



MFM2

More Feedback Machine 2



User Guide

for version 2.5

Contents

Introduction	3
Installation	3
u-he	3
MIDI	4
Knobs and Selectors	4
Control Bar	5
Main Panel	7
Inputs	7
Delays	8
Filters	9
Matrix	10
FX (Effects)	13
Compressors	15
Lower Panel	16
LFOs	16
MSEGs	19
Modulation	21
Preset Browser	23
Directory Panel	24
Presets Panel	27
Preset Tagging	31
Search Functions	32
Configuration	34
Remote Control	34
Preferences	37

Introduction

Installation

Before you start using MFM2, read about FEEDBACK control and the [PANIC](#) button!

Go to [MFM2 page](#), grab the installation file for your system (Mac OSX or PC/Win), double-click on the downloaded file and follow further instructions. While you're on the MFM2 page, you might like to scroll down and watch the introductory video!

Windows

Presets (local)	<i>C:\Users\YOU\Documents\u-he\MFM2.data\Presets\MFM2\</i>
Presets (user)	<i>C:\Users\YOU\Documents\u-he\MFM2.data\UserPresets\MFM2\</i>
Preferences	<i>C:\Users\YOU\Documents\u-he\MFM2.data\Support\ (*.txt files)</i>

macOS

Presets (local)	<i>MacHD/Library/Audio/Presets/u-he/MFM2/</i>
Presets (user)	<i>MacHD/Users/YOU/Library/Audio/Presets/u-he/MFM2/</i>
Preferences	<i>MacHD/Users/YOU/Library/Application Support/u-he/com.u-he.MFM2...</i>

To uninstall, delete the plugin file(s), then MFM2.data (PC) / the two MFM2 folders (Mac).

u-he

To check out all other u-he products, go to the main [u-he website](#)

For a lively discussion about u-he products, go to the [u-he forum](#)

For friendship and informal news, visit to our [Facebook page](#)

For video tutorials and more, go to our [YouTube channel](#)

For extra u-he product presets, check [PatchLib](#)

Team 2022 (Q1)

Urs Heckmann (boss code, concepts)
 Jayney Klimek (office management)
 Howard Scarr (user guides, synth presets, necessary grump)
 Rob Clifton-Harvey (IT admin, backend development)
 Sebastian Greger (GUI design, 3D stuff)
 Jan Storm (framework, more code)
 Alexandre Bique (all things Linux)
 Oddvar Manlig (business development)
 Viktor Weimer (support, presets, the voice)
 Thomas Binek (QA, bug-hunting, presets)
 Henna Gramentz (office supervision, support)
 Frank Hoffmann (framework, new browser)
 Alf Klimek (studio, tagging, voiceover)
 Sebastian Hübert (media, synthwave)
 David Schornsheim (more code)
 Luca Christakopoulos (communication design)
 Kay Knoke (hardware development)

MIDI

MFM2 begs to be fed MIDI control data. Especially notes from a keyboard or a MIDI track in your sequencer can significantly expand MFM2's already massive capabilities. For instance, you can use 'KeyFol' (key follow) to play its filters and delay lines in tune. For this reason, MFM2 includes an on-screen keyboard. Notes played via mouse-click can be recorded as automation data.

MIDI notes can also be used to trigger the multi-stage envelope generators and LFOs, giving you total control of synchronized modulation effects.

MFM2.5 supports [Oddsound MTS-ESP](#), a system for microtuning multiple plug-ins within a DAW environment. The free 'Mini' version is all you need to get started!

For information about how to route MIDI into effect plug-ins (such as MFM2), please refer to the documentation of your host application.

Knobs and Selectors

Knobs



Values are adjusted via the usual click-and-drag, often allowing finer resolution via SHIFT. Several of the knobs are centre-zero (like the Pan knob here) i.e. you can set negative as well as positive values.

Double-click on a knob to revert to the default value.

If you use a wheel-mouse you don't even have to click on knobs or even selectors to edit them. Simply hover over the control and roll the wheel. For fine control, hold down a SHIFT key.

Local modulation

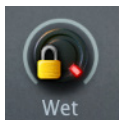
Several of the main parameters include modulation source selectors so you don't need to use a [modulation](#) slot for that purpose. If a source is selected (like *Lfo1* for the Ratio knob in the above image), a small **dot** appears next to the control...

To adjust the modulation depth, click on the dot and move it just like a regular knob. The light grey arc around the knob indicates modulation depth / polarity. Note that all modulation depths are bipolar, even if the target parameter i.e. the knob isn't.

Selectors

Selectors appear as dark rectangular fields (like 'Lfo1' and 'none' in the image above). Click on a selector to open the list of available options.

Parameter locking



To guarantee that a value does not change whenever you switch presets, use the *Lock* function: Right-click on a knob or selector and go to the bottom entry in the menu. Note that a locked parameter can still be adjusted manually!

Control Bar



The bar along the top of the MFM window contains several controls:

Undo / Redo



The pair of curved arrows let you step backwards or forwards through the edit 'history'. Although the number of steps is limited, Undo even works if you happen to select a new preset by mistake before saving your edits.

Presets

Opens the preset browser (see the [Preset Browser](#) chapter)

Save

This button opens a dialog box in which you can enter some text before finally storing the preset via the 'Apply' button. If you can't see your newly saved preset in the currently selected folder, check the status of the [preference](#) *Save Presets To*.

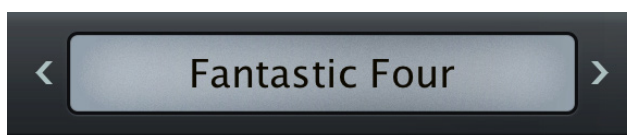
Right-click on the SAVE button beforehand to specify the format. The standard is *.h2p*, which has the advantage of being cross-platform compatible. The *.h2p extended* format is the same but also lets you add comments to each line.

Clicking on the final *Tag this Patch* entry opens a window where you can specify CATEGORY, FEATURE and CHARACTER tags for the currently loaded preset. See [Preset Tagging](#).

MIDI

This indicator flashes whenever MIDI messages are being received. For information about how to route MIDI into effect plug-ins, please refer to the documentation of your host application.

Data Display



The display at the top of the block shows the name of the selected preset or, while a parameter is being edited, its current value. Clicking on the little arrows to the left and right steps forwards or backwards through presets. Clicking directly on the data display opens a list of all presets in the current directory so you don't always have to open the browser to select a different preset.

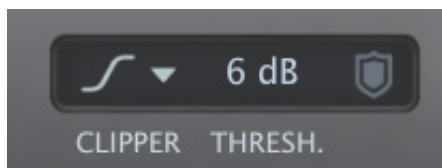
If you drag a preset from outside the plugin and drop it onto MFM2's data display, that preset will be loaded but not saved.

Initialize preset (init)

To load a very simple template, right-click on the data display and select *init*.

CLIPPER

The Clipper is mainly a 'shield' to protect your ears and your equipment against overly loud Output – which can all too easily occur in feedback-based systems such as MFM2.



Significantly less CPU-intensive than a brickwall limiter, the Clipper can be used to colour the sound. There are 3 algorithm options (*Hard*, *Medium* or *Soft*) and 3 threshold options (0, 6 or 12 dB). Note that *Clipper Algorithm* and *Clipper Threshold* are also global [preferences](#).

The shield icon is an **indicator** which turns green whenever the threshold is exceeded.

OUTPUT (loudspeaker icon)

MFM2's main volume control. Most presets will have this set to 100, but higher values can be used to boost quiet signals if necessary. If the Clipping indicator flashes when you want a clean output signal, the simplest remedy is to turn Output down a little, as it is pre-Clipper..

Badge



Click the u-he badge for direct links to our website, to this user guide and other MFM2 documents, to our user support forum at KVR as well as to our social network pages...

Visit u-he.com
User Guide
Docs Folder
Support Forum
u-he on Twitter
u-he on Facebook
u-he on YouTube

Install Soundset...

At the very bottom of the menu is the unrelated function [Install Soundsets...](#)

Configuration



Clicking on the cogwheel symbol opens the configuration pages where you can set up remote control via MIDI CC as well as several global preferences. For details, see the [Configuration](#) chapter.

Main Panel

Inputs

On the far left of the window are two vertical panels which can process input signals before they are sent to the delay lines. Note that the [Dry](#) signal is unaffected by these parameters.



There are two input panels, one for each pair of delay lines. To specify which particular signal sources are processed here, click on the [Input](#) selectors (indicated by the yellow or blue arrows) in each delay panel.

Gain

Adjusts input level. 100 is unity gain.

Transient

Transient balance suppresses or boosts transients (spikes) in the input signals, and any change in the overall level is compensated for. At maximum you will only hear the transients.

Input filter mode (unlabelled)

The input signal can also be filtered to reduce the range of frequencies entering the delay lines:

Bypass.....disable the input filter

Lowpass.....remove frequencies above the Cutoff point

Highpass.....remove frequencies below the Cutoff point

Cutoff

Corner frequency of the input filter (lowpass or highpass).

Delays

MFM2 has 4 identical delay panels:



Input

This selector determines the audio input: *Left*, *Right*, *Monosum* (stereo audio is summed to mono) or *None*. Please note that, even if a delay has its input set to *None*, it can still receive audio signals from others via the delay [Matrix](#).

Base / Sync

The upper selector (**Base**) offers 3 options for Ratio / ms / Tune modulation (see below), each with a *Fine* variant which reduces the range of modulation. The range of the Ratio / ms / Tune knob remains unaffected. The *Fine* options are best for subtle modulation e.g. chorus effects while the *Coarse* modes are for more radical effects. In the *Coarse* modes you can set intermediate values by holding down SHIFT while moving the knob.

The lower selector (**Sync**) is only applicable if Base is set to one of the *Sync* options, in which case the delay times are relative to the song tempo. The options here include dotted and triplet times, with values ranging from 1/64th notes to 1/1 (i.e. 1 bar in 4/4 time).

Ratio / ms / Tune

The first knob changes its label depending on the selected **Base**...

If Base is either of the *Sync* modes, the delay is synchronized to song tempo. The **Ratio** knob then scales this delay time between 0% and 200%. Note that the maximum delay is 4 seconds, so if your song tempo is very slow, long delays will be divided to stay within range.

if Base is set to either of the *MilliSec* modes, the delay time (**ms**) is independent of song tempo: It is an absolute value in milliseconds, with a range of 1 to 2000 ms i.e. 2 seconds.

If Base is set to either of the *Note* options, the delay time is modulated by incoming MIDI notes and / or MFM2's own [keyboard](#). The central **Tune** value (0.00) is equivalent to MIDI note 69 i.e. standard 'tuning-fork' A, 440Hz. Very short delays can act very much like playable Comb filters. If 3 or even 4 delays are tuned to a chord, MFM2 can turn a drum loop into something between a strummed acoustic guitar and a harpsichord.

Pan & Output

Pan sets the stereo positions, and **Output** set the volume for each individual delay channel.

Note: The range of the delay channel Output parameter has changed in version 2.5: previously 0 to 200, it is now 0 to 100. If you automated this parameter in any of your older projects, you should check that the automation still works 'properly'.

Filters

Filters can be placed in one of several positions within the signal path...

Filter Flow

Delay Inputbefore the delay
Delay FB.....within the feedback loop (iterative filtering!)
Delay Output.....after the delay
Input Leftbefore the delay, single channel
Input Right.....before the delay, single channel
Dry Left.....before the delay, only the dry portion of the signal is filtered
Dry Right.....before the delay, only the dry portion of the signal is filtered

Filter position indicators



Example: if you select the filter flow option *Delay Input* for delay 2, [F2] will appear in the DELAY 2 panel next to its label. If you select one of the *Input* options instead, [F2] will appear in the middle of the Input panel.

Note that a combination lowpass / highpass filter is also available in the [FX](#) sections.

Type

Bypass.....the filter is disabled
Lowpass.....classic 12dB synth-style resonant type
Bandpass.....classic 12dB synth-style resonant type
Highpass.....classic 12dB synth-style resonant type
Bandreject.....more subtle, this works like an inverted bandpass filter: a fairly narrow region of the spectrum is attenuated, so it can be used to remove feedback 'ringing'.
Allpass.....only affects phase relationships – no frequencies are attenuated. Resonance affects the depth of these phase shifts. Allpass filters are useful for phasing effects, especially when mixed with the dry signal.
LP/HP 6dB.....milder versions of *Lowpass* and *Highpass* types.

Cutoff

Controls filter frequency, with a definable modulation amount and source selector. Use the definable knob (via right-click) to modulate the Cutoff frequency.

Resonance

The Resonance knob adjusts filter-internal feedback.

KEY FOLLOW (lower panel)

Dedicated key follow settings for each of the 4 filters. See [Modulation](#).

Matrix

This panel lets you select a delay network type and adjust various levels, including the outputs:



Feedback Mode

PROPORTIONAL.....feedback levels are scaled inversely proportional to the delay times, thus preventing stereo delay effects from getting too lop-sided.

LINEAR.....delay times do not directly affect feedback levels.

FEEDBACK

Scales all feedback levels simultaneously. You can use it to control e.g. dub-style 'infinite' echos, but always be ready to hit that big red **PANIC** button (see the next page)!



PANIC (unlabelled)



The PANIC button immediately stops all feedback. With so many inserted effect options and complex feedback routing between the four delay lines, things can easily get out of hand, so you should be prepared to hit this button at any time.

Signal Level Meters

The vertical rows of 'LEDs' let you monitor the individual delay levels as well as overall output, from -80 dB to 0 dB.

Wet / Dry

The two knobs at the bottom right are separate gain controls for the original and the processed signals. Tip: When using MFM2 as a send effect set Dry to minimum and Wet to maximum.

Matrix Type

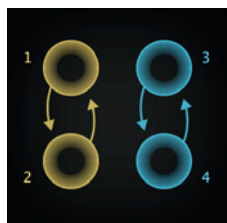
The selector immediately below the FEEDBACK knob specifies the type of delay matrix:

Note that these are simple graphics – apart from the Matrix Type, the dark rectangle does not contain any controls unless you select the *User Matrix* type (see the next page).



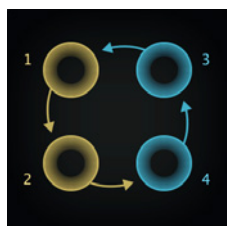
Four Mono

4 separate delays. The output of each delay is fed back into its own input.



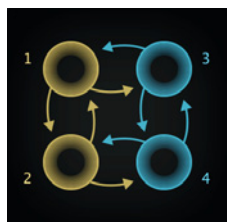
Dual PingPong

2 pairs. The output of each delay is routed to the other member of the pair.



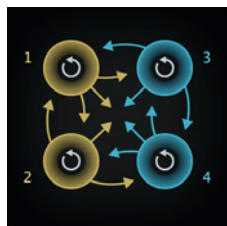
Quad Pingpong

The signal is fed from one delay to the next. To make the most of this type, set the input of three of the delay lines to 'none'.



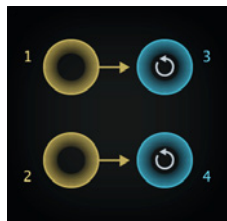
Quad Permute

Like *Quad Pingpong* except that the signal is sent in both directions around the circle, while the feedback is inverted in one of the directions. This is a very complex network which has been used in classical reverb algorithms.



Quad Network

Every output is sent to every other input – feedback heaven! Use carefully e.g. for atmospheric delays or dense reverbs.



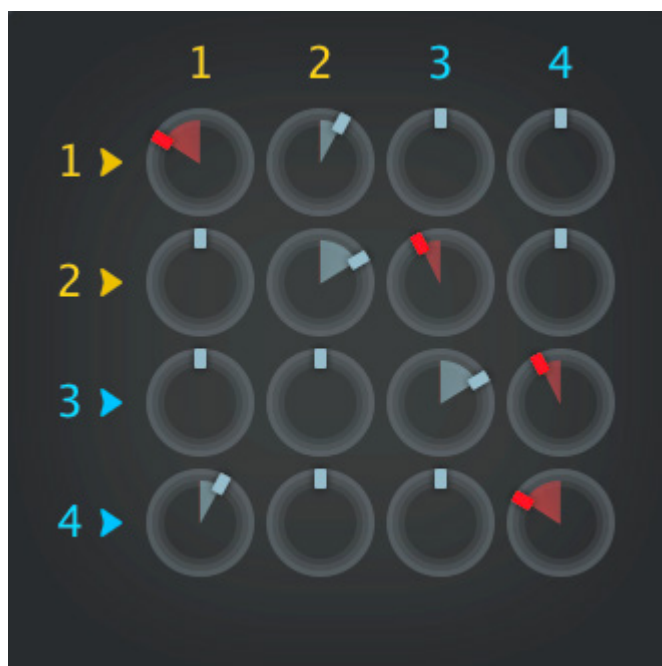
12 into 34

The output of delay 1 is sent to delay 3, which is fed back into itself. And similar for delay lines 2 and 4, of course. This option is great for ‘dub’ rhythms – set e.g. an initial 5/8 delay and 1/2 notes in all other lines.

User Matrix

This type lets you specify how much of each delay is fed back into *any* delay. Unlike the other Matrix Types, the elements in the User Matrix are editable knobs: The rows represent the signal sources, while the columns represent their targets.

An example:



Delay 1 (top row) is being fed back into itself, but inverted.

A little bit of delay 1 is also being sent to delay 2.

Delay 2 is being fed back into itself and also sent (inverted) to delay 3.

Delay 3 is being fed back into itself and also sent (inverted) to delay 4.

Delay 4 is being fed back into itself (inverted) and sent to delay 1, thus completing the ring.

FX (Effects)

To the right of the Delay Matrix are two post-delay effects, one for each pair of delay lines.

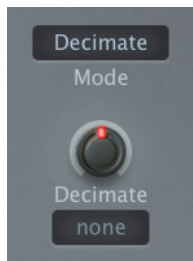
The **Mode** option switches between Off (which disables the effect) and one of 7 effects. The descriptions have been kept to a minimum, as it is far better to experiment with these effects than to study a long list of technical details:

SoftClip



The knob effectively controls the amount of distortion.

Decimate



A simple bit-crusher.

Phaser



A simple phaser:

Center

Nominal delay time before any modulation.

Feedback

Turn this up for more resonant effects.

SideBand



A sideband filter is essentially a frequency shifter based on a special kind of amplitude modulation. The metallic character is caused by all frequencies being shifted by a constant (e.g. 100Hz) instead of by pitch (e.g. 7 semitones).

Filter



Dual 6 dB/oct filter.

LP

Lowpass cutoff frequency

HP

highpass cutoff frequency

Granular



Granular pitch-shifters effectively cut audio material into small snippets which are then played back, smoothly cross-faded.

Base

Syncsynchronize grains to song tempo – experiment with this!

1sabsolute time, maximum 1 second.

DIR (direction)

Option to reverse the playback of all grains.

Size

Grain size.

Transpose

Iterative pitch shifting, integers are semitones. 2-octave range from -12 to +12.

Diffusor



Up to 4 delay-based allpass filters in series. In combination with regular delays, allpass filters form the essential building blocks of classic digital reverbs. As the rest of MFM2 is a complex delay, it can become quite reverb-like.

Stages

The number of allpass filters used.

Size

Scale factor for the delay lengths of all 4 stages.

Diffusion

Technically the allpass gain, the effect of this parameter can be quite subtle: Experiment!

Compressors

MFM2 features two flexible compressors, with realtime gain reduction indicators (**GR**):



Mode

Bypass..... the compressor is disabled and the signal is unaffected

PeakComp..... standard compressor – the signal is analyzed at the selected Source (see below)

Maximize..... RMS feedback compressor – the signal is analyzed at the output

Target, Source

Dry, 1+2, 3+4, Mix. In *PeakComp* mode the Source selector lets you specify the signal to be analyzed so you can compress one pair of channels using a ‘**sidechain**’ from the other.

Threshold

-96 dB to 0 dB. The level at which compression kicks in. If the Source and Target are the same (e.g. after setting the mode to *Maximize*), the output level is automatically compensated.

Comp (compression ratio)

0.00 = 1:1, 1.00 = 1:2, 2.00 = 1:4, 3.00 = 1:8, 4.00 = 1:16 etc., 10.00 = limiting.

Attack / Release

Compression attack and Release times in milliseconds. Note: Setting Release to the maximum (12.00) makes it much longer (several seconds!) than the maximum attack.

CH Link

While **Channel Link** is enabled, a **mono sum** of the input signal compresses the left and right channels equally. For instance, a kick drum in the left channel would also compress the right channel on those beats. When Link is disabled, that kick only compresses the left channel. Similarly, and a dynamic signal in the right channel would only compress the right channel.

Output

Sets the output level from -24dB and +24dB

Lower Panel

As well as quoting the revision number and plug-in format, the bar switches between four different modulation panels: **LFO 1-4**, **MSEG 1**, **MSEG 2** and **MODULATION**...



LFOs

The four identical low frequency oscillators can be used to animate any parameters that have a knob (exception: the modulation matrix amounts).

WAVEFORM



sine pure sine wave
triangle pure triangle wave
saw up rising sawtooth ('ramp')
saw down falling sawtooth
sqr lo-hi square wave, restarted at the lower level
sqr hi-lo square wave, restarted at the higher level
rand hold random hard steps
rand glide random smooth curve
user up to 32 definable steps or lines – see the next page

User Waveform

The 'user' waveform lets you create custom LFO shapes:



Drawing Tools

The LFOs include drawing tools adopted from our synthesizer plugins (ACE, Bazille, Zebra2). Perhaps overkill for the LFOs here, but you might find some of them useful!

Right-click to open the menu:

Copy / Paste.....copies the current curve to the clipboard, or replaces it with a previously copied one. You can use copy/paste to transfer curves between presets.

Shapes.....draws a preset curve: *Ramp*, *Triangle*, *Sine*, *Cosine*, *Root* or *Quadric*.

Alt / Cmd-Draw.....sets the drawing mode to *Erase* (zero), *Scale* (multiply), *Shift* (2D move) or *Warp* (2D bend). Hold down *alt* (Win) or *cmd* (Mac) before drawing.

Selection.....*Deselect*, *Invert*, *Shift Left*, *Shift Right*, *Select every 2nd / 3rd / 4th*. If nothing is currently selected, only the latter 3 will appear in the menu.

To add to a selection, hold a shift key and draw. To deselect, click within an unselected area.

Reverseflips the current selection horizontally

Invert.....flips the current selection vertically

Randomize.....adds a random offset to all values in the current selection

Soften.....interpolates between adjacent values to remove abrupt transitions

Normalize.....scales all values so that the lowest is at the bottom and the highest at the top

Make Unipolar.....shifts all values into the positive

Straighten.....draws a straight line

Resetsets all values to zero

Quantize 4–24.....adjusts values to an equally-spaced grid

STEPS

Select STEPS (the number of points, 0 from 2 to 32) and the MODE (steps or lines). The length of **each step** or line is the current SYNC value. Draw in the editor by clicking and dragging. For straight lines, hold down the *ctrl* key (Win) or *alt* key (Mac).

RESTART

Restart gives you more control over synchronization. You can restart the LFO after any number of measures (1 to 32), or trigger via MIDI Note On messages...

free.....the LFO starts at a random position within its waveform

gate.....the LFO restarts with every MIDI Note-On, always at the same position in its wave (see Phase below). Use a MIDI keyboard or MFM2's own [keyboard](#).

SYNC

LFOs can be synchronized to song tempo, with values ranging from 1/64 notes to 8 bars (of 4/4), including dotted and triplet time. At the top of the list are also two 'absolute time' options: 0.1 second or 1 second. All LFO times are scalable via the Rate knob (see the next page).

Rate

LFO rate. This bipolar control *scales* the value set by the Sync parameter. Use it to fine-tune the speed of the LFO. The definable knob to the right is for rate modulation – in the image on the previous page, LFO1 rate is being controlled by the modulation wheel.

Phase

Sets the the position (within its cycle) at which the LFO will be restarted each time a note is played. Meaningless if MFM2 is not receiving MIDI notes or if Restart (see above) is set to *free*.

Delay

Actually LFO fade-in time. Typically used for 'delayed vibrato' in synthesizers, hence the name. This parameter only works if MFM2 is receiving MIDI notes.

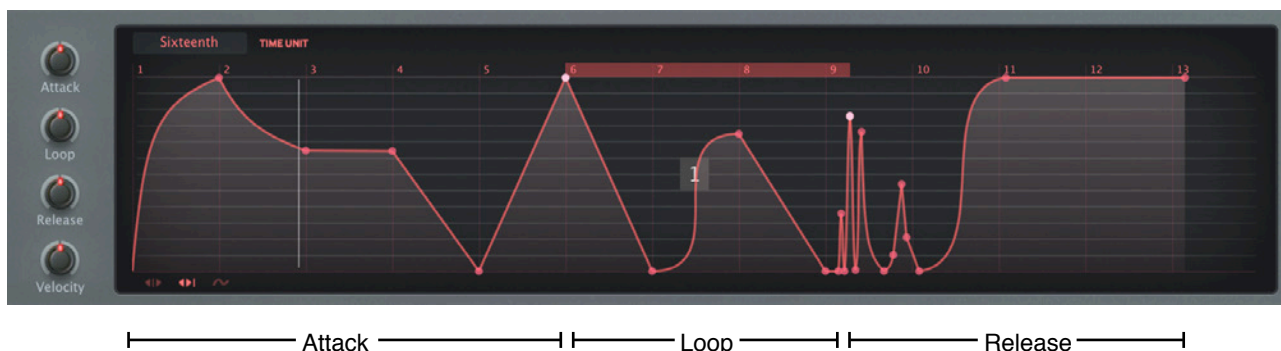
Amp

Amplitude i.e. the overall output level of the LFO.

MSEGs



Multi Stage Envelope Generators are complex modulation sources with comprehensive control over the shape as well as continuous control over the timing. Click on the **MSEG1** tab...



Each MSEG can have up to 32 segments connecting 33 'points', with adjustable curvature per segment. Instead of the usual sustain stage found in typical synth envelopes (ADSR), the MSEG loop can span multiple segments (as in the above image). Both MSEGs are triggered whenever MFM2 receives a MIDI *Note On* message, or when you click on a key in MFM2's own [keyboard](#).

Time Unit

The button at the top left of the MSEG editor (where it says *Sixteenth* in this image) selects the basic unit that will correspond to integer steps in the editor's timeline.

Sixteenth / Quarters / NotesNote lengths synchronized to song tempo
SecondsAbsolute time, non-synchronized

Attack

Adjusts the rate of everything before the loop.

Loop

Adjusts the rate of the loop (which repeats as long as MFM2 is receiving a gate i.e. MIDI note). For how to define loops, see 'Loop Region' on the next page.

Release

Adjusts the rate of everything after the loop.




Velocity

For dynamic envelopes – velocity scales the MSEG output level.

Editor Functions

Edit Mode

At the bottom left of the MSEG editor are three small buttons:

-  *Single*.....individual points move horizontally as well as vertically
-  *Shift*individual points move, all following points are shifted to the left or right
-  *Draw*.....multiple points can only move vertically (click on a point, draw left/right)

Add / Remove Points (max. = 33)

Up to the maximum 33 you can add new points via cmd+click (Mac) / alt+click. Right-click on an existing point and select *remove point* to delete it.

Curvature

To adjust the segment curvature, click on a line and drag it 'away'. S-curves are also possible by dragging left-right. Hands-on experience is better than an explanation here: experiment!

Zoom & Scroll

To zoom in or out, click on the background and drag up / down. For optimum zoom, double-click. To scroll to invisible sections of the envelope, click and drag left / right.

Context Menu

Right-clicking in the background opens a menu containing the following options:

- Copy / Paste*.....clipboard functions
- Half Size*.....shortens the envelope
- Double Size*lengthens the envelope
- Upside Down*.....inverts the envelope
- Unit Snap*.....horizontally restricts new input to 3, 4, 6 or 8 steps per unit
- Value Snap*.....vertically restricts new input to 12, 24, 36, 48 or 15 levels
- Quantize to Snap*quantizes all points to the nearest step (see Unit Snap)
- Unit Spacing*.....distributes all points to successive units
- Even Spacing*.....evenly distributes all points between the leftmost and rightmost
- Pointer*resolution of the position indicator (*fine* is the most CPU-intensive)

Loop Region

Right-clicking on a point lets you set loop start and end points. Alternatively, click and drag the edges of the coloured bar immediately above the editor window. Note: MSEGs will continue looping if the loop end is set to the very last point.

Modulation



The MODULATION tab in the lower bar opens a panel containing several global pitch parameters, an on-screen keyboard and a 4-slot modulation matrix:



IMPORTANT: TRANSPOSE and KEY FOLLOW require **pitch data**. Although MFM2's [keyboard](#) is chiefly for displaying incoming MIDI notes, it can also be used to set a constant pitch – simply click on one of the keys.

TRANSPOSE

The leftmost knob shifts notes within a range of +/- 24 semitones. The current transposition is displayed below the knob ('T' value). Transposition can also be set by clicking within the strip above the keyboard: the selected key is highlighted red, as in the above image.

Fine Tune

Shifts pitch by +/- 100 cents. The amount of fine tuning is displayed below the knob ('F' value).

PITCHBEND

Pitch bend ranges (down | up), from 0 to +/- 12 semitones.

Portamento

A smooth glide in pitch between consecutive notes. Set higher values for a slower glide. Portamento affects the *KeyFol* (key follow) modulation source as well as filter KEY FOLLOW.

Range

Values below the default 100 will shift the start of the glide closer to the target note.

KEY FOLLOW

Dedicated 'KeyFol' for the filters. KEY FOLLOW determines how much incoming MIDI notes (or MFM2's own keyboard) will modulate Cutoff. Set to the maximum 100.00, Cutoff should follow notes 100% and thus become 'playable'.

KEYBOARD

The keyboard will only have an effect if you use the key follow modulation source (KeyFol) or filter KEY FOLLOW. At the top left are the current transposition and fine tuning values (see above). The narrow strip immediately above the keyboard displays the current transposition value: Click anywhere within the strip to change this (you will see the transpose knob move and the 'T' value change). To set a constant pitch, simply click on one of the keys. You can also drag up and down the keyboard while holding the mouse button.

MOD MATRIX

On the right is a panel used for specifying up to 4 custom modulation routings:



Target (unlabelled selector)

The parameter to be modulated. Drag and drop from the selector onto any knob in the main MFM2 panel, or right-click and choose from the menu.



The drag & drop 'crosshair'

3rd alternative: drag and drop from one of the **circled numbers** in the lower bar. The number will be highlighted and the selected target will appear in the modulation matrix. You can even right-click on them to choose a target from the menu, as they mirror the target selectors.



only slot 1 has a defined target here

Source

Bipolar modulation depth for the selected source: Click on the selector below the knob, choose a source from the menu, then move the knob to adjust modulation depth.

Note: The modulation source menu includes two user-definable MIDI CC controls called *CtrlA* and *CtrlB* ('Control A' and 'Control B') meant for extra 'live' performance control above and beyond the usual modulation wheel and aftertouch. See the [Control A/B Default](#) preference.

Via

An optional secondary modulator. **Via** determines how much of the primary modulator reaches its Target. Note: When the Via source is at minimum, negative Via amounts will scale the modulation depth from 100% to 200%.

Preset Browser

You can load presets by clicking on the data display, or step through them by clicking on the arrow symbols on either side. However, MFM2 also includes a powerful preset browser...

Click on the PRESETS button and select the DIRECTORY tab to open this view:



Folders appear on the left, presets are listed in the centre and information about the currently loaded preset will appear on the right (PRESET INFO: the path, author, description etc.. won't appear until a preset is selected).

The 'Local' root contains a selection of presets copied from the 6 categorized folders. After loading one of them by clicking on its name, you can step through the others using your computer's cursor keys. If no presets appear in the central area, click on 'Local' or one of its subfolders. If you don't see a 'PRESET INFO' label on the right, click on the [=] button (top right) and select Show Preset Info.

that's all you really need to know!

If you do decide to dig deeper, MFM2's browser offers many interesting features including a comprehensive search engine. For full details, please read the rest of this chapter.

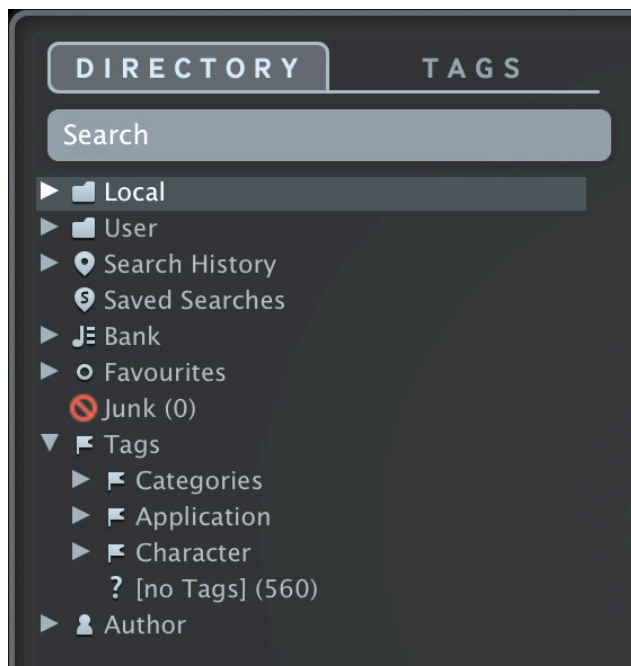
Default preset

When a new instance of MFM2 starts it checks whether the 'Local' root directory contains a preset called simply 'default', which is then loaded instead of the standard one. If you would like to change the default preset, make sure that the *Local* folder is selected and [Save] the one you want under the name "default". Note: A preset called 'default' will not appear in the browser.

If a fresh instance of MFM2 is not loading your new default preset, it probably landed in the 'User' folder instead of 'Local' – see the preference [Save Presets To](#).

Directory Panel

If the DIRECTORY tab is selected you will see the following folders:



Local

MFM2's factory presets are sorted into subfolders within 'Local'. Tip: It is best not to mess with the 'Local' folder, but to put your own creations and any other presets in the 'User' folder.

MIDI Programs

The 'Local' root also contains a folder called 'MIDI Programs' which is normally empty. When the first instance of MFM2 starts, all presets (up to 128) in this folder are loaded into memory so they can be selected via MIDI "Program Change" messages.

Note: Some hosts route all received MIDI data directly into effect plug-ins by default, while others expect you to set this up yourself. For information on how to do this, please refer to the documentation of your host / DAW.

As the presets in MIDI Programs are accessed in alphabetical order it is best to rename them, prefixing each one with an index. For instance "000 rest-of-name" to "127 rest-of-name".

Unlike regular presets, MIDI Programs cannot be added, removed etc. on the fly. Any changes are only updated after the host has been restarted.

MIDI Programs can contain up to 127 sub-folders (of 128 presets each), switchable via MIDI 'Bank Select' message (CC#0) before the Program Change message. 'MIDI Programs' is bank 0 and sub-folders are addressed in alphabetical order starting with bank 1.

When MFM2 receives a Program Change message, it will display the bank and program numbers to the left of the preset name (e.g. "0:0" for the first preset in the first bank). In certain hosts, however, the first bank / preset is designated "1" instead of the correct "0".

To avoid another possible source of confusion, please make sure there are no [junked](#) presets in the MIDI Programs folder: All files there are addressed, even if they are hidden!

User

The best address for your own creations as well as presets from other sources. You can either select 'User' immediately before saving, or set a global preference ensuring that it will always be saved in User (or a sub-folder thereof): See the [preference Save Presets To](#).

Tip: It's worth finding out where the 'User' folder resides on your computer. Right-click on 'User' and select *Open in Finder / Explorer*.

Smart Folders

The other top-level folders don't contain real files, but list the results of querying a database. The content is therefore dynamic – it will change whenever the underlying data changes.

You can drag & drop smart folder content onto e.g. 'User' (see [Internal Drag & Drop](#)) or the desktop (see [External Drag & Drop](#)) to create folders containing real copies of those presets.

Search History

Click on this folder to display the results of past searches (maximum 10). If you want the search results to be more permanent, right-click and select *Save Search...* To remove all searches from the list, right-click on the 'Search History' folder and select *Clear*.

Saved Searches

This folder contains any search results that were saved via right-click in the Search History list. To remove individual saved searches, right-click on the entry and select *Delete*.

Banks

These smart folders reference metadata about preset origin – the version of the factory or third party library with which the preset was installed. See 'Preset Info' a few pages down. Banks are already predefined for factory presets.

You can create your own banks: Drag & drop one or more presets onto the main 'Bank' folder then enter a suitable name into the dialogue box.

To remove Bank attributes from selected presets, either drag & drop them onto the '[no Bank]' folder, or right-click on the Bank and select *Remove Presets from Bank*. Empty Banks will be automatically deleted.

Favourites

Presets dropped onto the 'Favourite 1' folder will be marked as such. The Favourite status can be removed from all presets by right-clicking on 'Favourite 1' and selecting *Remove All Favourite 1 Marks* – see the [presets context menu](#) a few pages down.

Junk

A smart folder pointing to all 'junked' presets – see the [presets context menu](#) a few pages down. Presets dropped here will disappear from the rest of the browser unless they are made visible via *Show Junk* in the Presets context menu. Note: this smart folder will not appear until at least one preset has been junked.

Like Favourites, Junk can be exported/imported (as *Junk.uhe-fav*) – see [External Drag & Drop](#).

Author

Smart folders for each preset author. Tip: Instead of signing each of your creations individually you could sign just one of them, then select and drag & drop any others onto your new author smart folder. As the process cannot be undone, please use this feature with caution!

Directory Context Menu

Right-clicking on any folder within 'Local' or 'User' will open a menu:

Refresh

Update the browser contents (necessary for Windows users after altering any files in Explorer).

Create New...

Insert an empty subdirectory.

Rename...

Edit a folder's name.

Open in Finder / Explorer

Open a system window for the selected folder. Hold option (Mac) or ctrl (Windows) to switch this to Show in Finder / Explorer, which highlights the folder instead of opening it.

Move to Trash

This normally moves the selected folder to the system trash. However, if you right click on the *Junk* folder (see previous page), this entry will be replaced by *Remove All Junk Marks*. Similarly, if you right click on a *Bank* smart folder, the entry will be replaced by *Remove Presets from Bank* (see Smart Folders above).

On Open Expand to

These options determine how deeply the browser will open subdirectories whenever the GUI is reopened or Refresh is called.

Show Folder Icons

Deselect this option if you find the folder icons distracting.

Presets Panel

The central, unlabelled area of the browser is where you click to load presets...



Presets Context Menu

Right-click to open a menu containing functions that can be applied to individual presets:



Mark as Favourite

Tick one of 8 'favourite' colours. The selected entry will be replaced with *Unmark as Favourite*.

Mark as Junk / Show Junk

Instead of deleting unloved presets, you can mark them as 'junk' so that they disappear from the browser. Tick *Show Junk* to display junked files instead, marked with a STOP symbol.

Select All, Deselect

See 'Multiple selection' on the next page.

Rename

You can change the names of presets using this function. Note that only the most recently selected preset can be renamed i.e. you can't rename multiple files at the same time.

Duplicate / Copy to User Folder

This entry depends on the status of the preference *Save Presets To...* and whether the source presets are in the Local or User folder. Selected presets are copied with an index appended to the name (like the *Auto Versioning* [preference](#)).

Show in Finder / Explorer

Opens a system window for the right-clicked file. In smart folders only, holding down an option key (Mac) or ctrl key (Windows) replaces this entry with *Show in Browser*, which shows the currently selected file in its original location within MFM2's browser.

Convert to native / h2p / h2p extended

Converts the selected preset(s) to the format previously selected via right-click on the SAVE button.

Move to Trash / Recycle Bin

This function moves all selected preset(s) to the system trash. Caution: This also works on files in smart folders i.e. the originals will land in the system trash.

Restore

While in the browser you can audition as many presets as you like without losing track of the one that was previously loaded: Clicking RESTORE will always get you back to where you started.

Panic

Mirrors the large red button in the main panel.

Multiple Selection

A block of adjacent presets can be selected via shift+click, and individual presets can be added to the selection via *cmd+click* (Mac) / *alt+click* (Windows). To deselect, either select a different preset or choose *Deselect* from the context menu.

Drag & Drop

Internal

You can drag and drop single or multiple files from the preset panel onto any folders in the directory panel. Files dragged onto regular folders will be moved unless you hold *option* (macOS) or *Ctrl* (Windows), in which case they will be copied instead.

Files dropped onto smart folders will adopt the attribute of that folder: For instance, you can set the Author or Favourite status of several presets at once.

External

To manage your preset library externally you can drag presets and folders between MFM2's browser and e.g. your desktop (or any system window). On the Mac most Finder operations will automatically update the browser. Updating might not be immediate when using multiple formats or multiple host applications, but all it usually takes is a click on the GUI or in the directory tree (sets focus to the clicked instance of MFM2). On Windows systems, a manual *Refresh* (see [Directory context menu](#)) will be required before changes to the contents of the browser appear.

Another little helper: If you drag an MFM2 preset from e.g. your desktop and drop it onto the Data Display, that preset will be loaded (but not automatically saved).

Exporting smart folders

Drag any smart folder onto the desktop to create a new folder containing those presets. Drag an entry from e.g. your Search History, or a Category, Favourites or one of the Authors.

Exporting favourite / junk status

You can export Favourite status, all at once or individually: Shift+click and drag the 'Favourites' folder onto the desktop to create a file called *Favourites.uhe-fav*. Similar for sub-folders: If you shift+click and drag e.g. 'Favourites 5', this will create a file called *Favourite 5.uhe-fav*.

The same method also works for Junk status, creating a file called *Junk.uhe-fav*. Such files can be imported into MFM2's browser on a different computer (for instance), via drag & drop onto or anywhere within the Favourites folder, or to the Junk folder.

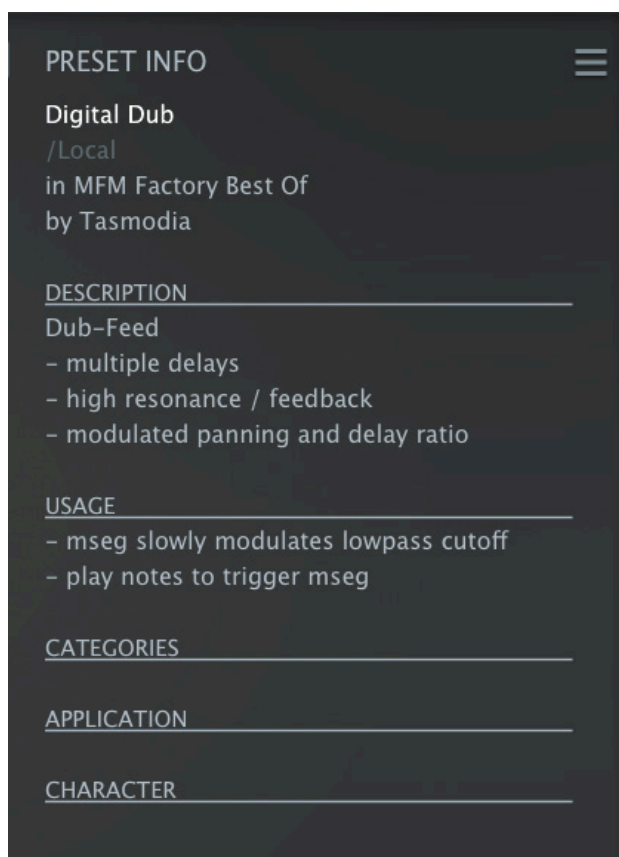
Note that importing *.uhe-fav* files from another computer will only work 100% correctly if all the preset names and locations are identical on both computers.

A note for Windows users

According to Microsoft, drag & drop will only work between applications with the same rights (i.e. both admin or both normal) for security reasons. If the host was started using the "run as admin" option, drag & drop functionality will be limited: You can still drag objects between plug-ins, or from the plugin into system windows e.g. your desktop. However, attempts to drag & drop anything into the plugin from outside the host will fail. This applies to presets, folders, favourites, *.uhe-soundset* files or indeed anything that can be dropped onto the plug-in GUI

Preset Info Panel

The panel to the right displays information about the selected preset:



If you can't see this panel, click on the button in the top right corner and tick *Show Preset Info*.

Below the preset name you should see its path (from /Local or /User), the Bank and the Author (which also appear as Smart Folders).

DESCRIPTION and USAGE text is entered immediately before saving a patch. CATEGORIES, APPLICATION and CHARACTER are the tags for the current preset. You can remove or add tags directly – see 'Tagging via PRESET INFO' a few pages down.

Installing Soundsets

Any extra presets we distribute ourselves will be available in *.uhe-soundset* format. Third parties are also encouraged to use this package format for their own commercial presets (for details please contact our [support](#) team).

Standard Method

To install, drag & drop the *.uhe-soundset* file into MFM2 – anywhere will work. The soundset should appear in the 'User' folder. If a soundset with the same name already exists there, any modified files will be backed up and the location of the backup file will be displayed.

Alternative Method

Soundsets in *.uhe-soundset* format can also be installed by clicking on the u-he badge, selecting *Install Soundset...* in the menu and navigating to the *.uhe-soundset* file. This option is especially useful for Linux, as the browser version for that platform does not support drag & drop.

Regular Folders

Folders containing MFM2 presets can be manually copied or moved into the ‘User’ folder. You might have to refresh the browser (see Directory context menu) before they appear there. A refresh is generally necessary in Windows but not in macOS.

Note: As *.uhe-soundset* files are basically ZIP-compressed folders, you can rename them i.e. replace the long file extension with ‘zip’, then extract the presets and documentation.

Preset Tagging

“Tags” are elements of metadata, information you can add to presets so that they can be found according to certain attributes.

IMPORTANT

Tags are updated automatically – clicking on the [SAVE] button isn’t required! The main advantage is that presets don’t have to be saved every time you edit a tag. The main caveat is that you should only edit tags after saving your preset.

For instance, if you decide to edit tags while creating a 2nd version of an existing preset, please remember that you are actually changing the tags in the original preset!

The Tagging Window

Right-click on the [Save] button and select *Tag this Patch*:



In MFM2, the CATEGORY tags describe a preset according to the type of effect, APPLICATION tags describe typical usage, and CHARACTER tags are pairs of more or less opposite attributes from which you can choose only one.

Tagging via PRESET INFO

In the PRESET INFO panel, right-click on CATEGORIES, APPLICATION or CHARACTER and select or deselect tags from the menu. Tip: If you right-click on an existing tag, the first option in the menu becomes *Remove Tag...*

The function *Create Search from Tags* looks for other presets with the exact same set of tags.

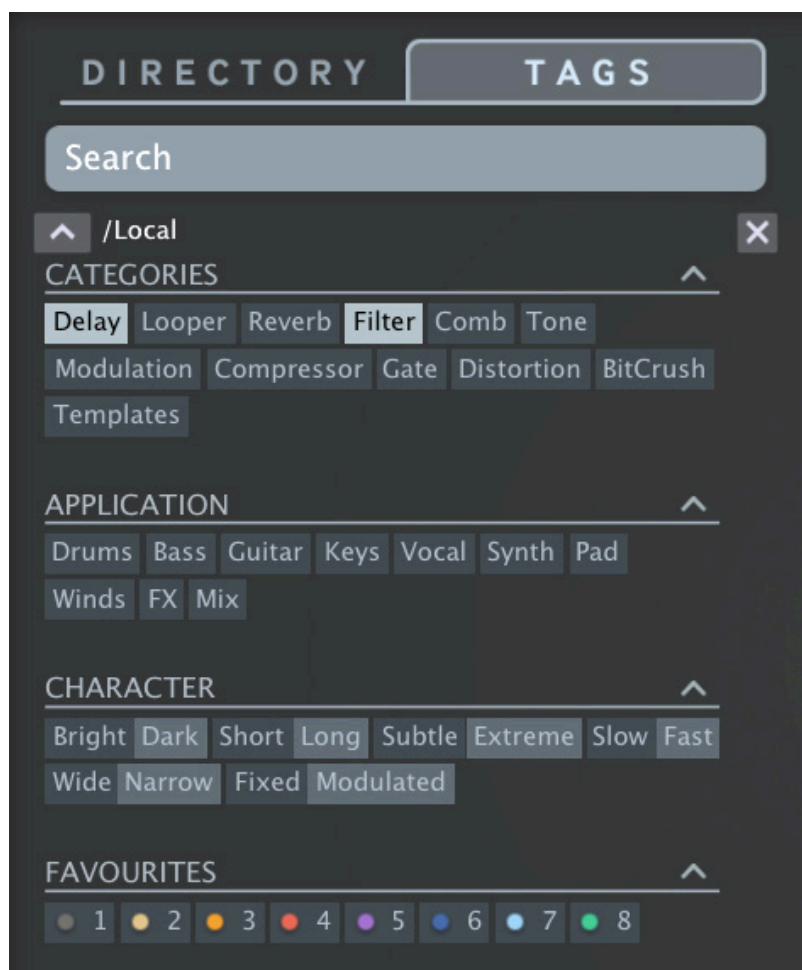
Tagging via Smart Folder

You can also tag presets by dragging & dropping them onto one of the 'Tags' smart folders. To remove all tags, drag them onto the '[no Tags]' smart folder.

Search Functions

Search By Tags

In the preset browser, click on the [TAGS] tab. The buttons let you set up search criteria according to existing tags with just a few mouse clicks.



There are four sets of buttons: The first three correspond to the tags in the tagging window (see the previous page), while the bottom row lets you find any presets tagged as Favourites. Clicking on the [^] icon to the right of each label hides the options for that set of tags.

Practically...

Click on the [DIRECTORY] tab, then right-click on the 'Search History' folder and select *Clear*. Double-click on 'Local' to restrict the scope to that folder (any presets in the 'User' folder will not appear in the search results now). The selected path appears immediately below the Search field. If you wanted to exit the "restriction" folder again, click on the [^] symbol to the left – but don't do that right now...

Click on the [TAGS] tab and select the [Delay] and [Filter] categories. Presets tagged with either category will appear in the presets panel. Click on the DIRECTORY tab again: "#Delay #Filter" appears in the Search field as well as in Search History. Adventurous souls can try editing the contents of the Search field now – the results will be updated accordingly.

Note: Unlike selecting multiple CATEGORIES, which expands the scope of the search, selecting APPLICATION, CHARACTER or FAVOURITES *refines* the search so you will get fewer hits.

Search by Text

The Search field lets you find presets according to a string of text. Here's an easy example: If you remember that the preset you're looking for has the word "space" in either its name or the description, simply enter "space" into the Search field and hit [Return].

The search routine normally looks into the preset name, the author, the DESCRIPTION and USAGE (see the PRESET INFO panel). Searches are not case-sensitive, and quotes are not required unless you need to include spaces between multiple words.

Search Path

To restrict the search to a particular search path, go into the DIRECTORY and double click on a folder. The path will appear below the Search field. The [^] button to the left moves the search path up one level, while the [X] button to the right resets the search path to the default (i.e. all MFM2 presets). Alternatively, you can navigate directly to any higher level by right-clicking on the search path.

Scope

You can limit the scope of the search to just the preset name or specific parts of PRESET INFO by using *name* (preset name), *author*, *desc* (description) or *use* (usage) followed by a colon. For instance, "*author:the*" finds all presets by sound designers whose author names contain "the". Similarly, "*desc:space*" will find all presets with the word "space" in the description.

Logic

The following logical operators can be used between text strings, but not between tags:

AND requires that presets contain both words. It can be written explicitly or simply left out. For example, "*star AND wars*" or "*star wars*" will find presets that contain both "star" and "wars".

OR means that presets can contain just one of the words... or both. For example, "*star OR wars*" will find presets that contain "star" as well as presets that contain "wars".

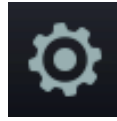
NOT excludes presets containing the specified word. To find all presets that do contain "star" but don't contain "wars", enter "*star NOT wars*".

Including Tags in Text Searches

Tags can be entered into the Search field if preceded by a '#'. For example, "*name:cold #Comb*" will find all presets with "cold" in their names that are also tagged with the [Comb] category.

Note: In the current version of the browser, text items must appear before any tags.

Configuration



The cogwheel at the top right opens the configuration pages where you can set the window size and other global options, as well as remote-control most MFM2 parameters via MIDI CC...

Remote Control

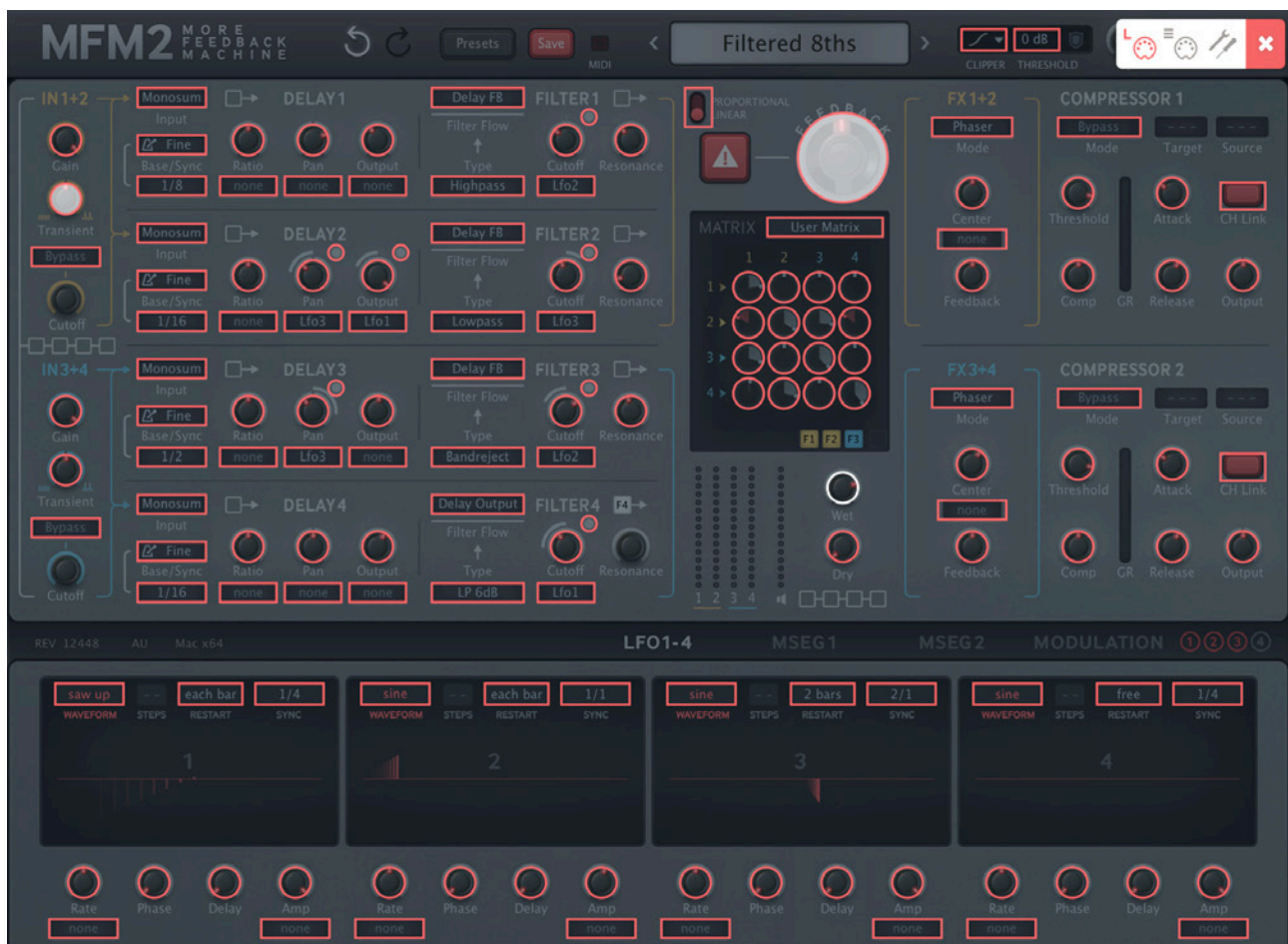
MIDI CC (Control Change), is a message format used for remote controlling plug-ins and editing presets. Note that the MFM2 modulation sources include two user-definable CC called **Control A** and **Control B** – see the [Preferences](#) a few pages down.

For instructions about how to route MIDI into effect plug-ins, please refer to the documentation of your host application. Also please note that MIDI assignments are truly global. They apply not only to all instances of MFM2 in the current project, but to ALL instances in ALL of your projects!

MIDI Learn



This page lets you assign MIDI CC ('control change') to individual parameters. The CC data can be generated by hardware knobs / sliders or by tracks in the host application. To open the MIDI Learn page, click on the [L] button. It should look something like this:



This window shows all **MIDI-learnable elements** as selectable outlines. Those that are already assigned will appear filled (like Transient for Inputs 1+2 and FEEDBACK in the above image), and the one waiting to be MIDI-learned is highlighted (like the *Wet* control here).

Try it: Click on the upper Transient knob then send MFM2 some MIDI CC data: Wiggle a knob or slider on your MIDI controller to complete the assignment. If you don't want to keep the new CC connection, double-click on the knob to remove it.

Note that the Panic button is not MIDI-learnable, as repeatedly flushing megabytes of delay data would use too much CPU. However, it is automatable...

As one of our staff recently put it: *"With great power comes great responsibility"*.

MIDI Table



The MIDI Table page lets you review and edit the MIDI assignments created using MIDI Learn. If just a few assignments have already been made, it will look something like this:

Parameter	Channel	Controller	Mode	Type	
MFM2:Transient Balance 12	1	4	normal	Continuous7bit	X
MFM2:MasterFeedback	1	5	normal	Continuous7bit	X
MFM2:Wet	1	6	normal	Continuous7bit	X
-not assigned-	1	1	normal	Continuous7bit	X

Per Instance Control

CC 2 Breath

Control A

CC 11 Expression

Control B

These "per instance" settings override the global Control A/B preferences

Set as Default

Sets the above values as default for all new instances.

Parameter

This field selects / displays the assigned target. Click to choose a different one from the menu.

An experimental feature: Select *Last Clicked Control*, enter the number of an unused controller your hardware can send, then exit the configuration pages. The most recently clicked knob / switch will respond to that CC. The *Fine* option is similar, but with a significantly reduced range.

Channel

Selects / displays the MIDI channel

Controller

Selects / displays the CC number.

Mode

specifies the range and/or resolution of values...

normal.....full range, continuous

integer.....full range, whole numbers only

fine.....0.01 steps between the two integers closest to the current value

Type

Specifies the kind of hardware used. By far the most common is *Continuous 7-bit*.

Encoder127‘relative mode’ endless rotary controls that repeatedly send the CC value 1 when turned in the positive direction, or 127 (interpreted as -1) when turned in the negative direction

Encoder64.....‘relative mode’ endless rotary controls that repeatedly send the CC value 65 when turned in the positive direction, or 63 in the negative direction

Continuous7bit.....7-bit MIDI CC (normal resolution, very common)

Continuous14bit14-bit MIDI CC (high resolution, rare)

Adding assignments

You can either MIDI-learn them as described on the previous page, or click on the **[Add]** button at the bottom of the window then select the Parameter, Channel etc. in the new entry.

Removing assignments

Individual assignments can be removed by clicking on the small **[x]** to the right of each line. To remove all assignments at once, click on the **[Delete All]** button at the bottom of the window.

Per Instance Control

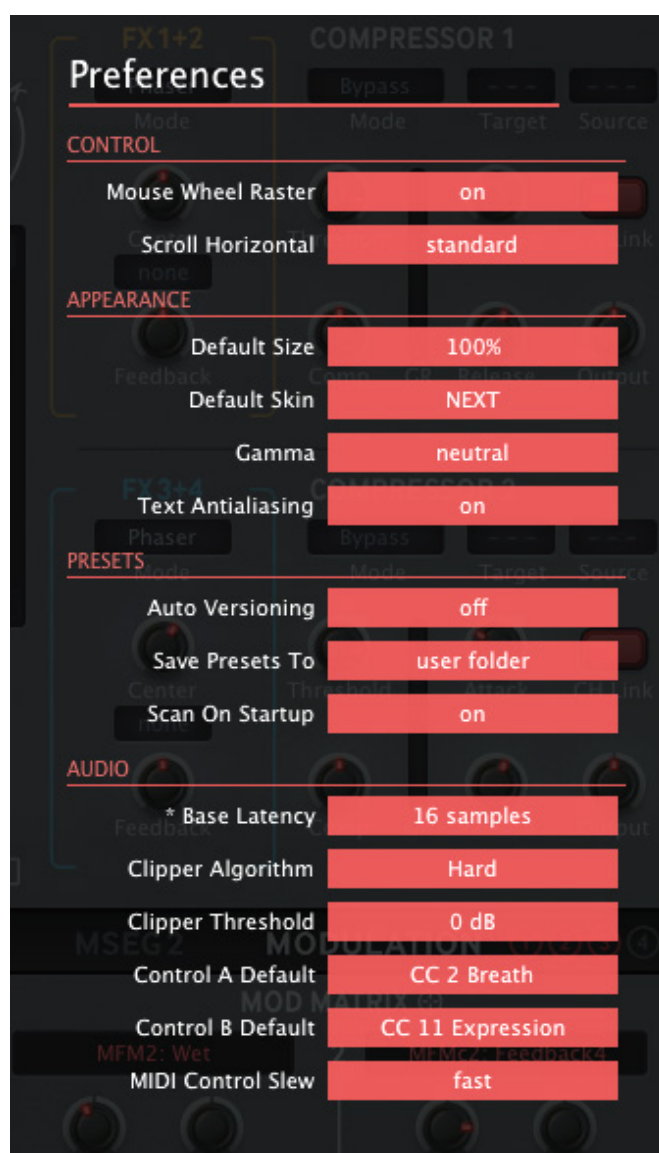
To the right of the MIDI Table is a panel containing local versions (i.e. for this instance only) of the *Control A Default* and *Control B Default* settings in the [AUDIO](#) section of the [Preferences](#) page. These settings override the global versions, so they are useful for performance control over multiple instances of MFM2 at the same time.

You can adopt these local settings as global defaults i.e. for all new instances of MFM2 without having to open the Preferences page: Simply click on the **[Set as Default]** button.

Preferences



Click on the 'tools' button to open the 'Preferences' page, where you can set several global defaults to suit your mouse and monitor:



CONTROL

Mouse Wheel Raster

If your mouse wheel is rastered (you can feel it clicking slightly as you roll the wheel), set this to on so that each click increments / decrements in sensible value steps.

Scroll Horizontal

standard or inverted: Folders that contain more presets than can be displayed in the window can be scrolled (pagewise) via mousewheel etc.. Opinions differed as to which wheel direction should move to the bottom of the list, so we made this optional.

APPEARANCE

Default Size

Sets the default GUI size for each new instance. You can temporarily change the GUI size without entering the Preferences – simply right-click in the background.

Default Skin

If you have an alternative skin installed, you can select it here.

Gamma

Determines GUI brightness.

Text Antialiasing

Switches the smoothing of labels and values on / off. Only in certain cases will switching it off improve readability.

PRESETS

Auto-Versioning

If 'on', an index is automatically appended to the name and incremented each time it is saved. Saving 'Space' 3 times in a row would give you 3 files: 'Space', 'Space 2' and 'Space 3'.

Save Presets To

Choose the 'user folder' option if you want all saved presets to land in the User folder instead of the currently selected one.

Scan On Startup

Determines whether the preset library should be scanned and the database recreated when the first instance of MFM2 is started, e.g. when you reopen a project.

AUDIO

Base Latency

If you are sure that your audio system – hardware as well as software – uses buffers that are a multiple of 16 samples in size (please check the documentation), you can safely disable this. Otherwise leave it set to the default '16 samples' to prevent crackles. See the yellow info box on the next page for technical details.

Note that the new Base Latency only takes effect when the host allows, e.g. on playback or when the sample rate is switched. Reloading MFM2 will always update the Base Latency.

Clipper Algorithm / Threshold

Default settings for the [Clipper](#).

Control A/B Default

Apart from the modulation wheel, all modulation source menus include two freely definable MIDI performance controls (CC) called *CtrlA* (Control A) and *CtrlB* (Control B). If you haven't changed them, they will be set to CC numbers 2 (Breath) and 11 (Expression).

Note that local i.e. per-instance versions of these settings are available in the [MIDI Table](#) panel.

MIDI Control Slew

Determines the strength of parameter smoothing for the following performance controls: pitch bend, modulation wheel, Control A, Control B and Pressure. With MIDI Control Slew set to 'off', MFM2 is more responsive to the modulation wheel (for instance), but it can sound rather grainy. The default setting ('Fast') is a good compromise between speed and smoothness.

The 'Slow' option is adaptive: Whenever the incoming control data jumps suddenly between values that are further apart, the slew is not applied.

ABOUT THE BUFFERS

Internally, MFM2 processes audio in chunks of $n \times 16$ samples. The 'block processing' method reduces the CPU load and memory usage of all our plug-ins.

For example, if the number of samples to be processed is 41, MFM2 will process the first 32 and keep the remaining 9 in a buffer (16 samples is enough). Those 9 samples are then processed at the start of the next call... and so on.

The extra buffer is only necessary if the host application or audio driver processes 'un-usual' audio buffer sizes. Many hosts process buffers of 64, 128, 256 or 512 samples (all multiples of 16), in which case you could try switching off Base Latency so that MFM2 can work latency-free.