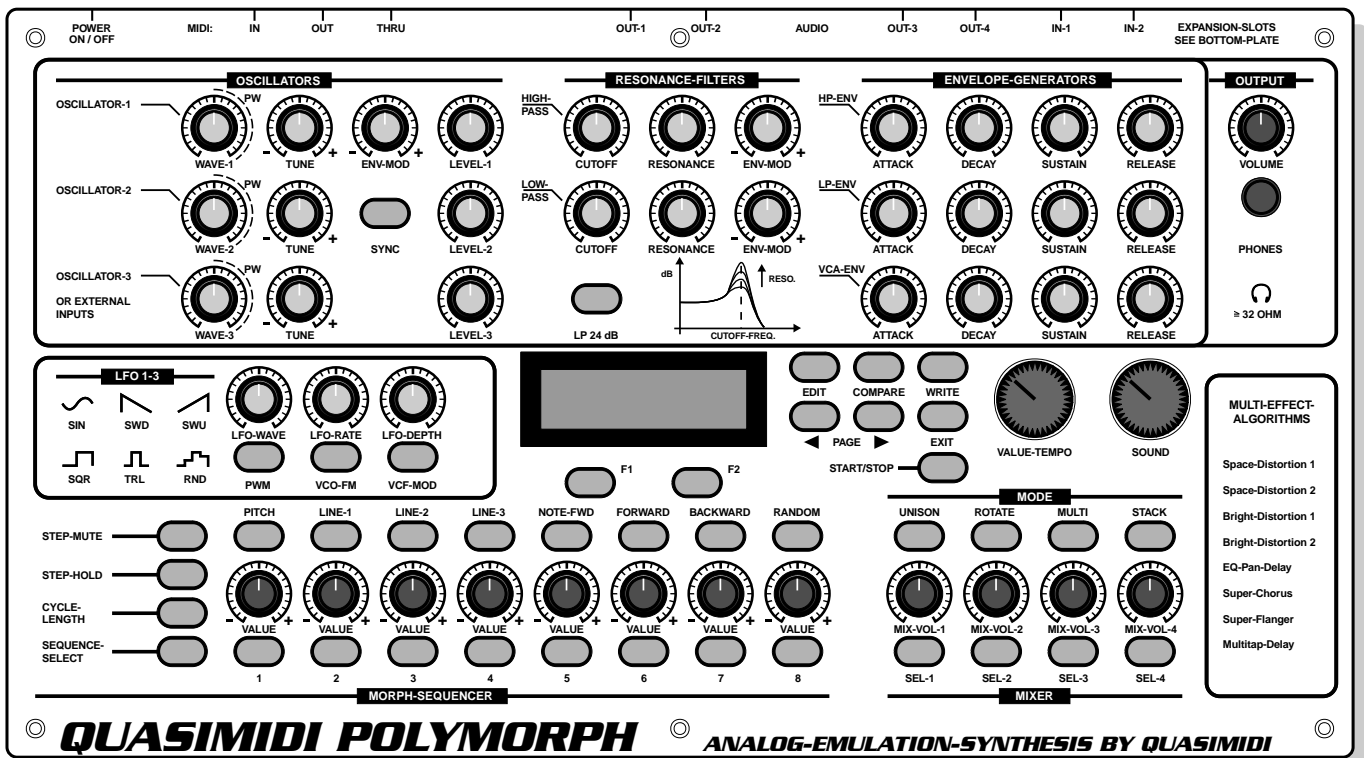


POLYMORPH

Operating Instructions



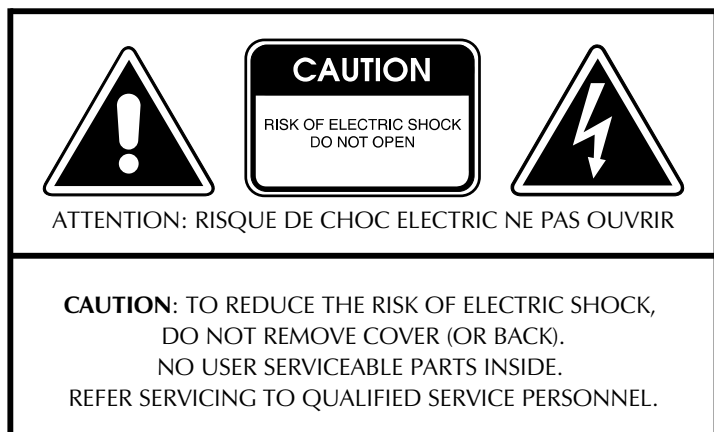
QUASIMIDI
Synthesizers made in Germany

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Important safety instructions



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

IMPORTANT SAFETY INSTRUCTIONS

WARNING - When using electric products, basic precautions should always be followed, including the following:

1. Read all the instructions before using the product.
2. Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. Avoid using the product where it may be affected by dust.
8. The product should be connected to a power-supply of the type described in the operating instructions or as marked on the product.
9. The power supply of the product should be unplugged from the outlet when left unused for a long period of time.
10. Do not tread on the power-supply cord.
11. Do not pull the cord but hold the plug when unplugging.
12. When setting up with any other instruments, the procedure should be followed in accordance with instruction manual.
13. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
14. The product should be serviced by qualified personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the product; or
 - C. The product has been exposed to rain; or
 - D. The product does not appear to operate normally or exhibits a marked change in performance; or
 - E. The product has been dropped, or the enclosure damaged.
15. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified personnel.

SAVE THESE INSTRUCTIONS

For the U.K.

WARNING: THIS APPARATUS MUST BE EARTHED

IMPORTANT: THE WIRES IN THIS MAIN LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.
GREEN-AND-YELLOW: EARTH; BLUE: NEUTRAL; BROWN: LIVE.

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol or coloured GREEN or GREEN-AND-YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.



The CE sign on our products declares that our electrical devices are in conformity with the EN 55014 and EN 50082-1 (in accordance with 89/336 EMC- and EEC directive). The manufacturer also declares the conformity of above mentioned product with the actual required safety standards.

In addition to the "IMPORTANT SAFETY INSTRUCTIONS" on the previous page please note the following:

Important Notes

Connecting to the Mains:

- Do not connect the unit to a socket which is already feeding other units that can cause interference (for instance electric motors, light controls, fridges etc.)
- The heat generated by the mains adaptor is completely normal.
- Whenever you intend to connect the Sirius to other units, first turn off all units. This will prevent possible malfunctions and damage to speakers and other equipment.

Installation:

- Using the unit close to heavy power sources (or other units containing larger mains transformers) can cause "humming" or other electrical interference.
- The unit might cause disturbances to television and radio. Do not set up your unit near any of these receivers.
- Do not expose the unit to extreme temperatures (like for instance direct sun light in a closed vehicle or extreme frost in winter). The unit could be damaged or the varnish on the casing might disintegrate.

Maintenance:

- To clean the unit wipe it with a soft, dry or damp cloth. To remove persistent stains you can use a damp cloth and a neutral cleaning agent. Wipe the unit dry afterwards.
- Never use Petrol, Thinner, Alcohol or similar cleaning agents to clean your unit. These can dissolve the markings and varnish and might deface the casing.

Repairs and Data:

- Please remember that you might lose the memory of your unit when you send it in for repair. Important information should therefore be stored on a different MIDI-unit (for instance Sequencer). Although every care is taken when repairing your unit it can happen, especially when work to the storage/memory or affiliated groups is necessary, that information is lost. Please note that it is not possible for us to restore lost data.

See page 52

Important Notes

Storage Protection:

- The memory of the unit is secured with a Lithium battery (CR 2025). The storage contents will remain even when the unit is switched off. Depending on how it is treated, the battery will last for several years. Should you have to exchange it, please contact our Service-Department. Please make sure that the old batteries are disposed of properly. Batteries of all kinds do not belong in the domestic trash, as they contain dangerous heavy metals.

Additional precautions:

See page 52

- Please consider that the storage contents can also be irrevocably lost through mal-function or improper use. Important data should therefore be stored regularly on another MIDI-unit (for instance a sequencer)
- For these cases we point out that it is not possible to restore lost data.
- Treat the keys and dials as well as the connection sockets with care - improper use can lead to mal-functions.
- Never press or hit the buttons or the display hard.
- Whenever you are connecting or disconnecting cables, always pull the plug itself, do not pull the cable. This will avoid short-circuits and cable damage.
- Should you wish to transport the unit, it is best to use the original carton (including the polystyrene inlays)



The CE-Sign on our products declares that our electrical devices are in conformity with the EN 55014 and EN 50082-1 (in accordance with 89/336 EMC- and EEC directive). The manufacturer also declares the conformity of above mentioned product with the actual required safety standards.

Introduction

Congratulations on your purchase of the QUASIMIDI POLYMORPH. You can be sure that you have acquired one of the most modern electronic music instruments with many innovative features. By integrating the Morphing Sequencers with the expressive synthesizer engine, you have the ability to easily create sounds which most other synthesizers would find difficult if not impossible to copy.

The POLYMORPH is a sophisticated instrument with many complex features and facilities which are described in full in this manual. To get started, we recommend you read the Basics section first to familiarize yourself with the layout, controls and fundamentals of operation.

Basics

Conventions used in this manual

The POLYMORPH has numerous keys, which control various functions of the synthesizer. All of the keys have fixed names which will be shown in square brackets in this manual. Whenever we refer to a sequence of button pushes it will look something like this:

e.g. Push [BUTTON 1] followed by [BUTTON 2]

In the manual we have simplified statements such as: Push the Start / stop button, with Push [START/STOP]

To simply distinguish between pushbuttons and rotary knobs in this manual, we have used angled brackets for the rotary knobs:

e.g. Turn the <CONTROL KNOB> completely to the left

instead of EXAMPLE in the pointed brackets the button description will be shown.

Other logical abbreviations will also be used for simplicity and convenience.

e.g. Turn the <LOW PASS CUTOFF> completely to the left, rather than explicitly stating turn the "knob labeled <CUTOFF> in the low-pass filter section..." etc.

For better orientation you will find the following little helpers in this manual:



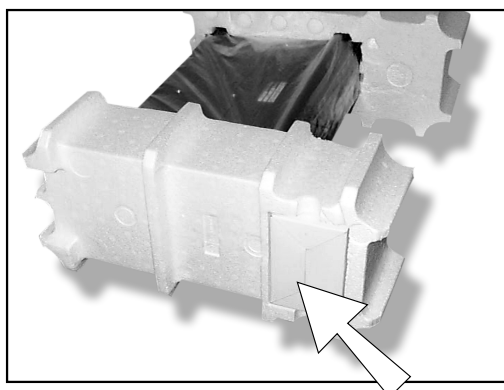
This symbol marks the useful tips given in this manual.



This marks text passages to which you should pay special attention.

Installation and Audio Connections

The box in which the POLYMORPH is packaged is ideal for transportation. It is secured by molded-polystyrene supports. One of these also holds the power supply adaptor in a small box.



power supply



We recommend that you keep the box and polystyrene for future use, in case you want to transport the POLYMORPH for instance, or if you send it to QUASIMIDI for a software version update, it must be in the original packing.

The following parts should be contained:

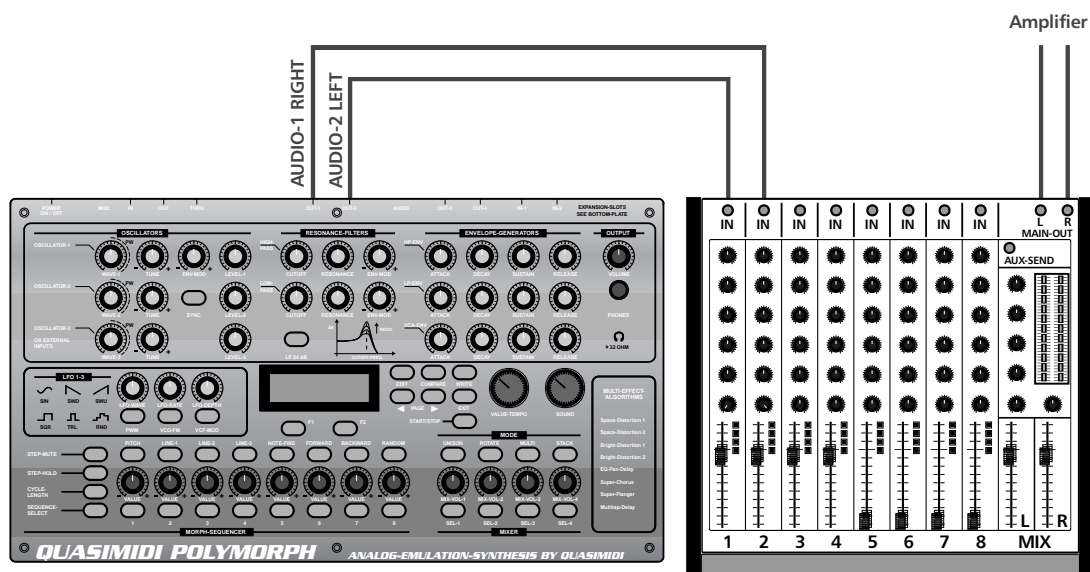
- 1 POLYMORPH
- 1 stereo (or two mono) audio cable with phono / RCA plugs and jack adaptors
- 1 power adaptor
- 1 owners manual
- 1 warranty form

After unpacking, the POLYMORPH should be placed on a stable surface and the power adaptor can be plugged into the Power Input socket at the back panel of the POLYMORPH. The main plug can go into a wall socket, but you should ideally make all audio and MIDI connections first before turning it on. To listen to the POLYMORPH you can either plug in headphones to the top panel, or connect its stereo audio outputs into a amplification system such as a keyboard combo amp or a hi-fi system, or run it through a mixing desk or outboard processors such as an instrument preamplifier, compressor or equaliser before injecting it into your signal chain if you prefer. We have supplied suitable audio cables for connections. The POLYMORPH's main output is stereo, unbalanced and has a nominal line level of around -10dBV. It also has two more additional audio outputs which you may also want to use as well, but they are not necessary to begin with. They would be treated the same way as the main stereo outputs.



Connecting the POLYMORPH to a mixing desk

The POLYMORPH's audio outputs are at line level and should require hardly any gain through the mixer input stages. It is best to make connections with all the equipment switched off in case there is any electrical fault, but if it is on, the mixer's channel faders that you are going to use for the POLYMORPH input must be turned down or muted to prevent any electrical burst noises going through to the outputs. These switch-on transients and plugging-in pops can cause severe damage to loudspeakers, headphones and your ears, and will easily overload most equipment. Check that



not only are the relevant channel faders muted, but also any aux sends, effects sends, direct outs, inserts, or bus routing switches on these channels as they too can pass the dangerous noises on from that channel's input to their destinations.

Pressing the [START/STOP] button on the POLYMORPH will begin a drum pattern, which you can use as a test signal. Start with the <MAIN VOLUME> knob low and gradually bring it up to a reasonable level.

If your mixer has a gain pot, start at the lowest setting, bring the faders up to unity and gradually increase the gain pot until you get a healthy signal level, checking that it is not distorting anywhere along the signal path. If you have a mixer with a Line/Phono input switch, such as many DJ turntable mixing desks, then select the Line input. (The phono input is for low level turntable cartridges only and will be severely overloaded by the high level output of the POLYMORPH.) If you have stereo inputs on your mixer, the left/right balance knob should be set to the centre position. If you use two separate input channels, then the panpot for POLYMORPH channel 1 should be panned to the left and POLYMORPH channel 2 should be panned to the right.

Connecting the POLYMORPH to a hi-fi system or portable stereo etc.

From the point of view of connections, the POLYMORPH can be treated as if it were another CD player. Its output will be a similarly high line level and require a similar high impedance audio input stage such as any labelled LINE, AUX, TAPE, CD, DAT which usually have RCA/phono plugs and hence will fit the cables supplied by QUASIMIDI with your POLYMORPH. However, you should never use the record player / MC / MM / PHONO input because the high level output of the POLYMORPH will overload it.

(If the only available input is something else such as a 5-pin DIN plug, or two XLR inputs then you will need to purchase the appropriate adaptor or cable for your application.)

Make sure that the volumes are turned fully off before plugging in and powering up, preferably the hi-fi amplifier should be the last component to switch on, and the first to switch off. Press the [START/STOP] button on the POLYMORPH to begin a drum pattern to listen to, and starting with the volumes at low levels, gradually increase them to a comfortable level. If your portable stereo has a "Loudness" button or some kind of "Hyper / Mega Bass Boost" button it is probably best to turn it off at first unless you are listening at low volumes because the POLYMORPH has resonant filters that can tune down to very low / subsonic frequencies that may easily distort with these processes applied, and this could damage your speakers etc



Connecting the POLYMORPH to a Keyboard Combo Amplifier

Some keyboard amplifiers will also have microphone inputs, on jacks or XLRs and these are NOT suitable for the POLYMORPH as their input impedance is too low (overtaxing the POLYMORPH's output stage) while their gain range is too high, and they will be overloaded.

Use only the Line inputs, which are sometimes labelled "Keyboard Inputs". If your keyboard combo is stereo, then connect POLYMORPH's channel 1 to the Left and Channel 2 to the right input. Switch the amp on last, and start off with the volumes low until you have optimised the settings such as treble / mid / bass etc. The POLYMORPH will playback some drum patterns if you press the [START/STOP] button.

If you have to plug into a guitar combo, use a clean channel, high impedance input and start with the <MASTER VOLUME> knob very low and the amp's input gain should not be turned up too much.

Trying Out The Setups (Factory Presets)

When first switched on, the POLYMORPH defaults to its "SETUP" operation mode. A setup is the overall status of all the main controls and adjustable parameters, for the whole POLYMORPH synth at a given moment, and all this information may be stored in the memory. The global System Menu however, is not affected by the Setup modes.

In this way, the sound programming of the four parts, the four sequences, all effect settings, and the tempo adjustments can be recalled instantly from a Setup memory.

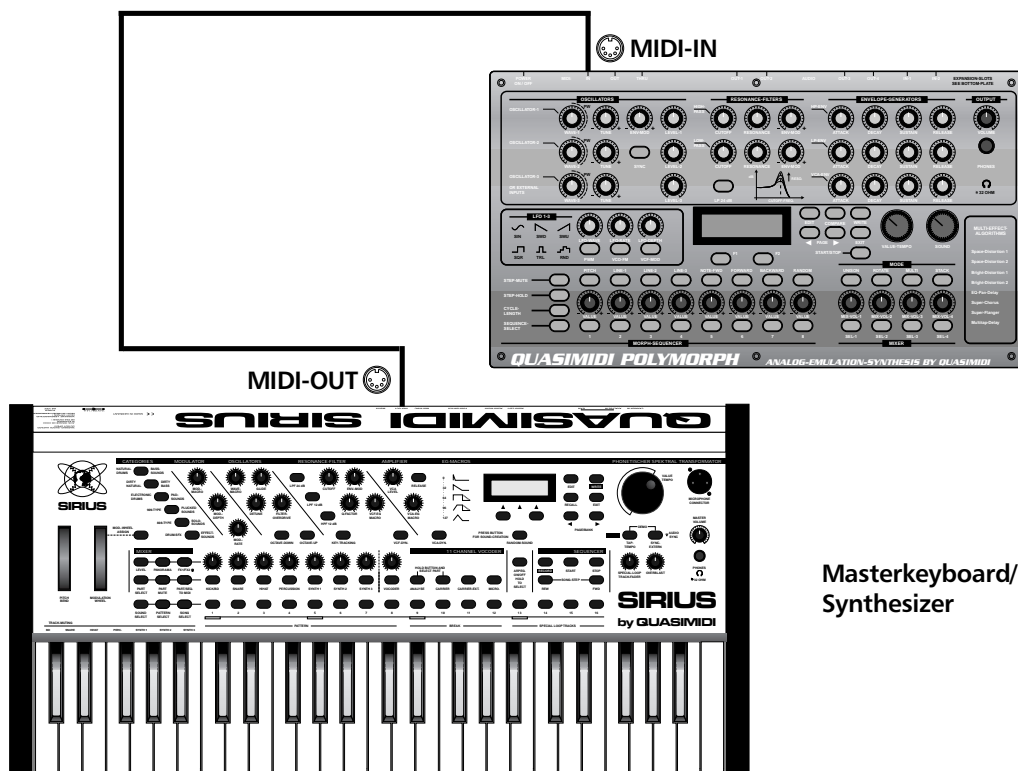
Ultimately, each Setup is like a performance patch for the whole synthesizer and determines the complete function of the four synth engines. The POLYMORPH's four synthesis engines make it four part multitimbral, and it has 16 voice polyphony and dynamic voice allocation. By turning the <SOUND> knob, you can scroll through different Setups, which will let you hear some of the different patches by pressing [START/STOP] to hear some of the preset drum loops / sequences etc. Now is a good time to play around and listen to these, and hear for yourself the type of effects and grooves the POLYMORPH is built for. Later on in the manual we will explain how to control the four synth engines, and how program and save your own sounds and sequences.

Playing of the single sounds from a MIDI keyboard

On its own, the POLYMORPH is a groovy drum machine, but to play melodies or basslines live you would need to give it MIDI data from a realtime controller such as a master keyboard, another synth, a digital piano or a MIDI guitar or wind controller etc. Alternatively you can connect it directly to a MIDI sequencer, either stand alone or computer based, to play back programmed tracks.

Connect the MIDI output (MIDI OUT) of the master keyboard controller or sequencer to the MIDI input (MIDI IN) of the POLYMORPH. In this chapter, we will assume you are simply transmitting on MIDI channel 1, so you would need to verify this on your controller keyboard or sequencer etc.





Masterkeyboard/
Synthesizer

When it receives MIDI messages, the [SEL1] button in the mixer section of the POLYMORPH should flicker, and obviously you would also hear the sounds you are playing.

Choosing Sounds

Directly after turning the POLYMORPH on it is in the "SETUP" mode. If you turn the <SOUND> dial in this mode, not only the sound of the chosen parts will be changed, but also the sound of all 4 parts and the assigned sequencer memories. The display would show:

```
Setupxx:xxxxxxxx
[Sound-Set][---]
```

...instead of the "xx" the number and name of the chosen setup will be displayed. To change only the sounds within the current setup, push [SOUND]. Then the following display message will appear:

```
A001: EXAMPLE
[Bank-up][Setup]
```

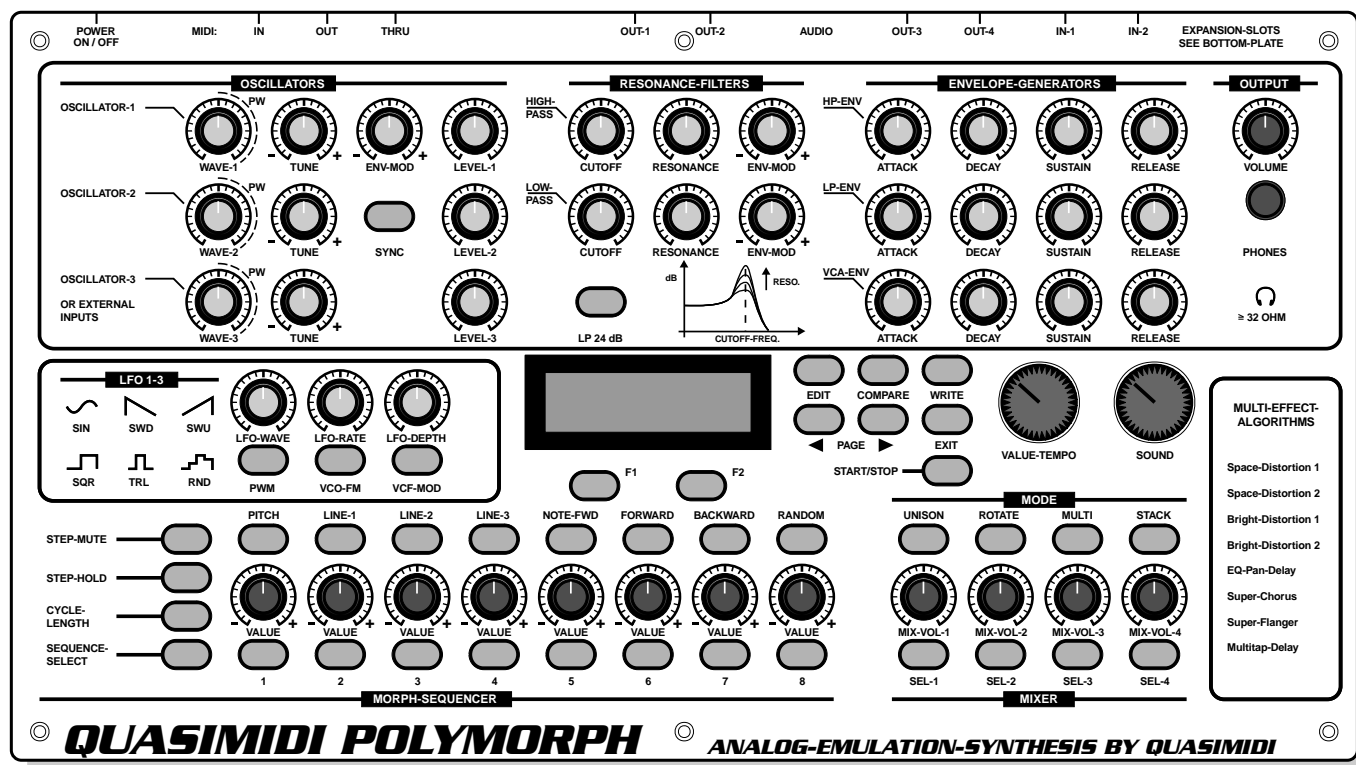
This mode selects the single sounds from the different memory banks of the POLYMORPH. With the softkey [F1] under the display, you can select the memory banks for the sound you wish to call up. In the banks A-D you have the single sounds which are used in the setups. Those intended for use as single sounds and especially pre-programmed for solo performance are the sounds in bank "U". Select this bank by repeatedly pushing [F1]. Now you can recall up the desired sound to play by scrolling the <SOUND> dial. With [F2] you can return to the setup mode.



Description of the operating surface

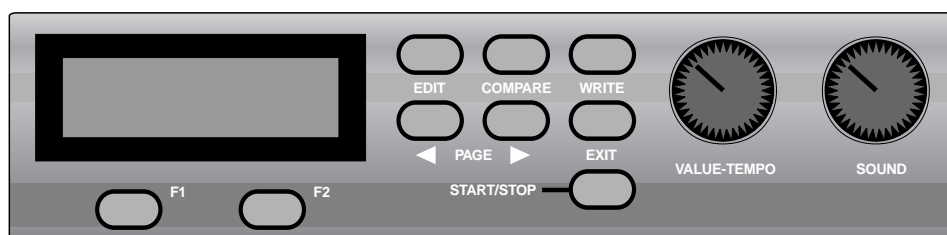
On the illustration below you see the operator controls of the POLYMORPH. This diagram in conjunction with the explanations will clarify 80% of the operation of the POLYMORPH. In this chapter you'll find the answers to most of your questions.

An overview of the operating elements



The functions of the controls and buttons

DISPLAY AREA



On the right and directly beneath the display you will find more buttons and dials, whose functions are dependant upon the respective menu.

[F1] AND [F2] SOFTKEYS

These buttons are found directly below the display. Their present function is shown in brackets in the display. If a parameter value is displayed above [F2], it can be set to a standard value by pressing [F2].

[EDIT] - CALLING UP THE EDIT MENU

With this button you can go into different menus for extensive editing of the sounds, sequences, effects etc. There you find all of the parameters of the operating surface and many more.

[COMPARE] – TOGGLES BETWEEN THE ORIGINAL SOUND AND THE CHANGED SOUND

After you have been through a sound adventure tour, and do not know if your new sound is better than the original, you can push [COMPARE] to jump back and forth between the original and your edited sound.

[WRITE] – CALLING UP THE MEMORY MENUS

Enables the selection of the memory slot in which you will store your setups, sounds or sequences.

[PAGE<>] - MAIN MENU: CHANGING BETWEEN SEQUENCER STEPS 1-8 AND 9-16 / - EDIT MENU: SUB MENU SELECTION

There are various parameters available in all of the edit menus and these are spread across several pages. To view all of these pages, simply step through them with the [PAGE<>] buttons. Pages are numbered in the display:

- |1> You are on the first page of the edit menu. More can be found on the right of this menu. Press [>] to go to the next page.
- <9| You are in the ninth and last page of the edit menu. More can be found on the left side of this menu. Press [<] to go to the previous page.
- <5> You are on the fifth page of the edit menu. More can be found on the left and right of this menu. Press [<] or [>] to reach these pages.

[EXIT] - LEAVING THE SUB MENU

To leave an edit menu, push this button.

<VALUE/TEMPO – TEMPO ADJUSTMENT / PARAMETER CHANGE

If you are not in an edit menu, this data knob controls the tempo of the sequencer. If you are in an edit menu you can use the data knob to change the selected parameter.

<SOUND> - SOUND / SETUP SELECTIONS

This dial is for the selection of sounds or to call up complete setups. After turning on the POLYMORPH is in the "setup" mode. A setup can be thought as a complete memory copy of the preset settings. All parameters are saved in setups except system menus. This mode is confirmed on the top left side of the display. "Setupxx:" is always displayed in the setup operation. When you want to change one of the sounds, push [F1] and the POLYMORPH will go into the mode for changing the single sound. Using [SEL. 1-4] you select the desired synth to change and with <SOUND> you search for the desired sound. In addition you can change the sound banks with [F1].

[START/STOP] – STARTING AND STOPPING THE SEQUENCER

With this button you can start and stop the sequences. If the sequencer does not start, check to see if at least one sequencer is activated and if the external synchronization is turned off.

FUNCTIONS OF THE MIXER

/ TURNING SEQUENCER ON AND OFF



Mixer-Section

The POLYMORPH mixer section is used to adjust the volume ratio between the single synthesizer parts. In addition, it controls the selection of one of the four synthesizers [SEL-1] – [SEL-4] or assigns the sequencer tracks.

[MIX-VOL-1] – [MIX-VOL-4] – VOLUME CONTROL

With these you can control the volume of each synthesizer engine respectively.

[SEL-1] – [SEL-4] – PART SELECTION BUTTONS

Here you can select one of the four synthesizers and one of the four sequencers that you would like to edit. At the same time the button lights are used as a monitor. When they blink, parts are receiving MIDI note information. If you can't hear a sound change, you have probably selected the wrong part. You can find out quickly with the monitor, which part has been selected for editing. Select the part that blinks while playing. In addition, parts can also be controlled by the morphing sequencers. While holding down [SEQUENCE-SELECT] you can turn the sequences 1-4 on or off by pressing the corresponding [SEL1-4]. The current activation state of the four sequencers is displayed through the button lights. (If the sequence is not active, the notes are not output via MIDI either.)



MODE – CHANGE

The following four buttons decide how the synthesizer parts will be played.

[UNISON]

In this operating mode the sounds of synthesizer part 1 are laid fourfold over another. Use this mode for fat and floating synthesizer sounds. In this operation mode the POLYMORPH will only receive on one MIDI channel. In addition, only the first of the four sequencers is active in this operation mode.

[ROTATE]

Also in this operation mode all four synthesizer parts are controlled from one channel, or to be precise controlled only from the first of the four sequencers. This time the different sounds of each part remain. The four parts do not sound simultaneously. Rather they are driven one after another. The first note plays part 1, the second note part 2 and etc. At the fifth note it starts from the beginning with part 1. In this operation mode it's easy to create wave sequences.

[MULTI]

This operation mode is the simplest, and at the same time the most popular way to drive the parts. All four parts are independent from each other and can be driven on 4 MIDI channels. The specific MIDI channels can be set in the system menu of the POLYMORPH. The first part reacts on the MIDI channel that is set as master channel in the system menu. Parts 2-4 lay behind with a rising MIDI channel number.

[STACK]

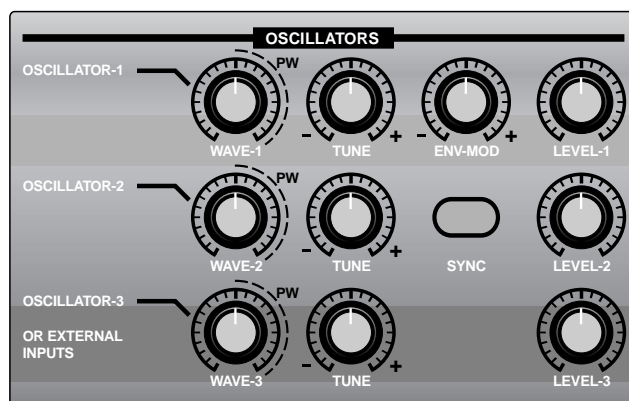
In the stack operation mode all four synthesizer parts will be driven with the master channel or with the first sequencer. In this mode every part plays a different sound. This is suitable for big layers. eg. You can combine a percussive sound with a soft pad sound and turn off the other two parts. Turning off parts is done as follows:



- 1.) Press [EDIT]
- 2.) Press [F2]
- 3.) Select menu page 13 with [PAGE<>].
- 4.) Select the part you want to mute with [SEL1-4].
- 5.) Use <VALUE> to mute the part.

OSCILLATORS – WAVEFORM GENERATORS

The oscillators create the actual waveforms at the appropriate audio frequency that the synthesizer sound is based on. The different tone characteristics depend on the waveform shape and on the subsequent signal path of the POLYMORPH. They can be widely altered.



Oscillator-Section

<WAVE1>, <WAVE2>, <WAVE3> - WAVE FORM SELECTION

With these controls the waveforms of the oscillators are selected.

<TUNE> - TUNING

With these controls the pitch of the oscillators is adjusted. <TUNE> controls the basic pitch of all oscillators into octave lengths with oscillator 1 being the reference, while oscillator 2 and 3 can be de-tuned independently from each other up to 2 octaves from each other against oscillator 1

<ENV-MOD> PITCH - ENVELOPE - SENSITIVITY

With this control the pitch of the three oscillators can be modulated by an envelope. When the control is in the middle position there is no sound change, turning to left creates a droop in pitch and to the right a rise in pitch. (The envelope is found in the edit-osc-menu.) If the [SYNC] is activated the pitch envelope effects only an auxiliary oscillator, which is synced with oscillator 1.

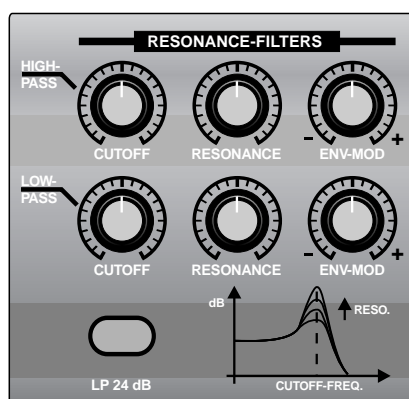
[SYNC] - OSCILLATOR-SYNCHRONIZATION

This button starts the oscillator synchronization operation of oscillator 1. It will be synchronized with an additional auxiliary oscillator. The pitch of the auxiliary oscillator is controlled with <WAVE-1> when this Sync operation is active. This has the advantage that in Sync operation the basic sound is controlled with <WAVE-1>. In addition the oscillators 2 and 3 are still independent from the sync operation and are at your disposal.

<LEVEL1-3> - LEVELS 1-3

These controls set the volume of each oscillator independently from one another. When <LEVEL 3> is turned completely to the left, the 3rd oscillator is turned off and the POLYMORPH's polyphony is doubled from 8 to 16 voices.

RESONANCE-FILTERS - RESONANCE CAPABLE FILTERS

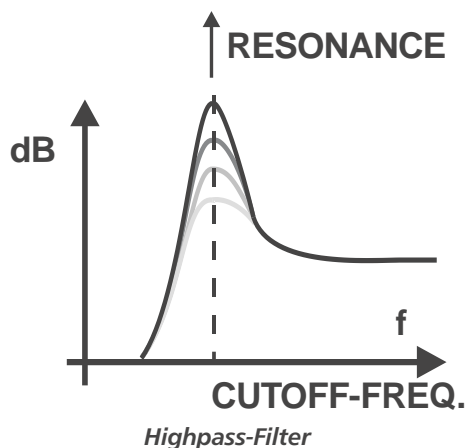


Filter-Section

The POLYMORPH has two filters working independently from another, to influence the sound of the oscillators. They can be arranged either in series or parallel. This way you can create band passes and band stops.

HIGHPASS - HIGH-PASS FILTER

The first filter is a high-pass filter with a roll off curve of 12dB per octave below the cutoff frequency. Only frequencies above the set Cutoff point can pass through this filter unaffected.



<HIGHPASS-CUTOFF> - HIGH-PASS CUTOFF FREQUENCY

This parameter varies the frequency below which the bass is filtered out.

<HIGHPASS-RESONANCE> - HIGH-PASS RESONANCE

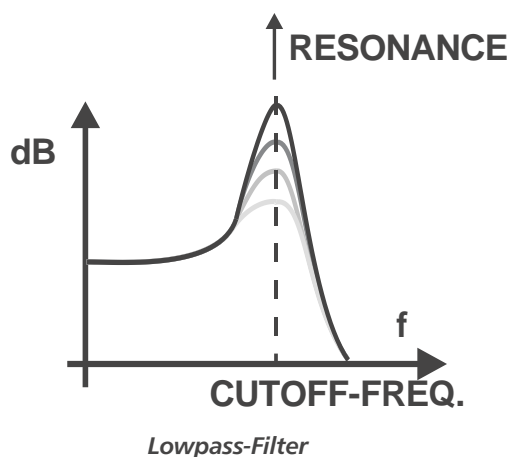
With this parameter you control the characteristics of the filter at the cutoff frequency. High resonance settings cause an increase of the level in the area of the cutoff frequency. As a result the filter has a nasal sound characteristic. An extreme resonance setting causes the filter to go into self-oscillation and creates a sine tone, at the cutoff frequency. This is the reason the pitch of this sine tone can be adjusted with <HIGHPASS-CUTOFF>.

<HIGHPASS-ENV-MOD> - HIGH-PASS FILTER - ENVELOPE SENSITIVITY

This parameter varies the amount by which the envelope generator modifies the HPF cutoff frequency. When the control is positioned in the middle it has no influence. With negative values, the greater the deflection of the envelope the lower the cutoff frequency of the filter. (ie. during the envelope's attack, the HPF opens up letting more bass through.) With the knob set at positive values, the cutoff frequency is made higher in proportion to the envelope amplitude, so the HPF effect becomes much more severe on the peaks.

LOWPASS - LOW PASS FILTER

The POLYMORPH's other filter is a low-pass filter, which has a switchable rolloff curve of either 12dB or 24dB per octave. The LPF filters out the treble above the set cutoff frequency and only lets the bass through.



[LP24DB] - 24DB ROLL OFF CURVE

With this button you can switch the rolloff curve of the low-pass filter between 12dB and 24 dB per octave. The rolloff curve decides how much the frequencies above the cutoff frequency are attenuated. At 12dB rolloff the over- tones with double the frequency of the cutoff frequency will be damped down to -12dB (one quarter) of the original level. With a rolloff of 24dB per octave the overtones would be reduced by 24dB (one sixteenth) or the previous level at every successive octave.

<LOWPASS-CUTOFF> - LOW-PASS CUTOFF FREQUENCY

This knob varies the frequency above which the treble is filtered out.

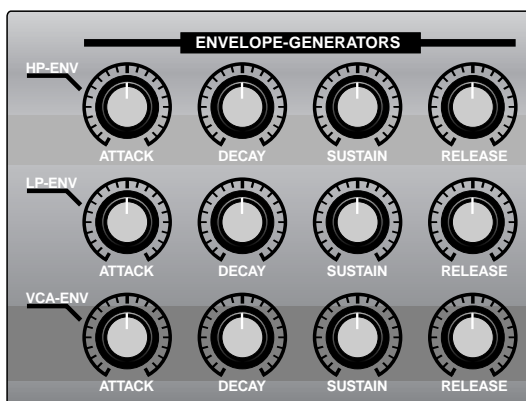
<LOWPASS-RESONANCE> - LOW-PASS RESONANCE

With this parameter you control the characteristics of the filter at the cutoff frequency. High resonance settings cause an increase of the level in the area of the cutoff frequency. As a result the filter has a boomy sound characteristic. An extreme resonance setting causes the filter to go into self-oscillation and create a sine tone, at the cutoff frequency. This is the reason the pitch of this sine tone can be adjusted with <LOWPASS-CUTOFF>.

<LOWPASS-ENV-MOD> - LOW-PASS FILTER ENVELOPE-SENSITIVITY

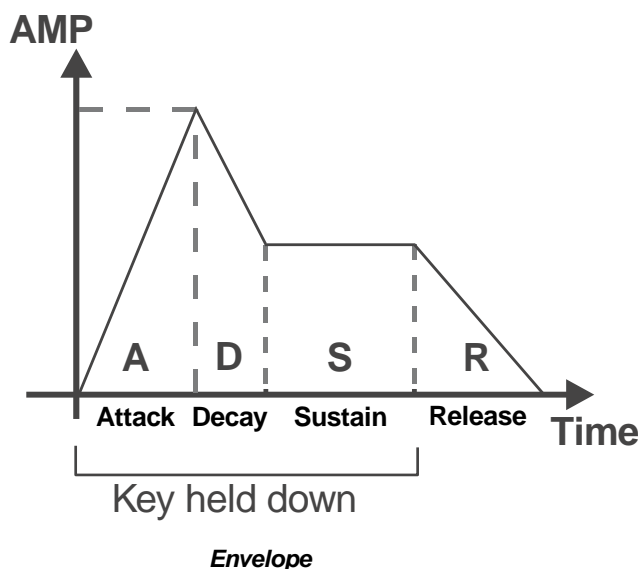
This parameter varies the amount by which the envelope generator modifies the LPF cutoff frequency. When the control is positioned in the middle it has no influence. With negative values, the greater the deflection of the envelope the lower the cutoff frequency of the filter. (ie. during the envelope's attack, the LPF closes down more letting less treble through.) With the knob set at positive values, the cutoff frequency is made higher in proportion to the envelope amplitude, so the LPF effect becomes much less severe on the peaks.

ENVELOPE-GENERATORS



Envelope generators can automatically modify certain characteristics of your sounds over time. The severity of their action can be adjusted with these controls. The envelope starts when it is triggered by the user eg. by playing a key on the keyboard.

The POLYMORPH has four independent envelope generators. Three of these can be controlled directly on the operating surface. These three envelopes each have four parameters and are placed under each other in order. The first one controls the cutoff frequency of the High-pass filters, the middle one the cutoff frequency of the low-pass filter and the third the volume of the sound. The four adjustable control knobs are the same in their behaviour for each of the three envelope generators. The fourth envelope is provided for the pitch, and can be found in the oscillator edit menu.



<ATTACK> RISE TIME

This parameter determines the amount of time it takes for the envelope level to travel from the initial to the peak level (when the key is struck). In the case of the VCA-EG this means, how much time has passed until the highest volume is reached. Percussive instruments need a very short attack time and string sounds are usually quite long. For the filters, it controls how fast the filter opens (or closes depending on the <ENV-MOD> setting.)

<DECAY> DECAY TIME

This parameter determines how fast the envelope falls from the peak to the sustain-level after passing through the attack phase.

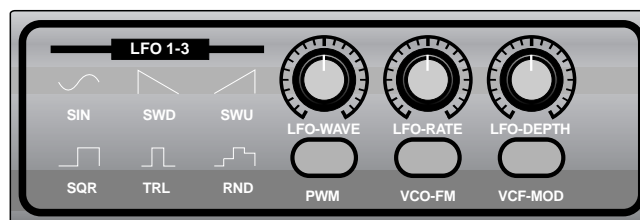
<SUSTAIN> HOLD LEVEL

This parameter is not an indication of time. Rather it is a level that is held after the decay time until the key on the keyboard is released. For the VCA-EG, if the sustain level is regulated to 0, the POLYMORPH sound would end after the decay phase regardless of how long the key is held. If the sustain level is higher than 0, the corresponding tone will be held until the key is released and the release time is finished.

<RELEASE> RELEASE TIME

This is the length of time that the sound can be heard after releasing a key. You can adjust the release time between stopping abruptly or slowly fading away, or in the case of the filters, how long before the filter closes after the key is released.

LFO 1-3 MODULATION OSCILLATORS



LFO-Section

The LFO provides a cyclical (recurring or repeating) change of a parameter. The POLYMORPH has 3 LFOs. You have 3 buttons to choose which of the 3 LFOs you would like to work with. All of these LFOs have a fixed modulation destination.

[PWM] PULSE WIDTH MODULATION (LFO-1)

This button puts the parameter of the pulse width modulation LFO under the control of the LFO section (hence varying its amplitude / volume over time for a tremolo effect.) This LFO creates a modulation of the pulse width of oscillator 1. If oscillator 1 is in the sync operation mode, the frequency of the auxiliary oscillator is controlled by this LFO.

[VCO-FM] FREQUENCY MODULATION OF THE OSCILLATORS (VIBRATO) (LFO-2)

This button puts the parameter of the frequency modulation LFO under the control of the LFO section. This LFO creates a vibrato.

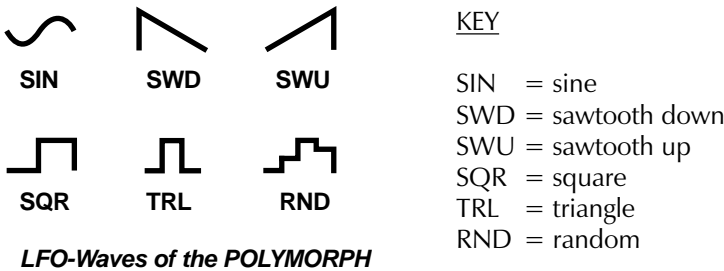
[VCF-MOD] FILTER CUTOFF FREQUENCY MODULATION (LFO-3)

This button puts the parameter of the filter cutoff frequency LFO under the control of the LFO section. This LFO causes the opening and closing of the filter. In the edit menu the modulation depth for the high and low-pass filter can be varied. In addition this LFO can influence the volume of the signals. Check the "Amp" menu for that.

See page 32

<LFO-WAVE> WAVEFORM OF THE MODULATION GENERATOR

This control is used for the selection of the waveform, with which the LFO swings. The available waveforms are printed on the operating surface.



<LFO RATE> SPEED OF THE MODULATION GENERATOR

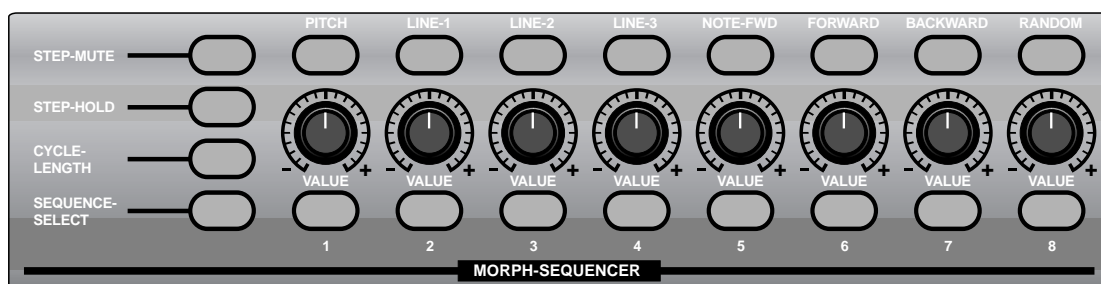
This control is for the adjustment of the modulation speed. A special function is available with values higher than 120. These are synchronized speeds. With this settings, the LFO's adapt their speed to the speed of the internal or external sequencer.

- 1/16 - The modulation frequency represents 16 periods per bar.
- 1/8 - The modulation frequency represents 8 periods per bar.
- - The modulation frequency represents 4 periods per bar.
- - The modulation frequency represents 2 periods per bar.
- 1/1 - The modulation frequency represents 1 period per bar.
- 2/1 - A cycle passes through after two bars.
- 4/1 - A cycle passes through after four bars.

<LFO DEPTH> LEVEL OF THE MODULATION

This control sets the depth of the modulation effect.

SEQUENCER SECTION



The user surface of the Morph sequencer is at the bottom left side of the front plate.

The POLYMORPH provides four morph sequencers simultaneously. A morph sequencer is used to create lively synthesizer lines or perhaps a periodic sound effect.

The morph sequencer of the POLYMORPH has 4 rows each with 16 steps. On the POLYMORPH the first row is called the pitch row, since it's responsible for the pitch. The second, third and fourth row each control a freely selectable sound parameter. The steps of the rows are called up one after another in a selectable sequence. When the sequencer is started the sound parameter is changed automatically. Every sound parameter row and also the order of the pitches can have various numbers of steps, which create sequences that repeat themselves after several cycles. In addition the sound parameter sequence can be played in a different order from the pitch. Some single steps can be turned off to achieve a rhythmic variation. To present all of the parameters of the sequencers simultaneously, a much large user surface would be needed.

8 steps of the sequencer can always be edited at the same time. In addition only one row can be edited, there is a choice of the pitch or one of the three parameters stepping order. The 8 number buttons can be setup to have different functions. If we had put all parameters on the panel with one button per function, you would have additional 112 buttons and 56 controls to look over. Instead, you will find more parameters in the edit sequencer menu. Here are the functions of the buttons and dials:

[PAGE] – TOGGLES BETWEEN STEPS 1-8 AND 9-16

With these buttons you can switch back and forth between steps 1-8 and 9-16. When pushing [PAGE-RIGHT] the lower line on the display will show for a short time the following:

Seq Steps 9-16

If this does not occur you are in an edit menu of the POLYMORPH and will have to push [EXIT] to leave the edit sector.

[PITCH] SELECTION OF THE PITCH ROW

This button puts the [NUMBER 1-8] and the <VALUES> on the pitch row. With <VALUE> you change the pitch of the respective step.

[LINE 1-3] SELECTION OF THE PARAMETER ROWS AND ASSIGNING THE PARAMETER ROWS

This button puts the [NUMBER 1-8] and the <VALUES> on the corresponding number of the parameter row. All of the rows 1-3 (line 1-3) can control a sound parameter. When you hold down one of the 3 [LINE]'s the display will show which sound parameter is controlled by the chosen row. There are two possibilities to select the controlled sound parameter:

- 1.) You hold down one of the [Line 1-3] and turn the desired parameter on the Polymorph surface.
- 2.) You hold down one of the [Line 1-3] and turn the <VALUE-TEMPO>. With <VALUE-TEMPO> you can select the desired parameter.

In two cases the 2nd variation is more likely to use:

- a.) When you do not want to control a parameter with the selected row simply choose "not assign" (first value in the list - turn to the left).
- and
- b.) When you want to control a parameter that can not be found on the surface.

[NOTE-FWD] - PLAYING NOTES FORWARD

Independent from the selected playing direction the note sequence will be played forward.

[FORWARD] – PLAY FORWARD

All four rows will be played forward.

[BACKWARD] – PLAY BACKWARD

All rows will be played backwards. If you push [NOTE-FWD] in addition the note sequence will run forward independently.

[RANDOM]

The single steps are played in a random sequence. By pushing [NOTE-FWD] you can run the notes forward independently.

[STEP-MUTE] - MUTING OF NOTE STEPS

When you have selected this button, you turn off the single steps with [NUMBER1-8]. Turning off means that the note output will be suppressed on the corresponding position. The parameter of the rest of the three step rows will be sent even when the notes are turned off.

[STEP-HOLD] – THE FREEZING OF A STEP

With an activated hold function you can freeze the single steps with [NUMBER1-8]. In this operating mode the pushed [NUMBER1-8] corresponding step will be continuously repeated. This function is very helpful during the editing of a sequence. A sequence of notes can be entered more specifically.

[CYCLE-LENGTH] – ADJUSTMENT OF THE ROW LENGTH

With an activated cycle length function you can adjust the length of the row for every parameter. For example, a note sequence with [NUMBER1-8]: A length of 8 steps for the note sequence but a length of 7 steps for filter control on line-1 could be created. The sequence would reach the beginning after 56 steps were played.

[SEQUENCE-SELECT] – SEQUENCE SELECTION / CALLING UP MUTING AND TRANSPOSE SUBSETS

With an activated [SEQUENCE-SELECT] you can call up different mute/transpose subsets with the [NUMBER1-8]. In these subsets every sequence can have its own transpose value. So it is no problem to transpose one of the four sequences up and the others down.

In the preprogrammed setups you find many examples for using the subsets. In live operation you can call up the setups over the MIDI notes. There will be more in the chapter "The Morphing sequencer of the POLYMORPH" on page 38.

In addition the POLYMORPH has a sequencer memory, independent from the setup memory, with 50-memory locations. This memory storage can be selected by holding down [SEQUENCE-SELECT] and turning <VALUE-TEMPO>. The sequence of the selected part will always be changed.

Remember: While holding down [SEQUENCE-SELECT], you can turn the sequences on or off with the buttons [SEL1-4].

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The Synthesizers of the POLYMORPH

The Synthesizers of the POLYMORPH

See page 10

In this chapter you will learn the POLYMORPH in more detail. To understand the different synthesizer parameters, start with the simplest sound, the initialized basic sound. After this you will learn everything about oscillators, filters, envelopes, LFOs etc. In this chapter it is helpful to control the POLYMORPH from a keyboard. The steps that are necessary are explained in the chapter "Playing single sounds from a MIDI keyboard". With your keyboard controlling the POLYMORPH on MIDI channel 1, we can first make a neutral single sound.

Initializing to a neutral single sound

- 1.) Confirm [WRITE].
- 2.) Chose menu page 4 using [PAGE <>]. This appears:

```
<4> Init Sound?  
[Ok]
```

- 3.) Initialize with the help of [F1].
- 4.) Leave the write menu with [EXIT].
- 5.) When you play on the keys, you should hear a simple boring tone.

Now everything is ready for a sound expedition.

The Oscillator section

If you are in an edit menu push [EXIT] twice. Push [EDIT] to reach the edit menu selection. Select with the [PAGE<>] display page 1. In the display appears

```
Select Edit |1>  
[Sequence] [Osc]
```

With [F2] you go into the oscillator menu. Many of the following parameters can be controlled directly from the user surface. The top display line shows which part you are editing now.

Oscillator 1

Select menu page 1 of the oscillator edit menu:

WAVEFORM OF OSCILLATOR 1: MENU PAGE 1

```
Edit Part1 OSC  
|1> Wave1:Sine0
```

With <VALUE> or <WAVE> you can now select the waveform for oscillator 1. While selecting play on the keyboard. You should remark a distinct sound change. Right now, you hear only the first oscillator. The other two are turned low with <LEVEL-2> and <LEVEL-3>. The first oscillator produces simple waveforms. They are sorted as follows:

Sine	(Sine)
..	
Triangle	(Tria)
..	
Trapezoid	(Trpz)
..	
Square	(Rect)
..	
Sawtooth	(Saw)
..	
Pulse wave 100%	(Puls)
..	
Pulse wave 1%	(Puls)

What's more, between the single basic waves are interstages. There are many different forms between the basic waves possible. The Pulse wave can also be modulated. You can read about this in "Pulse width modulation".

OSCILLATOR SYNCHRONIZATION

As we said before the first oscillator can be synchronized with an auxiliary oscillator. Through this, new wave forms are created. In this operating mode the frequency of the auxiliary oscillator is controlled by <WAVE>. To illustrate a view of the waveform, the POLYMORPH displays it as Sync 0-127. Now push [SYNC] in the oscillator section and listen to the results of the waveforms.

```
Edit Part1 OSC
|1> Wav1:Sync0
```

COARSE-TUNING OF SYNTHESIZER PART: MENU PAGE 2

On the second menu page you change the coarse tuning of the selected synthesizer part. It will affect all three oscillators and tune them in semitone steps. If you do not want the coarse tuning of the parts in semitones, but want to transpose up or down in octaves, you can use <TUNE> on the surface.

```
Edit Part1OSC
<2> CoarTune: +1
```

FINE-TUNING OF SYNTHESIZER PART: MENU PAGE 3

On the third menu page you can change the fine-tuning of the selected synthesizer part. It will affect all three oscillators, not just the first one.

```
Edit Part1 OSC
<3> FineTune: +0
```

VOLUME OF OSCILLATOR 1: MENU PAGE 4

On this menu page you can change the volume of the first oscillator. It's likely that you will hardly ever use this control because the function of the <VALUE> is identical to the function of the <LEVEL-1>, so you can change the volume more quickly on the surface as well.

```
Edit Part1 OSC
<4> Level1: 127
```

The Synthesizers of the POLYMORPH

Oscillator 2&3

WAVEFORMS OF OSCILLATORS 2&3: MENU PAGE 5 AND 9

The second and third oscillators have other waveforms available that differ from the first oscillator. Since the following sub menus for both oscillators are the same, we will describe the function of the second oscillator. Turn <Level1> and <Level3> to 0 and <Level2> to the maximum volume. Now you can hear the different waveforms that are offered from oscillators 2 & 3. The waveform selections of the second oscillator are on <WAVE-2> on the operating surface and on menu page 5 of the oscillator edit menus. (Oscillator 3 -> menu page 9)

```
Edit Part1 OSC
<5> Wv2:FatWave1
```

```
EditPart1 OSC
<9>Wv3:FatWave1
```

Here is the list of the waveforms for oscillator 2 & 3:

SineWave	DeepMoog	DeepBass	Sequence1	Sequence2
Sequence3	BellWave	ResBass1	ResBass2	WetBass1
WetBass2	Sawtooth1	Sawtooth2	Sawtooth3	FatWave1
FatWave2	FatWave3	Synced_1	Synced_2	Sync_Up
Orchestr	Strings	Mellotron	ChorWave	Voice
DigiWave	Spectrm1	Spectrm2	Effect	NoiseOSC
Ext-In 1*	Ext-In 2*			

EXT-IN 1 AND EXT-IN 2*: PROCESSING EXTERNAL SIGNALS WITH THE SYNTHESIZER

*Ext-In 1 & 2 is provided only by the third oscillator. With this function you can let any external sound source go through the filter and effects of the POLYMORPH. Simply connect an audio source like a CD-Player or a second synthesizer to the Inputs 1 and 2 of the POLYMORPH. Now you can select this audio signal as Ext-In 1 or Ext-In 2 like a normal waveform of the third Oscillator and can be processed the same way by the synthesis and the effects of the POLYMORPH. The only exception are of course the parameters for the pitch of the internal oscillators (like TUNE and GLIDE) which are not available for external signals. Note: The Ext-In 1 & 2 are designed for line level. If you want to use a microphone, you need an additional preamplifier.

INTERVAL OF OSCILLATORS 2 & 3: MENU PAGE 6 AND 10

On menu pages 6 and 10 you can de-tune oscillators 2 & 3 against the first oscillator in semitone steps. To understand this better turn the first two oscillators <WAVE> completely to the left. In addition turn <LEVEL> from both of the oscillators completely to the right. When you call up menu page 6, the semitone intervals are located on the value dial.

```
Edit Part1 OSC
<6> Interv2: +2
```

The same goes for the third oscillator:

```
Edit Part1 OSC
<10> Interv3: +0
```

You can also change the intervals on the user surface. <TUNE> of oscillators 2 and 3 provides the de-tuning in semitone steps left and right from the de-tuning area.

FINE-TUNING OF OSCILLATORS 2 & 3: MENU PAGE 7 AND 11

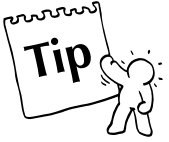
On menu page 7 and 11 you can fine-tune the oscillators 2 & 3. The fine-tuning is suitable for creating a fatter sound. (Some oscillator waveforms offer detuned basic sounds. With these modulated wave table waveforms a second oscillator is not needed to produce a detuned sound.)

```
Edit Part1 OSC  
<7> Detune2: -7
```

```
Edit Part1 OSC  
<11> Detune3: +7
```

When you are working with de-tune and create a floating sound with oscillator 1 & 2 try to tune one of them down and the other one up. Otherwise it is possible that your new sound will be too far out of tune with other sources and may sound awkward.

On the surface <TUNE> offers you easy access to the de-tuning function. To the left and right of the middle position you can reach the de-tuning of oscillators 2 & 3. Use <TUNE> when both oscillators are not played in intervals.



VOLUME OF OSCILLATOR 2 & 3

On menu pages 8 and 12 the volume of the oscillators 2 & 3 can be changed. It's likely that you will hardly ever use this control because the function of the <VALUE-TEMPO> is identical to the function of the <LEVEL-2>, and <LEVEL-3> so you can change the volume on the control surface as well.

```
Edit Part1 OSC  
<8> Level2: 127
```

```
Edit Part1 OSC  
<12> Level3: 127
```

SWITCHING POLYPHONY - SWITCHING BETWEEN 8 AND 16 VOICES

When you turn the volume of the third oscillator to 0 it will turn off, increasing the overall polyphony from 8 to 16 voices. You would naturally always want to use this feature when you are only using two oscillators for your sounds.

PART PLAY MODE AND PORTAMENTO EFFECT (GLIDE): MENU PAGE 13 15

On menu page 13 you can change the play mode of the chosen parts. The POLYMORPH offers polyphonic (several voices) and monophonic (single voice) operation. In addition you can turn off a complete part. Since the selected play mode has an effect on the behaviour of the portamento-effects, we put the three menus together. Portamento refers to the gliding of the pitch between two notes succeeding each other. Portamento was also featured on QUASIMIDI's Rave-O-Lution 309, but the same effect was called "GLIDE".

```
Edit Part1 OSC  
<13> Mode: POLY
```

PLAY MODE:

OFF
POLY

MONO

FUNCTION

The selected part is turned off.

The selected part is polyphonic (several voices). Use this setting when you want to play chords. An active portamento (gliding of the pitch) is always active and independent of your way of playing the keyboard.

The selected part is only playable one note at a time. Use this operation mode for sequences, bass lines and solo lines. An adjusted portamento effect will only be triggered if you play the notes "legato". When you play a second note, before the first note was released, the selected portamento pitch glides instead of changing abruptly.

On menu page 14 you can turn the portamento effect on and off:

```
Edit Part1 OSC  
<14> Porta: OFF
```

The Synthesizers of the POLYMORPH

On menu page 15 you can adjust the portamento time. This time defines how quickly the pitch glides between two notes.

```
Edit Part1 OSC  
<15> PorTime:0
```

THE OSCILLATOR ENVELOPE: MENU PAGES 16 - 19

On menu pages 16 - 19 you can control the oscillator envelope. The oscillator envelope has two modulation destinations:

- 1.) Pitch (Tune)
- 2.) PWM (Pulse width modulation exp. Frequency of the auxiliary oscillators in sync option.)

Select menu page 16 of the oscillator menu. Here you can set attack of the envelope generator.

```
Edit Part1 OSC  
<16> OSC-Att: 10
```

Lower values speed up the attack of the envelope and higher values slow it down.

On menu page 17 you can set the length of the decay. Lower values speed up the decay of the envelope and higher values slow it down.

```
Edit Part1 OSC  
<17> OSC-Dec: 10
```

On menu page 18 you can set how severe the modulation of the pitch envelope will be:

```
Edit Part1 OSC  
<18> Pitch-EG:+0
```

The parameter allows positive and negative values.

On menu page 19 you can set how drastically the envelope influences the pulse width of oscillator 1. In oscillator sync operation this parameter influences the frequency of the auxiliary oscillator:

```
Edit Part1 OSC  
<19> PWM-EG: +0
```

On the user surface of the POLYMORPH you find <ENV-MOD>. Depending on the operation mode of the first oscillator this has different functions.

Oscillator 1 without sync: The pitch of all three oscillators is modulated.

Oscillator 1 with activated sync: Only the pitch of the auxiliary oscillators is modulated.

THE LFOS IN THE OSCILLATOR SECTION: MENU PAGES 20 - 27

The LFO is convenient for automatically varying a sound. Unlike the audio oscillators, the LFOs create low frequencies beneath the audible range, which change the sound or the pitch cyclically. Just about all of the LFOs are found on the user surface. This menu is only needed when the modulation is to be used after an adjustable period when pushing a button. This offers parameter „delay“.

On the user surface both LFOs are selected with [PWM] or [VCO-FM].

The LFO waveforms are easy to demonstrate by modulating the pitch of the oscillators. The change of the waveforms can be heard.

The Synthesizers of the POLYMORPH

Before starting this experiment call up the function "Init sound" in the write menu and then return to the oscillator edit menu.

On menu page 25 you can adjust the modulation frequency. As an example, set a low value of 1.

```
Edit Part1 OSC
<25> FM-Rate: 5
```

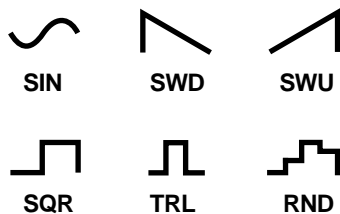
On menu page 26 adjust a high value of 127 for the modulation depth.

```
Edit Part1 OSC
<26> FM-Dept: 127
```

Now when you play a note, you can hear the sound clearly. Select menu page 24 of the oscillator menu. There you can select the waveform for the FM-LFO. This menu is equal to <LFO-WAVE> with selected [VCO-FM].

```
Edit Part1 OSC <24>
FM-Wave: SIN
```

You should be able to hear the difference between the waveforms. The following waveforms are provided to the POLYMORPH from the LFOs:



LFO-Waves of the POLYMORPH

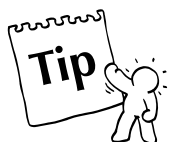
KEY

SIN = sine
SWD = sawtooth down
SWU = sawtooth up
SQR = square
TRL = triangle
RND = random

Now that you have been introduced to the different LFO waveforms with the help of the pitch modulation, you can try something else - how the PWM-LFO influences the sound.

PULSE WIDTH MODULATION

First initialize the sound in the write menu (Init-sound). Then set the <WAVE-1> on pulse 31. Push [PWM] so that the PWM-LFO is on the edit surface. Turn <LFO-DEPTH> to its maximum of 127 and <LFO-RATE> to a very low value (1). Now you should hear pulse width modulation. The sine wave is especially suitable for this case as LFO waveform, because you get the impression there are two floating oscillators, when there is only one.



On menu page 23 or 27 you can try delaying the effect of both LFO's. After pushing a key on the keyboard an adjustable time will pass before the modulation begins.

```
Edit Part1 OSC
<23> PWM-Del: 0
```

So far the parameters of the oscillator edit menu in overview. Now follows a description of the filters.

The Synthesizers of the POLYMORPH

The filter section of the POLYMORPH

Initializing to a neutral single sound

For the following example with the filters of the POLYMORPH, create a light sustained sound initially:

- 1.) Push [WRITE].
- 2.) Select menu page 4 with [PAGE < >]. This appears:

```
<4> Init Sound?  
[ok]
```

- 3.) Initialize with the help of [F1].
- 4.) Leave the write menu with [EXIT].
- 5.) Now when you play on the keyboard you hear a very boring simple tone.
- 6.) Regulate <LEVEL-1> to 0 and <LEVEL-2> to 127. Now you only hear oscillator 2.
- 7.) Select sawtooth2 as waveform for this oscillator.

Now everything is prepared for the filter examples.

First filter experiments

The best way to discover the reaction of the sound to a filter is to play around with it. The prior basic settings that were made suits this perfectly. Play a continuous tone and turn on the control of the low-pass filter only. Do not adjust the <ENV-MOD> and the envelope parameters at this time. A good exercise is to test the effects of the <LP-CUTOFF> with different resonance settings. You will notice that the sound changes become more drastically audible with the resonance adjusted up.

Directly beneath the <LP-CUTOFF> you find [LP24dB]. With this switch you can change the filter characteristics of the low-pass filter back and forth between 12 and 24 dB. With a higher resonance setting it is easier to hear the difference in the sound. Depending on the sound character you want you can use the 12dB filter or the 24dB filter. The LPF filters the treble out of the sound, but passes the low frequencies intact, hence the name.

Next set <LP-CUTOFF> to 127, <LP-RESONANCE> to 0 and go to the high-pass filter. The high-pass filter only lets frequencies through that are above the cutoff frequency. The high-pass filter has a rolloff curve of 12dB per octave. Now turn the <HP-CUTOFF> to cut off the frequency spectrum at the bottom. You can experiment with the resonance values, to change the character of the filter effects.

Filter menu

FILTER ROUTING: MENU PAGE 1

If you find yourself in another edit menu, push [EXIT] twice. Push [EDIT] to get in the edit menu. Press [PAGE<>] to select page 2. The display shows:

```
Select Edit <2>  
[FILTER] [AMP]
```

Push [F1] to reach the filter edit menu. The display indicates the first menu page of the filter menu:

```
Edit Part1 FILTR  
|1> VCFTyp:SER24
```

```
Edit Part1 FILTR  
|1> VCFTyp:PAR24
```

Both of the filters of the POLYMORPH can be driven in parallel or series. When both filters are connected in series they can be used as a band pass filter (low and high frequencies are damped, middle frequencies are let through). In parallel they are notch filters (low and high frequencies are let through, but any frequencies in-between the two cutoff points will be attenuated, creating a notch in the spectrum). Now listen the behaviour of both filters in series and parallel operation.

FILTER COUPLE: MENU PAGE 2

It is often desirable that both cutoff frequencies of the high-pass and low-pass filters could be shifted simultaneously. The POLYMORPH has a filter couple function. On menu page 2 of the filter edit menus you can turn the filter couple on:

```
Edit Part1 Filtr  
<2> VCFCoupl: ON
```

When the couple mode is turned on the behaviour of <LOWPASS-CUTOFF> and <HIGHPASS-CUTOFF> changes.

With <LOWPASS-CUTOFF> you move both cutoff frequencies and with <HIGHPASS-CUTOFF> you set the distance between the two frequencies.

In the middle position of <HIGHPASS-CUTOFF> both of the cutoff frequencies are identical.

With values below the middle position the high-pass cutoff frequency lies below the low-pass cutoff frequency. Above the middle position the high-pass cutoff frequency lies above the low-pass cutoff frequency. The further away from the middle position, the larger the distance between the cutoff frequency of both filters.

FILTER DRIVE (OVERDRIVE): MENU PAGE 3

On the third menu page you can overdrive both filters of the POLYMORPH. This parameter is for "dirty" solo sounds and roughed up effects. With the different basic waves of the oscillators you can also produce rich over tones. Because of the distortion more disharmonic over tones waves are added into the spectrum.

```
Edit Part1 FILTR  
<3> VCFDrive: 0
```

High filter drives do not work well with pad type sounds because the distortion usually sounds excessive.



HIGH-PASS FILTER PARAMETERS: MENU PAGES 4 - 10

On these menu pages parameters are presented which can be also adjusted from the user surface. This manual covers the resonance filter in the chapter, "The function of the controls and buttons" very thoroughly. The following is the only other parameter of the high-pass filter that is not found on the surface.

See page 12

HIGH-PASS FILTER DYNAMIC: MENU PAGE 11

On menu page 11 of the filter menu you can adjust how strongly the key stroke velocity influences the high-pass cutoff frequency.

```
Edit Part1 FILTR  
<11> HPF-Dyn: +0
```

The Synthesizers of the POLYMORPH

In zero position the cutoff frequency is not effected by the key dynamics. With values above 0 the cutoff frequency is moved up and with values below 0 down.

See page 15

LOW-PASS FILTER PARAMETERS: MENU PAGES 12 - 18

On these menu pages parameters will be presented which can be adjusted from the user surface. This manual covers the resonance filter more thoroughly in the chapter, "The function of the controls and buttons." The following is the only other parameter of the low-pass filter that is not found on the surface.

LOW PASS FILTER DYNAMIC: MENU PAGE 19

On menu page 19 of the filter menu you can adjust how strongly the key velocity influences the low-pass cutoff frequency:

```
Edit Part1 FILTR
<19> LPF-Dyn: +0
```

In zero position the cutoff frequency is not affected by the key velocity. With values above 0 the cutoff frequency is pushed up and with values below 0, down.

LOW-PASS FILTER KEY FOLLOW: MENU PAGE 20

The parameter "key follow" varies the low-pass cutoff frequency depending upon the played pitch. By using this parameter you can make the filtering of sounds dependant on those sounds themselves.

```
Edit Part1 FILTR
<20> LPF-Key: +0
```

At 0 the keyboard scale is turned off. With values above 0, higher notes will open the filter further than lower notes. With values below 0 the filter will behave in reverse. Higher keys (to the right) on the keyboard cause a lowering of the cutoff frequency.

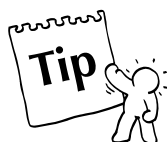
FILTER MODULATIONS: MENU PAGES 21 - 25

On these menu pages you can adjust how the cutoff frequencies of both filters are modulated by LFO-3. Most parameters are found on the surface of the POLYMORPH. They are explained in section "LFO 1-3 modulation oscillator" of "The function of the controls and buttons" chapter. Only menu pages 24 and 25 offer extra possibilities. Here you can individually adjust the low-pass and high-pass filter, how strong and with which polarity the cutoff value will be modulated.

```
Edit Part1 FILTR
<24>LFO>HPF: +63
```

```
Edit Part1 FILTR
<25>LFO>LPF: +63
```

See page 18



The most effective filter modulation is two that works the filters against each other. The low-pass filter has a positive value and the high-pass filter a negative value. With the parallel filter you can have a very effective phasing effect.

The amp (amplifier) section

The amp (amplifier) menu

After the sound has been filtered, it goes through an amplification stage which can function as a compressor under user control. In general, this smooths the volume of the sound, but also the dynamic range. The amplifier of the POLYMORPH also has its own envelope, which controls the compressor attack and release behaviour. The amp menu of the POLYMORPH not only has the controllable amplifier (VCA) and its envelope, but also the volume and panpot of the mixer. The latter lie in the signal path behind the VCA and the 4 effects.

If you find yourself in another menu, push [EXIT] twice. Push [EDIT] to get into the editing menu selection.

By using [PAGE<>] select page 2. The display shows:

```
Select Edit <2>
[Filter] [Amp]
```

Push [F2] to select the amplifier edit menu. The display shows the first menu page of the amplifier menus.

```
Edit Part1 AMP
|1> MixVol: 127
```

MIX VOLUME: MENU PAGE 1

This parameter equals the <MIX-VOL1-4> in the mixer section. The mix volume is important for setting the volume of the four synthesizers into the right relationship. That's why the mix volume will not be stored in sounds, but only in the setup.

PANORAMA: MENU PAGE 2

On the second menu page you can adjust the L/R pan position for the selected synthesizer part. You can adjust the sound's amplitude balance between the left and right channel outputs.

```
Edit Part1 AMP
<2> Panorama: +0
```

This function is not available in single output mode. The pan position is stored in setups, but not in the individual sound memories.

VCA LEVEL: MENU PAGE 3

On the third menu page you can adjust the basic volume of the sound. This parameter will be stored in sound memory. Because of the differences during sound programming you can correct the volume in the basic sound here.

```
Edit Part1 AMP
<3>VCA-Lev: 127
```

VCA KEY DYNAMIC: MENU PAGE 4

On the fourth menu page you can decide if the VCA compressor responds to your key velocity:

```
Edit Part1 AMP
<4>VCA-Dyn: ON
```

The Synthesizers of the POLYMORPH

VOLUME MODULATION: MENU PAGE 5

The LFO-3, which is normally used for filter modulation, can also be used for volume modulation. On menu page 5 of the AMP menu you can adjust how strongly the LFO influences the volume.

```
Edit Part1 AMP
<5>LFO3>VCA: +0
```

A positive deflection of the LFO waveform causes a rising of the volume from the VCA while negative deflections lower the volume. Set a negative value, and the volume modulation will be just the opposite - a positive deflection causing a lowering of the volume.

VOLUME ENVELOPE: MENU PAGES 6 - 9

On menu pages 6 - 9 you can change the ADSR envelope. This controls the volume shape of a sound over time. Since these parameters are available on the control surface, you probably would not use this menu page very often. In the chapter, "The functions of the controls and buttons" the envelope generator controls were covered in this manual.

See page 17

The effects of the POLYMORPH

In comparison to most of the other synthesizers the POLYMORPH offers a very luxurious supply of effects. It's not only that the POLYMORPH has 4 different effect processors, but it provides these fourfold. All of the POLYMORPH synthesizer parts have 4 effect processors! A maximum total of 16 effects can therefore be used at the same time. Since the effects of every part can be individually stored and changed, we integrated them into the sound as a component. Therefore all parameters in the effect area will be stored in the sound memories of the POLYMORPH.

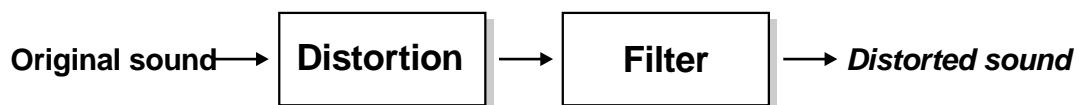
Multi-effect algorithms

Printed on the right side of the POLYMORPH surface are eight multi-effect algorithms. These multi-effect algorithms are the pre-settings of all four effects, that can be called up in the write menu. You find more detail on these in chapter "The write menu" in the section "Initializing the effect section of a sound / FX bypass function".

See page 51

The distortion section

The first of the four effects is a distortion algorithm with a post-connected low-pass filter. This effect filter also has a resonance control up to self-oscillation. The filter has a rolloff curve of 24dB per octave.



If you find yourself in another menu, press [EXIT] twice. Push [EDIT] to get into the edit menu selection.

By using [PAGE<>] select page 3. The display shows::

```
Select Edit <3>
[Distortion][EQ]
```

Push [F1] to get into the distortion edit menu. The display shows the first menu page of the distortion menu:

```
Edit Part1 DIST
|1> Gain: OFF
```

On the first menu page you can turn the distortion effect on and off as well as adjust the intensity. The post-distortion, low-pass filter will not be active until the distortion effect is turned on, so that clean sounds stay clean:

```
Edit Part1 DIST
|1> Gain: 64
```

The degree of distortion can be adjusted in a wide range from 1 to 127.

On the second menu page you can adjust the cutoff frequency of the low-pass filter:

```
Edit Part1 DIST
<2> OutFreq: 127
```

This LPF filter has exactly the same characteristics as the low-pass filter of the synthesizer section, although it cannot be controlled through the envelope and LFO. However, it does not have to be set static - the cutoff frequency and the resonance of this filter can be modulated through the built-in sequencer. Also, you can put the filter parameter on the modulation wheel of your synthesizer.

On the third page you can change the resonance of the filter:

```
Edit Part1 DIST
<3| Resonance: 67
```

The distortion effect is in-line with the signal chain which is why the original clean signal cannot be heard when the distortion filter is turned on. With a low gain setting the degree of the distortion is so small, that you will have no trouble working with non-distorted sounds.



The Equalizer Section

The effect section of the POLYMORPH has for every part a two-band sweep equalizer. You can adjust the centre frequency and the boost and cut of each band. This way you can give your sounds the finishing touch.

If you find yourself in another menu, press [EXIT] twice. Push [EDIT] to get into the edit menu selection.

By using [PAGE<>] select page 3. The display shows:

```
Select Edit <3>
[Distortion] [EQ]
```

Push [F2] to get into the EQ edit menu. The display shows the first menu page of the Equalizer menu:

```
Edit Part1 EQ
|1> EQ1-Gain: +30
```

On menu pages 1 and 3 you adjust the boost and cut of the frequency bands. When the "0" position is selected there will be no influence on the selected frequency bands. You can raise and lower the selected frequency band to a maximum of $\pm 12\text{dB}$.

The Synthesizers of the POLYMORPH

On menu pages 2 and 4 you can move the frequency bands of both filters:

```
Edit Part1 EQ
<2> EQ1-Freq: 30
```

The EQ- frequencies and the boost and cut of the frequency bands can also be controlled by the morphing sequencer.

The FX-1 and the FX-2 sections

A digital delay is an electronic echo device. It replays the input signal after an adjustable time once or multiple times. Both FX-1 and FX-2 offer the same parameters. But there is a difference between them. While FX-1 is a pure mono effect device, FX-2 has a stereo output. Both can be modulated. You can create extraordinary effects with the 7 parameters per effect. If you are modulating a very short delay time, you get "chorus" and "flanging" effects - dependent on the feedback setting this can sound very "spacy".



THE FX BASIC TYPES: MENU PAGE 1

FX-1 and FX-2 have different basic types of effects. All of them are delay based, but have different delay times and pre-selections of other parameters, which are explained in the following section. If you find yourself in another menu, press [EXIT] twice. Push [EDIT] to get into the edit menu selection.

By using [PAGE<>] select page 4. The display shows:

```
Select Edit <4>
[FX1] [FX2]
```

Push [F1] to get to the FX-1 edit menu. In the display appears the first menu page of the FX-1 menu:

```
Edit Part1 Fx1
|1> Typ: Delay
```

The basic effect type shown in the display depends on the selected sound. In the following table you will see the basic types of FX-1 and FX-2 that are available with the results of the value range for the delay time. The delay effects can also be synchronized to MIDI clock or for example the morphing sequencer of the POLYMORPH. In the table you will find a column that shows the synchronized corresponding note values.

Effect processor	basic type	Delay time range	Synchronization of note values
FX-1	Flanger	0.1ms - 13.6ms	—
	Space flanger	0.2ms - 27.2ms	—
	Chorus	0.4ms - 54.4ms	—
	Super chorus	0.9ms - 108.7ms	—
	Short-delay	1.7ms - 217.5ms	16th note*
	Delay	3.4ms - 435.0ms	8th note*
	Long delay	6.8ms - 870.0ms	4th note*
FX-2	Stereo flanger	0.1ms - 13.6ms	—
	Stereo flanger	20.2ms - 27.2ms	—
	Stereo chorus	0.4ms - 54.4ms	—
	Stereo chorus	20.9 - 108.7ms	—
	Stereo-delay	1.7ms - 217.5ms	16th note*
	Pan delay	3.4ms - 435.0ms	8th note*

*When calling up a delay effect a synchronized delay time will be pre-set. That's why you can change the different note values by calling up the basic types.

EFFECT VOLUME (LEVEL): MENU PAGE 2

On menu page 2 you can control the effect volume:

```
Edit Part1 FX1  
<2> Level: 20
```

REVERB TIME (DELAY TIME): MENU PAGE 3

On menu page 3 you can change the delay time. The range of possible values can be seen from the table. With the delay effects you can also select the setting "Synced", instead of delay time in milliseconds. This setting equals the note values in the above table.

```
Edit Part1 FX1  
<3> Time: SYNCED
```

FEEDBACK: MENU PAGE 4

The delayed signal can also be mixed back to the input of the delay effect so that there are echoes of the echoes. The Feedback control turns up the proportional volume of these extra echoes, which otherwise diminish to silence. At louder levels more distinct repeats are audible. With an extreme setting the delay repetition can be as loud as the original sound going into the input. In connection with the flanger or chorus effects and having the feedback settings above 80% you can hear a metallic feedback sound. Now select menu page 4 of the FX-1 or FX-2 menus. There you can adjust the degree of the feedback.

```
Edit Part1 FX1  
<4> Feedback: 40
```

FEEDBACK FILTER: MENU PAGE 5

In the feedback branch of the delay effects you find a 6dB LPF filter that muffles every delay repetition. Now select menu page 5 to change the cutoff frequency of this filter. The higher the adjusted values the stronger the reduction of the signal amplitudes.

```
Edit Part1 FX1  
<5> FbFilter: 126
```

MODULATION SPEED (RATE): MENU PAGE 6

The delay time of the effect instruments can be changed cyclically through a modulation oscillator. A sine signal is responsible for a uniform shortening and lengthening of the delay time. On menu page 6 you can change the speed of the modulation. To hear a change, the parameter „Depth“ on menu page 7 has to have a value larger than 0. Most important is the effect of modulation on the chorus or the flanger effect. Now select menu page 6 with [PAGE<>] to change the speed of the modulation:

```
Edit Part1 FX1  
<6> Rate: 2
```

MODULATION INTENSITY: MENU PAGE 7

On this menu page you can change the depth of the delay-time modulation. Depending on the setting you get a drastic or more likely a subtle effect.

```
Edit Part1 FX1  
<7> Depth: 54
```

The Synthesizers of the POLYMORPH

The controller edit menu

In the controller edit menu the part parameters are summarized. Here you can choose how a message received from a MIDI controller or stroke dynamic effect the characteristics of a sound. You can assign to the modulation wheel (MIDI controller 1) and the after-touch to almost any sound parameter.

If you find yourself in another edit menu, push [EXIT] twice. Push [EDIT] to get in the edit menu. By using [PAGE<>] select page 2. The display shows:

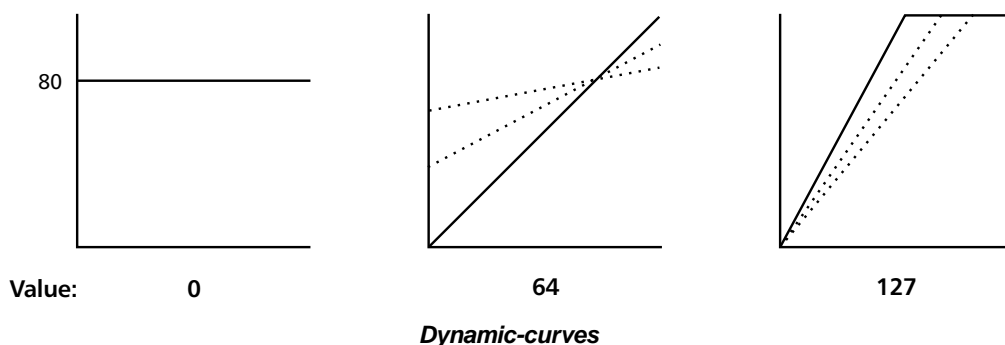
```
Select Edit <5>
[Contr] [System]
```

Key velocity curve: menu page 1

Push [F1] to reach the controller edit menu. The display indicates the first menu page of the controller menu:

```
Edit Part1 CONTR
|1> Velocity: 64
```

On this menu page you can influence the touch curve. The value "0" means, the sound does not react to the played key dynamic value. At "64" you have a linear path. At 127 the touch curve is moved up. Then you do not have to play harder (you don't need a dynamic value of 127) to reach the highest touch value of the POLYMORPH.



Hold pedal: menu page 2

On the next menu page you can decide, if the selected part will be held out or not with the sustain pedal (MIDI controller 64) of a connected keyboard:

```
Edit part1 CONTR
<2> Holdped: OFF
```

Pitch bender sensitivity: menu page 3

On the third page of the controller menus you can select, how strong the selected part is going to react to the pitch-bending wheel of your connected MIDI Keyboard. The pitch bend range can be changed in semitone steps with a range of up to 24 semitones up and down.

```
Edit Part1 CONTR
<3> PitchSns: +2
```

Modulations wheel assignment: menu page 4-5

Menu pages 4 and 5 allow you to assign POLYMORPH controllers to the modulation wheel (MIDI controller 1). On menu page 4 you can select the modulation destination and on menu page 5 you can change the strength and polarity of the control. Go to the menu page 4 to select the modulation destination:

```
Edit Part1 CONTR
<4> MW:Not assign
```

This display means the modulation wheel it is not yet assigned to a parameter. However the following parameters can be selected with <VALUE-TEMPO> wheel:

Panorama	Wave 1	Level 1
Detune 2	Level 2	Detune 3
Level 3	FilterDrv	HP cutoff
HP Reso	LP cutoff	LP Reso
Pitch EG	PWM EG	PWM Rate
PWM Depth	FM Rate	FM Depth
LFO3 Rate	LFO3 Depth	FX1 Level
FX1 Feedback	FX1 Rate	FX1 Depth
FX2 Level	FX2 Feedback	FX2 Rate
FX2 Depth	Distortion Gain	Distortion cutoff
Distortion Resonance		

On menu page 5 you can select the modulation depth for the chosen parameter.

```
Edit Part1 CONTR
<5>MWDepth: +100
```

Here follow the selection possibilities:

- +50 Full deflection of the modulation wheel makes a positive change of the parameter value. The size of the change is 50% of the full value range.
- +100 Full deflection of the modulation wheel makes a positive change of the parameter value. The size of the change is 100% of the full value range.
- 50 Full deflection of the modulation wheel makes a negative change of the parameter value. The size of the change is 50% of the full value range.
- 100 Full deflection of the modulation wheel makes a negative change of the parameter value. The size of the change is 100% of the full value range.

Aftertouch assignment: menu pages 6-7

These pages assign controllers for the monophonic Aftertouch data. They are otherwise the same as for the modulation wheel settings described above. Instead of modulation destination and the strength of the modulation wheel, select the corresponding parameter of the aftertouch (keyboard pressure).

```
Edit Part1 CONTR
<6> AT: Not assign
```

```
Edit Part1 CONTR
<71 ATDepth: +50
```

The morphing sequencers of the POLYMORPH

The morphing sequencers of the POLYMORPH

Basics: Analog sequencer

A compositional aid of the modern electronic music appeared a short while after the invention of the first voltage controlled synthesizer module; the Analog sequencer. At first this piece of equipment was primarily used for the automation of voltage control. Most of the musicians thought that a sequencer was unnecessary. First off, with the analog sequencer you could only put 8 to 16 note extensive tone series in, and this was tediously complicated. At the time tapes were faster, uncomplicated and "stored" more notes.

Only a few musicians introduced the analog sequencer as a new creative element in the music scene. The accompanying sequences of the US production of "Popcorn" was the turning point of further development, because of "Popcorn's" commercial success. At once, others found the potential of the new expressions with these typical basic sequences. Later came the most spread prejudice against keyboardists in circulation:

"Anyone can play the synthesizer. One doesn't have to know anything."

See page 20

You were familiarized with the basic possibilities of the POLYMORPH sequencer in section "sequencer section" in chapter "The function of the controls and buttons". Now we are coming to the extensive possibilities that you find in the sequencer edit menu.

The sequencers edit menu

If you find yourself in another edit menu, push [EXIT] twice. Push [EDIT] to get in the edit menu. By using [PAGE<>] select page 1. The display shows:

```
Select Edit 11>
[Sequence] [Osc]
```

Groove factor: menu page 1

Push [F1] to reach the sequence menu. With [PAGE<>] select the first menu page:

```
Edit Sequence
|1> Groove: 0%
```

This parameter increases the degree of the shuffle/ swing effect for all four morph sequencers. The sequencers no longer have such a mechanical quality, but have a selectable Groove factor.

Resolution: menu page 2

On the second menu page you can select which note duration each step of the sequencer equals too. The value ranges from a whole note (brieve) to a 32nd note (demisemiquaver). The "P" with a number from 1-4 shows you on the next menu pages, which part and which sequence is being edited.

```
Edit Part1 Sequence
<2> Resoltn: 1/16
```

The morphing sequencers of the POLYMORPH

Of interest is the combination of different resolutions giving exciting sequences. This parameter can be individually adjusted for every one of the four sequences. Select the desired sequence with [SEL 1-4].

Transposing: menu page 3

On this menu page you can transpose the pitch up and down in semitone steps, separately on all of the four sequencers.

```
Edit P1 sequence
<3> Transpos: +0
```

The transpose value is stored in the so-called transpose / muting subsets. With the help of these subsets you can store 8 different transpose combinations and with a push of the button you can call them up. There is more on this subject in section: "transpose / muting subsets".

Start triggering the sequences: menu pages 4 and 5

This parameter determines the start behaviour of the sequencers. A sequence can start automatically by pushing [START/STOP] or can be started from another sequencer or from MIDI note triggers. The parameter on menu page 5 selects how the sequence will start. The menu page 6 has extra parameters, which are slaves from the start characteristics.

"FREE" STANDARD SETTING FOR STARTING NORMAL USING [START/STOP]

```
Edit P1 Sequence
<4> StrtTrg: Free
```

In this operating mode the sequencer runs normally and starts off when pushing [START/STOP]. On menu page 6 there are no more parameters.

SEQ 1 - 4 - ADJUSTMENTS TO MUTUAL STARTING OF THE SEQUENCES

```
Edit P1 Sequence
<4> StrtTrg: SEQ1
```

In this operating mode you can select a sequence "trigger" (start) with another sequencer. With [SEL 1 - 4] you select, which sequencer will be started from another. After this you can decide with "StrtTrg:seq1 - seq4", which of the rest of the three sequencers will start the selected one. On menu page 6 you can select with which step of the sequencer the selected sequence will be triggered.

```
Edit P1 Sequence
<5> TrigStep: 1
```

PRODUCING LONGER SEQUENCES WITH MORE THAN 16 STEPS

There are many application examples for this trigger function. For example you can have two sequencers move against each other. You can also use a sequence as a trigger track. These only exist for starting the other sequencers. This way longer sequences than 16 steps are possible. Using this trigger track with the resolution of "1/1" starts a different 1/16th sequence on every beat. In the following example we will produce a sequence with 32 steps:

- 1.) Set sequence 1 as trigger sequence. The resolution of this sequence is to be set at 1/1.
- 2.) Limit the length of the note row of sequence1 to two steps. [PITCH], [CYCLE-LENGTH], [2]. Now set the note row of the sequences 2 and 3 to 16 steps.
- 3.) Mute both steps of this sequence. [STEP-MUTE], [1], [2].



The morphing sequencers of the POLYMORPH

- 4.) Call up the sequencer menu of menu page 2. In the display appears:

```
Edit P1 Sequence
<2> Resolutn: 16
```

- 5.) Set the resolution of sequence 1 to "1" and the resolution of sequence 2 and 3 to 16th.
6.) Select with [PAGE<>] menu page 4.

```
Edit P1 Sequence
<4> StrtTRG:Free
```

- 7.) On this menu page you adjust the triggering of sequence 1 to "Free" and sequence 2 and 3 to "Seq1"
8.) Now select with [PAGE<>] menu page 5.

```
Edit P2 Sequence
<5> TrgNote:1
```

- 9.) Select the first step of the first sequence as the trigger for sequence 2, and for sequence 3, the second step of the first sequence.
10.) Now, when you push [START/STOP], both of the sequences 2 and 3 will be played alternately.

"EXT1 - 16" STARTING A SEQUENCE FROM AN EXTERNAL MIDI NOTE

```
Edit P1 Sequence
<4> StrtTRG: Ext1
```

In this operating mode it is possible to start one or more sequences from an external MIDI note. On menu page 6 you can select, which note will start the sequence.

```
Edit P1 Sequence
<5> TrgNote: C2
```



Caution!!

Pay attention during your trigger experiments, because there is always the possibility of unwanted paralysis of one or all sequences. When you decide that a sequence should trigger another sequence at step 16, then it has to play step 16. When the cycle length of the trigger sequence is only 8, the selected sequence will never run.

Moving the first beat: menu page 6:

Some sequences sound great, but they don't fit to a synchronized drum computer. It seems as though the first beat of the drum computer is not on the first beat of the POLYMORPH sequencer. In addition when the setup changes it seems as though the POLYMORPH stumbles. The reason is that when entering the notes in the sequencer, one doesn't notice that the metrum has been moved one or more steps backward or forward. As soon as the POLYMORPH plays more than two cycles it seems as though everything is in order. Only when starting the sequence one has the impression that the POLYMORPH is not starting on the first note, but in the middle of the beat. The remedy is on menu pages 6 of the sequencer menu. There you can move the 1 of the running sequencer.

```
Edit P1 Sequence
<6> 1 Beat [shift]
```

Now let the sequence that you think has moved run. Push [F2] when the sequencer plays 1, independent from the beat position that the running light suggests. In the next moment all currently active (not muted) sequences are moved.

The morphing sequencers of the POLYMORPH

This is a feature that most analog sequencers do not have and more consideration should be given to it when programming the sequences.

Real-time transposing: Menu pages 7 - 11

The POLYMORPH permits the real-time transposition of the programmed sequences from a connected keyboard. The MIDI transpose channel is freely programmable. Furthermore, you can reduce the keyboard range that will control the transposing.

On menu page 7 you can adjust, which of the four parts are going to react to the real-time transposing. Select the desired part with help from [SEL-1-4] and turn the "real-time transpose" (RT-Trnsp) on or off.

```
Edit P1 Sequence
<7> RT-Trnsp: ON
```

The activated parts will be transposed in real-time, when the corresponding note arrives on the Transpose midi channel.

On menu page 8 you set the lowest and on menu page 9 the highest note which is to be recognized as a transpose value:

```
Edit P1 Sequence
<8> Lowkey: C2
```

```
Edit P1 Sequence
<9> Highkey C5
```

The notes in between these two borders will be obtained for transposing. If the transpose midi channel corresponds with one of the four parts of the POLYMORPH, notes on the outside of the range are used to play as normal tones. The notes inside of this range are not used to play as normal notes. So you can program a keyboard split, that on the upper octaves is for the transposing of the sequences, while on the left side of the keyboard you play the POLYMORPH.



On menu page 10 you can choose which note in the transpose range makes the original pitch of the sequences audible. When you use the upper octaves of the keyboard for the transpose range this does not mean that you have to shift 3 octaves upward to play. Using the initial setting of the original button you can put the original pitch or selected distances from these and put them in the transpose range.

```
Edit P1 Sequence
<10> Origin: C3
```

You can place the original pitch between C0 and C9 on any chosen button.

On menu page 11 you set the MIDI channel, which is to receive the transpose data:

```
Edit P1 Sequence
<11> RT-Chan:5
```

Any MIDI channel between 1 and 16 can be chosen as RT channel (real-time transpose channel).

The morphing sequencers of the POLYMORPH

Transpose / muting subsets

When listening to the pre-programmed setups you probably noticed the variations, which can be called up with [NUMBER 1-8]. These variations are subsets for the actual setups. For all of the eight subsets you can:

- 1.) Decide which of the four sequences are played or not when selecting the subsets.
- 2.) At which pitch the 4 sequences can be played. Every sequence has an individual transpose value.

The programming of these subsets is very simple: You always edit the variation that was last selected with [NUMBER 1-8]. With [SEQUENCE-SELECT] + [SEL 1-4] you activate or deactivate the desired sequence. Afterwards, go into the sequence menu and select menu page 3. There you can adjust the pitch for the sequences 1-4. If you would like to create another subset select it with [NUMBER 1-8] and start from the beginning. These subsets will be automatically stored inside of the setups. (See chapter „The write menu“)

See page 48

Remote control of the transpose / muting subsets

The subsets can also be called up from MIDI notes. The lowest eight keys of the transpose range are used to switch between the 8 subsets. For this you have to go to the sequencer menu on menu page 12 and set "SubsChg" to "ON":

```
Edit P1 Sequence  
<121 SubsChg: ON
```

Suggestions for the operation of the sequencers



The analog sequencer still thrives due to a unique capability - that one can intervene at any time on the sequence while being in live operation or in studio sessions. One should leave the possibility open to make changes during it's operation. You should fill the muted steps with suitable pitches and parameter adjustments. During live operation you can add on, step by step, single tones of a sequence. The same goes for steps, that would never be played because of the adjusted CYCLE-LENGTH. One can start by presenting two single notes, then increase the CYCLE-LENGTH step by step. For newcomers in the area of analog sequencing, we recommend the live album "ENCORE" by Tangerine Dream. There you can hear the techniques and other manipulations of analog sequencers. This album will also take you back to a world of electronic music of the pre-Techno era year 1975.

The combination of the synthesizer parts with the sequencer setups

The combination of the synthesizer parts with the sequencer setups

The POLYMORPH has a higher storage level for its adjustments, which permits snapshot memories.

It doesn't matter how many controls you have turned, or how many strange sounds are selected or if sounds have been deleted or newly created, the momentary settings of all used parameters can be saved by using a simple instruction.

This capability is available in the setup memory. The settings of all 4 synthesizers including their effect settings and sequencer data are saved here. Of course you can always fall back on the single sounds, which are saved on the inside of a setup in the POLYMORPH. When you change a sound inside of a setup, the original sound will not be touched. Rather the setup makes a copy of the original sound and saves it as a part of the complete setup.

The setups can be changed with the help from <SOUND>, when you are in the main page of the POLYMORPH and the setup operation is selected. To find out if you can change a setup:

- 1.) Leave the selected edit menu with [EXIT].
- 2.) Look at the display to see if you are in setup operation (In the setup operation "Setupxx:" appears in the top left side of the display). If not, push [F2] (below the display) to change into the setup operation.
- 3.) Now you can change the setups with <SOUND>.

See page 48

The setups can be stored with the write menu. Further information see chapter "The write menu".

The System Menu

The System Menu

The system menu is responsible for the overall or global settings of the POLYMORPH. Global settings contain all parameters that concern the behaviour of the entire POLYMORPH. Also the settings like the MIDI data filter or the synchronization of the instrument can be found here. These global settings are not stored with the Setup information.

Master transposing: Menu page 1

If you find yourself in another edit menu, push [EXIT] twice. Push [EDIT] to get in the edit menu. By using [PAGE<>] select page 5. The display shows:

```
Select Edit <5>
[Contr1] [System]
```

Push [F2] to reach the system edit menu. With [PAGE<>] select the shown menu on the display page 1:

```
Edit System/MIDI
|1> M.Transp: +0
```

On this menu page you can transpose the overall pitch of the POLYMORPH in semitone steps by two octaves up or down. The transposing effects all four parts of the POLYMORPH equally.

Master tuning: Menu page 2

On the second page of the system menu you can change the main tuning of the POLYMORPH. This is important when the POLYMORPH is played together with other instruments that can only be re-tuned with considerable time and effort:

```
Edit System/MIDI
<2> M.Tune: +0
```

Select the desired tuning.

Master channel: Menu page 3

The master channel page determines which MIDI channels the parts 1-4 can be played onto. Part 1 always receives on the master channel. The other parts are received on the following successive MIDI channels. Four MIDI channels above the master channel there is an extra control MIDI channel. With this channel the setup can be switched.

```
Edit System/MIDI
<3> M.Channel: 1
```

The functions of the single outputs: Menu page 4

The POLYMORPH has 4 single outputs. So it can send out 4 parts on separate outputs. Where FX2 is producing a stereo effect, then keeping the parts together would be preferable. The advantages of the single outputs are sometimes less interesting than the stereo effect. Basically this is why the POLYMORPH can be operated in three different basic routings:

Stereo mode 1 (1*ST) All parts are sent over a common stereo sum (OUT-1+2).

Stereo mode 2 (2*ST) Part 1+2 are on OUT-1+2, Part 3+4 are on OUT-3+4

Stereo mode 3 (SNGL) Every part has its own single output (Part1- OUT-1, Part 2- OUT-2, etc.)

On menu page 4 you can select the mode of the audio outputs:

```
Edit System/MIDI
<4> OutMode: 1*ST
```

Local On/Off: Menu page 5

The sound generators are said to be "local" to the POLYMORPH, likewise it is their "local" controller. On menu page 5 you can separate the controls of the surface and the data of the sequencers from the sound generators. The sound generators can only be played over MIDI in Local off operation. When starting the morphing sequencers there will be no sounds produced.



```
Edit System/MIDI
<5> Local: ON
```

Use the local off mode, when you want to record the sequencers of the POLYMORPH into an external sequencer.

MIDI-Synchronization: Menu page 6

On menu page 6 you can switch the morphing sequencer of the POLYMORPH to an external synchronization. The POLYMORPH then can only be started when it receives a MIDI clock on the MIDI input.

```
Edit system/MIDI
<6> MIDI-Sync: INT
```

In the position "INT" the POLYMORPH can be started with its set tempo.

In the position "EXT" the POLYMORPH can be started only when its synchronized to an external provided MIDI clock.

MIDI input filter

On menu pages 7-10 you can filter different MIDI commands at the MIDI input. With "ON" the corresponding data will be received and when "OFF" they are ignored. The following MIDI data filters are available on the POLYMORPH:

```
Edit System/MIDI
<7> RxStart: ON
```

Receiving start /stop commands over MIDI can be turned on and off here. When receiving a start command over MIDI you can decide if the POLYMORPH starts its sequencer or not.

The System Menu

```
Edit System/MIDI  
<8> RXSetChg: OFF
```

Receiving a Setup program change. When this parameter is "ON", the setups can be selected over MIDI. The setup changes are received on the MIDI channel that is 4 channels above the master channel. In the factory setting the master channel is on 1, the setups let themselves be switched accordingly on MIDI channel 5.

```
Edit system/MIDI  
<9> RxPrgChg: ON
```

Receiving single program changes. When this parameter is "ON", the single sounds can be switched over MIDI.

```
Edit System/MIDI  
<10> RxParam: ON
```

Receiving sound parameters. The POLYMORPH sends all control changes using a conventional MIDI controller number. To also receive these messages, RxParam: must be „ON".

MIDI output filter

On menu pages 11-14 you can choose what MIDI data from the POLYMORPH will be sent out.

```
Edit System/MIDI  
<11> TXClock: ON
```

You decide in this menu, if the POLYMORPH clock information is sent or not. Only when it is sent can the other instruments like the RAVE-O-LUTION 309 run in synchronized Tempo with the POLYMORPH.

```
Edit System/MIDI  
<12> TxSetCh: OFF
```

Here you decide if the POLYMORPH sends the program change messages of its setup changes over MIDI. In the position "ON" it sends every change of a setup as a corresponding program change.

```
Edit System/MIDI  
<13> TxPrgCh: ON
```

Here you select whether the POLYMORPH single program changes are sent by MIDI or not, when <SOUND> is turned, and it is in the single sound mode.

```
Edit System/MIDI  
<14> TxParam: ON
```

Here you can decide if the MIDI controller data of the control knobs will be sent over MIDI or not.

Sysex dump tempo: Menu page 15

Via system exclusive data, the memory of the POLYMORPH can be saved over MIDI to an external device. The working speed of different types of MIDI equipment differs. Some choke when too much MIDI data is being received at once at the input. That is why the POLYMORPH can be adapted to a MIDI filer, external sequencer, computer etc. The dump speed has three transfer speeds to make these devices more compatible.

The dump speed can be adapted on menu page 15 of the system menu.

```
Edit system/MIDI
<15> SxSped: Fast
```

Find the best compromise between data safety and transfer speed. Fast equipment like the Style Drive can dump without a problem at fast speed.



Control (regulator) characteristics: Menu pages 16-17

On menu pages 16 and 17 you can change the behaviour of the physical controls on the POLYMORPH top panel. Since the controls are not motorized spin to a new value automatically, recalling a new setting and editing it, could result in a drastic jump in actual value relative to the knobs former position. For example, when the filter cutoff frequency is programmed with a value of 20, the control is on 127, the cutoff frequency jumps to the higher value, as soon as the control is turned. To avoid this, there are different strategies. The following possibilities are built-in to the POLYMORPH:

- Jump-> Jumps direct to the control adjustment, if it changes. This adjustment is equal to the example with the filter cutoff frequency.
- Snap-> You have to move the control to the programmed value of the parameter before any changes to the value can be made.
- Relative-> This is the most smart mode. The area to the left and right of the actual control position is stretched or compressed dynamically. This way the control reacts instantly without any "jumps".

```
Edit System/MIDI
<16> Poti:SNAP
```

When you turn a control pot on the POLYMORPH, the corresponding parameter with the value is shown in the display. You can turn off this information displayed:

```
Edit System/MIDI
<171 PotiMsg: ON
```

In the position "OFF" this information will no longer be displayed.

The write menu

The write menu

The write menu is about storing data internally and externally via MIDI, and also initializing the POLYMORPH.

Storing a setup

The setup memory saves all updated settings with exception of the system menu. You can store the settings of all four parts, all effect settings of the parts and the complete sequencer data easily in the 64 memory banks.

Do the following to store:

- 1.) Push [WRITE] to reach the menu.
- 2.) Select menu page 1 of the write menu by using [PAGE<>]. The display shows:

```
L1> Store setup?  
[ok]
```

- 3.) Push [F1] to start the storage of the setup. The display shows:

```
Name:xxxxxxxx  
[ok] [cancel]
```

- 4.) Now you can give a name to your setup. With [PAGE<>] you can select the character position and with <VALUE> select the corresponding characters/special symbols. The name can also be entered in over a connected MIDI keyboard. Look in the appendix for the character table.
- 5.) If you are satisfied with the name, push [F1] again. If you want to leave the menu without storing, push [F2] then [EXIT]. In the first case the following message is in the display:

```
to xx (xxxxxxxx)  
[ok] [cancel]
```

- 6.) With <VALUE> you can select the target memory that will be overwritten with the new setup. The name of the designated setup will be shown on the display.
- 7.) With [F1] the storage will take place, with [F2] you can still cancel storing.
- 8.) With [EXIT] you can leave the write menu.

Storing a sound

In sound memory are all the sound parameters of a part and the complete current effect section from distortion, EQ, FX-1 and FX-2 stored. All user memory banks U 001 - U 128 are available. No sounds can be stored into the sound memory of the setups, that's in banks A - D. These memory banks are only for saving the setups.

Do the following to store sounds:

- 1.) Push [WRITE] to get into the write menu. Make sure that the right part 1- 4 is selected.
- 2.) Select menu page 2 of the write menu by pressing [PAGE>] The display shows:

```
<2> Store Sound?  
[Ok]
```

- 3.) Push [F1] to start the storage of the sound. The display shows:

```
Name: xxxxxxxx  
[ok] [cancel]
```

- 4.) Now you can give the sound a name. With [PAGE<>] you can select the appropriate character position and with <VALUE> the corresponding character/special symbol. The name can also be entered in with connected MIDI keyboard. Look in the appendix for the character table.
- 5.) If you are pleased with the name, push [F1] again. If you want to leave the menu without storing, push [F2] then [EXIT]. In the first case the following message is in the display:

```
To xx (xxxxxxx)  
[ok] [cancel]
```

- 6.) With <VALUE> you can select the target memory that will be overwritten with the new sound. The name of the designated setup will be shown on the display.
- 7.) With [F1] the storage will take place, with [F2] you can still cancel storing.
- 8.) With [EXIT] you can leave the write menu.

Storing a sequence

In the sequencer memory the sequence of the recently selected part will be stored. The POLYMORPH has 50 of these memory slots. This extra memory area is for the exchange of sequences between the single setups. The sequencer memory holds the following parameters:

- a.) Assigning the parameter to the rows Line 1-3.
- b.) The values for all steps of the rows, independent if they can be played or not.
- c.) The step muting, playing direction and cycle lengths all rows.

The parameters of the sequencer edit menu as well as the transpose settings or the resolutions will not be stored. These settings will come into consideration when creating a new setup.

Do the following to store the sequences:

- 1.) Push [WRITE] to reach the menu.
- 2.) Select menu page 3 of the write menu by using [PAGE<>]. In display shows:

```
<2> Store seq.?  
[ok]
```

The write menu

- 3.) Push [F1] to start the storage of the sequence. The display shows:

```
Name: xxxxxxxx  
[ok] [cancel]
```

- 4.) Now you can give a name to your sequence. With [PAGE<>] you can select the character position and with <VALUE> select the corresponding characters/special symbols. The name can also be entered in over a connected MIDI keyboard. Look in the appendix for the character table.
- 5.) If you are pleased with the name, push [F1] again. If you want to leave the menu without storing, push [F2] then [EXIT]. In the first case the following message is in the display:

```
To xx (xxxxxxxx)  
[ok] [cancel]
```

- 6.) With <VALUE> you can select the target memory, which will be overwritten with the new sequence. The name of the designated sequence will be shown on the display.
- 7.) With [F1] the storage will take place, with [F2] you can still cancel storing.
- 8.) With [EXIT] you can leave the write menu.

Initializing the complete Memory/ reloading of the factory settings



If you would like to go back to the original factory settings, you can completely initialize the POLYMORPH. When replacing the battery or after an update an initialization has to be made. **CAUTION!!** When initializing you lose all of your saved data.

To initialize turn the POLYMORPH off and follow the next steps:

- 1.) Push [WRITE] and hold the button.
- 2.) Holding the button turn the POLYMORPH on.
- 3.) The following message will be shown in a few seconds.

```
Initialize All?  
[ok] [cancel]
```

- 4.) Now you can release [WRITE].
- 5.) Push [F1] for the initialization. With [F2] you can abort the process.

In general to initializing single memory areas

On the following pages of the write menu you can set single memory areas into a basic condition. For an example, when you initialize a sound, you get a very simple basic sound with an opened filter and neutral envelope setting. The initialized sound has no modulations and is devoid of every effect action.

Initializing procedures have one thing in common. They always refer to the temporary memory. When initializing stored data is not lost (except with a complete initialization). If you want to delete a sound, setup or whatever, you have to save the initialized sound, initialized setup or initialized sequence. A basic, initialized memory area is not available.

Initializing a setup

When initializing a setup the momentary settings of all four parts and sequences are set to a neutral output condition. When you want to program a setup from the basics, then you should use this function.

- 1.) Push [WRITE] to get in the write menu.
- 2.) Select menu page 4 of the write menu by using [PAGE<>]. The display shows:

```
<4> Init Setup?  
[ok]
```

- 3.) With [F1] you can initialize the setup.
- 4.) Leave the write menu with [EXIT].

Initializing a sound

You can even initialize a single sound. To become acquainted with the synthesizer functions it helps to start with a basic sound that is transparent.

- 1.) Push [WRITE] to get in the write menu.
- 2.) By using [PAGE<>] select page 5. The display shows:

```
<5> Init Sound?  
[ok]
```

- 3.) With [F1] you can initialize the sound.
- 4.) Leave the write menu with [EXIT].

Initializing the effect section of a sound/FX-Bypass function

With this function the Effect section of a sound can be initialized or be loaded with preset standard values. These preset settings are also printed on the surface of the POLYMORPH. Let's see how to do it:

- 1.) Push [WRITE] to get in the write menu.
- 2.) By using [PAGE<>] select page 6. The display shows:

```
<6> Init Effect?  
[ok]
```

- 3.) Confirm with [F1]. The display shows:

```
Multi: SpaceDist1  
[ok] [cancel]
```

- 4.) Select with <VALUE> the desired effect setting. Since the adjustment is for all four single effects (distortion, EQ, FX-1 and FX-2), appears in the display "Multi". Eight different settings are available:

The write menu

Space distortion 1
Space distortion 2
Bright distortion 1
Bright distortion 2
EQ PanDelay
Super chorus
Super flanger
Multi delay

You have an extra possibility. You can call up a bypass function in order to hear the selected part without effects. In the display behind the effect pre-adjustments appears:

FX-Bypass
Bypass-off



The bypass function does not change any effect settings. The settings simply are ignored. So, if you take back the bypass function (Bypass-off), the effect settings become active again. Use this function if you need a sound without any effects without losing your effect settings.

- 5.) Confirm the selection with [F1].
- 6.) Leave the write menu with [EXIT].

Initializing a sequence

With this function you can initialize a sequence from a selected part. After initializing, the Lines 1-3 are no longer assigned to a parameter. The note line of this sequencer is filled with a middle C, the cycle length are pre-adjusted to 8 and all rows of the sequencers are running forward. These functions can help when creating a new sequence. And now, how to do the initialization of a sequence:

- 1.) Push [WRITE] to get in the write menu.
- 2.) By using [PAGE<>] select page 7. The display shows:

```
<7> Init Seq?  
[ok]
```

- 3.) Confirm the initialization with [F1].
- 4.) Leave the write menu with [EXIT]. The sequence is now initialized.

In general to the theme saving of data and System exclusive data

The following menu points are used for dispatching System exclusive data. This is known as "dumping". System exclusive data is sent over the MIDI interface for data archiving. When the memory of the POLYMORPH is full and you want to program further, you have the possibility to save the sounds in a computer or MIDI data filer. Afterwards you can create new sound bank without having to lose the finished ones. All of the following written dumping possibilities have one procedure in common:

If you want to save into an external sequencer or a system exclusive (sysex) librarian, start the recording first, wait for the pre-counter and then start the data transfer with the POLYMORPH.

If problem occur with the data transfer, look in the section "Sysex Dump speed" in the chapter System menu. There you can select three different speeds.

Send Temp - Sending the momentary settings

On menu page 8 the actual settings of all four parts and sequences can be sent to an external piece of equipment. In connection with a software sequencer the dumping function works well, because at the beginning of a song you can send the complete active settings to the POLYMORPH. Do the following to send the momentary condition of the POLYMORPH over MIDI:

- 1.) Push [WRITE] to get in the write menu.
- 2.) By using [PAGE<>] select page 8. The display shows:

```
<8> Send Temp?  
[ok]
```

- 3.) Start the recording of the external sequencer, dump utilities etc.
- 4.) Push [F1] to start the data transfer.
- 5.) Leave the write menu with [EXIT].

Send sounds - Sending the user sound memory

In this menu you can archive the 128 single sounds of the POLYMORPH.

- 1.) Push [WRITE] to get into the write menu.
- 2.) By using [PAGE<>] select page 9. The display shows:

```
<9> Send sounds?  
[ok]
```

- 3.) Start the recording of the external sequencer, dump utilities etc.
- 4.) Push [F1] to start the data transfer.
- 5.) Leave the write menu with [EXIT].

Send sequences - Sending the sequencer memory

In addition to the setups the POLYMORPH has a memory for 50 sequences. They are sent as follows:

- 1.) Push [WRITE] to get into the write menu.
- 2.) By using [PAGE<>] select page 10. The display shows:

```
<10> Send Seq.'s?  
[ok]
```

- 3.) Start the recording of the external sequencer, dump utilities etc.
- 4.) Push [F1] to start the data transfer.
- 5.) Leave the write menu with [EXIT].

The write menu

Send setups - Sending of the setup memory

With this function you can send all of the programmed setups over the MIDI interface.

- 1.) Push [WRITE] to get into the write menu.
- 2.) By using [PAGE<>] select page 11. The display shows:

```
<11> Send Setups?  
[ok]
```

- 3.) Start the recording of the external sequencer, dump utilities etc.
- 4.) Push [F1] to start the data transfer.
- 5.) Leave the write menu with [EXIT].

Send all - Send all POLYMORPH settings

With this function you can archive externally the complete memory of the POLYMORPH.

- 1.) Push [WRITE] to get into the write menu.
- 2.) By using [PAGE<>] select page 12. The display shows:

```
<12> Send All?  
[ok]
```

- 3.) Start the recording of the external sequencer, dump utilities etc.
- 4.) Push [F1] to start the data transfer.
- 5.) Leave the write menu with [EXIT].

APPENDIX

MIDI Implementation of the POLYMORPH

Function		Transmitted	Recognized
Basic Channel	Default Changed	1-4 1-16	1-4 1-16
Mode	Default Changed	Mode 3b* Mode 3b, Mode 4	Mode 3b* Mode 3b, Mode 4 (M=1)*
Note Number	True Voice	1-127	1-127 1-127
Velocity	Note On Note Off	0 X	0 X
Aftertouch	Keys Channel	X X	0 0
Pitch Bend	MSB (7 bit) LSB (1 bit)	X X	0 0
Control Change	0 Bank Change	0**	0**
	1-61, 68-97, 103-105	0****	0****
	64 Holdpedal	X	0**
	65 Portamento on/off	0**	0**
Program Change		0**	0**
System Exclusive		0***	0***
System Common	Song Position Song Select Tune Request	X X X	0 X X
System Real Time	Clock Commands	0** 0**	0** 0**
Aux Messages	120 All Sounds Off 121 Reset all Controller 122 Local On/Off 123 All Notes Off Active Sens. System Reset	X X X X X X	0 0 0 0 X X
<p>X = No 0 = Yes * = Multi-Mode 3b: omni-off, poly. Mode 4: omni-off, mono. ** = Can be set to on/off *** = Dump-Functions **** = See manual page 56 for MIDI-Controller-List</p>			

List of the MIDI-Controllers

List of the MIDI-Controllers

All controls of the POLYMORPH are transmitted on MIDI with "MIDI-Controllers". That way, all sound changes on the POLYMORPH can be recorded into an external sequencer. In the following list you can see, which MIDI-Controller is responsible for which parameter on your POLYMORPH.

No.	Parameter	Seq.Assignable	Mod.Assignable
0	Bank Change (only if RxPrgChg=ON)		
1	Modulation Wheel		
2	Modulation Line 1		
3	Modulation Line 2		
4	Modulation Line 3		
5	Portamento Time	*	
7	Volume (Mix)		
8	OSC1 Level	*	*
9	OSC2 Level	*	*
10	Panorama (Mix)	*	*
11	VCA Level	*	
12	Fine Tune	*	
13	HPF Resonance	*	*
14	HPF Cutoff Frequency	*	*
15	Filter Drive	*	*
16	LPF Cutoff Frequency	*	*
17	LPF Resonance	*	*
18	VCA Attack	*	
19	VCA Decay	*	
20	VCA Sustain	*	
21	VCA Release	*	
23	LPF Env Mod	*	
24	LPF Dyn Mod	*	
25	Velocitiy Response		
26	LFO3 Depth	*	*
27	LFO3 Wave	*	
28	LFO3 Rate	*	*
29	LFO3->HPF amount	*	
30	LFO3->LPF amount	*	
31	LFO3->VCA amount	*	
33	Dynamic->VCA amount		
34	HPF Dyn Mod	*	
35	LPF Key Follow	*	
36	PWM Wave	*	
37	PWM Rate	*	*
38	PWM Depth	*	*
39	PWM Delay	*	
40	FM Wave	*	
41	FM Rate	*	*
42	FM Depth	*	*
43	FM Delay	*	
44	HPF Attack	*	
45	HPF Decay	*	
46	HPF Sustain	*	
47	HPF Release	*	
48	HPF Env Mod	*	
49	LPF Attack	*	
50	LPF Decay	*	
51	LPF Sustain	*	
52	LPF Release	*	

List of the MIDI-Controllers

No.	Parameter	Seq.Assignable	Mod.Assignable
53	OSC Attack	*	
54	OSC Decay	*	
55	Pitch EG amount	*	*
56	PWM EG amount	*	*
57	OSC1 Wave	*	*
58	Coarse Tune		
59	OSC2 Wave	*	
60	OSC2 Interval	*	
61	OSC2 Detune	*	*
64	Hold (only if HOLDPEDAL=ON)		
65	Portamento ON/OFF		
68	Pitchbend Sensitivity		
69	Algorithm (Sync,12dB/24dB,ser./par.)		
70	OSC3 Wave	*	
71	OSC3 Interval	*	
72	OSC3 Detune	*	*
73	OSC3 Level	*	*
77	FX1 Feedback Filter		
78	FX2 Feedback Filter		
79	Distortion Resonance	*	*
80	FX1 Type		
81	FX2 Type		
82	FX1 Mod.Depth	*	*
83	FX1 Delay Time		
84	FX1 Feedback	*	*
85	FX1 Mod.Rate	*	*
86	FX2 Feedback	*	*
87	FX2 Delay Time		
88	FX2 Mod.Rate	*	*
89	FX2 Mod.Depth	*	*
90	Distortion Cutoff Frequency	*	*
91	FX1 Level	*	*
92	Distortion Gain	*	*
93	FX2 Level	*	*
94	EQ1 Gain	*	
95	EQ1 Freq.	*	
96	EQ2 Gain	*	
97	EQ2 Freq	*	
103	Modulation assign Line 1		
104	Modulation assign Line 2		
105	Modulation assign Line 3		
120	All Sounds Off		
121	Reset All Controllers		
122	Local ON/OFF		
123	All Notes Off		
126	Mono ON		
127	Poly ON		

POLYMORPH System-Exclusive Format

POLYMORPH System-Exclusive Format

Request Data from device

<i>Byte</i>	<i>Value</i>	<i>Remarks</i>
00	F0	System Exclusive start command
01	3F	QUASIMIDI id number
02	dv	device number = system channel-1
03	26	POLYMORPH id number
04	52	(R)equst data
05	ah	adress high
06	am	adress mid
07	al	adress low
08	dh	data count high (2 bit)
09	dm	data count mid (7 bit)
10	dl	data count low (7 bit)
11	F7	end of System Exclusive

Dump Data to device

<i>Byte</i>	<i>Value</i>	<i>Remarks</i>
00	F0	System Exclusive start command
01	3F	QUASIMIDI id number
02	dv	device number = system channel-1
03	26	POLYMORPH id number
04	44	(D)ump data
05	ah	adress high
06	am	adress mid
07	al	adress low
08...	dt	data (7 bit)
xx	F7	end of System Exclusive

Adress Map

<i>Adress</i>	<i>Memory section</i>
00 00 00 system parameter	
01 00 00 temporary common parameter	
01 01 00 temporary sound/mix parameter	(part 1)
01 02 00 -"-	(part 2)
01 03 00 -"-	(part 3)
01 04 00 -"-	(part 4)
01 05 00 temporary sequence parameter	(part 1)
01 06 00 -"-	(part 2)
01 07 00 -"-	(part 3)
01 08 00 -"-	(part 4)
01 09 00 reserved	
...	
01 7F 00 -"-	
02 00 00 user sound 1	
...	
02 7F 00 -"-	128
03 00 00 sequence 1	
...	
03 31 00 -"-	50
03 32 00 reserved	
...	
03 7F 00 -"-	
04 00 00 setup 1 common parameter	
04 01 00 -"- part 1 sound -"-	
04 02 00 -"- part 2 sound -"-	
04 03 00 -"- part 3 sound -"-	
04 04 00 -"- part 4 sound -"-	
04 05 00 -"- part 1 sequence	
04 06 00 -"- part 2 sequence	
04 07 00 -"- part 3 sequence	

04 08 00 -"- part 4 sequence
 04 09 00 reserved
 ...
 04 7F 00 -"-
 05 00 00 setup 2 common parameter
 ...
 43 08 00 setup 64 part 4 sequence
 ...
 44 00 00 reserved
 ...
 7F 7F 00 -"-

Address Offsets (low Address Byte)

System Parameter

Adr.	Parameter	Value (Remarks)
00	system channel	0..15 (1..16)
01	local	0,1 (OFF,ON)
02	extern sync	0,1 (OFF,ON)
03	program change input	0,1 (OFF,ON)
04	parameter control input	0,1 (OFF,ON)
05	program change out	0,1 (OFF,ON)
06	parameter control out	0,1 (OFF,ON)
07	midi clock out	0,1 (OFF,ON)
08	receive start	0,1 (OFF,ON)
09	master tune	0..64..127 (-64..0..+63)
0A	master transpose	40..64..88 (-24..0..+24)
0B	poti mode	0..2 (JUMP,SNAP,RELATV)
0C	poti message	0,1 (OFF,ON)
0D	output mode	0..2 (1*STEREO, 2*STEREO, 4*SINGLE)
0E	setup change input	0,1 (OFF,ON)
0F	setup change output	0,1 (OFF,ON)
10	system exclusive speed	0..2 (FAST,NORM,SLOW)

Common Parameter

Adr.	Parameter	Value (Remarks)
00..07	setup name	
08..0B	reserved	
0C	speed	0..127 speed bit 1..7 (in BPM)
0D	groove	bit 1..4: groove 0..8 (0%..100%) bit 0: speed bit 0
0E	setup no.	
0F	play mode	1..4 (UNISONO..STACK)
10	sequencer control channel	bit 0..3: channel 0..15 (1..16) bit 4: variation change (OFF,ON)
11	realtime transpose lowkey	12..120 (C0..C9)
12	realtime transpose highkey	12..120 (C0..C9)
13	realtime transpose origin	12..120 (C0..C9)

Sound Parameter

(in Setup memory section byte 00..0D are skipped!)

Adr.	Parameter	Value (Remarks)
00..07	sound name	
08..0B	reserved	
0C	bank no.	0..4 (USER,A..D)
0D	program no.	0..127
0E	mix level	0..127
0F	panorama	0..64..127 (Left..0..Right)
10	algorithm	0..7 (sync/12dB,24dB/ser.,par.)
11	osc 1 wave	0..127
12	osc coarse tune	0..48 (32"..2")
13	osc tune	0..127
14	osc 1 level	0..127
15	osc 2 wave	0..30
16	osc 2 coarse tune	0..48 (32"..2")
17	osc 2 tune	0..127

POLYMORPH System-Exclusive Format

18	osc 2 level	0..127
19	osc 3 wave	0..32
1A	osc 3 coarse tune	0..48 (32"..2")
1B	osc 3 tune	0..127
1C	osc 3 level	0..127
1D	filter input	27..127 (0..100)
1E	hpf cutofffreq	0..127
1F	hpf resonance	0..127
20	hpf dyn amount	0..127 (-64..+63)
21	lpf cutofffreq	0..127
22	lpf resonance	0..127
23	lpf dyn amount	0..127 (-64..+63)
24	lpf key amount	0..127 (-64..+63)
25	vca level	0..127
26	vca dyn amount	0,1 (OFF,ON)
27	eg 1 attack	0..127
28	eg 1 decay	0..127
29	eg 1 sustain	0..127
2A	eg 1 release	0..127
2B	eg 2 attack	0..127
2C	eg 2 decay	0..127
2D	eg 2 sustain	0..127
2E	eg 2 release	0..127
2F	eg 2 hpf amount	0..127 (-64..+63)
30	eg 3 attack	0..127
31	eg 3 decay	0..127
32	eg 3 sustain	0..127
33	eg 3 release	0..127
34	eg 3 lpf amount	0..127 (-64..+63)
35	eg 4 attack	0..127
36	eg 4 decay	0..127
37	eg 4 pitch amount	0..127 (-64..+63)
38	eg 4 pwm amount	0..127 (-64..+63)
39	lfo 1 wave	0..5 (Sine,UpSaw,DownSaw,Square,Trill,Random)
3A	lfo 1 rate	0..120,121..127
3B	lfo 1 pwm amount	0..127
3C	lfo 1 delay	0..127
3D	lfo 2 wave	0..5 (Sine,UpSaw,DownSaw,Square,Trill,Random)
3E	lfo 2 rate	0..120,121..127
3F	lfo 2 pitch amount	0..127
40	lfo 2 delay	0..127
41	lfo 3 wave	0..5 (Sine,UpSaw,DownSaw,Square,Trill,Random)
42	lfo 3 rate	0..120,121..127 (0,1..10Hz,1/16..4/1)
43	lfo 3 depth	0..127
44	lfo 3 hpf amount	0..127 (-64..+63)
45	lfo 3 lpf amount	0..127 (-64..+63)
46	lfo 3 vca amount	0..127 (-64..+63)
47	reserved	
48	trackmode	bit 0,1: mode 0..2 (OFF,INT,EXT) bit 2: holdpedal 0,1 (OFF,ON) bit 3: filter couple 0,1 (OFF,ON) bit 6: 0,1 (OFF,ON)
49	portamento	0..127
4A	portamento time	0..127
4B	modulation wheel	bit 0..4: mod. destination bit 5..6: mod. depth
4C	pitchbend sensitivity	0..48 (-24..24)
4D	aftertouch	bit 0..4: mod. destination bit 5..6: mod. depth
4E	velocity curve	0..127
4F	fx1 feedback filter	0..127
50	fx1 typ	0..6 (FLANGER...LONGDELAY)
51	fx1 level	0..127
52	fx1 feedback	0..127
53	fx1 delay time	0..126,127 (time depends on typ, synced)
54	fx1 mod. rate	0..127
55	fx1 mod. depth	0..127

POLYMORPH System-Exclusive Format

56	fx2 typ	0..5 (FLANGER...PANDELAY)
57	fx2 level	0..127
58	fx2 feedback	0..127
59	fx2 delay time	0..126,127 (time depends on typ, synced)
5A	fx2 mod. rate	0..127
5B	fx2 mod. depth	0..127
5C	eq1 gain	0..127
5D	eq1 frequency	0..127
5E	eq2 gain	0..127
5F	eq2 frequency	0..127
60	distortion gain	0,1..127 (OFF,1..127)
61	distortion cutoff freq.	0..127
62	distortion resonance	0..127
63	fx2 feedback filter	0..127

Sequence Parameter

Adr.	Parameter	Value (Remarks)
00	sequence direction	bit 0..1: forward,backward,random bit 2: notes forward
01	line 1 assign	FF,0..97 (not assigned, Ctrl.No.)
02	line 2 assign	FF,0..97 (not assigned, Ctrl.No.)
03	line 3 assign	FF,0..97 (not assigned, Ctrl.No.)
04	pitch line last step	0..15
05	ctrl line 1 last step	0..15
06	ctrl line 2 last step	0..15
07	ctrl line 3 last step	0..15
08..17	pitch steps	0..48
18..27	line 1 steps	0..127 (-64..+63)
28..37	line 1 steps	0..127 (-64..+63)
38..47	line 1 steps	0..127 (-64..+63)
(only stored in Setup memory section...)		
48	transpose	40..88 (-24..+24)
49	sequence control	bit 0..2: resolution (1..1/32) bit 5: realtime transpose on/off bit 6: sequence on/off
4A	start trigger source	0,1..4,5..20 (FREE,SEQ1..4,EXT1..16)
4B	start trig. step/note	0..15
4C..53	sequence variations	bit 0..6: transpose bit 7: sequence on/off

Identity Request

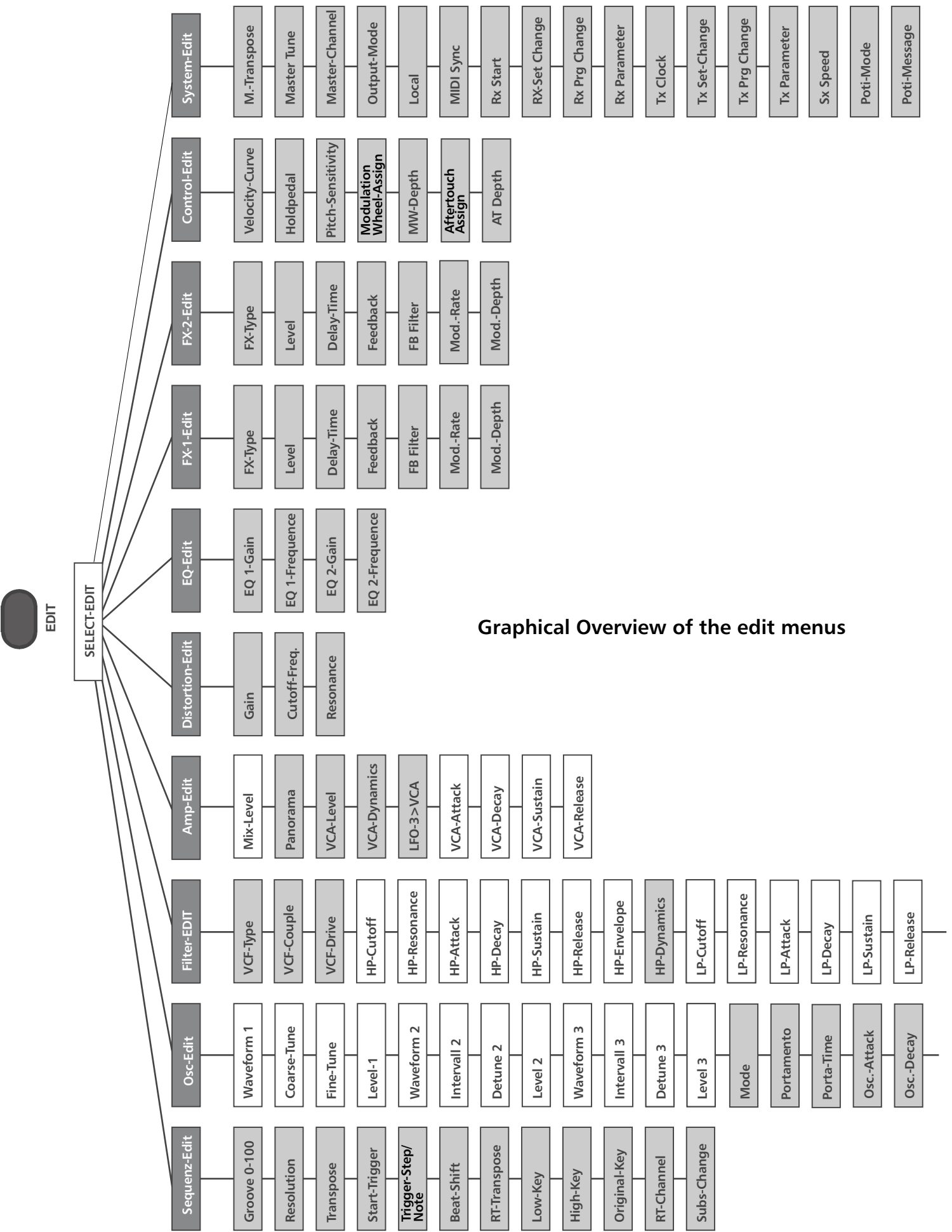
Byte	Value	Remarks
00	F0	System Exclusive start command
01	7E	Common Non-Real-Time message
02	cc	channel number = system channel-1 *
03	06	general information
04	01	identity request
05	F7	end of System Exclusive

Identity Reply

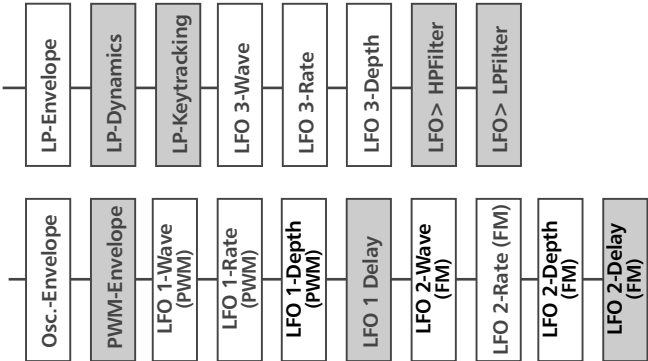
Byte	Value	Remarks
00	F0	System Exclusive start command
01	7E	Common Non-Real-Time message
02	cc	channel number = sytem channel-1 *
03	06	general information
04	02	identity reply
05	3F	QUASIMIDI id
06	26	POLYMORPH id
07	xx	reserved
08	xx	reserved (Expansion Board 1 exists (00=no, 01=yes))
09	xx	reserved (Expansion Board 2 exists (00=no, 01=yes))
10..13	v v v v	Version no. (4 ascii characters, i.e '1.00')
14	F7	end of System Exclusive

* note that if cc = 7F the POLYMORPH respond regardless of what master channel it is on

Graphical Overview of the edit menus



Graphical Overview of the edit menus



List of the Single-Sounds

List of the Single-Sounds

The following list gives you an overview over the 128 available single sounds of the User Bank (U001-U128). These sounds can be selected via MIDI program changes.

U001 SeqSound	U033 Clavinet	U065 Vangelis	U097 MKS 50
U002 Bassline	U034 Organ 2	U066 RaveBass	U098 Fighter
U003 Effector	U035 Accordion	U067 MoogSeq.	U099 FarOut
U004 2001	U036 Trombone	U068 SoftFlas	U100 Tomita
U005 ObiPad	U037 FANTASIA	U069 Draht	U101 Lavalamp
U006 PhasePad	U038 EAGLE	U070 SpaceDiv	U102 Modelbas
U007 ClassicB	U039 OBxBrass	U071 Selfmod	U103 DigiAtmo
U008 DirtySol	U040 Bottle	U072 Subsonic	U104 SanSynth
U009 Sequenz2	U041 BlasterZ	U073 HiHat	U105 Attack!
U010 Future	U042 Ruepel	U074 Gloeckle	U106 SoftSeq
U011 SynthBas	U043 SoloSynt	U075 AnaStrng	U107 Trapez
U012 Sequenz3	U044 Polysynt	U076 Hoelzken	U108 Simplex
U013 SoftPad1	U045 Organ5th	U077 LongStrg	U109 Element
U014 The Bass	U046 AnaBell	U078 Soltau	U110 MZ XV5
U015 TrakelKS	U047 Wind	U079 Strings1	U111 VocBass
U016 SoftSolo	U048 Voices	U080 PhaseSUB	U112 EuroSynt
U017 SpaceSwp	U049 Digitali	U081 THE PAD	U113 EuroSolo
U018 MusicBox	U050 SubBass	U082 Organ	U114 Mr.Mr.
U019 SyncBass	U051 FunkySol	U083 AnaBell2	U115 ClusterB
U020 70sPad	U052 Birdland	U084 BlowJob	U116 RevPad
U021 Mellotrnr	U053 AntikPad	U085 Church	U117 Hall
U022 Organ1	U054 Chor	U086 Acid	U118 Japanese
U023 Polyatmo	U055 Fretless	U087 Flaute	U119 Agressor
U024 Ambient	U056 SuprStrg	U088 DirtySeq	U120 Quinter
U025 Gamelan	U057 PercStrg	U089 Elethno!	U121 OV Solo
U026 SyncSolo	U058 OpenSeq.	U090 Talos 5	U122 Horny!
U027 70s Solo	U059 Cruiser	U091 Sync!	U123 BrsPad
U028 EPiano1	U060 ModSequ1	U092 Bassic	U124 Shorty
U029 IntroPad	U061 FreakSol	U093 Shaker	U125 DanceSeq
U030 Dr.Digi	U062 SynthBas	U094 Chords	U126 Reverse
U031 Guitar	U063 Berlin	U095 Modulate	U127 Serious
U032 EPiano2	U064 80Digtl	U096 Far away	U128 Wet

Of course, you can also call up sounds which are stored in the setups via MIDI. Use the "MIDI-bank-change command" Controller 0. Remember that you need to send a program change after the bank change.

Bank	value of the Controller 0	program change
1	0	0 - 127 (U001-U128)
2	1	0 - 63 (A001-A064)
3	2	0 - 63 (B001-B064)
4	3	0 - 63 (C001-C064)
5	4	0 - 63 (D001-D064)

List of the Setups

Also the setups can be called up via MIDI. Use the MIDI channel which is 4 above the system channel (RxSetChg=ON in System Edit!).

Sp01 Dr.RELAX	Sp17 CIRCLEB	Sp33 Filter	Sp49 Iteratio
Sp02 SUBSONIC	Sp18 CIRCLEC	Sp34 Argon	Sp50 Iterati2
Sp03 SUBSONI2	Sp19 Dr.DRUM	Sp35 Endlos	Sp51 HX[E ^ 8]
Sp04 Rotor!	Sp20 Dr.DRUM2	Sp36 Model	Sp52 Cadmium
Sp05 REDFORC1	Sp21 Play Ch1	Sp37 Dr.Groov	Sp53 PolyRyth
Sp06 REDFORC2	Sp22 Dr.Trig.	Sp38 Dr.Sound	Sp54 OffBeat
Sp07 REDFORC3	Sp23 FALCON	Sp39 DrSound2	Sp55 Cluster
Sp08 SLALOM !	Sp24 ClassicS	Sp40 RADIUM	Sp56 AnnaLog
Sp09 INFRANI2	Sp25 BlasterX	Sp41 RADIUM2	Sp57 XPERIMEN
Sp10 SYNTHASI	Sp26 BlasterY	Sp42 Oriental	Sp58 SequiLog
Sp11 SQ 10!!	Sp27 BlasterZ	Sp43 Barium	Sp59 EleDance
Sp12 TDSEQ.1	Sp28 FALCON2	Sp44 Strontium	Sp60 Electrox
Sp13 SQ SYNTH	Sp29 FALCON3	Sp45 Tangerin	Sp61 Robotalk
Sp14 Cloudbst	Sp30 FALCON4	Sp46 Reigen	Sp62 Spheric
Sp15 KRAFTWER	Sp31 SUBVERSV	Sp47 Xenon	Sp63 AGRESSOR
Sp16 CIRCLEA	Sp32 PSYCHO	Sp48 Atom	Sp64 Carpet

Warranty conditions

Warranty conditions

WARRANTY REGISTRATION

Fill out the Registration card and send to the preprinted address on the front of the card.

How to Validate the Warranty:

To validate the Warranty, fill out the Warranty card and return it to QUASIMIDI within ten days from the date of purchase.

What is covered and what is not covered?

This Warranty covers all defects in material and workmanship for six (or twelve) months from the date of original purchase. This Warranty does not cover damage to, or deterioration of the external cabinet or internal circuitry resulting from accident, misuse, neglect, attempted unauthorized repair or failure to follow instructions in this owners manual.

This Warranty does not cover units that have been modified or altered (except an authorized QUASIMIDI modification which includes its own Warranty coverage).

This Warranty does not cover damage that may occur during shipping. Software/Firmware are not sold as is and not covered by the Warranty.

How to obtain Warranty servicing:

Return your unit to an Authorized QUASIMIDI Service center. If you are unable to locate one, write or call the QUASIMIDI Factory Service Department. We will either refer you to an Authorized Service Center or issue a Return Authorization number for factory service. Units returned to QUASIMIDI for factory service must display the Return Authorization number on the outside of the shipping carton and on all related documents, or units will be returned freight collect. The owner must pay all shipping costs to and from the factory.

Shipment of the product to QUASIMIDI is the responsibility of the owner, and should be insured by the owner for the full value of the product.

NO CLAIM FOR WARRANTY WILL BE HONORED WITHOUT PROOF OF PURCHASE

Limitations of implied Warranties and exclusion of certain damages. Any implied Warranties, including Warranties of usefulness for a particular purpose are limited in duration to the length of the Warranty.

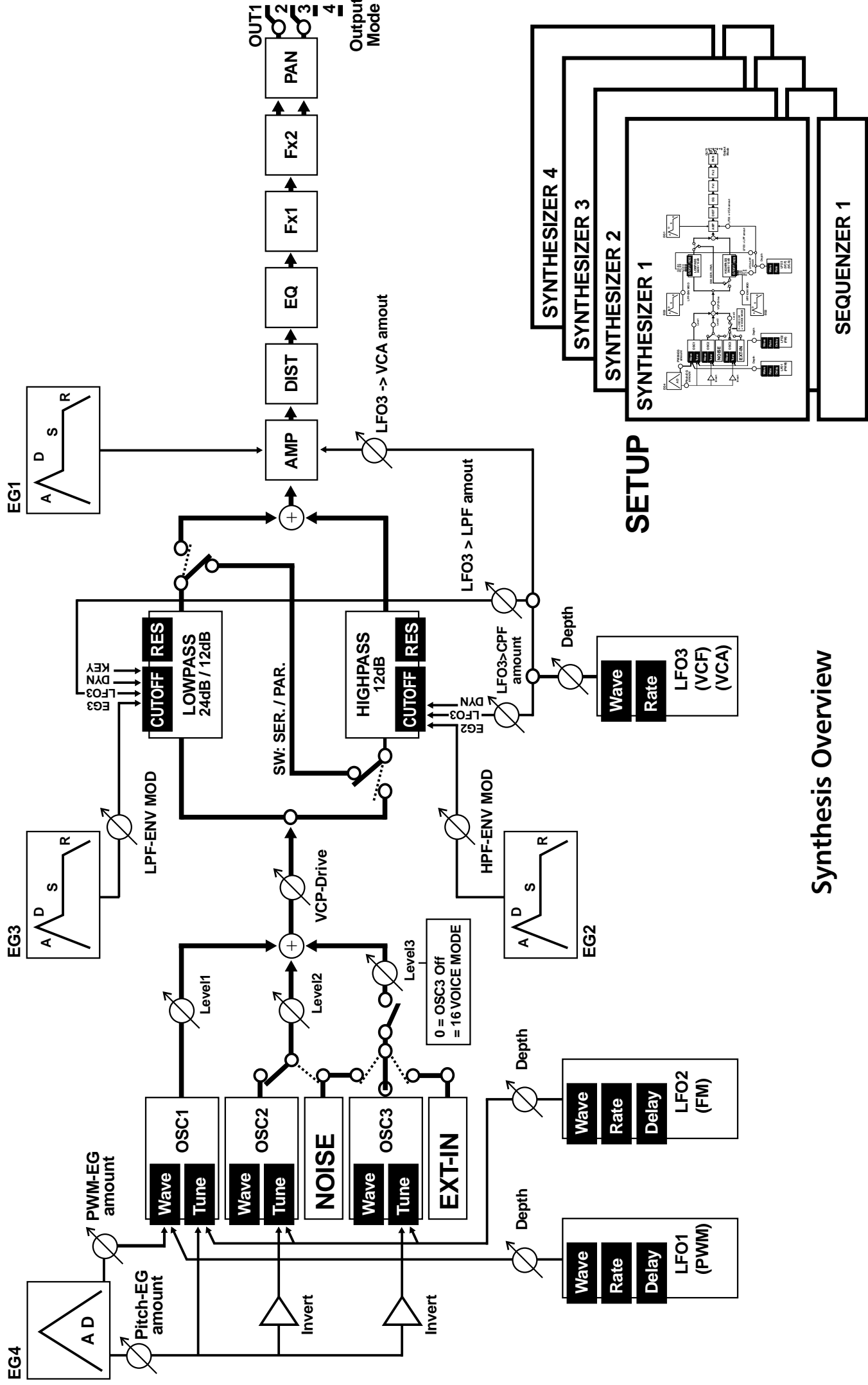
QUASIMIDI's liability for any defective product is limited to repair or replacement of the product.

QUASIMIDI shall not be liable under any circumstances for :

- 1) Damages based upon inconvenience, loss of use of the unit, loss of time, interrupted operation or commercial loss.
- 2) Any other damages, whether incidental, consequential or otherwise, except damages which may not be excluded under applicable law.

Technical data of POLYMORPH

Polyphony:	8/16 voices (3 oscillators / 2 oscillators)
Multitimbral:	4 x multi mode with dynamic voice allocation and 4 separate effects per voice unit (part) (16 FX-processors) through ADVANCED-DSP-TECHNOLOGY
Play mode:	Multitimbral, stack, rotate and unison mode
Oscillator bank:	Based on ANALOG EMULATION SYNTHESIS by QUASIMIDI; 3 independent Oscillators per voice, wave forms: sine, triangle, sawtooth, rectangle, pulse, noise, complex wave spectrums; own pitch envelope for Oscillators, Sync, Pulse width modulation, and wave morphing
Filter section:	24 / 12 dB low-pass filter with resonance and ist own envelope generator; 12 dB high-pass filter with resonance and own envelope; serial and parallel connections of the filters with filter coupling (band-pass and notch filter); 2 filters per voice.
LFO section:	all together 3 LFO's per voice; each with rectangle, sinus, sawtooth (rising and falling), random; for pulse width modulation (PWM), oscillator modulation and filter modulation; Midi-clock and sequencer synchronization
ADSR-Bank:	4 independent envelope generators (EG) for high-pass filter, low-pass filter, VCA and oscillator pitch (AR), Modulation intensity is also reversible
Morph-Sequencers:	4 analog-step-sequencers (with 16 steps each) and 4 parallel lines (tune and 3 controllers), that can be linked (i.e. Each step can start another sequence line); adjustable step order for each line: forward, note-forward, backward, random; independent loop length for each line separately, real-time transposing, step mute, step hold, preprogrammed sequence setups are provided (also electronic drums, psychedelic tunes, bass-lines and much more) 50 memories for sequences plus 4*64 in Setups = 306 memories.
Sound memory:	128 single sound memories, 64 multi setup memories with 4 x 64 sound memories = 384 sound memories.
Connections:	MIDI-IN, MIDI-OUT, MIDI-THRU, four single audio outputs, and two audio inputs to manipulate external signals through the filters, EG's and FX's. Head phone connector on the front panel.
Effects:	4 independent effect processors (FX) per voice (all together 16) with delay (MIDI clock synchronization) distortion including extra resonance filter, super flanger, super chorus, multi tap delay, space distortion and many more.
Dimensions:	400mm (W) x 225 mm (D) x 98 mm (H)
Weight:	3 kilograms



Synthesis Overview

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