



# moonwind mk II

ANALOG FILTER TRACKER

## Operating Manual

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## Introduction

Thank you for using the Jomox moonwind mk II!

The moonwind mk II is a real analog stereo filter with built-in step sequencer, a fantastic sounding digital effects chip, two LFOs and envelope modulation.

Everything is storeable and controllable via midi.

Although this device is basically an effects unit, you can play the moonwind mk II like a synth via MIDI notes and play melodies using the self-resonating filters.

The sequencer is able to control cutoff, Q and resonance per step and turns a stereo filter with analogously fed back effects into a creative instrument all its own.

The moonwind mk II is an easy-to-use and awesome sounding analog sound engine that is playable like a synth. By incorporating MIDI controllers, it can be seamlessly integrated into a DAW recording system.

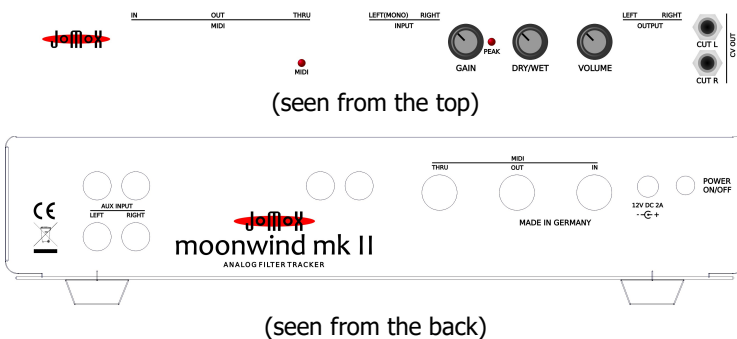
Use of this filter device is simple and self-explanatory for the most part. We recommend that you read this manual carefully in order to allow quick exploration into all of moonwind mk II's amazing musical possibilities.

Before we start, please take note of some important security instructions:

- Please use the moonwind mk II only in dry rooms. Please never let fluids or humidity get into the device!
- Only use the original wall wart adapter. Other power supplies may seriously damage the moonwind mk II!
- For cleaning of the moonwind mk II, please use a slightly damp cloth (unit powered OFF), never solvents or agents!
- The moonwind mk II is a complex electronic device and should therefore be treated carefully!
- If any damage or malfunctions occur, please immediatly turn off the device, unplug the power supply and contact your music dealer or send an email to [support@jomox.de](mailto:support@jomox.de).

## 1. Connections

Before you cable your setup, switch off every unit to be connected. On the back side of the moonwind mk II you can find the following connectors:



### **1.1. 12V DC 2 amps**

The supplied 12V DC 2A wall wart adapter shall be plugged in here. Please do not use any other power supply since the moonwind mk II needs 2 amperes. In case once you would need a non-Jomox power supply please take care that it meets the given specs.

### **1.2. Midi In**

This jack serves to control the moonwind mk II by another Midi capable device, e.g. a soft- or hardware sequencer, a controller box, a Jomox Alpha Base or similar. Please use a standard midi cable as short as possible.

### **1.1. Midi Out**

Serves to transmit Midi data from the moonwind mk II to another Midi capable device, e.g. a soft- or hardware sequencer, in order to exchange data. Please use a standard midi cable as short as possible.

### **1.2. Midi Thru**

Serves to bypass Midi data from the moonwind mk II to another Midi capable device. The incoming Midi messages get passed through by hardware to the Midi Thru port without any change. Please use a standard midi cable as short as possible.

### **1.3. Input L(Mono) R**

These are the stereo left and right audio inputs for the filter and the effects processor. If you just want to process a mono signal, insert the cable into the L(Mono) jack. The switching jacks bypass the signal automatically to both filters then.

Basically the inputs are made for line level signals, but they are hi-z (high impedance) though and have enough gain to amplify a guitar



signal for direct processing without the use of a preamp. Please use standard ¼ inch plug cables for each side.

### **1.4. Output L R**

Delivers the audio output signal of the moonwind mk II. The output is balanced and adjustable from  $-\infty$  to about max. +20 dBu. Connect the Audio Out to an audio mixer, DAW interface or an amp. Please use standard ¼ inch plug cables for each side.

### **1.5. Aux Input L(Mono) R**

Here you can connect another auxiliary line level input signal which is fed into the filter without a preamp. It is mixed to the main signal path only at the filter input and cannot pass the FX processor. This input has some limitations: there is not way to adjust the level, and the envelope follower does not work too.

## 2. Operation

### User Interface



### 2.1. Rotary Knobs (Potentiometers)

#### 2.1.1. GAIN

Controls the gain of the input. The moonwind mk II can process almost any input levels, from weak guitar signals to very high studio line levels of +20dBu.

Please adjust the gain so that the neighbored Peak LED just does not light up yet.

#### 2.1.2. DRY/WET

Controls the mix between the direct signal and the effects amount. Turned whole to the left the output signal equals the input signal

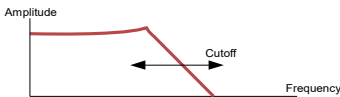
without effects (bypass), turned fully clockwise you get the pure effects signal.

### 2.1.3. VOLUME

Controls the stereo output level. The outputs are balanced and adjustable from  $-\infty$  to about max. +20 dBu. Thus you can drive even very sensitive inputs (as e.g. guitar amps) directly with the moonwind mk II by turning the output level low. In a studio environment however you should turn it as high as possible in order to obtain the best possible S/N ratio and sound.

### 2.1.4. CUTOFF

This knob controls the cutoff (corner) frequency of the filter. According to the shape setting of the filter you change the fundamental properties of the filter and its sound influencing. The range goes from 16Hz-ca. 35kHz and accordingly covers the whole audio range.



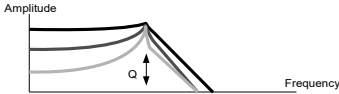
The moonwind mk II owns two identical filters. Therefore only one side is described more detailed here because the three, in a triangle arranged knobs Cutoff, Q and Res have the same function on each filter.

*This is a potentiometer scanned by the cpu. That means, the value will be changed according to the arrow position if you move the knob. Previously stored values jump to the arrow position in case knob lock hasn't been activated before. The advantage is an intuitive editing of parameters since the value corresponds to the arrow position and does not change relative to stored values.*

### 2.1.5. Q

The Q (Q = quality) adjusts the narrowness of the filter. A high value leads to a nosy filter adjustment, a small one to broadbanded

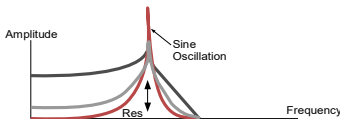
sounding filter. At Resonance = 0 the filter will not self-oscillate but instead becomes extremely narrowbanded if Q is at maximum.



*This is a potentiometer scanned by the cpu. That means, the value will be changed according to the arrow position if you move the knob. Previously stored values jump to the arrow position in case knob lock hasn't been activated before.*

### 2.1.6. RES

Adjusts the resonance of the filter. Opposing to most other synth filters the moonwind mk II has different settings for Q and Resonance. With resonance the filter becomes able to self-oscillate and can produce a stable sine oscillation at cutoff frequency. To make this happen, Q must be set higher than zero as well.



*This is a potentiometer scanned by the cpu. That means, the value will be changed according to the arrow position if you move the knob. Previously stored values jump to the arrow position in case knob lock hasn't been activated before.*

### 2.1.7. Encoder 1-4

To the left of the OLED display there are four endless encoders which can adjust different values corresponding to the selected mode. Four parameters are to be changed in every menu page. These incremental rotary knobs always work relative to a chosen parameter and increase with clockwise movement and decrease with counterclockwise rotation.

### 2.1.8. DATA Encoder

With the DATA encoder presets or sequences get selected or parameter values changed. Pressing the knob includes a click function and resembles an enter key. Loading of presets and acknowledge of storing are performed with this click function.

## 2.2. TOUCHPAD

The integrated touchpad lets you intuitively edit complex filter shapes or change the sequences at your fingertip. Also most of the parameters can be edited by use of the touchpad.

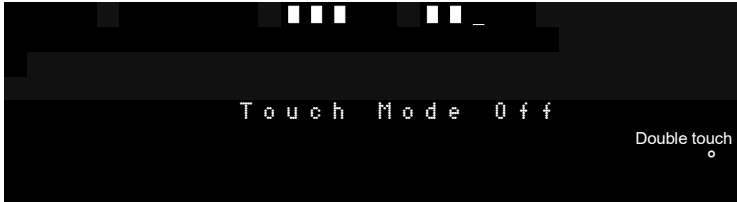
### 2.2.1. Touch Mode

Whilst you are in Single Mode, double touch on the touchpad, and shortly „Touch Mode On“ will be prompted in the display. The screen empties and a dot follows your fingertip on the display. In the right half of the screen you control the right hand cutoff by right-left movement and the Q/Resonance by up/down movements. The left half applies for the left filter in opposite direction regarding to the cutoff.



That makes the filters tweet and whistle at your fingertip, and you can expressively play the filter if you will. All movements can also be recorded into the sequencer. If you want to record, just start the sequencer, and as soon as you touch the touchpad, recording starts automatically. Let your moonwind mkII become a true whistleblower!

In link modes, the cutoff for both filters covers the whole range of the touchpad in x-direction. See 2.3.1 LINK

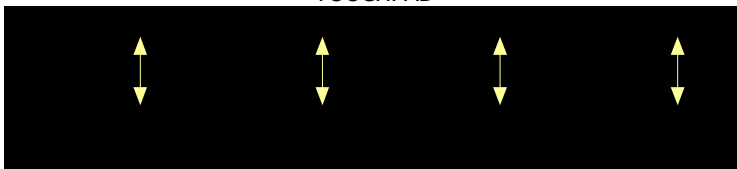


In order to leave the Touch Mode, go to the right down corner with the tracing dot and double touch here. Shortly the prompt „Touch Mode Off“ is displayed and the quick edit screen is shown again.

### 2.2.2. Value Editing via Touchpad



TOUCHPAD



If you have chosen a menu from the quick edit buttons LFO1 – STEP, you can edit the 4 parameters if you touch in the field under the parameter and slowly move up/down with your fingertip.

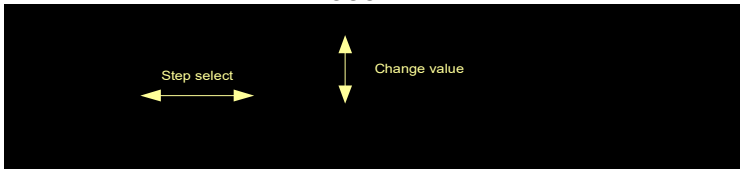
### 2.2.3. Sequence Step editing via Touchpad

Got to Sequence Step Edit Mode by pressing STEP, and you can move the cursor with the touchpad and change the sequencer bars by moving up/down with your fingertip.

Double touching flips between the left and right sequences.



#### TOUCHPAD



If you hold the REC button pressed and double touch on the pad, the Smear Mode is activated. Now every movement in the touchpad smears the bars of your sequence.



Do the same to turn off the Smear Mode again. Now you can move to the desired step without overriding every sequencer bar.  
More information: see 5.4 Sequencer Step Edit

## 2.3. Tact Buttons

### 2.3.1. LINK

If Link is pressed the LED Link lights up. In this mode both filters left/right are not separately editable, but instead the Cutoff/Q/Res section - no matter which side - controls both filters at the same time. That is useful in stereo operation to make both sides sound the same. Pressing Link again switches through the 3 link modes:

1. indicated by a  $\sim$  sign: both filters have the same cutoff, Q and resonance.
2. indicated by an **O** sign: the right filter cutoff makes an an offset to the left cutoff. In this case only the left cutoff is the master.
3. indicated by an **I** sign: both filters run inversely regarding to the cutoff.

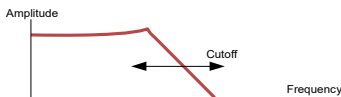
Pressing again Link eventually leaves the Link mode.

### 2.3.2. SHAPE L

This button changes the Shape (form) setting of the left filter. By pressing it again four different shapes step through. They are displayed in the OLED. There are four settings:

#### **Lp** (Low Pass)

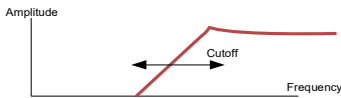
Only low frequencies up to the cutoff (corner) frequency get passed. The trebles are being cut off.



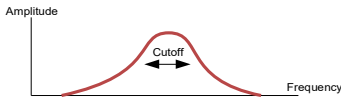
#### **Hp** (High Pass)

Only the high frequencies down to the cutoff frequency get passed. The low frequencies are being cut off.

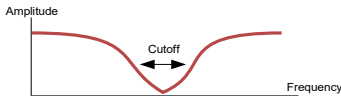


**Bp** (Band Pass)

Only frequencies within the pass band around the cutoff frequency get passed. The high and the low frequencies are being cut off.

**Nt** (Notch)

All frequencies except the stopband around the cutoff frequency get passed. The band around the cutoff frequency is cut out.

**2.3.3. SHAPE R**

This button changes the Shape setting of the right filter. The values are the same as with Shape L (see above).

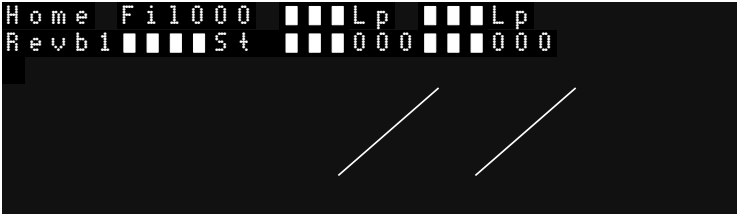
**2.3.4. NOISE**

If NOISE is pressed the LED NOISE lights up. The NZE menu opens and you can adjust the metallic shape and the volume of the noise signal. See 4.5 Filter Routing / Noise

Pressing again turns off noise again.

### 2.3.5. SINGLE/SEQ

This button switches between the single mode and sequence mode. In single mode, the moonwind mk II works as a standalone filter bank.



In case one is within the edit area of single mode, pressing this key turns back to main menu (quick edit menu) first and then changes to sequence mode.

In sequencer mode, the Cutoff/Q/Res can be edited and played back as sequences.



### 2.3.6. MIDI

Selects the Midi Setup menu in which different Midi settings can be made.

```
Midi Setup
R×Ch01 T×Ch01 ClkSyncOff T×Ck Off
```

Please find more detailed descriptions of the functions in chapter 7 Midi Parameter.

### 2.3.7. STORE

Stores a single preset or a sequence. After pressing the store LED flashes and the display shows:

```
Home Fil000Store Preset?
Yes=Click/Enter No=Undo
Choose destination to overwrite
```

Now you can still select the destination preset by turning the DATA encoder or pressing the up/down buttons.

This implies a copy function. If you store a non-edited preset to another location, the unit creates an identical copy of this preset there.

If you click on the DATA encoder or press the Enter button now, the preset (or sequence) gets stored. This proceeding is displayed by a short flashing of the Enter (Knob Lock) LED.

In order to cancel the storing procedure, press the button UNDO/EXIT.

### **2.3.8. < LEFT/RIGHT >**

With these cursor buttons you can navigate through the edit menu. According to the chosen mode you can select the detailed parameter menus and edit them by encoders 1-4 or the DATA encoder.

If you hold one of cursor buttons longer than a second, the cursor skips automatically quickly through the menus (autorepeat) to reach distant menu pages faster.

### **2.3.9. DOWN/UP**

If the unit is in the main menu (quick edit menu), you can step through presets depending on the chosen mode (Single/Seq) without needing to load them.

Within the detailed edit menus you can edit values in discrete steps with these buttons.

If you hold one of the up/down buttons longer than a second, the value changes repeatedly (autorepeat).

### **2.3.10. ENTER (KNOB LOCK)**

If Enter (Knob Lock) without a store request is pressed, the LED above this button lights up. In this mode, no edits can be made by the continuous potentiometer knobs Cutoff/Q/Res.

This is useful if you play the moonwind mk II live or in a studio recording and only want to use previously programmed presets which are not due to change during playing or recording.

Although the potentiometers are filtered well, you can't eliminate 100% that a recalled value might jump unintendedly because the knob stands between two values or is moved a little bit.

Pressing this button again leaves the Knob Lock mode again.

### **2.3.11. UNDO/EXIT**

Cancels the storage process (see Store) or undoes previous parameter records in sequence mode (see Sequencer).

Up to 1000 edit steps can be made undone. If the undo level has ended, the line 'no further undo!' is displayed in the OLED.

### **2.3.12. STOP**

Stops the sequencer.

### **2.3.13. START**

Starts the sequencer. Regardless of the Single/Seq mode the sequencer runs and shows the played steps by the flashing of the Start LED.

You can still move the cutoff knobs and add the steady cutoff value to the sequence.

### **2.3.14. RECORD**

Activates the realtime recording of Cutoff/Q/Res knobs movements while the sequencer is running. You can see the recorded changes as a bar graph only if you are in sequencer mode. With UNDO/EXIT you can undo up to 1000 edit steps.

Record can only be activated if the sequencer is playing. The red LED next to the button lights up. Pressing the button again leaves the record mode.

→ Please note that you can only record parameters of the kind of track that has been chosen before, i.e. CUTOFF, Q or RES in order not to overwrite too much unintentionally.

### **2.3.15. LFO1**

This button acts as a shortcut to the LFO1 page.

Here you can edit the parameters for the left LFO1

See 4.2 LFO Left

### **2.3.16. LFO2**

This button acts as a shortcut to the LFO2 page.

See 4.3 LFO Right

### **2.3.17. ENV**

This button acts as a shortcut to the FIL Envelope and VCA Envelope menu. If you press this button again, you toggle between filter and VCA menu.

See 4.4 FIL Envelope / VCA Envelope

### **2.3.18. ALG**

This button acts as a shortcut to the effects menu.

See 4.1 Effects Page

### **2.3.19. NZE**

This button acts as a shortcut to the Filter Routing / Noise menu.

See 4.5 Filter Routing / Noise

### **2.3.20. VCA**

This button acts as a shortcut to the VCA menu.

See 4.6 VCA / FIL Env Amt

### **2.3.21. BPM**

This button acts as a shortcut to the BPM editing and turns on sequencer mode.

See 5.1.2 BPM

### 2.3.22. STEP

This button acts as a shortcut to the Sequencer Step Edit menu and turns on sequencer mode.

See 5.4 Sequencer Step Edit

If sequence mode is already activated, this buttons turns the individual step edit mode on or off. You can select the step with the right/left cursor or with the touchpad.

### 2.3.23. CUT

This button acts as a shortcut to the Cutoff stereo sequencer track and turns on sequencer mode. The x in the end of the track indicates which side of the stereo track is currently active. Pressing again this button flips between both tracks L and R.

See 5.1.1 Parameter Tracks.



### 2.3.24. Q

The same as for CUT applies for Q: this button acts as a shortcut to the Q stereo sequencer track and turns on sequencer mode.

See 5.1.1 Parameter Tracks.

### 2.3.25. RES

The same as for CUT applies for RES: this button acts as a shortcut to the Resonance stereo sequencer track and turns on sequencer mode.

See 5.1.1 Parameter Tracks.

### **2.3.26. SET L**

This button acts as a shortcut to the programming of the CV jacks L 1 - 3.

See 6.3.1 Programmable CV Inputs L.

### **2.3.27. SET R**

This button acts as a shortcut to the programming of the CV jacks R 1 - 3.

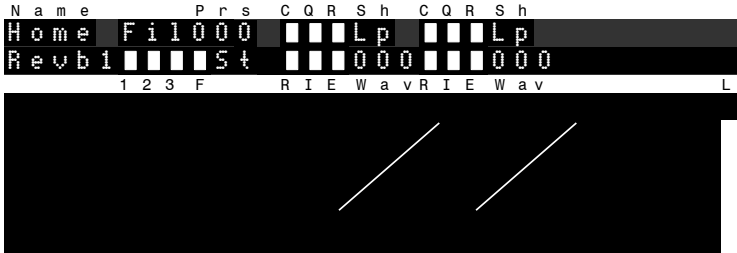
See 6.3.2 Programmable CV Inputs R.



### 2.3.28. OLED Display

The 8x32 digits or 64x256 pixel graphics OLED in the center of the device shows the actual settings according to the modes.

After pressing SINGLE/SEQ for the first time, the quick edit mode appears:



The letters are only displayed to show the function in the quick screen. The meaning of the abbreviations are as follows:

Prs = Preset number

C = Cutoff

Q = Q

R = Resonance

Sh = Shape

1 = FX Parameter 1

2 = FX Parameter 2

3 = FX Parameter 3

F = FX Feedback

R = LFO Rate

I = LFO Intensity

Wav = LFO Wave form

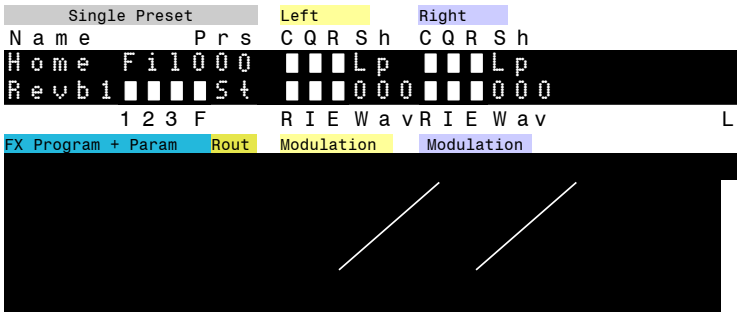
E = Envelope amount

L = Input level (Bar goes across the whole display height)

## 2.4. Single Presets

After turning on, the moonwind mk II is in Single mode and in the main menu i.e. quick edit mode.

The filter and the effects processor now work like a filter bank and can be edited directly by the rotary knobs. Each change is immediately audible and can be stored right away.



In the picture you can see the layout of sections in quick edit screen. For the most important adjustments and quick sound editings you normally don't need to leave the quick edit mode.

If you are in another parameter menu, pressing SINGLE/SEQ always brings you back to this quick screen location.

By turning the DATA encoder you can recall a maximum of 256 preprogrammed sounds – a small number of them are factory presets. The number and the name are shown at scrolling. By clicking on the DATA knob the chosen preset gets loaded.

A second way to choose presets is by stepping up or down with the Up/Down buttons. Now you don't have to explicitly load the preset, it loads automatically.

## 2.5. Editing in Quick Edit Mode

If you apply an audio signal to the moonwind mk II and level it with the gain knob, you can see the level indicator bar moving up and down (L position).

With the Cutoff/Q/Res knobs you can immediately edit the sound. You see the changes as bar movements in the quick edit screen display.

To edit the filter shape, press buttons Shape L/R in the upper row. They work without a menu and show the current Lowpass/Hipass/Bandpass/Notch setting in the quick edit screen.

If you turn the encoders, you edit the values of FX Parameter 1-4 of the effects chip which is shown in the lower left area of the quick edit screen.

The effects chip always has four values to edit: FX Para 1-3 plus feedback (F). Feedback mostly has a great impact as it routes the signal back to the FX processor.

The selected effects algorithm is shown by the abbreviation down left.

Attention, with some effects programs the analog FX Feedback (if cranked up) can produce some strong feedbacks which might sound awful!

## 2.6. Editing of Sound Parameters

If you are in the main menu (quick edit mode) of Single mode, press the right cursor. Now you can navigate through the different menu pages of sound parameters.

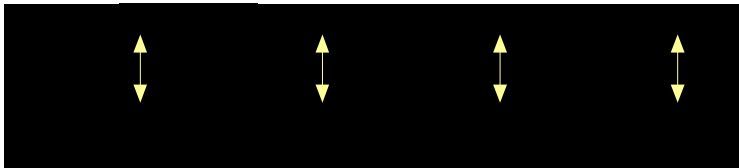
The most convenient usage, however, is to use the shortcut keys as described in 2.3.15 – 2.3.22 to enter a menu page.

Now use encoders 1-4 to edit the parameters. Within a page the cursor jumps automatically to the position addressed by the respective encoder of the four values of the lower row.

In the below example encoder 1 edits Revb, encoder 2 Rate, encoder 3 Cmix and encoder 4 Fed.

```
Chorus+Reverb  
Revb092 Rate064 CMix160 Fed000
```

TOUCHPAD



Alternatively you can use the touchpad to edit the values. With the touchpad please place your finger in the field under the number and slowly move up and down.

At the cursor location you can also change the value by turning the DATA knob or the Up/Down buttons.

A detailed description of all menu pages and sound parameters you can find in chapter 4. Sound Parameter.

Furthermore, you can find a detailed description of the sequencer and its usage in chapter 5. Sequencer.

## 3. Functional Description

### 3.1. Hardware Description

The moonwind mk II is an analog stereo multi mode filter with an additional effects processor.

Who doesn't want to spend too much time with technical details of sound processing may proceed now to chapter 4. Sound Parameters.

Multi mode filter means that a circuit with several gain stages and two integrators is made in a way that it offers a lowpass, a highpass, bandpass and a notch (bandgap) on its outputs at the same time. One of these signals is tapped and forwarded by an electronic switch in the moonwind mk II filter.

The Q (quality) of the filter determines the narrowbandedness of slope at the cutoff frequency. The term comes from coil filter techniques where selectivity (namely quality) of a resonating LC circuit or a band filter are most important properties.

If Q reaches maximum the filter is extremely narrow banded but does not self-resonate though.

Therefore in the moonwind mk II there is adjustable Resonance added to Q. With this the filter is able to self-resonate and to produce a stable sine oscillation at the corner frequency.

If Resonance $>0$  then Q must be  $>0$  as well to get the filter vibrate.

The adjustable frequency range of the moonwind mk II filter reaches from 16Hz – 35kHz. The cutoff is controlled by an analog exponential generator to obtain a logarithmic-musical frequency resolution.

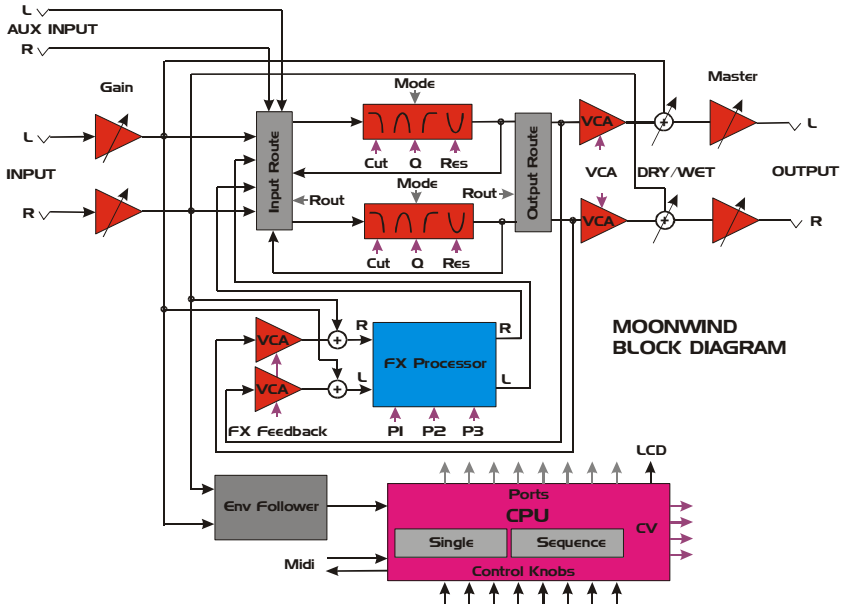
Other than that, in the moonwind mk II there is an effects processor FV-1 of SPIN Semiconductor ([www.spinsemi.com](http://www.spinsemi.com)). This chip has 7 firm effects programs included and is able to address 8 free programmable algorithms. In the moonwind mk II there are also eight effects of Jomox integrated which may be upgraded or changed with future OS updates.

Basically the fx processor has three adjustable external parameters FX Para 1-3 which are provided by the moonwind mk II hardware.

### 3. Functional Description

Additionally we have added a programmable analog feedback way for the fx section in hardware.

How does it work?



The signal comes from the high impedance inputs and the gain section and feed the input router and the fx processor inputs. Both stereo inputs also feed an analogue envelope follower which creates an envelope signal in order to modulate the filters later on. The outputs of the fx processor also go into the input router. The input signals and the effects signals are mixed together here. Within the filter section there are electronic switches that select the various shape signals (LP, HP, BP, Notch) for the filter output. From the output of the filter a part of the signal is fed back to the fx processor via a VCA (FX Feedback) in order to create e.g. tape delays or wave guide reflections.

The input/output router of the filter determines the several routing setups of both filters. They can be routed as follows: 2-channel stereo (default), parallel (1:1 mixed), serial, with feedback and parallel feedback. In this case feedback means a direct analog cross feedback between the filters (not the FX feedback) which results in strong distortions or screaming sounds. This is most interesting if both filters have alternating shape settings (e.g. Lp/Hp).

And there is some more global routing possible:

filter only (inputs go only into the filter without fx processor),  
fx processor first (signals first pass the fx processor and then go into the filter), or direct signal plus fx (default mode).

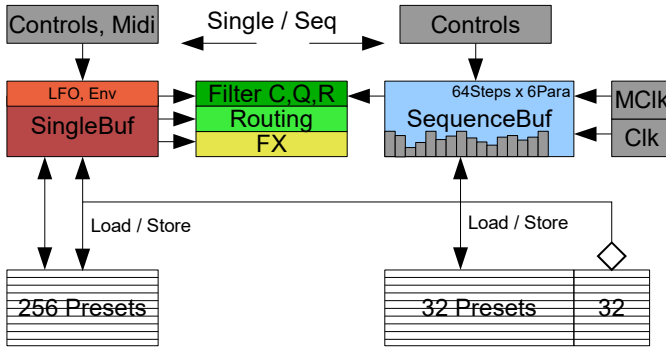
The AUX input serves as an auxiliary input which directly feeds the input router without passing the fx processor. In the input router the AUX signal is mixed to the main signals which feed the filter inputs. Please note that the AUX input can only process line level signals, has no gain adjustment, feeds no envelope modulation and does not pass the dry/wet stage. But for some applications it may be very useful to add a pure filter signal to the mix.

Behind the filter stage with its several feedback ways there is a final VCA which can be used to modulate the main signal level.

The dry/wet knob controls the mix between the global input signal and the effects signal (including all filters, fx processors, feedbacks). Before the outputs there is the master volume amp which can either lower the signal or amplify it depending on your application.

The whole analogue sound circuitry is controlled by a CPU which scans the user interface on the front plate, provides the Midi communication, generates the CVs (CV=control voltage) for the analog circuitries and the port bits for the routers and fx algorithms. All presets and sequences are stored in the processor's internal flash memory and are therefore endureably saved without battery.

### 3.2. Memory Model



The moonwind mk II has two buffer systems: the Single mode buffer (SingleBuf) and the Sequence mode buffer (SequenceBuf).

The SingleBuf mainly controls the hardware with all layers from FX, Routing up to the Filter Cutoff/Q/Res. It can be loaded from 256 preset memories residing in flash memory or store into them. The LFOs and envelope modulations are also controlled only by the SingleBuf.

All controls (rotary knobs, tact buttons, parameters, Midi) of the user interface layer are made in the SingleBuf and get stored from there or are being loaded into there.

Opposing to this, the SequenceBuf can only control the uppermost hardware layer of the filters (Cutoff/Q/Res). It manages a maximum of 64 steps x 6 parameter tracks per sequence, the bars, steps, tempo and clock divider. It is edited and changed by the controls of the user interface as well.

It has access to a memory consistent of 32 presets which can load it or being stored into. Additionally, to each sequence preset a single preset is linked which also is loaded or stored along with the sequence buffer. It is one out of the 256 single presets.

If a sequence is stored, the current SingleBuf is stored within the single preset memory. So be cautious that single presets may get overridden when you store in sequence mode.



## 4. Sound Parameters

Press the right cursor button to enter the edit menus. The cursor skips under the editable entries. Now you can change values either with the Data encoder, the Up/Down buttons or encoders 1-4. Encoders 1-4 only have access to one of the four entries in the lower row of the menus.

Or you can use the shortcut keys as described in 2.3.15 – 2.3.22 to enter a menu page.

### 4.1. Effects Page

On the first menu page you can select effects and edit their FX parameters.

#### 4.1.1. Effects Program < Effect Name >

The effects processor of SPIN semiconductor offers 7 unchangeable ROM programs and 8 algorithms updateable via OS, which makes a total of 15 effects programs plus a test program without function. They can be chosen one after each other.

```
Chorus+Reverb
Revb092 Rate064 CMix160 Fed000
```

On this page, you can select the effect program with the DATA encoder or the Up/Down buttons. Because the three available Fx parameters have a different meaning for each fx program, the value description of them changes individually for every algorithm.

Following here is a list of fx programs with a short description of parameters (OS 1.0).

Firmly built-in effect programs of SPIN Semiconductor:

<b>Algorithm</b>	<b>Parameter 1</b>	<b>Parameter 2</b>	<b>Parameter 2</b>
<u>Chorus+Reverb</u>	<u>Revb</u> ( <i>Reverb Level</i> )	<u>Rate</u> ( <i>Chorus Rate</i> )	<u>CMix</u> ( <i>Chorus Mix</i> )
<u>Flanger+Reverb</u>	<u>Revb</u> ( <i>Reverb Level</i> )	<u>Rate</u> ( <i>Flanger Rate</i> )	<u>FMix</u> ( <i>Flanger Mix</i> )
<u>Tremolo+Reverb</u>	<u>Revb</u> ( <i>Reverb Level</i> )	<u>Rate</u> ( <i>Tremolo Rate</i> )	<u>TMix</u> ( <i>Tremolo Mix</i> )
<u>Pitch Shift</u>	<u>Ptch</u> ( <i>Pitch Shift</i> )	-- ( <i>no function</i> )	-- ( <i>no function</i> )
<u>Pitch Echo</u>	<u>Ptch</u> ( <i>Pitch Shift</i> )	<u>Dely</u> ( <i>Delay Time</i> )	<u>Echo</u> ( <i>Repetition</i> )
<u>Test no FX</u>	-- ( <i>no function</i> )	-- ( <i>no function</i> )	-- ( <i>no function</i> )
<u>Reverb 1</u> (Open Reverb)	<u>Time</u> ( <i>Reverb Time</i> )	<u>HFil</u> ( <i>Reverb Highpass</i> )	<u>LFil</u> ( <i>Reverb Lowpass</i> )
<u>Reverb 2</u> (Dense Reverb)	<u>Time</u> ( <i>Reverb Time</i> )	<u>HFil</u> ( <i>Reverb Highpass</i> )	<u>LFil</u> ( <i>Reverb Lowpass</i> )

## Algorithms 8-16 of Jomox

<b>Algorithmus</b>	<b>Parameter 1</b>	<b>Parameter 2</b>	<b>Parameter 2</b>
<u>Stereo Delay</u> (Dual delay with cross feedback)	<u>TimL</u> (Delay time left)	<u>TimR</u> (Delay time Right)	<u>PPng</u> (Ping pong L/R)
<u>Delay + Chorus</u> (Mono delay with chorus)	<u>Time</u> (Delay time)	<u>Dmix</u> (Delay mix)	<u>Cmix</u> (Chorus mix)
<u>Wave Guide 1</u> (Single pipe with filter)	<u>Pipe</u> (Pipe pitch)	<u>Rflx</u> (Reflexion coefficient)	<u>Filt</u> (Lowpass filter)
<u>Wave Guide 2</u> (Dual pipe)	<u>PipA</u> (Pipe A pitch)	<u>PipB</u> (Pipe B pitch)	<u>Rflx</u> (Reflexion coefficient)
<u>Bit Crusher</u> (Bit cut, quantize and chorus)	<u>Bits</u> (Bit depth min:24 max:5)	<u>Quan</u> (Quantization bits mix)	<u>Chor</u> (Crushed+ chorus mix)
<u>Warp Tracker</u> (Scratch effect VCO tracking)	<u>Trac</u> (Tracking VCO)	<u>VCO</u> (VCO mix)	<u>Chor</u> (VCO+chorus mix)
<u>Warp 2</u> (Four pipes, two filters with modulation)	<u>Pipe</u> (Pipes pitch)	<u>LFrt</u> (LFO rate)	<u>Warp</u> (Warp modulation)
<u>Formant Voxer</u> (Vocal formants with modulation and reverb)	<u>F1pt</u> (Formant 1 pitch 300-1000Hz)	<u>F2pt</u> (Formant 2 Pitch, relative to F1 $\Delta$ 400Hz-3kHz)	<u>Revb</u> (Reverb mix)

#### 4.1.2. FX Parameter 1

< 000-127 >

```
Chorus+Reverb  
Revb092 Rate064 CMix160 Fed000
```

This parameter controls the first external value of the fx processor.

#### 4.1.3. FX Parameter 2

< 000-127 >

This parameter controls the second external value of the fx processor.

#### 4.1.4. FX Parameter 3

< 000-127 >

This parameter controls the third external value of the fx processor.

#### 4.1.5. FX Feedback

< 000-127 >

With this value you change the FX feedback. If delay programs are activated, you can create beautiful tape delays and ping pong echoes, as the filter output is fed back analogously and the signal is filtered a bit more with every run through.

Basically you have to experiment with each fx program to get the desired result since every algorithm interacts different with analog feedback.

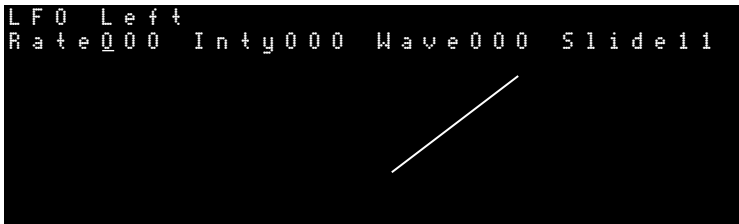
*Attention:* if FX Feedback is cranked up it may suddenly result in strong feedbacks when certain fx programs are chosen which might sound pretty awful!

### 4.2. LFO Left

With the LFO (Low Frequency Oscillator) you can create interesting modulations of the cutoff. Slowly uprising and fading filter sweeps up to tonal vibratos are possible. A large number of 64 wave forms is at your choice.

If the filters are in self-resonance, you can create modulated sine waves with the LFOs which remember of large modular systems. Anyways, this is a box of tricks for a large number of awesome sound effects, for a steady filter is never as interesting as a modulated and moving one.

You can select the values with the cursor and change them with the DATA encoder resp. the Up/Down buttons.



### 4.2.1. LFO Rate <000 – 127 / midiclock sync>

Controls the rate of the left LFO.

Rate can be set in a range from 0.015Hz (T=65sec) to about 30Hz (T=0.033sec).

If you turn up the value above 127, the midi clock dividers appear in the value field. If the moonwind mkII receives Midi clock, the LFOs automatically sync to the beat clock and the selected note length of one wave cycle.

→ Please note that you don't have to activate midi clock sync in the Midi menu to synchronize the LFOs, they run independently from the sequencer.

Following abbreviations and divider ratios are available:

## 4. Sound Parameters

Abbreviation	One LFO Wave	Abbreviation	One LFO Wave
S32	1/32 <sup>th</sup> note	S3t	1/32 <sup>th</sup> - triplets
S16	1/16 <sup>th</sup> note	S6t	1/16 <sup>th</sup> - triplets
S8h	1/8 <sup>th</sup> note	S8t	1/8 <sup>th</sup> - triplets
S4h	1/4 <sup>th</sup> note	S4t	1/4 <sup>th</sup> - triplets
S2h	1/2 note	S2t	1/2 - triplets
S1B	1 bar	S1t	1 bar-triplets
S2B	2 bars		
S4B	4 bars		
S8B	8 bars		

### 4.2.2. LFO Intensity <000 - 127>

Controls the intensity of the left LFO. The LFO modulates the cutoff by adding its wave form multiplied by factor intensity to the cutoff. Intensity = 0 turns off the LFO.

### 4.2.3. LFO Wave <000 - 63>

The wave form of the LFO is selected here. If you turn encoder 3, the different wave forms are displayed as graphics under this parameter. 64 Wave forms are at your choice.

### 4.2.4. Slide <01 - 32>

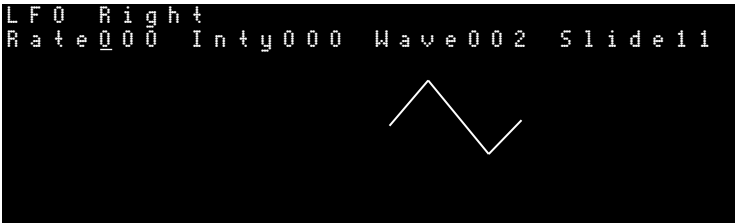
The movement of the cutoff CV by the sequencer slides from one step to another according to this parameter. This allows you to create voice-like continuous filter sweeps.

Slide = 1 makes no effect and Slide = 32 slowly ramps up or down between two steps.

Slide does not affect the LFO modulation.

### 4.3. LFO Right

Because the page LFO 2 is exactly identical with LFO 1 we have renounced a detailed description here. The same values and ranges yield as LFO left except for the only difference - LFO 2 works for the right cutoff.



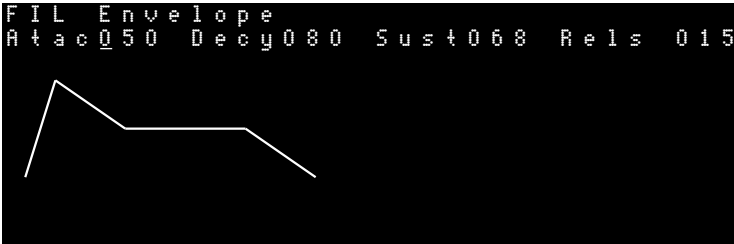
### 4.4. FIL Envelope / VCA Envelope

The moonwind mkII has got a filter and a VCA envelope that can be triggered by a midi note event. The first note opens the envelopes and the last released note releases the envelope on played chords. So you can use the moonwind mkII as a noise synthesizer or synth enhancement and add an analogue filter to your synth if you audio-route it through the moonwind mkII and apply the same midi notes. Pressing ENV again toggles between the FIL and VCA envelope.

You can adjust the typical ADSR parameters Attack, Decay, Sustain and Release with the 4 encoders. The simple graphics follows the values. → Please note that only the display is linear but not the physical signal that modulates the CV. It's classic exponential. For the sake of simplicity it's drawn with straight lines.

### 4.4.1. Filter Envelope

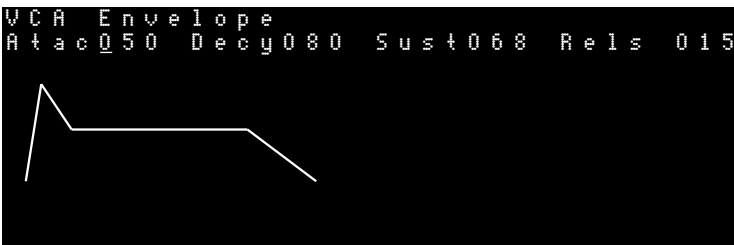
The filter envelope works on both filters, but the modulation amount can be different for each filter.



The envelope amount for each side can be found on page 4.6 VCA / FIL Env Amt.

### 4.4.2. VCA Envelope

The VCA envelope controls the loudness curve of the final VCA (Voltage Controlled Amplifier). Please note that this strongly interacts with the parameter VCAm (VCA Amount) on page 4.6.2 VCAm. If VCAm is zero, only the envelope can open the VCA and the moonwind mkII is silent if no midi notes apply. If VCAm is opened to 127, the VCA envelope has no effect. The values between let the signal get through and add a little VCA loudness curve. Default-wise this value is fully opened, because the moonwind mkII actually works as a standalone filter in the first place.





## 4.5. Filter Routing / Noise

Both stereo filters can be connected with each other in several ways. On this menu page you can also decide how the effects processor and the filter are routed together. Last but not least there is a noise generator that can be switched on and off.

Since the shapes do belong to the filter routings too, they are listed here again.

```

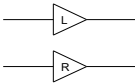
Filter Routing Lp      Hp
Stereo      FilFx NoiseOff Vol1001

```

### 4.5.1. Filter Cross Routing

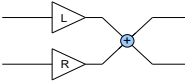
Both filters can be coupled together in order to get further sound possibilities. This is possible by the in/output router which is described more detailed in chapter 3. Functional Description. Following settings are possible:

#### 4.5.1.a) **Stereo** (Default):

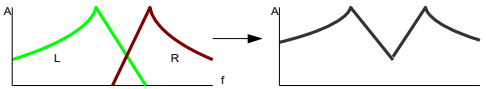


Both filters work independently of each other. The signal paths are separated. This is the default mode.

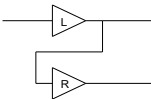
#### 4.5.1.b) **Parallel:**



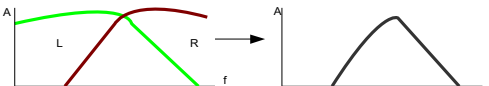
The outputs of both filters are being mixed together 1:1. This mixes and interferes both filter characteristics and produces a unified mono signal. This can be useful e.g. with formant filters or more complex filter shapes (two peaks), or if you need a mono signal (mixer, amp).  
Example:

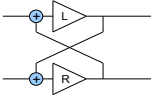


#### 4.5.1.c) **Serial:**



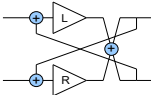
The output of the left filter is being routed into the input of the right filter. The resulting signal coming from the right filter is a serial connection of both filters now. Both filter characteristics get multiplied. From the both 2 pole filters a steeper 4 pole slope arises. A highpass and a lowpass form a bandpass. This requires of course that the passing bands (cutoff) overlap enough, or almost no signal would come out as a result.  
Example:



**4.5.1.d) Feedback:**

The output of the left filter is mixed into the input of the right filter and vice-versa.

The result is an analog cross feedback that can produce strong distortions or screaming feedbacks with certain filter shapes. Especially interesting are alternating filter shapes, e. g. hipass on the left and lowpass on the right side. Then both filters form a positively fed back bandpass which will eagerly start to scream if both cutoffs are coming closer to each other. Be careful:)

**4.5.1.e) Feedback P (Feedback Parallel):**

This setup feeds back crosswise exactly like the single feedback, except for the fact that the outputs are mixed together 1:1 beforehand as with the parallel setting.

This makes the feedback character even stronger because both feedback ways have more level and each filter gets fed back itself and across the neighbour.

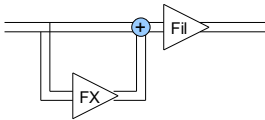
The yields almost the same properties as with Feedback, yet the effect of distortion and screaming is more extreme. Be careful:)

### 4.5.2. Input Routing

The FX processor and the filter inputs can be configured by the input router. With encoder 2 you can choose three different input configurations.

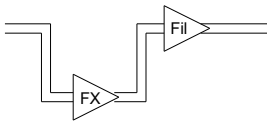
```
Filter Routing Lp Hp
Stereo FilFx NoiseOff Vol1001
```

#### 4.5.2.a) **FilFx** Filter+Fx (Default)



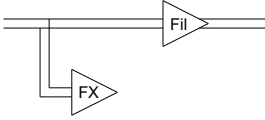
The input signal feeds either the filter as the fx processor. Before the filter input the fx signal is mixed to the direct signal 1:1. All effects run through the filter, but the filters also get the direct input signal.

#### 4.5.2.b) **---Fx** Input Solo Fx



The input signal only feeds the fx processor. The fx output feeds the filter input. This configuration is useful if you want to process a pure effect (e.g. bit crusher, compressor, wave guide) with the filters.

**4.5.2.c) Fil-- Only Filter no Fx**



The input signal only feeds the filter input. The fx output signal is not mixed to the filter input. This interrupts the signal flow from the fx processor. This has the same effect as fx processor mute.

**4.5.3. Noise <Off/000-999/On> <001=white noise>**

At this menu item you can decide if white or metallic noise is fed into the moonwind mk II filter or not. For some experimental sound applications this can be very useful. The moonwind mk II emerges to be a complete sound producer. Noise = 001 produces white noise. Above that the metallic noise pattern is a binary scheme derived from the noise value.

None is the same, and you have a huge variety of metallic noise patterns to explore. Some are a bit tonal, some are hissy and noisy. The higher the number is, the more complex the repetitive noise signal can be.

**4.5.4. Volume <000-127>**

The noise mixed to the main signal flow can be volume controlled here.

#### 4.6. VCA / Fil Env Amt

The VCA page lets you control the gain of the routing input VCA stage and the envelope amount of the final VCA. Also the amounts for the internal ADSR or the external audio driven filter envelope can be adjusted.

```
VCA / FIL Env Amt
Gain 127 VCAm 127 EAL -072 EAR 012
```

##### 4.6.1. Gain

<000 – 127>

The filter input stage has a VCA which controls the gain of the input signal to the filter matrix. Here you can drive the filter a bit.

##### 4.6.2. VCAm

<000 – 127>

This parameter controls the VCA envelope amount in opposition to the opened VCA. If this parameter is set to 127 (default), the VCA envelope has no effect and the VCA is fully opened. This is what you would want if you use the moonwind mkII as a standalone filter bank.

Decreasing this value sports the VCA ADSR envelope described at 4.4.2 VCA Envelope which is triggered via Midi notes. VCAm = 000 gives the control completely to the envelope. This also implies that you cannot hear anything (VCA closed) unless the envelope is triggered via a Midi note.

##### 4.6.3. EAL Envelope Amount Left

<-127 – 127>

Controls the filter envelope amount of the left filter cutoff. Note that this value may also be negative. If so, the envelope works reversely as it is subtracted from the cutoff CV.

This value also controls the amount of the external envelope if XENV = On.

**4.6.4. EAR Envelope Amount Right <-127 – 127>**

Controls the filter envelope amount of the right filter cutoff. Note that this value may also be negative. If so, the envelope works reversely as it is subtracted from the cutoff CV.

This value also controls the amount of the external envelope if XENV = On.

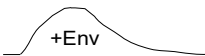
**4.6.5. 2nd page XENV <Off/On>**

```
VCA / FIL Env Amt
Gain127 VCAm127 XENVOn EAR 012
```

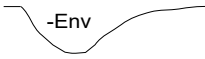
If you press VCA again, you toggle between two pages. On the second page you can set the external envelope to on or off. Then the filter cutoff is also modulated by the incoming audio signal.

The moonwind mk II has an envelope follower which generates a signal that is proportional to the level of the input audio. With this signal the cutoff may be modulated in order to obtain a wah wah effect or other filter modulations.

The signal is mixed together from both stereo inputs and is then generated. But modulation amount can be made for each side individually.



Note that opposing to the rest of parameters in the moonwind mk II the parameter Env has a sign and can be negative too.



This lets you create a filter modulation which closes the filter if a signal appears and which slowly reopens when the tone fades. Env= 0 turns off the envelope modulation.

#### 4.7. Name Edit Page

On this last menu page you can edit the name of the preset and/or initialize a whole preset.

```
Name Edit < > Initialize
A nit Fil Press up
```

##### 4.7.1. Name Edit

The cursor is underneath the letter which is to be edited. You can edit the selected letter with the DATA encoder, one of the three encoders or the Up/Down buttons. With the cursor buttons you can choose other letters. The name of a preset can have 8 letters maximum. It is stored together with the preset.

##### 4.7.2. Initialize Single Preset

If you go beyond the name editing, the cursor is located underneath the entry 'Initialize/Press up'. If you want to reset the whole preset to default, press the button Up or turn the DATA knob to the right. Immediately the whole single edit buffer (not the stored preset!) is initialized to default settings.

The display shows now:

```
Name Edit < > Initialize
Init Fil Done.
```



*Attention:* all previous editings and non-stored preset settings get lost by doing this and cannot be recalled.

## 5. Sequencer

### 5.1. Editing the Sequencer

Press the button SINGLE/SEQ. If the moonwind mk II was in the quick edit screen of single mode before, the display switches to sequencer mode now. The single preset quick screen remains in the display and is light grey backgrounded in the drawing:



The bars of various height represent the values for the cutoff (or another parameter) which are played back at the steps of the sequence.

Besides cutoff, the sequencer can record and play back Q and resonance as well.

#### 5.1.1. Parameter Tracks

There are three stereo parameter tracks:

Cutoff left + right  
 Q left + right  
 Resonance left + right

You can change between the three parameter stereo tracks with the TRACKS buttons CUT, Q and RES. The display changes accordingly and shows the tracks. In order to edit a desired track, you must select the track beforehand.

### 5.1.2. BPM Direct Input <20.0 – 330.0>

Right next to the preset quick screen (light grey background) the speed in BPM (Beats Per Minute) is shown.

With encoder 3 you can edit the BPM in steps of 1 BPM, and with encoder 4 in steps of 1/10 of a beat right from the decimal point.

```

Home Fil000 █ █ Lp █ █ Lp BPM123.4
Revb1 █ █ St █ 000 █ █ 000 01
Seq00 L a S 1 6 B r 0 4
  
```

### 5.1.3. Sequencer Preset Selection <00-31>

Left under the preset quick screen the sequence number is shown by a two-digit number.

```

Seq00 L a S 1 6 B r 0 4
  
```

For selection you can use the Up/Down keys which load them automatically.

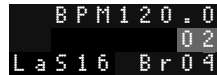
Alternatively, after pressing the **right cursor once** you can select the sequence preset with the DATA knob and load it by clicking on the knob.

Attention: with the cursor in the leftmost position, you load again the underlying Single preset with the DATA knob.

There are 32 memory slots for sequences.

To make the moonwind mk II a music instrument of its own, the actual single preset is linked by each sequence memory and is loaded and stored together. You can select another single preset if you like. So loading a sequence implies loading a preset to single mode too.

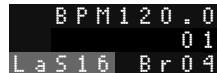
#### 5.1.4. Realtime Display of Bars



The image shows a monochrome LCD display with three lines of text. The top line reads 'BPM120.0'. The middle line shows '02' in a box. The bottom line reads 'LaS16 Br04'.

Whilst the sequencer is running, the number of the currently played bar (measure) is shown above the number of bars (measures). If the sequence has more than one bar, this number counts up to the maximum number of bars and jumps back to '1'. To each bar count the display changes and shows the part of the sequence related to that bar.

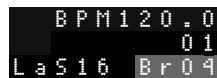
#### 5.1.5. Number of Steps



The image shows a monochrome LCD display with three lines of text. The top line reads 'BPM120.0'. The middle line shows '01' in a box. The bottom line reads 'LaS16 Br04'.

This is the two-digits number of steps played in one bar (measure). A maximum of 32 steps per bar is possible. You can change this number with encoder 1, even if the sequencer is running. The sequence diagram adapts to the altered number of steps.

#### 5.1.6. Number of Bars (Measures)



The image shows a monochrome LCD display with three lines of text. The top line reads 'BPM120.0'. The middle line shows '01' in a box. The bottom line reads 'LaS16 Br04'.

The two-digits number of bars shows how many bars (measures) a sequence has. The maximum number of bars is determined by the length of a bar in steps. The global maximum of steps per sequence

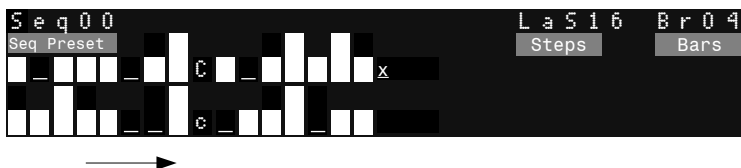
is 64. Therefore with 16 steps you can choose max. 4 bars, with 8 steps maximum 8 bars, with 4 steps max. 16 bars and so forth. The maximum number of bars is calculated and limited automatically.  $\text{Bars}_{\text{max}} = 64/\text{Steps}$ . You can change the number of bars with encoder 2, even if the sequencer is running.

## 5.2. Sequencer Play

Press the Play button. The LED Play starts to flash in the rhythm of the steps.

The running letter resembles the chosen parameter track and changes if you select another track with the three TRACK keys. The letters run through both tracks and show the currently played back position. "C" stands for cutoff, "Q" for Q and "R" for resonance. The filter 'chops' or changes the audio signal in the rhythm of the sequence bargraph. The upper sequence is the left, the lower the right channel, indicated by a small letter.

If Q and resonance are properly programmed on some steps, the sequence will play back sine wave tones of the self-resonant filters.



The parameter tracks change if you select on the three TRACK keys CUT, Q and RES. If you press a TRACK key again, the active side indicated by the  $\times$  right behind the track flips.

### 5.3. Sequencer Record

Whilst the sequencer is running, press the Record button. The LED record lights up.

Activate the track to be recorded, e.g. press CUT (it's active on default).

Now if you move the left cutoff knob, the knob movements get recorded and are displayed as values in the bargraph.

Values get recorded only when you move the knob and if the step just changes.

Please note that the track only records the previously activated parameter track in order to avoid that the screen unintentionally jumps.

The recording also works when you are in Single mode.

Another nice method for real time recording is the touch mode: go to Single Mode and double touch on the touchpad to activate the Touch Mode. Now only press Play. If you now touch and draw filter sweeps with the finger, the filter movements get recorded automatically. Detaching stops recording.

If you want to make recordings undone, press the Undo/Exit key a couple of times until you have the state to which you wanted to return. A maximum of 500 edit steps can be made undone this way.

### 5.4. Sequencer Step Edit

You can also edit single targeted steps. Press the Step button. The display show the entry "Step" above the bargraph.





Now you can select one single step with the Left/Right cursor keys. At the location of the cursor an 'x' appears.

If the sequence has more than one bar, you can select the bar with the Up/Down keys.

Please note that during this step edit mode the bar (measure) does not change automatically during playback but can only be selected by the Up/Down keys.

If you move one of the Cutoff/Q/Res rotary knobs of the currently selected parameter track now, the display jumps to the respective track and changes the parameter only for this particular step.

The selected bar gets slimmer and follows the rotary knob:



Or edit the bargraph intuitively with the touchpad:  
see 2.2.3 Sequence Step editing via Touchpad

Press the Step button another time to leave the step edit mode again. The display returns to the normal bargraph display and the measures are being played back automatically again.

### 5.5. Sequence Preset Store

If you have recorded a sequence, don't forget to store it. Make sure you are in sequence mode, press the Store button, and the display says:

```

Store Sequence?
Yes=Click/Enter      No=Undo
Seq00
Choose destination to overwrite

```

Exactly like in the single mode you can select another sequence preset with the DATA knob to which you want to store this sequence to. A click on the DATA knob or pressing the Enter (Knob Lock) button performs the storing. You can cancel with Undo/Exit.

## 5.6. Sequencer Setup

If you go right with the cursor and step beyond the parameter tracks, you reach the first menu page of the sequencer parameters.

```

Sequencer Setup
LaStp16 Bars01 CkDv02

```

You can change the value above the cursor with the DATA encoder. Also you can use encoders 1-4 which automatically address one of the three values in the lower row.

### 5.6.1. LaStp Last Step <01 - 16>

Like in the sequencer display you can change the number of steps from 1-32.

**5.6.2. Bars****<01 - 64/Steps>**

Like in the sequencer display you can change the number of bars here. The maximum number of bars depends of the number of steps per bar and calculates as follows:

$$\text{Bars}_{\text{max}} = 64/\text{Steps}.$$

**5.6.3. CkDv Clock Divider****<1 – 64>**

Default = 2.

The sequencer has a clock divider which divides the internal clock of the step sequencer once more. The default setting is 2 which corresponds to a resolution of  $1/16^{\text{th}}$  per step at a given BPM (Beats Per Minute, i. e. quarter beats).

The smallest division ratio is 1 which corresponds to  $1/32^{\text{th}}$ . This was made in order to stay compatible with the midi clock of 24ppq (pulses per quarter).

This function can be useful if you create sequences that work with other note lengths than  $1/16^{\text{th}}$ . If you synchronize the moonwind mk II to another device and the filter steps should e.g. only change in a quarter measure, set CkDv to 8. Triplets and other uneven divider clock division ratios are therefore also possible of course.

This is a little overview of some important clock division ratios:

Clock Divider	Note Length per Step
1	$1/32^{\text{th}}$
2	$1/16^{\text{th}}$
3	$1/8^{\text{th}}$ -triplets
4	$1/8^{\text{th}}$
6	$1/4$ -triplets ( $\frac{3}{4}$ Ms.)



---

8	1/4
12	1/2-triplets
16	1/2
32	1/1 (1 Measure)

### 5.7. Initialize Sequence

If you go on right with the cursor, the following menu page opens:

```
Initialize Sequence  
Press or scroll up
```

If you now press the Up button or turn the DATA knob right, the sequence edit buffer gets loaded with the default settings.

```
Initialize Sequence  
Initialization done
```

*Attention:* all previous editings and non-stored sequence preset settings get lost by doing this and cannot be recalled. This does not rule for the parallel editings of the single mode, as this has its own buffer and is only linked with the sequence.

The stored sequence memory will not be affected by the initialization though.

## 6. CV Control

The moonwind mkII sports 11 CV-compatible jacks. CV means Control Voltage and is a well-known standard throughout the eurorack modular standard. All 3.5mm eurorack CV jacks process or output 0-5 Volts. We have two CV outputs, 3 fixed CV inputs and 6 assignable CV inputs.

### 6.1. CV Outputs

CV OUT left and right of the internal cutoff CV. If you want to use the internal cutoff sequence to control an external device (for instance a VCO or another filter), connect it here. The CV follows all the internal filter modulations including sequencer, FIL Envelope and LFOs.



### 6.2. CV Inputs

Three CV IN jacks are available which have a fixed wiring and do a direct analogue control without amount.

#### 6.2.1. CUT L CV IN

CUT L = Left cutoff

Adds the CV to the internal cutoff of the left filter. So you can modulate the modulations if you will. This external CV does not affect

the internal CV processing and works only on the hardware filter output. The CUT L in can be operated with negative CVs too, ranging from -5V to +5V.

### 6.2.2. CUT R CV IN

CUT R = Right cutoff

Adds the CV to the internal cutoff of the right filter. Works the same like CUT L above.

### 6.2.3. VCA CV IN

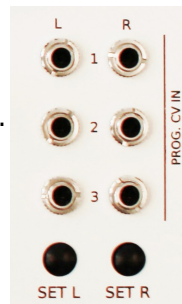
VCA = final VCA (Voltage Controlled Amplifier)

This jack has a switching function: unplugged the VCA is fully open and under control of the moonwind mkII OS, and as soon the plug is inserted the VCA only follows the applied CV. 0 Volt CV = VCA closed and no signal comes out. 5 Volt CV = VCA fully open and signal passes through.

## 6.3. Programmable CV IN

Six CV input jacks are arranged in 2 columns. The L (left) column modulates the left filter parameters and vice-versa for the R (right) column. Besides the filter-related parameters there are more parameters that can be routed from both sides.

You have to press SET L or SET R to program the assignments.



### 6.3.1. CV Input Routing Left <CV1-CV3, 0..127>

Pressing SET L opens the CV input routing menu. On the first page CV1 and CV2 parameter can be edited with encoder 1 and 3, the corresponding amount with encoder 2 and 4. Pressing SET L another time lets you edit CV2 and CV3.

```

CV Input Routing
CV1 Cutoff 023 CV4 FX Par1 023
CV2 FX Par2 127 CV5 CutSlid 095
CV3 LFO Wav 054 CV6 Resonance 089

```



Left side parameters

### 6.3.2. CV Input Routing Right <CV4-CV6, 0..127>

Pressing SET R opens the CV input routing menu. On the first page CV4 and CV5 parameter can be edited with encoder 1 and 3, the corresponding amount with encoder 2 and 4.

Pressing SET R another time lets you edit CV5 and CV6.

```

CV Input Routing
CV1 Cutoff 023 CV4 FX Par3 121
CV2 FX Par2 127 CV5 CutSlid 095
CV3 LFO Wav 054 CV6 Resonance 089

```



Right side parameters

### 6.3.3. CV Input Routing Parameters

For each CV input you have a parameter that it routes to and an amount that goes from 0..127. If the amount is > 0 and a CV is applied to that jack, a bar appears and the number of the CV jack. The height of the bar symbolizes the CV voltage multiplied with the amount, i.e. the resulting modulation depth of the destination parameter.

```

CV Input Routing
                1 3
CV1 Cutoff    0 2 3   CV4 EX Par3  1 2 1
CV2 FX Par2   1 2 7   CV5 CutSlid  0 9 5
CV3 LFO Wav   0 5 4   CV6 Resonce  0 8 9

```

In the table below are the possible CV destinations. They apply for both sides. The rightmost column shows if the parameter applies only for C1-CV3 (Left) or CV4-CV6 (Right), the other parameters work globally. The third column shows the resulting range in the selected parameter.

CV Parameter	Abbreviation	CV amount result	Applies
Cutoff	Cutoff	0..511	L/R
Q	Q	0..511	L/R
Resonance	Resonce	0..511	L/R
Filter Mode	Fil Mde	0..3	L/R
LFO Rate	LFO Rat	0..127	L/R
LFO Intensity	LFO Int	0..127	L/R
LFO Waveform	LFO Wav	0..63	L/R
FX Parameter 1	FX Par1	0..127	Global
FX Parameter 2	FX Par2	0..127	Global
FX Parameter 3	FX Par3	0..127	Global
FX Feedback	FXFeedb	0..127	Global
FX Algorithm	FX ALG	0..15	Global
Noise Volume	NoisVol	0..127	Global
Metallic Noise	MetalNz	0..127	Global
Cutoff Slide	CutSlid	0..31	Global

VCA	VCA	0..511	Global
-----	-----	--------	--------

→ Please note that you can route multiple CVs on one parameter, e.g. CV1 and CV2 on Cutoff (L). The CVs and their individual amounts get added on this particular parameter. This applies on the L/R-sided parameters only for parameters from one side (i.e. only groups CV1-CV3 (L) or CV4-CV6 (R) can add).

For global parameters they can be taken from any side, e.g. CV2 (L) and CV6 (R) can both control the VCA.

## 7. Midi Parameters

Press the MIDI button. Now you are in the Midi Setup menu and able to navigate to the various values and change them with the DATA knob or the Up/Down buttons.

```
Midi Setup
RxCh 01 TxCh 01 ClkSync Off TxClk Off
```

### 7.1. Receive Channel RxCh < 001 - 016 >

This is the midi channel on which the moonwind mk II receives. Received are note on/off, program change, controller (CC).

### 7.2. Transmit Channel TxCh < 001 - 016 >

This is the midi channel on which the moonwind mk II transmits data.

Transmitted are note on/off, program change, controller (CC).

**7.3. Clock Sync ClkSync < On / Off >**

<Off> The moonwind mk II only runs with the internal clock. Received midi clock is ignored.

<On> The moonwind mk II sequencer receives midi clock from an external sequencer. In this case the moonwind mk II sequencer is remotely started and stopped if it receives the corresponding realtime midi commands – e.g. from a computer software or a drum machine like the Alpha Base.

With running midi clock the moonwind mk II sequencer can be manually stopped and restarted though. It then runs with an offset depending on where it was restarted.

**7.4. Transmit Clock TxClk <On / Off>**

<Off> The moonwind mk II does not send midi clock.

<On> The moonwind mk II transmits midi clock in order to synchronize an external sequencer (e.g. a drum machine as the XBASE 888).

The moonwind mk II sequencer sends the real time midi commands 'Midi Start' and 'Midi Stop' if the internal sequencer is started or stopped. Clock is only being sent if the sequencer runs.

**7.5. SysEx Dump**

On this menu page you can dump out presets and sequences as SysEx bulk dump to store them on other Midi devices as e.g. computers or file players.

```
SysEx Dump
SingGo   SgAllGo   SeqGo    RevOff
```

There are three different kinds of bulk dumps: Single, Single All und Sequence.

With Single only one single preset is being sent. The preset number is stored within the SysEx dump.

With Single All all 256 single preset are being sent consecutively.

With Sequence only the current sequence of 32 sequence presets is being sent.

### 7.5.1. SysEx Dump Transmission

In general, only single presets are being sent and received. You can rearrange the order of presets and load them back if you use a SysEx editor and edit the preset number (see Midi Implementation) within the bulk dump.

Go with the cursor to the desired dump function. Now start recording on the attached Midi device and press the Up or the Enter key on the moonwind mk II.

```
SysEx Dump
SingGo   SgAllBSY SeqGo   RcvOff
```

The unit now starts to transmit the SysEx dump. During that process 'BSY' is shown at the cursor position. When the bulk dump has finished, the display shows 'FIN' at the cursor position.

The receiving device should be able to show the dump now.

```
SysEx Dump
SingGo   SgAllFIN SeqGo   RcvOff
```

### 7.5.2. SysEx Dump Reception

Go with the cursor to the last position of this Midi menu and switch Rcv to On by turning the DATA encoder right or pressing the Up



button.

```
SysEx Dump
SingGo   SqAllGo   SeqGo    RevOn
```

Now the moonwind mk II is in reception mode for the different bulk dumps that are accepted in the moonwind mk II.

Play back the bulk dump on your computer, e.g. with our provided SysExDumper program (available for free at [www.jomox.de](http://www.jomox.de)).

The moonwind mk II shows the reception of a correct bulk dump in the display and stores the preset or sequence to the location which is described in the bulk dump.

The moonwind mk II response is:

„Single Preset received' or „Sequence Preset received'.

Please note that in order to store a preset to cpu flash memory, the moonwind mk II needs some time to turn off any cpu interrupts and wait the time for the internal flash cell storing. During that time no midi can be received. This implies that between the end of the sysex sequence (0xF7) and the next midi command there must be a pause of at least 0.3 seconds, or midi data gets lost.

With SysEx Librarian, just set the transmit buffer size to 256 and set a delay of 500ms between the packages.

### 7.5.3. OS SysEx Dump Reception

The OS sysex dump Midi file as it is provided on the jomox website can be loaded into our SysEx Dumper or Sysex Librarian, which is a very good tool for handling Midi dumps on a Mac. With SysEx Librarian, just set the transmit buffer size to 256 and set a delay of 500ms between the packages.

There is *nothing* you have to adjust on the moonwind mkII. Just turn it off and on, wait for the booting process to be finished and then send the sysex dump off. The unit should show and count up the blocks and checksums and after reception of all blocks perform the update by flashing the LEDs and make a reset with the new OS.

→ Please note that the preset memory is needed for the OS block transmission. After a fresh OS update, the unit *initializes* all presets and sequences!!!

→ Important - so it is strongly recommended to backup all user presets and sequences beforehand in order to reload them after the OS update!!!

### **7.6. Midi Control of the moonwind mk II**

#### **7.6.1. Midi Notes**

The moonwind mk II is processing midi note commands. The notes control the cutoff of both filters. The note number is scaled in such a way that with self-resonating filters roughly musical semitones are met – however the filter modes are never as precise as the VCO of a synth. The pitch varies with Q and resonance amount and the logarithmic scaling is not perfect too. Who expects here a synthesizer with perfect tuning will be disappointed - this is an analogue filter bank and not a synth.

If the moonwind mk II receives midi data on its own midi channel, the MIDI LED close to the Midi In jack lights up shortly.

During the sequence is in recording mode, the filter cutoffs can be recorded by midi notes as well.

The running moonwind mk II sequencer sends the cutoff steps as midi notes via Midi Out too.

### 7.6.2. Parameter Control by Midi CC

All sound parameters can be controlled by midi continuous controllers (CCs). This way the moonwind mk II can be completely remotely controlled by a midi sequencer.

The controller numbers and ranges you can find in the Midi Implementation at the end of this operating manual.

If the moonwind mk II is in single mode's quick edit screen, the received controllers are displayed as moving bars.

During the sequence is in recording mode, cutoff, Q and resonance can be recorded by CC controllers as well.

## 8. Midi Implementation

### 8.1. Sound Parameter CC

Parameter	Controller No.	Range
Cutoff Left MSB*	16	0..3 MSB
Cutoff Left LSB	17	0..127
Cutoff Right MSB*	18	0..3 MSB
Cutoff Right LSB	19	0..127
Cutoff Left whole range	14	0..127
Cutoff Right whole range	15	0..127
Q Left	22	0..127
Resonance Left	23	0..127
Q Right	24	0..127
Resonance Right	25	0..127
LFO Left Rate	100	0..127
LFO Left Intsy	101	0..127
LFO Left Wave	102	0..8
LFO Right Rate	103	0..127
LFO Right Intsy	104	0..127
LFO Right Wave	105	0..8
ENV Left +Amt	106	0..127
ENV Left -Amt	107	0..127
ENV Right +Amt	108	0..127
ENV Right -Amt	109	0..127
ENV Left Offset 64 +/-	20	0..127

ENV Right Offset 64 +/-	21	0..127
FX Program select	110	0..15
FX Parameter 1	111	0..127
FX Parameter 2	112	0..127
FX Parameter 3	113	0..127
FX Feedback	114	0..127
Shape Left	115	0..3
Shape Right	116	0..3
Filter Routing	117	0..4
Input Routing	118	0..2
Noise On/Off	119	0/64

\* In the moonwind mk II the fine resolution controllers for cutoff can be transmitted by 2 MSB/LSB controllers. Most sequencer programs are able to do this; you only have to define these CCs as 14 bit controllers with MSB and LSB and edit the respective values. The other CCs only use the regular CC resolution of 127 steps. For some parameters this is less than the internal range or equal but it is absolutely sufficient regarding the control range.

## 8.2. Note Commands

Parameter	Note Number
Cutoff Left	0..127
Cutoff Right	0..127

## 8.3. System Exclusive Data

With system exclusive data only the hex dumps of the currently chosen preset are managed as the sound control works only with CC controllers.

The system exclusive command line for a single preset looks as follows:

Single preset dump:

\$F0(SysEx Begin), \$31(JoMoX Code), \$3F(Command Bulk Dump), \$78(Product Code), \$01(Type Code), \$XX(Preset MSB), \$XX(Preset LSB),  
XX(Data0),XX(Data1),..., \$F7(End of SysEx)

28x 14-Bit Word (0..16384) + 8x char byte names per preset are transmitted. These are split up in MSB (b13..b7) in Data0 and LSB (b6..b0) in Data1.

Sequence dump:

\$F0(SysEx Begin), \$31(JoMoX Code), \$3F(Command Bulk Dump), \$78(Product Code), \$03(Type Code), \$XX(Preset MSB), \$XX(Preset LSB), XX(Data0),XX(Data1),..., \$F7(End of SysEx)

419x 14-Bit Word (0..16384) data per preset are transmitted.  
These are split up in MSB (b13..b7) in data0 and LSB (b6..b0) in data1.

Finally...

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14059 Berlin / Germany  
E-Mail [mail@jomox.de](mailto:mail@jomox.de)  
<http://www.jomox.de>

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