STEREOPING

SYNTH PROGRAMMER
FOR WALDORF MICROWAVE

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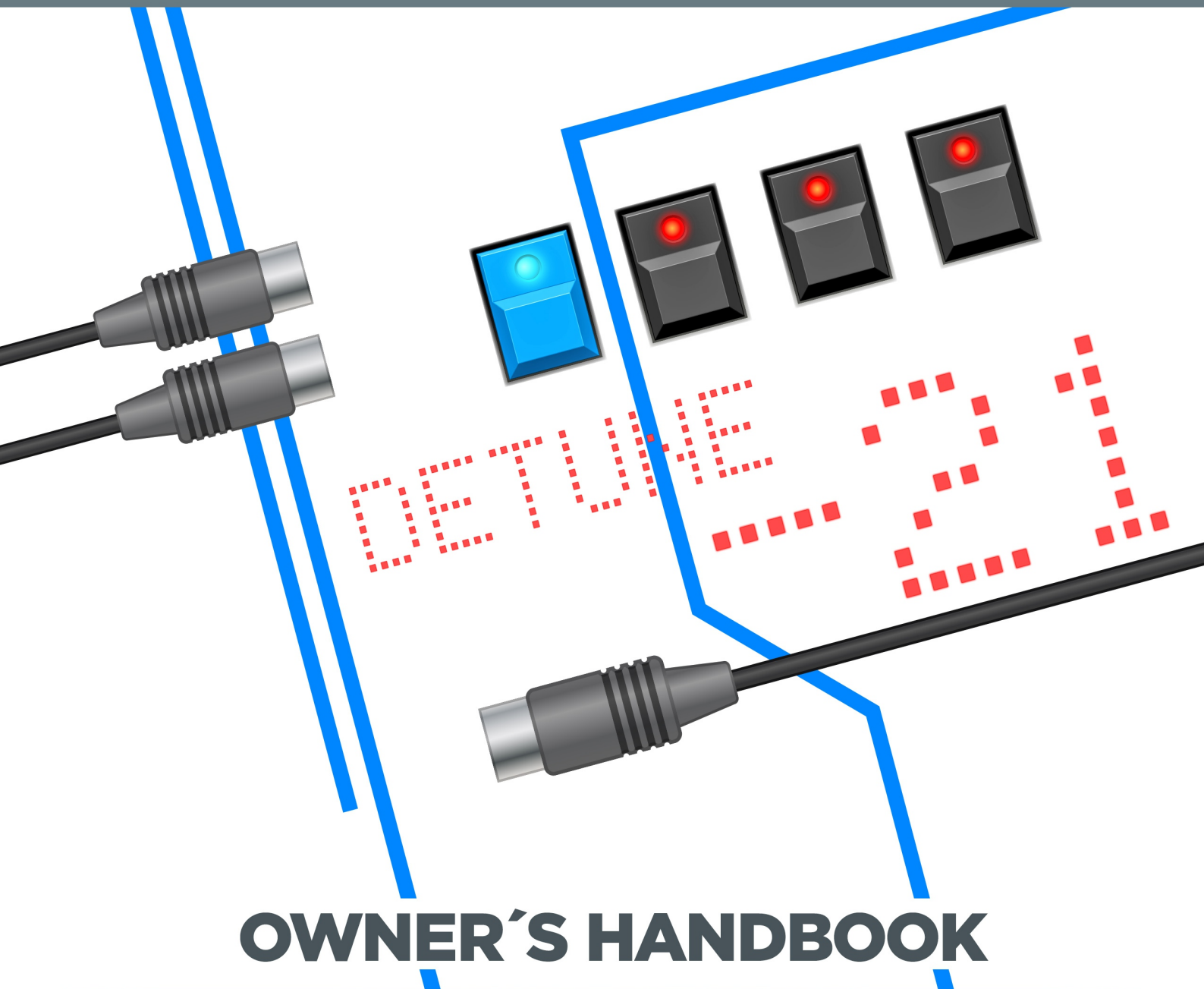
OWNER´S HANDBOOK

General features of the Synth Programmer

The Stereoping Programmer offers 45 control dials, 4 endless encoders and a 16x2 characters OLED display to for convenient and intuitive sound shaping of your Waldorf Microwave. At the moment you turn a knob, the programmer sends the suitable command into your synthesizer which immediately changes it's sound.

- Highly specialized hardware midicontroller for Waldorf Microwave
- Optional CC-mode to send customizable Control Change commands (VSTi remoting)
- Convertable from 19" rackmount to desktop usage – and back
- 45 dials, 4 encoders, 2x16 character OLED display
- Firmwareupdate over SysEx-Dump
- Current draw 100 mA
- Weight 2.650g
- Size without rackmount brackets, incl. knobs and rubber feet ca. 430 x 130 x 85 mm

Special features of the edition for Waldorf Microwave

- Visual design suitable to the Microwave
- simplified and quick access to the modulation possibilities
- Performance orientiented Multi Edit Mode
- Program name can be typed on the keyboard, the Mod Wheel shifts cursor
- 'Midi CC' to 'SysEx'-translator to automate your Microwave with ordinary CC-messages
- Patch-Randomizer
- 6 voice Chord Memory with 6 saveable Chord-Slots
- Editing of Userwavetables and Userwaves by parametrized randomization or knob-drawing

Technical handling

The Synth Programmer was built to be used in a comfortable music studio environement. You can operate it under free skies of course. But please keep in mind, it uses electricity for proper operation and therefore is quite sensitive to water, drinks or other fluids. Excessive heat or exposition to sunlight is also not advised.

Your programmer has got a neat OLED display. The OLED technology is quite young. As none really can guarantee how long it will keep it's perfect function after displaying the same content for hours or even days, we integrated a screensaver to mutiply the lifetime of the display. If the programmer is not touched for longer than 23 minutes it will fall into screensaver mode and switch the OLED display off – the LEDs in the buttons above the display will start to blink slowly. The programmer awakes immediately if a knob is moved or notes are being sent through it.

Some 'No-need-to-worry' information: the datasheet of the display claims 50.000 hours until it has lost 50 % of it's brightness. If you would use your programmer 5 hours on each day of the year this will take over 27 years – even with deactivated screensaver.

1. Connections and integration into your setup

Power supply

You can use any ordinary 9 Volt <u>DC</u> powersupply to operate your controller. The connector should have **Plus on it's center pin** and Ground - sometime labeled as 'Minus' - on the outside. The Synth Programmer has a protection diode for not doing any harm if the polarity of the power supply is wrong, it just won't work. The current of the PSU should at least offer about 200 mA (=0.2 A). If it supplies more current (e.g. 500mA) this is fine and won't cause problems.

Please do NEVER use a powersupply which has an 'AC'-Output. AC means alternate current. AC-PSUs have the letter combination AC/AC or a sinewave symbol besides the word 'output'.

Midi connections

The Stereoping Programmer has 3 Midi jacks which should be cabled like that:
- **MIDI 1 - OUT**   -> MIDI IN of your Microwave
- **MIDI 1 - IN**   -> MIDI OUT of the Microwave
- **MIDI 2 - IN**   -> MIDI OUT of your Midi interface/sequencer/keyboards
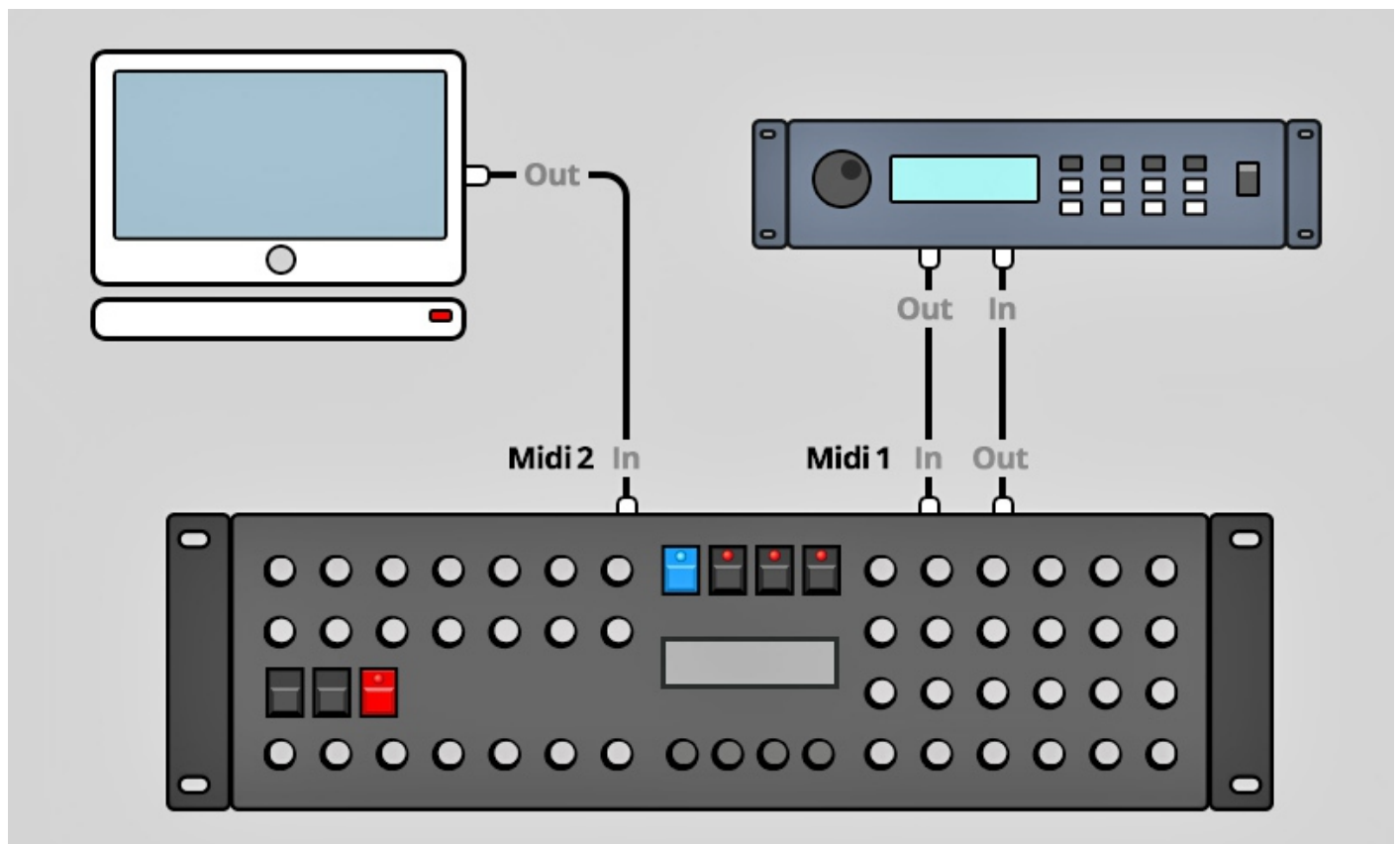
Both jacks of Midi 1 connect the Programmer with your synth in a loop. This seems unconventional but it is necessary: the Synth Programmer must hold the same patch data in it's memory as your Microwave. This data exchange runs through **MIDI 1 IN / OUT**.

A Synthesizer would not make any sense if it could not receive midinotes, modulation wheel changes etc. These are coming into the programmer over the **MIDI 2 IN** jack from your keyboard/DAW/sequencer. They will be merged with your parameter changes and sent together to the synthesizer.

2. Settings and workflow

Settings on the Microwave

- MIDI Param - Midi Chan. - sould be set to the same midichannel as the Synth Programmer
- Midi Param - Prog Change → 'on'
- Midi Param - PC Maps → 'off'
- Device Param. - Dev. Number → 0

Settings on the Synth Programmer

- PREFS 1/4 MIDICHANNEL should be set on the same midichannel as the Microwave
- PREFS 2/4 DeviceNr should be set to the same Device Number as the Microwave

Synchronisation

Directly after powerup the Programmer is 'empty', it should be feeded with the parameter data of the currently selected Microwave program. As the Programmer has no idea about all the original values of the patch, the display shows questionmarks instead. In addition some features like Compare or the Modulations Mode are locked.

To get the Microwave and the Programmer in sync:
- select PATCH to enter Patch Mode
- use the endless encoders to dial in the program number currently active in the Microwave (Encoder 2 sets bank A,B,C,D - Encoder 3 changes numbers)
- select YES

… more on the Patch mode in *Chapter 7. Patch Mode*

Saving

Saving your program must be accomplished on the Microwave itself, the Programmer does not offer any possibility to save your patch or call the Microwave to do so.

By the way, the Microwave unfortunately does not display realtime midi parameter updates on it's display. This is not an issue of the Synth Programmer :-)

3. Overview

Let's take a quick look on the user interface first. Details to the different modes and buttons are following behind – if necessary at all.

The 45 turn dials are – you guess it already – for direct changing of the parameters of the Microwave.

The 4 endless encoders are for finetuning values on features tweaked best in fine steps and with a display. There are 4 lines, each starting on an encoder and ending in a corner of the display. This should help finding the right encoder of the parameter you want to change.

The 7 buttons change main modes, allow program comparison or control the Chord Memory. The 4 buttons above the display sometimes have a secondary function:

Function keys

In modes like COMPARE, CHORD SETUP, PATCH & RANDOMIZER the 4 buttons above the display act as special keys to execute different menu functions. A button acting as function key has it's LED shining and a command printed in capitals in the 1st line of the display.

Example: hold PATCH down for 2 seconds to enter the RANDOMIZER. The LEDs of the buttons MOD, MULTI and PATCH will light up to show they are function keys, below the display sais DO+M, DO and XIT. On pressing PATCH again, XIT is executed and you are leaving Randomizer. By pressing MULTI (='DO') the Programmer would send a random patch to the Microwave.

PLAY Mode

After powerup or if no other mode is selected you are directly in **PLAY MODE**. This is the main mode you will spend most time in: here you change the parameters of the Microwave with the knobs. Details to PLAY Mode follow in *Chapter 5. Play Mode*

Button 'PREFS'

Press **PREFS** to enter the Programmer's menu with it's preferences. Any changes you make here will automatically be saved on exiting. The settings are also preserved after powering the Programmer down of course. Holding the PREFS button for longer than 2 secs. activates **MIDI BYPASS MODE**. Details on all PREFS parameters and the MIDI BYPASS MODE will follow in Chapter 8. PREFS and MIDI BYPASS MODE

Button 'COMPARE'

Use **COMPARE** to switch between your *original* patch inside the Microwave and your *edited* patch. As long as compare is active and you hear the original patch, the turn dials are locked.

Line 2 of the display shows 'Original Patch' to make clear you actually are listening to the original patch as it was coming out of the Microwave's memory. Line 1 displays the command 'KEEP?' and button No. 4. above the display is bright. If you desire to keep this original patch just press this function key. Your edited patch will be replaced by the original patch and the Programmer jumps back into PLAY mode. Or you simply press COMPARE again to revert to your edited patch.

Button 'CHORD'

This enables/disables **CHORD MEMORY**. Holding the button for 2 seconds umps into the CHORD SETUP menu. All infos and details about this in *Chapter 10. Chord Memory.*

Button 'MOD'

In **MODULATION MODE** you will be offered a comfy access to all modulations slots of the Microwave. Press MOD again to leave Mod Mode. More on this *Chapter 5. Modulation Mode*

Button 'MULTI'

Pressing **MULTI** jumps into **MULTI EDIT MODE**. This mode makes things easier setting up the Microwaves Multi Mode. The pots to the right can be assigned any multi parameter which can then be tweaked with pots for the first 6 Multi instruments. The pots on the left side allow to send any Control Change message numbers which can lead to powerful modulation sessions when using prepared patches. Press MULTI again to leave this mode. Any details about the Mutli mode in *Chapter 6. Multi Mode*

Button 'PEEK'

Press **PEEK** to toggle **PEEK** mode on and off. While PEEK is active any knob fiddling brings the parameter to display without changing the value or sending anything to the Microwave.

Hint: If you just need to PEEK one or two parameters only and want to avoid clicking ON/OFF, ON/OFF, ON/OFF there is a shortcut: keep PEEK pressed. If you hold the PEEK button longer than ½ a second on activating, it will be immediately disabled again as soon as you lift it again. This saves half of the 'Clicks'. As long as PEEK is down you can peek as many parameters as you like of course.

Note: PEEK is not available in Modulation mode as the values can only be changed by encoders there.

Button 'PATCH'

This leads to the **PATCH**-Mode, the place to select patches on your Microwave. As soon as you select a program here, the Synth Programmer will cause the Microwave to call this program and send the parameter values to the Programmer for both to be in sync. More on this in *Chapter 7. Patch Mode*

By holding PATCH for 2 seconds you enter the Programmers Randomizer. Any deatils on this in *Chapter 9. Randomizer*

4.   PLAY Mode

This is the active mode right after powerup. On turning a dial you change the parameter inside the Microwave while the Programmer's display shows all the details. It provides 4 (or 5) informations:

- to the upper left you see the parameter group (e.g. OSC1, WAV2, LFO1 etc.)
- right behind follows the parameter name (e.g. Waveform)
- lower left in brackets is the original value of this parameter as it is (still) saved in the Microwave. As long as you did not request any patch from the Microwave the Programmer displays questionmarks. *Exception: if you are in Randomizer befinden, you will see the current value of the Random-Patch, NOT the original value of the Microwave program*
- Lower right you find the new value changing quickly with your moving of the turn dial. It can be finetuned with encoder 3 (Why encoder 3? Because the line printed on the faceplate leads from encoder 3 to the lower right corner of the display)

If the Programmer's PREFS parameter *MultInstSwap* is set to ON, you will be provided another information in the upper right corner. You will see a tiny number between 1 and 6. It stands for the currently active Multi Instrument which will be addressed from edits in Play Mode. If the instrument does not fit to the last requested program, questionmarks will be displayed for the original values. More information on that in the Chapter for Multi Mode. If the Microwave is used in SINGLE Mode you can safely ignore this little number

The three different Volumes of the Microwave

The knob in the upper right corner labeled VOLUME addresses the Microwave Program Parameter „Sound Vol", you find it in the Microwave menu under „Volume/Filter". It determines the Volume of the current program and is saved together with it.

In addition the Microwave supplies a global „Master Volume" (to be found in „Volume/Tune") which will NOT be addressed by the Programmer. It sets the overall volume for the whole synth. If it is set to 0 you will not hear anything at all, no matter which value Program Volume has. „Master Volume" is preserved, even when switching the Microwave off.

Lastly the Microwave also listenes to Control Change #7, aka 'Midi Volume'. This also is independent from Master Volume and Sound Volume. If your Synth keeps quiet although Master AND Program Volume are up, please check if your DAW or Keyboard accidently sent CC#7 with value 0 into your Microwave. Midi Volume is reset to 127 (fully up) when powering up the Microwave, changes of Midi Volume will not saved anywhere in the Microwave.

Parameter groups

A complete Program of the Waldorf Microwave contains 165 parameters, your Programmer just offers 45 turn dialy. You ask yourself 'Where is the rest?' The rarely used parameter are grouped by function and spread on sub pages. They will be selected and changed with the encoders. If a parameter group offers sub parameters is indicated by the groupname printed in CAPITALS. Example: the parameter group „Vcf" is printed normal, there are no additional parameters here. Whereas „VOL Env Amnt" is part of the group „VOL" where you find the sub parameter „Keytrack".

Following are all parameter groups with the associated, 'hidden' parameters in brackets:
- OSC1 *(Bend Range, Pitch Mode)*
- WAVE1 *(Wavetable, Env Velocity, Keytrack, Wave Mode)*
- OSC2 *(Bend Range, Pitch Mode)*
- *WAVE2 (Wavetable, Env Velocity, Keytrack, Wave Mode)*
- GLIDE *(Mode, Type, Temperment, Patch Name)*
- LFO1 *(Humanize, Sync, Delay, Attack, Decay)*

- LFO2 *(Shape, Humanize, Phase Shift)*
- VOL *(Keytrack)*
- WAVE ENV *(Time 7/8, Level 7/8, Key Off Point, Loop Start, Loop Mode)*

Now how do you select and change these sub parameters?
- Encoder 1 enters (on the 1st tick) or scrolls (with the following ticks) through the different parameter groups (e.g. from OSC1 to WAVE1 to OSC2 etc.)
- Encoder 2 changes the selected parameter. A prefix in form of „3/5" signalizes you are on parameter 3 of a total of 5.
- Encoder 3 changes value

As soon as you move a pot again, the Programmer jumps out of the submenu. The lastly selected page of a parameter group is remembered btw.: if you were in WAVE1 on page 3/4 'Keytrack', you will find yourself there again when entering WAVE1 sub menu later.
For parameters in submenus you will directly see the current value , there is no original value in brackets

Wavetable selection

You might ask yourself why the essential parameter *Wavetable* is 'hidden' in WAVE1 and WAVE2 submenu? Well, Wavetable is best selected by encoder, a pot would not make much fun. And it is far better protected against accidently changes.

Now as we all know, most of the Microwave users crank as mad on the STARTWAVE parameter after changing WAVETABLE to check out the sound of the available waves and get a feeling for the wavetable's sound. For not being forced to head back into the submenu parameter WAVETABLE after touching STARTWAVE we programmed an exception here: it is no problem at all to crank on STARTWAVE as mad while being on the submenu parameter for WAVETABLE. The Programmer stays on WAVETABLE while both STARTWAVE pots can be changed. You can use both in conjunction.

Wave Envelope

Wave Envelope is special. It offers 8 Levels and 8 Times. To much to be layed out completely with dedicated pots. With the lower right row of 6 pots you can change the first 6 Times/Levels, step 7 and 8 are (unfortunately) hidden in the submenu. After touching one of the envelope's pots, you can toggle between Levels and Times with the 4th encoder labeled 'L/T'.

Program Name

Program Name is also special. Waldorf hided it under „Pan/Glide". This is where you also find it on the Programmer: page 4/4 in GLIDE submenu. The 2nd display line shows the complete program name. Encoder 3 selects letter position. Encoder 4 changes letter. You can have it easier, please read on …

We implemented something funny we got to know on the Kawai SX-210: selecting letters with the keyboard! Being on the PROGRAM NAME page play some notes on your keyboard, each key selects another letter/number/sign. Heavy press: CAPITAL LETTER; mellow keypress: normal letter. One more: you can use the Modulation Wheel to shift the cursor :-)

5.   Userwavetable and Userwave editing

Firmware version 1.61 introduced User Wavetable editing.

First a little reminder about the Microwave's structure:
- Wavetables R01-R32 and R57-R88 are Preset Wavetables which can not be edited
- Wavetables I33-I44 are User Wavetables (1-12) stored in the Microwave itself
- Wavetables C45-C56 are User Wavetables (13-24) stored on a RAM Card
- Waves 0-245 and 368-505 are Preset Waves which can not be edited
- Waves 246-306 are User Waves stored in the Microwave itself
- Waves 307-367 are User Waves stored on a RAM Card

Wavetable Editor specs

- Waves can be changes and randomized on held notes... funny :-)

- The Wavetable is dumped automatically after no encoder movement is detected for about ½ second. This avoids sending masses of redundant data while choosing wavenumbers.

- Randomizing Waves and Tables is one way, there is no Undo

- The Editor does not offer any Backup/Restore of Tables/Waves. This be done with the Microwaves functions.

Entering the Wavetable Editor

The entrance to the editor is presented when selecting the wavetable with the 4th encoder. In the upper right corner of the display „ED" appears and the button's LED above it is highlighted, indicating it accepts to be pressed.

As soon as you press the ED button, the currently selected wavetable is requested into the Programmer and you are in the Wavetable Editor.

Examining Preset Wavetables

The MW only allows editing of <u>User</u> Wavetables but it is still possible to request <u>Preset</u> Wavetables (not R29-R32) and have a look how many and which Waves it uses.

After entering the Editor while having selected a Preset Wavetable, the editor's menu looks like the picture to the right.
„Pos:" shows the currently selected wave position inside the Wavetable, „Prset:" indicated the used Wave at this position. If you see the letters „ - „ instead of a wavenumber, this means: the current wavetable postion is empty.

You have the following options:
- Encoder 1 one increases/decreased the position
- Encoder 2 jumps to the next/previous position holding a wave. Remember: most Wavetable-positions are empty. Travelling empty space inside the Wavetable results in the interpolation of the waves to the beginning and the end of the travelled space.
- Encoder 3 & 4 are inactive
- Button 1 enters GRAPHICS display (explained later)
- Button 4 exits the wavetable editor

Graphics display

The GFX mode offers a graphical representation of the currently selected Wavetable – 60 wavepositions from left to right. There are no editing or animated features here. Vertical lines indicate positions inside the Wavetable holding Waves. The rest is empty space. Depending on the selected Wavetable this will look quit different and gives a quick impression about the density of the wavetable. The example to the right shows Wind Syn R12 with it's Wave entries at position 00, 16, 32, 48, 60. Valid Wavetables have at least two Waves at Positions 00 and 60. „XIT" exits the graphical display.

Editing User Wavetables

After entering the Wavetable Editor with a <u>User</u> Wavetable selected, you will see the menu to the right. There are two more menu points and Encoder 3 & 4 allow selecting Waves. Encoder 1&2 do the same as for Preset Wavetables.
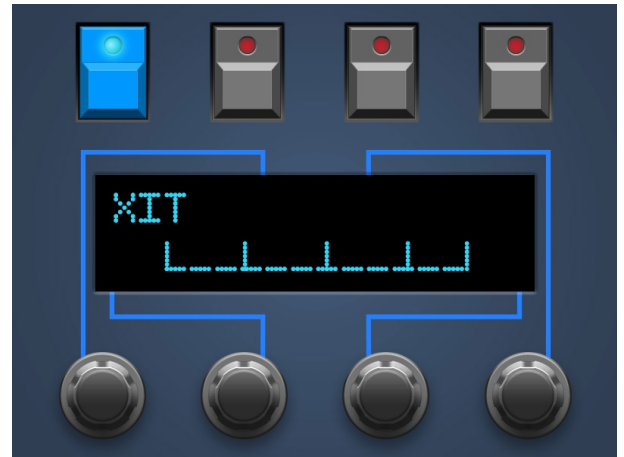
- Encoder 1 increases/decreased the position
- Encoder 2 jumps to the next/previous position holding a wave
- Encoder 3 increases/decreases the Wavenumber by 1. Decreasing 0 results in „ - „ which means *empty.* Setting a position to *empty* is not possible in positions 0 and 60
- Encoder 4 changes the Wavenumber by +/- 25
- Holding „RTbl" (= „Randomize Table") allows to choose the table randomization mode with encoder 1&2. The 7 different modes are described below.
- After <u>releasing</u> the pushbutton „Rtbl", the Programmer randomizes the current user Wavetable and dumps it into the Microwave. (This button secretly also works in GFX mode. For technical reasons without allowing to change the mode though.)
- The pushbutton „RdWv" (= „Randomize Wave") only appears when the selected Wavenumber is in between the userwave range of 246-367. For Userwaves the display sais „User :xxx", Presetwaves are shown in format „Prset:xxx". <u>Releasing</u> the button randomizes the User Wave at the currently selected position. Keeping the button pressed allows adjusting two parameters for randomization:

User Wave randomization parameters

- „Pnts" defines the number of value points distributed throughout the table. It is adjustable with encoders 1 & 2 in between 4-60. The values between these defined points are interpolated linear. Low values result in less harmonics
- „Wdth" stands for „Width". Encoders 3 & 4 change it between 8 and 64. It stands for the filled space inside the Userwave. 64 fills all positons, values below leave more and more space silent. Similar to a pulsewave becoming increasingly narrow.

User Wavetable randomization modes

- INIT empties the table and sets random waves into positions 0 and 60 (which are not allowed to stay empty)

- 4, 8 and 16 distributes 4, 8 or 16 random wavenumbers equally into the table

- 4R, 8R and 16R distributes 4, 8 or 16 random wavenumbers into the table with random distance to each other (Press the „RWtb" button in GFX display for easier understanding)

- CHAOS fills the wavetable with 60 random wavenumbers

User Wave drawing

If the Wave in the current position is a Userwave, the CHORD button's LED will be highlighted. This is the entry for Userwave drawing. After pressing CHORD you will be presented the menu in the right picture, (yes, the 'i' of 'with' is missing).

- XIT leaves the Userwave drawing menu. You can as well press the CHORD button once again to leave wavedrawing.

- START will engage the drawing process as described below.

After pressing START the following will happen:

- you will be presented a 3-2-1 countdown

- then you will see a line of dots becoming longer during ca. 5 seconds. It's a represenation of the current position inside the Userwave which has 64 samples. This position is filled with the value you are dialing in with the drawing knob.

- After the line has reached the last position, the currently selected Userwave is overwritten and dumped to the Microwave.

Hints and technical background for Userwave drawing

- Any pot can be used to draw. If you prefer you can even dial 2 knobs at the same time to get more chaotic values

- A Userwave has 64 samples holding values between 0 and 255, 128 is the null line.

- You can only draw the first half of the complete Userwave which consists of 128 samples. The Microwave mirrors your Userwave vertically and puts both parts together horizontally (one after the other). Example: if you draw all 64 samples to be 255 (or 0), the result which you will hear is a perfect squarewave.

- Use the countdown before the line appears to set the desired starting value with your drawing pot.

- It's not necessary to move the pot all the time during line progress. The last tuned in value will be filled in the following Userwave positions until a new knob movement is detected – or the last Userwave position is reached.

- 128 is the null line and corrsponds the middle position of the drawing pot. Moving it in small amounts around 12 o'clock position results in less volume.

- If you have an Oscilloscope somewhere, use it. It's very interesting to actually see what you recently have drawn.

- Go sure the currently drawn Userwave is targeted to be actually heard inside your program. If the Userwave you are working on is e.g. in Wavetable position 60 and your Oscillator is set to Startwave 0 (with another wave in that position), you will not be able to hear your results.

6.   MODULATION Mode

The Microwave has got quite powerful modulation possibilities. The modulation slots are not organized in one place. The engineers have spread them all over the parameter pool, near the parameter they should modulate. The Stereoping Programmer wants to simplify the access to this modulation zoo. As mentioned above you enter this mode by pressing MOD.

In Mod Mode the type printed in blue on the faceplate gets valid. You will see lots of points and some strange descriptions like 'M2'. A blue dot simply means this parameter can be modulated. Pots without blue dots or type do not have any function at all in this mode.

In Mod Mode the pot are just SELECTING the modulations Slots. Setting the modulations source, control or amount will be accomplished by encoders and display.

Let's take VCF ENV Attack for example. Below you see a blue dot, this can be modulated. To get the values on screen jump into Modulation Mode and move the pot of 'VCF ENV Attack'. The display instantly shows all modulation parameters for VCF ENV Attack. In the example pic to the right it will be modulated by LFO 1 with the amount of +28.

For some more important parameters like e.g. Cutoff, the Microwave offers two modulation slots. One is more complex supplying an additional 'Controller' and a simpler secondary. This second slot hides behind the type 'M2' mentioned above.

As usual: follow the faceplate's encoderlines to find out which encoder changes what:

- Encoder 1 allows scrolling though all available modulation slots. Quite versatile for a quick overview which slots got any amount at all

- Encoder 2 changes the source in the lower left

- Encoder 3 allows finetuning of amount (lower right). Quick changes of amount are explained below

- Encoder 4 is only important for the more complex slots as it changes the CONTROLLER

Value Speedup by pot

For getting quicker on changing amount we used some free pots for special tasks – you find them in the lower right corner of the Programmer.

- Moving the dial labeled ZERO immediately sets amount to +00

- The pot with the blue type VALUE allows direct adjustment of the amount

Poweruser-Feature since Firmware version 1.07

While being in PLAY Mode keep the MOD-button pressed. As long as it is held down, you can use the pots (marked with a blueish modulation dot or 'M2') to adjust the modulation intensity of their dedicated modulation slot. After releasing the MOD button you are back in PLAY mode.

7.   MULTI EDIT Mode

Note: in the following we are always talking of 6 Multi Instruments. This amount is related to the limited number of 6 Instruments which can be edited by the Programmer. The Microwave itself offers a total of 8 Multi Mode Instruments, but the last 2 can not be edited by the Programmer.

This modes makes things easier for Multi Programs as you can change any 4 Multi parameters for the first 6 Multi instruments at once with the pots in the right half of the Programmer. In addition the pots on the left side make up a 6 channel Midi-CC# mixer which can really rock when being used in conjunction with prepared programs making use of incoming CC-changes.

When leaving Multi Mode all your settings for CC numbers or selected Multi parameters will be saved and also preserved after power down.

Multi Request

Before finetuning your Multi Program, it would be helpful to get the data into the Programmer as it perfectly can display the original values on it's display. You need to manually request the currently selected Multi Program of the Microwave. **To engage a Multi Request hold the MULTI key for 2 seconds, no matter if you are in PLAY Mode or already in MULTI Mode.** After successful transfer of data, the OK.-screen will also supply the number of active instruments inside the Multi.

Dials on the left side

The 3 rows of knobs in the left half of the Programmer send any 3 Control Change Messages (Midi-CC#) on the Midichannels the first 6 Multi Instruments are set to. *Huh? What for?* If you prepare Programs to make use of these CC-numbers as modulation sources you suddenly get a powerful modulation mixer.

Dials on the right side

You can assign any Multi parameter to the 4 rows of knobs on the right side. Each knob in a row is dedicated to one of the first 6 Multi instruments. Having assigned 'Instrument mode' to row one and turning knob No. 3 leads to the picture on the right side.

- In the upper left corner the Multi Instrument Number is displayed. You can scroll the instruments manually with encoder 1.
- Directly behind is the current row which can also be scrolled by using encoder 4.
- in the upper right corner the original value of this parameter in the Multi program is shown. If you did not request the currently selected Multi from the Microwave, a questionmark is displayed instead.
- In the lower left corner you find the Multi parameter currently assigned the row. You can change it with encoder 2 or in Setup described below.
- Finally the value you already changed with the pot sits in the lower right corner. As usual you can finetune it by moving encoder 3.

For a Multi channel Multi program you might e.g. assign the following Multi parameters:
- row 1: Finetune
- row 2: Transpose
- row 3: Pan
- row 4: Volume.

For finetuning a layersound maybe:
- row 1: Volume
- row 2: Velo Limit H
- row 3: Velo Limit L
- row 4: Output Select

Setup Left / Right and the 3rd Setup turn dial

The last three knobs on the left Programmer side have special functions:
Setup L opens a setup screen where to assign the desired CC numbers to each row. Encoder 1 & 4 change the row in the first line, encoder 2 & 3 change the CC number. The CC messages will always be sent on the midichannels of the first 6 Multi instruments. Column 1 sends on the channel for Instrument 1, column 2 on the midichannel of Intrument 2 etc. **While being in 'Setup L' the type on the 3. Setup pot saying 'L: CC#" is valid**. Use is for quickly changing the desired CC-number. Getting from 1 to 120 would take a while using encoders.

Setup R causes the Programmer to enter Setup for the turn dials to the right where you can assign Multi Parameters. It's the same as above, Encoder 1 & 4 change row, 2 & 3 change the parameter.

Hint: Assigning Multi parameters to each of the 4 rows is also possible through the encoders directly in the normal display, appearing while pot fiddling on the right side. Use the encoders to switch instruments and rows for quick access to all Multi parameters.

While being in 'Setup R' the type saying 'R: Multi Name' on the 3rd Setup dial is valid. Touching it enters Multi Name edit mode. The pot itself shifts the cursor position, encoder 3 changes the current letter. **The funny naming tool using keyboard keys is working here as well** (see *Chapter 4. PLAY Mode – Patch Name*).

Instrument Swapping

Now things will become a bit complicated. The Microwave offers 8 edit buffers, meaning it can hold 8 edited programs in memory at the same time without having to save anything. This starts to make sense when using Multi Mode. 8 edit buffers allow to jump between Multi mode and up to 8 Programs in Single Mode to tweak the Program's parameters without always having to save after each change on a program.

Your Synth Programmer can only hold ONE Program in memory for displaying original values. But nothing holds it back from *sending* Parameter edits to each of the first 6 Multi-Instruments. This is exactly what you will allow on setting the PREFS Parameter *MultInstSwap* to ON: being in MULTI Mode each of the 6 pot columns (no matter if left or right) silently sets the target instrument where all the parameter tweaks in PLAY Mode will be sent to. This has nothig to do with the midichannel and also works on layer sounds when multiple Programs use the same midichannel.

Example: You got a Multimode using 3 instruments. In Multimode you turn a pot in column 3, no matter if left (CC) or right (Multi parameter). Now jump back in Programmer's Play Mode. You will see a little '3' behind a dashed line in the upper left corner of the display. Every tweak you are fiddling now in Play Mode will be sent to Microwaves Multi Intrument No. 3. The downside: original values will only be displayed for the patchnumber you recently requested. The Programmer does <u>not</u> check if or where the Program is assigned anywhere in Microwave's MULTI Mode. This feature only works in one direction for technical reasons. Nevertheless it's a powerful feature.

If this whole bunch is confusing und you don't want to use it, just set *MultInstSwap in PREFS to OFF*. The Programmer does not take Multi Instrument numbers into account and always serves Instrument 1.

8. PATCH Mode

Note: use Patch Mode of the Programmers only in conjunction with Microwave's Single Mode. While the Microwave is in Multi Mode, the Programmer faultly requests the currently active Instrument number and not the Program number you tuned in.

This is the mode to select Single Programs on your Microwave. Use Encoders 2 & 3 to select the Microwave's current Program Number (or any other) and press YES. The Microwave MIDI Parameter „Prog Change" is hopefully set to „ON", causing the Microwave to jump to the desired Program Number. Afterwards the Programmer automatically requests the Program parameter data to allow displaying the original values in it's display when turning knob.

Unfortunately the Microwave does not *send* any Program-Changes. This is why the Programmer can not sync itself automatically if you select Programs directly <u>on the Microwave</u>. If you prefer selecting Programs on the Microwave you perfectly can request the Program manually afterwards to get it's data into the Programmer. Press CUR to request the data for the **cur**rently selected Program. Requesting program data with CUR causes the Programmer to leave PATCH mode and jump back to PLAY mode automatically without the need to press XIT.

After successful request - with selecting of a program number by encoders - the display will show something as in the pic to the right. To the beginning of the 2ndline you see the currently requested Program Number followed by the name (last 4 characters cut off). All parameters of this Program are now in the Programmer's memory.

Using **PRV** and **NEXT** you can scroll through the Programs. Helpful to find the right Sound. Incoming Midi notes are forwarded to the Microwave of course to check out the Program instantly. After each Program change the Programmer is automatically up to date parameter-wize.

Note: After requesting program data from the Microwave using the CUR button, the Programmer is up to date about the parameters but it's got no idea about the program <u>number</u>. Therefore the number is not displayed and skipping program numbers with PREV and NEXT is not possible.

Now you are at Program A04 and want to jump quickly to C31? Use encoders 2 & 3 for tuning in the desired Program.

Encoder 2 changes Bank A,B,C and D.
Encoder 3 sets the Number.

Confirm with **YES**

Press **XIT** to leave Patch Mode

Note: The requested patch will be associated with the currently active Multi Instrument. As explained in the Chapter MULTI Mode the Programmer can only display original values for the Multi Instrument which was currently active while requesting the Single Program. Which is 1 after powerup (or if the PREFS parameter MultInstSwap is set to OFF).

9. PREFS und MIDI BYPASS MODE

PREFS menu offers 7 pages. The currently selected will be displayed in the upper left corner in format '2/7' e.g. You can swap pages with encoder 1 and 4. Values can be changed with encoder 2 and 3.

- **'1/7 Midichannel'** – this is where to set the Programmer's Midichannel. It should fit the current midichannel of your Microwave.

- **'2/7 DeviceNr'** – the Device Number should also match the Microwave's Nr. – normally 000.

- **'3/7 Limit Waves'**

  ○ YES : the pots for STARTWAVE span from 00 to 60 only and do NOT run into tri/sqr/saw which always reside to the end of each wavetable. The Encoders still allow to select the standard waveforms.

  ○ NO: default behaviour of STARTWAVE pots span: 0…60/tri/sqr/saw

- **'4/7 Block PrgChg'**

  ○ YES : incoming Program Change messages from DAW or Keyboard will be blocked by the Programmer and NOT forwarded to the Microwave.

  ○ NO: incoming Program Change messages will be processed and passed to the Microwave. The Microwave calls the desired Program and the Programmer will request it afterwards for both to be in sync.

- **'5/7 MultInstSwap'**

  ○ ON: if the Programmer is in Multi Mode the 6 knob columns (no matter if left or right) select the targeted Multi Instrument where parameter changes will be sent to when being back in Programmer's PLAY Mode.

  ○ OFF: parameter changes in PLAY Mode will always be sent to Multi Instrument 1. Details about that in *Chapter 6. MULTI EDIT Mode*

- **'6/7 Screensaver'**

  ○ YES means the display falls asleep after 23 Minuten inactivity. This can increase lifetime of OLED displays. As soon as you move a knob or some mididata is detected on the programmers Midi In the display wakes up.

- **'7/7 Operate'**

  'Operate' determines the main operation mode of the whole Programmer. Chaning from one mode to the other lets the Programmer reboot after leaving the PREFS.

  ○ Native: this is the main operation mode to edit all the Microwave's parameters as described in this manual

  ○ CC-Mode: this mode turns your Programmer into a universal Midicontroller for the so called „Midi Control Change" commands (CC). Sending standard CC messages is quite handy for remoting VST plugins or hardware responding to CC. The CC-mode had a dedicated manual on it's own. You will find it on our website in the DOWNLADAS area of the Synth Programer.

You can leave this mode by pressing the PREFS button again. If you changed any of the values, your new settings are saved automatically.

Midi Bypass Mode

The PREFS button got a secondary function. By holding it for 2 seconds the Programmer jumps into **MIDI BYPASS MODE**. Being in MIDI BYPASS MODE most of the routines of the Programmer are skipped and any midi data coming in on **MIDI IN 2** will be forwarded unprocessed and unfiltered to your Microwave on **MIDI OUT 1** - as if your Programmer would not be in between at all. This mode is quite useful if you want to dump some soundbanks into the Microwave. You can leave MIDI BYPASS MODE at any time pressing PREFS again.

10. RANDOMIZER

To enter Randomizer please hold the PATCH button for 2 seconds until the display shows 'OK'. The Randomizer creates random patches as well as some typical preset sounds, to have a clean starting point for your own creations. It's aim is not to spill patch junk, needing 25 attempts until coming up with something valuable. The Randomizer follows some special rules. On the other side you hardly can expect 50 attempts to create 50 breathtaking top patches.

Warning: Especially for Mode set to 4 the Randomizer might create Programs being <u>significantly</u> louder compared to e.g. the Presets with Mode 0. Volume modulations add up, envelopes acting negative on VCA holding it permanently open or other strange coincidences. Do not make the mistake cranking your volume up if you still hear nothing after having pressed DO the 4th time. The 5th press surely will generate a brutal sound being able to make damage to your loudspeakers or ears if the Volume of your speakers or headphone is set to high.

The 4 Buttons above the Display execute the following commands:

- **'DO+M'** – creates a random sound WITH modulations. Sources and Controls for Modes from 0 to 3 will be randomized between the following ('tame') Sources: LFO1&2, Filter Env, Wave Env, Keytrack, Velocity and ModWheel. In Mode 4 all sources will be used. Amount raises with mode. See explanation below.

- **'DO'** – creates a random Patch based on the parameters explained below. All modulations set to OFF

- **'KEEP'** - will appear below the PEEK button after having created a random sound. If you like to <u>keep</u> it, press this button. Your old patch BEFORE entering Randomizer will be rejected and your random sound will become the current patch held in Programmer's memory.

- **'XIT'** – press this to exit Randomizer and return to PLAY mode. If you created a random patch it will be rejected and the Patch before entering Randomizer will be restored.

In the second display line you can take influence on fortune:

- encoder 2 selects the **Preset**: Init, Bass, Orgn, Perc or Pad.

- encoder 3 changes **'Mode'** between 0 and 4 to increase the amount of randomization. Mode 0 sends the preset without any randomization. If something different should happen on pressing 'DO' over and over again, 'Mode' should be at least 1.

Keep request

You created the random patch of your life and want to keep it? You surely pressed KEEP already. A safety request appears on screen then as shown to the right.

Pressing '**KEEP&XIT**' rejects the old Program before entering Randomizer. Your random patch replaces it and is now the currently editied Program in PLAY Mode.

Press '**BACK**' and you find yourself in Randomizer again.

Randomizer Modes and their effect

Effects on the modulations when pressing DO+M are printed in blue

Mode 0:   Just the Randomizer Preset is sent to the Microwave. No randomization at all.
Modulations Amount between -10 and +10 respectively -1 to +1 for Wave/Noise Vol Mod

Mode 1:   OSC 1&2 in octaves, OSC 2 Detune between -12 and +12
Random values for Wavetable, Startwave and -sample
Wave 1 & 2 Volume between 3 and 5, Noise always 0
all remaining parameters keep unchanged from the Randomizer Preset
Modulations Amount -20 to +20 respectively -2 to +2 for Wave/Noise Vol Mod

Mode 2:   OSC1 in octaves, OSC2 in famous intervals (minor & major third, quart, fifth, seventh, nineth)
OSC 2 Detune between -15 and +15
Glidetime max. 5
Wave 1 & 2 Volume between 2 and 6, Level for Noise 0 with 60% probability
Moderate Envelope Attack-times (Volume & Filter) and Env Amounts
no Filter Envelope Delay
Modulations Amount -30 to +30 rsp. -3 to +3 for Wave/Noise Vol Mod

Mode 3:   OSC 1 und 2 in famous intervals
Glidetime max. 30
Volume Envelope Attacks max. 50, Decays max. 80, Filter Envelope Delay max. 30
Wave 1 & 2 Volume between 1 und 7, Level for Noise 0 with 30% probability
Volume Envelope Velocity and Volume Keytrack not negative
Cutoff min. 40, VCF Keytrack between -20 and +40
all remaining parameters randomized
Modulations Amount -40 to +40 rsp. -4 to +4 for Wave/Noise Vol Mod

Mode 4:   full chaos
full Modulations Amount, all Mod-sources used

Tip: if the Randomizer has set Cutoff to 002 again and you wont hear anything … all turn dials are fully functional in randomizer :-)

11. CHORD MEMORY

The CHORD Button simply switches CHORD MEMORY on and off. A Chord Memory allows to play a previously learnt chord chromatically by just pressing one key. The lowest note of the chord is the base note, all remaining notes will be shifted in their learnt interval above the base note.

The Chord Memory of the Synth Programmers offers six 'Chord Slots' which can be quickly selected by pressing notes on the keyboard! Your 6 chords keep saved in Programmer's memory even after switching it off.

Triggernotes

The 6 chord memos will be selected each by it's own keyboard note, the triggernote. It allows switching chords over midi to be automated easily in a song. The triggernotes are also used in Chord Setup to learn the chord. You can program and use the chord memory completely from the keyboard without switching between Programmer and keyboard.

To avoid collision of triggernotes and normal play notes, setup also offers changing the position of the triggernotes. But they always are placed on succeeding keys, e.g. C2, C#2, D2,D#2 etc.

On activating or changing chord slots, the display shortly shows the currently selected Chord Slot and the triggernote, e.g. „Sl: 2 Nt:2 Tr:C " (Slot 2, using 2 notes in total, triggernote C1)

Chord Setup

To enter CHORD SETUP keep the CHORD key pressed for 2 seconds. This is the mode to learn new chords, set Strum or shift the triggernotes.

The display shows the following:

Sl:2 – You are currently working on slot 2. Change the slot with enocder 1 or using the triggernotes

Nt:3 – The current chord slot uses 3 notes. This will be updated automatically on learning a chord

Tr:C3# – The triggernote for this slot is C3#. Shift all triggernotes using encoder 4. Remember: the triggernotes for all 6 slots are succeeding. Changes on one slot alters all others as well.

Strm:00 – the Strum-time is a short delay before triggering the next note of the current chord. Possible values range from 0 to 99. Change strum time using encoder 2.

Mode:Tgl/Hld – The Chord learn mode, use encoder 3 to toggle between 'Toggle' and 'Hold'.

Being in Chord-Setup you can play your chords and swap slots as outside the Setup. The big difference in Setup: **while holding a triggernote you learn the new chord**. Display shows 'LEARN!' instead of the triggernote. The first incoming note will erase the old chord in memory. As soon as you do not SAVE on exit, nothing is lost.

Learning modes 'Toggle' and 'Hold'

In learning mode 'Hold' you just hold your chord until you lift the triggernote. In 'Toggle' mode you do not need to hold the desired keys, making things easier on chords with widely spread notes. Press a note to add it to the chord. Press it again to remove it from the stack.

Lifting the triggernote saves your new chord in the current slot and you can start testing your chord on the keyboard.

You can leave Chord-Setup by pressing CHORD again. On leaving you will be asked whether to save or reject your changes. The buttons above the display offer 3 options:

• SAVE – all changes in the chord slots will be saved

• BACK – leads back into the Chord Setup

• XIT – Chord Setup will be left without making any changes

12. CC to SysEx translator

Maybe you like to automate cutoff, envelope times or other parameter in your song? This is where the CC-translator comes into play, it converts ordinary Midi Control Change messages into the complex SysEx-Strings your Microwave needs to see for parameter changes.

Setup a 'mixermap' or 'Dashboard' (or whatever it is called) in your DAW with sliders or turn dials sending Midi-Controller-Change messages (CC). You just need to assign the CC number associated to your desired parameter to such a control (according to the table). By moving or automating this control inside your DAW or sequencer the Programmer translates the DAW's CC-output into SysEx-commands and sends them to the Microwave which immediately changes it's sound.

To avoid intersections with Standard-CCs like Volume (#7) or panning (#10) some CC-numbers are left out. The CC data must be sent on the same midichannel as your Programmer and Microwave is set to.

Notes:
  • Due to technical reasons the Programmer does not show permanent value changes when translating CC into SysEx data.
  • Some parameter like e.g. Vcf Env Amount are bipolar offering a range from -64 to +63. To archive a value of 0 you have ti send the CC value of 64.
  • The CC Translator only reacts to CC messages being sent on the current basechannel of the Programmer. CC on other midichannels are passed through. For CC modulations in Multi Mode please use the Microwave's internal system of WXYZ controllers.

CC#	Parameter
14	OSC1 Octave
15	OSC1 Semi
16	OSC1 Detune
17	Wave 1 Samplestart
18	Wave 1 Wave
19	Wave 1 Env Amnt
20	Wave 1 Env Velo
21	Wave 1 Keytrack
22	Wave 1 Volume
23	OSC2 Octave
24	OSC2 Semi
25	OSC2 Detune
26	Wave2 Samplestart
27	Wave2 Wave
28	Wave2 Env Amnt
29	Wave2 Env Velo
30	Wave2 Keytrack
31	Wave2 Volume
32	
33	Noise Volume
34	LFO1 Rate
35	LFO1 Shape
36	LFO1 Symetry
37	LFO2 Rate
38	LFO2 Shape
39	LFO2 Symetry
40	Cutoff
41	Keytrack
42	Reso
43	VCF Env Amnt
44	VCF Env Velo
45	VCF Env Delay
46	VCF Env A
47	VCF Env D
48	VCF Env S
49	VCF Env R
50	VOL Env Amnt
51	VOL Env Velo
52	VOL Env A
53	VOL Env D
54	VOL Env S
55	VOL Env R
56	VOL Keytrack
57	VOL Sound Volume
58	Wave Env Rate 1
59	Wave Env Rate 2
60	Wave Env Rate 3
61	Wave Env Rate 4
62	Wave Env Rate 5
63	Wave Env Rate 6
64	
65	
66	
67	
68	
69	
70	Wave Env Rate 7
71	Wave Env Rate 8
72	Wave Env Level 1
73	Wave Env Level 2
74	Wave Env Level 3
75	Wave Env Level 4
76	Wave Env Level 5
77	Wave Env Level 6
78	Wave Env Level 7
79	Wave Env Level 8

13. Updating Firmware

The day may come you want to update your edition or try out another. Your Synth Programmer offers a firmware update mode for this. After entering this mode you just send a firmware-file into the controllers Midi IN 2 jack. The firmwares in SysEx-format are all compatible with your Programmer and freely available on our website. You can dump them with any standard SysEx dump tool of which several are available as freeware for different operating systems. An exmaple for PC is 'MidiOX', for the Mac you could use 'SysEx Librarian'.

The technical part:
- Switch off the Stereoping Programmer
- Connect **MIDI OUT** of your Midi-Interface directly to the jack **MIDI 2 IN** of the Programmers using a short cable of good quality
- There are some preferences in most SysEx-Dump Programs like 'Delay between Buffers' or 'Delay after F7'. Please choose something around 100mS (Milliseconds) here.
- Hold MOD and power up your Programmer. The Display should read 'BOOTLOADER'
- Load the new Firmware into your SysEx-Dump Program and send it out
- In rare cases there is a data-chunk stuck somewhere and you will see the message „Wrong file" right at the beginning. Stop the firmware transmission, simply press MOD again and restart the firmware transmissing. It should work now.
- The display shows OS-Version and progress. After about 2 minutes the Programmer restarts
- If you will get an error on the screen please try another cable or increase the delay mentioned above.

The firmware update erases all PREFS settings. All 6 Chord Memory slots will be reset to factory settings.

14. Imprint

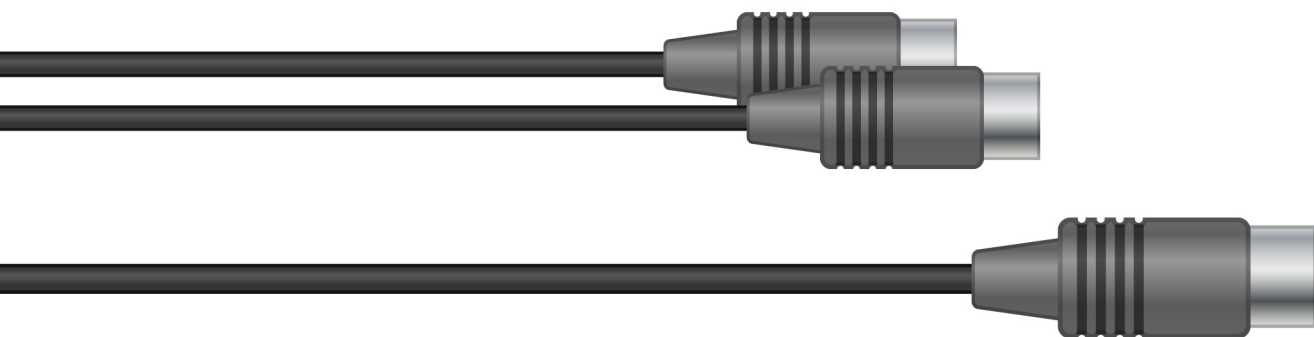Stereoping is a registered trademark of Gregor Zoll, Germany.

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STEREOOPING

SYNTH PROGRAMMER