access

MUSIC ELECTRONICS

VIRUS

Important additions and remarks for the VIRUS b/kb

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Dear Virus-User,

the VIRUS operating system consists of two parts, "first25x.mid" and "secon25x.mid". The file "first25x.mid" contains the actual operating system; the file "secon25x.mid" holds the factory single and multi-patches. Upload the file "secon25x.mid" only if not discribed in a different way in the read-me file which comes with the software version. The single and multi-sounds in "secon25x.mid" are being stored into the flash-ROM (like the operating system) and can be accessed via bank C and D

If you've already created and stored sounds into your VIRUS, you should perform a bulk dump into your sequencer, for safety reasons (this can be done in the MIDI menu which can be accessed by pressing the CONTROL key)

Installing the software update

- Switch your VIRUS off.
- Load the file "first.mid" into your sequencer and make sure you have chosen the right MIDI channel and port settings.
- Ensure that the MIDI clock option is disabled (mixing SysEx data and the MIDI clock can lead to malfunctions of your MIDI interface).
- Hold the STORE key while switching your VIRUS on until the display shows "SYSTEM UPDATE Receive".
- Now press the STORE key again to activate the receive mode.
- Start your sequencer to playback the MIDI-file.

At this stage, you should be able to watch the VIRUS counting up the received blocks. If the display shows "RECEPTION FAILED," then a transmission error has occurred. This can be caused by a buffer overrun of the MIDI interface. In this case, you will need to upload the entire file again. Lower the tempo of your sequencer before uploading (e.g. 60 bpm). To proceed, press any key followed by STORE which will again enable the receive mode.
After a successful upload, press STORE to burn the new operating system into the flash-ROM.

Never switch off the VIRUS while burning the data! Please ensure stable power conditions during this procedure which should take approximately 30 seconds. As soon as the new software version is successfully burned, the VIRUS will request that you switch off. After switching the VIRUS on again, you can use the new operating system!

If you get the impression that the VIRUS is behaving unstable or indeed strange, we suggest you perform a system reset.   Holding the keys LFO 1 SHAPE and LFO 2 SHAPE while switching the VIRUS on, performs a system reset. No data will be lost during this procedure, although some system settings as "Soft Thru" will be reset.

Enjoy the new features,
yours VIRUS-Developer-Team,
Summer 1999

The user interface of the VIRUS b/kb

We have revised the user interface of the VIRUS b and kb, to give you even more intuitive access to the parameter menus. The VIRUS b and kb host five additional buttons for LFO1, LFO2, Oscillators, Filters and Effects related operations. Each allows you direct access to a local menu. Obviously, the local menus only show parameters which deal with the corresponding function.

When consulting the users manual, please bear in mind that some of the functions located in the "Single Edit Menu" of the VIRUS can now be accessed directly via the new VIRUS b's and kb's buttons. The buttons lead to the local menus mentioned above. The new models also have two dedicated buttons to select the "parts". Furthermore, we have slightly redesigned the LFO section of the panel.

The supplementary functions of the VIRUS kb are described at the end of the addendum.

For details please refer to the appendix of this addendum (Overview of the VIRUS b/ kb menus).

The vocoder of the VIRUS

▸ **Talking about vocoders**

The VIRUS now has a vocoder. Although vocoder sounds have seen a comeback in the recent time, many musicians do not specifically know how they work or even more importantly, how they sound!

A Vocoder creates a new sound by combining two signals. The timbre of the so called analysis signal (or modulator signal) forms the carrier signal. A typical example for a modulator signal is the human voice, another suitable carrier signal can be a steady tone with rich harmonics.

The sound characteristic is being rendered into the new sound by two cascades of bandpass filters: The modulator signal is being send through several parallel bandpass filters, which only pass through a certain part of the whole spectrum. Every bandpass filter is followed by an envelope follower which uses the level of the signal to create a control signal. This part of the vocoder is called a modulator bank.

The carrier signal is treated in a similar way. It is split into several bands by a chain of bandbass filters. Different to the technique used above, the bandpass filters are not followed by envelope followers. The circuit uses amplifiers which are levelled by the control signal output of the envelope followers of the modulator banks. This part of the vocoder is called the carrier bank or synthesis part.

As soon as the modulator detects a signal in a certain frequency range, its envelope follower levels the corresponding band in the synthesis part. In other words: Just the frequency band of the carrier signal (the steady tone), which is a part of the modulator signal (the spoken voice) in this second, is being passed to the output. This is because the steady tone starts to vocode.

The pitch of the output signal depends on the carrier. If a cord, e.g. a polyphonic pad sound is being used instead on a single tone, you can listen to a typical vocoder choir. Of course, you can use a different Modulator than a spoken voice. Have a try with a drumloop!

All you need is the internal synthesizer of the virus. It is also possible to process external signals. The feature set of the VIRUS includes 32 filter bands, shifting the frequency's relation of modulator and carrier, adjustable quality (Q-factor) of the filter bands and much more.

By using a multi patch and the auxiliary sends, sounds can be filtered or combined (see above). The vocoder substitutes the whole filter section of a single sound. Therefore, you can access the vocoder's parameters via the filter section on the front panel (see Filter Envelope Release and additional notes).

The VIRUS's vocoder consists of different sections which perform different tasks:

▸ **1. the Modulator Bank**
This cascade of bandpass filters split the frequency spectrum of the modulator into slices, quite similar to the way a studio frequency analyser would.

▸ **2. the Envelope Follower**
The level at the output of each bandbass filter is measured by the modulator bank. The resulting control signal can be modified by an ATTACK and DECAY parameter. These signals are no audio signals, as they contain the envelope of the signal being analysed.

▸ **3. The Carrier Bank**
The signal is treated in a similar way to the signal which passes the modulator bank. In this case, the carrier signal is split by the bandpass filters. Each bandpass of the carrier bank corresponds to one of the modulator bank. Usually, both bandpasses use the same frequency slice. Similar to a synthesizer's envelope, the signal level being measured by the envelope followers of the modulator, is used to control the level of the carrier's filter. Last, but not least, the individually controlled signals of the carrier bank are reunified to create the vocoder's output sound.

The parameters of the VIRUS vocoder

▸ **VOCODER MODE**

(located in the Single Mode/edit menu after the input parameters)
here you can enable the vocoder and choose the signal source for the carrier bank at
the same time:

▸ **OSC**

The "OSC" mode uses the whole oscillator section of the Virus, including the noise
generator as the carrier signal. The oscillators can be played polyphonic which
enables the amplifier envelope to work as usual. The difference is in the filter section.
The oscillator signal does not pass the filter section, as this section is being used to
control the vocoder. It is possible to feed the vocoder with a single sound which uses
the whole filter section. Just use the aux-sends in the multimode to feed the
vocoder's input with a single sound created within another multipart. Use this certain
auxiliary send signal as the carrier signal within the vocoder.

▸ **OSCHOLD**

This setting is identical to "OSC" although the hold-mode (which also is available at
COMMON/KeyMode) is activated.

▸ **NOISE**

White noise is used as the carrier. The oscillator section is disabled.

▸ **IN (L / In L+R / In R / Aux L ...)**

The analog inputs or the aux-sends are the carrier signal. If a stereo source, like L+R,
is chosen, the left and right signal is mixed to create a mono signal.

▸ **OSC VOL (Pre setting: 0 (middle))**

OSC VOL adjusts the output level of the vocoder. This is independent of the signal
source (which can be assigned using the vocoder mode parameter)

▸ **INPUT SELECT (in the Edit menu)**

The modulator bank input can be assigned here. This will only work if the vocoder is
activated. Again, stereo sources like L+R are mixed to a monophonic signal.

▸ **FILTER ENVELOPE RELEASE**

It is possible to control the number of filter bands here between 1 and 32. This parameter changes the sonic complexity of the sound, by using more or less filter bands. Less filter bands result in a typical vocoder sound. More filter bands increase the quality of the signal's reproduction (e.g. how easily you can "understand" a vocoded voice). The Virus' polyphony might vary depending on the number of active filter bands.
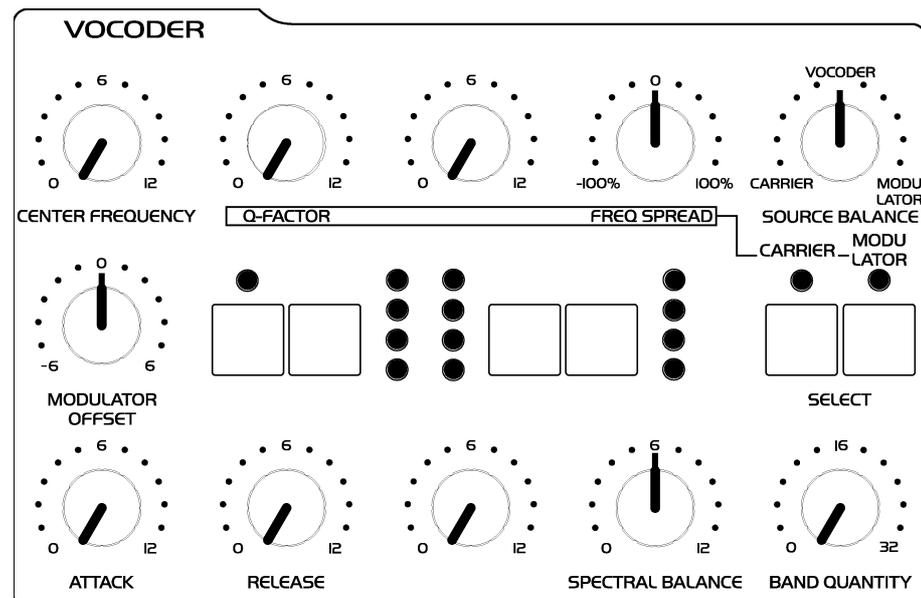
▸ **CUTOFF (Pre setting: 64 (middle)**

The central frequency of the bandpass filters in the modulator- and carrier bank. Using a high Q (filter quality parameter, which is controlled using KEYFOLLOW) you can adjust the central frequency of the spectrum you edit.

▸ **KEYFOLLOW (Pre setting: +63 (hard right)**

The spread of the filter bands used by the modulator and carrier bank. This parameter can adjust both banks together or separately. The mode depends on the setting of the filter select buttons. FILT1 is assigned to the carrier, FILT2 controls the modulator. With maximum KEYFOLLOW (+63) the filters cover the whole frequency spectrum. Reducing the KEYFOLLOW results in narrower spread, whereby just a part of the frequency spectrum is covered. CUTOFF 1+2 define the centre frequency. Linking FILT1 and FILT2 results in identical frequencies for the modulator and the carrier. If only the spread of the carrier bank is being reduced, the analysed spectrum is being rendered on a part of the carrier signal.

If you reduce the spread of the modulator bank (FILT2), just a part of the modulator signal is analysed but applied on the whole carrier signal. This leads to an increased spread of the spectrum.

If one of the two KEYFOLLOW parameters has a negative amount, the modulator spectrum is applied on the carrier spectrum in a mirror symmetrical way. This causes a very interesting change in the bands. The modulator's treble frequencies control the carrier's bass frequencies and vice versa, for instance a human voice still has the sound of the human voice but it would be virtually impossible to understand anything. We want to encourage you to experiment with mirror symmetrical sounds using this function. It is definitely worth a try!

This picture shows the filter section in vocoder mode.

▸ **CUTOFF 2 (Pre setting: 0 (middle))**

A linear shift of the modulator bank's central frequencies against the carrier bank, results in pitch-shifting and "mickey mouse" effects. CUTOFF2 creates an offset of the modulator to the carrier bank.

▸ **RESONANCE**

The resonance parameter controls the quality of the filter bands (like an equalizer's q-factor). Depending on the filter select setting, the banks are adjusted together or independently. FILT1 is assigned to the carrier, FILT2 controls the modulator.
A low quality factor of the carrier bank leads to a fairly neutral reproduction of the carrier signal. A higher quality creates a higher resonance in the filter bands, which therefore make the overall sounds more artificial.
The effect is less effective on the modulator bank. Here, the filter quality controls the "gab" in between the individual filters. Depending on the modulator signal, if you soften or tighten the "gab," it could lead to interesting changes, although in most cases this will result in a rather subliminal change.

▸ **FILTER ATTACK (Pre setting: 0 (hard left))**
> The attack time of the envelope follower. This parameter controls how fast the carrier bands react on a change of the modulator signal's frequency energy. Higher values result in a "flabby", lazy, even delayed response from the vocoder.

▸ **FILTER DECAY (Pre setting: 0 (hard left))**
> The decay time of the envelope follower. This parameter controls how fast the carrier bands reflect if a certain frequency disappears from the spectrum of the modulator signal. Here, higher values result in a kind of sustain in the carrier bands. High attack and decay times lead to less speech recognition, although it is possible to create a really nice sounding synthesizer pads with.

▸ **FILTER BALANCE (Pre setting 0 (middle))**
> FILTER BALANCE creates a mixture of the vocoder signal and the modulator-respectively carrier signal. Turning FILTER BALANCE to the left adds a certain amount of the carrier signal to the vocoder signal. A turn to the right adds the modulator signal.
> Turning the FILTER BALANCE hard left or right can be used to monitor the vocoder's input signals only.

> Several vocoder related parameters can be modulated by LFO 1 and LFO 2

▸ **LFO 1 RESO 1+2**
> modulates the bandpass filter quality of the modulator and carrier bank.

▸ **LFO 2 FILT 1**
> modulates the bandpass filter frequency of the carrier bank.

▸ **LFO 2 FILT 2**
> modulates the bandpass filter frequency of the modulator bank.

Notes about the vocoder:

• The vocoder can also be controlled by any part of the multimode. If more than one part of the multimode contains an activated vocoder, only the vocoder of the part with the lowest part number is active.

• The vocoder takes a lot of computing power. This reduces the maximum number of voices dependent on the number of vocoder bands used. A vocoder with 32 bands takes approximately 4 voices away, although the vocoder only starts to reduce the number of voices when there is an audio signal at the vocoder input. 10 seconds after the signal is diminished, the VIRUS "frees" the voices again to get back the maximum polyphony.

• As mentioned before, the whole filter section is exchanged to the vocoder, parameters, parameters like saturation or the filter routing are not available anymore.

• If you would like to use the vocoder as an external effect device, choose one external input in the VOCODER MODE parameter page (modulator signal) and the carrier signal by the INPUT SELECT page.

• A similar task has to be performed to use several multimode parts to feed the vocoder. Use OUTPUT SELECT (OutSel) within the desired multimode patches to route them to the auxiliary sends. Then select these auxiliary sends in the VOCODER MODE and INPUT page. Isn't that easy?

• The auxiliary sends of more than one part are mixed automatically (similar to a mixing desk). Therefore, a whole drum track (which consists of several multiparts for several instruments) can be used at once to drive the vocoder's in. Using FILTER BALANCE you can balance the level of the original signal.

• The effect section (chorus, delay) and the output selection can be used in a vocoder patch.

The ring modulator

The VIRUS' ring modulator is a new sound source. The output of the two oscillators is multiplied to create interesting sounds with rich enharmonic overtones. These overtones are highly dependent on the frequency coherence of both oscillators and it's waveforms. The frequency coherence can be changed, for instance use the OSC2 SEMITONE parameter.
To blend in the ring modulator use EDIT: RINGMODULATOR VOLUME (right after NOISE VOLUME). If the RINGMODULATOR VOLUME is zero, the ring modulator is switched off. OSC VOL does not affect the ring modulator level (or indeed the noise volume). Therefore the original oscillator signal can be levelled independently of the ring modulator.

512 single-patches

The VIRUS now offers you 512 single-patches! Beside the 256 RAM based patches (bank A and B), the 256 original factory presets in the Flash ROM can be accessed (bank C and D). Originally, a reset procedure was necessary to copy the ROM patches into the RAM, although bank C and D can not be used to store user voices.

Compare mode

Pressing STORE followed by EDIT or CTRL enables the new compare mode. This mode compares the edited patch with the patch stored in the memory location. EDIT or CTRL switches between the edited and the stored sound for comparison. The bank- and program number can be manipulated using the parameter- and value keys. It is therefore possible to look for a suitable place to store your own sound creation and first listen to the sound you intend to override. STORE stores the edited sound. MULTI or SINGLE exits the compare mode respectively the STORE procedure.

Unison mode

The TWIN MODE is now called UNISON MODE. Instead of only two voices (TWIN MODE enable) you can assign a number of voices to one note. The parameters UNISON Detune, UNISON PanSpread and UNISON LFOPhase have the same effect as in the former TWIN MODE. UNISON Detune detunes all allocated voices in a different way. UNISON PanSpread disperses all voices balanced in the stereo panorama. Of course you will still be able to play a UNISON sound polyphonic. Only the number of voices at the same time are reduced according to the number of allocated voices. To create a classical UNISON mode sound, switch the KEYMODE to mono. To emulate the original TWIN Mode setting simply use UNISON Mode = 2.

New keymode: HOLD

HOLD: The HOLD mode is a polyphonic mode. The VIRUS holds the sound even after the keys have been released. When all keys are released and a new key is pressed, the notes on hold are switched off. This mode is similar to the arpeggiator hold mode.

New arpeggiator functions

The VIRUS arpeggiator contains some new functions.
If the HOLD parameter (CTRL menu/ARPEGGIATOR) is activated the VIRUS goes on arpeggiating the chord, even if you release the keys again. ARPEGGIATOR TO MIDI (CTRL menu/MIDI) controls, if the arpeggiator's notes are send out to the MIDI. Now you can record the arpeggiator into a sequencer. Just connect the VIRUS MIDI out to the MIDI by using your sequencer.
There are two new modes called RAMDOM and CHORD. The RANDOM mode shuffles the order of the notes. The CORD mode repeats the played cord instead of single notes. This mode creates a kind of cord trigger function which can be used to create a rhythm based accomplishment instead of a classical arpeggiator line.

Parameter scroll

Holding the parameter buttons a little longer, let the display automatically scan though the parameter set. Holding one button and pressing the other after a short while, jumps through the parameter groups. Holding two buttons at once, enables you to scan though all parameters very quickly. Dependent on which parameter button you pressed first, the VIRUS scans up or down.

The new modulation matrix

The ASSIGN section contains over nine additional, voice related, modulation sources:

▸ **Env1, Env2, Lfo1, Lfo2, Lfo3**
  The corresponding envelope or LFO is the actual modulation source of the assignment.

▸ **VELOON, VELOOFF**
  The note on velocity (VeloOn) respectively the note off velocity (VeloOff) is the modulation source. According to the fact, that the note off velocity is only known when the key is released again, here, the VIRUS uses the note on velocity, too. Therefore both, note on- and off velocities, are active.

▸ **Keyflw**
  The note number or tone height is used as the modulation source (Keyfollow)

▸ **Random**
  A random number which remains for the whole duration of the note on, is used as the modulation source here.

  Using this new sources as well as the given 18 controller-sources you can modulate 90 destinations! (CTRL menu/ASSIGN 1-2-3: SOURCE)

LFO–3 clock

LFO3 can be used as a modulation source as well. Therefore the third LFO can be synced to Master- and MIDI-Clock. Previously this only applied to LFO 1+2.

LFO synchronisation and triggering

We improved the LFO synchronisation to the MIDI clock (the LFO will now always behave the same way in the sequencer arrangement). Furthermore, you can trigger a LFO by a controller. Here are the trigger controllers:

- LFO1 Mode (Ctr #70) ,
- LFO2 Mode (Ctr #82) and
- LFO3 Mode (Parameter B 9, also refer to the SysEx documentation).

The LFOs are triggered by simply receiving the controllers shown above. The controllers value byte is not important due to the fact that the LFO mode has no functionality when the LFO is synchronised.

Mainswitch for MIDI clock receive

This new parameter (CTRL: MIDI ClockRx) enables or disables the ability to receive MIDI clock. The VIRUS automatically recognises a MIDI clock (Auto). Therefore, this parameter is used to disable this behaviour, in other words, it simply switches off the MIDI clock synchronisation (Off).

Priority

This parameter manipulates the VIRUS's behaviour in case of one MIDI channel captures to many voices ("stealing voices") and therefore the maximum polyphony is exceeded. "Low" treats every part equally, when one voice has to be switched off in favour of another one. "High" priors the voices of the part which can no longer be captured by another voice. Please use this parameter in an economical way. Do not change every part to "High", as the VIRUS would tread every part the same way again.

New dump functions

▶ **Arrangement Dump**

This function dumps the preset multi-setup and all used single sounds into your sequencer. It can be used in the multi and the multi-single mode. To keep the dump as short as possible, just enabled part parts are dumped. This function is designed for a total recall of the VIRUS by the sequencer.

▶ **Arrangement Request:**

$F0 $00 $20 $33 $01 [DeviceId:$00..$10] $34 $F7

▶ **Global Dump**

All global data, as "SoftThru On/Off" are dumped into your sequencer (CTRL: MIDI DUMP TX Global). Single sounds and multi-setups will not be dumped.

▶ **Global Request:**

$F0 $00 $20 $33 $01 [DeviceId:$00..$10] $35 $F7

▶ **Total Dump**

All data are transmitted into your sequencer (CTRL: MIDI DUMP TX Total).

▶ **Total Request:**

$F0 $00 $20 $33 $01 [DeviceId:$00..$10] $36 $F7

Multi program change

This function controls if the VIRUS receives program changes of multi-setups. If enabled, the VIRUS switches an entire multi-setup by a program change. The global MIDI channel has to be used to receive the program change. The multi program change works independently of the program change enable parameter, which only controls the behaviour of single program changes. Please note that the multi program change will not work in the single-multi mode.

Controller dump

Now you can dump an entire single sound into your sequencer as single data. But where's the difference to a single sound dump? Depend on the MIDI control LowPage/HiPage setting, the sound is dumped either as controllers and poly-pressure or SysEx data. The controller dump is no alternative to the normal single dump (as it takes too much time be transmitted). Now you can "feed" a parameter based editor (like a Emagic Logic environment or Steinberg Cubase mixermap) with all data needed to display your current sound in a perfect way. All knobs and faders will show the right value. In other words, the controller dump will update your visual editor. To perform a controller dump choose CTRL: MIDI DUMP TX Controller Dump and press STORE. You can also use a SysEx request.

▸ **Controller Dump Request:**
[message]=
37: Controller Dump Request
bb: Bank Number 00:Single Edit buffer
ss: Part Number0..15
{F0,00,20,33,01,[DeviceId:$00..$10],37,00,ss,F7}

Extended Panic functionality

The Panic function has been improved. Now a controller reset is performed, when you press panic a second time within a second. To perform a panic-function press both transpose keys at the same time:

The VIRUS resets the following parameters:

- Pitch Bend = 64 (middle)
- ChannelPressure = 0 (Aftertouch)
- Modulation Wheel = 0 (Contr. #1)
- Channel Volume = 127 (Contr. #7)
- Hold Pedal = 0 (Contr. #64)

Bank/Program change via SysEx

A SysEx message can now perform a bank- or program-change. This command is independent of the VIRUS' MIDI channel setting like all SysEx messages. The SysEx program change will be performed independently of the regular program change settings (enable/disable program change per part).

Parameter:
C 31m,bpcPart Bank Select0..3Bank A..D
C 32m,bpcPart Bank Change0..3Bank A..D
C 33m,bpcPart Program Change0..127
C105gMulti Program Change0..127

Bipolar chorus feedback

The chorus feedback is now bipolar. The value can be positive or negative which increase the variety of chorus- and flanger-effects.

If "MultiChannels" is selected, the keyboard signals are generally sent to all the Multiparts. All the active parts (PartEnable=On) are controlled by the keyboard, regardless of which MIDI channel has been set. Whether data is sent out via MIDI depends on the KeybToMidi parameter (Off, On) which can be found in the Part-Me

The keyboard version of the Virus: The Virus kb

Although the Virus kb is „merely" a Virus with a keyboard, there are a few characteristics to be considered, which is what the following section deals with.

Local off and „Three in One"

To be able to get the most out of your Virus kb, and to use it sensibly, it is worthwhile to theoretically dissect the machine into its components: Keyboard, panel and sound generator. The keyboard and the panel transmit data, namely the keys being played and the wheels and pots being turned. The Virus' invisible heart, the sound generator, receives this data. The transmitter and receiver communicate via the MIDI standard, so whether the sound generator receives note messages via the keyboard or via MIDI-In makes no real difference. The same applies for data sent from the pots on the panel to the sound generator: Normal MIDI data is sent, just as if it were being sent to the sound generator via the MIDI-In.

Why do we feel inclined to direct your attention to this circumstance so explicitly? Simple: You might have come into contact with the so called „Local-Off"-Mode on other synthesizers: when activated the keyboard sends data to the MIDI-Out, but not directly to the sound generator. This makes sense when you use a synthesizer along with a sequencer, and want to use the synthesizer as a Masterkeyboard in your setup. In this case the sequencer decides which machine receives the keyboard data, and it could be very undesirable for the keyboard to send data directly to the internal sound generator. After all you do not want to send the data twice, (directly as well as through the sequencer), nor do you want the internal sound generator to play along when you are trying to play the sounds on a different synthesizer. So obviously the Virus kb also has a Local-Off-Mode (Parameter: KEYBOARD Local (Off, On)). When activated, all the keyboard data, i.e. aftertouch, the data from the wheels and from the two pedals, is sent only to the MIDI-Out, and not to the sound generator.

Just like on the Virus without a keyboard, the Virus kb has a special Local-Off-Mode for the Panel (Parameter: MIDI Panel (Internal, Int+MIDI, MIDI)). You can choose whether the data from the control panel should be sent only to the sound generator, to the sound generator and MIDI-Out, or just to MIDI-Out. Separating the Local-Off mode for the panel from that of the keyboard may seem a little confusing and unnecessarily complicated at first, but it does make sense - as shown in the following example:

Let us suppose you want to use the Virus kb as a Masterkeyboard with your

sequencer and have switched to „Local-Off". If this mode were valid for the keyboard and the panel, the data from both transmitters would not be sent to the Virus' sound generator, only to the MIDI-Out. This would be desirable as far as the keyboard data is concerned, but not necessarily for the control panel data: If you suddenly wanted to turn the Virus' Cutoff pot to dampen the Virus sound, the pot's data would not arrive at the sound generator, only at the sequencer. From there it might be passed on to an entirely different synthesizer, where it could cause sound changes that were not at all intended - after all there is no standard allocation for control data to parameters. To make it short: It can be very practical and easier on the nerves, to be able to activate the Local-Off-Mode for the keyboard, while the pots still control only the Virus - and nothing else. Only if you want to record the control data in a sequencer, or definitely want to influence another machine with the Virus' controls, does it make sense to send the control data simultaneously - or exclusively - to the MIDI-Out.

After having acquainted you with both of the Virus kb's Local-Off Modes, it is time to take a look at a few more of the keyboard version's features.

Keyboard & company.

The keyboard is not the only difference between a Virus kb and a virus without a Keyboard. After all the keyboard comes with aftertouch, two wheels and two pedal interfaces.

Aftertouch (also commonly referred to as „Channel Pressure"), is a control signal that is generated by hitting a key, and whilst holding it, pressing it a bit harder (not too hard, lest the function be changed to „repair required") The harder the keys are pressed, the stronger the control signal becomes; excellent for modulating any parameters while playing the Virus' via its modulation matrix („ASSIGN"). The sensitivity of the Aftertouch-function is set with the parameter KEYBOARD PRESSURE Sensitivity (Off, 1...127). Normal sensitivity is around 64, this allows you to exploit the entire aftertouch range. If you are using the keyboard to record MIDI data with a sequencer, it might make sense to turn the aftertouch-function off, (Sensitivity=Off), to avoid recording undesired MIDI data.

The Pitch-Bend-Wheel is used mainly to bend the pitch, but can also be used to control other parameters via the modulation matrix. Pitch Bend is a bipolar control source, which means that the destination parameter can be shifted, starting from a middle value, either up or down. (A spring automatically returns the wheel to the middle value when you let it go.)

This is not the case with the Modulation Wheel: This wheel sends „0" when turned all the way down, and its maximum value when turned to the top. The destination parameter can only be shifted in one direction. The classic application for the Modulation Wheel is to blend in vibrato for a sound.; as a standard it is usually assigned to

MIDI-Controller Nr. 1 („Modulation"). Of course the Modulation Wheel can control other things instead of vibrato, e.g. the opening of a filter. As a matter of fact the modulation wheel can be used to control several parameters at the same time, because it can be assigned to different modulation destinations via the modulation matrix - by the way, the same applies to aftertouch. These multiple assignment capabilities enable you to create very complex sound changes, one might call them Sound-"Morphing."

Attention: The Virus kb allows you to freely choose the controller that the Modulation Wheel sends - just in case you need it (Parameter KEYB MODWHEEL (Off, 1...127)). The standard, (and the factory preset) for the Modulation Wheel is - as mentioned above - MIDI-Controller 1. You could control any of the Virus' parameters by assigning the wheel to the corresponding controller. Although this would work, we strongly advise against doing so. If you assign a different controller than „1" to the Modulation Wheel, the Virus' software no longer recognizes the Modulation Wheel as such, and connections in the modulation matrix, (ASSIGN-Menue) that use the modulation wheel as the source of modulation no longer have any effect. The right way to do it, which we strongly recommend, is to leave the Modulation Wheel on Controller 1, and to select the corresponding modulation destination for the wheel in the matrix. Then the adjustments are also valid for each sound, and everything works the way it is supposed to.

Let us turn to the two pedal interfaces: They enable you to connect switch pedals (on/off) or control pedals (constant control signal). You can choose a MIDI-Controller for the pedals (Parameter: KEYB PEDAL 1 or 2 (Off, 1...127)). Standard are Controller 64 (hold or sustain pedal, the note played is held) and 7 (Channel- or MIDI-volume, the volume of the sound played.) Just as with the Modulation Wheel, the pedals can be used to control different parameters via the modulation matrix (ASSIGN). Switch and control pedals are available in your local music store. The only suitable control pedals are the typical synthesizer control pedals with a single three pole plug (similar to a headphone plug). What does not work are volume or Wahwah pedals that guitarists use. In addition, some manufacturers' control pedals have a different polarity, so that the pedals do not function correctly with the Virus kb (no control effect or erratic control). We suggest you try out a control pedal before you buy it. Some manufacturers' switch pedals also have a different polarity. The Virus kb however recognizes this polarity when you switch it on or whenever you hit the Panic-Reset (Double-click both Transpose-buttons, see Panic-function).

The Virus' keyboard can be transposed in semitones. Mind you the transposing takes place in the „transmitter" (the keyboard) and not in the „receiver" (the sound generator). The transpose parameter is called KEYBOARD Transpose (-64...+63).

The Keyboard–Modes

You will be especially interested in the Virus' Keyboard-Mode-Function if you intend to use the Virus kb as a Masterkeyboard during a live performance. To explain it, we have to take a closer look:

If you use the Virus in MULTI MODE, you can play several parts on different MIDI channels. You can also assign several parts to the same MIDI channel, but set so that one part is only played on the lower end of the keyboard, and a different one played on the higher end. This allows for a variety of split and layer variations. The lower half of the keyboard plays a bass, the higher end plays a pad sound that is mixed with brass - and so on. The parts are assigned to the keyboard areas in the Virus' Multi, where they are also saved - which means in the sound generator or in other words the „receiver" as mentioned in our „Three in One"-definition). The keyboard simply sends out the data, and the various notes are distributed to the correlating parts in the sound generator.

With the help of the Keyboard-Mode-Parameter, we can turn the entire thing around. It can relocate the Multi's note assignment back to the transmitter side, i.e. the keyboard. The notes are checked and assigned in the keyboard and not in the sound generator. The idea behind this option is that it is an easy and elegant way to include external sound generators in the split and layer configurations. The bass mentioned in the example above, was only activated by the lower half of the keyboard. Now the sound would no longer have to come from the Virus, any other MIDI controlled synthesizer would do. Selected keyboard ranges can be diverted at the MIDI-Out long before they reach the Virus' sound generator. During a live performance this enables you to tie in external sound generators by using the Virus as a masterkeyboard. This is not possible in normal MULTI MODE because the organizing and assigning functions only apply to the internal sound generators.

VIRUS

Software Addendum

The KEYBOARD MODE function enables you to select „OneChannel" or „Multichannels" and this is how it works:

If „Onechannel" is selected, the keyboard transmits on the MIDI channel of the selected part (or on the „Global Channel" in Single Mode) to the sound generator and to the MIDI-Out. This is the normal setting for all sequencer and stand-alone applications.

If „MultiChannels" is selected, the keyboard signals are generally sent to all the Multiparts. All the active parts (PartEnable=On) are controlled by the keyboard, regardless of which MIDI channel has been set. Whether data is sent out via MIDI depends on the KeybToMidi parameter (Off, On) which can be found in the Part-Parameters in Multimode: If KeybToMidi is activated (On) for one or more parts, the keyboard transmits to MIDI-Out on each of the part's MIDI channels. It is hereby taken into consideration which keyboard area the part has (LowKey, HighKey), and each individual part-transposition (PartTranspose). The current bank and program numbers and the parts' volume settings are also transmitted via MIDI-Out. The parameter formerly activated on the receiving side can now be used on the transmitter side; the 16 Multi-Parts now at your disposal allow for very extensive control of external sound generators. The „PartEnable" parameter is also activated on the transmitter side, it determines if the keyboard plays the internal part (On) or not (Off). In other words „PartEnable" is the counterpart to the KeybToMidi parameter, and can be regarded as an individual Local-Off for each part.

Here once again the various applications:

1. PartEnable =Off; KeybToMidi =Off: The „passive Part"
The Keyboard does not transmit data to either the MIDI-Out nor to the sound generator, and is consequently not activated on the transmitting side. The part does however receive data from the MIDI-In, and can be controlled on its MIDI channel by an external keyboard or sequencer.

2. PartEnable =On; KeybToMidi =Off: The „internal keyboard zone"
The keyboard sends out its signals to the sound generator of the corresponding part, but not to MIDI-Out.

3. PartEnable =Off; KeybToMidi =On: The „external keyboard zone"
The keyboard sends its signals to MIDI-Out, but not to the sound generator of the corresponding part. This enables you to control an external machine with the appropriate keyboard zone.

4. PartEnable =Off; KeybToMidi =On: The „internal + external keyboard zone"

The keyboard sends its signals to the sound generator and to MIDI-Out. In a single keyboard zone you can combine a Virus part and an external sound generator on the same MIDI channel.

Since „PartEnable" does not work on the receiving side when in „MultiChannels" mode, the parts play the notes coming through MIDI-In on the corresponding MIDI channels! If this should create problems in your MIDI-Setup, it might be necessary to set different MIDI channels for transmitting and receiving on each machine. Alternatively a part can be „deactivated" if the „LowKey" and „HighKey" parameters are set to C-2. It would only respond to the lowest MIDI note C-2, which is rarely used in everyday situations.

Please remember that the „KeybToMidi" parameter is only visible if the KEYBOARD Mode is set to „MultiChannels".

Please notice the following: When set to „OneChannel", playing the keys has the effect that the keyboard and the panel operate the selected part. The Part-Select when „MultiChannels" is set is valid only for the panel, not for the keyboard.
Here an overview of the keyboard version's special parameters:

▸ **KeybToMidi (Off,On)**

▸ **KEYBOARD**
Local (Off, On)

▸ **KEYBOARD MODE**
(OneChannel, MultiChannels)

▸ **KEYBOARD**
Transpose (-64...+63)

▸ **KEYB MODWHEEL**
Destination Controller

▸ **KEYB PEDAL 1**
Destination Controller

▸ **KEYB PEDAL 2**
Destination Controller

▸ **KEYB PRESSURE**
Sensitivity (Off, 1...127, Default #64)

All these parameters exept KeybToMidi are global parameters. These parameters are only visible in the keyboard version of the Virus.

Menu Overview VIRUS b und kb

The following list gives you an overview of the VIRUS b/kb menu parameters:

LFO 1 Local menu
    LFO 1
        Shape
        TriSymmetry
        Clock
        Mode
        TrigPhase
        Keyfollow
    LFO 1 AMOUNT
        Filt Gain

LFO 2 Local menu
    LFO 2
        Shape
        Contour
        Clock
        Mode
        TrigPhase
        Keyfollow
    LFO 2 AMOUNT
        FM Amount

Oscillators Local menu
    OSCILLATOR 1
        Wave
        Semitone
        Keyfollow
    OSCILLATOR 2
        Wave
        Keyfollow
        FltEnv>Ptch
        FltEnv>Fm
    OSCILLATORS

PhaseInit
SUB OSCILLATOR
Shape
RINGMODULATOR
Volume
NOISE
Volume

Filters Local menu
SATURATION
Curve
FILTER 1
EnvPolarity
FILTER 2
EnvPolarity
CutoffLink
FILTERS
KeyflwBase

SINGLE EDIT menu
COMMON
PatchVolume
Panorama
KeyMode
Portamento
BendUp
BendDown
BendScale
SmoothMode
UNISON
Mode
Detune
PanSpread
LfoPhase
PUNCH
Intensity
LFO 3
Rate
Dest
OscAmount

FadeIn
Shape
Clock
Mode
Keyfollow
ASSIGN 1
Source
Dest
Amount
ASSIGN 2
Source
Dst1
Amount1
Dst2
Amount2
ASSIGN 3
Source
Dst1
Amount1
Dst2
Amount2
Dst3
Amount3
VELOCITY
Osc1Shape
Osc2Shape
PulseWidth
FmAmount
Filt1EnvAmt
Filt2EnvAmt
Resonance1
Resonance2
Volume
Panorama

SINGLE CTRL menu
CLOCK
  Tempo (bpm)
ARPEGGIATOR
  Mode
  Clock
  Octaves
  Hold
DEFINABLE 1
  Mode
  Single
  Global
  Midi
DEFINABLE 2
  Mode
  Single
  Global
  Midi
KEYBOARD
  Local (Off, On)
  Mode
  Transpose
  Modwheel
  Pedal 1
  Pedal 2
  Pressure Sensivity
MIDI
  DUMP TX
  DUMP TX
  GlobalChan
  Panel
  ArpeggSend
  ClockRx
  MidiVolume
  ProgChange
  MultiPrgChg
  DeviceId
  Control LoPage
  Control HiPage

SYSTEM
  MasterTune

MemProtect
LCDContrast
KnobMode
KnobDisplay
LEDMode

EFFECTS menu
INPUT (GLOBAL)
DirectThru
Boost
INPUT
Mode
Select
VOCODER
Mode
CHORUS
Dir/Eff
Rate
Depth
Delay
Feedback
Shape
DELAY
EffectSend
Clock
Time (ms)
Feedback
Rate
Depth
Shape

MULTI-SINGLE EDIT menu

{see SINGLE EDIT menu}

MULTI–SINGLE CTRL menu

COMMON (PART)
    PartEnable
    MidiChannel
    OutSel
    CLOCK (MULTI)
    Tempo (bpm)
ARPEGGIATOR
    Mode
    Clock
    Octaves
    Hold
DEFINABLE 1
    Mode
    Single
    Global
    Midi
DEFINABLE 2
    Mode
    Single
    Global
    Midi
KEYBOARD
    Local (Off, On)
    Mode
    Transpose
    Modwheel
    Pedal 1
    Pedal 2
    Pressure Sensivity
MIDI
    DUMP TX
    DUMP TX
    GlobalChan
    Panel
    ArpeggSend
    ClockRx
    MidiVolume
    ProgChange
    MultiPrgChg
    DeviceId

MIDI CONTROL
LoPage
HiPage

SYSTEM
MasterTune
MemProtect
LCDContrast
KnobMode
KnobDisplay
LEDMode

MULTI-SINGLE EFFECTS menu

{see MULTI-SINGLE EFFECTS menu}

MULTI EDIT menu

SelectBank
SelectNumber
PartEnable (Off/On)
KeybToMidi (Off/On)
MidiChannel
PartTranspose
PartDetune
PartVolume
MidiVolume
OutSel

MULTI CTRL menu

> SelectBank
> SelectNumber
> PartEnable (Off/On)
> KeybToMidi (Off/On)
> MidiChannel
> Priority
> LowKey
> HighKey
> MidiVolume (Ena/Dis)
> HoldPedal (Ena/Dis)
> PrgChg (Ena/Dis)

CLOCK (MULTI)
> Tempo (bpm)

DEFINABLE 1
> {see SINGLE CTRL menu}

DEFINABLE 2
> {see SINGLE CTRL menu}

MIDI
> {see SINGLE CTRL menu}

MULTI EFFECTS menu

{see MULTI-SINGLE EFFECTS menu}