the folding, and **Mix** blends the result with the dry cell. All six controls can be modulated.

Shimmer A pitch-shifted reverb. **Shift** sets transposition, **Pre** delays the reverb onset, and **Size** changes the space. **Decay** sets the tail length; **Regen** feeds the tail back through the pitch shift, so successive passes climb or fall by Shift. **Mix** blends the tail with the input, and the expanded editor adds **Damp** to darken it. Shimmer adds no host latency.

Vocoder The cell's input shapes a carrier through a bank of filters. **Note** sets the internal carrier pitch, **Wave** moves from saw through pulse to noise, and **F Shift** moves formants without changing the carrier note. **Speed** sets how quickly the bands follow the input; **Mix** blends dry and wet. **Width** controls stereo spread. In the expanded view, **Mono** follows the last held MIDI note and **Poly** plays up to six held notes. **Bands** selects 4, 8, 12, 16, 24, or 32 analysis bands. Use the header's source selector for the internal oscillator, external input, or another cell. The cell input must have a signal to open the bands.

Table Filter Scans a table of filter-gain curves while the cell plays. Six factory tables ship with it: harmonic, vowel, comb, noisy, hollow and smooth. The import menu gives a WAV, AIFF or FLAC file one of three meanings. **Import Sample Spectrum...** analyses ordinary audio as spectral snapshots. **Import Harmonics {N}...** treats every {N}-sample frame as one repeating cycle and uses its harmonic magnitudes. **Import Direct Curve {N}...** maps each frame from left to right across the filter, with sample values from -1 to +1 becoming -12 to +12 dB around flat. Sample Spectrum and Direct Curve set Anchor to the imported frequency scale; Harmonics keeps the current tuning. **Frame** moves through the table, so an LFO can morph the response. **Anchor** sets the spacing of the table's frequency points and slides the pattern up or down the spectrum; below the first point the filter holds that point's level. **Depth** sets overall filter amount and passes dry at zero. **Reso** scales and narrows the curve from 25% to 400%; 100% uses its stored strength. **Smooth** blurs, and **Mix** blends the wet filter with the cell. The pop-out stacks every frame and labels the bright curve as the wet target. Lower Mix fades the curve's colour rather than flattening it, because the parallel blend also depends on phase. Drag across the plot to scan Frame and set Depth. The effect adds no delay. An imported table is stored in the preset, so the sound survives losing the original file or moving to another machine.

Chorus Sweeps a short delay under the cell and mixes that swept copy against the dry sound. **Rate** sets how fast the sweep moves, in Hertz or locked to the host tempo, and **Depth** sets how far it travels. **Delay** is the shortest point of the sweep rather than its centre, so a small value thickens the sound in place and a larger one slides toward a doubled copy. **Mode** picks one of three shapes. CLASSIC sweeps one voice on each side. WIDE holds the centre still and moves only the sides, so a mono source opens up while the middle stays put. ENSEMBLE runs six voices at six different speeds for a thick swirl that takes minutes to come back around. **Spread** sets how wide the movement sits across the stereo image, **Tone** darkens the swept copy so it sits behind the dry sound, and **Mix** balances the two. At the fastest tempo divisions the sweep is held shorter than Depth asks for, which keeps the copy from bending pitch past a musical range. The effect adds no delay to the cell.

Phaser Runs the cell through a bank of allpass stages and mixes the result against the dry sound, which cuts a set of moving notches into it. **Stages** sets how many notches there are: 2 stages give one, 4 give two, and 12 give six. **Centre** sets where they sit and **Depth** sets how far they travel, up to four octaves either side of Centre. **Rate** sets how fast, in Hertz or locked to the host tempo. **Fdbk** feeds the swept output back in, so the peaks between the notches sharpen into a vocal ring. **Pol** flips the sign of that feedback, which moves those peaks and hollows the sweep out. **Mix** balances the swept sound against the dry one, and the notches are deepest at halfway. Every stage runs at all times and the effect crossfades between them, so changing Stages while it plays stays smooth. The effect adds no delay to the cell.

Repeat Captures recent audio when **Engage** crosses its trigger point. HOLD releases with the pointer; LATCH stays engaged. **Size** sets capture length and **Div** sets retrigger spacing. The MS/SYNC selector switches both knobs between independent 5–1000 ms times and musical divisions; SYNC is the default. In SYNC, FREE/GRID sets whether capture follows the trigger or waits for the timing grid. MS captures immediately and keeps its timing when the tempo changes; returning to SYNC restores your divisions and FREE/GRID choice. Existing presets use SYNC. ROLL recaptures forward, REVERSE plays backward, PITCH changes replay speed, and FREEZE holds one window. **Decay** shapes the repeat envelope, **Damp** darkens repeats, **Feedback** recirculates them, and **Mix** blends with live audio. **Band** selects FULL, LO, MID, or HI: a selected band is captured while the other bands stay live. Lo Cut and Hi Cut set the crossovers. Right-click Engage for **Stop With Transport**, off by default; enable it to release a held repeat when transport stops. Engage can be automated or sequenced but is excluded from value randomization and envelope followers.

Drive Nine saturation models on one **Model** knob: SOFT, TUBE, TAPE, IRON, DIODE, HARD, FUZZ, RECT and PLASMA. Between models, both play with matched levels. **Drive** adds up to 36 dB before saturation, **Bias** changes the asymmetry, and **Tone** darkens or brightens the result. **Lo Cut**, on the card, and **Hi Cut**, in the pop-out, each span 20 Hz to 20 kHz and isolate the band entering the drive. At full **Mix**, frequencies outside that band are removed. Cross the cuts to reverse the band's polarity before saturation; the band fades to silence as the cuts meet. The pop-out also adds **Motion**, which lets the input level change Drive. Drag the pop-out's display across for Model and up for Drive.

Freq Shift Moves every frequency by the same number of Hz. **Shift** is curved for fine control near zero, including when modulated; **Factor** selects a range of ± 20 Hz, ± 200 Hz, ± 2 kHz or ± 20 kHz. **Spread** turns the right channel's shift toward the opposite direction. **Fdbk** sends the result through the shifter again after **Time**, in FREE or SYNC mode, and **Damp** darkens each lap. SYNC uses Repeat's divisions from 1/64T to two bars, limited to eight seconds. **Mix** blends against the original signal, so partial Mix can create phasing even near zero Shift. Drag the pop-out's display across for Shift and up for Fdbk.

LPC A speech-chip vocoder. **Order** sets the detail of the formant model, **Bits** sets its precision, and **Frame** controls how often it updates. Frame has FREE timing and the Delay's SYNC divisions for stepped changes on the host grid. **Excite** selects BUZZ, TRACK, NOISE or SIDE. BUZZ uses **Note**; held MIDI notes override it. TRACK follows the input pitch and uses Note as a transposition from C3: C3 is unison and C4 is +12 semitones. NOISE whispers, and SIDE uses the source selected in the header. **F Shift** moves the formants, **Breath** mixes noise into the voiced sources, and **Mix** blends the result with the input. Drag the pop-out's tube across for F Shift and up for Bits.

FM Two directions of frequency modulation. In the default CARRIER mode, a sine modulates the input through a short moving delay. In MOD mode, the input modulates a sine that follows the input's level. The pop-out's **Tune** selector chooses NOTE, HZ or TRACK; the first knob becomes **Note**, **Freq** or **Ratio**. Note follows the global tuning, while TRACK follows the detected input pitch times Ratio. **Index** sets modulation depth, **Fdbk** feeds the oscillator back into itself, **Motion** lets the input level push Index, and **Spread** detunes the stereo oscillators. **Mix** blends with the input. Drag the pop-out's display across for Index and up for Fdbk.

Spectral Delay Each frequency band gets a delay from a curve you draw in the pop-out. The header offers RISE, FALL and SCATTER shapes across 32 bands from 20 Hz to 20 kHz. **Time** sets the maximum delay, from 30 to 2000 ms in FREE mode or on the Delay's SYNC chart; synced times are capped at two seconds. **Depth** increases the delay amount from immediate dry at zero to the full curve times Time at 100%. The shortest spectral repeat is about 27 ms at 48 kHz; below that, Depth fades toward dry. **Fdbk** repeats each band on its own timing, **Blur** smears the repeats, and **Freeze** holds the ringing spectrum. The pop-out adds **Tilt**, **Size** and a TIME/LEVEL selector: LEVEL uses the curve to filter the repeats, with all bands sharing the depth-scaled Time. **Size** sets the analysis frame from 4 to 2048 samples (1024 by default): large frames separate close frequencies and smear attacks, small ones keep attacks and make the repeats grainy. Repeats already playing keep their old Size until they fade, and a frozen sound keeps it until Freeze is released. The pop-out draws what plays: the shaded strip at the bottom is the shortest possible repeat at the current Size and Time, bands the frame cannot tell apart draw as one block, and

Tilt fades each band's repeats at its own rate. **Mix** blends with the input. Curves save with presets, variations, full-cell copies and single-cell presets. In CTRL's all-cells view, one stroke draws the curve into every cell that view edits, as a single undo step. Sample Spectrum import is not available.

Squeeze The master bus's three-band upward and downward compressor, on one cell. **Depth** sets how much of the squash you hear: quiet detail comes up and peaks come down. **Time** scales every band's attack and release, from 0.1× for snap to 10× for slow swells. **Tone** tilts the three bands darker or brighter. **In** sets the level into the squash, ±12 dB, and more In lets quieter sounds reach the upward range; **Out** trims the result by ±12 dB. The pop-out adds **Lo Cross** and **Hi Cross**, where the low band ends (10 to 500 Hz, default 88.3 Hz) and where the high band starts (500 Hz to 20 kHz, default 2.5 kHz); drag the split lines on its band strip to move them. Drag the pop-out's display up or down for Depth. The effect adds no delay to the cell.

Tape The master tape saturator, on one cell. The mode bar selects CLEAN, saturation with no wobble or hiss; LO-FI, gentle wobble and hiss; BROKEN, a worn cassette; or STUDIO, magnetic hysteresis. **Drive** sets how hard the cell hits the tape, from warmth to compression and grit. **Wear** adds wobble, hiss, crackle and lost top end in LO-FI and BROKEN, sets the magnetic formulation in STUDIO, and does nothing in CLEAN. **Tone** darkens or brightens the result, and **Mix** blends it with the dry cell. LO-FI and BROKEN add 12 ms of compensated delay when Wear is above 2%; CLEAN and STUDIO add no delay. Drag the pop-out's display up for Drive and across for Wear.

Grain A cloud of short grains read from the cell's last two seconds. **Size** sets each grain's length, from 10 to 500 ms, and **Density** how many start each second, from 1 to 100. **Pos** sets how far back the grains reach, up to two seconds behind what the cell just played, and **Spray** scatters each start by up to half a second either way. **Pitch** transposes every grain by up to two octaves, and **Mix** blends the cloud with the dry cell. The pop-out adds **Scatter**, a random pitch for each grain up to an octave either way; **Rev**, the chance that a grain plays backwards; **Width**, how far grains spread across the stereo field; **Fdbk**, which returns the cloud into what the grains read; and **Freeze**, which stops listening so the grains keep playing the last moments they heard. Drag the pop-out's display for Position across and Pitch up. The effect adds no delay to the cell.

Noise Gate Silences the cell while its key is quiet. The **KEY** menu in the card header picks what the gate listens to: INT, the cell itself; EXT, the sidechain input; or another cell, read before or after that cell's fader (PRE is the default, so you can pull the key cell's fader down and still use it to open the gate). **Thresh** sets the level that opens the gate, from -80 to 0 dB. **Tol** sets how far below Threshold the key must fall before the gate closes, up to 24 dB, so a signal hovering at the threshold does not chatter. **Range** sets how far the closed gate turns the cell down: -80 dB is silence, and a few dB just tucks the gaps under. **Attack** sets how long the gate takes to open fully, from 0.05 to 100 ms; **Hold** keeps it open for up to a second after the key drops away; **Release** sets how long it takes to close, from 1 ms to 2 s. The pop-out draws the key level against the open and close lines; drag it up or down for Threshold and across for Release. The effect adds no delay to the cell.

Codec Models the sound of low-bitrate encoding. BLADE, LAME and OPUS model how those encoders allocate bits; the effect does not use their encoder libraries or export compressed files. BLADE spreads its bit budget across the full band, producing swirl and chirps at low rates. LAME uses a hearing model and trims the top as the bitrate drops. OPUS preserves band levels and fills bands that have too few bits with noise. **Bitrate** runs from 8 to 320 kbps. **Power** adds coding noise; **Tilt** aims it around **Centre**, removing highs at full left or lows at full right. **Loss** sets the chance of losing a packet. **Mix** blends the result with aligned dry audio. The pop-out adds CBR or VBR; VBR gives busy moments more bits at the same average rate. **Repeat** replaces lost packets with gaps at 0%, the last received packet at 100%, or a random choice between them. **Errors** introduces bit errors. Drag the display across for Centre and up for Bitrate. Codec reports 1152 samples of latency at 44.1 and 48 kHz (about 26.1 and 24 ms respectively), with delay compensation.

NOTE The shared default order is **Pitch, Filter, Transient, Chorus, Phaser, Flanger, Crusher, Wavefold, Ring Mod, Table Filter, Vocoder, Resonator, Repeat, Gate, Vinyl Brake, Gain, EQ-8, Compressor, Shimmer, Delay, FDN, Pan, EQ, Drive, Freq Shift, LPC, FM, Spectral Delay, Squeeze, Tape, Grain, Noise Gate** and **Codec**. The rack spreads them over five pages. Page boundaries adjust to the visible effects and their order; EQ-8 takes two rack slots. Pan and Gain are bit-clean at their defaults (centre / unity), and Table Filter is bit-clean at Depth 0.

NOTE External source selectors use SIDECHAIN in MFX, including the Vocoder and Ring Mod carriers. Route that bus in the host before choosing External.

VOCODER INPUT AND CARRIER

The audio entering the Vocoder's cell opens its analysis bands. The carrier supplies the pitched or noisy sound those bands shape. Choose Internal for the built-in oscillator, External for MFX's dedicated SIDECHAIN input, or another cell for a carrier processed elsewhere in the patch. A silent modulator input makes a silent vocoder even when MIDI is held.

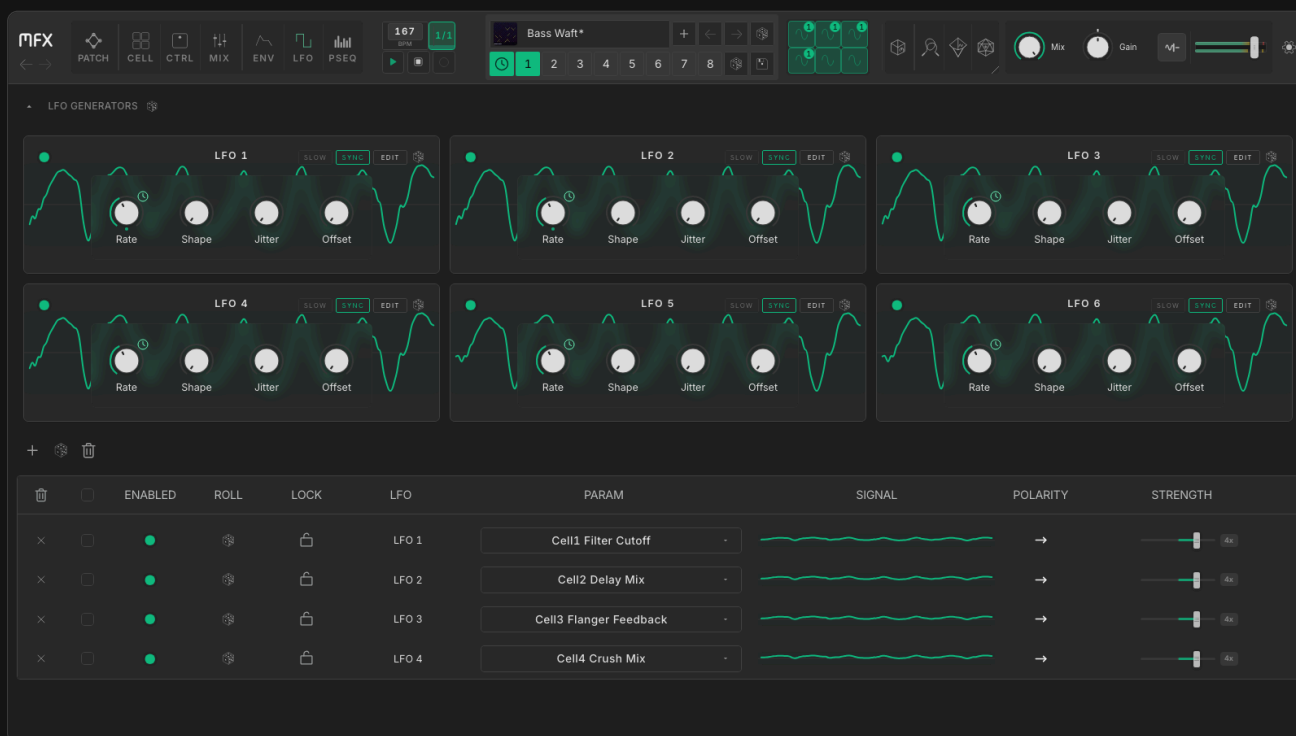
For a talking synth, feed speech or drums into the Vocoder cell and send MIDI notes to MFX from the host. Select Poly for chords. For an external carrier, route a synth into MFX's sidechain in the host, then choose External. The main INPUT and SIDECHAIN are separate signals. Use the source selector's signal indicator to check that the carrier is arriving.

CHAPTER 6 MODULATION

Right-click a parameter to assign modulation. The parameter's coloured marker shows an assignment; its moving arc shows the resulting value. A base knob value and its modulation are separate: turn the knob to move the centre of the modulation.

LFOS

MFX has six shared LFO generators, which can drive parameters across all four cells. Open LFO to set their shapes, speed, phase, and sync. Assign different parameters to the same generator when their movement should stay related. Tempo sync uses musical divisions; free rate uses Hertz.

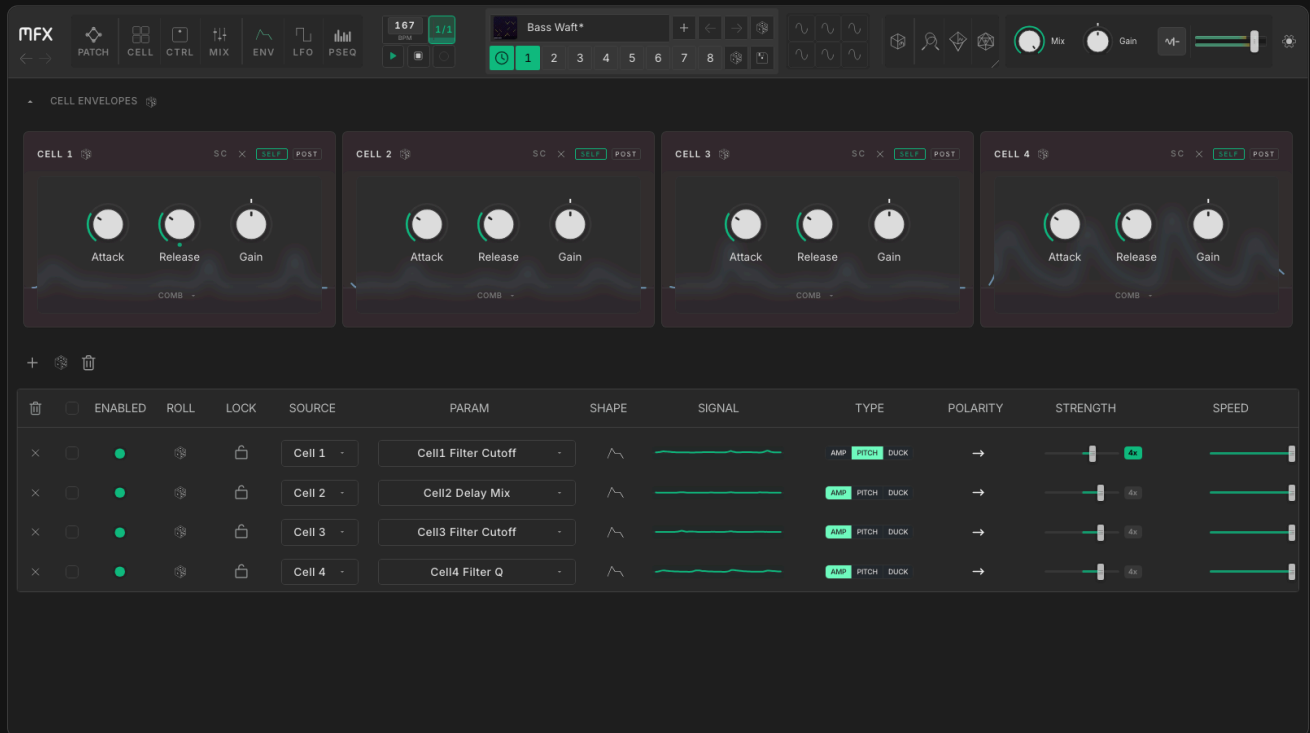


LFO generators and their parameter assignments

Choose a waveform or open the custom curve editor to draw breakpoints and bend the segments between them. Assignment depth sets the amount, and polarity changes whether movement is unipolar or bipolar. The assignment table lets you enable, adjust, or remove individual routes. An assignment does not automatically make a bypassed effect audible: enable its FX block too.

ENVELOPE FOLLOWERS

Envelope followers turn signal level into modulation. Choose the source and set Attack and Release, then assign the follower to a target. AMP follows the full signal. PITCH emphasizes a tuned pitch with a comb filter; DUCK suppresses that pitch so the follower reacts more strongly to other parts of the sound. The assignment's Strength and Polarity set how the target moves.

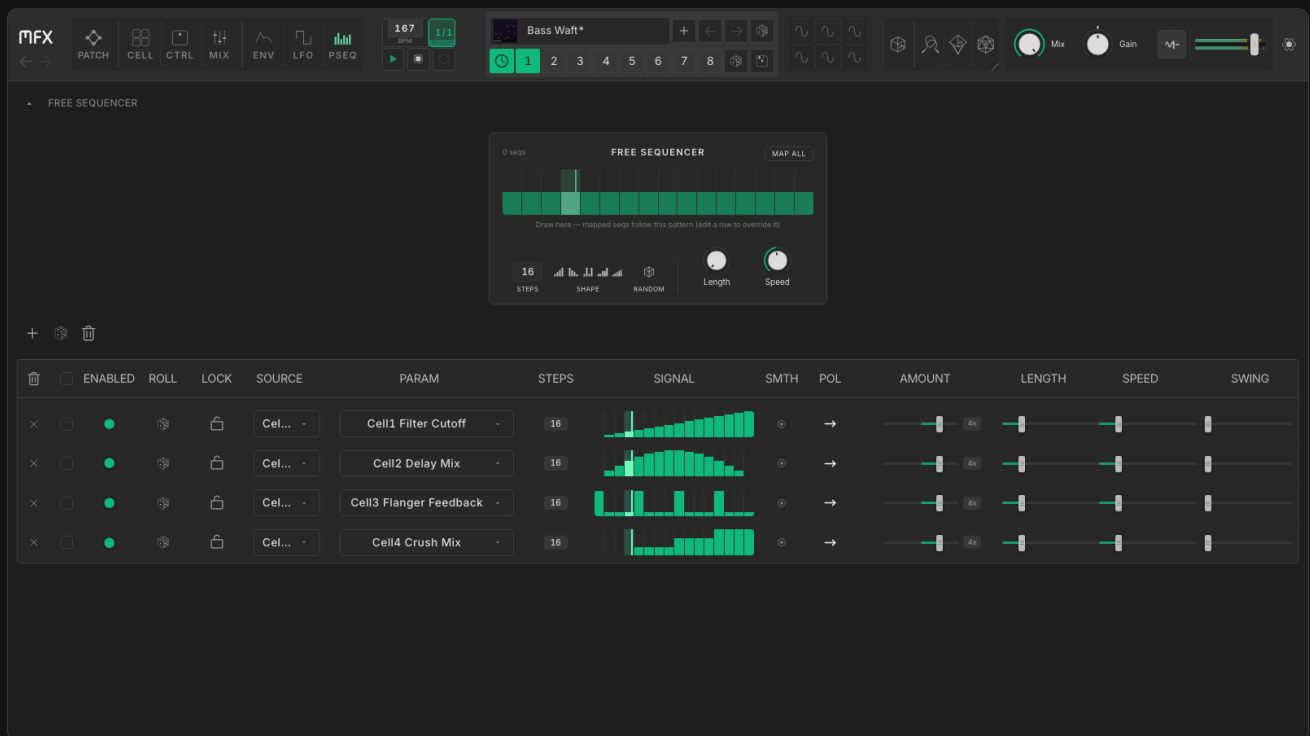


Envelope sources, shaping controls, and target assignments

PRE and POST both listen after the source cell's effects. POST follows its fader level; PRE keeps following when you turn that fader down. In MFX, muting the source cell leaves its modulation signal running. Use the source meter to check the signal before increasing depth. Resonance, Damp, Mix, Tune, and Glide shape the tuned follower without changing the source cell's audible output.

PARAMSEQ

ParamSeq draws values over time for an individual parameter. Right-click the knob and enable its sequencer, then open the ParamSeq view for the full table and lanes. Set up to 128 steps, a length from 1/64 bar to 8 bars, values, swing, and smoothing. A held step makes a discrete change; smoothing joins values gradually.



Parameter sequences for rhythmic control of effects

The Free Sequencer supplies a shared clock and optional master pattern for FREE-sourced lanes. Draw a contour in its grid to make those lanes follow it; each lane keeps its own Strength, Polarity, Boost, and Smooth. Editing a following lane's steps detaches it so it can use its own sequence. Clocked lanes keep moving while transport is stopped and align with the host again when playback starts. MFX has no trigger-driven Gate mode.

OTHER SOURCES

Random and Wander are LFO shapes: choose Random for changing values or Wander for gradual movement. The knob menu also offers macro and automation assignments where the target supports them. MFX has no per-hit Vary matrix.

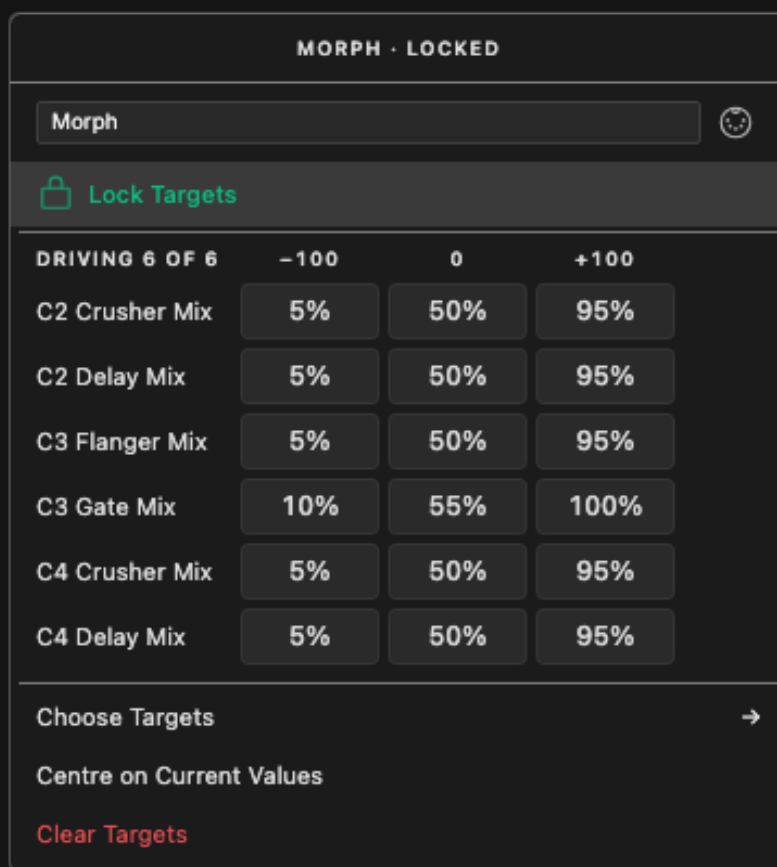
CHAPTER 7

COMBOS AND CTRL

The three PATCH Combos are Morph, Color, and Motion. Each moves up to six different parameters together from -100 through a neutral centre at 0 to +100. Automatic assignments follow enabled effects in the audible patch. Read their target list to see what a particular patch does.

EDITING A COMBO

Right-click a Combo to rename it, learn MIDI, lock its targets, or choose parameters manually. Module output levels are available as manual targets so a Combo can balance the level changes it creates. Each target has values at -100, 0, and +100. Drag a stop or double-click to type in the parameter's own units. Range edits take effect immediately at the Combo's current position. Invert swaps the two outer stops.



A Combo's target list and its three values per target

Lock Targets keeps the assignment when you repatch. Unlocking returns it to automatic selection. Editing targets makes a manual assignment. **Centre on Current Values** makes the current parameter settings the neutral centre while retaining each target's reach. **Clear Targets** empties the list. A mark on a driven knob identifies its Combo assignment.

CTRL MACROS

CTRL shows the same parameter for every cell. Enable a macro to change matching cell controls together, and adjust per-cell amounts or exclusions where needed. Combos combine different parameters; a CTRL macro links matching parameters. Their assignments save with presets.



CTRL controls matching effect parameters across four cells

Use the XY pad to control two assigned parameters at once. Choose targets from the X and Y dropdowns above the pad, then drag in the pad to move both together. CTRL's FX pages also open all-cells effect views for comparing the four instances of an effect.

CHAPTER 8

MIXER AND MASTER EFFECTS

The Mixer has four cell strips and a master strip. Cell faders sit after cell effects; the FX Gain effect can set level earlier in a chain. The strip's limiter is a separate per-cell limiter. Pan, Mute, and Solo affect that cell; in a serial patch, its level also changes what reaches the next cell.



Four cell strips and the master processing controls

The master chain processes the patch sum in this order: Master EQ → Punch → Squeeze → Tape → Iron → Clipper → Limiter. Open an expanded editor by right-clicking its button. The LED bypasses the stage; the pop-out opens a separate window.

Master EQ Trim, Tilt, Width, and Bass Mono precede an interactive low shelf, four bell bands, and high shelf. Drag handles for frequency and gain, scroll for width, and right-click for exact controls and dynamic bell options.

Punch Master compression with Threshold, Attack, Makeup, and Mix. The transfer curve and reduction meter show the compression.

Squeeze Three-band upward and downward compression. Depth sets amount, Time sets speed, Tone shifts emphasis, and In/Out set level.

Tape Mode chooses Clean, Lo-Fi, Broken, or Studio. Drive adds saturation; Tone tilts brightness; Mix blends; Wear changes the active character. Wear is inactive in Clean and controls formulation in Studio. Tape's detailed settings save with the preset; its enable switch is the DAW automation control.

Iron Console or Transformer colour. Drive sets saturation, and Iron controls transformer depth.

Clipper The clip chip in the Limiter panel enables clipping before limiting. Clip Drive and Clip Mix set amount and blend; Smooth, Si, Ge, and LED select the curve. Oversampling adds a small reported delay.

Limiter Controls output peaks with live input/output and gain-reduction meters. Check the final output level when adding parallel routes or feedback.

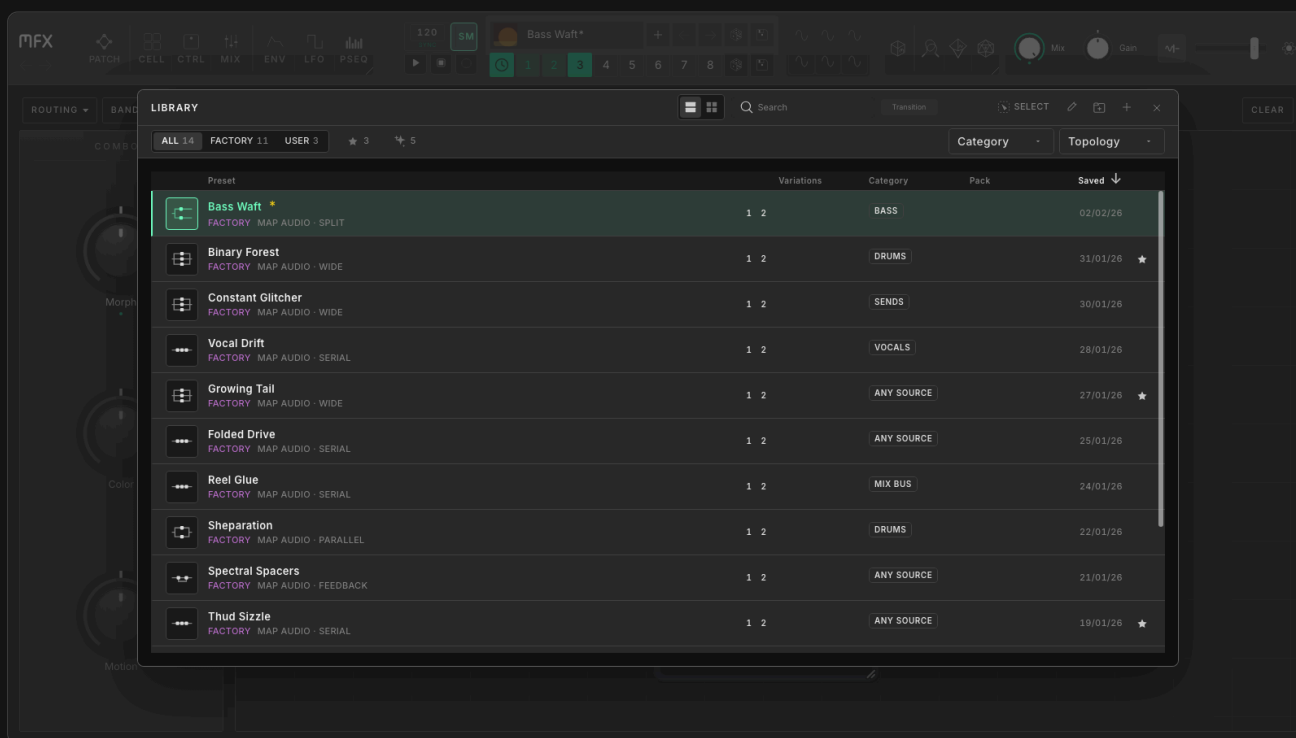
LOUDNESS

Click LOUD for momentary, short-term, and integrated loudness, dynamics, true and sample peaks, and stereo phase. Reset starts a new measurement; auto resets when transport starts. Target chips change the reference shown by the grid. MFX has the metering and EQ controls; the PAM Master Assistant and Mix Assist are not MFX features.

CHAPTER 9

PRESETS AND VARIATIONS

Open the preset browser to search the factory and user libraries. Factory patches are starting points for routing and modulation; use Save As to keep your own version. Save stores the complete patch, including cable gains and layout, effect order, enabled effects, parameters, modulation, Combos, and variations.



The MFX preset browser groups patches by intended source and routing

FINDING AND ORGANIZING PATCHES

Categories describe intended sources, such as Drums, Bass, Vocals, Guitar, Keys, Synths, Mix Bus, Sends, or Any Source. Routing labels describe Feedback, Dry/Wet, Wide, Parallel, Split, or Serial. Effect and capability filters come from the patch itself. Tags describe treatment, character, motion, and intensity. Star a patch to add it to Favourites.

Rename, edit metadata, duplicate, import, and export from the browser's controls and context menus. Factory files are protected; save a user copy to edit them. Table Filter imports are embedded in the preset, so they travel with it. Hosted plugins must still be installed on the destination computer.

MORPH AND TRANSITION

The browser's **Transition** button controls preset morphing. **Transition** names the change between presets or variations and its settings. **Morph** describes the sound changing over the chosen window of time. **Morphing** in the preset list marks the destination while the change is in progress. MFX's preset morph modes are Auto, Glide, and Steps; Auto chooses Glide or Steps.

Length sets the window in bars; OFF skips the morph window. **Switch fade** is the separate short audio crossfade at a variation switch. Click the settings button beside **Transition** to choose the preset morph length and mode. Double-clicking a preset requests an immediate load, including while a morph is running.

EIGHT VARIATION SLOTS

Variations store alternate states inside a preset. Save the current sound to an empty slot, switch slots to compare, and save the preset to retain the bank. Right-click a slot for Save, Copy/Paste, Variate, and the expandable Transition controls. Filled slots also offer Save to Next and Save to Next Empty. Remove empties one slot; Reset to Init fills it with the initial state; Clear All empties the bank. MIDI mappings can select slots during performance.

Use Switch fade for a short audio crossfade at a switch. Enable Morph for a longer transition with its duration in bars. Transition presets such as DROP, RISE, BREAK, BLEND, SWEEP, and FILL configure the next transition; selecting one does not immediately change the sound. Right-click for detailed controls and saved transition presets. Bar-synced changes wait for the selected boundary while transport runs.

RANDOMIZATION

The randomizer can change effects, modulation, or routing according to its selected scope. Lock controls that should stay fixed and save a variation before exploring. A patch-level roll can change connections as well as sound; check the resulting route before raising feedback gain.

CHAPTER 10**MIDI AND AUTOMATION**

Route MIDI to MFX in your DAW or choose MIDI devices in standalone. MIDI can play Vocoder and Resonator voicings, move learned parameters, trigger mapped actions, and select variations. Sending notes does not create a sampler voice.

MIDI LEARN

Right-click a knob and use MIDI Learn, then move the hardware control. Settings → Mappings lists assignments and lets you edit or remove them. Combo menus have their own MIDI Learn control. Use the actual controller's MIDI channel and message type when editing a mapping manually. Knobs show CC21 for an enabled CC 21 assignment, N60 for note 60, PB for pitch bend, and NR151 for NRPN 151. LEARN means the knob is waiting for input; use Cancel MIDI Learn in its menu to stop listening. Disabled and unfinished assignments have no mapped label on the knob. Mappings are saved in settings and DAW projects. Opening a project can restore an earlier assignment. Controller templates and imported mapping files can also add assignments.

HOST AUTOMATION

Automate exposed effect parameters, cell/master levels, global Mix and Gain, and the three Combo parameters in your host. Parameters can also use MFX's automation-slot assignments from the knob menu. Effect order, cables, custom curves, and detailed settings stored as preset state are not ordinary numeric DAW automation lanes.

RECORDING MOTION AND AUDIO

Right-click Record to choose Actions, Audio, or Actions + audio. In MFX, Actions records knob movement into ParamSeq; it does not record MIDI note patterns. Choose a new Motion take length of 1 bar / 16 steps, 2 bars / 32 steps, or 4 bars / 64 steps. Arm Record, move an eligible knob while transport plays, then release it to write the take. Existing sequence timing is retained. Stopping transport finishes active gestures; Escape or disarming cancels them.

In the native application or plugin, Audio captures the full mix to a WAV file in Recordings. Capture begins with the first audio, omits leading silence, and does not normalize the result. Press Record again to finish; the engine caps a take at five minutes. The Record menu's Take item reveals the saved file. Actions + audio records knob motion and the full mix together. Audio capture is unavailable in the browser demo.

VARIATION TRIGGERS

In Settings → Mappings → MIDI → Variation Triggers, enable variation triggers and choose Hold or Latch. Hold starts on a held trigger and stops when the last held trigger is released; overlapping held notes return to the previous held slot. Latch selects the slot without taking ownership of transport. Latch changes can follow bar-sync timing.

CHAPTER 11

SETTINGS

Open Settings and use its search field to find a control. MFX shows Settings, Tuning, Mappings, Keybindings, Performance, Account, and Experimental. Plugins appears when experimental plugin hosting is enabled. Audio-device controls are available in standalone.

FX Rack Mode **All Effects** shows the full rack. **Build** starts empty: use **+ Add module** to enable effects in the order you choose. Bypassed modules stay in the rack; the FX Chain menu hides and bypasses a module. Loaded presets show their active effects. This preference applies to cell and CTRL racks.

Appearance Choose a theme, size, and graphics preferences on the Settings tab. Reduced Graphics lowers visual work. These settings change the interface, not the sound.

Startup In standalone, choose Last session, Init, or Default. Save a default preset when you want the same starting patch on each launch.

Tuning Set the reference tuning, root, and scale for pitched effects and pitch-related modulation. Custom scales and Scala .scl imports support other interval systems.

Mappings MIDI parameter and action assignments, device choices, and variation triggers.

Keybindings Inspect and change keyboard shortcuts. Hosts may consume a shortcut before it reaches the plugin.

Performance Inspect CPU, memory, and processing information. Enable the displays you need while diagnosing a patch; use Reduced Graphics when visual work is expensive.

Account Sign in, activate, import an offline license, inspect status, or deactivate the device.

Experimental Beta Features is the master switch. Individual rows enable Plugin Host or MCP Bridge where the build supports them.

CHAPTER 12

HOSTED EFFECTS (EXPERIMENTAL)

Enable Beta Features and Enable Plugin Host in Settings → Experimental. Follow the panel's reload instruction: relaunch standalone, or reload MFX in the host. Use the Plugins tab to configure scan paths and scan installed VST3, AU, or CLAP plugins supported on your platform.

MFX uses effect slots, with a hosted processor in a cell's effect chain or on the master. Open the plugin's own editor to change its controls. The master hosted insert runs after the built-in limiter. Save the preset to retain the hosted state; loading it on another machine requires the same plugin.

The parameter panel opens in **Focus**, with a varied selection of up to twelve controls. Pin knobs to keep them at the front; pins are remembered per plugin and format. **All** shows the exposed parameters, and **Recent** shows up to sixteen touched controls. Search includes names, groups, units, and parameter IDs across all exposed controls. Repeated names carry group context or a parameter number. These view choices leave the plugin's sound unchanged.

A plugin that fails or is missing needs to be removed, replaced, or rescanned before that processor can be restored. The MFX MCP tools do not control these experimental hosted FX slots.

CHAPTER 13

MCP BRIDGE

MCP lets a compatible AI client inspect and change MFX through a local bridge. In Settings → Experimental, switch on Beta Features and Enable MCP Bridge. The bridge starts when enabled; it does not require an application restart. Copy the MFX configuration shown in that panel into your MCP client's configuration.

CLIENT CONFIGURATION

The package requires Node.js 21 or later. A standard configuration is:

```
{
  "mcpServers": {
    "mfx": {
      "command": "npx",
      "args": [ "-y", "@map-audio/mfx-mcp-server@latest" ]
    }
  }
}
```

Start or reload the MCP client after adding the configuration. Keep MFX running with the bridge enabled. The MFX server connects only to MFX instances and uses MFX's four-cell parameters. When several instances are open, use `connection_status` and `select_instance` before making changes.

AVAILABLE OPERATIONS

The tools inspect parameters, state, routing, presets, and transport; edit effects, cables, cable gains, modulation, Combos, and variations; and save patches. Ask the client to read `design_context` before building a patch. In standalone, `get_audio_device_setup` discovers the names used by `set_audio_device` and `set_midi_io`.

Offline tools can read the bundled parameter reference and preset files. Live edits require a connected bridge. `capture_ui` requires the MFX editor to be open, and its optional view arguments change the visible editor. Ordinary parameter and Combo edits work with the editor closed. Interface-only dialogs and license activation happen in MFX itself, not through MCP.

TIP Save to a variation slot before a large change. For example: "Save this in an empty variation slot, then make a parallel patch with clean lows and a modulated delay on the upper band."

CHAPTER 14

TROUBLESHOOTING AND SUPPORT

No sound Confirm audio reaches the host track or standalone input. Trace a cable from a source to OUTPUT, check every cell's mute and level, and check that the global Mix and master fader are where you expect. A sidechain requires a host route.

No modulation Enable the assignment and target effect, inspect the source meter, and check the clock or source selection. Start host playback when checking transport alignment. A silent follower input produces no level modulation.

Unexpected dry level Check for INPUT → OUTPUT cables as well as global Mix. Several direct or parallel copies add at the output.

Ringling after input stops Inspect feedback returns, Resonator resonance, Delay/FDN feedback, Shimmer Regen, and held Repeat or Vinyl Brake states. Lower or remove the feedback return to stop a sustained loop.

Latency changes Check Pitch mode and Transient split levels; the Clipper's figure is reported whether it is on or off. Fixed Latency Mode avoids host compensation changes during live switching.

MCP cannot connect Confirm Beta Features and Enable MCP Bridge are on, use the MFX package configuration, inspect connection_status, and select the intended instance. Open the editor for screenshot tools.

Contact support@map.audio with your MFX version, operating system, DAW and plugin format, a short reproduction, and the preset when it helps reproduce the issue. The current product page is map.audio/mfx the software license terms are at map.audio/eula.