

# ACCELERATOR manual

**Accelerator manual**

Firmware version 1.5 and higher. Jörg Schaaf, Radikal Technologies Deutschland GmbH, Copyright © 2011

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## **Declaration of Conformity**

For the following named product

### **Accelerator**

it is hereby declared, that it confirms to the requirements of the council Directive 89/336/FWG for radio frequency interference. It also complies with the regulations about radio interference of electronic devices dated on August 30th, 1995.

The following standards have been used to declare conformity

- EN 50082-1 1992,
- EN 50081-1 1992,
- EN 60065 1993

This declaration has been given responsible by the manufacturer:

RadikalTechnologies Deutschland GmbH, Eduard-Schmid-Str. 27, D-81541 Munich



Munich, 01.03.2011

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## Table of contents

<b>1.0 Warranty</b>	<b>8</b>
<b>1.1 Terms</b>	<b>8</b>
<b>1.2 Coverage</b>	<b>8</b>
<b>1.3 Transfer of warranty</b>	<b>8</b>
<b>1.4 Liability</b>	<b>8</b>
<b>1.5 Safety notices</b>	<b>8</b>
<b>2.0 Introduction</b>	<b>10</b>
<i>Feature summary</i>	<b>10</b>
<i>a.) 8 voice polyphonic synthesizer</i>	<b>10</b>
<i>b.) Advanced synthesis engine</i>	<b>10</b>
<i>c.) FX bus system</i>	<b>10</b>
<i>d.) Step sequencer and programmable, polyphonic arpeggiator</i>	<b>10</b>
<i>e.) Everything under control - the masterkeyboard features.</i>	<b>11</b>
<i>f.) Randomize sound - individual sounds on a fingertip</i>	<b>11</b>
<i>g.) Song chain: fast access to performances, splits and single sounds</i>	<b>11</b>
<i>h.) Matter of course</i>	<b>11</b>
<b>3.0 About this manual</b>	<b>12</b>
<b>4.0 First Steps</b>	<b>12</b>
<b>4.1 User Interface basics</b>	<b>12</b>
<b>4.2 Selecting and playing performances</b>	<b>14</b>
<b>4.3 Selecting and playing single sounds</b>	<b>16</b>
<b>4.4 Creating split and dual layer sounds</b>	<b>18</b>
<b>4.5 Saving performances</b>	<b>18</b>
<b>4.6 Loading Chains and using chains</b>	<b>19</b>
<b>4.7 Chain save procedure</b>	<b>21</b>
<b>4.8 Randomize sound algorithm</b>	<b>22</b>

## Table of contents

<b>5.0 Sound editing details</b>	<b>23</b>
<b>5.1 Overview about the synthesis engine features</b>	<b>26</b>
<b>5.2 Oscillator section</b>	<b>27</b>
<b>5.3 Noise section</b>	<b>29</b>
<b>5.4 VCF section (Multimode filters)</b>	<b>30</b>
<b>5.5 String filter (delay with damped feedback loop)</b>	<b>31</b>
<b>5.6 VCA and voice EQ section</b>	<b>33</b>
<b>5.7 LFO section</b>	<b>36</b>
<b>5.8 Envelope section</b>	<b>37</b>
<b>5.9 Modulation matrix (voice modulation matrix)</b>	<b>38</b>
<b>5.10 Global modulation matrix (bus/part modulation matrix)</b>	<b>43</b>
<b>5.10 Pitch bend range</b>	<b>45</b>
<b>5.11 Mono modes and retrigger settings</b>	<b>45</b>
<b>5.12 Glide and glissando</b>	<b>47</b>
<b>5.13 Saving single sounds</b>	<b>48</b>
<b>6.0 FX section and bus system</b>	<b>50</b>
<b>6.1 Introduction: FX-chains and output busses</b>	<b>50</b>
<b>6.2 The output busses</b>	<b>51</b>
<b>6.3 FX fundamentals</b>	<b>52</b>
<b>6.4 Distortion/Saturation</b>	<b>54</b>
<b>6.5 Modulation delay</b>	<b>54</b>
<b>6.6 Phasing</b>	<b>56</b>
<b>6.7 Leslie</b>	<b>57</b>
<b>6.8 Chorus</b>	<b>59</b>
<b>6.10 Post FX EQ</b>	<b>61</b>
<b>7.0 Sequencer section overview</b>	<b>61</b>
<b>7.1 Entering of notes and chords</b>	<b>66</b>

## Table of contents

<i>7.2 Further playback variations</i>	<i>67</i>
<i>7.3 Adding parameter sequencer lines</i>	<i>69</i>
<i>7.4 Saving of sequencer motifs</i>	<i>70</i>
<i>7.5 Loading sequence motifs from memory</i>	<i>71</i>
<i>7.6 Combining sounds and sequencer motifs in performance memories.</i>	<i>72</i>
<i>7.7 Realtime transpose of sequence lines</i>	<i>72</i>
<b>8.0 Arpeggiator section</b>	<b>75</b>
<i>8.1 Arpeggiator basic functions</i>	<i>75</i>
<i>8.2 Arpeggiator user motifs</i>	<i>77</i>
<b>9.0 Multi performances</b>	<b>80</b>
<i>9.1 Keyboardzone parameter in the performance edit menu</i>	<i>80</i>
<i>9.2 Performance default edit part.</i>	<i>84</i>
<i>9.3 Performance Button Modes</i>	<i>85</i>
<i>9.4 User knob assignments (USER)</i>	<i>85</i>
<b>10.0 Chain editing details</b>	<b>87</b>
<i>10.1 Adding MIDI splits to direct access memories of the chain</i>	<i>93</i>
<i>10.2 Programming a song chain</i>	<i>95</i>
<b>11.0 Setting up the Accelerator</b>	<b>97</b>
<b>12.0 Global parameters in the system menu</b>	<b>99</b>
<i>12.1 Setting up a velocity curve for the Accelerator keyboard</i>	<i>99</i>
<i>12.2 Pedal configuration</i>	<i>99</i>
<i>12.3 Global sequence transpose</i>	<i>100</i>
<i>12.4 MIDI system channel and MIDI input/output definitions</i>	<i>100</i>
<i>12.5 Setting up MIDI Input and output definitions</i>	<i>102</i>
<i>12.6 MIDI synchronisation</i>	<i>103</i>
<i>12.7 Mastertune</i>	<i>104</i>

## Table of contents

<i>12.8 Setting up the display backlight color</i>	<i>105</i>
<i>12.9 Setting up realtime controls and the acceleration sensor.</i>	<i>105</i>
<b>13.0 Addendum</b>	<b>106</b>
<i>13.1 MIDI NRPN Listing</i>	<i>106</i>
<b>14.0 Upgrade opportunities</b>	<b>118</b>
<i>14.1 Voice expansions</i>	<i>118</i>
<i>14.2 Software upgrades</i>	<i>118</i>
<b>15.0 Feature summary</b>	<b>119</b>
<i>Connections:</i>	<i>120</i>
<i>Weight and dimensions</i>	<i>120</i>

# 1.0 Warranty

## 1.1 Terms

Radikal Technologies warrants all electronic und mechanical components of this product, subjects to the conditions herein described, for a period of 12 months from purchase. If any covered malfunctions occur during the warranty period, the unit will either be repaired or replaced at the Manufacturer's election. The general business terms and conditions of Radikal Technologies GmbH Germany shall apply.

## 1.2 Coverage

Radikal Technologies Deutschland GmbH reserves the right to perform warranty repairs or product replacement subject only to prior warranty registration by the customer. Such registration needs to be submitted together with a copy of dealer invoice or sales receipt. The final decision concerning validity of the warranty is made by Radikal Technologies GmbH. In case of a justified warranty claim the submitted product will be repaired or replaced within 30 days of receipt at Radikal Technologies offices. Any physical damage to the instrument or unauthorized attempts to open or fix the unit will render the warranty null and void. Repair of non-registered products or products with a lapsed warranty will be performed at customer's expense. We strongly recommended that customers ask for an estimate of costs before sending in their instruments for repair. Cost of packaging and shipping will be charged additionally.

In case of covered warranty claims the product will be shipped back to the customer free of charge. Shipment to customers residing outside of Germany will take place at the cost of the customer.

## 1.3 Transfer of warranty

This warranty is exclusive and personal to the original owner and may not be transferred. Other than Radikal Technologies Deutschland GmbH, no third party (retailer, etc.) is authorized to promise or perform warranty services. Services other than ones specified herein are not covered under this warranty

## 1.4 Liability

Claims for additional damages of any kind, including all claims of financial damages as a result of malfunction of a product, are specifically excluded hereunder. The liability of Radikal Technologies Deutschland GmbH in all cases is expressly limited to the purchase price or the adjusted value of the product only. All warranty services and shipments are performed subject exclusively to Radikal Technologies Deutschland GmbH's general business terms and conditions.

# 1.5 Safety notices

**CAUTION:** Please do not open the instrument's case at any time, to avoid the possibility of electric shock. There are no functions or features inside the unit intended for the user. Do not ever make any attempt to repair the instrument yourself! Any technical problems should be addressed with qualified service personnel only.



**WARNING:** Do not expose the unit to rain or humidity to avoid electric shock or shorts.

- Before using your unit please read the security and user instructions carefully.
- Store the safety and user instructions in a safe and readily accessible place.
- Never use the unit close to water (i.e. bathtub, sink, swimming-pool)!
- Do not set your unit up too close to heat-sources (heaters, Amps, etc.). To ensure proper air ventilation it is important not to obstruct the unit's heat vents.
- Make sure to place the unit on a solid surface strong enough to support its weight.
- Connect the unit only with the correct and sufficient power sources.
- Position the power-cord carefully, so nobody will fall over it.
- Only use undamaged and fully functioning power-cords
- Turn off unit and remove the power-cord before moving or transporting the unit.
- Unplug the power-cord before cleaning the unit
- When you're not using the unit for any extended period of time make sure to turn it off and remove the power-cord.
- Clean the unit only with a dry or slightly damp cloth. NEVER use cleaning solutions!
- Make sure that no hard particles or liquid can get inside the unit.
- As a result of rapid temperature-changes it is possible that condensation can form inside the unit. Make sure your unit has sufficient time for the condensation to dry off, before reconnecting it to a power-supply after such temperature change.

**The unit needs to be checked by a qualified service-technician in case:**

- The power-cord or the plug has been damaged
- Hard particles or liquid have managed to get inside the unit
- The unit has been exposed to rain or humidity
- The unit has been dropped and/or shows physical damage
- The unit is not functioning in the usual or described fashion

## 2.0 Introduction

We first would like to thank you for purchasing the Accelerator. You have purchased a modern music instrument, which not only sounds great, but also doubles as a powerful "Performance-Controller" for your entire live setup.

### **Feature summary**

In this section we will summarize the key features of the Accelerator. Everything is described in much more detail later in this manual, but we thought it would be a good idea to give you a basic overview first.

#### **a.) 8 voice polyphonic synthesizer**

The Accelerator in its standard configuration sports 8 voices and two part multitimbrality. The polyphony can be increased to up to 32 voices via expansion modules. Each of the two expansions adds 12 voices. At least one expansion must be inserted to get 8 part multitimbrality.

#### **b.) Advanced synthesis engine**

Besides the basic voice structure with three oscillators, three multimode filters, 6 envelope generators and 4 LFOs the Accelerator offers some advanced synthesis algorithms and parameters that allow for the creation of synthesizer sounds that cover a much wider range than more basic subtractive synthesizers.

Phasemodulation in combination with sweepable waveforms, oscillator synchronisation, time linearity modulation and ringmodulation allows for a wide range of different spectrums.

Furthermore, a delayline with a damped feedback loop (string filter) lets you explore virtual instrument synth design like plucked string sounds, woodwind instruments and bowed string FXs. Three full parametric EQs per voice add realism to your sound creations and can help to place a new sound well in the mix.

Two modulation matrixes, one with 32 nodes for voice parameters and a second with 8 nodes for part parameters, are very helpful for adding complex modulations and powerful realtime control over your timbres.

#### **c.) FX bus system**

The Accelerator has 4 FX-Busses with incredible FXs. Each of the two Accelerator parts is fed into a separate bus. The remaining two busses are used for smooth transitions from one performance to the next. When switching from one layer or split sound to the next, the Accelerator selects the next two busses for the new sounds. The FXs of the former sound remain untouched without any glitches or interrupted reverbation release phases. Each FX-chain contains the following algorithms: distortion, stereo modulations-delay, phasing, leslie, chorus, reverb and a post FX EQ.

#### **d.) Step sequencer and programmable, polyphonic arpeggiator**

A polyphonic step sequencer and a programmable polyphonic arpeggiator for each part - with independent or global transpose zones for the sequencers - gives the Accelerator its special music machine appeal. Another highlight for sure is the realtime access to the music parameters of the sequencer and arpeggiator motifs.

In addition three sequencerlines can be assigned to synthesizer parameters in the modulation matrix.

#### **e.) Everything under control - the masterkeyboard features.**

If you happen to play more than a single instrument on stage you will benefit from the masterkeyboard functionality the Accelerator offers. By pressing a single button in the song chain mode, all attached MIDI instruments receive bank and program changes, volume and panpot settings. Velocity and keyboard split zones let you play multiple instruments together with the accelerator sound engine from the keyboard. Zones can not only be assigned to the Accelerator keyboard. If you connect a second masterkeyboard or synthesizer to the Accelerator MIDI input, additional zones can be programmed to integrate your second keyboard completely into your setup.

#### **f.) Randomize sound - individual sounds on a fingertip**

The randomize sound function of the Accelerator selects elements from different, already programmed sounds in memory and recombines them to new sounds. This algorithm creates thousands of variations of sounds. As soon as you hear a result that you would like to recall later, you can save the sound into the singlesound memory.

#### **g.) Song chain: fast access to performances, splits and single sounds**

Organizing your favorite sounds and performances without changing the order of the sounds in the memory - that is the main benefit you get from chains. But chains can do more. Switching between different play modes, building new combinations and splits from single sounds and playing MIDI instruments without programming a complex masterkeyboard program - all this can be done in chains.

Even cooler is the opportunity to use the chain memories for the organisation of your live gigs. Create a chain for each song of your setlist. During the gig one can select a song from the setlist in the display menu. For each song the Accelerator sports 10 direct access buttons that recall the programs preselected for the song. Additionally these programs can be organized in a row. The [NEXT]-button increments the position in the song row and recalls the sounds and performances more or less automatically. The button can also be controlled by a foot switch remote control.

#### **h.) Matter of course**

##### **Voice remain**

Select a new sound while holding a chord and play the new sound above the sustained chord. The new sound does not interrupt the held chord and even the FXs remain untouched.

##### **USB MIDI**

The Accelerator appears as a MIDI interface in your computer as soon as you connect the ACC to the USB port. Not even a driver installation is necessary as the Accelerator works fine with the USB MIDI class device drivers.

##### **Galvanic isolated USB port.**

USB normally can cause groundloops in your setup if you connect a music instrument to a USB host. The Accelerator USB connector is galvanic isolated and prevents these problems.

### **Balanced inputs for external instruments**

Not only line signals can be fed into the external inputs. Connect dynamic microphones or an electric guitar directly to the balanced inputs of the Accelerator and use the FX bus system as a powerful external Multi FX unit.

### **Memory organisation**

500 Single sounds, 300 performances, 100 song chains and 60 sequencer memories.

## **3.0 About this manual**

Do you like reading manuals? Most people don't. Just sitting in front of the new instrument and trying to figure out everything without checking the secrets in the manual for many people is the preferred way to explore a new instrument. We really recommend that you at least read the first steps section of this book and everything about the memory management. Especially the „first steps“ section will help you navigate faster through edit menus and will help you to find the parameters quickly. Besides the manual the Accelerator has another very unique and powerful help system. Users getting stuck when they use their new synth for the first time should know, that all knobs of the Accelerator have additional button functions. The help system is a kind of built in reference manual and eliminates the need for you to revert to the manual in most cases. Simply hold a button or an encoder button, you want to get some infos about and in most cases the button functions call up submenu pages with parameters, that are belonging to the parameter or the encoder is controlling. For example if you press an encoder that is assigned to an envelope parameter, the envelope edit page will pop up. If one holds that knob button a little bit longer, the help screen will appear while holding the button and it will give a short description of that parameter.

## **4.0 First Steps**

If you are not familiar with the connection and cabling of keyboards and amplifiers please just check chapter 11.1 „Connections and preparations“. We'll assume in the next section, that your Accelerator is already powered up and connected to a valid amplifier and speaker system.

### **4.1 User Interface basics**

Every technical device has a user interface philosophy. If the user interaction with the device evolves more or less consistently in all sections, the operation is much easier and more or less self explanatory as soon as you have understood the basics. For that reason the following section is the most important one in the entire manual aside from your skills. Here are the most essential facts about the Accelerator:

a.) All encoders (knobs) of the Accelerator have multiple button functions. In most cases these buttons recall submenus. Instead of navigating with cursor buttons the encoder buttons allow for a much faster direct access to different edit sections.

b.) By holding down a button or an encoder button the Accelerator shows up a description of the parameter or parameter section that is assigned to that button.

This even works with the three encoders under the display section. They are assigned to different parameters depending on the selected edit screen and parameter row. Simply press and hold them down if you are wondering what the selected parameter is all about. Below you can see a little sample screen. This help text pops up, if you just powered up the unit and press and hold the first display encoder „SET“:

```

Set
The soundmemory of the
Accelerator is organized
in Sets. Each set contains
10 Banks with 10 programs
each.
EXIT

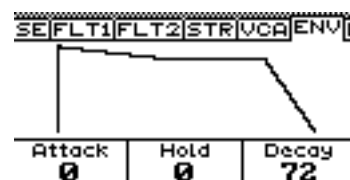
```

c.) At the top left corner of the „Advanced Edit“ section you can locate the [page]-encoder. By turning this encoder you can reach different edit pages. Available edit pages can be seen at the top page bar in all display menus. By touching the page encoder alternate views of the selected edit page can be recalled. In the envelope generator edit page you can for example recall another menu page with a graphic view of the envelope:

```

SE|FLT1|FLT2|STR|VCA|ENV|
E2: SUSTAIN  RELEASE
   127      0
E3: ATTACK   HOLD   DECAY
   0        0      72
E3: SUSTAIN  RELEASE
   110      32

```



d.) All parameters can be reached inside the display menu but the most essential ones can also accessed much faster in the matrix edit section at the left side of the front panel. The eight encoders control up to 8 parameters at a time and the assignment can be controlled by the button row left of the matrix and with the page dial as well. If you turn the page encoder during sound editing you will realize, that the button LEDs at the left side of the matrix are changing accordingly. On the other hand switching the buttons in the edit matrix is also selecting menu pages in the display menu. In short you have two different possibilities to navigate and even the encoder buttons in the edit matrix can recall edit menus or different views in the display menu. If you select for example the VCO1 section by pushing the VCO button, the display shows the VCO page as well.

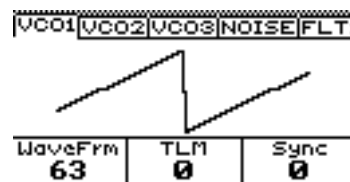
```

VCO1|VCO2|VCO3|NOISE|FLT1|
WAVEFRM  TLM  SYNC
VCO2PM  VCO3PM  PHASE
COARSE  FINETNE FREQOFF
VOLUME  FEED1  FEED2
SCALE   INV
E3      0      0

```

d.) In the display menu parameters are shown, that can be controlled with the display encoders 1-3. If multiple rows of parameters are shown, the current row of three is highlighted. The next row can be selected by using the [cursor up] and [cursor down] ([↑] [↓]) buttons to the left of the display. As you already learned, the page encoder button offers different views of edit pages. Some pages only show one row of accessible parameters. The envelope graphics and VCO waveform view for example does not leave enough room to display more than 3 parameters. But even in those menus

the ([↑] [↓])-buttons allow for the selection of other parameters.



## 4.2 Selecting and playing performances

After powering up, the Accelerator always starts in Performance mode:

Selecting performances from the display menu:

```

PLAY|TEMPO|ARP|ZONE|BUS|
Performance Select: A0.0
Bass plus Strngs
Current Part: Master
-----
Set | Category | Load | Snd
A | Split | BssplS

```

The name of the selected performance program shows up with large letters. Above the name the memory location is shown. The performance memory is arranged in three sets (A,B,C), banks (0..9) and memory slots (0..9). Each set contains 10 banks with 10 slots each. „Bass plus Strings“ is a split program that has been stored in the first set „A“ at banknumber „0“ and memory slot „0“.

Now check the bottom row in the display menu. There are three functions visible:

[SET]

The first encoder shows the set selection. Select one of the sets A,B or C with the encoder. The preset performances are all stored in Bank A. The set selection is only necessary when selecting performances with the bank and program select buttons. In the display select mode, performances can be selected by just choosing a category and selecting performances with the [LOAD-SO-UND] encoder.

[CATEGORY]

The second encoder allows for choosing a category for the performance selection.

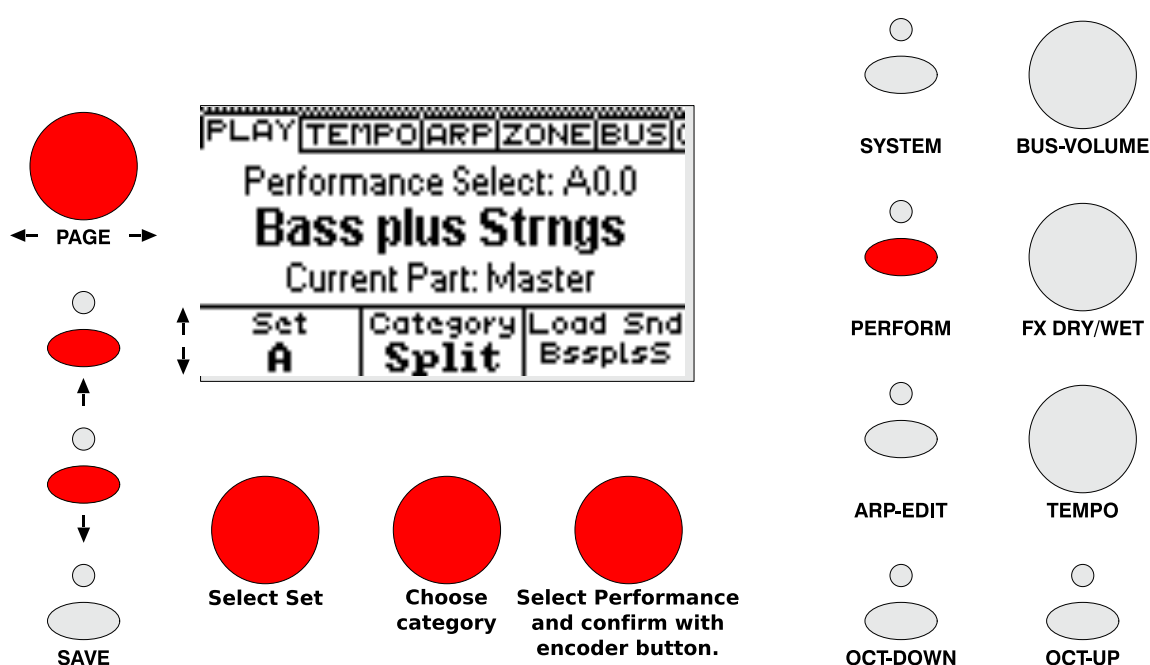
### Selecting performances from the display menu:

[LOAD SND]

The third display encoder allows for the selection of all Performances of the selected category. To load a selected performance just push the [Load Snd] encoder button after dialing in the desired performance. The factory soundset already contains 60 performance examples. They are stored in Set A at the first 6 memory banks (0-5).

In the following picture, we highlighted all buttons and encoders, that are essential for the display menu driven performance selection and basic editing:

### ADVANCED EDIT SECTION



The right section of the front panel offers dedicated buttons for bank and sound selection purposes. The [bank] and the [program] buttons are colored in green. In most cases you select a bank first by pushing [bank] and selecting a bank between 0 and 9 with the numeric buttons at the right side. Afterwards you push [program]. Now you have direct access to the memory slots 0-9.

### Selecting performances with bank and program buttons:

[PERFORM]

Switches to Performance mode.

[BANK]

Activates memory bank selection mode.

Selecting performances with bank and program buttons:	
[0] - [9]	Selects the desired bank between 0 and 9.
[PROGRAM]	Activates program selection mode.
[0]-[9]	Selecting the desired memory slot.

For the selection of another performance set simply use the first encoder in the display menu.

If you get lost in one of the edit menus and would like to jump back into the performance selection, just push the [PERFORMANCE]-button. This button is hard-wired to the performance mode menu.

Please also recall, that the parameter triple in the bottom area of the display area can be selected with the cursor ([↑] [↓])-buttons. If you are missing the category and set selection in this button row simply press the [↑]-button a couple of times until the parameter group is selected again.

A performance of the Accelerator contains all parameter settings of the involved parts. If you tweak the parameters of one of the parts and save the performance, the sound data of the involved parts get saved as well. Other performances or the single sound memory of the tweaked part remain untouched. The Accelerator has 300 performance memories. Each of these performance memories can hold the patch data of up to 8 parts in the expanded version. 2400 single sounds can be saved inside the performance memories.

### 4.3 Selecting and playing single sounds

500 single sound memories are available beside the performance memories. Like performances, the single sound memories are arranged in sets, banks and memory slots. Single sounds are not only associated with categories - the whole single sound memory is arranged in categories. The numeric buttons are labeled with categories. If you select a bank, you choose a category as well. If you select for example the bank „Organ“, all programs of that bank are organ sounds. By selecting a different set, multiple banks of organs can be selected. Before selecting single sounds the single mode must be selected by pressing the [SINGLE]-button:

Single sound selection:	
[SINGLE]	Single Mode selection.
[BANK]	Bank change mode selection.
[0] - [9]	Selection of the desired bank/category
[PROGRAM]	Program Change mode selection.
[0]-[9]	Selecting of memory slots.



The basic Accelerator offers two independent synthesizer parts. That means, two single sounds can be played simultaneously. Both parts have independent stereo busses with independent FX chains. If you save a single sound all FX settings will get saved as well.

In most performances multiple synth parts are in use. The program selection in single mode works always on the selected part. The first two parts are also called „upper“ and „lower“. If you program split and layer sounds you need to deal with those two parts.

The edit matrix and the edit menus are also always assigned to the selected part. If you start to tweak a sound in a split or layer performance you should check, whether you have selected the correct part.

Selecting parts:	
[PART]	Pushing [PART] selects the part select mode.
[1] [LOWER] - [2] [UPPER]	Select the part with numeric buttons 1 and 2.

Now you can recall the program selection by pushing the [PROGRAM]-button:

```

PLAY|TEMPO|ARP|ZONE|BUS|
Current Part: 0
Program: A0.0
Full Bass
-----
Set | Category | Load Snd
A | Bass | Ammernn

```

Single sounds can be selected in the display menu as well. Instead of dealing with [BANK] and [PROGRAM]-select modes and set selections, all sounds of a category can be dialed in and confirmed with the Load-Sound encoder. Sets A -C are already almost filled with factory sounds. In the display picture above you see the sound selection menu. The second display encoder selects the category and with the third encoder you can choose a sound by dialing the knob and load the sound by pushing the encoder:

Single sound selection with the display menu:	
[SINGLE]	Select the single mode.
[PROGRAM]	Recall the program select menu by pushing [PROGRAM].
Knob 2 [CATEGORY]	Select the sound category by dialing display encoder 2.
Knob 3 [LOAD SOUND]	Dial in the desired sound and confirm the selection with the encoder button.

In the text field above the third encoder, the sound name sometimes get's truncated if the string length does not fit the text field. After the confirmation with the encoder button the full name appears in the display with larger characters.

## 4.4 Creating split and dual layer sounds

You already learned now how to select parts and their single sounds. In this section you will create a basic split performance. With split performances two parts are sharing the keyboard. Two separate sounds can be played with the left and right hand. All you need to know is how to activate the split mode and how to define the splitpoint on the keyboard. The Split mode has a dedicated button on the frontpanel right next to the [SINGLE]-button. Pushing the [SPLIT] button activates the split function:

Setup the split function and define the splitpoint	
[SPLIT]	Pushing [SPLIT] activates the Split function.
Hold [SPLIT] + keyboard-note.	Selecting the keyboard note while holding [SPLIT] sets the splitpoint.
[PART]-> [0-MASTER]	Activate the part select mode and select virtual part 0 (MASTER). Now the keyboard is assigned to the split function.

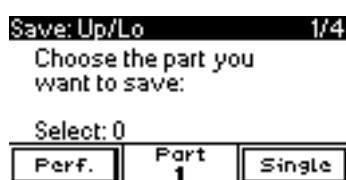
Select the desired sounds for the lower and the upper part. The lower part is assigned to the left side of the keyboard and the upper part is assigned to the right side.

Creating a dual layer performance is a no brainer. Instead of [SPLIT] push the [DUAL]-button. If the Master part is selected, both parts are playing simultaneously if you press some notes on the keyboard. In dualmode the polyphony is reduced to 4 voices in the basic Accelerator version. Adding one expansion the polyphony of 20 voices already expands the polyphony limit of dual sounds to 10 voices.

## 4.5 Saving performances

You should now learn how to save such basic performances. Please remember - the performance memory does not only hold the playmode (single, split, dual or multi) and the program change numbers of the involved parts - the sound data of all parts and the FX settings of the busses will be saved as well. Even the Arpeggiator settings are part of the performance.

The save dialog pops up if you press the red [SAVE]-button left of the display encoders:



You can decide whether you would like to save a performance or a single sound. We choose [Perf.] with the first display encoder button in order to save the performance.

By the way - sometimes you may change your mind and want to leave the Save Dialog for further editing. Simply press [SAVE] again to leave the save dialog! Now choose [Perf.]. The next page of the save dialog will appear:

Save: Dest.		2/4
Select memory:		
Replace		
Bass plus Strngs		
Perf.: A0.0		
Set/Bnk	Slot	NEXT
A-0	0	

Here you can select the target memory slot for your new performance. The first encoder selects the Set and the banknumber for the new performance and the second encoder selects the memory slot. To make sure, whether you really want to overwrite the selected memory location the current performance of the target slot can be played on the keyboard. After finding a proper memory location just press [NEXT].

Save: Cat.		3/4
Select category for new sound:		
Category: Split		
Cat	Split	NEXT

Here you can choose a category for your new performance with the first encoder. Now press [NEXT] again:

Save: Name		4/4
Select Name		
Name: Bass plus Strngs		
< x >	Char	SAVE

At the last page of the save performance dialog you can enter a name for your performance. We implemented two ways to name a performance:

- 1.) The first encoder selects the position of the name string and the second encoder selects the character at that position.
- 2.) Pushing the [CHAR]-encoder button activates the keyboard entry mode for the naming procedure. If this function is activated, the keyboard is not triggering notes anymore. The characters are assigned to different notes on the keyboard. Please refer to the labelling on the frontpanel and use the keyboard like a typewriter.


When you are satisfied with the name push [SAVE]. Now your performance is stored in the memory.

#### 4.6 Loading Chains and using chains


In Live situations one needs a much faster access to sounds and performances than in the home studio. Chains offer a way to select up to 10 sounds of a song with single fingertips. Just load a song of your setlist in the display menu to get direct access to all sounds and mode settings you have prepared for that song. The chain sound access memories 0-9 are references to single programs, split or dual layer selections or performances. By pushing a numeric button between 0-9, the chain recalls the

memory locations and mode settings. You can concentrate on your playing instead of dealing with sets, banks, programs, part selections and mode settings.

Chains can also be used to build some favorite banks without rearranging the whole memory. The Accelerator ships with some example chains that will help you to understand the benefits of the chain mode:

Chain mode activation and usage:	
[CHAIN]	Pushing [CHAIN] activates the chain mode.
	
[Bank]	With the [BANK] encoder one can select a bank between A and J. The examples are all located in bank A. The Accelerator offers 100 chains from A0 to J9.
[Slot]	Select one of the chains A0 - A6 with the second display encoder.
[LOAD]	Push [LOAD] to load the chain.
[0]-[9]	Now you can select the referenced memories by using the numeric buttons 0-9.

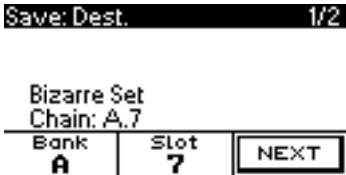
In order to create your own chain, all you have to do is combining all the different skills you already learned about the Accelerator. The chain mode offers some additional features we will present in depth in chapter 10.0. Here we will just arrange some performances and single sounds into a chain, that you can already create a favorite soundbank.

Basic chain editing:	
[CHAIN]	Pushing [CHAIN] activates the chain mode.
	
[Bank]	With the [BANK] encoder one can select a bank between A and J. Choose an empty chain and press [LOAD].

Basic chain editing:	
[Slot]	Select an empty memory slot.
[LOAD]	Push [LOAD] to load the empty chain.
[0]-[9]	Select the first numeric button [0].
Now you can leave the chain mode and select a single sound or a Performance. After selecting the desired sound press [CHAIN] again and select another numeric button for your next favorite sound.	
[CHAIN]	Jump back into the chain mode.
[0]-[9]	Select the next numeric button [1..9].
[PERFORMANCE], [SINGLE], [DUAL] or [SPLIT]	Choose the desired mode for the next memory. Select the performance, a single sound or two single sounds for a split or dual sound.
[CHAIN]	Jump back to the chain mode.
[0]-[9]	You can now switch between your two chain memories.
Just follow these instructions for all chain reference memories.	

The last step of the chain programming is the save procedure. The save-menu offers different options dependent on the selected edit section. If the chain mode is active, the save menu automatically offers the save function for chains.

#### 4.7 Chain save procedure

How to save a chain:	
[CHAIN]	Activate the chain mode.
[SAVE]	Press [SAVE] to enter the save dialog.
	
[BANK] + [SLOT]	Select the target memory slot with the [BANK] and the [SLOT] display encoders.
[NEXT]	Jump to the next dialog page, where you can enter a name for the new chain.

How to save a chain:	
<div> <div>Save: Name 2/2</div> <div> <div>Name: Bizarre Set</div> <div> <div>&lt; x &gt;</div> <div>Char</div> <div>SAVE</div> </div> </div> </div>	
< x >	Select the position in the string with the first display encoder.
(Char)	Dial in the desired character for that string position with the second encoder.
or:	
[Char]	Push the [CHAR] display encoder to activate the keyboard typewriter function and enter the string with the keyboard.
[SAVE]	Press [SAVE] to save the new chain.

#### 4.8 Randomize sound algorithm

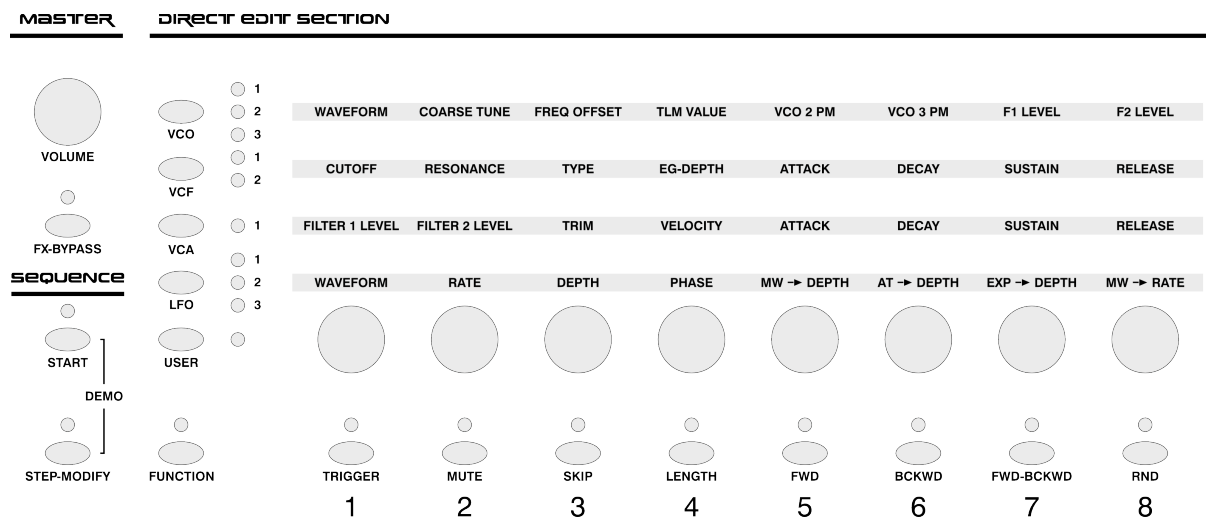
Before starting to program your own sounds we will show you the powerful randomize sound function. This function creates thousands of new sounds by recombining elements of the sounds, which are already stored in the memory of the Accelerator. For that reason the function does not work, if the memory is empty. As soon as you get a sound that fits your needs you can save the new creation in the single sound memory.

Using the randomize sound function:	
[SINGLE]	Push [SINGLE] to activate the single sound mode.
[RANDOM]	Push [RANDOM] to activate the randomize sound function.
[0]-[9]	Choose a sound category for the randomize function by pressing one of the numeric buttons [0]-[9]. The randomized sound function combines elements of sounds already stored under that category. For that reason, pushing [BASS] will probably create a new bass sound.
You should reduce the mastervolume a little bit before using the randomize function. In some cases a randomized sound can be much louder than the factory sounds.	

You should choose the category carefully when saving a new single sound. If the category does not match the sound character, the randomize function will prove useless after a while. If you save a sound that does not match any of the categories, choose „Other“. Sounds, that are saved under „Other“ will not get used by the Randomize function.

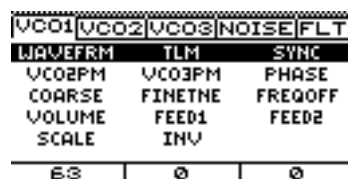
## 5.0 Sound editing details

The most essential parameters are available in the edit matrix at the left side of the frontpanel:



The edit matrix assignment can be selected with the buttons at the left side of the matrix. Depending on your selection (VCO, VCF, VCA or LFO) the knobs are controlling the parameters printed in the matrix. Pushing one of the buttons multiple times selects the desired subsection. The Accelerator sports for example 3 VCOs which can be accessed by pushing the [VCO] button multiple times. At the right side of the button row LEDs are indicating which VCO you chose.

Check the display while selecting the VCO in the matrix. The display menu follows the selection in the matrix:



The active parameter row is highlighted and the parameter values of the active parameters are visible at the bottom end of the display area. Another triple of parameters can be selected with the [↑] [↓]-buttons.

If you push the [PAGE]-Encoderbutton, alternate views of the edit section show up:

VCO1	VCO2	VCO3	NOISE	FLT1
WAVEFRM	TLM	SYNC		
63	0	0		
VCO2PM	VCO3PM	PHASE		
0	0	0		
COARSE	FINETNE	FREQOFF		
0	0	-31		

Up to 9 parameters with their values are visible in this view. The parameter triples can be selected in the same way like in all other views - with the [↑] [↓]-buttons. Furthermore, different rows can also be selected with the encoder buttons of the edit matrix. That allows for navigating in a menu page without using the cursor buttons. If you press the [VCO2PM]-encoder button, the parameter triple with the PM parameters gets selected and highlighted:

VCO1	VCO2	VCO3	NOISE	FLT1
WAVEFRM	TLM	SYNC		
63	118	0		
VCO2PM	VCO3PM	PHASE		
0	0	0		
COARSE	FINETNE	FREQOFF		
0	0	-31		

Now push the matrix encoder button that is assigned to the VCO waveform parameter. The parameter triple with the waveform parameter gets selected again in the display menu as well. The more you learn about the different interactions between the matrix and the display menu the faster you will manage the menu navigation in the future.

At the upper section of the display you will notice tabs, you maybe already know from some computer programs. The [PAGE]-encoder allows for a fast selection of the different tabs. Dialing the [PAGE]-encoder switches through the different edit menus.

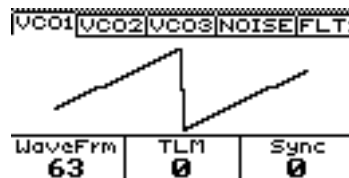
VCO1	VCO2	VCO3	NOISE	FLT1
WAVEFRM	TLM			
VCO2PM	VCO3PM	PHASE		
COARSE	FINETNE	FREQOFF		
VOLUME	FEED1	FEED2		
SCALE				
63	0			

You will notice, that each tabbed menu jumps back into the view which was selected when leaving the dialog last time. The views of the different sections are working independent from each other. If you navigate with the [PAGE]-encoder, the selected edit parameter triple gets memorized as well for all edit pages. That makes navigation very quick.

If you select different VCOs with the [PAGE]-encoder, the LED in the edit matrix will highlight these VCOs as well. That means that also the assignment of the matrix encoders follows the selection.

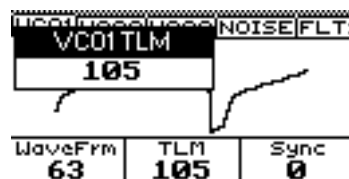
Now push the [PAGE]-encoderbutton multiple times until the waveform view shows up:





When you dial the waveform encoder in the edit-matrix or the display encoder for the waveform, you can follow the changes of the waveform shape in realtime in the display.

Now turn the TLM encoder in the edit matrix. The waveform changes caused by the TLM modulation will be shown as well. Beside that an overlay window shows the value of the TLM modulation as well:




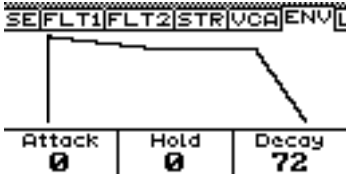
Last, but not least - sometimes you may come across a parameter that does not tell you anything. Don't hesitate to use the help function in such a case. If for example you hold the TLM encoder in the matrix or the display a little bit longer, the TLM help screen pops up in the display.

**VCO Time Linearity**  
 Modulation changes the shape of the oscillator waveform. Results in PWM if used with rectangular waves.  
 LOCK

You should now play around a little bit further with all these editing and navigation features. Use the help function whenever something appears that you are not familiar with. Later inside the parameter reference we will not cover all these different editing options anymore. We'll assume, that you know how to reach different views and edit sections in later chapters. If we were to describe that again and again in detail, the manual would get too heavy for overseas shipments.

After practising a little bit you may want to do a little test. Try to figure out how to reach the envelope generator graphics view in the display. If you find it you mastered the menu navigation contest.

Edit matrix navigation check - how to reach the envelope graphic view:	
[VCF]	Push the [VCF] button opens the VCF edit menu.

Edit matrix navigation check - how to reach the envelope graphic view:	
[ATTACK]	Push the [ATTACK]-encoder button in the edit matrix.
	
By selecting an envelope generator parameter in the matrix, the envelope generator edit menu opens automatically. Envelope 3 is preselected because EG 3 is assigned to the VCF1 cutoff frequency.	
[PAGE]	If you now push the [PAGE]-encoder button a couple of times, the graphic view will pop up automatically:
	
Edit matrix encoder 5-8	With the edit matrix encoders [ATTACK], [DECAY], [SUSTAIN] and [RELEASE] the envelope shape can be altered. The graphic changes accordingly. An additional envelope parameter is assigned to the middle display encoder - [HOLD] controls the length of a plateau between the attack and the decay phase of the envelope.

After learning everything about menu navigation it's time to learn more about the synthesizer engine of the Accelerator.

## 5.1 Overview about the synthesis engine features

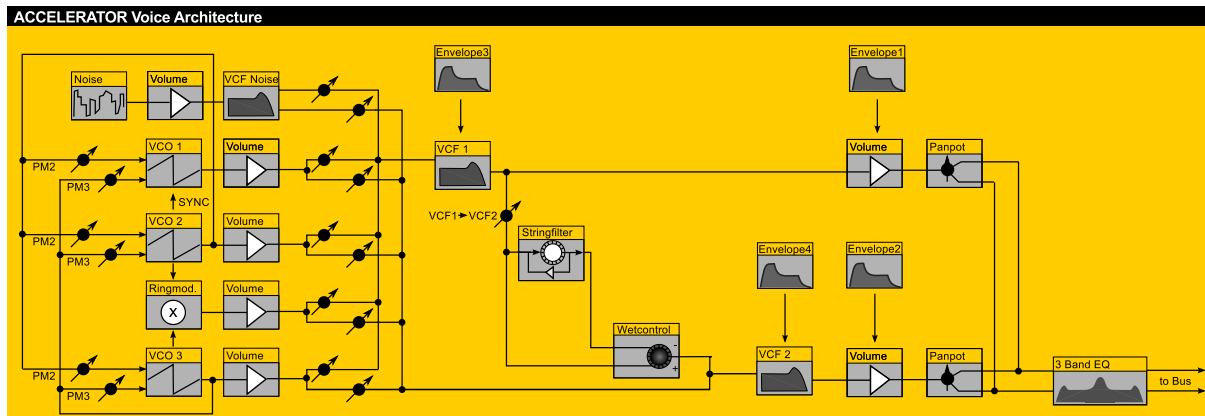
On the next page you see a graphic overview of the voice architecture. We omitted envelope generator 5 and 6 as well as the LFO section and the modulation matrix. We also omitted the realtime controls, the step sequencer and the FX-Bus. Otherwise, the graphic would become too complex. But you will get an impression about the raw voice architecture.

Oscillators as well as the noise source have independent level controls for both Multimode filters. The noise source has an additional Multimode filter.

Oscillator signals can be fed parallel into both filters with adjustable levels. Filter 1 can be fed into filter 2 for series configurations. Between filter 1 and filter 2 is a special string filter that allows for a wide range of virtual instrument FXs. As you can see, Multimode filter 1 acts as a prefilter and filter 2 acts as a post filter for these virtual instrument FXs. You will learn more about the string filter in a later chapter. The string filter can be bypassed for normal series configurations of filter 1 and 2.

At the end of the signal chain is a 3 band full parametric EQ.

Ok - that is really a very simple overview only but it should give you a first impression about the sonic capabilities. In the picture you can also locate the phasemodulation between oscillators and you can check, which envelopes are assigned to which sections by default. Everything else will be described in much more detail in the different section chapters for VCOs, VCFs, VCAs, LFOs and the modulation matrix.



## 5.2 Oscillator section

The Accelerator sports 3 oscillators, one filtered noise source and a ringmodulator per voice. The oscillators have continuously adjustable waveforms, time linearity modulation for further wave adjustments, oscillator 2 and 3 can phase modulate oscillator 1-3, oscillator 2 can synchronize oscillator 1 and oscillator 2 and 3 can be fed into the ringmodulator. All these signal sources can be fed with independent adjustable volumes into both filters. First we will concentrate on the oscillators.

Oscillator parameters reference	
VCO waveform [WAVEFRM]	The waveform changes the VCO signal shape from sine over triangle and sawtooth to rectangle.
Time Linearity Modulation [TLM]	The TLM modulation changes the shape of the oscillator waveform. Results in pulswidth modulation on rectangle waves.
Oscillator synchronisation [SYNC] ( VCO 1 only)	This parameter is only available in the oscillator 1 section. Oscillator 1 gets synchronised to oscillator 2. If oscillator 1 is synchronised to oscillator 2, each zero crossing of oscillator 2 resets oscillator 1 to the beginning of the waveform. At settings below 127, oscillator 1 only resets, if it's waveform is close to the zero crossing as well. The value determines how close the waveform shape must be at the zero crossing in order to get resetted by Oscillator 2.

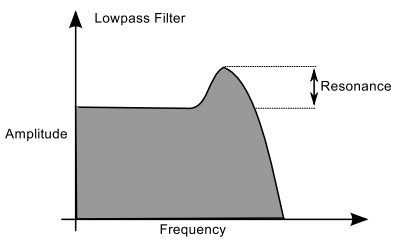
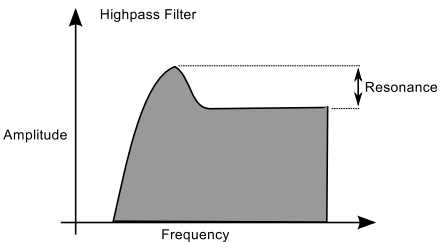
Oscillator parameters reference	
VCO2 phasemodulation [VCO2PM]	Controls the depth of the oscillator 2 phase-modulation.
VCO3 phasemodulation. [VCO3PM]	Controls the depth of the oscillator 3 phase-modulation.
Phasestartpoint [PHASE]	At a value of 0 the oscillator is set to freerunning mode. Values above zero start the oscillator at a certain phase.
Coarse tune [COARSE]	Adjusts the pitch of the oscillator in halftone steps.
Finetune [FINETNE]	Finetune (percentage)
Frequency Offset. [FREQOFF]	Finetune in Hertz (linear detuning for equal frequency beating between oscillators over the entire keyboard range).
Oscillator Volume. [VOLUME]	Oscillator Volume. The volume can be modulated in the modulation matrix. If volume is set to zero, no oscillator signal can be fed into the filters with the filter feeds.
Oscillator feed for VCF 1. [FEED1]	Controls the feed level for multimode Filter 1 (VCF1).
Oscillator feed for VCF 2. [FEED2]	Controls the feed level for multimode filter 2 (VCF2)
Pitchscaling. [SCALE]	At a value of 12, each key at the claviatur increases the oscillator pitch by one halftone. Values below 12 decrease the pitch difference between keys, values above increase the pitch difference.
Waveform inversion. [INV]	This parameter is only available for oscillator 1. If the inversion is set to 1, the waveform runs backwards. If the waveform is set to sawtooth and a second sawtooth oscillator runs with a little detune, the resulting waveform sum looks similar to a pulsewidthmodulated rectange.
Ringmodulator volume. [RINGVOL] (VCO3 section only)	Sets the ringmodulator volume. The outputs of oscillator 2 and 3 are fed into a ringmodulator. A ringmodulator builds the sum and the difference of the two oscillator frequency spectrums.

Oscillator parameters reference	
Ringmodulator filter 1 feed. [RINGF1] (VCO3 section only)	Controls the ringmodulator level for filter 1.
Ringmodulator filter 2 feed. [RINGF2] (VCO3 section only)	Controls the ringmodulator level for filter 2.

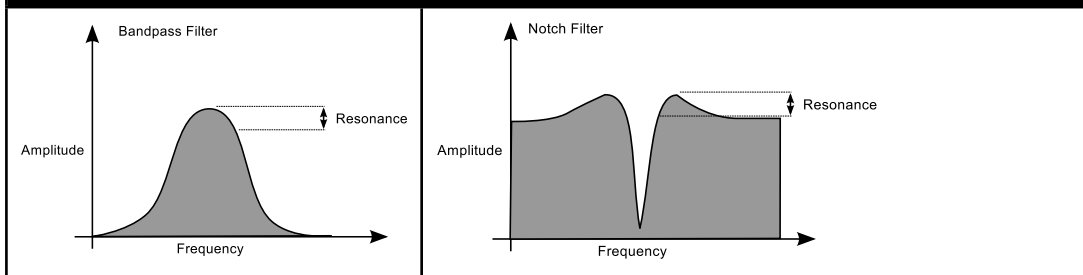
### 5.3 Noise section

The noise section of the Accelerator has an independent multimode filter section. As the volume and the filter parameters can be controlled by envelopes and other modulation sources in the modulation matrix, adding noise keeps the rest of the sound engine nearly untouched - even if you need a short noise burst with a certain frequency spectrum.

The noise section is located directly behind the three oscillators in the edit menu. Select the noise section by dialing in the Noise tab in the display menu.

Noise parameters:	
Noise volume. [NOISVOL]	Controls the level of the noise signal.
Noise feed for VCF1. [NOISEF1]	Controls the VCF1 noise feed.
Noise feed for VCF2. [NOISEF2]	Controls the VCF2 noise feed.
Noise filter keyboard Scaling. [KEYSCL]	Controls the keyboardscaling of the noise filter frequency. Higher notes will increase the cutoff frequency if the keyboard scaling has a positive value.
Cutoff frequency. [CUTOFF]	The filter frequency of the noise filter.
Filterresonance. [RESO]	The resonance of the noise filter.
Filtertype. [FLTTYPE]	Lowpass, highpass, bandpass and notch are the different available filter types. Each filter-type is available in 12dB and 24dB versions.
	

## Noise parameters:

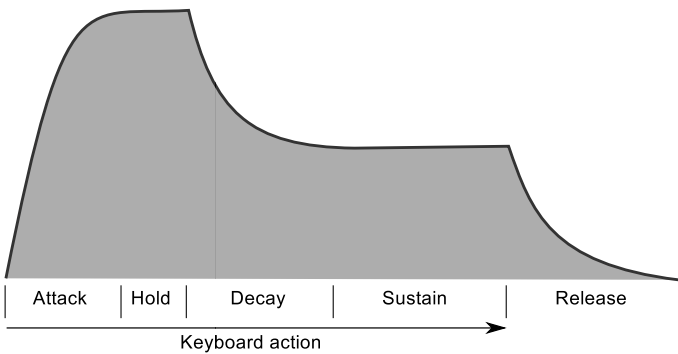


### 5.4 VCF section (Multimode filters)

The Accelerator sports two multimode filters plus the noise multimode filter. In addition, the Accelerator has a special string filter which we will describe in the next chapter. All filter types have in common, that they are passing certain frequency components while damping other frequency components. Depending on the resonance settings, the frequency components at the cutoff frequency can get boosted as well.

## Filter section VCF1 and VCF2

Cutoff frequency. [CUTOFF]	The cutoff frequency of the filter.
Resonance. [RESO]	The resonance of the multimode filter.
Filter type. [FLTTYPE]	Lowpass, highpass, bandpass and notch are the different available filter types. Each filter-type is available in 12dB and 24dB versions.
Envelope depth. [EG-DEPTH]	The third envelope is assigned to the first VCF and the fourth envelope is assigned to the second VCF. EG-depth controls the depth of the envelope control over the cutoff frequency.

Filter section VCF1 and VCF2	
Keyboardscaling. [KEYSCL]	Controls the keyboardscaling of the cutoff frequency. Higher notes will increase the cutoff frequency if the keyboard scaling has a positive value.
Filter 1 > Filter 2 feed. [F1TOF2] (Filter 1 section only)	Feeds the output of filter 1 into the input of filter 2.
Attack time. [ATTACK]	Attack time of the filter envelope generator.
Hold time. [HOLD]	Hold time between the attack and the decay phase
Decay time. [DECAY]	Decay time of the filter envelope.
Sustain level. [SUSTAIN]	Hold level of the filter envelope.
Release time. [RELEASE]	Release time of the filter envelope.
<p>Envelope Generator</p>  <p>Attack   Hold   Decay   Sustain   Release</p> <p>Keyboard action →</p>	
<p>In the graphic above you see a typical shape of an envelope curve. The height of the curve in case of a filter envelope is the resulting filter frequency value change. If EG-depth is set to zero, the envelope will not alter the frequency at all. Negative values for EG-depth invert the envelope shape - the highest point of the envelope shape is than the lowest filter frequency result. Please try to avoid values close to zero for the release time - otherwise you maybe will get glitches when releasing a key. If you push one of the encoder buttons of the envelope generator controls, the envelope edit display menu will pop up. By pushing the cutoff or resonance encoder button will return to the filter edit menu.</p>	

### 5.5 String filter (delay with damped feedback loop)

Just as an explanation - we are calling this delay line „string filter“ because it sounds like a plucked string when you feed a short noise peak into it. The delay is tuned to a musical pitch. Because of the damping filter the resulting tone of the self oscillation delay line gets muffled like a plucked string. Only the beginning of the tone has high frequency components. Please check performance A.1.2. This performance is a

combination of a plucked string sound with a pad sound. The plucked string component is the result of the string filter settings.

### Performance A1.2: Guitar Strings

After selecting the performance select the single sound mode by pressing [SINGLE] and select part 1 by pushing [PART] and selecting part 1 (lower) with the numeric button. That is a good basic setting for string filter experiments. The sound of the plucked string instrument can be changed by the string filter settings described in the next reference table but also by changing the noise filter settings and the envelope generator 5 that is assigned to the noise volume. The quickest way to reach the string filter parameters is pushing the [VCF]-button and dialing in the „STR“ tab with the page encoder.

But the string filter can not only simulate plucked string sounds. The next example shows something completely different - a flute sound:

### Performance A1.6: Andensplit

Push the [PERFORM-button again and select performance A1.6. The stringfilter sound is assigned to the right keyboard area of the split performance: A nice sounding flute emulation. Select again the single mode but this time select part 2 instead of part 1. Now you can tweak the parameters of this flute sound in the sound edit menu. In this example the feedback has a negative value. In that case the delay signal gets phase reversed in the feedback loop. That results in a different sound character.

Essential for the sound character are not only the string filter settings. The frequency spectrum and the volume envelope assigned to the input and output signals are critical as well. In the flute examples not only a short noise burst is fed into the filter. A continuous oscillator signal is fed into the string filter as well. If you change the shape of envelope 5 the sound will change dramatically. Also the noise filter changes the characteristics of the flute sound.

All these parameters are a nice playground for the design of virtual instruments.

String filter parameters:	
Coarse tune. [Coarse]	Coarse tune in the string filter is nothing else than the delay length quantized to halftones. The length of the delay is depending on the keyboard notes. The length of the delay line is depending on the delay line memory. For that reason the delay can not get tuned in the same range like the oscillators. If you reach a pitch on the keyboard that is too low for the delay length, the pitch automatically get's transposed one octave up.



String filter parameters:	
Finetune. [FINE]	Finetune allows for the tuning of the delay line. Depending on the feedback and wet settings, nice timbre changes will result on continuous oscillator signals.
String filter routing and dry/wet control. [WET]	At 0 the string filter is bypassed. Signals from VCF 1 are fed directly into VCF 2. At +127 only the output signal of the string filter is fed into VCF2. At -127 the string filter signal gets phase reversed and is also fed exclusively into VCF2. At +/-64 a mix of the string filter output and the VCF1 output is fed into VCF2 (-64 phase reversed). By using different values you can control the VCF1 and stringfilter output balance.
String feedback. [STRFBK]	The feedback parameter controls the level and phase of the feedback signal. At negative values the feedback signal gets phase reversed in the loop.
String damping. [STRDAMP]	Controls the highs damping in the feedback loop.
Lows damping. [LO-DAMP]	Controls the lows damping in the feedback loop.
Initial pitch bend. [INI-BEND]	The string filter has a auto glide function that simulates the intial pitch drift of the string simulations. If you pluck a string with a plectrum, the pitch gets a little bit altered. This parameter controls how deep the pitch gets bended at the Attack phase. Positive signs bend the pitch from an higher pitch to the basic pitch and negative values have a lower starting pitch.
Glide [GLIDE]	Adjusts the bending time.

## 5.6 VCA and voice EQ section

Signals of both filters can be placed to different stereo panpot positions as the VCA and the EQ section are running in stereo.

If both filters are running in a parallel configuration and different signals are fed into both filters, wide stereo images can be created. If you have a closer look to the editing matrix you will realize, that the VCA section only has one LED for the optical selection feedback. If VCA1 is selected the LED will light up permanently and if you switch the VCA button again the LED will start to flash indicating, that VCA 2 is selected. VCA 1 is located behind the VCF 1 output and VCA 2 is located behind the VCF

2 output. Envelope 1 is hardwired to the VCA 1 volume and envelope 2 is hardwired to the VCA 2 volume.

Both VCA signals are fed into a stereo bus with a 3 band full parametric EQ section. Although it is a stereo EQ you don't need to edit parameters for the left and the right channel independently. The filter settings are working always on both channels simultaneously. That makes it easier to control stereo signals with the EQ.

The volume envelopes can be accessed directly in the edit matrix. By pushing one of the envelope parameter encoders the display menu of the envelopes opens and the additional hold parameter, that is not available in edit matrix becomes accessible.

VCA and EQ Section parameters:	
Filterpanpot position [FLT1PAN][FLT2PAN]	These two parameters control the panpot positions of both filter outputs independently from each other.
Filter 1 and Filter 2 Level control. [FILTER 1 LEVEL] and [FILTER 2 LEVEL]	These parameters control the Filter output levels. Attention - these parameters are only accessible in the edit matrix but not in the VCA edit menu.
Voice Trim. [TRIM]	The voice trimming is essential to get equal volumes on different sounds. Sounds with three oscillators as an example will have a higher level than sounds with only one oscillator. With the voicetrim parameter you can adjust the level of the voice. The parameter can be accessed in the edit matrix as well as in the bus edit menu. The bus edit menu can be accessed by pushing the [BUS-VOLUME] encoder button at the upper right corner of the advanced edit section. By pushing the [PAGE]-encoder level meters can be shown. These level meters are running pre Master - they show the level independent from the master volume. That makes it easy to adjust the voice volume.
Key velocity. [VELOCITY]	The VCA level can be controlled by the key velocity. The parameter in the edit matrix controls a node inside the modulation matrix. If one assigns this note to a different modulation source and target, the parameter will not control the VCA key velocity. If you push that encoder, the display menu jumps directly into the modulation matrix menu and selects that node for you.

### VCA and EQ Section parameters:

The last 4 parameters in the edit matrix are assigned to the VCA envelope parameters. Envelope 1 controls the VCA 1 level and envelope 2 controls the VCA 2 level. By pushing one of the envelope parameters you can recall the envelope edit menu.

Attack time. [ATTACK]	The attack time controls, how fast the sound reaches it's maximum level.
Hold time. [HOLD]	This parameter holds the maximum level for an adjustable time before entering the decay phase.
Decay time. [DECAY]	This parameter controls how fast the level falls down to the sustain level.
Sustain level. [SUSTAIN]	As long as you hold the key on the keyboard, the level remain on the sustain level.
Release time. [RELEASE]	The release time decides how fast the voice fades out after releasing the key. This time should not set too short to avoid glitches at the end of a sound.
If all three EQs would run as peaking filters only, they would be interchangeable. But for shelving filter modes of the first and the last EQ they must be placed correctly at the low and the high end of the frequency range. For that reason they are named LOW-EQ, MID-EQ and HIGH-EQ although all three can be tuned over the entire frequency range.	
Low EQ frequency. [LOWFRQ]	This parameter controls the LOW-EQ frequency setting.
Low EQ Q. [LOWQ]	This parameter controls the q-factor of the LOW EQ filter. At higher q settings the affected frequency band of the filter is getting narrower. At the left end of the range the LOW EQ switches into shelving filter mode.
Low EQ Gain. [LOWGAIN]	This parameter controls the accentuation or lowering of the affected frequency band.
Mid EQ frequency [MIDFRQ]	This parameter controls the MID-EQ frequency setting.
Mid EQ Q [MIDQ]	This parameter controls the q-factor of the MID EQ filter. At higher q settings the affected frequency band of the filter is getting narrower.

VCA and EQ Section parameters:	
Mid EQ Gain [MIDGAIN]	This parameter controls the accentuation or lowering of the affected frequency band.
Hi EQ Frequenz [HIFRQ]	This parameter controls the HIGH-EQ frequency setting.
Hi EQ Q [HIQ]	This parameter controls the q-factor of the HIGH EQ filter. At higher q settings the affected frequency band of the filter is getting narrower. At the left end of the range the HIGH EQ switches into shelving filter mode.
Hi EQ Gain [HIGAIN]	This parameter controls the accentuation or lowering of the affected frequency band.

### 5.7 LFO section

The Accelerator sports 4 LFOs. Three of these LFOs are polyphonic - that means each voice of a played chord has it's own independently running LFO. They have the same frequency and waveform settings but they are normally not running with the same phase position. The voice LFOs are perfect for subtle modulations and the enhancement of liveness. The fourth LFO is a track LFO. This LFO is monophonic and modulates all voices with one single modulation wave. If you need a vibrato or a filter modulation that affects all voices in the same way, you should use the track LFO.

All LFOs can be synchronised to the internal or external tempo. At the left range of the LFO speed, the rate can be controlled with note values.

LFO 1-3 can be directly accessed by the LFO button of the edit matrix. The track LFO is only available in the display menu.

LFO section parameters:	
LFO waveform. [WAVEFORM]	The waveform parameter changes the LFO signal shape from sine over triangle, sawtooth and rectangle to a random signal.
LFO rate. [LFORATE]	This parameter controls the LFO speed. At the lower end of the range the LFO rate can be controlled with note values between 4/1 and 1/32 notes. The rate is then depending on the tempo setting.
LFO depth. [DEPTH]	This parameter controls the maximum depth of the LFO modulation.

LFO section parameters:	
LFO phasestartpoint [PHASE]	This parameter is only available for the voice LFOs 1-3. At zero the LFOs are set into free-running mode. Each note will start the LFO at a different phase startpoint. At settings above 0 the LFO always start with a fixed phase startpoint.
The last 4 parameters in the edit matrix are not really LFO parameters. We mapped popular modulation matrix assignments to these knobs. If one changes these default modulation matrix nodes to other sources and targets, the encoders are maybe controlling different modulations. You can verify the assignment of the modulation matrix nodes by pushing the encoder buttons. The display menu will then open the modulation matrix editor and will select the node which is under control of the selected encoder.	
Modulationwheel depth control. [MW-DEPTH]	Here you can control how deep the modulation wheel controls the modulation depth of the LFO.
Aftertouch depth control. [AT->DEPTH]	Here you can control how deep the aftertouch controls the modulation depth of the LFO.
Expression pedal depth control. [EXP->DEPTH]	Here you can control how deep the expression pedal the modulation depth of the LFO.
Modulationwheel rate control. [MW->RATE]]	Here you can control how deep the modulation wheel controls the modulation rate of the LFO.

## 5.8 Envelope section

The envelope section has been covered already multiple times in this manual. You can easily reach this edit section with the [PAGE]-dial (tab „ENV“). In the VCA and VCF edit matrix the envelope menu can be selected directly with the current envelope already preselected by pushing one of the encoder buttons that are assigned to the envelope parameters.

2 of the 6 envelope generators (ENV 1 and 2) are hardwired to the two VCAs. You can not interrupt that connection. But you can map this envelopes to additional targets in the modulation matrix.

Envelopes 3 and 4 all premapped in all factory presets to the cutoff frequencies of the two filters. This assignment can be changed in the modulation matrix.

Envelope 1	>	VCA 1 (Fixed assignment)
Envelope 2	>	VCA 2 (Fixed assignment)
Envelope 3	>	VCF1 (editable)
Envelope 4	>	VCF2 (editable)

The envelope parameters have been described already in the VCA and the VCF section. We are not repeating this information here. You can also refer to the help system if you need a freshup.

The envelopes appearing as modulation sources in the modulation matrix. The attack time, decay time and release time are modulation targets in the modulation matrix as well.

## 5.9 Modulation matrix (voice modulation matrix)

The Accelerator sports a 32 node modulation matrix on voice level. That means 32 modulation sources can be routed into 32 modulation targets. Additionally the Accelerator has an eight node part/bus level modulation matrix that will be covered in the next chapter.

At the next page we you'll find a graphic overview over the voice modulation matrix. At the left side (after rotating this book by 90 degrees) you can locate all available modulation sources. At the top of this table are the modulation targets. The dots in the matrix overview are nodes, which are preassigned by default. That are mainly nodes which depth can be accessed directly by edit matrix encoders.

Each node in the matrix has three parameters: A modulation source, a modulation target and the modulation depth for that node. The modulation depth also appears as a modulation target. That allows for to modulate that modulation node by another modulation source or by a realtime control.

You should avoid to change modulation assignments that are already predefined in order to keep the knob assignments in the edit matrix consistent. Therefor new nodes should always be assigned at the end of the matrix.

The edit page of the modulation matrix can be reached in the sound edit menu by dialing in the tab „MOD“ or as described in chapters above by pushing an encoder button in the edit matrix that is assigned to the modulation depth of a node:

[STR VCA ENV LFO USR MOD C]		
Source	Target	Depth
01: ADSR1	OUT1VOL	127
02: ADSR2	OUT2VOL	127
03: ADSR3	FLT1CUT	72
04: ADSR4	FLT2CUT	0
05: MODLJHL	LFO1DPH	0
06: MODLJHL	LFO1RTE	0

With the [↑] and [↓]-buttons the nodes of the matrix can be selected. The first encoder selects the modulation source, the second selects a modulation target and the third encoder controls the modulation depth of that node.

In the graphic above the first two entries are not necessary anymore as we decided during the development to hardwire the envelopes 1 and 2 to the VCA. You can use these entries for other modulation connections without losing envelope control over the volumes.



If you don't know what a selected modulation source or target is doing you can use the help system to get a short description about the selected parameter. Just push and hold the first encoder to get info about the modulation source and the second to get a description about the modulation target. In the following screenshot you see as an example the help text for the envelope generator as a modulation source:

**Envelope Generator x**  
 One of the envelope  
 generators. This source  
 works above zero. Enve-  
 lopes 1-4 are preassigned:  
Envelope-Assignments  
 Lock

Modulation sources for the modulation matrix:	
LFO1-TRACK LFO	Selects one of the LFOs as a modulation source. These modulation sources are oscillating around zero.
LFO1ABS + TRACKLFO ABS	Selects one of the LFOs as a modulation source. These modulation sources are oscillating above zero.
ADSR1 - ADSR6	Envelopes 1-6.
ADSR1D - ADSR6D	Envelopes 1-6 again but in a special operation mode for pitch envelope usage. The sustain level is always zero in order to get the correct pitch on sustained notes.
Pitch	The pitch wheel (the left wheel).
MODWHL	The modulation wheel.
AFTT	The aftertouch.
AFTTM	Multiplying aftertouch - the aftertouch value multiplies with the parameter value of the target.
EXP	Expression pedal.
EXPM	Multiplying expression pedal - the expression value multiplies with the parameter value of the target.
VELOC	Keyboard velocity.
VELOCM	Multiplying keyboard velocity.



Modulation sources for the modulation matrix:	
CTRL1-CTRL8	MIDI controller 1-8.
Key	Key number. (MIDI Note) as a value.
SEQ1 - SEQ3	The sequencerline outputs of the step sequencer.
RND	A random value that changes with every keyboard hit.
RNDSQ	The same like above but in a squared version that has only positive values.
Button 1 and 2	The performance buttons above the wheels can be used to send an fixed offset value to the modulation target. Depth controls the offset value in that case. When used on multiple targets with different values you can create sound triggerable sound variations.
HOLD	Also the sustain pedal can be used to send a fixed value to the modulation target for sound variations.
Release	Sends a fixed value as soon as the keyboard key is released.
OFFVEL	Release velocity. The value is higher depending on the speed you release the keys.
OFFVELM	Multiplying release velocity.
ACCX	Positioning sensor x-axis output.
ACCY	Positioning sensor y-axis output.

Modulation targets for the modulation matrix:	
TUNE	Modulates the pitch of all oscillators.
VCO1TUNE - VCO3TUNE	Modulates the pitch of single VCOs.
VCO1-VCO3 WAVE	Modulates the waveform selection of VCOs.
VCO1-VCO3 TLM	Modulates the TLM modulation of the VCOs.
VCO1-VCO3 VOLUME	Modulates the VCO Volumes.

Modulation targets for the modulation matrix:	
VCO1PM2, VCO1PM3, VCO2PM2, VCO2PM3, VCO3PM2, VCO3PM3	Modulates the depth of the phasemodulations.
RINGVOL	Modulates the ringmodulator output volume.
NOISVOL	Modulates the Noise output volume.
OUT1VOL, OUT2VOL	Modulates the Volume of the selected VCA.
OUT1PAN, OUT2PAN	Modulates the panpot position of the selected VCA.
FLT1CUT - FLTNCUT	Modulates the cutoff frequency of the selected filter. VCFN is the noise filter.
FLT1RES - FLTNRES	Modulates the resonance of the selected filter. VCFN is the noise filter.
LFO1-3 DEPTH	Modulates the depth of the selected LFO. The track LFO is available in the bus/part modulation matrix (global matrix).
LFO1-3 RATE	Modulates the rate of the selected LFO.
STRTUNE	Modulates the tuning of the string filter delay.
STRFB	Modulates the feedback of the string filter delay line.
STRDAMP	Modulates the highs damping in the string filter delay feedback loop.
STRWET	Modulates the wet control of the string filter.
EG1ATT - EG6ATT	Modulates the attack time of the selected envelope generator.
EG1DEC - EG6DEC	Modulates the decay time of the selected envelope generator.
EG1REL - EG6REL	Modulates the release time of the selected envelope generator.
O1SYNC	Modulates the depth of the oscillator synchronisation of VCO1.
MDDPH1-32	Modulates the modulation depth of the selected modulation node.

## 5.10 Global modulation matrix (bus/part modulation matrix)

The global modulation matrix covers parameters that work on the whole part or even on the bus FX system instead of the voice parameters covered by the voice modulation matrix.

In the global modulation matrix you can for example control the FX level of the delay by the modulation wheel or switch the leslie speed on organ sounds.

The global modulation matrix can be reached in the edit menu by selecting the tab „GMOD“:

JCA	ENV	LFO	USR	MOD	GMOD
Source	Target	Depth			
01: BUTTON1	LESSPD	127			
02: NONE	NONE	0			
03: NONE	NONE	0			
04: NONE	NONE	0			
05: NONE	NONE	0			
06: NONE	NONE	0			



Modulation sources for the global modulation matrix:	
TRACK LFO	Selects the Track LFO as a modulation source. This modulation source oscillates around zero.
TRACKLFO ABS	Selects the Track LFO as a modulation source. In this case, the modulation source oscillates above zero.
CTRL1-CTRL8	MIDI controller 1-8
SEQ1 - SEQ3	The parameter sequencerline outputs of the step-sequencer.
Pitch	The pitch bender.
MODWHL	The modulation wheel.
AFTT	The aftertouch.
AFTTM	Multiplying aftertouch.
EXP	Expression pedal.
EXPM	Multiplying expression pedal.
Button 1 and 2	The performance buttons above the wheels can be used to send an fixed offset value to the modulation target. Depth controls the offset value in that case. When used on multiple targets with different values you can create sound triggerable sound variations.

Modulation sources for the global modulation matrix:	
ACCX	Positioning sensor x-axis output.
ACCY	Positioning sensor y-axis output.

Modulation targets for the global modulation matrix:	
Track LFO modulation depth [TLFODPH]	Modulates the track LFO depth.
Track LFO modulation rate [TLFORTE]	Modulates the Track LFO rate.
FX bypass [FXBYP]	Controls the bypassing of the entire FX chain.
FX wet/dry balance [FXWET]	Controls the DRY/WET balance of the entire FX chain.
Distortion wet/dry balance [DISWET]	Controls the DRY/WET balance of the distortion FX.
Delay wet/dry balance [DLYWET]	Controls the DRY/WET balance of the modulation delay.
Chorus wet/dry balance [CHRWET]	Controls the DRY/WET balance of the chorus FX.
Phaser wet/dry balance [PHSWET]	Controls the DRY/WET balance of the Fader FX.
Leslie dry/wet balance [LESWET]	Controls the DRY/WET balance of the leslie FX.
Reverb dry/wet balance [REWWET]	Controls the DRY/WET balance of the reverb FX.
Leslie speed control [LESSPD]	Controls the leslie speed.
The following two modulation targets are only functional at expanded units with activated drawbar simulation software addon:	
Organ click volume [ORGCLK]	This target controls the level of the organ keyboard click.
Organ percussion volume [ORGPERC]	This target controls the organ percussion level.

## 5.10 Pitch bend range

The depth of the pitchbend range can be adjusted independently for the positions above and below the center position.

Adjusting the pitch bend range:	
Select the program select Mode. [PROGRAM]	Push the [PROGRAM] button to reach the part parameters:
	
[↑] [↓]	Select the pitchbend parameters with the cursor buttons:
	
[BendDn]	The first encoder changes the pitchbend range in halftones for downwards movements.
[BendUp]	The second encoder changes the pitchbend range in halftones for upwards movements.
<p>The pitchbend ranges can be adjusted for each part independently. The pitchbender is also available as a modulation source in the modulation matrix. The depth controls have no impact on the modulation matrix nodes.</p>	

## 5.11 Mono modes and retrigger settings

Monophonic synthesizers are reacting very different if players hit more than one key by accident. As only one set of oscillators is available for one monophonic voice, only the highest or lowest note played on the keyboard controls the actual pitch.

Digital keyboard scanning keyboards additionally allows for the recognition of the last hit key.

Another problem is the triggering of the envelope generators. A lot of vintage instruments are not retriggering the envelopes on overlapping notes. If the sustain level is set to zero on such a synth and if the performer plays only overlapped notes, the sound will fade out and notes are not audible anymore. Special multitrigger modes that are reacting on pitch changes allow for retriggering the envelopes as soon as a new pitch has been detected. But not all synthesizers offer that feature.

But these restrictions make some playing techniques possible which can not be performed on polyphonic synthesizers. For that reason the Accelerator allows for the simulation of different pitch and retrigger detections. Even the retriggering mode can be defined. Envelopes can get retriggered completely from the beginning, from the

beginning but without resetting the initial level or will not retrigger at all at overlapping notes. So all these soloing techniques normally only available on monophonic synths can be performed on the Accelerator as well.

Mono modes and retrigger settings:	
Select the program select modus. [PROGRAM]	Push the [PROGRAM]-button to open the play parameter menu:
<pre> PLAY TEMPO ARP ZONE BUS  ----- Current Part: 0 Program: A3.0 <b>Fat Saw Lead</b> ----- Set   Category   Load Snd <b>A</b>   <b>Lead</b>   FatSwLd </pre>	
[↑] [↓]	Push the arrow buttons until you have reached the Monomode and retrigger parameters:
<pre> PLAY TEMPO ARP ZONE BUS  ----- Current Part: 0 Program: A3.0 <b>Fat Saw Lead</b> ----- MonoMd   MonoTrg   GtMode <b>Last</b>   <b>Reset</b>   <b>Legto</b> </pre>	
[MonoMd]	The first encoder selects the monophonic play modes. By default this parameter is set to polyphonic. The other modes are described below:
Polyphonic [Poly]	„Polyphonic“ is the standard mode. Retrigger settings have no effect on the sound.
Last note priority. [Last]	Always the last detected note sets the actual pitch.
Highest note priority. [High]	The highest note on the keyboard sets the actual pitch.
Lowest note priority. [Low]	The lowest note sets the actual pitch.
Envelope retrigger mode. [MonoTrg]	The second parameter sets the envelope retrigger mode:
Legato without retriggering. [Legto]	Overlapping notes are not retriggering the envelopes.
Resets the envelope from the current envelope level. [Retrg]	Overlapping notes are retriggering the envelopes but the attack phase starts from the current envelope level.

### Mono modes and retrigger settings:

Complete retrigger from zero level. [Reset]

Overlapping notes are detected and retrigger the envelope completely from zero level.

## 5.12 Glide and glissando

The Accelerator sports polyphonic glissando and glide (portamento). The pitch-up and pitch-down speed can be set independently.

### Glide and glissando settings:

Select the program select modus. [PROGRAM]

Push the [PROGRAM]-button to open the play parameter menu:

```

PLAY|TEMPO|ARP|ZONE|BUS|
Current Part: 0
Program: A3.0
Fat Saw Lead
-----
Set | Category | Load Snd
A | Lead | FatSwLd

```

[↑] [↓]

Push the arrow buttons until you have reached the „GIMode“ parameter:

```

PLAY|TEMPO|ARP|ZONE|BUS|
Current Part: 0
Program: A3.0
Fat Saw Lead
-----
MonoMId | MonoTrg | GIMode
Last | Reset | Legto

```

[GIMode]

With the third encoder, glide can be activated. You also can decide, whether only legato notes activate the glide function or all notes:

[OFF]

Glide is turned off.

Legato Mode [Legto]

Only legato notes will activate the glide function.

[ALL]

All notes will be played with glide or glissando.

[↓]

Now select the next edit page to edit the glide parameters:

```

PLAY|TEMPO|ARP|ZONE|BUS|
Current Part: 0
Program: A3.0
Fat Saw Lead
-----
GlideDn | GlideUp | GlideGz
15 | 15 | 0

```

[GlideDn]


This parameter controls the downward glide time.

Glide and glissando settings:	
[GlideUp]	This parameter controls the upward glide time.
[GlideQz]	Glide Quantize allows for gliding with quantisation. Instead of smooth pitch changes the glide function creates pitch steps. That is also known as glissando.

### 5.13 Saving single sounds

Single sounds, that are part of a performance, must not get saved separatly. The performance memories hold the sound data of all involved single sounds. But if you want to recall a new single sound from other performances or if you want to use a new sound in single sound mode, you can save the sound at a separate single sound memory slot. A single sound memory does not only contain the sound parameters but also the complete FX bus settings. Arpeggiator settings and sequencer references are only saved in performances. For that reason you can select another single sound without stopping the arpeggiator or the sequencer. The sequence will stay running while you are testing different single sounds.

Single sounds are filed under categories. There are categories like basses, organs or pads that make it easy to find a desired sounds. The factory presets are even saved in categorised memory banks. The numeric buttons at the right side of the panel are labelled with these categories. If the Accelerator is set to bank select mode, you can choose a category and switch into program afterwards to reach sounds from that category very easily. When saving sounds you should select these categories carefully. If you save single sounds under not matching categories, the randomize sound function will not work as supposed after a while as the randomize sound function uses these categories for the optimisation of the results. There is one category „others“ that can always be used, if you don't want to get the programmed sound used for the randomize sound function.

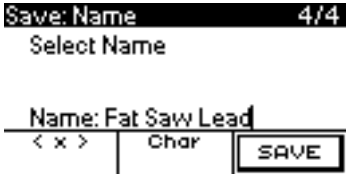
Saving single sounds procedure:	
[SINGLE]	Select the single sound mode.
[PROGRAM]	Select the program selection mode.
	
[SAVE]	Pushing the [SAVE]-button enters the Save-dialog. You can always leave the save-dialog be pushing the [SAVE]-button again.



## Saving single sounds procedure:

<p><b>Save: Up/Lo 1/4</b> Choose the part you want to save:</p> <p>Select: 0</p> <p>Perf. Part Single 1</p>	
[PART]	Choose the part with the sound you want to save with the middle display encoder. If you are not sure about your selection you can play the selected part on the keyboard after selection.
[SINGLE]	If you found the desired part press the [Single]-button in the display menu with the third encoder button.
<p><b>Save: Dest. 2/4</b> Select memory: Replace Fat Saw Lead Program: A3.0</p> <p>Set/Bnk Slot NEXT A-3 0</p>	
[Set/Bnk]	With the first encoder you can select the set and the banknumber of the memory location.
[Slot]	With the second encoder [SLOT] you can select the desired memory slot for saving. While selecting different slots, you can play the sound of the target memory on the keyboard. That makes it easy to find a sound you want to overwrite for the new sound.
[NEXT]	After making a selection you can press the [NEXT]-button.
<p><b>Save: Cat. 3/4</b> Select category for new sound:</p> <p>Category: Lead</p> <p>Cat Lead NEXT</p>	
[Cat]	Now you can choose the category for the new sound.
[Next]	Pushing the [NEXT]-button again opens the naming dialog:

### Saving single sounds procedure:

	
< x >	Move the cursor with the first encoder to the desired position of the name-string.
(Char)	Choose the desired character for the selected cursor position with the second encoder.
or:	
[Char]	Push the [CHAR]-encoderbutton to enter the typewriter mode for the keyboard and enter the name with the claviatur.
[SAVE]	Now push [SAVE] to save that sound. This last step automaticly exits the save dialog.
You can leave the save-menu whenever you want by pushing the [SAVE]-button again.	

## 6.0 FX section and bus system

We spent a lot of time into the development of the FX section. It was very important for us, that the FX section matches the same quality level like the sound engine. Noone needs internal FXs in a synthesizer, that get replaced by studio gear whenever someone wants to record the synth in the studio. We are sure, that the quality level or the Accelerator's FX section is good enough to replace some of your studio FXs in the future. The balanced inputs of the Accelerator makes it easy to integrate the Accelerator as a powerful multi FX unit in your studio environment as well.

Effects were always an integral part of the studio sound design. A lot of sought after synthesizer sounds from popular recordings would not be possible by using the synthesizers as they are. Sounds on popular recordings have never been created by simply recording the dry synthesizer signal on tape. The synthesizer sound plus the EQ settings plus FX settings are the key for mindblowing sound creations. We want you to recreate these sounds on stage - without taking the whole studio with you. The Accelerator's FX bus system is perfect for outstanding sound design independent from any additional equipment.

### 6.1 Introduction: FX-chains and output busses

The Accelerator sports 4 stereo busses with FXs. The basic not expanded version of the Accelerator offers 2 part multitimbrality - you can always play up to 2 sounds simultaneously and each of that sound is fed into one of the four stereo FX busses. Only two of the four busses are in use while playing a split or a layer performance. The second pair of stereo busses will only get used, if you switch to another sound or performance. The new sounds are always automaticly assigned to the remaining

busses. That behaviour allows FXs from the former sound to fade out without interruption of echo repeats or reverb release phases. A sustained chord of the former sound will remain with all FXs until the keyboard gets released even if one starts to play with the new sound. With other words - at sound changes the Accelerator behaves like a unit with 4 part multitimbrality. This feature is also called „voice remain with FXs“ and is a great feature during live performances.

With an expansion installed all 4 FX chains can be used simultaneously and independent for multimode recordings. In that case the voice remain feature is turned off.

## 6.2 The output busses

Before talking in depth about the different FXs of the Accelerator we will explain the bus system of the Accelerator. A bus is a stereo audio path in the Accelerator. Buses are allocated dynamically by the sound engine. If one opens the bus edit menu, always the bus of the actual selected part will get opened. The bus number is not visible in that edit menu. If the main part (0) of a split or layer performance is selected the bus menu of the last selected real part will get opened. You should always make sure to select the desired real part before opening the bus menu.

In the bus edit menu you mostly control the levels and the physical input and output connections for that bus. The digital SPDIF output mirrors the main output.

The bus edit menu can be accessed by pushing the [BUS-VOLUME]-encoder button or in the Performance menu by selecting the tab „BUS“:

```

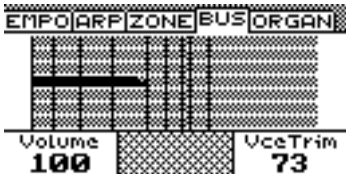
PLAY|TEMPO|ARP|ZONE|BUS|C
VOLUME 100 VCETRIM 18
LIMHARD 0 BUSTRIM 0
TOMAIN 127 TOAUX 0 DIRECTIN 0

```

### Bus edit menu parameter description:

Part volume [VOLUME]	The part volume controls the output level of the actual part. When doing sound editing, you should not match the volume to other parts with the part volume. Use the voice trim parameter instead.
Voice Trimming [VCE-TRIM]	Sounds using three oscillators will probably have a higher peak volume then sounds with one oscillator. In order to equal the volumes of differnt parts you should use the voice trim parameter. Sounds using the distortion algorithm are highly compressed. The volume of these parts should be matched with the post gain parameter of the distortion alorithm.

### Bus edit menu parameter description:

Hard Limiter. [LIMHARD]	Here you can adjust a bus limiter. Signals on the bus will get saturated by this parameter. On high settings you can get the some beastly sounds out of the Accelerator.
BUS Trimming. [BUS-TRIM]	This parameter controls the volume of the entire bus.
Bus to main output feed. [TOMAIN]	This is the bus feed for the main output. If this parameter is set to 0, the bus will not audible anymore at the main output.
Bus to Auxillary feed. [TO-AUX]	This is the auxillary output feed. The entire bus can be sent to the auxillary output.
Direkt in gain. [DIRECTIN]	The Accelerator has a balanced stereo input pair. With the direct in volume you can adjust the input gain. The input gain has a wide range. Dynamic microphones, electric guitars or basses can be connected directly. Please make sure, that the input gain does not distords the input signal. If the input is not in use, the input gain should remain at zero - then the input is muted. Otherwise maybe some background noise will appear at high gain settings.
<p>The Accelerator offers an additional view in the bus menu, where one can control the levels with level meters. That makes it much easier to match the volumes of different sounds. The level meter shows the input level but also the bus levels. The level meter is not dependent on the master volume control. So you can adjust the maximum levels even if you have reduced the master volume for your headphones. The most right vertical line marks a +6dB level. The double vertical line marks the 0 dB gain. Try to keep your single sounds always at 0dB. Summing still has then some dB headroom before clipping may occur. Push the [PAGE]-encoderbutton a couple of times until the level meter shows up. With the arrow buttons you can reach the hidden bus parameters.</p>	
	

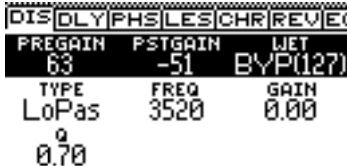
### 6.3 FX fundamentals

At a lot of synthesizers with even more knobs and buttons it's often a nightmare to get a dry signal without any FXs out of the instrument. We know, how important a bypass function is in live and studio situations. For that reason the Accelerator has a

global working FX-Bypass switch on the frontpanel. You can locate that button at the upper left corner of the frontpanel directly under the master volume knob. If the [BYPASS]-function is activated all FXs are silent independent from the sound or the performance you are selecting afterwards. This switch works global and will not get saved in a performances or a single sounds.

Another cool feature is the [FX DRY/WET] knob between the [TEMPO]- and the [BUS-VOLUME] knob. With one single knob you can control the WET/DRY balance of all FX busses. That is very nice for live performances. This knob is always set to 63 if you recall another program or performance. The value range is from 0 (dry signal) to 127 (wet signal only) and 63 is a value that does not do anything to the programmed Dry/Wet controls of the FXs.

Now let's have a look to the FX-Edit menu. All the described FXs can run at the same time. You enter the FX-editor by pushing the [FX DRY/WET] Encoderbutton:

FX-EDIT Bedienung	
[FX DRY/WET]	Push the [FX DRY/WET]-button to enter the FX-Edit menu:
	
<p>When entering the FX edit menu you will always jump to page 1 of the edit menu. Page 1 shows the parameters of the distortion FX. As soon as you have opened the FX-Edit menu, the [FX DRY/WET]-encoder is assigned exclusively to the actual FX and not to all FXs anymore. In this case it controls the Distortion DRY/WET parameter. If you dial in another FX like the delay, the [FX DRY/WET]-encoder is assigned to new selected FX.</p>	
[PAGE]	Like in other edit menus you can select the different pages with the [PAGE] dial. Another page is always another FX algorithm as well. The different FXs can be located with shortcuts at the tabs above the edit menu. By pushing the [PAGE]-dial alternative views of the FX editors are accessible.
<p>Exit the FX-Edit menu by selecting anything else like the [PERFORM]-button or any other edit section. As soon as you have left the FX menu behind you, the [FX DRY/WET] encoder works on all FXs again..</p>	

## 6.4 Distortion/Saturation

The first FX in the FX chain is the distortion/saturation FX. With the pregain control, and the following EQ a lot of different distortion and saturation FXs are possible:

Distortion/Saturation FX:	
Preamp Gain [PREGAIN]	The preamp gain controls the level of distortion. If the overall level is getting too loud, one can adjust the output level with the post gain parameter.
Post Gain [PSTGAIN]	The post gain parameter controls the level of the saturated signal.
Direct/Wet Balance [WET]	This parameter controls the balance between the Distortion signal and the original signal. If you push that encoder, the FX is set to bypass.
EQ TYPE [TYPE]	The distortion FX has a post FX EQ. This parameter selects the EQ type. The following EQ types are available: Peak, Hi Shelving, Low Shelving, Lowpass, Highpass, Bandpass, Notch and Allpass.
EQ Frequenz [FREQ]	This parameter controls the frequency of the EQ.
EQ GAIN [GAIN]	This parameter lowers or raises a range of frequencies around the selected equalizer frequency. This parameter works only at peaking and shelving filters.
EQ Q [Q]	This parameter controls the Q factor of the selected filter.

## 6.5 Modulation delay

The modulation delay is much more than a simple delay. The delaytime modulation with feedback creates wonderful flanging FXs, the delaytime can be synchronised to the sequencer tempo or can be set to note pitch values for special tonal FXs and last but not least - one post FX EQ and one additional EQ inside the feedback loop allows for astonishing DUB FXs.

Choose the modulation delay FX with the [PAGE]-Dial:

DIS	DLY	PHS	LES	CHR	REVE
DLYTIM	DLYFBK	SPREAD			
400ms	75	255			
PDLYTIM	PDLYFB	WET			
425ms	0	1			
DLYRATE	LFODPTH				
-off-	0				

The modulation FX has more parameters than display space. Use the [↑] [↓]-buttons to reach hidden parameters.

Modulation delay:	
Delay-time. [DLYTIM]	The delay time can be adjusted in milliseconds, synced note values and even musical pitch values. The synced note values are located at the left end of the value range, the delay times in ms can be found at the right end of the value range and between these areas are the musical pitch values located.
Delay feedback. [DLYFBK]	The feedback controls the number of echo repeats. At high feedback values the echo starts to self oscillating.
Stereo spreading. [SPREAD]	Echos are jumping from the left to the right speaker, if the stereo spreading is set to a high value. At 0 the delay FX signal is set to mono.
Predelay time. [PDLYTIM]	The predelay delays the signal before reaching the main delay. At the left value range the delaytime can be set in synced note values.
Predelay feedback. [PDLFB]	The predelay has it's own feedback loop.
Dry/Wet balance control. [WET]	This parameter controls the balance between the delay signal and the original signal. If you push that encoder, the FX is set to bypass.
Delay modulation speed. [DLYRATE]	The delaytime can be modulated with an LFO. This parameter controls the LFO rate. At the left end of the value range the rate can be adjusted with tempo synced note values.
Delay modulation depth. [LFODPTH]	This parameter controls the modulation depth.
Post EQ Type. [TYPE]	The delay FX has a post FX EQ. This parameter selects the EQ type. The following EQ types are available: Peak, Hi Shelving, Low Shelving, Lowpass, Highpass, Bandpass, Notch and Allpass.
Post EQ Frequenz. [FREQ]	This parameter controls the frequency of the EQ.

Modulation delay:	
POST EQ Gain. [GAIN]	This parameter lowers or raises a range of frequencies around the selected equalizer frequency. This parameter works only at peaking and shelving filters.
Feedback EQ Type. [FBTYPE]	The delay FX has a feedback loop EQ. This parameter selects the EQ type. The following EQ types are available: Peak, Hi Shelving, Low Shelving, Lowpass, Highpass, Bandpass, Notch and Allpass.
Feedback EQ Frequenz. [FBFREQ]	This parameter controls the frequency of the EQ.
Feedback EQ Gain. [FBGAIN]	This parameter lowers or raises a range of frequencies around the selected equalizer frequency. This parameter works only at peaking and shelving filters. You should avoid high gain values combined with high feedback values. That combination can cause unpredictable saturation FXs.
Post Delay EQ Q. [Q]	This parameter controls the Q factor of the Post delay EQ.
Feedback EQ Q. [FBQ]	This parameter controls the Q factor of the selected filter. Attention! Please use the feedback EQ Q factor carefully to avoid saturation.

## 6.6 Phasing

The phasing FX is one of the most popular FXs for the creation of the typical space sounds. The classical phaser consists of a row of allpass filters whose frequency is modulated by a LFO. If the FX signal is mixed with the original signal, phasecancellations at multiple frequency areas create a moving comb filter sound.

The Phasing FX of the Accelerator can be found by selecting the „PHS“ tab with the [Page]-dial:

```

DIS|DLY|PHS|LES|CHR|REV|EQ
-----
PHSRATE  PHSLFRR  PHSHIFR
  4       104     4699
WIDTH    PHSFBK   WET
 127     90     BYP(64)

```



Phasing parameters:	
Phasing modulation rate: [PHSRATE]	This parameter controls the speed of the phasing FX. At the left end of the value range the modulation speed can be set with synced note values. Between the synced and the unsynced values one can set the Phasingrate to off. The modulation LFO stops and the phasing FX can be controlled manually with the [PHSLOFR] parameter.
Lowest affected frequency. [PHSLOFR]	This parameter selects the lowest frequency area affected by the phasing FX. If the Phasing modulation is switched off, this parameter controls the phasing FX manually. The phaser works then as a sweepable comb filter.
Highest affected frequency. [PHSHIFR]	This parameter sets the highest frequency affected by the phasing FX.
Stereowidth [WIDTH]	This parameter controls the stereo width of the phasing FX.
Phasing Feedback. [PHSFBK]	With the feedback parameter one can intensify the phasing FX.
Dry/Wet balance. [WET]	This parameter controls the balance between the phasing signal and the original signal. If you push that encoder, the FX is set to bypass.

## 6.7 Leslie

The leslie FX is a simulation of a cabinet with rotating speakers. The simulation sports two speakers - one for the higher (treble) and one for the lower (bass) frequency components. The crossover frequency can be adjusted by the user. For both cabinet speakers the high and low rotation speed can be set independently. Speed up and speed down times are adjustable as well - independently for both cabinet speakers. This algorithm is quite complex. You could not get all parameters on one edit page. Please use the [↑] [↓]- buttons to reach hidden parameters.

The leslie FX can be selected by dialing in the „LES“ tab in the FX edit menu:

```

DISDLYPHSLESCHREVIEW
#OVER  SLWFS  WET
 69      0  BYP(100)
GAINLO  GAINHI
100     100
SLRTLO  FSTRLO  WIDTHLO
 13      43     127

```

Leslie FX parameters:	
Crossover frequency. [XOVER]	The crossover frequency selects the frequency ranges for the bass and the treble speaker.
Leslie speed. [SLWFST]	This parameter controls the leslie speed of both speakers between their independent lowest and highest speed settings. At 127 both speakers are rotating with their high speed setting and at 0 both run with their lower speed setting. The parameter can be controlled by the global modulation matrix. At all factory programs of organs with leslie, the performance button is preassigned to the leslie speed.
Direct/Wet balance [WET]	This parameter controls the balance between the leslie signal and the original signal. If you push that encoder, the FX is set to bypass.
Bass speaker gain. [GAINLO]	Here one can adjust the gain for the bass speaker.
Highs speaker gain. [GAINHI]	Here one can adjust the gain for the treble speaker.
Bass speaker lower speed. [SLRTLO]	This parameter sets the rotation speed of the bass speaker for a leslie speed of 0.
Bass speaker higher speed. [FSTRLO]	This parameter sets the rotation speed of the bass speaker for a leslie speed of 127.
Bass speaker stereo width. [WIDTHLO]	This parameter controls the stereo width of the bass speaker rotation FX.
Bass speaker speed up acceleration. [VELONLO]	Here one can control how fast the bass speaker reaches the higher speed setting if the leslie speed is switched to 127.
Bass speaker speed down acceleration. [VELOFFLO]	Here one can control how fast the bass speaker slows down to the lower speed if the leslie speed is switched to 0.
Treble speaker lower speed. [SLRTHI]	This parameter sets the rotation speed of the treble speaker for a leslie speed of 0.
Treble speaker higher speed. [FSTRHI]	This parameter sets the rotation speed of the treble speaker for a leslie speed of 127.

Leslie FX parameters:	
Treble speaker stereo width. [WIDTHHI]	This parameter controls the stereo width of the treble speaker rotation FX.
Treble speaker speed up acceleration. [VELONHI]	Here one can control how fast the treble speaker reaches the higher speed setting if the leslie speed is switched to 127.
Treble speaker speed down acceleration. [VELOFFHI]	Here one can control how fast the treble speaker slows down to the lower speed if the leslie speed is switched to 0.

## 6.8 Chorus

We are very proud of the Accelerator chorus FX. This FX brings back the lush chorusing sound of the eighties without any disturbing noise. You should not use that FX only for the built in synthesizer. Connect your electric guitar to one of the external inputs and you will feel like in heaven with the first chord you are playing over this FX highlight.

The chorus of the Accelerator has 4 modulated delay lines mixed to the left and the right bus channels.

Select the chorus edit page by selecting the „CHR“ tab with the [PAGE]-dial:

DIS	DLY	FHS	LES	CHR	REVIEW
CHRRATE	DEPTH	DELAY			
4/1	80	90			
CHRDAMP	WIDTH	WET			
20	127	BYP(64)			

Chorus parameters:	
Chorus modulation speed. [CHRRATE]	This parameter varies the modulation speed of the chorus FX.
Chorus modulation depth. [DEPTH]	This parameter controls the depth of the delaytime modulation.
Chorus average delay time in milliseconds. [DELAY]	This parameter controls the average delay time of the chorus FX.
Chorus highs damping. [CHRDAMP]	Here one can suppress the highs of the FX signal.
Stereo width. [WIDTH]	This parameter controls the stereo width of the chorus FX.

### Chorus parameters:

Dry/Wet balance. [WET]	This parameter controls the balance between the chorus signal and the original signal. If you push that encoder, the FX is set to bypass.
------------------------	---

## 6.9 Reverb

The reverb FX of the Accelerator can simulate everything between a small bathroom and a really large hall. The reverb Fx can be found by selecting the „REV“ tab with the [PAGE]-dial:

```

DISOLYPHSLESCHRREVE
ROOMSIZ REVDAMP REVEBK
 69      32      96
TYPE    FREQ    GAIN
HiPas   156    0.00
Q
0.10

```

### Reverb parameters:

Roomsize. [ROOMSIZ]	This parameter controls the Roomsize of the reverbration FX.
Reverb signal highs damping. [REVDAMP]	Depending on the wall material the highs in the reverbration signal are more or less suppressed at room refelctions. The highs damping allows for smulating this effect.
Reverb EQ Type. [TYPE]	The reverb FX has a post FX EQ. This parameter selects the EQ type. The following EQ types are available: Peak, Hi Shelving, Low Shelving, Lowpass, Highpass, Bandpass, Notch and Allpass.
Reverb EQ frequency. [FREQ]	This parameter controls the frequency of the EQ.
Reverb EQ gain. [GAIN]	This parameter lowers or raises a range of frequencies around the selected equalizer frequency. This parameter works only at peaking and shelving filters.
Reverb EQ Q. [Q]	This parameter controls the Q factor of the Post reverb EQ.
Stereo width. [WIDTH]	This parameter controls the stereo width of the reverb effect.

Reverb parameters:	
Reverb predelay. [PDE-LAY]	In large rooms it takes a while until the first room reflections are reaching the listener. The predelay simulates that effect.
Dry/Wet Balance [WET]	This parameter controls the balance between the reverb signal and the original signal. If you push that encoder, the FX is set to bypass.

## 6.10 Post FX EQ

At the end of the FX chain we inserted an additional post FX EQ. You reach the EQ by selecting the „EQ“ tab with the [PAGE] dial:



Post EQ	
Post FX EQ Type. [TYPE]	This parameter selects the EQ type. The following EQ types are available: Peak, Hi Shelving, Low Shelving, Lowpass, Highpass, Bandpass, Notch and Allpass.
Post FX EQ Frequenz. [FREQ]	This parameter controls the frequency of the EQ.
Post FX EQ Gain. [GAIN]	This parameter lowers or raises a range of frequencies around the selected equalizer frequency. This parameter works only at peaking and shelving filters.
Post FX EQ Q. [Q]	This parameter controls the Q factor of the Post reverb EQ.

## 7.0 Sequencer section overview

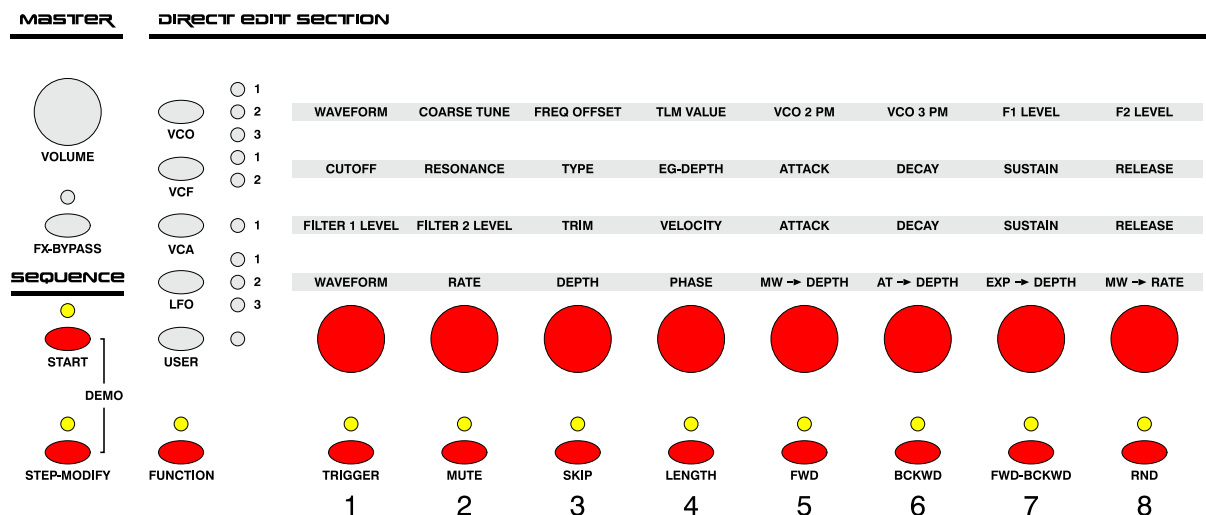
Each part of the Accelerator sports an independent step sequencer with 4 lines. A step sequencer is a device where you can create a row of note or parameter values which are selected successively in selectable directions with a selectable clock speed. One line of the Accelerator sequencer can hold a note or a chord on each step and is assigned triggers the synthesizer engine. Each step can have a selectable velocity and gate time. The other three lines are holding parameter values. The modulation target of these parameter lines can be selected in the modulation matrix.

Two of these step sequencers are available at basic Accelerator units with no expansion installed. As soon as you insert one expansion module into the Accelerator you benefit from 8 of these sequencers.

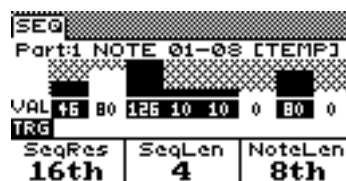
Whatever you do with the sequencer - the sequencer must never be stopped. A step sequencer is a live sequencing tool. The direction of a sequencer line can be set from forward to backward, steps can get skipped or muted, the length of a sequencer line can be changed etc. and everything can be done, while the sequencer is running.

Each of the Accelerator sequencerlines has up to 32 steps. You can run 32 steps again 31 steps or whatever you would like to test. A step sequencer will never replaces a DAW sequencer in a studio. But a step sequencer can do many things you can't do with a DAW sequencer.

Editing of the step sequencer takes place at the edit matrix. In the following graphic we marked all elements that are in use by the step sequencer. Push the [FUNCTION]-button to assign the sequencer functions to the edit matrix and to open the sequence edit menu in the display.



As soon as you push the [FUNCTION]-button the sequencer edit menu appears in the display section:



The following informations are provided in the sequencer edit menu:

At the upper row of the display menu the current selected part shows up - in this case **Part:1**.

The selected part field is directly followed by the information, which 8 steps of the 32 sequence steps are currently mapped to the edit matrix encoders - in this case **Steps 1-8**.

At the right end of the upper row you find the memory slot number of the selected sequence. **[TEMP]** indicates, that the current sequence has not been saved yet.

Under the uppermost line you see an overview about the 8 current selected steps of the sequencer. As we have not instructed you to load a sequence this overview is probably empty. As soon as an event has been entered you see in case of notelines a bar indicating the **velocity** of that step. In case of parameter sequencer lines, the bars show the value of the entered sequencer steps. Whatever type of sequencer line you have selected - the values can be altered with the 8 encoders of the edit matrix. But we will review that in depth later in this chapter.

If you push the [STEP-MODIFY]-button, the overview changes for note lines. Instead of controlling the velocity the matrix encoders are now controlling the pitch of a sequencer step. If you push the [STEP-MODIFY] button again, the encoders are assigned to the velocity again.

The buttons 1 - 8 can be assigned to different functions. At the left side directly under the step overview view is a little black info field that shows the current selection - in this case „TRG“ for „Set trigger“.

As usual the lowest row shows the parameter values and parameters that can be accessed by the display encoders. In our graphic these are **[SEQRES]** (Sequencer resolution), **[SEQLEN]** (Sequence length) and **[NOTELEN]** (Note length).

With the [↑] and [↓]-buttons other parameters can be selected for editing.

As in all other menus the [PAGE]-encoder button let you select alternative views for the sequencer menu. Here is a view were more sequencer parameters are visible at a time:

SEQ		
SEQRES	SEQLEN	NOTELEN
RPT	MULT	TRANS
LOCTR		
BANK	SLOT	LOAD
		INIT
8TH	32	2

Informations about all these parameters will follow later in this chapter. For now it's only necessary that you know how to navigate in the sequencer edit menu and what information the display provide in standard view mode.

You maybe already have recognized that some sequencer functions are mapped to keyboard keys at the left end of the keyboard. If the sequencer edit menu is opened you have access to these parameters while holding down the [FUNCTION] button. The keyboard keys let one select a sequencer line for editing and select the 8 out of 32 step group which is assigned to the 8 knobs (1-8, 9-16, 17-24 or 25-32).

Sequencer functions on keyboard keys C1 to F1 as long as the [FUNCTION]-button is held down:

[FUNCTION]

Push the [FUNCTION]-button to open the sequencer edit menu.

Sequencer functions on keyboard keys C1 to F1 as long as the [FUNCTION]-button is held down:

[FUNCTION] + C1, D1, E1 or F1.

Now push the [FUNCTION]-button again and hold it down. As long as you hold down the [FUNCTION] button, you can select steps 1-8, 9-16, 17-24 or 25-32 with the labelled keyboard keys. By pushing [FUNCTION] + D1 a view of steps 9-16 appears in the display:

```

[SEQ]
Part:1 NOTE 09-16 [TEMP]
VAL 0 0 0 0 0 0 0 0
[TRG]
SeqRes SeqLen NoteLen
16th 4 8th

```

The display menu shows steps 9-16 now. But check the sequence length parameter at the middle display encoder! At the current setting (SeqLen: 4) steps 9-16 will never get played. After changing the sequence length to 16 steps 9-16 will get played.

[FUNCTION] + Dis1

Hold down the [FUNCTION]-button and press Dis 1 on the Keyboard selects the next sequencer line - in this case parameterline 1:

```

[SEQ]
Part:1 CTL01 01-08 [TEMP]
VAL 0 0 0 0 0 0 0 0
[TRG]
SeqRes SeqLen NoteLen
16th 8 8th

```

[FUNCTION]+Cis1

Hold down the [FUNCTION]-button and press Cis 1 on the Keyboard selects the former sequencer line - in this case the note line.

You maybe have noticed, that a help screen pops up whenever you hold the [FUNCTION]-button down. In that help screen the Accelerator notifies you, that the [FUNCTION]-button works as a shift button for the numeric buttons 1-8 in the edit matrix.

Sequencer functions available while holding down the [FUNCTION]-button on buttons 1-8:

[FUNCTION]

Push the [FUNCTION]-button to enter the sequence edit menu.



**Sequencer functions available while holding down the [FUNCTION]-button on buttons 1-8:**

[FUNCTION]+[1] (TRIGGER)	Now push the [FUNCTION]-button again and hold it down. While holding down the [FUNCTION]-button push the [TRIGGER]-button. After releasing the [FUNCTION]-button button [1] to [8] are set into „Set trigger“ mode. Steps with no trigger set will not send anything. That is true for notelines and parameterlines as well. Now you can enter the triggerpoints with buttons [1] to [8].
TIP: While holding down the [FUNCTION]-button the LEDs of the buttons [1] to [8] show the current selected modes and directions.	
[FUNCTION] + [2] (MUTE)	While holding down the [FUNCTION]-button push the [MUTE]-button. After releasing the [FUNCTION]-button buttons [1] to [8] are set into „step mute“-mode. Steps of the sequence line can be muted by pressing buttons [1] to [8].
[FUNCTION] + [3] (SKIP)	While holding down the [FUNCTION]-button push the [SKIP]-button. After releasing the [FUNCTION]-button buttons [1] to [8] are set into „skip“-mode. Steps of the sequence line can be skipped by pressing buttons [1] to [8].
[FUNCTION] + [4] (Length)	The length of a sequence can be controlled in the display menu. In Live situations it's a cool feature to set the length directly with buttons as you can for example just push a length between one and eight steps directly. While holding down the [FUNCTION]-button push the [LENGTH]-button. After releasing the [FUNCTION]-button buttons [1] to [8] are set into „set length“-mode. The sequence length can directly controlled by pushing buttons [1] to [8].
The next button combinations are not setting the numeric buttons into a new mode. They are selecting the sequence line playback direction.	
[FUNCTION] + [5] (FWD)	While holding down the [FUNCTION]-button push the [FWD]-button. The playback direction of the sequence line is set to forwards.

**Sequencer functions available while holding down the [FUNCTION]-button on buttons 1-8:**

[FUNCTION] + [6] (BCKWD)	While holding down the [FUNCTION]-button push the [BCKWD]-button. The playback direction of the sequence line is set to backwards.
[FUNCTION] + [7] (FWD-BCKWD)	While holding down the [FUNCTION]-button the [FWD-BCKWD]-button toggles between two forwards and backwards modes. If you push the [FWD-BCKWD]-button again, the LED starts flashing instead of lighting up. If the LED lights, forwards and backwards without repeat is selected. If the LED is flashing the playback direction plays the upper and the lower step twice.
[FUNCTION] + [8] (RND)	While holding down the [FUNCTION]-button push the [RND]-button. The playback direction of the sequence line is set to random order.

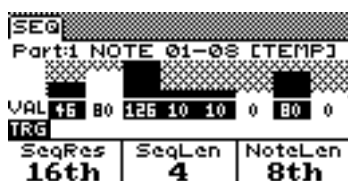
## 7.1 Entering of notes and chords

Now we finally will enter some notes and chords into the step sequencer. You should start the sequencer before programming the sequencer line. You will then instantly hear what you are entering into the sequencer. Push the [START]-button of the sequencer.

**Sequencer: Entering notes and chords in learnmode:**

[FUNCTION]	Push the [FUNCTION]-button to enter the sequence edit menu.
Make sure the notes sequencerline is selected and the sequence length is set to 8 steps and steps 1-8 are selected.	
Encoder buttons [1]-[8].	If you hold down one of the encoder buttons 1-8 the actual step is set learnmode. While holding down the encoder button enter a note or a chord with the keyboard.
Encoder [1] - [8]	With the encoders you can edit the velocities of the entered notes or chords.
[↑] + [↓] (cursor buttons)	Use the [↑] + [↓]-buttons to select the parameter triple SeqRes, SeqLen and NoteLen if not already selected:

## Sequencer: Entering notes and chords in learnmode:



Sequencer resolution. [SeqRes]	[SeqRes] selects the different available sequence line resolutions. Your sequence will playback faster or slower by changing the resolution.
Note length or gate time. [NoteLen]	Notes and chords in a sequence line can have different lengths. With this parameter one can select a note length that is valid for the next notes or chords you are entering. If one would like to change the length of an already entered note or chord he can choose the new value with the encoder and push the Encoderbuttons 1-8 of the steps he wants to get altered.

## Sequencer: Entering notes in step modify mode:


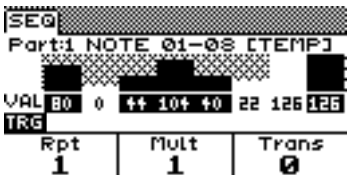
[FUNCTION]	Push the [FUNCTION]-button to enter the sequence edit menu.
Make sure the notes sequencerline is selected and the sequence length is set to 8 steps and steps 1-8 are selected.	
[STEP-MODIFY]	Push the [STEP-MODIFY]-button to enter the „step modify“ mode.
Numeric buttons [1]-[8]	Buttons 1-8 set the trigger points for the new sequence. Only steps with an active trigger will get played.
Encoder [1] - [8]	Enter the pitch of the notes with the encoders 1-8. Only steps with an active trigger will get played.

## 7.2 Further playback variations

As soon as you have successfully entered some notes into the sequencer, you should start to play with the playback parameters. The appeal of a good step sequencer is the opportunity to modify everything while the sequencer is running. Change the playback direction, skip some notes, adjust the sequencer length etc. Often after some modifications a new motif appears that is just better than the original line you entered into the sequencer. The effect of this modifications is much more audible if you combine two different sequences for the lower and the upper part. One se-

quence get's altered while the other sequence runs straight and defines the rhythm and groove.

The Accelerator offers another playback variation that has multiple parameters but also multiple results. This function transposes the sequence pitch automatically.

Sequencer: Self transpose function	
[FUNCTION]	Push the [FUNCTION]-button to enter the sequence edit menu.
	
Make sure the notes sequencerline is selected and the sequence length is set to 8 steps and steps 1-8 are selected.	
[↑] [↓]	Use the [↑] + [↓]-buttons to select the parameter triple Rpt, Mult and Trans if not already selected:
	
Repeat transpose variation. [Rpt]	One can decide, whether a transpose step gets repeated or not. Can be set between 1 and 4 repeats. If no transpose interval is set, the sequence step itself gets repeated.
Multiples of auto transpose iterations. [Mult] (multiples)	It's much easier to explain this parameter by giving an example. Just imagine the transpose interval is set to 1 half-tone. If the „Multiples“ parameter is set to 1, the sequence will only play the original pitch of the sequence. If the parameter is set to 2, the sequence jumps between the original pitch and the actual transpose interval (+1 half-tone). If the parameter is set to 3, the sequence will play back the original pitch, the pitch transposed version (one half-tone up) and a version, where the transpose interval is doubled (two half-tones up). If the repeat function is set, each transpose interval will get played multiple times.

Sequencer: Self transpose function	
Transpose step interval. [Trans]	Here you can adjust the transpose intervall in halftones.
The autotranspose function has it's greatest appeal when using short sequence lengths. Just build a sequence line with 2-4 steps and enter some notes. Try different transpose intervalls, repeats and multiples.	

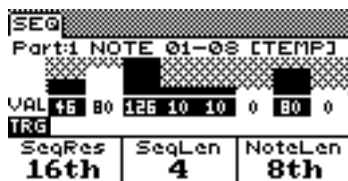
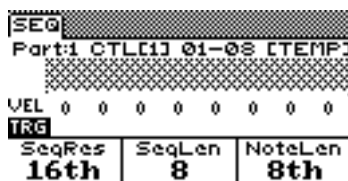
### 7.3 Adding parameter sequencer lines

With the remaining 3 sequencer lines parameters of the sound engine can be modulated. The assignment of the sequencer lines to parameters have to be done in the modulation matrix.

The modulation matrix has already been discussed in detail in this manual but we will just give you a reminder:

Assigning synth parameters to sequence lines:	
[LFO]	Push the [LFO]-button. This button already selects an edit page which is quite close to the modulation matrix parameters.
[PAGE]-Regler	Select the „MOD“ tab with the page dial to open the modulation matrix edit menu.
[↑] und [↓]	Select an empty modulation node.
[SOURCE]	Choose „SEQ1“ as a modulation source for the selected node.
[TARGET]	Choose the desired modulation target for the sequencer line. What about the cutoff frequency of VCF1?
[DEPTH]	Set the depth of this modulation node to a high value so that the sequence can control a high value range. As the sequencerline values get added to the current sound parameter value, you mayby should reduce the value of the the assigned parameter. As an example - if the filter is already completely opened, the sequence line can not open the filter further. Reduce the cutoff frequency in the sound edit menu to give the sequencerline more impact on the sound.
SPEICHERN!	Save the new single sound for later experiments.

Now you have prepared a sound for parameter sequencer line modulations. Push the [FUNCTION]-button again to enter the sequencer menu again:

Editing the parameter sequencer line:	
[FUNCTION]	Push the [FUNCTION]-button to enter the sequence edit menu.
	
Make sure the notes sequencerline is selected and the sequence length is set to 8 steps and steps 1-8 are selected.	
[FUNCTION] + [KEYB. Dis}	Select Sequence line 1 by pushing D#1 at the keyboard while holding the [FUNCTION]-button.
	
[1] - [8]	Activate steps for parameter control by pushing the numeric buttons 1-8. Set the values with the encoders 1-8. Now you should already hear the parameter modulations.

## 7.4 Saving of sequencer motifs

The save-menu works contextsensitive. Depending on the section you are actually editing something, a different page of the save menu opens, if you push [SAVE]. If you want to save a sequencer motif make sure, that the sequencer edit menu is still opened by pushing the [FUNCTION]-button.


Saving of sequencer motifs:	
[FUNCTION]	Push the [FUNCTION]-button to enter the sequence edit menu.
[SAVE]	Open the save-menu by pushing the [SAVE]-button.

Saving of sequencer motifs:	
<div> <div>Save: Dest. 1/2</div> <div> <div>Bass</div> <div>Seq: A0.1</div> <div> <div>Bank</div> <div>Slot</div> <div>NEXT</div> </div> </div> </div>	
[BANK] + [SLOT]	Choose a memory slot for the new sequence motif.
[NEXT]	Select the next menu page with the [NEXT]-button.
<div> <div>Save: Name 2/2</div> <div> <div>Name:</div> <div>&lt; x &gt;</div> <div>Char</div> <div>SAVE</div> </div> </div>	
< x >	Move the cursor with the first encoder to the desired position of the name-string.
(Char)	Choose the desired character for the selected cursor position with the second encoder.
oder	
[Char]	Push the [CHAR]-encoderbutton to enter the typewriter mode for the keyboard and enter the name with the claviatur.
[SAVE]	Push the [SAVE]-button in the display menu with the third encoder button to save the sequence.
The sequence save function always saves the data of all 4 sequencer lines!	

## 7.5 Loading sequence motifs from memory

The load-function can be found inside the sequence edit menu.

Loading sequence motifs from memory:	
[FUNCTION]	Push the [FUNCTION]-button to enter the sequence edit menu.
<div> <div>SEQ</div> <div>Part:1 NOTE 01-08 [TEMP]</div> <div> <div>VAL</div> <div>TRG</div> </div> <div> <div>SeqRes</div> <div>SeqLen</div> <div>NoteLen</div> </div> </div>	

Loading sequence motifs from memory:	
[↑] and [↓]	Choose the „load sequence“ page with the [ARROW]-buttons.
	
[BANK]	Choose a memory bank with the first encoder.
[SLOT]	Choose the memory slot with the second encoder. The name of the selected sequence appears above the slot number in the edit view.
[LOAD]	Push the [LOAD]-button in the display menu to confirm the selection and load the sequence. You can load a bank of 8 sequencer memories for parts 1-8 by selecting ALL instead of the slot number.

## 7.6 Combining sounds and sequencer motifs in performance memories.

If you want to recall sequences and sounds at once, you have to save a performance of the combination. Beside the sound- and FX-data, performances save references to sequence memories. The sequence motif data itself is not part of the performance. If you change a sequencer memory after saving the performance, the performance will get changed according the new sequencer motif.

## 7.7 Realtime transpose of sequence lines

Motifs programmed in sequencerlines can be transposed in realtime from definable keyboard zones.

Three different transpose modes are available:

1.) The „global transpose“ mode. This transpose mode works globally on all performances and single sounds. If you define a keyboard zone for global transpose, this zone will stay active independently from the selected patch. The global transpose zone does not trigger any sounds anymore. All sequences, which have the transpose function enabled, get transposed by this zone. The global transpose zone is the fastest way to prepare the Accelerator for sequencer realtime transposing.

2.) The „global performance transpose“ mode. This mode activates the transpose function for all parts of the actual performance. One keyboard zone transposes all parts of a performance at once. This transpose function has no effect on other performances. If you save the performance, this transpose mode will get memorized.



3.) The „expert transpose mode“. The „expert transpose mode“ allows for defining multiple transpose zones on the keyboard that are controlling different parts independently from each other.

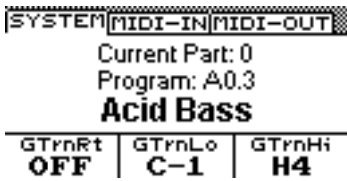

The three different transpose modes can never stay active simultaneously. Instead, a priority system activates only one of the transpose modes at a time.

The „global transpose“ mode has the highest priority. If a global transpose zone has been defined and is active, all other transpose zones and modes are disabled.

The „global performance transpose“ mode has the second highest priority. If one activates a transpose zone for the whole performance, the individual transpose zones of the „expert transpose“ mode will get disabled.

The „expert transpose“ mode has the lowest priority. Settings made for a „global transpose“ mode or a „global performance transpose“ mode disable the settings of the „expert transpose“ mode.

We will describe the „expert transpose“ mode in the masterkeyboard edit section. In this chapter we will learn how to setup the „global transpose“ and the „global performance transpose“ mode.

Setting up the „global transpose“ mode:	
[SYSTEM]	Enter the system edit menu by pushing the [SYSTEM] button.
[↓]	Select the parameter row with the global transpose parameters by pushing the [↓]-button two times:
 <p>The screenshot shows the system menu with 'SYSTEM' highlighted. Below it, 'MIDI-IN' and 'MIDI-OUT' are visible. Further down, 'Current Part: 0' and 'Program: A0.3' are shown. The title 'Acid Bass' is centered. At the bottom, there are three columns: 'GTTrnRt' with the value 'OFF', 'GTTrnLo' with the value 'C-1', and 'GTTrnHi' with the value 'H4'.</p>	
Global transpose rootkey. [GTTrnRt]	In the screencopy above, the global transpose zone is disabled. You can activate the global transpose mode by pushing the first display encoder:
 <p>The screenshot is similar to the previous one, but the 'GTTrnRt' value is now 'C3', indicating that the global transpose mode is activated.</p>	
Global Transpose Rootkey. [GTTrnRt]	Now you can select the keyboard note where the sequences are running with the original pitch.

### Setting up the „global transpose“ mode:

Lowest note of the global transpose zone. [GTrnLo]	Selects the lowest note of the global transpose zone.
Highest note of the global transpose zone. [GTrnHi]	Selects the highest note of the global transpose zone.
Now you should select a performance with a running sequencer to check the global transpose zone. Performance set A, banknumber 6, slot 1 (Technoid 2) is such a performance. Start the sequencer after selecting this performance. Now the bass sequence of this performance can be transposed from your defined keyboard zone.	
You should disable the global transpose mode afterwards by pushing the [GTrnRt] encoder button in the system menu.	

### Setting up the „global performance transpose“ mode:

[PERFORM]	Select the performance mode by pushing the [PERFORM]-button.
[SET] = A, [BANK] = 6, [PROGRAM] = 1	Select the performance A6.1 „Technoid 2“.
<pre>  PLAY TEMPO ARP ZONE BUS  Performance Select: A6.1 <b>Technoid 2</b> Current Part: Master ----- Set   Category   Load Snd <b>A</b>   <b>Seq</b>   Technd2           </pre>	
[↓]	Push the [↓]-button multiple times to reach the parameter triple with the transpose settings:
<pre>  PLAY TEMPO ARP ZONE BUS  Performance Select: A6.1 <b>Technoid 2</b> Current Part: Master ----- PTrnRot   PTrnLo   PTrnHi <b>OFF</b>   <b>C-1</b>   <b>H4</b>           </pre>	
Performance transpose rootkey. [PTrnRt]	Pushing the [PTrnRt]-encoder button activates the global performance transpose zone.
<pre>  PLAY TEMPO ARP ZONE BUS  Performance Select: A6.1 <b>Technoid 2</b> Current Part: Master ----- PTrnRot   PTrnLo   PTrnHi <b>C3</b>   <b>C-1</b>   <b>H4</b>           </pre>	

### Setting up the „global performance transpose“ mode:

Performance Transpose Rootkey. [PTrnRt]	Now you can select the keyboard note where the sequences are running with the original pitch.
Tiefste Taste der Transponierungs-Zone. [PTrnLo]	Selects the lowest note of the global performance transpose zone.
Höchste Note der Performance Transponierungs-Zone. [PTrnHi]	Selects the highest note of the global performance transpose zone.
Start the sequencer and test the new transpose opportunity by pushing some notes in the transpose zone. If you like the opportunity to transpose this performance in realtime, you can save the edited performance.	

## 8.0 Arpeggiator section

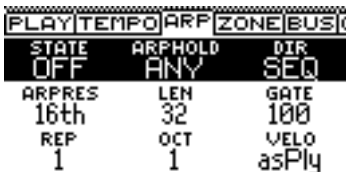
Every part of the Accelerator sports an independent Arpeggiator. The basic version of the Accelerator has two parts and two arpeggiators - an expanded version offers 8 parts with 8 Arpeggiators. An Arpeggiator collects notes from a pressed chord on the keyboard and creates rhythmic patterns from that notes. In it's simplest form the Arpeggiator just plays one note after the other with a selectable direction - for example from the highest down to the lowest note in a row. But the Accelerator arpeggiators do much more. One can create complex rhythmic patterns with notes and chords that are taking the pitch informations from the pressed chords and create new astonishing auto accompaniment patterns from that.

### 8.1 Arpeggiator basic functions

Before exploring the arpeggiator settings you should select a proper sound for your first experiments. Select part 1 and press [SINGLE]. Afterwards select a sound by pushing the [PROGRAM] button and selecting a sound from the bass, sequencer or arpeggiator category.

Pushing the [ARP-EDIT] button enters the Arpeggiator edit menu:

#### Arpeggiator edit menu:

[ARP-EDIT]	Open the Arpeggiator edit menu by pushing the [ARP-EDIT]-button:
 <pre> PLAY TEMPO ARP ZONE BUS  STATE  ARPHOLD  DIR OFF    ANY      SEQ ARPRES  LEN      GATE 16th   32       100 REP     OCT      VELO 1       1       asPly </pre>	

Arpeggiator edit menu:	
Arpeggiator state [STATE]	Start or stop the Arpeggiator by pushing the [STATE]-encoder button.
Arpeggiator hold mode. [ARPHOLD]	[ARPHOLD] sets the Arpeggiator into Hold mode. The Arpeggiator will keep playing even if you have released all keys on the keyboard. When the arpeggiator direction „As Played“ is selected, one can create little sequences by holding one note down and adding other notes on the fly by pushing notes in the desired order. The „As Played“ direction memorizes the notes and their order and plays them back. The arpeggiator sports two different hold modes:
Hold mode: „UNIQUE“	When set to hold mode „UNIQUE“, only notes that have not been added before will be added to the arpeggiator playback buffer.
Hold mode: „ANY“	When set to hold mode „ANY“, all notes will be added to the arpeggiator playback buffer. So you can add the same note multiple times to the buffer.
Playback direction of the Arpeggiator. [DIR]	This parameter selects the playback direction of the arpeggiator
DIR: UP	The notes get played back successively from the lowest to the highest note.
DIR: DWN	The notes get played back successively from the highest to the lowest note.
DIR: U+D	The notes get played back successively from the lowest to the highest note and back from the highest to the lowest note. The lowest and highest notes will only get played once.
DIR: U+D2	The notes get played back successively from the lowest to the highest note and back from the highest to the lowest note. The lowest and highest notes will get played twice.
DIR: RND	The notes will get played back in random order.

Arpeggiator edit menu:	
DIR: asPI	The notes will get played in the order you have entered them on the keyboard - very nice feature in combination of Arpeggiator hold modes.
DIR: SEQ	The sequencer memory controls the playback of the notes. Please refer to chapter 8.2 „Arpeggiator user motifs“.
Arpeggiator playback resolution. [ARPRES]	Here you can select the desired Arpeggiator resolution.
Arpeggiator motif length. [LEN]	Here you can define the maximum length of the arpeggiator motif.
Arpeggiator gate time. [GATE]	The gate time controls the length of the notes the arpeggiator plays.
Arpeggiator step repeat. [REP]	With this parameter notes of the arpeggiator motif will be repeated multiple times. Can be adjusted between 1x and 4x.
Arpeggiator octaves. [OCT]	The arpeggiator motifs can get repeated with a pitch transpose of one or more octaves. If this parameter is set to 4 octaves the motif plays 4 times - everytime with the next higher octave transpose pitch.
Arpeggiator velocity. [VELO]	The velocity of the arpeggio motif notes can be set to a fixed value. If you push that encoder the parameter value „As played“ can be selected and plays the notes with the velocity of the entered keyboard notes.

## 8.2 Arpeggiator user motifs

An arpeggiator that only plays the notes with the standard directions described above would not match the professional level of the Accelerator. For that reason we implemented something very unique and special for you. The directions can be defined by the user by editing special sequencer lines. As the sequencer lines can hold chords, polyphonic arpeggiator motifs can be created.

Each step in a sequencer line equates to a step in the arpeggiator motif. An user arpeggiator motif can have a maximum length of 32 steps. Not all of these steps must be used - instead of that one can program rhythmical patterns for the arpeggiator.

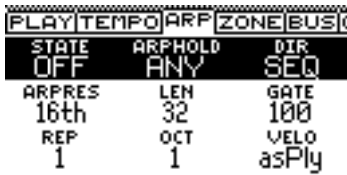
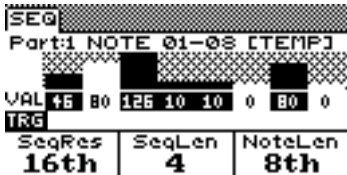
Each step of the arpeggio user motif can trigger up to 11 notes at once. A chord defined in a sequencer line is a placeholder for notes of the pressed chord. Each note of the pressed chord is assigned to a number in the arpeggiator buffer memory. The

lowest note is assigned to number 1, the second lowest note is assigned to number 2 etc.

In the sequencer line a programmed C triggers the note with the number 1, the C# triggers the note with number 2 etc. The 11 possible notes of an Arpeggiator step are selectable with the 11 keyboard notes of an octave. By selecting these notes in different octaves, the notes of the pressed chord will play with octave transposes.

The programming of such an arpeggiator motif works the same way like programming a note line for the sequencer. Instead of real notes you are entering numbers - numbers that are assigned to the arpeggiator buffer memory numbers.

The next table contains a step by step instruction for the creation of arpeggiator user motifs:

Programming arpeggiator user motifs:	
[ARP-EDIT]	Open the arpeggiator edit menu by pushing the [ARP-EDIT]-button.
	
Arpeggiator State. [STATE]	[STATE] works like a toggle button. Start the Arpeggiator by pushing the [STATE]-encoder button.
Arpeggiator hold mode. [ARPHOLD]	Set the hold mode to „any“.
Arpeggiator playback direction. [DIR]	Schalten Sie die Abspielrichtung auf „SEQ“.
Keyboard	Play a chord on the keyboard. The arpeggiator will start to run with that chord. In case, that the sequencer memory is empty, no sound will become audible. Next we are opening the sequence edit menu and create a user motif for the arpeggiator:
[FUNCTION]	Open the sequencer edit menu by pushing the [FUNCTION]-button.
	

Programming arpeggiator user motifs:	
Make sure the notes sequencerline is selected and the sequence length is set to 8 steps and steps 1-8 are selected.	
[↓]	Select the menu page that contains „INIT“ in the parameter row by pushing the [↓]-button. Push the [INIT] encoderbutton deletes the sequencerline.
[1] - [8] + keyb.-notes	Now you can already enter the note numbers for the arpeggiator. Just hold down one of the encoderbuttons 1-8 and press the desired note numbers on the keyboard. If you for example want the Arpeggiator to play the first and the third note of an played chord on the first step, play a C and a D while holding down encoder button 1. Enter some additional steps in the same way and try different Note lengths and velocities for the different steps.
TIP!	When entering notenumbers 1-11 (by entering C, C#,D...H) in another octave of the keyboard, the resulting arpeggiator notes of the entered chord will play pitch transposed by octaves.

When using arpeggiator user motifs made with the sequencer, the following arpeggiator parameters will get ignored: Arpeggiator resolution [ARPRES], gate time [GATE], octaves [OCT] and repeat [REP].

Before falling into deep depression about the disabled arpeggiator features we have some good news - all the sequencer parameters are working for the manipulation of user arpeggiator motifs! After creating the sequence line and playing a chord on the keyboard you should start to use all the live features of the step sequencer. Skip steps, change the direction, use the auto transpose function etc. Everything can be done, while the arpeggiator is running. You will get some patterns out of that arpeggiator you never thought about, when you entered the chord on the keyboard.

When you encounter something very special and unique, you should save the sequence for that arpeggiator motif. We already saved some cool arpeggiator direction sequence lines into the sequencer memory. All these sequences have one thing in common - they all begin with the string „ARP“. You should also give your creations a name that let you remember, that the sequence has been used as an Arpeggiator user motif sequence.

If you want to recall the whole settings later, not only the sequence must be saved. After saving the sequence you must save the combination of sounds and sequences and arpeggiator settings as a performance. The chain „Arpeggio chain“ contains so-

me examples of arpeggiator performances. Most of them are using user arpeggiator motifs.

## 9.0 Multi performances

Sure - a performance memory can hold a simple layer or split performance and it is nice to recall these kind of combination patches by selecting performances. But a performance in the Accelerator can do much more. For that reason it is maybe better to keep the performance memory free for more complex patches. Simple split and dualsound layers can also be done in the chain mode. If you use chains for the creation of simple split and layer programs you can save up to 1000 split and layer sounds without using a single performance memory slot.

A performance holds the sounddata of up to 8 Accelerator parts and can control external equipment as well with the MIDI masterkeyboard functionality. Last but not least a performance memory also holds the Arpeggiator settings and refers to sequence memories that will be recalled automatically as soon as you select a performance.

A part in a multi performance is controlled by a zone. Zones can do different things. They can control an external MIDI device or the built in sound engine. They can be controlled by the Accelerator keyboard but as well by an external keyboard connected to the Accelerator MIDI in or an external sequencer. Zones can have a limited keyboard or velocity range and they can send program changes and volume changes to external MIDI equipment. By just selecting another performance, your whole LIVE setup can be configured.

Performances can be recalled by the Accelerator chains. Controlling the whole MIDI setup can then be done with a simple footswitch.

In this chapter we will describe the performance zones. If you are interested to use the Accelerator as a masterkeyboard for other gear as well, you should read chapters 12.4 and 12.5 before creating masterkeyboard programs. You will learn, that the Accelerator works with MIDI definitions instead of adresssing MIDI channel directly. That makes it easier to change your MIDI setup. Instead of editing all masterkeyboard programs, you can simple change the MIDI definition in a lot of cases. In the MIDI definition you define a MIDI channel and the bank change mode of a device. At the default setting, all MIDI definitions are preassigned with MIDI channels. So - if you select for example MIDI output definition 4 as an MIDI output for a zone, MIDI channel 4 is preselected. If you have to change the channel in the expander or external synthesizer for any reason, all you have to do is to change the MIDI output definition to the new MIDI channel.

### 9.1 Keyboardzone parameter in the performance edit menu

Beside the zone assignment for internal and external sound sources this chapter also covers the realtime transpose expert mode settings. We have marked them in the following table.

Let's start with the zone programming:



## Keyboard zone programming and masterkeyboard functions:

[PERFORM]

Select the Performance mode by pushing [PERFORM].

```

PLAY|TEMPO|ARP|ZONE|BUS|
Performance Select: A6.1
Technoid 2
Current Part: Master
Set | Category | Load Snd
A | Seq | Technid2
    
```

[PAGE]

Select the „zone“ tab with the [PAGE]-dial:

```

PLAY|TEMPO|ARP|ZONE|BUS|
1: L+IN01 => V+OUT01
2: L+IN02 => V+OUT02
3: L+IN03 => V+OUT03
4: L+IN04 => V+OUT04
5: L+IN05 => V+OUT05
6: L+IN06 => V+OUT06
PAGE TO EDIT
    
```

The list already shows some infos about the keyboard zones. The first row of that list is selected in the zone table. Every row starts with the zone number. The zonenummer is directly followed by the info about the zone input. „L“ stands for „local“. „Local“ means, that the Accelerator keyboard is assigned to this zone. Next follows „+IN01“ That means, that the zone is additionally assigned to the MIDI input definition 01. The double arrow points to the output the zone is assigned to. „V“ stands for „VOICE“. „VOICE“ means that the zone is assigned to the internal sound engine. „V“ is followed by „+OUT01“. That means that the keyboard zone is additionally assigned to the MIDI output definition „OUT01“.

[↓] + [↑]

Select a zone for editing with the [↓] + [↑]-buttons.

[PAGE]

Enter the editor for the selected zone by pushing the [PAGE]-button.

```

PLAY|TEMPO|ARP|ZONE|BUS|
Z1: KEYMIN  KEYMAX  TRANSP
   C-1      G9      0
Z1: VELMIN   VELMAX  PART
   0        127     1
Z1: KEYBED   TOSYNTH TOSEQ
   ON       ON      OFF
    
```

Like in all edit menus, parameter triples can be selected with the [↓] + [↑] - buttons.

Lowest note that reaches this keyboard zone.  
[KEYMIN]

Select the lowest note that can control this zone. You can select that note with the encoder directly. But it is much easier to hold that encoder button down and enter the desired note by pushing a note on the keyboard.

Keyboard zone programming and masterkeyboard functions:	
Highest note that reaches this keyboard zone. [KEYMAX]	Select the highest note that can control this zone. You can select that note with the encoder directly. But it is much easier to hold that encoder button down and enter the desired note by pushing a note on the keyboard.
Zone transpose setting. [TRANSP]	The zone output can be transposed in half-tone steps.
Lowest Velocity that reaches this zone. [VELMIN]	Select the lowest velocity value of the velocity window. Notes with lower velocities will not reach the zone targets.
Highest Velocity that reaches this zone. [VELMAX]	Select the highest velocity value of the velocity window. Notes with higher velocities will not reach the zone targets.
Internal part assignment. [PART]	Choose the Accelerator part for this zone target.
Keyboard enable. [KEYBD]	Switch that parameter to „ON“ if you want the Accelerator keyboard to control that zone. If the keyboard is disabled, the realtime controls Aftertouch, Expression pedal, performance buttons, Pitch wheel and modulation wheel are disabled as well.
Enabling the Accelerator sound engine for that zone. [TOSYNTH]	If „TOSYNTH“ is set to „ON“, the zone controls the internal sound engine.
Sequencer transpose setup. [TOSEQ]	You can enable this zone for sequence transposing of the selected part by setting „TOSEQ“ to „On“.
MIDI-input definition. [MDIN]	Choose a MIDI Input definition for this zone. If you don't want this zone to be controlled via MIDI simply push the encoder button. The encoder button toggles the parameter value between the actual MIDI definition number and „OFF“.
MIDI volume. [MDVOL]	By pushing this encoder button the MIDI volume send function gets enabled. After enabling the volume send function you can adjust the volume setting with the encoder. This value will be sent, when you recall the performance.

### Keyboard zone programming and masterkeyboard functions:

MIDI panpot. [MDPAN]	By pushing this encoder button the MIDI panpot position send function gets enabled. After enabling the panpot position send function you can adjust the panpot position with the encoder. This value will be sent, when you recall the performance.
MIDI-output definition. [MDOUT]	The encoder button toggles between an active and a disabled MIDI output for the selected zone. When activated, the desired MIDI-output definition can be selected with the encoder.
MIDI program change. [MDPRG]	By pushing this encoder button the MIDI program change send function gets enabled. After enabling the program change send function you can select the desired program with the encoder. This program change will be sent, when you recall the performance.
MIDI bank change. [MDBANK]	By pushing this encoder button the MIDI bank change send function gets enabled. After enabling the bank change send function you can select the desired bank with the encoder. This bank change will be sent, when you recall the performance. The bank change format for this MIDI output definition can be configured in the system menu.
Sustain pedal enable. [FLTHOLD]	If this parameter is set to „OFF“, the zone will not send a received sustain pedal command anymore.
Modulation wheel enable. [FLTWHL]	If this parameter is set to „OFF“, the zone will not send received modulation wheel data anymore.
Transpose rootkey. [TRNROOT]	Here you can select the keyboard note where the sequence will run with the original pitch. The note can be selected with the keyboard by holding down the [TRNROOT]-encoder button. The lowest and highest key settings [KEYMIN] and [KEYMAX] for that zone defines the transpose zone borders as well. By setting up velocity limits for this zone, the transpose function will only work if you play the note with a velocity between the lowest and the highest velocity border.

### Keyboard zone programming and masterkeyboard functions:

Lowest transpose key. [TRNLO]	If a note pitch lower than the lowest transpose key sets the transpose interval, an octave will be added to the transpose interval. The note can be selected with the keyboard by holding down the [TRNLO]-encoder button.
Highest transpose key. [TRNHI]	If a note pitch higher than the highest transpose key sets the transpose interval, an octave will be subtracted from the transpose interval. The note can be selected with the keyboard by holding down the [TRNHI]-encoder button.
If you want to edit another zone, push the [PAGE] encoder button again, select another zone in the zone table with the arrow keys and push the [PAGE] button again.	

All these settings can be saved in a performance. Please remember - the zone settings for splits or layers assigned to the Accelerator keyboard are only active, if you select part 0 (Master)!

### 9.2 Performance default edit part.

When playing a Split, dual or Multi performance part 0 (Master) is normally selected. Only the master part triggers multiple parts defined in the zone table. For the edit matrix, the arpeggiator edit menu or the bus edit menu, part 0 is not a valid selection. The edit menus are normally assigned to the last selected part above 0.

You can select a part that will get automatically preselected for all these edit menus and the edit matrix after recalling a performance. The Accelerator is memorizing the default part for all performances independently.


### Selecting the default part for a performance:

[PERFORM]	Select the Performance mode by pushing [PERFORM].
[↓]	Select the menu page that contains „DefPart“ in the parameter row by pushing the [↓]-button multiple times.
<div><div>PLAYTEMPOARPEZONEBUSK</div><div>Performance Select: A1.0</div><div>Arpeggiator Splt</div><div>Current Part: Master</div><div><div>DefPart</div><div>PBtn1</div><div>PBtn2</div><div>1</div><div>ON</div><div>OFF</div></div></div>	
[DefPart]	Select the default part with the first display encoder.

### 9.3 Performance Button Modes

The two buttons above the wheels can be used as temporary buttons or toggle switches.

When used as temporary button, a function or parameter value is active while holding the button down. When used in toggle switch mode, the button toggles between 0 and the programmed value.

Performance button mode selection:	
[PERFORM]	Select the Performance mode by pushing [PERFORM].
[↓]	Select the menu page that contains the [PBTN1] and [PBTN2] parameters in the parameter row by pushing the [↓]-button multiple times.
 <p>The screenshot shows a menu with the following text:   PLAY   TEMPO   ARF   ZONE   BUS     Performance Select: A1.0   <b>Arpeggiator Splt</b>   Current Part: Master   Below this, there is a table with three columns: DefPart, PBtn1, and PBtn2. The values are 1, ON, and OFF respectively.</p>	
[PBtn1] and [PBtn2]	Activate the toggle mode by pushing the [PBTN1] or [PBTN2] encoder buttons.

### 9.4 User knob assignments (USER)

The eight encoders of the edit matrix and the three display encoders can be assigned to any parameters of the sound- or FX-edit menu. The assignment can be activated by pressing the button [USER] left from the 8 encoders. For each performance one can define a different set of parameters for realtime control.

The defining of user knob assignments is straight forward:

User knob assignment:	
[PART]	Select the part select mode by pushing the [PART] button.
[1] - [2] ([8])	Select a part whose parameter you want to control with the first encoder of the user knob assignment set.

User knob assignment:	
*	Choose the edit section where you have access to this parameter. It does not matter, whether this parameter is mapped to the edit matrix or only available in an display menu. But the parameter row with the desired parameter must already be selected before doing the user assignment.
[USER] + [Parameter]	Now hold the [USER]-button down and push the encoder button of the desired parameter. The following display message will appear:
<pre> LT2 STR VCA ENV LFO USR E Press Number Encoder to assign Parameter FLT1 Cutoff </pre>	
In the example above one has selected the Cutoff frequency of the first filter. All you have to do is now pushing one of the encoders of your user set. This simple procedure will map the filter 1 cutoff frequency to that encoder. After pushing the desired encoder the user assignment overview page will show up:	
<pre> LT2 STR VCA ENV LFO USR E 1:FLT1 CUTOFF  5:EMPTY&gt; 2:EMPTY&gt;      6:EMPTY&gt; 3:EMPTY&gt;      7:EMPTY&gt; 4:EMPTY&gt;      8:EMPTY&gt; </pre>	
In the example above part 0 (Master) has been selected before assigning the parameter to an encoder. For that reason the knob will always control the actual part. If a part above 0 had been selected, the part number would appear behind the user assignment target. The parameter assignment is then independent from the actual part and will always control the defined part.	
For the next knob assignment you just start again at the beginning of this table. Select a part, select the edit menu that holds the desired parameter and finally do the assignment.	

After configuring the whole user knob assignment you should save the performance.

The Accelerator ships with some ready to use setups:

Selecting preset knob assignments:	
[USER]	Push the [USER]-button.

### Selecting preset knob assignments:

[V]

Select the User Assignment preset selection by pushing the [V]-button:

```

FLT2|STR|VCA|ENV|LFO|USR|
1:VC01WAVEFRM 5:VC02 TLM
2:VC02WAVEFRM 6:VC03 TLM
3:VC03WAVEFRM 7:FLT1 CUTOFF
4:VC01 TLM      8:FLT2 CUTOFF

UsrAsgn
CUSTOM

```

[UsrAsgn]

The first encoder selects the user assignment preset. Load the preset by pushing the display encoder button down.

```

FLT2|STR|VCA|ENV|LFO|USR|
1:PARTVOLUME13 5:PARTVOLUME53
2:PARTVOLUME23 6:PARTVOLUME63
3:PARTVOLUME33 7:PARTVOLUME73
4:PARTVOLUME43 8:PARTVOLUME83

UsrAsgn
CUSTOM

```

In the example above, we have selected a mixer page. The part volumes of all 8 parts can be controlled with that assignment. Selecting a preset assignment overwrites a user configured assignment. Make sure to save your Performance before loading preset assignments.

## 10.0 Chain editing details

Chapter 6.4 already covered some chain mode basics. In this chapter we will explore all special chain mode features. Before starting to program a new chain you should select an empty chain memory:

### Loading an empty chain memory:

[CHAIN]

Choose the chain mode by pushing [CHAIN].

```

[CHAIN] STEPS|N/A|N/A
A3.7:Extasia Groove

A.0: Arpeggio Chain
Bank  Slot  LOAD
A      0

```

[Bank] and [Slot]

Select an empty chain with the [BANK]- and [SLOT]-encoders. An empty chain shows up with the name <empty> just above the selected slotnumber.

```

[CHAIN] STEPS|N/A|N/A
<none>

A.8: <empty>
Bank  Slot  LOAD
A      8

```

#### Loading an empty chain memory:

[LOAD]	Load the empty chain by pushing the [LOAD]-encoder button.
--------	--

The numeric buttons 0-9 are assigned to the direct access memories of a chain as soon as the chain mode is activated by the [CHAIN]-button. Each chain contains 10 direct access memories. These memories are recalling the playmode (performance, single, split or dual layer) and the involved programs. Additionally each direct access memory can hold some basic masterkeyboard functions for MIDI splits and layers.

After loading an empty chain, these direct memories are not doing anything. If you push the numeric buttons [0] - [9], the display shows <none> for all memories indicating that the direct access memories are initialised.

From now on we will call the numeric buttons „direct access“ buttons [0] - [9].

We will now program some direct access buttons. The procedure is always the same but will be covered in more detail on the following pages:

#### Basic procedure for the chain mode „direct access“ button programming:




Step 1	Select the chain mode by pushing the [CHAIN]-button.
Step 2	Select one of the direct access buttons [0]-[9]. (numeric buttons at the right side of the panel)
Step 3	Select the desired mode [Perform], [Single], [Split] or [Dual].
Step 4	Choose the program or programs for the involved parts. In case of a performance direct access you choose a performance - in all other cases you select single programs for the involved parts.
Step 5	Switch back into chain mode by pushing the [CHAIN] button.
Step 6	If you push the direct access buttons 0-9 you can already recall the new direct access memory specified by steps 2 - 5.

Repeat the steps 1 - 6 until you have programmed all necessary direct access buttons. Afterwards you should save the new chain as described in chapter 4.7. Otherwise your settings get lost as soon as you load another chain.



Now we should have a closer look to the chain programming details. We will program a chain, where the direct access buttons 1-3 recall a performance, a single sound and a split combination. Afterwards we will create a song chain list for these direct access memories.



First we assign a performance to the [DIRECT ACCESS]-button 1 (numeric button at the right side of the panel).

Assigning a Performance to [DIRECT-ACCESS]-button [1]	
[CHAIN]	Select the chain mode by pushing the [CHAIN]-button.
[1]	Select [DIRECT-ACCESS]-button [1]
[PERFORM]	Select the Performance mode by pushing [PERFORM].
	
[Category] + [Load Snd]	Select the desired performance in the display menu by selecting a category with the middle encoder and the performance with the right encoder. Confirm the selection by pushing the [LOAD SND]-encoder button.
[CHAIN]	Switch back into chain mode by pushing the [CHAIN]-button.
	
Depending on the selected performance the display will show another performance name.	
[↓]	Push the [↓]-button to select the category selection in the display menu:
	

## Assigning a Performance to [DIRECT-ACCESS]-button [1]

[Cat]	Choose a category for the direct access memory you defined above. If you as an example select „INTRO“, the display will add this information to the display menu. An information about the category and the playmode of that direct access memory shows up below the performance name.
TIP! Mute function. [MUTE]	Do you recognized the [MUTE]-softbutton in the display menu. While holding that encoder button down, one can mute parts by pushing the numeric buttons 1-8. That is a very cool feature for multimode sequencer patterns.

## Assigning a single sound to [DIRECT-ACCESS]-button [2]

[CHAIN]	Select the chain mode by pushing the [CHAIN]-button.
[2]	Select [DIRECT-ACCESS]-button [2].
[SINGLE]	Select the single playmode by pushing [SINGLE].
[PROGRAM]	Open the sound select menu by pushing the [PROGRAM]-button.
 <p>PLAY TEMPO ARF ZONE BUS  Current Part: 0 Program: A3.0 <b>Fat Saw Lead</b> Set   Category   Load Snd <b>A</b>   <b>Lead</b>   FatSwLd</p>	
[Category] + [Load Snd]	Select the desired single sound in the display menu by selecting a category with the middle encoder and the sound program with the right encoder. Confirm the selection by pushing the [LOAD SND]-encoder button.
[CHAIN]	Switch back into chain mode by pushing the [CHAIN]-button.
 <p>CHAIN STEPS ZONE N/A  <b>A0.0:Full Bass</b> A.8: &lt;empty&gt; Bank   Slot   <b>LOAD</b> <b>A</b>   <b>8</b>  </p>	

### Assigning a single sound to [DIRECT-ACCESS]-button [2]

Depending on your selection the display will show up another sound name.

[↓]	Push the [↓]-button to select the category selection in the display menu:
-----	---



CHAIN STEPS ZONE IN/A  
**A0.0:Full Bass**  
 Step 1:1 ChorusA, Single  
 Cat ChorusA **Flute**

[Cat]	Choose a category for the direct access memory you defined above. If you as an example select „Chorus“, the display will add this information to the display menu. An information about the category and the playmode of that direct access memory shows up below the program name.
-------	---

### Assigning a split combination to [DIRECT-ACCESS]-button [3]

[CHAIN]	Select the chain mode by pushing the [CHAIN]-button.
---------	--

[3]	Select [DIRECT-ACCESS]-button [3].
-----	------------------------------------

[SPLIT]	Select the split playmode by pushing [SPLIT]. Push the [SPLIT]-button again and hold it down while pushing the desired splitpoint on the keyboard. The display should now look like this:
---------	---






CHAIN STEPS LEFT RIGHT  
 <none>  
 <none>  
 A.8: <empty>  
 Bank A Slot 8 **LOAD**

As you have not selected any sound for the lower and upper part yet, <none> shows up for both involved parts in the display menu. The upper entry shows the selection for the lower part (1) and the row below shows the sound selection of the upper part 2.




[PART]	For part selection push the [PART]-button.
--------	--

[1-Lower] or [2-Upper]	Choose the part with the [LOWER] or [UPPER] button.
------------------------	---

Assigning a split combination to [DIRECT-ACCESS]-button [3]	
[PROGRAM]	Open the sound select menu by pushing the [PROGRAM]-button.
	
[Category] + [Load Snd]	Select the desired single sound for the selected part in the display menu by selecting a category with the middle encoder and the sound program with the right encoder. Confirm the selection by pushing the [LOAD SND]-encoder button.
[PART]->[2]->[PROGRAM]	Repeat the 4 steps above for the second part.
[CHAIN]	Switch back into chain mode by pushing the [CHAIN]-button.
	
Depending on your selections the display will show up other sound names for the lower and upper part.	
[↓]	Push the [↓]-button to select the category selection in the display menu:
	
[Cat]	Choose a category for the direct access memory you defined above. If you as an example select „Chorus“, the display will add this information to the display menu. An information about the category and the playmode of that direct access memory shows up below the program name. The splitpoint shows up there as well.


## 10.1 Adding MIDI splits to direct access memories of the chain

In the section above you already programmed some direct access memories for your chain. Select the chain mode with the [CHAIN]-button and select the three programmed direct access memories with the [DIRECT ACCESS]-buttons 1-3. Keep an eye on the display menu while selecting the different direct access memories. Especially the right side of the tab menu is important for this chapter.

Performance	Single	Split
		
<p>If a performance is selected for the direct access memory, the two right tabs are disabled [N/A] means not available. The MIDI split function of the chain mode is disabled in this case because performances can hold MIDI masterkeyboard functions that would compete with the settings in a chain.</p>	<p>If a single sound is selected for the direct access memory one MIDI zone is active. Instead of „N/A“ the second last tab reads now „ZONE“. That means one can add a MIDI zone to the single sound direct access memory.</p>	<p>If a split combination has been programmed for the direct access memory, both zones are active. The tabs are now labelled with „Left“ and „RIGHT“. If you had a dual combination programmed, the tabs would read „Lower“ and „Upper“.</p>

Select your split combination to explore the MIDI split functionality of chain direct access memories.

### Editing a MIDI split combination in chain mode:

[CHAIN]	Select the chain mode by pushing the [CHAIN]-button.
[3]	Select [DIRECT-ACCESS]-button [3] if you have assigned your split combination to this button.
[PAGE]	Select the „Left“-tab with the [PAGE]-dial.
	

### Editing a MIDI split combination in chain mode:

You have explored these parameters already in the masterkeyboard edit chapter. The zone features are limited compared to the performance features but in most cases, you will still find everything you need for basic MIDI splits. Chain MIDI splits do not sport velocity splits and can only use two parts simultaneously. If you need the full featureset of the performance masterkeyboard functions, you must program a performance.

Keyboard [KEYBED]	Switch that parameter to „ON“ if you want the Accelerator keyboard to control that zone. If the keyboard is disabled, the realtime controls Aftertouch, Expression pedal, performance buttons, Pitch wheel and modulation wheel are disabled as well.
[ToSynth]	If „TOSYNTH“ is set to „ON“, the zone controls the internal sound engine.
Lautstärke [VOL]	The volume parameter allows for the adjusting the volume of the internal Accelerator part.
MIDI Programmwechsel [MIDIPRG]	By pushing this encoder button the MIDI program change send function gets enabled. After enabling the program change send function you can select the desired program with the encoder. This program change will be sent, when you recall the direct access memory.
MIDI Bankwechsel [MBANK]	By pushing this encoder button the MIDI bank change send function gets enabled. After enabling the bank change send function you can select the desired bank with the encoder. This bank change will be sent, when you recall the performance. The bank change format for this MIDI output definition can be configured in the system menu.
[TRANSP]	The zone output can be transposed in halftone steps.
[MIDIVOL]	By pushing this encoder button the MIDI volume send function gets enabled. After enabling the volume send function you can adjust the volume setting with the encoder. This value will be sent, when you recall the direct access memory.


### Editing a MIDI split combination in chain mode:


[MIDIIN]	Choose a MIDI Input definition for this zone. If you don't want this zone to be controlled via MIDI simply push the encoder button. The encoder button toggles the parameter value between the actual MIDI definition number and „OFF“.
[MIDIOUT]	The encoder button toggles between an active and a disabled MIDI output for the selected zone. When activated, the desired MIDI-output definition can be selected with the encoder.
The same settings are available for the second zone as well.	
If a dual combination has been used instead of a split combination, the zone tabs are labelled with „Lower“ and „Upper“. The feature set for both kinds of combinations is the same. Up to 4 parts will play simultaneously if the internal sound engine and the MIDI zones are active.	

## 10.2 Programming a song chain

After assigning sounds and playmodes to the direct access memories one can arrange them in a row. The steps of such a row can be accessed successively afterwards with the [NEXT]-button or even a footswitch.

### Programming a song chain:

[CHAIN]	Select the chain mode by pushing the [CHAIN]-button.
[PAGE]	Choose the tab „STEPS“ with the [PAGE]-dial.
	
The chain above consists of only one step. The actual step is selected with the black selection bar.	
[0] - [9]	Choose the desired direct access memory for the selected step by pushing one of the [DIRECT ACCESS]-buttons.

Programming a song chain:	
[↓]	By pushing the [↓]-button you can select the next step in the song chain.
[0] - [9]	After selecting a direct access memory for the new step, the entry <new> gets replaced by the category of the selected memory. Additionally a new entry will be created at the end of the song chain list. In the following display screencopy we have already created some song steps:
	
[↓] + [↑]	You can already select steps successively with the [↓] + [↑]-buttons. The selected [DIRECT-ACCESS]-button LED will light up accordingly.
[NEXT]	The [NEXT]-button will already work as well.
Delete step. [DEL]	The actual step can be deleted by pushing the [DEL]-encoder button.
Duplicate step. [DUB]	The actual step can be duplicated by pushing the [DUB]-button.
After loading a chain from memory the first step of a song chain will get selected automaticly. You don't need to select the „Steps“ tab before using the [NEXT]-button.	
In chapter 12.2 you learn how to assign an external footswitch to the [NEXT]-button.	
In chapter 4.7 you learn how to save a chain into memory. As long as the chain mode is active, the red [SAVE]-button will jump directly into the save chain menu.	



## 11.0 Setting up the Accelerator

Place the Accelerator onto a robust table, rigid board or solid keyboard stand. Take the IEC cord that ships with the Accelerator and attach it into the C14 inlet jack at the backpanel. Attach the other end of the IEC cord into the wall outlet. The Accelerator accepts voltages between 110 and 230 Volt, 50/60 Hz.

Before turning the Accelerator on, you should connect the main output audio 1/4" jacks with two instrument cables with the inputs of an amplifier, mixer or active speaker system. If you want to use headphones instead of speakers, insert the 1/4" TRS plug connector into the headphones jack.

The power switch is at the backside of the Accelerator directly beside the power jack.

The Accelerator can create high output signals with up to 6dB. When using the Accelerator for the first time make sure, that the input gain of the amplifier or mixer is set to a low value. The mastervolume of the Accelerator should be reduced when using headphones to avoid any hearing impairments during your session.















If you are using active speaker systems without a volume control reduce the master volume with the [Master Volume]-knob before playing the first notes on the keyboard.

In the following table are informations about all the Accelerator inputs and outputs. read them carefully before connecting the unit to other equipment.

Now we invite you to listen to some preset sounds and performances. Continue with chapter 4.2 at page 14.

If you prefer to learn more about the available inputs and outputs check the table at the next page:

## Connecting to the rest of the world:

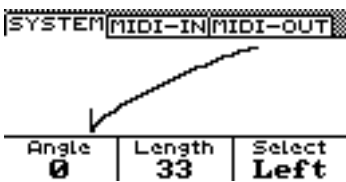
<div>PHONES</div> 	<p>Connect the headphones to the phones jack. When using headphones please make sure to reduce the master volume in order to avoid any hearing impairments.</p>
<div>IN L MONO</div> 	<p>You can connect microphone and line instruments to the external inputs directly. The inputs of the Accelerator are balanced TRS jacks. The gain settings can be adjusted in the BUS-menu. The bus menu opens if you push the [BUS-VOLUME]-encoder button. The [DIRECT-IN]-parameter controls the input gain setting.</p>
<div>IN R</div> 	
<div>SUM L</div> 	
<div>SUM R</div> 	<p>The Accelerator sports two independent stereo output busses. The outputs can be configured in the bus menu. The sum output „SUM L+R“ appears as main output in the bus menu. All preset sounds and performances are assigned to this output by default. The „direct 1+2“ output appears as „AUX“ output in the bus menu. Open the bus menu by pushing the [BUS-VOLUME] encoder button.</p>
<div>DIRECT 1</div> 	
<div>DIRECT 2</div> 	
<div>SPDIF</div> 	<p>The SPDIF output feeds the sum output audio stream digitally with 96kHz/ 24 bits.</p>
<div>USB</div> 	<p>The USB port allows for connecting the Accelerator with an USB cable to a PC or MAC. The Accelerator works then as a USB MIDI device. A driver installation is not necessary!</p>
<div>EXPRESSION</div> 	<p>Both pedal inputs accept foot switches and pedals. You can configure the pedal inputs in the system menu.</p>
<div>SUSTAIN</div> 	
<div>IN</div> 	
<div>OUT</div> 	<p>The three MIDI jacks allow for connecting the Accelerator to other MIDI gear. With the masterkeyboard functionality of the performance mode, extern MIDI devices can be assigned to the keyboard and program changes and other setup informations can be sent to these devices.</p>
<div>THRU</div> 	

## 12.0 Global parameters in the system menu

In the system menu parameters can be set, that work globally on all performances, sequences, sounds and parts. The system parameters will be memorized automatically after leaving the system menu.

### 12.1 Setting up a velocity curve for the Accelerator keyboard

The velocity sensitivity of the keyboard can be configured in the system menu:

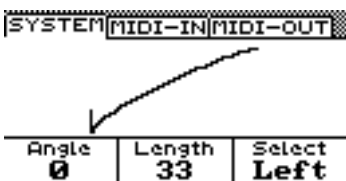

Adjusting the keyboard velocity curve:	
[SYSTEM]	Enter the system menu by pushing the [SYSTEM]-button.
	
The shape of the velocity curve can be adjusted with the angles and length of two tangent vectors.	
[Angle]	The angle changes the shape of the curve between logarithmic, linear and exponential run of the curve.
[Length]	The length defines how much the linear curve will get changed into a logarithmic or exponential shape. If the length is set to 0, the curve will remain linear independent from the selected angle.
[Select]	Select the right or the left tangent vector for editing.
It's not necessary to understand the math behind tangent vectors to configure the velocity curve. When adjusting the parameters the shape of the curve can be viewed in the display and you will instantly hear the velocity response when hitting notes on the keyboard.	

### 12.2 Pedal configuration

The pedal jacks at the backside (expression and sustain) both can be configured as footswitch jacks or continuous value pedal jacks. In the system menu the assignment and functionality of both pedal jacks can be configured.

Pedal jack configuration:	
[SYSTEM]	Select the system menu by pushing the [SYSTEM]-button.

## Pedal jack configuration:

	
[↓]	By pushing the [↓]-button, the parameters for the pedal configuration can be selected:
	
For both pedal jacks the following functions can be selected:	
No function. [OFF]	The pedal input jack is disabled.
Sustain [SUSTAIN]	An attached footswitch works as sustain (hold) switch.
Sostenuto [SUSTNTO]	An attached footswitch works as Sostenuto switch.
Performance button 1 [PERF1]	An attached footswitch or footpedal remote controls the first performance button.
Performance button 2 [PERF2]	An attached footswitch or footpedal remote controls the second performance button.
Chain next [NEXT]	An attached footswitch remote controls the Chain->[NEXT]-button.
Expression [EXPR]	An attached continuous pedal works as expression pedal.
The modulation targets of the performance buttons and expression pedal can be assigned in the modulation matrix and the global modulation matrix.	

## 12.3 Global sequence transpose

Please refer to chapter 7.7 „Realtime transpose of sequencer lines“.

## 12.4 MIDI system channel and MIDI input/output definitions

Program and bank changes received on the MIDI system channel can be used to select Performances via MIDI. A MIDI keyboard attached to Accelerator MIDI input can replace the Accelerator keyboard if configured to send on the MIDI system channel. That makes it quite easy to replace the ACC's keyboard by another MIDI masterkeyboard. Just attach the keyboard and select the MIDI system channel ac-

cordingly to the keyboards send channel. That sounds quite easy you maybe think now - but unfortunately it is a little bit more complicated.

The Accelerator works with MIDI Input and MIDI output definitions. Instead of selecting a MIDI channel directly in an edit menu one selects a MIDI Input or MIDI Output definition. A MIDI Input- or MIDI output-definition is a kind of virtual MIDI channel. A MIDI definition holds the real MIDI channel number and the bank change format for that MIDI channel. You maybe start wondering why we did that.

I will provide you one example that makes it quite easy to understand why we did so. Just imagine one adds a new MIDI device to his LIVE setup and imagine that this device is a vintage instrument that only receives on one fixed MIDI channel. If that MIDI channel would have been used already in a lot of master keyboard programs it would be really hard to integrate that new sound source to the setup. One would have to edit all masterkeyboard programs that are using this MIDI channel. Instead of that one can just assign the MIDI output definition to a new MIDI channel and select the according MIDI receive channel on the synth that was assigned to this MIDI output definition. Just two parameters have to be set in that case to keep all the masterkeyboard programs running.

Another problem of MIDI setups are the Bank change commands. Different synthesizer manufacturers are using different Bank change formats. As a results some synthesizers or masterkeyboards have no access to all soundbanks of an attached synthesizer. Some manufacturers are sending the MSB only, others are only accepting bank changes when receiving MSB and the LSB bank change messages. That can render the whole program selection useless. There are even synths at the market, that receive bank changes on program change messages above 100.

The Accelerator is capable to work as a translator for all these different bank change formats. Once configured in the MIDI input and output definitions, one never has to think about these problems again.

On the other hand it is quite easy to integrate another MIDI Masterkeyboard even if the new keyboard sends bank change commands in a different format. Just configure the bank change format in the MIDI input definition and everything will work again like before.

Assigning a MIDI input definition to the system channel:		
[SYSTEM]	Enter the system menu by pushing the [SYSTEM]-button.	
<div><div>SYSTEMMIDI-INMIDI-OUT</div><div><div>Angle</div><div>Length</div><div>Select</div><div>033Left</div></div></div>		

### Assigning a MIDI input definition to the system channel:

[V]

By pushing the [V]-button three times, the MIDI Input definition selection for the MIDI Master channel can be selected:

```

SYSTEM MIDI-IN MIDI-OUT
Current Part: 0
Program: A0.3
Acid Bass
MidiChn  Sync  MstTune
IN01  OFF  440.0

```

[MIDIChn]

Select the MIDI input definition with the first display encoder.

In our factory defaults the MIDI Input and Output definitions 1-16 are assigned to MIDI channel 1-16.

## 12.5 Setting up MIDI Input and output definitions

After reading the last chapter you should already be an expert in the field of MIDI Input and MIDI output definitions. Now we guide you through the configuration of these definitions:

### Setting up a MIDI Input definition:

[SYSTEM]

Enter the system menu by pushing the [SYSTEM]-button.

```

SYSTEM MIDI-IN MIDI-OUT
Angle  Length  Select
0      33     Left

```

[PAGE]

Select the MIDI-In tab with the [PAGE]-dial:

```

SYSTEM MIDI-IN MIDI-OUT
Name      Chn  BankMode
01: IN01   1    MSB
02: IN02   2    MSB
03: IN03   3    MSB
04: IN04   4    MSB
05: IN05   5    MSB
06: IN06   6    MSB

```

[V] + [↑]

Select a MIDI input definition with the arrow keys.

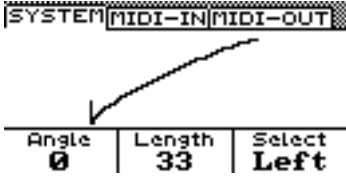
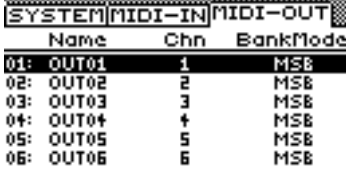
[Chn]

Select the MIDI channel for this MIDI input definition with the second display encoder.

[BankMode]

Select the bank change command format for this MIDI input definition.

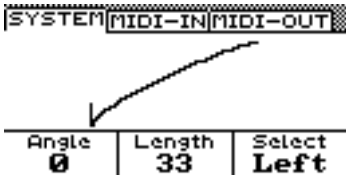
### Setting up a MIDI output definition:

[SYSTEM]	Enter the system menu by pushing the [SYSTEM]-button.
	
[PAGE]	Select the MIDI-Out tab with the [PAGE]-dial:
	
[↓] + [↑]	Select a MIDI output definition with the arrow keys.
[Chn]	Select the MIDI channel for this MIDI output definition with the second display encoder.
[BankMode]	Select the bank change command format for this MIDI output definition.

## 12.6 MIDI synchronisation

The Accelerator can synchronize its FXs, LFOs, Arpeggiators and sequencers to an external MIDI clock source. Alternatively the Accelerator can also send Start/Stop commands and MIDI clock as a master clock to other MIDI devices. The synchronisation settings can be found in the system menu:

### Configuration of MIDI sync:

[SYSTEM]	Enter the system menu by pushing the [SYSTEM]-button.
	
[↓]	By pushing the [↓]-button three times, the MIDI synchronisation parameter appears in the system menu:

## Configuration of MIDI sync:


<div> <div>SYSTEMMIDI-INMIDI-OUT</div> <div>Current Part: 0 Program: A0.3 <b>Acid Bass</b></div> <div> <div>MidiChn</div> <div>IN01</div> </div> <div> <div>Sync</div> <div>OFF</div> </div> <div> <div>MstTune</div> <div>440.0</div> </div> </div>	
[Sync]	Select the MIDI sync mode with the [Sync]-encoder. Three options are available:
OFF	The synchronisation is turned off. The Accelerator runs with it's own clock. No MIDI clock will be sent to a MIDI output and incoming MIDI clock messages will get ignored.
IN	The Accelerator runs as a MIDI sync slave. The internal clock is turned off. Incoming MIDI clock messages synchronize the sequencers, arpeggiators, LFOs and Fxs of the Accelerator.
OUT	The Accelerator runs as a MIDI sync master. The internal clock is running and the Accelerator sends MIDI clock to the MIDI output.
<p>If the Accelerator runs as a sync Master (setting SYNC:OUT), the output streams MIDI clock messages to the MIDI output permanently. If you want to start or to stop external MIDI devices from the Accelerator hold the sequencer [FUNCTION]-button down when pushing the sequencer [START/STOP]-button. If you only want to start the Accelerator sequencer alone, just push the [START/STOP]-button without holding the [FUNCTION]-button down.</p>	

## 12.7 Mastertune

The mastertune parameter tunes the Accelerator.

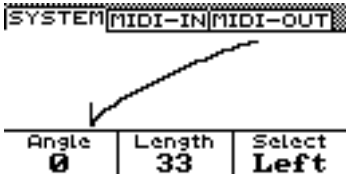
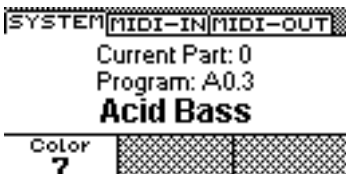
Mastertune	
[SYSTEM]	Enter the system menu by pushing the [SYSTEM]-button.
<div> <div>SYSTEMMIDI-INMIDI-OUT</div> <div> <div>Angle</div> <div>0</div> </div> <div> <div>Length</div> <div>33</div> </div> <div> <div>Select</div> <div>Left</div> </div> </div>	



Mastertune	
[↓]	By pushing the [↓]-button three times, the mastertune parameter appears in the system menu:
	
[MstTune]	Adjust the tuning of the Accelerator with the third display encoder.

## 12.8 Setting up the display backlight color

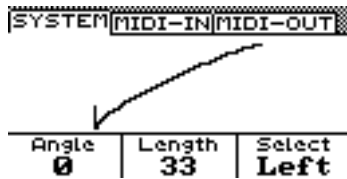
The backlight color of the display can be selected in the system menu:

Setting up the display backlight color:	
[SYSTEM]	Enter the system menu by pushing the [SYSTEM]-button.
	
[↓]	By pushing the [↓]-button four times, the backlight color selection appears in the system menu.
	
[Color]	The backlight color can be selected with the [Color] encoder.

## 12.9 Setting up realtime controls and the acceleration sensor.

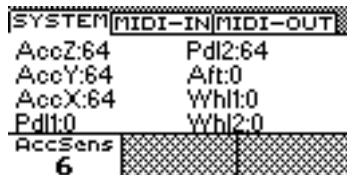
Setting up realtime controls and the acceleration sensor:	
[SYSTEM]	Enter the system menu by pushing the [SYSTEM]-button.

## Setting up realtime controls and the acceleration sensor:



[↵]

By pushing the [↵]-button 6 times, the realtime controls setup page appears:



[AccSens]

The first encoder sets the sensitivity of the acceleration sensor. Higher values allow higher modulation depths at smaller movements but are also more sensitive for little disturbances. A good compromise is a value of 6. This is also the factory default value. If you never want to use the acceleration sensor, you can set Accelerator sensitivity to zero.

In the display area above the parameter row you can check the functionality of all realtime controls. Aftertouch and Modulationwheel should have a range between 0 and 127, Pitch Bend should have a range between -255 and +255. You can check an attached foot pedal in that menu as well.

## 13.0 Addendum

### 13.1 MIDI NRPN Listing

Parameter	Adressmap	NRPN Controller
VCO1 Sync (7 Bit)	0 [0x0401]	NRPN 0x08 0x01
VCO1 Inv (7 Bit)	1 [0x0402]	NRPN 0x08 0x02
Voice Trim (14 Bit signed)	2 [0x0403]	NRPN 0x08 0x03
Flt1 to Flt2 (7 Bit)	3 [0x0404]	NRPN 0x08 0x04
Noise Volume (7 Bit)	4 [0x0405]	NRPN 0x08 0x05
Noise Feed1 (7 Bit)	5 [0x0406]	NRPN 0x08 0x06
Noise Feed2 (7 Bit)	6 [0x0407]	NRPN 0x08 0x07
Ring Volume (7 Bit)	7 [0x0408]	NRPN 0x08 0x08

Parameter	Adressmap	NRPN Controller
Ring Feed1 (7 Bit)	8 [0x0409]	NRPN 0x08 0x09
Ring Feed2 (7 Bit)	9 [0x040a]	NRPN 0x08 0x0A
PitchBend Up (7 Bit signed)	10 [0x040b]	NRPN 0x08 0x0B
PitchBend Dn (7 Bit signed)	11 [0x040c]	NRPN 0x08 0x0C
Part Volume (7 Bit)	12 [0x040d]	NRPN 0x08 0x0D
STR Coarse Tune (14 Bit signed)	13 [0x0410]	NRPN 0x08 0x10
STR Fine Tune (14 Bit signed)	14 [0x0411]	NRPN 0x08 0x11
STR Damp (7 Bit)	15 [0x0412]	NRPN 0x08 0x12
STR Feedback (14 Bit signed)	16 [0x0413]	NRPN 0x08 0x13
STR LoDamp (7 Bit)	17 [0x0414]	NRPN 0x08 0x14
STR IniBend (14 Bit signed)	18 [0x0415]	NRPN 0x08 0x15
STR Glide (7 Bit)	19 [0x0416]	NRPN 0x08 0x16
STR Wet (14 Bit signed)	20 [0x0417]	NRPN 0x08 0x17
EQ Q (7 Bit)	21 [0x041e]	NRPN 0x08 0x1E
EQ LowF (7 Bit)	22 [0x0420]	NRPN 0x08 0x20
EQ MidF (7 Bit)	23 [0x0421]	NRPN 0x08 0x21
EQ HiF (7 Bit)	24 [0x0422]	NRPN 0x08 0x22
EQ LowGain (14 Bit signed)	25 [0x0423]	NRPN 0x08 0x23
EQ MidGain (14 Bit signed)	26 [0x0424]	NRPN 0x08 0x24
EQ HiGain (14 Bit signed)	27 [0x0425]	NRPN 0x08 0x25
EQ LowQ (7 Bit)	28 [0x0426]	NRPN 0x08 0x26
EQ MidQ (7 Bit)	29 [0x0427]	NRPN 0x08 0x27
EQ HiQ (7 Bit)	30 [0x0428]	NRPN 0x08 0x28
Master Volume (7 Bit)	31 [0x0441]	NRPN 0x08 0x41
Glide Mode (7 Bit)	32 [0x0451]	NRPN 0x08 0x51
Glide Up (7 Bit)	33 [0x0453]	NRPN 0x08 0x53
Glide Down (7 Bit)	34 [0x0454]	NRPN 0x08 0x54
Glide Quantize (7 Bit)	35 [0x0455]	NRPN 0x08 0x55
Mono Mode (7 Bit)	36 [0x0458]	NRPN 0x08 0x58
Mono Trg Mode (7 Bit)	37 [0x0459]	NRPN 0x08 0x59

Parameter	Adressmap	NRPN Controller
Limit Hardness (7 Bit)	38 [0x0469]	NRPN 0x08 0x69
Limit Gain (7 Bit)	39 [0x046a]	NRPN 0x08 0x6A
Bus Trim (14 Bit signed)	40 [0x046b]	NRPN 0x08 0x6B
DirectIn (7 Bit)	41 [0x046c]	NRPN 0x08 0x6C
Bus To Main (7 Bit)	42 [0x046d]	NRPN 0x08 0x6D
Bus To Aux (7 Bit)	43 [0x046e]	NRPN 0x08 0x6E
OrgnVol (7 Bit)	44 [0x0480]	NRPN 0x09 0x00
ORGAN 16' (7 Bit)	45 [0x0481]	NRPN 0x09 0x01
ORGAN 5 1/3' (7 Bit)	46 [0x0482]	NRPN 0x09 0x02
ORGAN 8' (7 Bit)	47 [0x0483]	NRPN 0x09 0x03
ORGAN 4' (7 Bit)	48 [0x0484]	NRPN 0x09 0x04
ORGAN 2 2/3' (7 Bit)	49 [0x0485]	NRPN 0x09 0x05
ORGAN 2' (7 Bit)	50 [0x0486]	NRPN 0x09 0x06
ORGAN 1 3/5' (7 Bit)	51 [0x0487]	NRPN 0x09 0x07
ORGAN 1 1/3' (7 Bit)	52 [0x0488]	NRPN 0x09 0x08
ORGAN 1' (7 Bit)	53 [0x0489]	NRPN 0x09 0x09
ORG SoftVol (7 Bit)	54 [0x0490]	NRPN 0x09 0x10
ORG HardVol (7 Bit)	55 [0x0491]	NRPN 0x09 0x11
ORG Short Time (7 Bit)	56 [0x0492]	NRPN 0x09 0x12
ORG Long Time (7 Bit)	57 [0x0493]	NRPN 0x09 0x13
ORG Click Vol (7 Bit)	58 [0x0494]	NRPN 0x09 0x14
ORG Perc Rls (7 Bit)	59 [0x0495]	NRPN 0x09 0x15
ORG Perc Hard (7 Bit)	60 [0x0496]	NRPN 0x09 0x16
ORG Perc Long (7 Bit)	61 [0x0497]	NRPN 0x09 0x17
ORG Click (7 Bit)	62 [0x0498]	NRPN 0x09 0x18
ORG Percussion (7 Bit)	63 [0x0499]	NRPN 0x09 0x19
EQ Freq (7 Bit)	64 [0x0500]	NRPN 0x0A 0x00
EQ Type (7 Bit)	65 [0x0501]	NRPN 0x0A 0x01
EQ Q (7 Bit)	66 [0x0502]	NRPN 0x0A 0x02
EQ Gain (14 Bit signed)	67 [0x0503]	NRPN 0x0A 0x03

Parameter	Adressmap	NRPN Controller
DIS Wet (7 Bit)	68 [0x0504]	NRPN 0x0A 0x04
DIS Drive (7 Bit)	69 [0x0505]	NRPN 0x0A 0x05
DIS Type (7 Bit)	70 [0x0506]	NRPN 0x0A 0x06
DIS Pre Gain (7 Bit)	71 [0x0507]	NRPN 0x0A 0x07
DIS Post Gain (14 Bit signed)	72 [0x0508]	NRPN 0x0A 0x08
DLY Wet (7 Bit)	73 [0x0510]	NRPN 0x0A 0x10
Delay Time (14 Bit)	74 [0x0511]	NRPN 0x0A 0x11
Predelay Time (14 Bit)	75 [0x0512]	NRPN 0x0A 0x12
DLY Feedback (14 Bit)	76 [0x0513]	NRPN 0x0A 0x13
Delay Spread (14 Bit)	77 [0x0515]	NRPN 0x0A 0x15
DLY LFO Rate (7 Bit)	78 [0x0516]	NRPN 0x0A 0x16
DLY LFO Depth (14 Bit)	79 [0x0517]	NRPN 0x0A 0x17
EQ Freq (7 Bit)	80 [0x0518]	NRPN 0x0A 0x18
EQ Type (7 Bit)	81 [0x0519]	NRPN 0x0A 0x19
EQ Q (7 Bit)	82 [0x051a]	NRPN 0x0A 0x1A
EQ Gain (14 Bit signed)	83 [0x051b]	NRPN 0x0A 0x1B
EQ Freq (7 Bit)	84 [0x051c]	NRPN 0x0A 0x1C
EQ Type (7 Bit)	85 [0x051d]	NRPN 0x0A 0x1D
EQ Gain (14 Bit signed)	86 [0x051f]	NRPN 0x0A 0x1F
EQ Freq (7 Bit)	87 [0x0528]	NRPN 0x0A 0x28
EQ Type (7 Bit)	88 [0x0529]	NRPN 0x0A 0x29
EQ Q (7 Bit)	89 [0x052a]	NRPN 0x0A 0x2A
EQ Gain (14 Bit signed)	90 [0x052b]	NRPN 0x0A 0x2B
FX Wet (7 Bit)	91 [0x052c]	NRPN 0x0A 0x2C
REV Wet (7 Bit)	92 [0x0530]	NRPN 0x0A 0x30
REV Room Size (7 Bit)	93 [0x0531]	NRPN 0x0A 0x31
Reverb Damp (7 Bit)	94 [0x0532]	NRPN 0x0A 0x32
Reverb Width (7 Bit)	95 [0x0533]	NRPN 0x0A 0x33
REV Feedback (7 Bit)	96 [0x0534]	NRPN 0x0A 0x34
REV Pre Delay (14 Bit)	97 [0x0535]	NRPN 0x0A 0x35

Parameter	Adressmap	NRPN Controller
EQ Freq (7 Bit)	98 [0x0536]	NRPN 0x0A 0x36
EQ Type (7 Bit)	99 [0x0537]	NRPN 0x0A 0x37
EQ Q (7 Bit)	100 [0x0538]	NRPN 0x0A 0x38
EQ Gain (14 Bit signed)	101 [0x0539]	NRPN 0x0A 0x39
CHR Wet (7 Bit)	102 [0x0540]	NRPN 0x0A 0x40
CHR Delay Time (7 Bit)	103 [0x0541]	NRPN 0x0A 0x41
CHR Depth (7 Bit)	104 [0x0542]	NRPN 0x0A 0x42
CHR Feedbck (7 Bit)	105 [0x0543]	NRPN 0x0A 0x43
CHR LFO Rate (7 Bit)	106 [0x0544]	NRPN 0x0A 0x44
CHR Damp (7 Bit)	107 [0x0545]	NRPN 0x0A 0x45
CHR Width (7 Bit)	108 [0x0546]	NRPN 0x0A 0x46
PHS Wet (7 Bit)	109 [0x0550]	NRPN 0x0A 0x50
PHS Rate (7 Bit)	110 [0x0551]	NRPN 0x0A 0x51
PHS Width (7 Bit)	111 [0x0552]	NRPN 0x0A 0x52
PHS Feedback (7 Bit)	112 [0x0553]	NRPN 0x0A 0x53
PHS Low Freq (7 Bit)	113 [0x0554]	NRPN 0x0A 0x54
PHS High Freq (7 Bit)	114 [0x0555]	NRPN 0x0A 0x55
LES Wet (7 Bit)	115 [0x0560]	NRPN 0x0A 0x60
LES XOver (7 Bit)	116 [0x0561]	NRPN 0x0A 0x61
LES SlowFast (7 Bit)	117 [0x0562]	NRPN 0x0A 0x62
LES WidthLo (7 Bit)	118 [0x0563]	NRPN 0x0A 0x63
LES SlowRateLo (7 Bit)	119 [0x0564]	NRPN 0x0A 0x64
LES FastRateLo (7 Bit)	120 [0x0565]	NRPN 0x0A 0x65
LES GainLo (7 Bit)	121 [0x0566]	NRPN 0x0A 0x66
LES WidthHi (7 Bit)	122 [0x0567]	NRPN 0x0A 0x67
LES SlowRateHi (7 Bit)	123 [0x0568]	NRPN 0x0A 0x68
LES FastRateHi (7 Bit)	124 [0x0569]	NRPN 0x0A 0x69
LES GainHi (7 Bit)	125 [0x056a]	NRPN 0x0A 0x6A
LES VelOn Lo (7 Bit)	126 [0x056b]	NRPN 0x0A 0x6B
LES VelOn Hi (7 Bit)	127 [0x056c]	NRPN 0x0A 0x6C

Parameter	Adressmap	NRPN Controller
LES VelOff Lo (7 Bit)	128 [0x056d]	NRPN 0x0A 0x6D
LES VelOff Hi (7 Bit)	129 [0x056e]	NRPN 0x0A 0x6E
MOD01 Source (7 Bit)	130 [0x0620]	NRPN 0x0C 0x20
MOD02 Source (7 Bit)	131 [0x0621]	NRPN 0x0C 0x21
MOD03 Source (7 Bit)	132 [0x0622]	NRPN 0x0C 0x22
MOD04 Source (7 Bit)	133 [0x0623]	NRPN 0x0C 0x23
MOD05 Source (7 Bit)	134 [0x0624]	NRPN 0x0C 0x24
MOD06 Source (7 Bit)	135 [0x0625]	NRPN 0x0C 0x25
MOD07 Source (7 Bit)	136 [0x0626]	NRPN 0x0C 0x26
MOD08 Source (7 Bit)	137 [0x0627]	NRPN 0x0C 0x27
MOD01 Source (7 Bit)	138 [0x0628]	NRPN 0x0C 0x28
MOD02 Source (7 Bit)	139 [0x0629]	NRPN 0x0C 0x29
MOD03 Source (7 Bit)	140 [0x062a]	NRPN 0x0C 0x2A
MOD04 Source (7 Bit)	141 [0x062b]	NRPN 0x0C 0x2B
MOD05 Source (7 Bit)	142 [0x062c]	NRPN 0x0C 0x2C
MOD06 Source (7 Bit)	143 [0x062d]	NRPN 0x0C 0x2D
MOD07 Source (7 Bit)	144 [0x062e]	NRPN 0x0C 0x2E
MOD08 Source (7 Bit)	145 [0x062f]	NRPN 0x0C 0x2F
MOD01 Source (7 Bit)	146 [0x0630]	NRPN 0x0C 0x30
MOD02 Source (7 Bit)	147 [0x0631]	NRPN 0x0C 0x31
MOD03 Source (7 Bit)	148 [0x0632]	NRPN 0x0C 0x32
MOD04 Source (7 Bit)	149 [0x0633]	NRPN 0x0C 0x33
MOD05 Source (7 Bit)	150 [0x0634]	NRPN 0x0C 0x34
MOD06 Source (7 Bit)	151 [0x0635]	NRPN 0x0C 0x35
MOD07 Source (7 Bit)	152 [0x0636]	NRPN 0x0C 0x36
MOD08 Source (7 Bit)	153 [0x0637]	NRPN 0x0C 0x37
MOD08 Source (7 Bit)	153 [0x0637]	NRPN 0x0C 0x37
MOD01 Source (7 Bit)	154 [0x0638]	NRPN 0x0C 0x38
MOD02 Source (7 Bit)	155 [0x0639]	NRPN 0x0C 0x39
MOD03 Source (7 Bit)	156 [0x063a]	NRPN 0x0C 0x3A

Parameter	Adressmap	NRPN Controller
MOD04 Source (7 Bit)	157 [0x063b]	NRPN 0x0C 0x3B
MOD05 Source (7 Bit)	158 [0x063c]	NRPN 0x0C 0x3C
MOD06 Source (7 Bit)	159 [0x063d]	NRPN 0x0C 0x3D
MOD07 Source (7 Bit)	160 [0x063e]	NRPN 0x0C 0x3E
MOD08 Source (7 Bit)	161 [0x063f]	NRPN 0x0C 0x3F
MOD01 Target (7 Bit)	162 [0x0660]	NRPN 0x0C 0x60
MOD02 Target (7 Bit)	163 [0x0661]	NRPN 0x0C 0x61
MOD03 Target (7 Bit)	164 [0x0662]	NRPN 0x0C 0x62
MOD04 Target (7 Bit)	165 [0x0663]	NRPN 0x0C 0x63
MOD05 Target (7 Bit)	166 [0x0664]	NRPN 0x0C 0x64
MOD06 Target (7 Bit)	167 [0x0665]	NRPN 0x0C 0x65
MOD07 Target (7 Bit)	168 [0x0666]	NRPN 0x0C 0x66
MOD08 Target (7 Bit)	169 [0x0667]	NRPN 0x0C 0x67
MOD01 Target (7 Bit)	170 [0x0668]	NRPN 0x0C 0x68
MOD02 Target (7 Bit)	171 [0x0669]	NRPN 0x0C 0x69
MOD03 Target (7 Bit)	172 [0x066a]	NRPN 0x0C 0x6A
MOD04 Target (7 Bit)	173 [0x066b]	NRPN 0x0C 0x6B
MOD05 Target (7 Bit)	174 [0x066c]	NRPN 0x0C 0x6C
MOD06 Target (7 Bit)	175 [0x066d]	NRPN 0x0C 0x6D
MOD07 Target (7 Bit)	176 [0x066e]	NRPN 0x0C 0x6E
MOD08 Target (7 Bit)	177 [0x066f]	NRPN 0x0C 0x6F
MOD01 Target (7 Bit)	178 [0x0670]	NRPN 0x0C 0x70
MOD02 Target (7 Bit)	179 [0x0671]	NRPN 0x0C 0x71
MOD03 Target (7 Bit)	180 [0x0672]	NRPN 0x0C 0x72
MOD04 Target (7 Bit)	181 [0x0673]	NRPN 0x0C 0x73
MOD05 Target (7 Bit)	182 [0x0674]	NRPN 0x0C 0x74
MOD06 Target (7 Bit)	183 [0x0675]	NRPN 0x0C 0x75
MOD07 Target (7 Bit)	184 [0x0676]	NRPN 0x0C 0x76
MOD08 Target (7 Bit)	185 [0x0677]	NRPN 0x0C 0x77
MOD01 Target (7 Bit)	186 [0x0678]	NRPN 0x0C 0x78



Parameter	Adressmap	NRPN Controller
MOD02 Target (7 Bit)	187 [0x0679]	NRPN 0x0C 0x79
MOD03 Target (7 Bit)	188 [0x067a]	NRPN 0x0C 0x7A
MOD04 Target (7 Bit)	189 [0x067b]	NRPN 0x0C 0x7B
MOD05 Target (7 Bit)	190 [0x067c]	NRPN 0x0C 0x7C
MOD06 Target (7 Bit)	191 [0x067d]	NRPN 0x0C 0x7D
MOD07 Target (7 Bit)	192 [0x067e]	NRPN 0x0C 0x7E
MOD08 Target (7 Bit)	193 [0x067f]	NRPN 0x0C 0x7F
MOD01 Depth (14 Bit signed)	194 [0x06a0]	NRPN 0x0D 0x20
MOD02 Depth (14 Bit signed)	195 [0x06a1]	NRPN 0x0D 0x21
MOD03 Depth (14 Bit signed)	196 [0x06a2]	NRPN 0x0D 0x22
MOD04 Depth (14 Bit signed)	197 [0x06a3]	NRPN 0x0D 0x23
MOD05 Depth (14 Bit signed)	198 [0x06a4]	NRPN 0x0D 0x24
MOD06 Depth (14 Bit signed)	199 [0x06a5]	NRPN 0x0D 0x25
MOD07 Depth (14 Bit signed)	200 [0x06a6]	NRPN 0x0D 0x26
MOD08 Depth (14 Bit signed)	201 [0x06a7]	NRPN 0x0D 0x27
MOD01 Depth (14 Bit signed)	202 [0x06a8]	NRPN 0x0D 0x28
MOD02 Depth (14 Bit signed)	203 [0x06a9]	NRPN 0x0D 0x29
MOD03 Depth (14 Bit signed)	204 [0x06aa]	NRPN 0x0D 0x2A
MOD04 Depth (14 Bit signed)	205 [0x06ab]	NRPN 0x0D 0x2B
MOD05 Depth (14 Bit signed)	206 [0x06ac]	NRPN 0x0D 0x2C
MOD06 Depth (14 Bit signed)	207 [0x06ad]	NRPN 0x0D 0x2D
MOD07 Depth (14 Bit signed)	208 [0x06ae]	NRPN 0x0D 0x2E
MOD08 Depth (14 Bit signed)	209 [0x06af]	NRPN 0x0D 0x2F
MOD01 Depth (14 Bit signed)	210 [0x06b0]	NRPN 0x0D 0x30
MOD02 Depth (14 Bit signed)	211 [0x06b1]	NRPN 0x0D 0x31
MOD03 Depth (14 Bit signed)	212 [0x06b2]	NRPN 0x0D 0x32
MOD04 Depth (14 Bit signed)	213 [0x06b3]	NRPN 0x0D 0x33
MOD05 Depth (14 Bit signed)	214 [0x06b4]	NRPN 0x0D 0x34
MOD06 Depth (14 Bit signed)	215 [0x06b5]	NRPN 0x0D 0x35
MOD07 Depth (14 Bit signed)	216 [0x06b6]	NRPN 0x0D 0x36

Parameter	Adressmap	NRPN Controller
MOD08 Depth (14 Bit signed)	217 [0x06b7]	NRPN 0x0D 0x37
MOD01 Depth (14 Bit signed)	218 [0x06b8]	NRPN 0x0D 0x38
MOD02 Depth (14 Bit signed)	219 [0x06b9]	NRPN 0x0D 0x39
MOD03 Depth (14 Bit signed)	220 [0x06ba]	NRPN 0x0D 0x3A
MOD04 Depth (14 Bit signed)	221 [0x06bb]	NRPN 0x0D 0x3B
MOD05 Depth (14 Bit signed)	222 [0x06bc]	NRPN 0x0D 0x3C
MOD06 Depth (14 Bit signed)	223 [0x06bd]	NRPN 0x0D 0x3D
MOD07 Depth (14 Bit signed)	224 [0x06be]	NRPN 0x0D 0x3E
MOD08 Depth (14 Bit signed)	225 [0x06bf]	NRPN 0x0D 0x3F
GMOD01 Source (7 Bit)	226 [0x0700]	NRPN 0x0E 0x00
GMOD02 Source (7 Bit)	227 [0x0701]	NRPN 0x0E 0x01
GMOD03 Source (7 Bit)	228 [0x0702]	NRPN 0x0E 0x02
GMOD04 Source (7 Bit)	229 [0x0703]	NRPN 0x0E 0x03
GMOD05 Source (7 Bit)	230 [0x0704]	NRPN 0x0E 0x04
GMOD06 Source (7 Bit)	231 [0x0705]	NRPN 0x0E 0x05
GMOD07 Source (7 Bit)	232 [0x0706]	NRPN 0x0E 0x06
GMOD08 Source (7 Bit)	233 [0x0707]	NRPN 0x0E 0x07
GMOD01 Target (7 Bit)	234 [0x0720]	NRPN 0x0E 0x20
GMOD02 Target (7 Bit)	235 [0x0721]	NRPN 0x0E 0x21
GMOD03 Target (7 Bit)	236 [0x0722]	NRPN 0x0E 0x22
GMOD04 Target (7 Bit)	237 [0x0723]	NRPN 0x0E 0x23
GMOD05 Target (7 Bit)	238 [0x0724]	NRPN 0x0E 0x24
GMOD06 Target (7 Bit)	239 [0x0725]	NRPN 0x0E 0x25
GMOD07 Target (7 Bit)	240 [0x0726]	NRPN 0x0E 0x26
GMOD08 Target (7 Bit)	241 [0x0727]	NRPN 0x0E 0x27
GMOD01 Depth (14 Bit signed)	242 [0x0740]	NRPN 0x0E 0x40
GMOD02 Depth (14 Bit signed)	243 [0x0741]	NRPN 0x0E 0x41
GMOD03 Depth (14 Bit signed)	244 [0x0742]	NRPN 0x0E 0x42
GMOD04 Depth (14 Bit signed)	245 [0x0743]	NRPN 0x0E 0x43
GMOD05 Depth (14 Bit signed)	246 [0x0744]	NRPN 0x0E 0x44

Parameter	Adressmap	NRPN Controller
GMOD06 Depth (14 Bit signed)	247 [0x0745]	NRPN 0x0E 0x45
GMOD07 Depth (14 Bit signed)	248 [0x0746]	NRPN 0x0E 0x46
GMOD08 Depth (14 Bit signed)	249 [0x0747]	NRPN 0x0E 0x47
VCO1 Waveform (7 Bit)	250 [0x0808]	NRPN 0x10 0x08
VCO2 Waveform (7 Bit)	251 [0x0809]	NRPN 0x10 0x09
VCO3 Waveform (7 Bit)	252 [0x080a]	NRPN 0x10 0x0A
VCO1 Coarse Tune (14 Bit signed)	253 [0x0810]	NRPN 0x10 0x10
VCO2 Coarse Tune (14 Bit signed)	254 [0x0811]	NRPN 0x10 0x11
VCO3 Coarse Tune (14 Bit signed)	255 [0x0812]	NRPN 0x10 0x12
VCO1 Fine Tune (14 Bit signed)	256 [0x0818]	NRPN 0x10 0x18
VCO2 Fine Tune (14 Bit signed)	257 [0x0819]	NRPN 0x10 0x19
VCO3 Fine Tune (14 Bit signed)	258 [0x081a]	NRPN 0x10 0x1A
VCO1 Freq. Off. (14 Bit signed)	259 [0x0820]	NRPN 0x10 0x20
VCO2 Freq. Off. (14 Bit signed)	260 [0x0821]	NRPN 0x10 0x21
VCO3 Freq. Off. (14 Bit signed)	261 [0x0822]	NRPN 0x10 0x22
VCO1 TLM (14 Bit signed)	262 [0x0828]	NRPN 0x10 0x28
VCO2 TLM (14 Bit signed)	263 [0x0829]	NRPN 0x10 0x29
VCO3 TLM (14 Bit signed)	264 [0x082a]	NRPN 0x10 0x2A
VCO1 VCO2 PM (7 Bit)	265 [0x0830]	NRPN 0x10 0x30
VCO2 VCO2 PM (7 Bit)	266 [0x0831]	NRPN 0x10 0x31
VCO3 VCO2 PM (7 Bit)	267 [0x0832]	NRPN 0x10 0x32
VCO1 VCO3 PM (7 Bit)	268 [0x0838]	NRPN 0x10 0x38
VCO2 VCO3 PM (7 Bit)	269 [0x0839]	NRPN 0x10 0x39
VCO3 VCO3 PM (7 Bit)	270 [0x083a]	NRPN 0x10 0x3A
VCO1 Volume (7 Bit)	271 [0x0840]	NRPN 0x10 0x40
VCO2 Volume (7 Bit)	272 [0x0841]	NRPN 0x10 0x41
VCO3 Volume (7 Bit)	273 [0x0842]	NRPN 0x10 0x42
VCO1 to Filter1 (7 Bit)	274 [0x0848]	NRPN 0x10 0x48
VCO2 to Filter1 (7 Bit)	275 [0x0849]	NRPN 0x10 0x49
VCO3 to Filter1 (7 Bit)	276 [0x084a]	NRPN 0x10 0x4A

Parameter	Adressmap	NRPN Controller
VCO1 to Filter2 (7 Bit)	277 [0x0850]	NRPN 0x10 0x50
VCO2 to Filter2 (7 Bit)	278 [0x0851]	NRPN 0x10 0x51
VCO3 to Filter2 (7 Bit)	279 [0x0852]	NRPN 0x10 0x52
VCO1 Start Phs (7 Bit)	280 [0x0858]	NRPN 0x10 0x58
VCO2 Start Phs (7 Bit)	281 [0x0859]	NRPN 0x10 0x59
VCO3 Start Phs (7 Bit)	282 [0x085a]	NRPN 0x10 0x5A
VCO1 KeyScale (7 Bit signed)	283 [0x0860]	NRPN 0x10 0x60
VCO2 KeyScale (7 Bit signed)	284 [0x0861]	NRPN 0x10 0x61
VCO3 KeyScale (7 Bit signed)	285 [0x0862]	NRPN 0x10 0x62
LFO1 Rate (7 Bit)	286 [0x0880]	NRPN 0x11 0x00
LFO2 Rate (7 Bit)	287 [0x0881]	NRPN 0x11 0x01
LFO3 Rate (7 Bit)	288 [0x0882]	NRPN 0x11 0x02
LFO1 Depth (7 Bit)	289 [0x0888]	NRPN 0x11 0x08
LFO2 Depth (7 Bit)	290 [0x0889]	NRPN 0x11 0x09
LFO3 Depth (7 Bit)	291 [0x088a]	NRPN 0x11 0x0A
LFO1 Waveform (7 Bit)	292 [0x0890]	NRPN 0x11 0x10
LFO2 Waveform (7 Bit)	293 [0x0891]	NRPN 0x11 0x11
LFO3 Waveform (7 Bit)	294 [0x0892]	NRPN 0x11 0x12
LFO1 Phase (7 Bit)	295 [0x0898]	NRPN 0x11 0x18
LFO2 Phase (7 Bit)	296 [0x0899]	NRPN 0x11 0x19
LFO3 Phase (7 Bit)	297 [0x089a]	NRPN 0x11 0x1A
ENV1 Attack Rate (7 Bit)	298 [0x08c0]	NRPN 0x11 0x40
ENV2 Attack Rate (7 Bit)	299 [0x08c1]	NRPN 0x11 0x41
ENV3 Attack Rate (7 Bit)	300 [0x08c2]	NRPN 0x11 0x42
ENV4 Attack Rate (7 Bit)	301 [0x08c3]	NRPN 0x11 0x43
ENV5 Attack Rate (7 Bit)	302 [0x08c4]	NRPN 0x11 0x44
ENV6 Attack Rate (7 Bit)	303 [0x08c5]	NRPN 0x11 0x45
ENV1 Hold Time (7 Bit)	304 [0x08c8]	NRPN 0x11 0x48
ENV2 Hold Time (7 Bit)	305 [0x08c9]	NRPN 0x11 0x49
ENV3 Hold Time (7 Bit)	306 [0x08ca]	NRPN 0x11 0x4A

Parameter	Adressmap	NRPN Controller
ENV4 Hold Time (7 Bit)	307 [0x08cb]	NRPN 0x11 0x4B
ENV5 Hold Time (7 Bit)	308 [0x08cc]	NRPN 0x11 0x4C
ENV6 Hold Time (7 Bit)	309 [0x08cd]	NRPN 0x11 0x4D
ENV1 Decay Rate (7 Bit)	310 [0x08d0]	NRPN 0x11 0x50
ENV2 Decay Rate (7 Bit)	311 [0x08d1]	NRPN 0x11 0x51
ENV3 Decay Rate (7 Bit)	312 [0x08d2]	NRPN 0x11 0x52
ENV4 Decay Rate (7 Bit)	313 [0x08d3]	NRPN 0x11 0x53
ENV5 Decay Rate (7 Bit)	314 [0x08d4]	NRPN 0x11 0x54
ENV6 Decay Rate (7 Bit)	315 [0x08d5]	NRPN 0x11 0x55
ENV1 Sustain Lvl (7 Bit)	316 [0x08d8]	NRPN 0x11 0x58
ENV2 Sustain Lvl (7 Bit)	317 [0x08d9]	NRPN 0x11 0x59
ENV3 Sustain Lvl (7 Bit)	318 [0x08da]	NRPN 0x11 0x5A
ENV4 Sustain Lvl (7 Bit)	319 [0x08db]	NRPN 0x11 0x5B
ENV5 Sustain Lvl (7 Bit)	320 [0x08dc]	NRPN 0x11 0x5C
ENV6 Sustain Lvl (7 Bit)	321 [0x08dd]	NRPN 0x11 0x5D
ENV1 Release Rte (7 Bit)	322 [0x08e0]	NRPN 0x11 0x60
ENV2 Release Rte (7 Bit)	323 [0x08e1]	NRPN 0x11 0x61
ENV3 Release Rte (7 Bit)	324 [0x08e2]	NRPN 0x11 0x62
ENV4 Release Rte (7 Bit)	325 [0x08e3]	NRPN 0x11 0x63
ENV5 Release Rte (7 Bit)	326 [0x08e4]	NRPN 0x11 0x64
ENV6 Release Rte (7 Bit)	327 [0x08e5]	NRPN 0x11 0x65
FLT1 Cutoff (14 Bit signed)	328 [0x0900]	NRPN 0x12 0x00
FLT2 Cutoff (14 Bit signed)	329 [0x0901]	NRPN 0x12 0x01
FLT3 Cutoff (14 Bit signed)	330 [0x0902]	NRPN 0x12 0x02
FLT1 Resonance (7 Bit)	331 [0x0908]	NRPN 0x12 0x08
FLT2 Resonance (7 Bit)	332 [0x0909]	NRPN 0x12 0x09
FLT3 Resonance (7 Bit)	333 [0x090a]	NRPN 0x12 0x0A
FLT1 Type (7 Bit)	334 [0x0910]	NRPN 0x12 0x10
FLT2 Type (7 Bit)	335 [0x0911]	NRPN 0x12 0x11
FLT3 Type (7 Bit)	336 [0x0912]	NRPN 0x12 0x12

Parameter	Adressmap	NRPN Controller
FLT1 KeyScale (7 Bit signed)	337 [0x0918]	NRPN 0x12 0x18
FLT2 KeyScale (7 Bit signed)	338 [0x0919]	NRPN 0x12 0x19
FLT3 KeyScale (7 Bit signed)	339 [0x091a]	NRPN 0x12 0x1A
FLT1 Level (7 Bit)	340 [0x0920]	NRPN 0x12 0x20
FLT2 Level (7 Bit)	341 [0x0921]	NRPN 0x12 0x21
FLT3 Level (7 Bit)	342 [0x0922]	NRPN 0x12 0x22
FLT1 Pan (14 Bit signed)	343 [0x0928]	NRPN 0x12 0x28
FLT2 Pan (14 Bit signed)	344 [0x0929]	NRPN 0x12 0x29
FLT3 Pan (14 Bit signed)	345 [0x092a]	NRPN 0x12 0x2A

## 14.0 Upgrade opportunities

### 14.1 Voice expansions

The voice expansion modules increase the polyphony of the Accelerator. Each expansion adds 12 voices to the synthesis engine. Two expansions can be installed for a maximum of 32 voices. Additionally expansions increases the multitimbrality as well. Up to 8 parts are available as soon as at least one expansion has been installed. Each of these additional parts sport an independent arpeggiator and sequencer.

### 14.2 Software upgrades

Additional software packages allow for adding new synthesis algorithms. Already in betastage is a 61 voices drawbar organ module which will become available soon for Accelerators with at least one voice expansion installed.

## 15.0 Feature summary

- 3 oscillators with sweepable waveforms, time linearity modulation, phasemodulation, ringmodulation between Oscillator 2+3, oscillator synchronisation and linear detuning
- 6 envelope generators, 4 LFOs (3 voice, 1part LFO)
- noise with dedicated noise filter (multimode filter - LP, HP, BP and Notch 12 / 24 dB) and independent amp & envelope
- 2 multimodefilter per voice - LP, HP, BP and Notch with 12/24 dB per filter switchable independent oscillator to filter feeds, flexible serial and parallel filter routing
- additional 3 band full parametric EQ per voice
- powerful modulationmatrix
- 4 powerful FX busses with modulation delay, chorus, phasing, reverb, leslie and distortion
- up to 8 programmable polyphonic arpeggiators
- up to 8 step sequencers with chord memories, 32 steps and three lines for parameter control. Realtime features like mute, skip, gate, transpose, direction and line length manipulation
- split, dual, single and performance mode with performance memories and selection chain programming
- acceleration sensor for parameter control
- 61 lightweighted keys with channel aftertouch
- 500 sound memories, 300 performance memories, 100 performance chain memories
- categorized sound selection
- categorized randomize sound function
- floating point processing for enhanced dynamic range
- 8 voices (up to 32 voices per DSP expansion)
- two part multimode (up to 8 part multimode with DSP expansion)
- monochrom graphic display with RGB backlight

**Connections:**

- expression pedal input
- footswitch input
- galvanic isolated USB connector (USB MIDI class device)
- two external balanced inputs
- four analog outputs
- headphone output with a discrete headphone amp
- additional SPDIF-Output
- two DSP expansion slots
- MIDI In, Out, Thru
- power: 110-220V 50/60Hz

**Weight and dimensions**

weight: 9 kg, dimensions: 0.99m x 0.35m x 0.115m