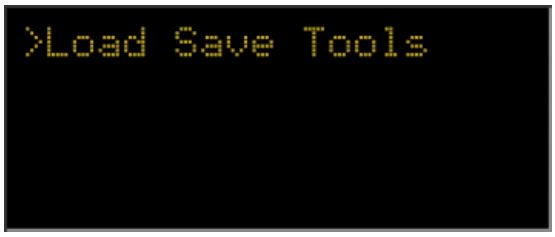
Menu Mode

(Updated for 2.01 firmware)

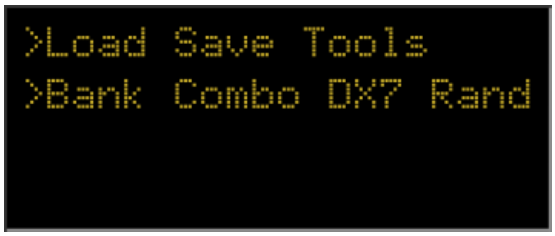
You enter the Menu mode from the edit mode by pressing once the menu button. And exit by pressing « Inst » whose function is « Back » in the menu mode.



To navigate through the menu, you control the '>' cursor by turning any encoder, then to confirm the current choice press 'Menu', or 'Inst' to go back.

The 3 main parts are Load, Save, Tools.

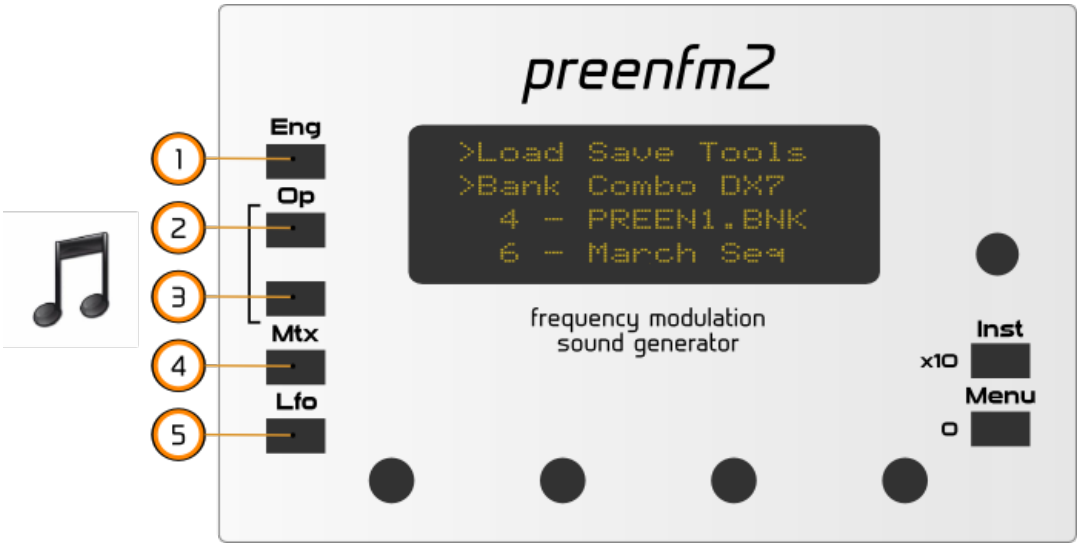
1. Load



Selecting **Bank** will allow you to load a preset from a bank.
The preset will replace the current instrument you were seeing in the edit mode.

Browsing the preset without confirming will allow you to hear the sound of it, it temporary replaces the current selected instrument. If you go back at any moment, you'll retrieve the sound you had before entering this menu.
In every preset menu, turn encoder 2, 3 or 4 to move faster.

While selecting the sound you want to load, you can play with the 5 left buttons to hear the sound at different pitch. Middle button can be modify in the settings.
Pressing Menu will load the preset.



Selecting **Combo** will allow you to load 4 presets at a same time replacing the 4 instruments. Combo are usefull to save a instruments set associated to a specific song in your sequencer.

Selecting **DX7** browses the DX7 bank you can put on your USB stick.

Selecting **Rand** allows you to randomize a part of (or all) your current preset.
Note that a randomization is triggered when you hit one of the left buttons. The randomization applied depends on your current selection. Each module can be set to keep, if you don't want to change its values.



- **Oper /** operator : keep = don't change, soft = randomize with soft and harmonic values, medi = randomize with medium values , high = 100% randomization can be very harsh and inharmonic.
- **Enve /** Enveloppe : keep = don't change, perc = randomize with percussion type sound, pad = randomize with pad type sound, rand = 100% randomization
- **IMs** / indices of modulation : keep = don't change, soft = radnomize with low values which give soft sounds, med and high add more modulation between operator and give richer sounds.
- **Modu** / Modulation : keep, soft, med, high : med will add more modulation than soft, and high will add more modulation than medium.

You modify the randomization values with the 4 encoders than you can trigger a new randomization by hiting one of the left buttons.
If you want to go back to your original sound press **back** button.
If you want your changes to be permanently applied to your preset, press the **menu** button.

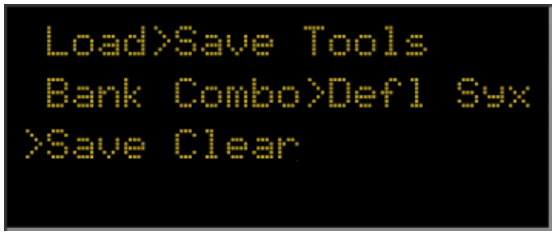
Tip : Keeping everything but Modu, can give a new life to DX7 imported presets.

2. Save

Note : *Presets can be saved only into preexisting Banks or Combos. <empty> are not usable slots as there's nothing linked to them on the USB drive. To save a preset in an empty slot, you must first create a Bank or Combo in that slot by going to* ***Tools > Crea****. Once you have created a Bank or Combo slot, you will find it under* ***Menu > Save****.*

In Save you'll find mainly the same menus as In Load.
Except you cannot save under DX7 format.

An important feature is the Defl (Default) option in the save menu. You can save here the combo that you want to be loaded when the PreenFM is switched on.

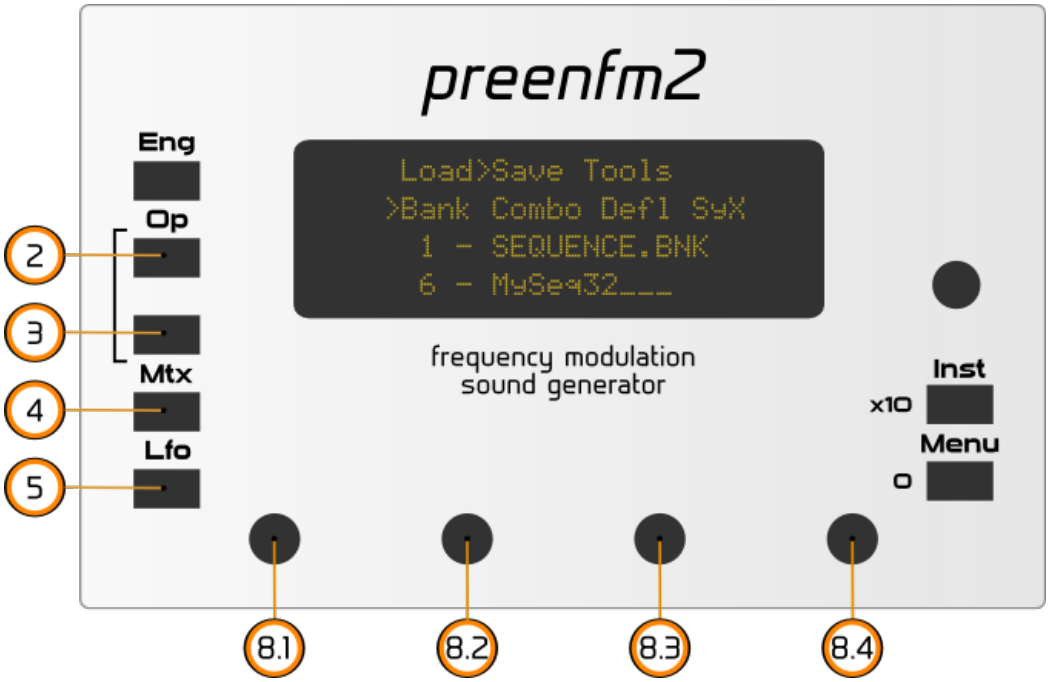


The 4 instruments are saved in your default combo. Use clear to reset to default combo.

Save Sysex will dump the current preset to the midi output. You can save it as a sysex file, then resend it to the preenfm2 any time to reload the preset.

In many case you'll have to Enter a name such as on the display bellow.

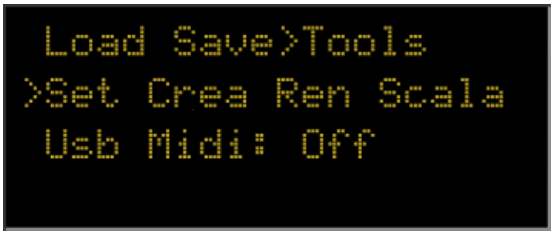
The available symbols are : _ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz 0123456789 .,;:<>&*$



To enter a text :

- Encoder (8.1) : move the cursor
- Encoder (8.2) : browse all letters in lowercase
- Encoder (8.3) : browse all letters in uppercase
- Encoder (8.4) : browse all available symbol
- (2) jump to symbol
- (3) jump to number
- (4) button : jump to space.
- (5) button : jump to first available symbol '_' which is not taken into consideration when at the end of a name.Menu : Confirm.

3. Tools



In **Tools** you can modidy the main parameters of the PreenFM2 (**Set**tings), **Create** empty Bank or Combo, **Rename** patch bank or Combo or make your preenfm2 use one of your **Scala** scales.

3.1. Settings

In the setting submenu, use encoder 1 to navigate through parameters and encoder 4 to change its value.

The available **settings** are :

- Usb Midi: Off by default. Activate this parameter if you want your PreenFM2 to be seen as a midi device through the USB connection.
- Mdi ch. 1: default is 1. Midi channel that Instrument 1 will listen to. All 4 instruments can listen to the same midi chanel.
- Mdi ch. 2: default is 2. Midi channel that Instrument 2 will listen to.
- Mdi ch. 3: default is 3. Midi channel that Instrument 3 will listen to.
- Mdi ch. 4: default is 4. Midi channel that Instrument 4 will listen to.
- Midi thru: copy midi in to midi out. Works with midi jack. Usefull to chain several devices on different channel.
- Receives : do the preenFM2 listen to midi control change (CC), NRPN, both or none
- Send: On any value change, must the preenFM send midi information.
- Program ch: specifies if you want the preenfm2 to respond to program change midi command.
- Boot : change the default value if you want the PreenFM2 to boot directly in a menu mode : bank, combo or DX7.
- Op Buttons: New. Use old if you want PreenFM1 behaviour for the 2 operator buttons in edit mode.
- Rot Enc: 12 or 24 depending on the type of encoder you have on your PCB. If one tick gives you 2 value change or if you have to turn 2 ticks to get one change, this is the value to modify.
- Test note: middle test note. To test current instrument, go back in edit mode. Hold « Inst » and play with the 5 left buttons
- Test velocity: velocity used by the test note.
- Clock Led: set it to yes if you want the led to blink on BPM of the external midi clock.
- Arp in Preset: No. By default the preset does not load neither save the arpeggiator setting. This allows you to browse presets while keeping your arpeggiator. If you want to load and save the arpeggiator with presets change here. Arpeggiator settings are ALWAYS saved in the combos.
- Oled Save: Off, 2m, 5m, 10m, 1h. OLED owner may want to save their OLED display life. This is a screen saver.
- Unlinked Edit : allow the current edit page to be different for each of the 4 instrument. Default is no.
- Boot sound : no. Set it to yes to put back the boot sound.
- Firmware: nothing to chose, just the firwmare version to check.

3.2 Create

allows you to create empy patch banks or combo banks.

3.3 Rename

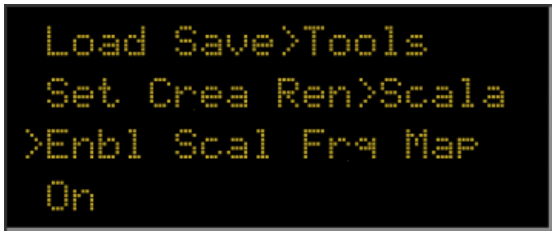
allow you to rename you current patch, one of you patch banks or one of you combo banks. An easier way today is to simply modify the files buy accessing your USB drive from the you computer by booting in the bootloader.

3.4 Scala scale files

Scala has been added in firmware 2.00.

Use the bootloader to access your Usb drive (Hold ENG button while switching on) / Or unplug your USB stick.
Add a « scala » folder inside « /pfm2/ ».

Put your favorite *.scl file in /pfm2/scala/ ». Only 128 files will be selectable from the preenFM.
Rename them if needed so that their name before « .scl » has 8 chars max.
4500 scales are available at the bottom of this page :
http://www.huygens-fokker.org/scala/downloads.html



Any modification in this menu is saved only if you press Menu one more time when you are on the last line line. You'll then see the « Done » message.
If you modify the values and go up, the modification are only valid untill you reboot your preenfm2.

If you want to use one of your scala scales, select **Enbl** (Enable) and turn the value to On.
This makes the 4 instruments of your preenfm2 to be scala sclale mode.

The **Scal** menu will allow you to navigate through the 128 first scala scales files that will be found in the '/pfm2/scala' folder. Use the right encoder to navigate quicker.

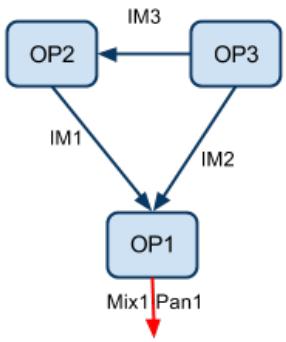
Then in **Frq** you'll be able to tune your scale. What you adjust here is the frequency of the middle C note. A scala scale file only define intervals so a frequency reference is required.

The last option **Map** is set to Keyboard by default. In this mode, it will always make a C starting each scale. This is relevant for scales with number of notes different from 12. The keyboard mode makes scales easier to play on… keyboard.
'Continuous' option will start each next scale right after the previous one is finished, which make it harder to play on keyboard, but can be usefull with other kind of midi controller.

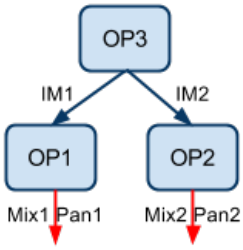
Algorithms

All algorithms in pdf format: click here to download.

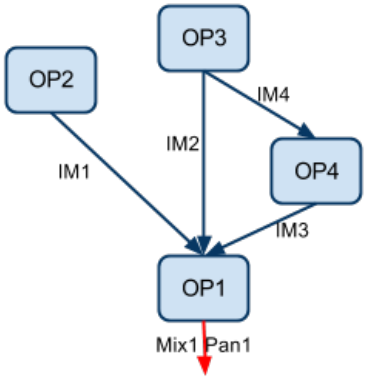
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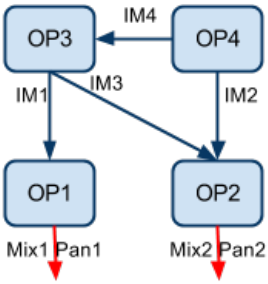
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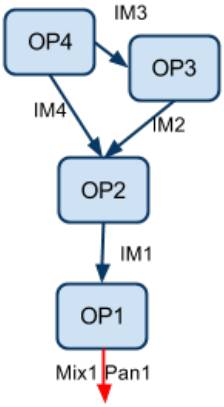
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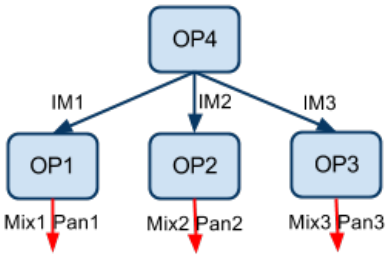
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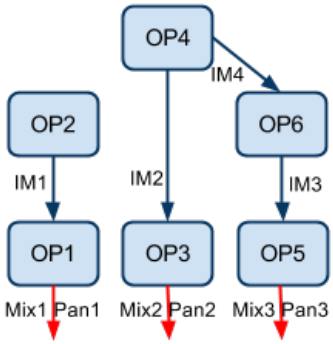
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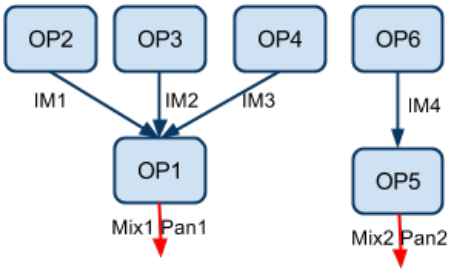
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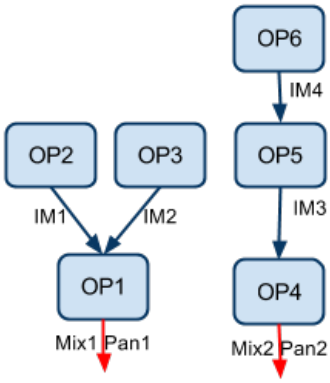
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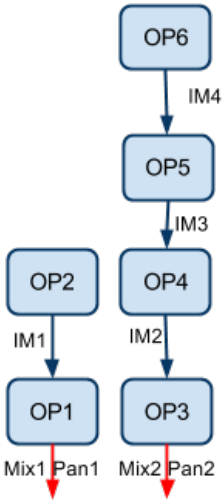
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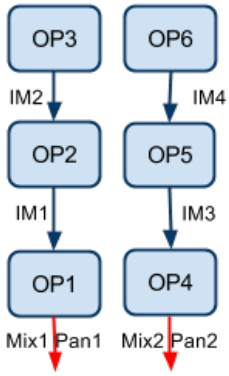
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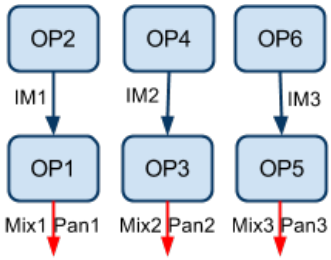
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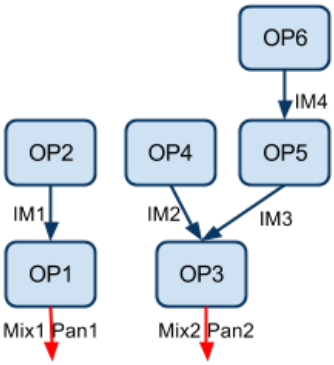
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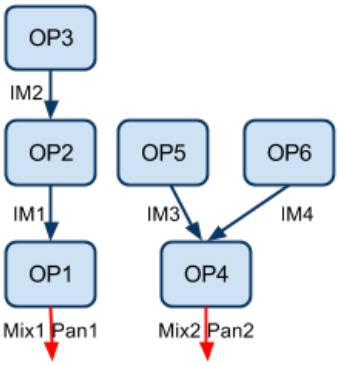
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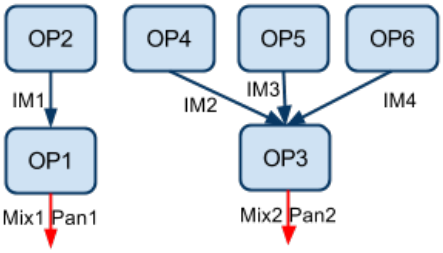
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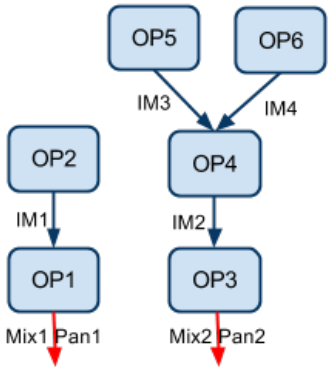
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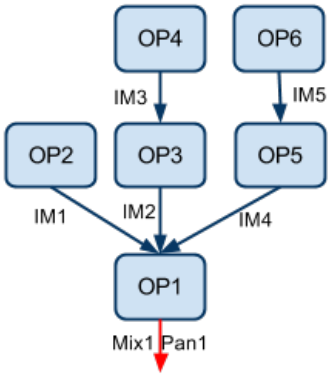
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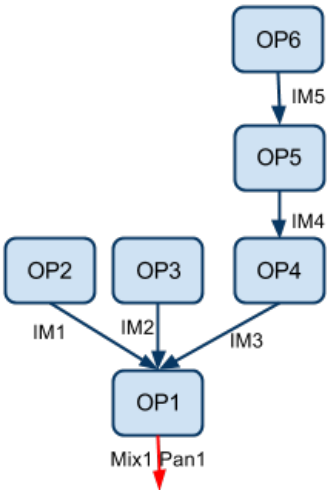
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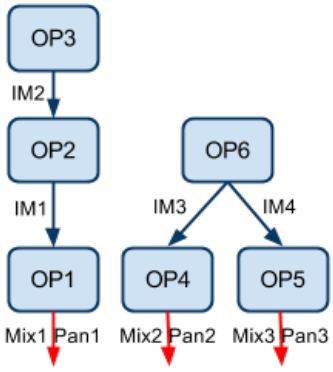
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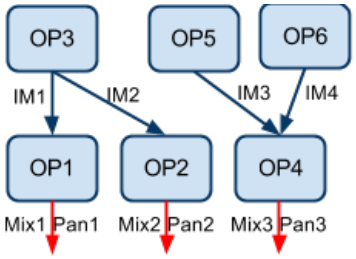
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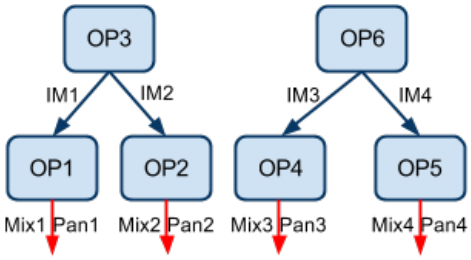
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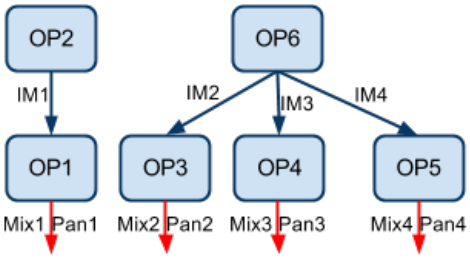
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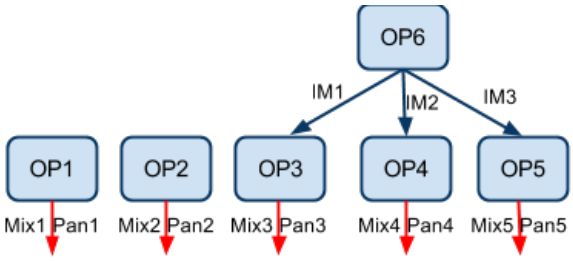
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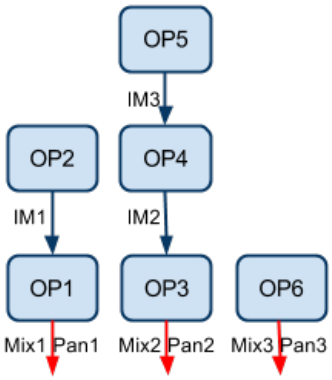
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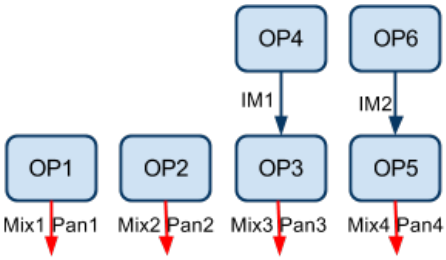
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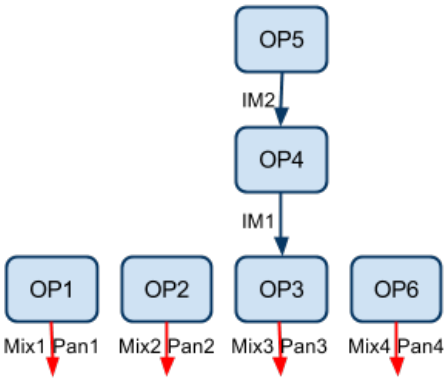
Algo24



Algo25



Algo26



Algo27



Search ...

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Navigate

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- Build it
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  - Flash the Bootloader
- Download
- PreenFM1
- Facebook
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- Buy

Articles récents

Documentation

Prototype of the stm32F405 board for the preen

Top plate which fits OLED display

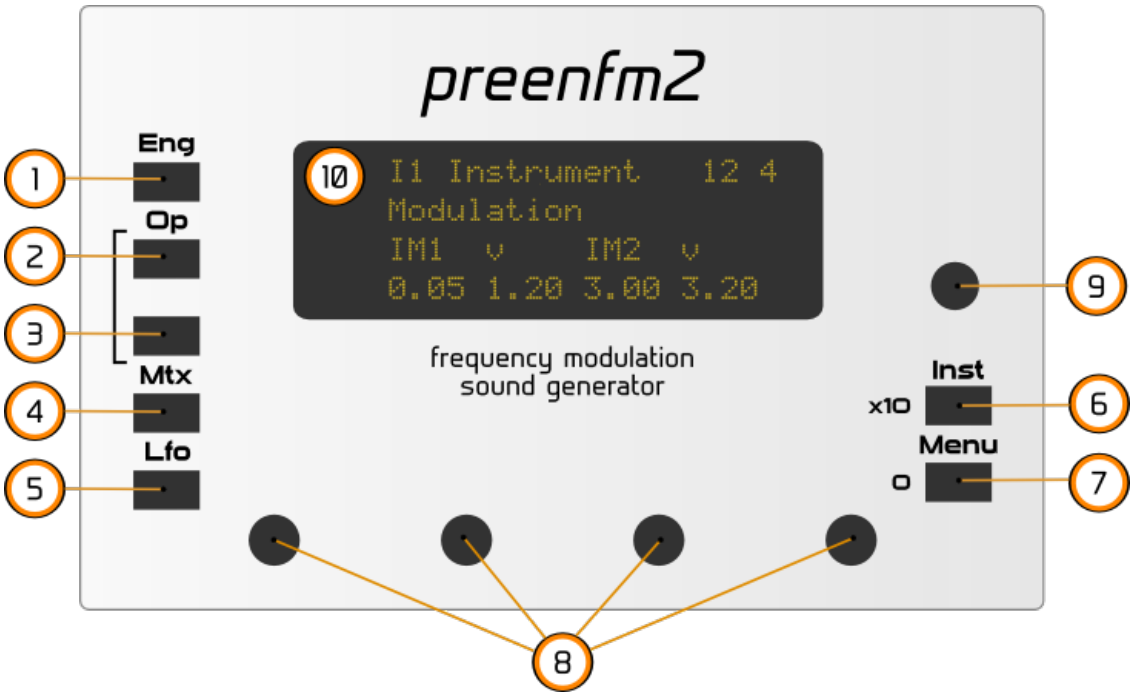
0. 9d firmware : oled compatibiltity

The screws & nuts bag

Edit Mode

(Updated for 2.01 firmware)

This mode allows you to edit all the parameters of the sound engine.
This is is the default mode when you power on your PreenFM.



First the display (10).

- Line 1: you can read from left to right : instrument number, instrument name, midi note on activity for all 4 instruments on the right.
- Line 2 & 3: information on what you currently edit.
- Line 4: the values of the 4 parameters.

Then the sound edition is spitted into 6 main parts each part. The 5 first ones are accessible through the 5 left buttons.

1. The Engine (Algo, voices, modulation indexes, mixer). At any moment, hold 'Eng' and press 'Menu' to see the current algorithm configuration.
2. The 6 operators (or 3 or 4 depending on the algo)
3. Navigate through the oscillator and the 2 envelope menus of the operator selected in 2.
4. The 12 rows Modulation Matrix

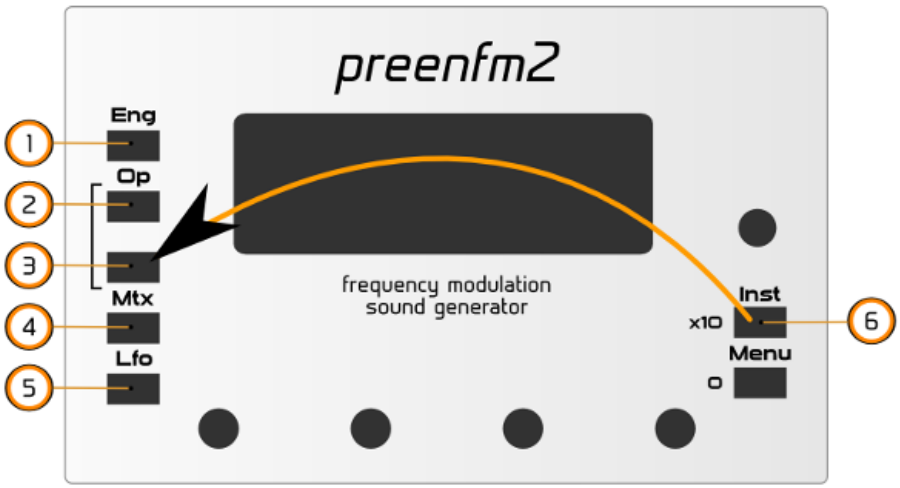
5. The 7 LFOs (3 oscillators LFO, 2 envelopes and 2 step sequencers)
6. Performance mode : allows you quickly edit the parameters p1, p2, p3, p4 if you use them as source in the Matrix. Accessed by pressing (5) & (7) at the same time or pressing one of the encoders (8) with last PCBs.

In addition if a button is pressed while you turn an encoder (8) :

- (1), (2), (3), (4) or (5) : navigate quickly inside a part
- (6) modify value 10 times faster.
- (7) reset the parameter to its default value

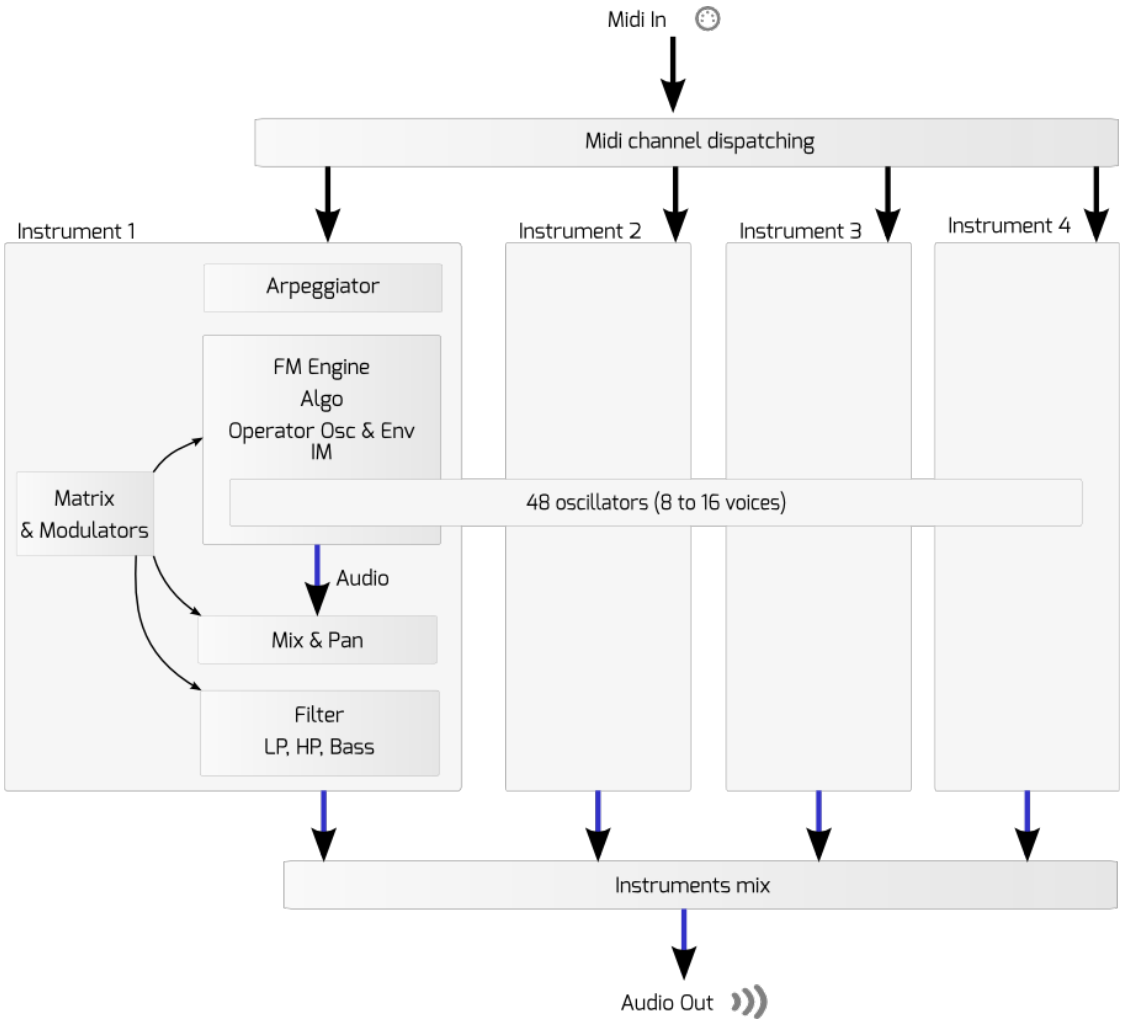
Holding Inst(6) button also allows some useful things when another button is pressed :

- Inst (6) + one of the 5 left buttons. Tests note, play sound of the current instrument.



- Inst (6) + Menu (7): Panic. Stop all sound, useful if you have hanging notes.

Workflow of the PreenFM2 sound generation



1 – Engine



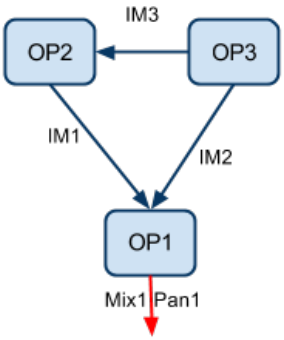
Algo :

This define the way the operators are plugged with each other.

The backbone of your sound.

27 totally different FM algorithms are implemented.

Here is the first one, which is good to understand how things work.



See the algo page for an exhaustive list.

Changing the algorithm make it shows up on the LCD. You can press « Eng » + « Menu » to see it at any moment without changing the algo.

Velo (1-16) :

1 The keyboard velocity has no impact on the volume of the voices. Volume always full.
..
16 Full impact of the velocity on the volume of the voices.

The velocity source in the matrix modulation is independant from this setting.

Voices :

Number of notes that can be played at the same time by this instrument.

What the engine can handle depends on the number of operators of the algo of the 4 instruments.

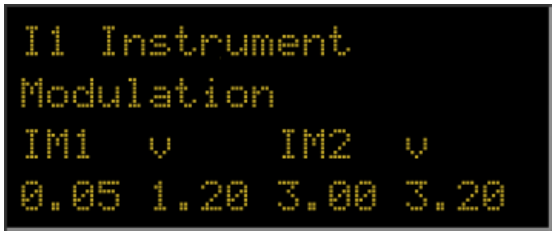
Knowing that 48 operators can be played real time that means that maximum value of voices is :
. 14 voices for 3 operators algorithm
. 12 voices for 4 operators algorithm
. 8 voices for 6 operators algorithm

The 48 operators are shared by the 4 instruments.

Glide :

When the number of voices is set to 1, the glide param shows up.

When higher than 0, the env is not retrigged when a new note is played before the older one is released.
0 : no glide
1 : very quick frequency glide
..
10 : slow frequency glide



Depending on the algo selected in the main engine screen, IM1, IM2, IM3, IM4 or IM5 shows up.

This is the direct value of modulation index as describe in all the FM documentation.

This is the heart of the FM engine and the more important parameters of the PreenFM. And the first one you'll want to target from the modulation matrix.

v is the amount of modulation that is injected by the velocity of the note you pressed.



If you continue pressing the ENG button you'll reach the mixing parameters. Each of the carrier operator has its Mix and Pan parameter.

It's interesting to play with the Pan parameter in the modulation matrix.

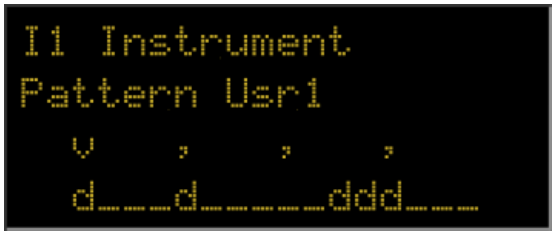
Arpeggiator





There are 22 pre-programmed patterns. After pattern 22 you'll find 4 user patterns : Usr1, Usr2, Usr3, Usr4.

If you select one of latter, an aditionnal page will show up when you press the ENG button. The Pattern editor :



Use the left encoder to move the cursor and the 3 other encoders to activate or desactivate the triggers.
The encoder 4 will (de)activate the trigger just bellow the cursor. The encoder 3 will do 4 triggers at the same time separated by 1 beat. And the encoder 2 will (de)activate all triggers of the current beat.

Filter slot

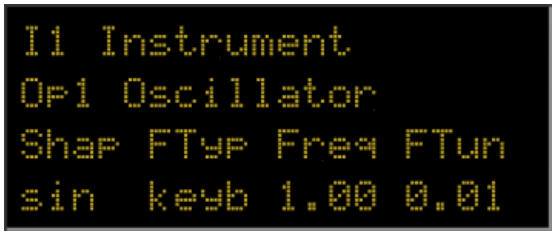


The available filters are (in firmware 1.04) : Low pass 2nd order, High pass, Bass boost, Band Pass and crusher.

The Filter cutoff frequency and the crusher sampling rate can be modified by the modulation matrix.

2 – Operator

User Op button to select your Operator number and the button just bellow to select « Oscillator », « Env A » or « Env B ». A different behavior can be selected in the settings.



Depending on the algo you've selected, you can have between 3 and 6 operators.
The operator number you're currently editing always show up on the lcd. 3 in the above screen.

You can trying to edit only with your ear but it's always good to have in mind the algo picture so that you can understand how the knob you turn will modify the sound.

Shape :
This defines the waveform that the oscillator is using. Pure FM snthesis only use sin waveform.
PreenFM proposes you several waveofms, and even a noise (rand) waveform very usefull to create percussive attack or to add noise/breath to your sound.

You can chose for each operator independently between sin, saw, square, noise and 3 sinus variations.

> **User waveform** : In firmware 2.01 have been added the user waveforms feature.
> You have 6 aditional waveforms that are read from the preenfm2 usb drive.

Put you own waveform in /pfm2/waveform/ of the preenfm2 usb drive.
They must be called usr1.txt, usr2.txt... usr6.txt
Format is simple :

<4 chars for name>
<number of samples>
<sampe1> <sampe2> <sampe3> ....

Samples must be float values between -1 and 1 with a « . » as decimal separator.
Samples can be separated by what you want : tab, space, comma, return....

See message here for user waveform examples and here to turn wav files into preenfm2 format.

The preenfm2 will create a usr*.bin from your txt to read the waveform faster and so boot faster.
If you modify your waveform you have to remove the bin so that it's recreated.

The waveforms can be found in « Operator>Shap » after « Off ».

FType:

Keyb : the frequency of the oscillator depends on the key you pressed and on the 2 following params : Freq and FTun.
Fixe : the frequencry of the oscillator is always the same. The 2 following params allow to change this frequency. In this case the LCD will show you the frequency that the oscillator will produce in Hz.

Freq:
IF Ftype i set to « Keyb », the this param is the ratio between the real note asked by the key you pressed and the frequency the oscillator will produce.
1.0 : real frequency
1.5 : a fifth above.
2.0 : An octave above
3.0 : An octave and a fifth above
4.0 : two octave above
etc...

If FType is set to « fix », the frequency of the oscillator won't depend on the key you press, you can then change this frequency with button 3 and 4.
Ftun:
Fine tune... Small adjusment to the main frequency.



The envelope of each operator has 8 parameters, copied from the DX7 enveloppe.



You still get the usual Attk, Decay, Sustain release. The first parameter set the time this state lasts. And the second parameter « lv » (level) the value that must be reached at the end of this state.
When a note off is sent, the enveloppe jumps to the Release level.
For the carrier operator you should avoid having the Release level different from null.

3 – Modulation Matrix

Each instruments has 12 matrix rows to modulate its parameter.



Each row has the usual 3 parameters : source, multiplicator and destination.

As source parameter you can choose between the 7 Lfos (see next part), modulation wheel, pitch bend, after touch, velocity, 2 values based on key note (Not1, Not2 : see LFO 4.4 for more info), and 4 performance parameters.

The multiplicator's range is -10 to 10.

The desination matrix can be one of these values :
IM1 , IM2 , IM3 , IM4 , IM* : One of the 4 modulation index or all at the same time : IM*.
Mix1, Pan1, Mix2, Pan2, Mix3, Pan3, Mix3, Pan3, Mix*, Pan* : Mix value or Pan value of the 3 first carrier. Or all Mix or Pan at the same time.
o1Fq, o2Fq, o3Fq, o4Fq, o5Fq, o6Fq, o*Fq : Frequency of the operator oscillators.
Att1, Att2, Att3, Att4, Att5, Att6, Att* : Attack of the operator enveloppes.
Rel* : Release of all enveloppe
mx01, mx02, mx03, mx04 : Multiplicator of the 4 first matrix row.
l1Fq, l2Fq, l3Fq : Frequency of the 3 LFO oscillators.
e2si : modify the silence duration of the LFO Env 2.
s1ga, s2ga : gate value of step sequencers
Fltr : cut off frequency of the filter or sampling rate of the crusher FX.

4 – Modulators

Each of the 4 instruments in the PreenFM2 can use 7 low frequency modulators.

- 3 LFO
- 1 free enveloppe
- 1 free enveloppe with loop and silence (LFO Env 2)
- 2 step sequencers.

The role of these 7 LF modulators is to be set as source in the matrix rows.

4.1 LFO



Shape :

The waveform of the LFO.

You have the choice between 5 possibilities : sinusoid, sawtooth (up then down then up…), ramp up (up then go to begining then up…), square (max value then min value then max value….) and random values.

Freq :

The frequency in herz of your lfo. Can go down to 0.1 Herz and up to 24 Herz.

After 24 you'll find the MidiClock synchronization values : MC/16, MC/8, MC/4, MC/2, MC, MC*2, MC*3, MC*4, MC*8.

Bias :

If set to 0 the values of your LFO will be between -1.0 and 1.0.

If set to .5, the LFO will oscillates between -.5 and 1.5

If set to 1.0 you'll get values between 0 and 2.0

So using Bias you can chose to have only positive or negative values.

KSyn:

Key synchronisation.

Off : the lfo live on its own… and is never modified by any event.

0.0- 16.0 : the lfo reset when a key is pressed. The time it takes in second for the LFO to reach its full range. 0 is different from Off because it will reset the phase of the Oscillator when a key is pressed.

After the 3 LFO pages, you'll find a page where you can specify the phase of each LFO.



4.2 Free Enveloppe 1



The 4 standard ADSR enveloppe parameters. All values are in seconds.

Nice on filter cutoff frequency.

4.2 Free Enveloppe 2



Silence, attack, decay and Loop.

After the decay the Loop parameter allow you to loop back to the begining of the silence, to the begining of the attack or not to loop at all.

Silence values can be targeted from the modulation matrix. Random LFO can nicely modify the silence time to make an organic/alive enveloppe.

4.3 2 step sequencers



The step sequencer output can be routed in the matrix modulation to any available destinations : « mix* » to give punch to one of your carrier operators, « IM* » to shape the spectrum in rythm or « o*FR » to write a melodic line.
In this latter case, set the matrix multiplier to 10.0 and you'll get one step sequencer value per semi-tone: 0, 3, 7, C for minor chords.

The steps are a bit smoothed to avoid click/noise in the sound between 2 values very different such as 0 and F.

BPM:

Beat per minute. The tempo of your sequence.. The sequence has 4 beats of 4 sixteenth.
Value from 10 to 240.
After 240 you'll find the MidiClock synchronization values : MC/4, MC/2, MC, MC*2, MC*4.

Gate:

The steps are « gatable ». When the step value is gated its output is 0.
A gate of 0.5 means that half the sixteenth, the value is sent, the other half 0 is sent.
A gate of 0.01 is the shortest value when you hear your sequence… most of the sixteenths are gated.
A gate of 1.0 means no gate.
Gate is available as the matrix destination and can give interesting result when modulated by a slow LFO1/3 (bias = 0) or modulated by the pitchwheel of your keyboard.

Steps:

Then on the right part you can see the 8 first steps… the 8 following ones show up when your cursor exceeds the step limits.
Use the encoder 3 to move the cursor, and encoder 4 to change the value.
There are 16 values : from 0 to F.
The values are not linear so that routing them in the matrix modulation to a frequency destination can give one semitone per step value. 2 is a tone, 7 a fifth, 'C' an octave. For that, the matrix multiplier must be set to 64.

4.4 Note Midi Scaling

As written in the matrix part, you can modulate your destination parameters by 2 values based on midi note values (0-127).



Those 2 « note midi scaling » pages allow you to fine tune the value you want depending on the midi key note entry.

You can select the break note (or middle note) then 2 curve that starts from this point in both direction.
Before and After describe the kind of curve you want the respond to follow :

Flat: 0 for any note
+Lin : 1 per step from the break note value.
+Lin8 : 8 per step from the break note values

+Exp : exponential curve, starts slowly and go up faster as you go further from the break note.

-Lin, -Lin8, -Exp : same as the 3 above but with a negative value.

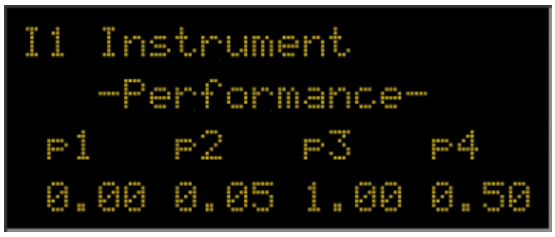
Simple use case example :

Stereo panning over the keyboard. Low note on the left, high note on the right : (-Lin, 60, +Lin) that you multiply by Pan* in the modulation matrix.

Decrease the IM for high notes to get rid of aliasing. (Flat, 60, -lin8) that you multiply by IM* in the modulation matrix .

5 – Performance

The performance page show up when you press one of the encoder or both MOD&MENU if you don't have clickable encoders.



This page's goal is to allow you to control from one page the important parameters of you preset.

p1, p2, p3, p4 have to be specified in the modulation matrix and can be used in 1 or more matrix rows.

Midi messages

Page updated with firmware 2.08.

This page explains what midi messages the preenfm2 can send or respond to.

You can select in the menu settings what midi messages you want the preenfm to respond to (none, CC, NRPN, both) and what midi messages you want it to send on its midi output jack when you modify a parameter (none, CC, NRPN).
If Usb midi is set to « In/Out » then the output will also be sent to your USB midi connection.

The preenfm2 responds to several well known midi messages such as :

- Hold Pedal (CC#64), do not listen anymore to note off.
- Keyboard pitch wheel, global after touch and modwheel (CC#1) can be routed in matrix sources.
- Realtime midi clock (time clock, start, stop, continue)

- Program change
- Bank select (CC#0) and Bank Select LSB (#32)
- Bank select=0 => BankLSB=Preenfm bank number
- Bank select=1 => BankLSB=Combo number
- Bank select=2 => BankLSB=DX7 bank 0->127
- Bank select=3 => BankLSB=DX7 bank 128->255

- Onmi On (CC#124) and Omni Off (CC#125). Allow an instrument to listen to all midi channel.
- All sounds off (CC#120) mute immediatly all voices
- All note off (CC#123) send note off to all voices. Release stage will be heard.

Sysex can be used to store and restore single presets. This sysex is not really usable outside the preenfm2. It contains a memory dump of the the preenfm2 memory. Set of 32 bits floating point numbers split in 7bits messages.

The preenfm2 will flush all its parameters with NRPN midi messages if it recevies a NRPN with ParamLSB = 127 and ParamMSB = 127. Can be used by editors to read the preenfm2 current preset.

The following table shows with more details the parameters, their NRPN param number and values as well as the midi control change if available.

Parameter	MSB	LSB	Value max	Comment	CC
Algorithm number	0	0	28		16

Parameter	MSB	LSB	Value max	Comment	CC
Velocity	0	1	16	the higher the more the velocity of a note will impact the volume opf the note	
Voice	0	2	16	number of voices for the current instrument	
Glide	0	3	10	Valid only if voices	
IM <n>	0	4 + (n-1)*2	1600	Value of the modulation index #n (1 <= n <= 5) The real value is the nrpn one divided by 100	17 + (n-1)
IM <n> velocity	0	5 + (n-1)*2	1600	the modulation index #n (1 <= n <= 5) that depends on velocity.	
Mix <n>	0	16 + (n-1)*2	100	Value of the mix #n (1 <= n <= 6 for NRPN and <=4 for CC)	22 + (n-1) *2
Pan <n>	0	17 + (n-1)*2	200	Value of the pan #n. 0 = Pan Left / 100 = center / 200 = pan right. Only the 4 first Mix are available with CC (1 <= n <= 6 for NRPN and <=4 for CC)	23 + (n-1) *2
Arpeggiator Clock	0	28	2	0=Off. 1 = internal. 2 = external	100
Arpeggiator BPM	0	29			
Arpeggiator Direction	0	30			101
Arpeggiator Octave	0	31			102
Arpeggiator Pattern	0	32			103
Arpeggiator Division	0	33			104
Arpeggiator Duration	0	34			105
Arp. Latch	0	35			
Filter Type	0	40	4	0 = Off / 1 = Mix / 2 = LP / 3 = HP / 4 = Bass	70
Filter Param1	0	41	100		71
Filter Param2	0	42	100		72
Filter Gain	0	43	200		73
Op<n> Shape	0	44 + (n-1)*4	7	1 <= n <= 6. n is the operator number.	
Op<n> Freq Type	0	45 + (n-1)*4	1		
Op<n> Frequency	0	46 + (n-1)*4			50 + (n-1)
Op<n> Fine tune	0	47 + (n-1)*4			
Op<n> env Attack	0	68 + (n-1)*8	1600		74 + (n-1)
Op<n> env Attack level	0	69 + (n-1)*8	100		
Op<n> env Decay	0	70 + (n-1)*8	1600		
Op<n> env Decay level	0	71 + (n-1)*8	100		
Op<n> env Sustain	0	72 + (n-1)*8	1600		
Op<n> env Sustain level	0	73 + (n-1)*8	100		
Op<n> env Release	0	74 + (n-1)*8	1600		82 + (n-1)
Op<n> env Release level	0	75 + (n-1)*8	100		
Carrier Op env Attacks				Modify the Attack of the all carrier operators : attack of the sound volume	80
Carrier Op env Releases				Modify the Release of the all carrier operators : release of the sound volume	81
Modulator Op env Attacks				Modify the Attack of all the modulatior operators	62

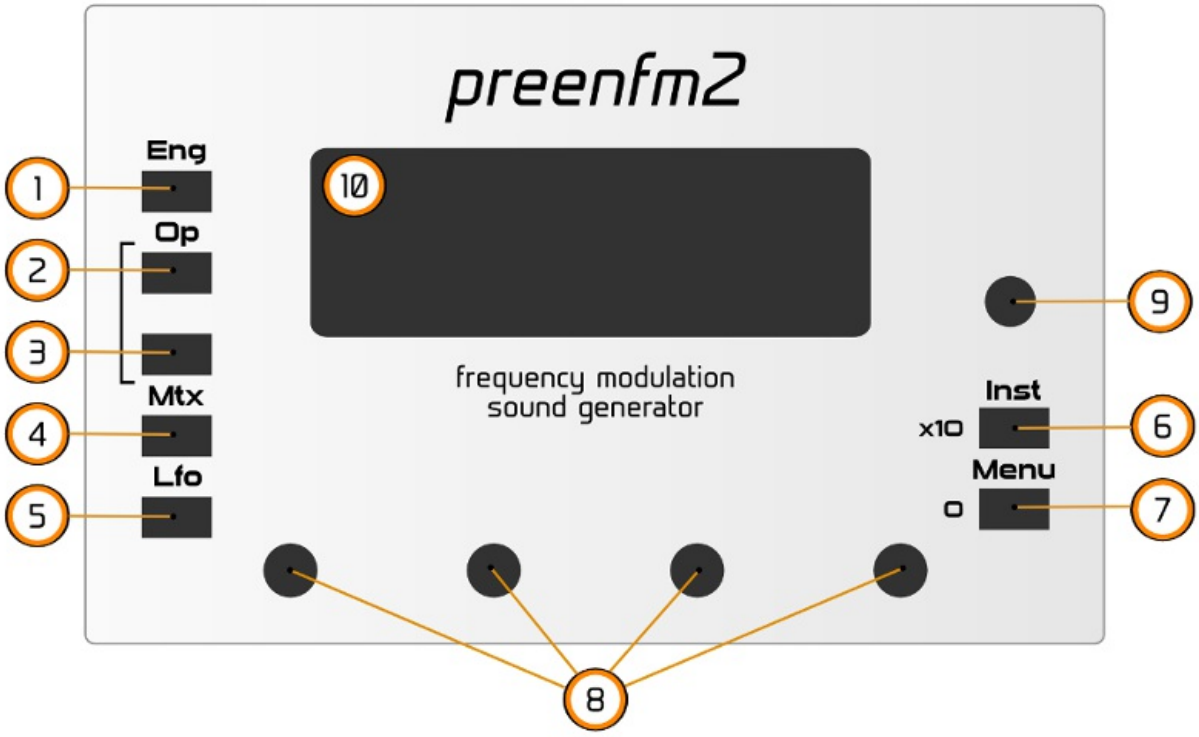
Parameter	MSB	LSB	Value max	Comment	CC
Modulator Op env Releases				Modify the Release of all the modulator operators	63
Matrix row<n> Source	0	116 + (n -1)*4		1 <= n <=3	
Matrix row<n> Multiplier	0	117 + (n -1)*4	2000	Value = 0 mutliplier = -10.0; Value = 1000 mutliplier = 0.0; Value = 2000 mutliplier = 10.0. Only 4 first matrix rows are available with CC.	46 + (n-1)
Matrix row<n> Destination	0	118 + (n -1)*4			
Matrix row<n> Source	1	(n -4)*4		4 <= n <= 12. NRPN value is simply the following of the previous one. Matrix row4 Source param value = 128. Which is MSB= 1 and LSB =0.	
Matrix row<n> Multiplier	1	1 + (n -4)*4	2000	Value = 0 mutliplier = -10.0; Value = 1000 mutliplier = 0.0; Value = 2000 mutliplier = 10.0	
Matrix row<n> Destination	1	2 + (n -4)*4			
Performance param<n>	1	36 + (n-1)		n is the parameter number : 1 <= n <= 3	115 + (n-1)
LFO <n> Shape	1	40 + (n-1)*4	164	1 <= n <= 3. Value : 0 = sin / 1 = Ramp / 2 = saw / 3 = square / 4 = rand	94 + (n-1)
LFO <n> Frequency	1	41 + (n-1)*4			56 + (n-1)
LFO <n> Bias	1	42 + (n-1)*4			91 + (n-1)
LFO <n> Key sync	1	43 + (n-1)*4			
LFO <n> Phase	1	68 + (n-1)			88 + (n-1)
Free Env1 Attack	1	52			
Free Env1 Decay	1	53			
Free Env1 Sustain	1	54			
Free Env1 Release	1	55			
Free Env2 Silence	1	56			60
Free Env2 Attack	1	57			
Free Env2 Decay	1	58			
Free Env2 Loop	1	59			
Step Seq<n> BPM	1	60 + (n-1)*4		n can be 1 or 2.	
Step Seq<n> Gate	1	61 + (n-1)*4			61 + (n-1)
Letter <n> of preset name	1	100 + n		You can send a ASCII value to change the letter <n> of the preset name	
Step Seq1 Step<n>	2	n	16	0<=n<=16.	
Step Seq2 Step<n>	3	n	16	0<=n<=16.	
Scala Enable				Enable (>=1) or Disable (0) scala scale mode	12
Scala Scale			127	Select the scala scale to use	13

Bootloader / Upgrade firmware

To enter into bootloader mode you must press a key while powering on the PreenFM2.

The bootloader allows you to upgrade your PreenFM2 firmware and to access your USB drive from your computer.
PreenFM2 firmwares are available from the download page.

The fastest way to upgrade your firmware is to use (1) to upload your firmware on the USB drive then (2) to flash it.



Once you are in the bootloader, the display offers you several option.

(1) : Access Usb Stick.

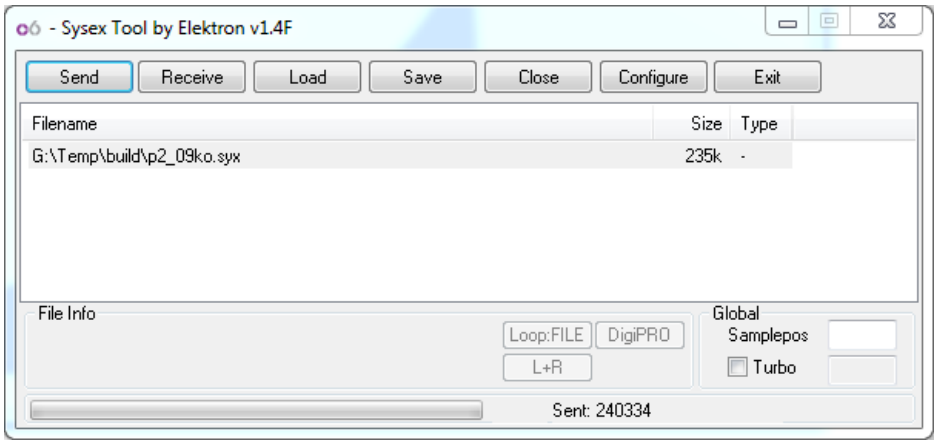
Pressing this button will allow you to access your Usb Stick from your computer. I should be accessible as a regular mass storage device (read regular usb drive).
Each I/O access goes to the ARM MCU that responses as a mass storage device and redirect to the actual USB stick all low level I/Os.
The performance is really slow compared to if you were pluging directly your usb stick in your computer. But it can be usefull to copy last firmware or banks on the drive.

(2) : Upgrade from the firmware in the USB Key.

Once the firmware is copied in your »/pfm2/ » directory, you'll want to flash it.
This is the option to use.
Press (1),(2),(3),(4) or (5) to select next firmware.
Pree (6) or (7) to flash.

(3) : Upload sysex through the DIN5 midi IN connector

Under windows, Elektron has a sysex utility that works perfectly: C6.
Go at the bottom of this page : http://www.elektron.se/support-and-downloads
Deploy « Applications » and download C6 sysex manager.
It's a zip file, no need to install, nice
Launch C6 BEFORE switching on your preeFM.
« Configure » the right Midi interface to use BEFORE switching on your preenFM.
Now click on « Load » and select you Sysex file :



Power you preenFM while pressing the button 2.
Confirm « Erase Firmware » by pressing on « Inst » or « Menu »
Then in C6 press « Send » and wait… yes it's not fast.
At the end, as written on your LCD, reboot.

(4): DFU (device firmware upgrade)

This mode is the only one that will allow you to update your bootloader… Do you really need to update your bootloader ?

The code used to upgrade through DFU is contained inside the STM32F4 microcontroller and have been writen by STMicroelectronics. So you cannot brick your PreenFM.

I you press the button 3 while powering on your PreenFM it will display a message on the screen than jump to integrated DFU mode.
The process is then the the same as when jmp3 is shortcut so see burn firmware for more information.

Search …

Search

Navigate

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  - Bootloader / Upgrade firmware
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Articles récents

- Documentation
- Prototype of the stm32F405 board for the preen
- Top plate which fits OLED display
- 0. 9d firmware : oled compatibiltity
- The screws & nuts bag

Xavier Hosxe - 2014

Usb drive

The PreenFM2 expect the usb drive to be formated in FAT32 filesystem and to have at least a « /pfm2/ » folder. A good start is to extract the zip file from the download page.

You can browse DX7 sysex files and the PreenFM2 will do its best to cast the DX7 parameters to its own parameters. As they are 2 totally different beast, don't expect miracle, but this is something that can be improved in future firmware.

The DX7 sysex files must be in a folder « pfm2/dx7/ ». Go there : http://homepages.abdn.ac.uk/mth192/pages/html/dx7.html#patches and download the sysex tar file. Unzip the file in « pfm2/dx7″ on your usb drive, and you'll be able to try the thousands of DX7 presets from inside the PreenFM2.

Since firmware 2.00 you can copy scala scale files in « /pfm2/scala/ » and go into Menu>Tools>Scala to use those scales and enjoy microtonality on your preenfm2.

Since firmware 2.01 you can also put your own waveforms in the « /pfm2/waveform/ » folder. See 2 – Operator > Shape on this page for more information.



The bootloader allows you to access you USB drive (requires bootloader 1.10) from your computer without opening your PreenFM. Turn on your preenFM while holding down any key, then when the menu shows up, press « Eng ».

The STM32F4 has a program that implements a FAT file system and redirect all low level IO access to the USB drive.
It works but the result is slow compared to if you plug your USB stick directly into your computer.

The goal is to upload firmware (.bin) or add new bank. For such small files, the speed is totally acceptable.