

ED!SON

***THE EWS64 SERIES
INSTRUMENT EDITOR***

English manual

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Ed!SON - THE EWS64 SERIES INSTRUMENT EDITOR

PREFACE

Ed!son turns your EWS64 into a powerful sampler. This offers a huge advantage: You're no longer stuck with prefabricated soundsets or general-MIDI pigeonholes, but you can now finally develop your own instrument sounds. Classical choirs, screaming-guitar meltdowns, or technoid synth - it's all possible, and much more.

The simple fact that Ed!son lets you create a MIDI instrument out of any wave file opens limitless possibilities. But that's not all. You can modify any instrument sound using typical synthesizer elements such as filters, LFOs and envelope generators.

It doesn't even matter if you're not an experienced sound designer. Ed!son is so easy to use that even beginners can easily realize their sound ideas. Just give it a try - after all, you can't break anything...

Have fun customizing sounds with Ed!son!

Your TerraTec Team

PS.

Be sure to check the ReadMe files of the EWS64, as they may contain additions or modifications to this documentation.

ABOUT THESE INSTRUCTIONS

This documentation is based on the assumption that you have read the "Wavetable & MIDI Handbook" (included with the EWS64), so that you are familiar with MIDI fundamentals and the basic operation of your EWS64.

The following section contains a digression into the world of synthesizers and samplers for beginners. There's also a section designed to get experienced users up and running as quickly as possible.

Hint

Work your way through this documentation with your PC running. Try out what you've read immediately. Many acoustic events cannot be described adequately in words.

This documentation is organized in four sections:

- **Basics:** Fundamental information which you must know in order to work with Ed!son
- **Operation:** Ed!son's user interface and global functions, basic procedures
- **Reference:** Description of the individual operating elements/audio parameters
- **Appendix:** Glossary and keyboard shortcuts

Important note:

Certain Ed!son parameters can have a drastic effect on the volume of a sound, leading to unpleasant acoustic surprises. Protect your ears and speakers by working at low volumes - at least until you've gained some experience with Ed!son.

PART 1: BASICS

1.1 NOT AS TOUGH AS IT LOOKS: SYNTHESIZER & SAMPLER CRASH COURSE

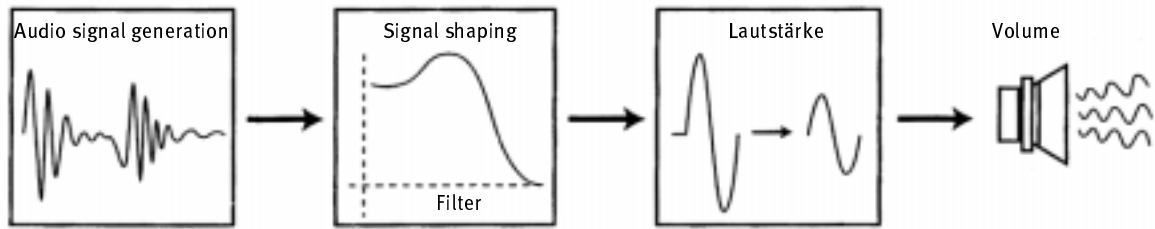
Ed!son transforms your EWS64 into a sampler, allowing you to play wave files (also known as samples) as MIDI instruments. As you know, anything which is audible can be recorded as a wave audio file using the EWS64 and a sample editor such as the Ed!son Wave. In other words, it's entirely up to you whether you want to play a melody with a string section, a car horn, or the barking of your dog.

The key to these infinitely versatile acoustic possibilities of the EWS64 is the Ed!son application. It's used to manage and transfer the desired wave files to the EWS64's onboard memory, the sample RAM. What's more, complex progressions of tonality and volume can be applied to the instrument sounds as with a synthesizer. In order to systematically achieve acoustic results with Ed!son, it's necessary to understand the fundamentals of how synthesizers and samplers work. So, let's take a little excursion into the world of synthetic sound generators.

Subtractive synthesis

The EWS64 creates an instrument sound when you hit a key on your MIDI keyboard. That sound passes through three major development phases before it reaches your ears: Audio signal generation, signal shaping and volume control. Each of these three phases has its own parameters which can be adjusted across wide ranges with the Ed!son.

In the EWS64, fast computer algorithms and DSPs handle tasks performed by analog circuits in older synthesizers. Despite the huge technological differences between old analog synthesizers and current sound cards such as the EWS64, the fundamental architecture of these two worlds is very similar. The magic word is *subtractive synthesis*, which is the technique of removing, or subtracting, high-frequency components (the so-called overtones) from the original signal with the aid of a low-pass filter. Once a signal has been generated at the correct pitch, it passes through the filter and changes its acoustic character in varying degrees depending on the filter setting. Next, a given volume progression is assigned to the signal.



The voice architecture of the EWS64 is based on subtractive synthesis.

Audio signal generation

Before you can hear a sound, it has to be generated. As you already know, the EWS64's instrument sounds are based on wave files. Playing a wave file is not an art form - the cheapest sound cards will do the job. Things get interesting when playing a wave file as an instrument voice, in other words in multiple voices and at any (musically appropriate) pitch.

To put it briefly: Unlike other sound cards, our EWS64 has its own onboard sample RAM which permits the instant reproduction of all of the samples stored there at any required pitch. And that at up to 64 voices simultaneously!

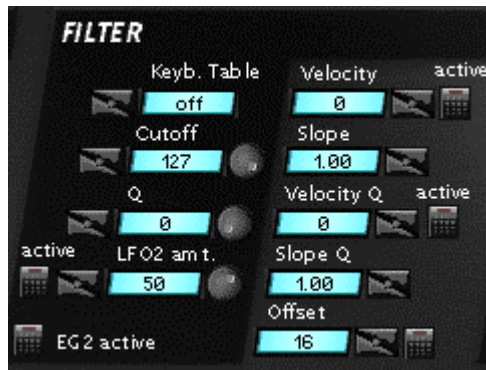


Ed!son's audio signal generation parameters can be found in the OSC field.

Signal shaping

While the signal generation section described above is playing our sample in the desired pitch, the signal can be altered and manipulated - or shaped - over a wide range. This is performed by reducing specific frequency ranges. The frequency above which these signal components are filtered out can be adjusted and is referred to as *Cutoff* in the Ed!son. Lowering the *Cutoff* will result in a duller sound or an emphasis of the bass.

The second important filter parameter is the resonance, referred to in the Ed!son as *Q*. Resonance is a form of feedback, in other words, a specified amount of the output signal of the signal is returned to the filter input. The resonance effect can be best explored by setting *Cutoff* low and *Q* high.

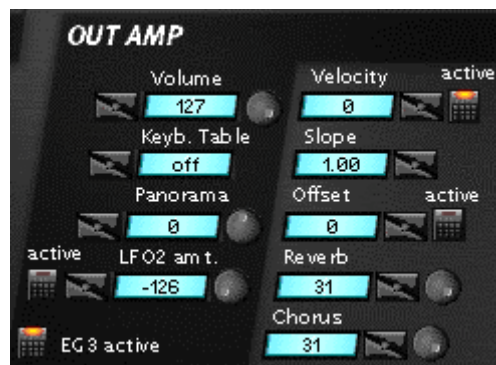


All signal-shaping parameters can be found on the Ed!son user interface in the FILTER section.

Volume control

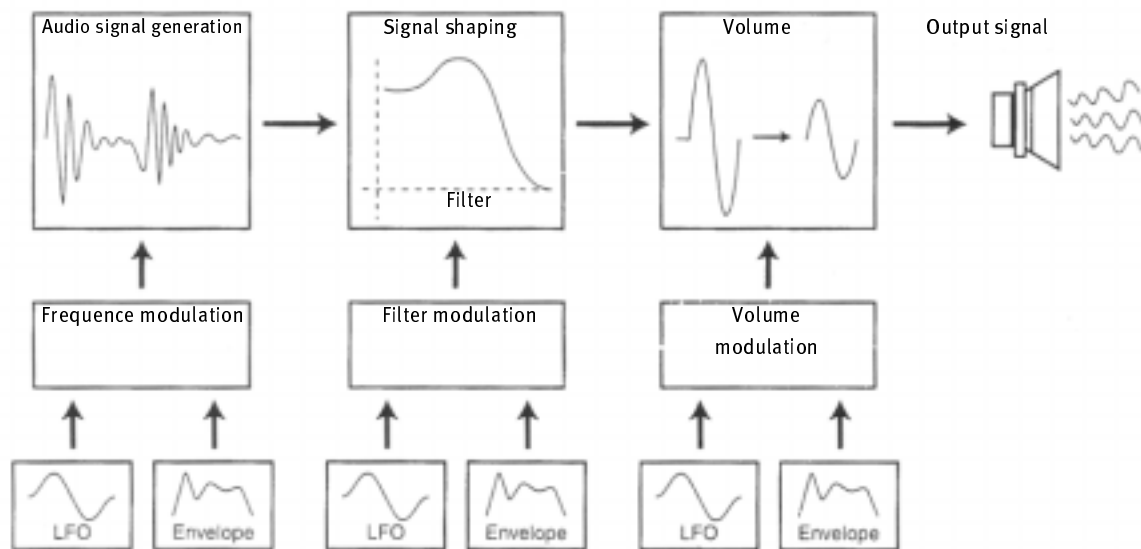
The third and final development stage of an instrument sound involves the control of its volume. This section is called VCA (Voltage Controlled Amplifier) in older synthesizers. In addition to the global volume and panorama settings, the volume can also be controlled dynamically.

As you probably already know, the volume of a sound is not necessarily constant. Here are two examples: String sounds increase slowly in volume, while piano sounds reach their maximum volume immediately and taper off slowly. These are not constant volumes, but dynamic volume slopes. The following chapter contains more information on this topic.



The OUTAMP section contains the Ed!son volume parameters.

Modulators



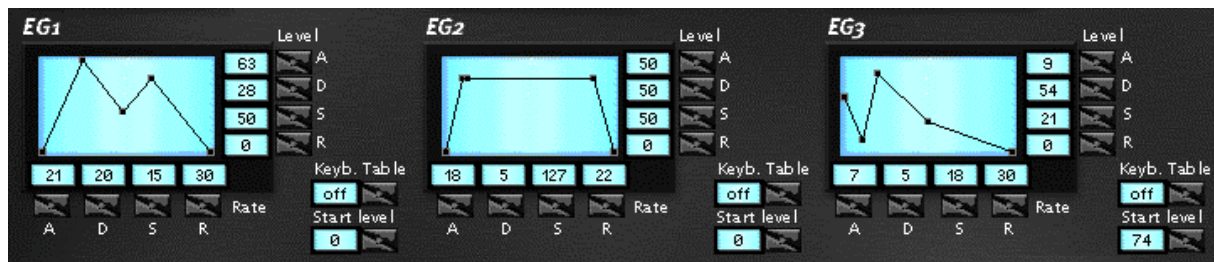
The synthesizer of our EWS64 can generate audio signals, shape them with the aid of a filter and control their volume. So far, we have only been dealing with static parameters - once set, they change the basic signal, but otherwise sound fairly stiff and boring. Modulators help rectify this situation. Modulators are control signals which can be set over a broad range to dynamically control important audio parameters such as the pitch, filter frequency or volume. Two important modulator types are available in the EWS64: LFOs (low frequency oscillators) and envelope generators (abbreviated as *EG* in Ed!son).

LFOs are present in practically all synthesizers and generate cyclical control signals with a low frequency and adjustable waveform. If an LFO is used to control an oscillator, for example, pitch fluctuations are the result, from slight (organ vibrato) to intense (siren effect).



The EWS64 has two LFOs per voice.

Unlike LFOs, envelope generators do not involve cyclical control signals, but specific progressions which are triggered by the key. A well-known example are volume envelopes. These can be used to determine whether the volume increases gradually, as with string sounds, or abruptly to the maximum value as in a piano. In the EWS64, four time and level parameters are available for each envelope for the construction of complex modulation progressions.



Pitch, filter or volume: Ed!son provides individual envelope generators for each section.

Each of the three synthesizer sections, for example the filters, has its own modulators. An example to clarify this: LFO1 can modulate the pitch and thus create a sirenlike effect, while LFO2 controls the filter to provide a typical filter sweep. At the same time, EG3 ensures that the tone develops gradually after the key has been struck.

Modulation provides the sound with an inherent dynamism.

As you can see, modulators add a lot of action to the sound and add to the appeal of synthetically generated sounds. Other sources of modulation are available to the EWS64 in addition to LFOs and envelope generators. For example, the touch dynamics (velocity) or the keyboard table position of a played note can be applied as modulators in Ed!son.

Splits and multi-samples

With Ed!son, you can also create instrument sounds based on multiple wave files. This is especially useful if instruments are to be recreated as authentically as possible with a sampler. If you were to construct a piano or chorus sound using a single sample, the instrument would not sound very realistic. The reason: Samples tend to sound increasingly unnatural the further they are played from their original pitch.

Multi-sampling is the name of a process in which several samples of an instrument are recorded at different pitches and distributed over several zones of the keyboard. An example: A complex synthesizer sound is sampled at a variety of pitches (an octave apart, for example). The individual samples are then once again assigned to their original pitches in Ed!son. Smaller tonal ranges for the individual samples result in a more realistic sound for the multi-sample.

In Ed!son, the individual samples (and their keyboard zones) are referred to as *splits*. A further use of splits is the realization of drum kits, i.e. a collection of various drums and other percussion instruments. Strictly speaking, a drum kit is nothing more than a multi-sample, several samples distributed across the keyboard within an instrument sound.

Sample loops

All samplers, including the EWS64, have a number of design limitations: The number and size of the samples which can be stored on the EWS64 is more or less limited the amount of sample RAM with which the sound card has been equipped. Of course, memory chips are no longer one of the earth's most precious resources, but careful budgeting is a good idea nevertheless - even though the EWS can be equipped with up to 64 MB of sample RAM.

Sampler manufacturers have come up with a special trick which contributes significantly to conserving sample RAM: the sample loop. If you have a closer look at the samples of many instrument sounds, you will find that there's a lot of activity at the beginning, which then goes over to a relatively constant progression. A piano sound is a good example. Striking a piano key causes the sound to develop very quickly. It then goes over to a constant tone (the vibration of the string) which gradually decreases in volume and fades out.

We apply precisely this characteristic to shorten our samples and conserve sample RAM. The fact that the sound decreases in volume is no problem, as we can take care of that later with the volume envelope. The crucial point is that the sound takes on a continuous quality after a given period of time. If only a small section of this continuous-tone period is repeated for the entire period during which the key is held, it is then possible to cut off the entire rat's tail of audio information following it.

In practice, the sample loop part of the wave file, i.e. the part to be repeated infinitely, can be defined in practice with Ed!son Wave or other suitable sample editors.

1.2 ED!SON FOR ADVANCED USERS

At the risk of telling you, as a power user, things that you already know about the capabilities of the EWS64 and Ed!son team: In principle, the MIDI audio signal generation of the EWS synthesizer corresponds to that of a sampler with subtractive voice architecture. The wave files loaded in the sample RAM serve as audio sources that can be played polyphonically via MIDI. A resonant low-pass filter, a VCA and a comprehensive modulation section with several envelope generators and LFOs are available for each individual voice. The velocity and keyboard position (keyboard table) are additional sources of modulation. The edge steepness of the filter can be toggled between 12 dB/octave and 24 dB/octave. All this and more can be set and controlled using Ed!son.

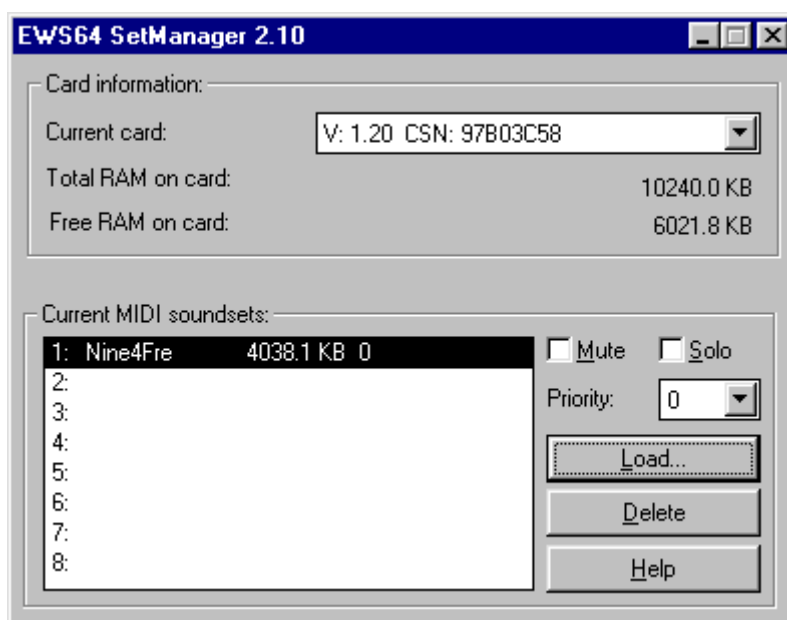
Ed!son is not only used for the audio parameters, but also for the management of soundsets. In addition to "normal" wave files, Ed!son also imports files containing sample loop settings. Ed!son Wave or other suitable sample editors such as WaveLab 2.0 or Sound Forge 4.0 can be used to create wave files with sample loops. Needless to say, multi-samples can also be created with Ed!son. This is an important feature for the construction of drum kits or for achieving maximum authenticity in instrument sounds (such as pianos or choruses). The multi-edit mode implemented in Ed!son permits parallel editing of several individual samples or keyboard zones.

Finally, you can position the MIDI instrument voices created with Ed!son on the stereo outputs of your EWS as described in "The Wavetable & MIDI Handbook". As you can see, Ed!son and the EWS64 deliver everything that you can expect from a good sampler.

1.3 THE EWS64 INSTRUMENT ARCHITECTURE

The EWS64 instrument architecture consists of three levels. The bottom level is the *sample*, based on a file in wave audio format. The recording and audio processing of samples is not performed in Ed!son, but in Ed!son Wave or another sample editor. The finished wave file is then imported into Ed!son. One or more loaded samples make up an *instrument*, together with the pitch, filter, volume and modulation settings. These can be saved separately in *TTI* (TerraTec Instrument) format.

One or more instruments make up a *soundset*. In addition to instruments, a soundset can also contain variations and drumkits. Soundsets, i.e. collections of instruments, can be saved in their own file format with the ending *TTS* (TerraTec Soundset).



The Set Manager is used for the management of the soundsets created in Ed!son.

While the TTI format is primarily used to exchange individual instruments or the construction of new soundsets, finished soundsets in TTS format are used during a sequencer session or music production. Use the Set Manager for this purpose, as it permits up to eight soundsets to be loaded into the memory of your EWS64 simultaneously. In other words, look upon Ed!son mainly as a tool for the development of new soundsets.

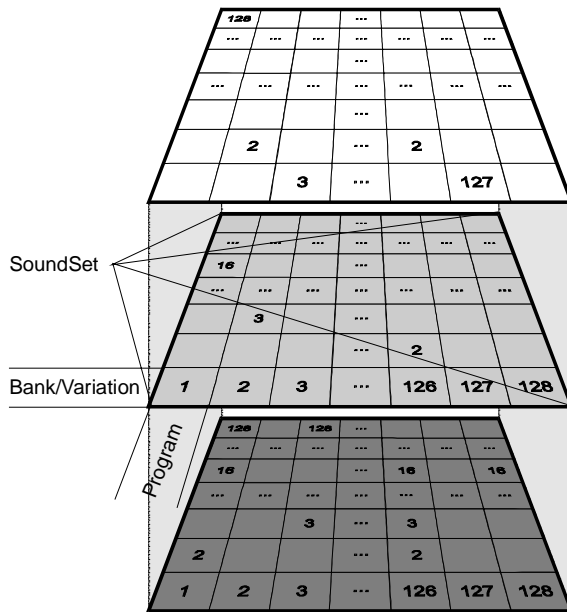
A few more points: TTI and TTS files contain the complete audio data in addition to the parameters. This is especially practical if you would like to exchange TTI/TTS files with other EWS64 users, or make them available via the Internet. Ed!son is also able to import 94B-format soundsets. You can thus use soundsets from other sound cards with Dream DSP with your EWS64. It's not possible to save in this format, however.

Note

GM/GS-compatible drumkits (available via MIDI channel 10) cannot currently be edited with Ed!son. You can, however, create drumkits of your own by simply combining a variety of drum sounds as a multi-sample.

1.4 A WORD ABOUT PRIORITIES

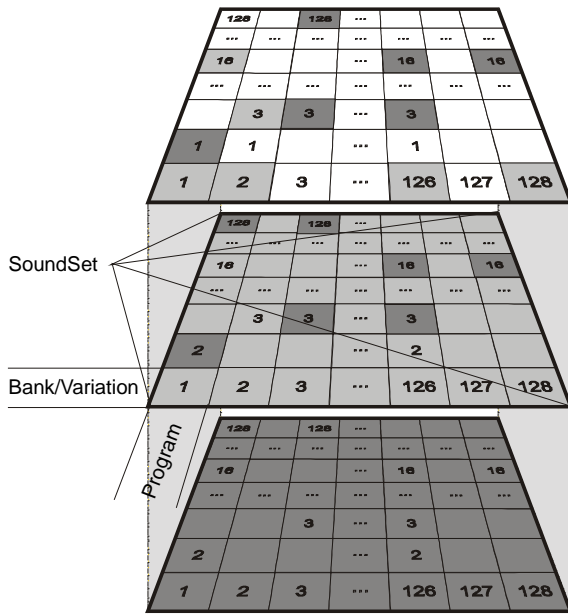
To summarize the terms instrument, program, bank, variation, soundset and priority, we'd like to explain the relationships of these terms to one another.



Priority-level 0 63 127

A soundset consists of a field with a maximum of $128 * 128 = 16384$ instruments. The individual positions of the instruments within this field are clearly defined by the program number and the bank or variation number. As a rule, instruments are located in Bank 1; variations which use the same samples or that are closely related by theme are in other banks.

Mixing of sets As several sets can be loaded in the EWS64, overlaps may result in the program and bank numbers. Priorities were introduced for this reason. The priority is applied in the event of identical program or bank numbers, and the instrument with the highest priority in the set is played. If you would like to replace a number of instruments in a GS set with your own, you can do this by simply adding the program and bank numbers of the instruments to be replaced to the instruments in your own set. Next, use the Set Manager to load both sets into the EWS64 and increase the priority of your own set. Now you can play all GM files with your own supplemental sounds without having to edit the GM/GS set itself. The following graphic shows which instruments will finally be played from which set.



Priority-level 0 63 127

In our example the bottom soundset is a GS set with the priority 0, the middle is a GS set with a number of variations and priority 63, and the upper is a custom set with only a few instruments and the priority 127. The top level of the second graphic shows which instrument will be played from which set.

PART 2: OPERATION

2.1 THE ED!SON USER INTERFACE

The Ed!son user interface corresponds to the appearance of an analog synthesizer. This is a good analogy, since Ed!son's fundamental architecture is basically identical to that of a synthesizer. Instrument sounds are created and edited on a single Ed!son screen. Ed!son has only a small number of menus which are mainly required for global settings, or for the file management of the soundsets and instrument sounds.

Beginners shouldn't worry about the large number of controls. A closer look at Ed!son's user interface will show that many parameters and function groups are present several times. The envelope generators, for example, are present three times, but only need to be understood once. The same goes for the LFOs and the velocity/slope/offset parameters. The actual functions of these individual parameters are covered in Part 3 of this documentation, the reference section.

Ed!son is divided into logical sections with regard to its appearance and functions. First, there's the basic elements of subtractive voice architecture, pitch (OSC), filters (FILTER) and volume (OUTAMP). Next, there's the modulators, in this case 2 LFOs and three envelope generators (EG 1 to EG 3). The keyboard tables, which are used for keyboard-related modulations, are located below the third envelope.



It's no coincidence that the Ed!son user interface is modeled after a synthesizer.

General notes for the user

As the Ed!son is equipped with specially-designed controls, we would like to give you a few general hints for working with the program as efficiently as possible. Nearly every parameter has a so-called sandwich button, which is generally used to set numerical values. To change the parameter in small increments, click on the upper or lower half of the button to raise or lower the value accordingly.



Numerical values can be set quickly and efficiently with the sandwich buttons.

For coarse adjustments, either click in the middle of the button or click it with the right mouse button. This mode is marked by a small, double-headed arrow. Move the mouse while holding the mouse button to quickly change the parameter over a wide range.



For coarse adjustments, click the sandwich button with the right mouse button.

By the way, sandwich buttons can also be operated with the Microsoft IntelliMouse (or any Microsoft-compatible wheel mouse). If you would like to adjust parameters with the mouse wheel, please single-click onto the control first. A control is ready for input from the mouse wheel when a light gray frame surrounds the mouse wheel.



Sandwich buttons can only be controlled using the mouse wheel when it has the focus as shown here.

An additional special feature of the Ed!son are the light blue text fields with an autoscroll function. It's often not possible to display a complete text for lack of space. If you come across such a text field, simply move the mouse pointer over the field without clicking. The displayed text will begin to scroll automatically a moment later. Examples for autoscroll text fields include the *ALG* parameter at the upper edge of the screen or the driver selection in the *Ed!son MIDI Settings* dialog.

A few more points: Please note that special context menus are available via the right mouse button in certain areas of the screen such as the split zone.

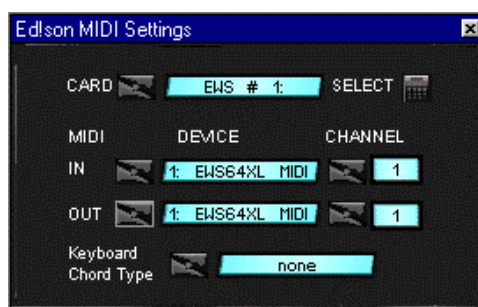
Playing sounds in Ed!son

A conspicuous feature of the user interface is the keyboard at the lower edge of the screen, which can be used to play the currently active instrument sound with the mouse or the PC keyboard. The mouse only permits playing single sounds, while the PC keyboard can be used for polyphonic playing. The mouse remains useful while playing with the keyboard, as it can be used to trigger pitch-bend and modulation events. Pitch bends can be triggered by clicking and holding a key while moving the mouse to the left or right. The simulation of a modulation wheel works in a similar manner, only that the mouse is moved forwards or backwards while holding the mouse button. The following illustration shows the key assignments of your PC keyboard.



Ed!son can also be "played" using the PC keyboard if necessary.

Of course, it's much more elegant to use a proper MIDI keyboard to play the sounds. To do so, click the *MIDI* menu. This opens the *Ed!son MIDI Settings* dialog in which you can select the MIDI port to which the keyboard is connected.



Configure Ed!son's MIDI properties here.

If you're lucky enough to have more than one EWS64 installed in your PC, you can switch back and forth between the cards in the *CARD* field. Once you have selected a different card, confirm your choice by clicking on the *SELECT* button.

Use the *IN* field under *DEVICE* to select the port to which your MIDI keyboard is connected. Once your keyboard is connected to the EWS64, select the driver *EWS64 MIDI Record* or *EWS64 Midi-2*. Select the required MIDI channel under *CHANNEL*. The same applies to the *OUT* field under *DEVICE* in which you can select the MIDI driver to accept the incoming MIDI data (Ed!son thus provides a thru function). If you select the *Auto* setting, the data will be forwarded to the MIDI Mapper.

Use *Keyboard Chord Type* to determine whether the onscreen keyboard should play single notes (*none* setting) or a chord. The latter is useful when constructing organ, spatial or technoid stack sounds. The chord function is not available to a connected MIDI keyboard.

2.2 FIRST STEPS AND PROCEDURES

To get an idea just how quickly a new instrument can be constructed using Ed!son, here's the step-by-step procedure. The wave file SAWTOOTH.WAV located in the Ed!son folder will serve as the basis. As the name implies, the sample contains a sawtooth wave which can also be used later for a huge number of typical synthesizer sounds.

Preparations

- In order to have a defined starting condition, start by deleting the contents of the sample RAM of your EWS64 by removing all of the soundsets in the memory using the *Delete* button in the Set Manager. Important: Do this *before* starting Ed!son.
- Close the Set Manager and start Ed!son.

Note:

These two steps are not absolutely necessary, as one or more sample sets may be loaded in the EWS64. The priority of the Ed!son set is automatically set to the highest value. It's advisable nevertheless to ensure a predictable starting basis and prevent being surprised by a sudden shortage of memory.

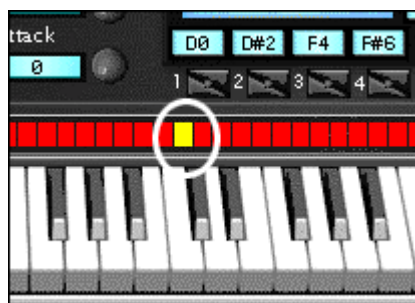
Importing sample and setting root key

- In the *File* menu, call up the item *Open Sample(s)*. Select the file SAWTOOTH.WAV in the Ed!son folder and click on *Open* in the file selection box.

Important:

If you would like to load a different wave file, please ensure that the length of a mono file may not exceed 512 KB (stereo: 1024 KB).

- Once the sample is loaded, enter its original pitch, the so-called root key, into Ed!son. To do so, move the yellow square over the onscreen keyboard to the correct note. Alternatively, you could also accomplish this with the parameter *COARSE* in the *OSC* field. The original pitch of our demonstration sample is A₃.



The position of the yellow square marks the root key.

- Check now whether the sample is being played at the correct pitch. If not, check the root key setting. If the overall pitch is OK but the sound is slightly out of tune, correct the tuning with the *OSC* parameter *FINE*. The pitch can be checked conveniently at any time using *TUNE TONE*, an electronic tuning fork integrated in EdIson. In case you can't hear anything when playing the sound using an external MIDI keyboard, please check the *CHANNEL* and *DEVICE* settings in the *MIDI* menu or use the PC keyboard for a test.



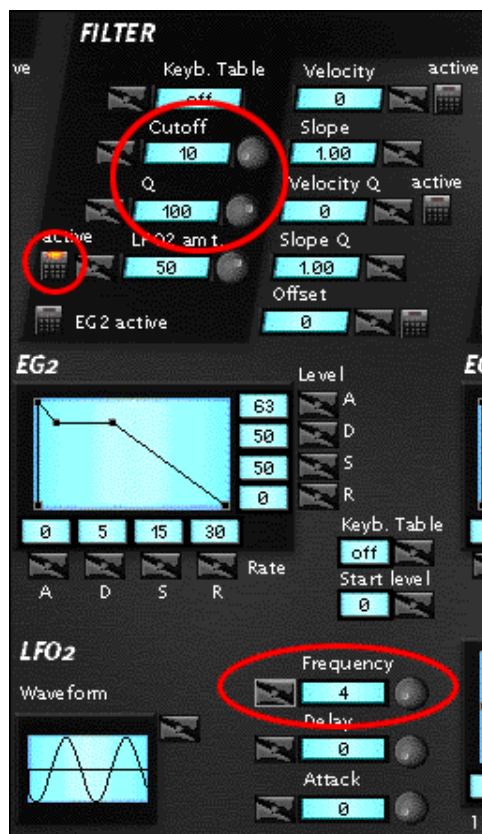
The OSC section contains the parameters for setting the root key and fine tuning.

- Everything OK? Congratulations, you've just built your first EWS instrument. Now you can start tinkering with the synthesizer parameters...

Setting parameters

The following is an example of how we can expand our instrument with a simple LFO filter modulation.

- First, prepare the filter for an easily detectable modulation. In other words, a low filter frequency at high resonance. So, let's set the following values in the *FILTER* section: *Cutoff* = 10, *Q* = 100.
- Now let's set the LFO which will modulate the filter to a slow speed. Set the following value in the *LFO 2* section: *Frequency* = 4.
- As a third point, we have to inform the filter that it will be modulated by the LFO. Click on the *active* button located to the left of the *LFO 2 amt* parameter.
- When you now hit a key, you will clearly hear how the LFO modulates the filter. You can now experiment with the other settings. Change the LFO speed or LFO waveform, or test the interaction of the filter frequency and resonance.



These settings will result in a simple filter modulation via LFO.

Adding splits

If you would like to construct a multi-sample or drumkit, it will be necessary to add additional samples to the instrument. This can optionally be done via a context menu.

- Move the mouse cursor to the split display above the onscreen keyboard. Press the right mouse button and select the item *Add split* from the context menu. Repeat this procedure as for each of the samples you need for the instrument.



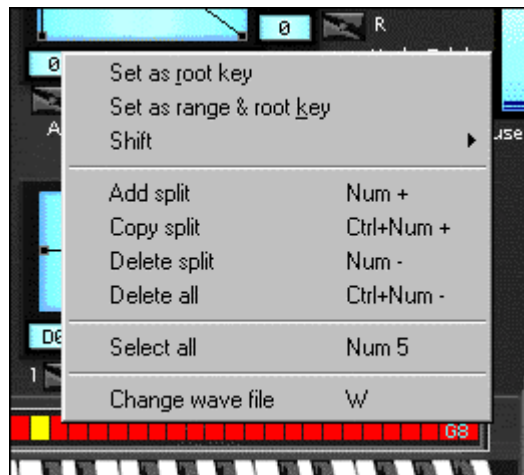
Use this area to set the sample keyboard zones (splits).

- Next, set the keyboard zone of the samples by moving the small gray bar horizontally to the left and right of the split.
- In the third step, assign samples to the individual keyboard zones or splits. Select the split by clicking on it. A selected split will be shown in red. Press the right mouse button and assign a new wave file to the selected keyboard zone with *Change wave file*.
- Next, adjust the root key of each individual sample.

Editing splits

The following contains additional user information pertaining to splits:

- If an instrument contains more than eight splits, a small slider will appear on the right-hand edge of the split display to permit scrolling through the split list.
- A double-click on the split display or pressing the enter key of the numerical keypad of the PC keyboard will hide all but the last selected split. This provides a clear overview in complex multi-samples or drumkits. A second double-click will once again reveal the splits.
- The context menu available via the right mouse button offers a variety of functions such as *Delete splits*, *Copy splits*, *Select all*, *Delete all*, or *Set as root key*. *Set as range and root key* assigns a sample to a single key which is also the root key.



The context menu of the split display is helpful when managing keyboard zones.

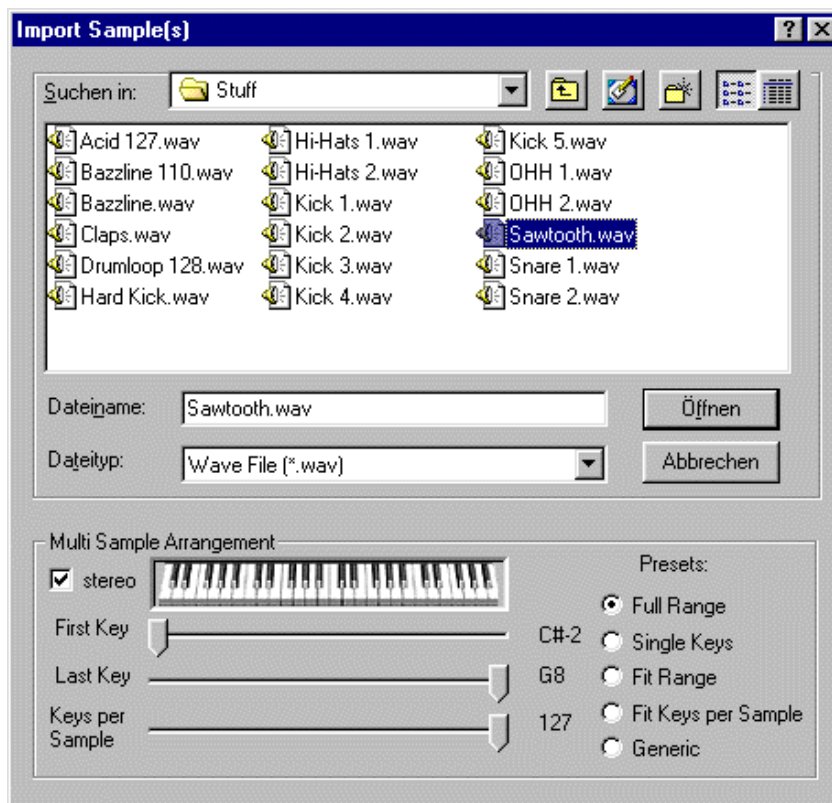
The special case of stereo samples

As the DSP synthesizer of the EWS can only import mono files, Ed!son applies a small trick to permit the playback of true stereo samples. If Ed!son encounters a wave file in stereo format during an import, it automatically splits it into two mono samples and positions them as overlapping splits over the same keyboard range. The panorama values of both splits are then set to opposing maximum values and - hey presto, stereo!

Creating multi-samples

If you know in advance that you would like to create a multi-sample or a drumkit, a much more elegant method to apply multiple samples to an instrument can be found in the File menu.

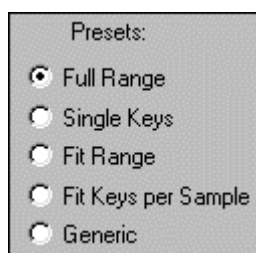
- Click the menu item *Open Sample(s)*. A variety of parameters for the semiautomatic compilation of multi-samples are available in the lower section of the file selection box. First, select the appropriate wave files in the desired order. Use the *Ctrl* key of your PC keyboard to select multiple wave files.



Ed!son permits the import of several samples at once.

- If the *stereo* parameter is activated, stereo samples will automatically be converted to two superimposed splits with opposed panorama settings. If not, the stereo samples will automatically be converted into mono samples.
- Assign the number of keys that will apply to the sample under *Keys per Sample*. Each sample receives a single key if the setting *Keys per Sample* = 1 is selected. This is the ideal setting for the creation of drumkits, Adlib vocal banks or effect sets. If you would like to import a multi-sample spaced at full octaves, enter the value 12 (12 keys make up one octave).
- *First key* and *Last key* set the upper and lower limits of the samples to be imported.

All of the parameters covered here can be set for the most common import situations by a mouse click via four presets. The following presets are available:



Presets help with importing samples.

- *Full Range*: The entire keyboard range is used for all samples. Important for instruments consisting of layered samples.
- *Single Keys*: Each key is assigned its own sample. Important for drumkits.
- *Fit Range*: Distributes the samples in a non-overlapping manner and equally proportioned over the selected keyboard range.
- *Fit Keys per Sample*: Automatically adapts the keyboard range to the *Keys per Sample* value.
- *Generic*: No preset, free assignment of parameters.

Parallel editing of multi-samples

It's extremely practical to jointly edit several splits of a multi-sample. Find out more about the purpose of the *Multi-edit* mode with a small example: Create an extremely broad chorus multi-sample consisting of 30 splits. If you'd like to increase the attack time of the volume envelope by a tiny notch, you would have a problem. It would be necessary to make the adjustment individually for each of the 30 splits.



This button permits several splits to be processed at the same time.

As it would be better to invest this time in your music, the Ed!son developers came up with the *Multi-edit* button. If this button is activated, it is possible to edit the parameters of all selected splits at the same time. Please observe the following:

- If you would only like to edit a part of the available splits, select them with the *Ctrl* key pressed.
- Only synthesizer parameters can be edited simultaneously. All of the parameters at the upper edge of the screen with the exception of *Alg* can not be controlled in the

Multi-edit mode. *Transpose*, *Program*, *Variation*, as well as the *Velocity Split* and *Key Split* functions are also not available.

Creating velocity splits



The velocity scale permits switching samples in dependence on their touch dynamics.

Each split can be assigned to an individual velocity range. In other words, The sample will only be played if the key velocity is within the specified range. A piano sound is also a useful example for this function: Sample a piano not only at a variety of pitches, but also at different key velocities, and use Ed!son to assign these samples to varying velocity splits. This technique can be used to construct an extremely authentic piano sound.

Velocity splits are also almost indispensable for non-electronic drum sounds. The procedure for switching samples with regard to their velocity dynamics is easily explained:

- Select the split to be edited.
- Use the velocity scale at the right-hand edge of the window to set the velocity range in which the specific sample is to be played. The settings of the velocity range are made in a manner similar to the setting of the keyboard splits: The range limits can be changed by moving the gray marks in the velocity scale. The numerical fields above and below the scale show the range limits in plain text.

PART 3: REFERENCE

3.1 PARAMETER REFERENCE

The following section contains a short description of all parameters to be found in the main Ed!son screen.

Important:

Changing the synthesizer parameters always affects only the currently selected split. To change the parameters of several splits at the same time, switch on the Multi-edit mode (see above).

OSC



The pitch and fine tuning of the samples can be set in this section. In addition, you can determine whether, and with which modulator, and the degree to which the pitch will be modulated.

Keyb. Table determines which keyboard table will control the basic volume of the samples. No keyboard table is applied in the *off* position.

Keyb. Type determines whether the sample will be played back in a *Fixed* or variable *Normal* pitch. In other words, in the *Fixed* position, the sample is played at the same pitch by all keys. In the *Normal* position, the sample can be played over the set tonal range. In the *FixKbd:1* position, the pitch is influenced by the setting of keyboard table 1.

Pre Amp. determines the basic volume of the sample.

LFO1 Amt. determines the intensity at which LFO1 should modulate the pitch. Use a low value for a light vibrato or a high value for a siren effect. *Active* toggles the LFO modulation.

EG1 Amt. determines the intensity with which EG 1 should modulate the pitch. *Active* toggles the envelope modulation.

Velocity determines the offset, i.e. a basic value for the effect of touch dynamics on the *Pre Amp* parameter. *Active* toggles the velocity modulation.

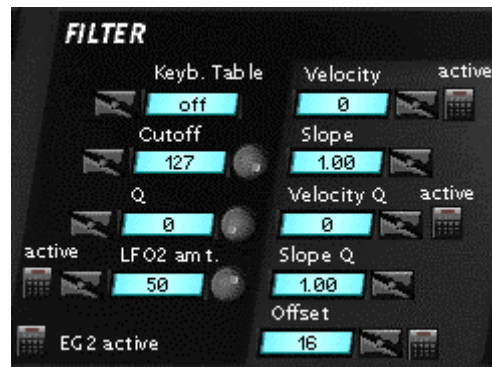
Slope determines the slope of the touch dynamics for the *Pre Amp* parameter. A positive value will cause the volume to increase with an increase in touch dynamics; a negative value will cause it to drop.

Tune tone is a test tone with which to tune samples. Use the sandwich button to adjust the pitch and the rotary control to adjust the volume of the test tone.

Coarse tuning adjusts the basis tuning (root key) of the sample.

Fine tuning permits the fine tuning of the sample.

FILTER



The tone-shaping parameters cutoff frequency and resonance are set here. In addition, you can determine whether, and with which modulator, and the degree to which the filter will be modulated.

Keyb. Table determines which keyboard table will control the cutoff frequency of the samples. No keyboard table is applied in the *off* position.

Cutoff sets the filter frequency (cutoff frequency).

Q sets the filter resonance.

LFO2 amt. determines the intensity with which LFO2 should modulate the cutoff frequency. *Active* toggles the LFO modulation.

EG2 active toggles the filter modulation through envelope generator EG2.

Velocity sets an offset for the effect of touch dynamics on the cutoff frequency. *Active* toggles the velocity modulation.

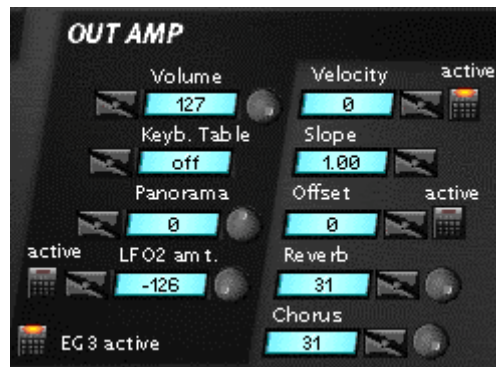
Slope determines the slope of the touch dynamics for the cutoff frequency. A positive value will cause the frequency to increase with an increase in velocity; a negative value will cause it to drop.

Velocity Q sets an offset for the effect of touch dynamics on the filter resonance. *Active* toggles the velocity modulation.

Slope Q determines the slope of the touch dynamics for the filter resonance. A positive value will cause the resonance to increase with an increase in velocity; a negative value will cause it to drop.

Offset adds a constant value to the cutoff frequency. The *Offset* can be toggled with the button on the right.

OUTAMP



Adjust the global volume, panorama and effect share of the sound in this section. In addition, you can determine whether, and with which modulator, and the degree to which the volume will be modulated.

Volume controls the global volume of the sample.

Keyb. Table determines which keyboard table will control the volume. No keyboard table is applied in the *off* position.

Panorama controls the stereo positioning of the sample.

LFO2 amt. determines the intensity with which LFO2 should modulate the volume. *Active* toggles the LFO modulation.

EG3 active toggles the volume modulation through envelope generator EG3.

Velocity sets an offset for the effect of touch dynamics on the output volume. *Active* toggles the velocity modulation.

Slope determines the slope of the touch dynamics for the output volume. A positive value will cause the volume to increase with an increase in velocity; a negative value will cause it to drop.

Offset adds a constant value to the volume. The *Offset* can be toggled with the button on the right.

Panorama controls the share of reverb of the sample. Please note the effect settings in the FX Panel.

Chorus controls the share of chorus of the sample. Please note the effect settings in the FX Panel.

LFO 1 / LFO 2



LFO 1 is used for pitch modulation. It can be used to realize typical vibrato or siren effects. LFO 2 can modulate the filter sweep effects as well as the volume (tremolo).

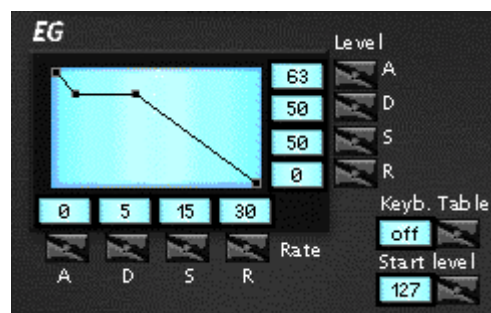
Waveform determines the waveform of the modulator signal. A choice of sine, ascending sawtooth, descending sawtooth, square, noise (random modulation), and clipped sine (degree of clipping) waveforms are available.

Frequency determines the speed of the LFO modulation.

Delay sets the delay time between striking the keyboard and the start of the modulation.

Attack permits the automatic addition of modulation after striking the key or the elapse of a delay time.

EG 1 / EG 2 / EG 3



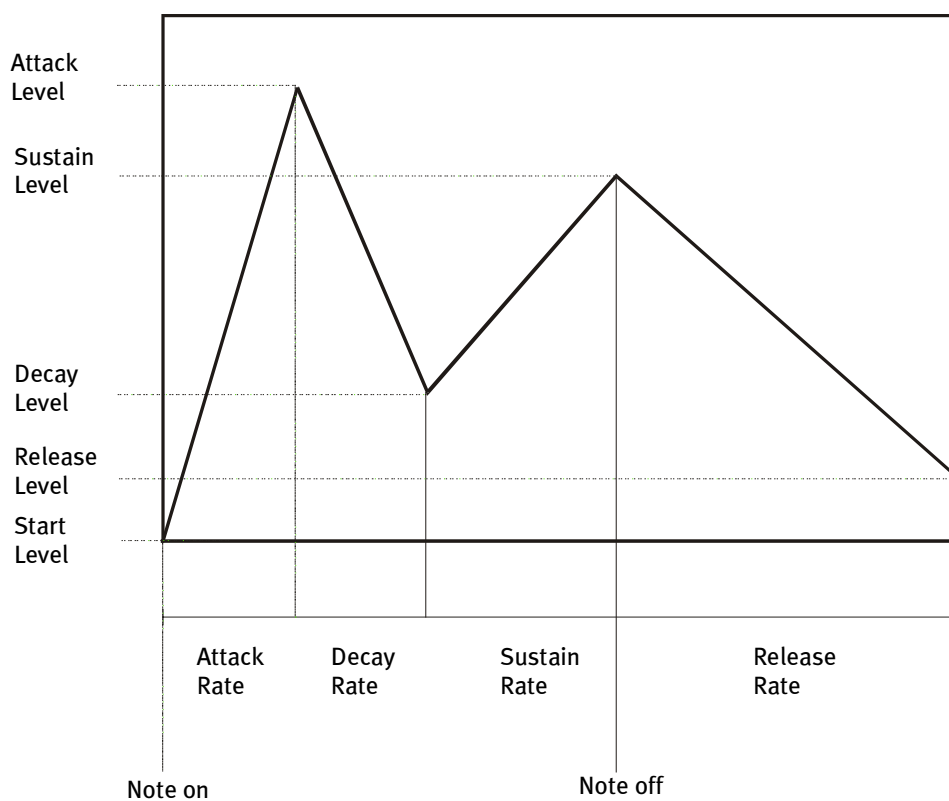
The EWS64 has three permanently assigned envelope generators. EG 1 controls the pitch, EG 2 the filter, and EG 3 the volume. Each envelope is constructed using four level and four time parameters. The envelope generators can be edited in two different ways: Firstly, by clicking and sliding the square anchor points within the envelope generator graphic. And secondly, by the individual adjustment of the parameters as described below.

A (Attack) is the first phase of an envelope immediately after the key is struck. Long attack times permit the slow fade-in of the sound, with strings for example.

D (Decay) is the second phase of an envelope. The decay phase immediately follows the attack phase and corresponds to the rise or drop of the envelope to the sustain level. Percussive sounds can be achieved by making the attack time as short and the sustain level as low as possible. Decay sets the time in which the sound automatically fades while the key is held.

S (Sustain) is the designation for the phase following the decay. The envelope initially passes through the attack and decay phases and then stays in the sustain phase for the entire period in which the key is held.

R (Release) is the fade phase of an envelope after the release of the key. A good example for this is a crash cymbal, which decays for a fixed time regardless of the length of the attack.



Relationship between level and time parameters

The Rate parameters of the envelopes are scaled approximately exponentially. In other words, a small value (approx. < 60) represents only a few fractions of a second, whereas a value near the maximum is already several minutes.

Note:

Envelope parameters are hard to describe in words. It's best to simply try out which envelope parameters affect which modulation characteristics. Try experimenting with the volume envelope EG 3 in conjunction with a wave file with a sample loop such as

our demo file *SAWTOOTH.WAV*. Don't forget to activate the *EG3* button in the *OUTAMP* section first.

Keyb. Table determines which keyboard table will control the attack and delay times of the envelope. This can be used to set shorter attack and delay times for higher frequencies than for lower ones. No keyboard table is applied in the *off* position.

Start level determines the basic level of the envelope at the start of the attack phase.

KBT



The EWS64 has two independent keyboard tables. A keyboard table generates a modulation signal based on a characteristic curve which depends on the keyboard position of the played key. One possible application of this is the filter tracking performed by other synthesizers, which involves changing the cutoff frequency in dependence to the played note. In other words, the higher the pitch at which a sample is played, the higher its cutoff frequency.

This characteristic corresponds to that of some natural instruments which sound bright at high pitches and dull at lower pitches. Needless to say, you can also reverse this characteristic due to the flexible adjustment of the characteristic curve. It's possible to achieve especially unusual effects by using a keyboard table to manipulate the pitch of a sample.

The characteristic curve of a keyboard table can be constructed by either clicking and moving an anchor point in the characteristic curve graphic or by adjusting the individual *Key* and *Level* parameters. A total of four key positions are available per keyboard table.

Key corresponds to the keyboard position of an anchor point of the characteristic curve.

Level corresponds to the level of an anchor point of the characteristic curve.

Keyb. Table determines which of the four keyboard tables is shown in the display and can be currently modified. The pitch can only be assigned to keyboard table 1 (via *Keyb. Type* in the oscillator). All 4 tables can be applied to the following parameters:

- OSC -> control of PreAmp, basic volume of sample
- Filter -> control of CutOff, filter limit frequency
- OutAmp -> control of Volume, output volume of the splits
- EG -> control of envelope rates. The times are compressed or expanded.

Other parameters and controls

In addition to typical synthesizer parameters, Ed!son offers global parameters and management tools. Starting with the top row, directly under the menu bar:



Sample shows all of the samples contained in the instrument and permits the exchange of samples. The button on the right next to the display opens and closes the sample list.

Del. removes the currently selected sample from the soundsset.

Alg. determines the edge steepness of the filter and the characteristics of the sample loop. While one doesn't have anything to do with the other in the context of a sampler, the DSP contained in the EWS64 has the peculiarity of linking the two parameters. The following algorithms are available:

Algorithm	Filter characteristic	Sample loop characteristic
12 dB noise	12 dB/octave low-pass	The sample is replaced by noise.
12 dB F	12 dB/octave low-pass	Sample loop forwards
24 dB A	24 dB/octave low-pass	Sample loop forwards/reverse
24 dB AM	24 dB/octave low-pass	Sample loop forwards/reverse/inverted
24 dB F	24 dB/octave low-pass	Sample loop forwards

Note:

The non-clip algorithms available in the beta versions have been dropped for technical reasons.

Loop toggles the sample loop playback. If the currently selected sample does not have a sample loop, the full length of the sample will be looped.

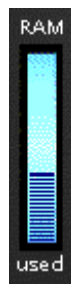
Add is used to add a new instrument to the soundset.

Del. deletes the current instrument or removes it from the soundset.

Instrument selects an instrument from a loaded soundset for editing in Ed!son.

Repeat ensures that a played note is not cut off but played in full when the same note is played again. This is especially useful when constructing and testing spatial sounds.

Panic triggers a MIDI reset. Use this button if you detect frozen notes or other irregularities in the MIDI operation.



RAM shows the status of the EWS64's memory. The dark blue cross-hatched section shows the used memory, the light blue section represents the total amount of sample RAM installed on the card. Depending on the organization of the soundsets and instruments, you may find that the EWS will still have unused memory, despite the fact that it's not possible to load even the smallest sample. In that case it's not the sample RAM, but the instrument parameter memory which is full. In this case you should remove a GS set from the memory if present to free up an adequate amount of space.



Multi-edit toggles the *Multi-edit* mode.

Program sets the program number used to address the current instrument in the soundset.

Variation sets the variation number used to address the current instrument in the soundset.

Transpose transposes all of the splits contained in the currently selected instrument in increments of an octave.

3.2 MENU REFERENCE

The following is a listing and brief description of all Ed!son menu commands. Keyboard shortcuts are shown in square brackets.

File

New [Ctrl + N] resets Ed!son for a new instrument.

Open Set [Ctrl + Shift + O] opens a TTS or 94B format soundset.

Open Instrument(s) [Shift + O] opens an instrument in TTI format.

Open Sample(s) [Ctrl + O] opens one or more wave format samples.

Save Set [Ctrl + Shift + S] saves a soundset in TTS format.

Save As... [Ctrl + S] saves a soundset or instrument, prompting for a file name.

Save Instrument [Shift + S] saves an instrument in TTI format.

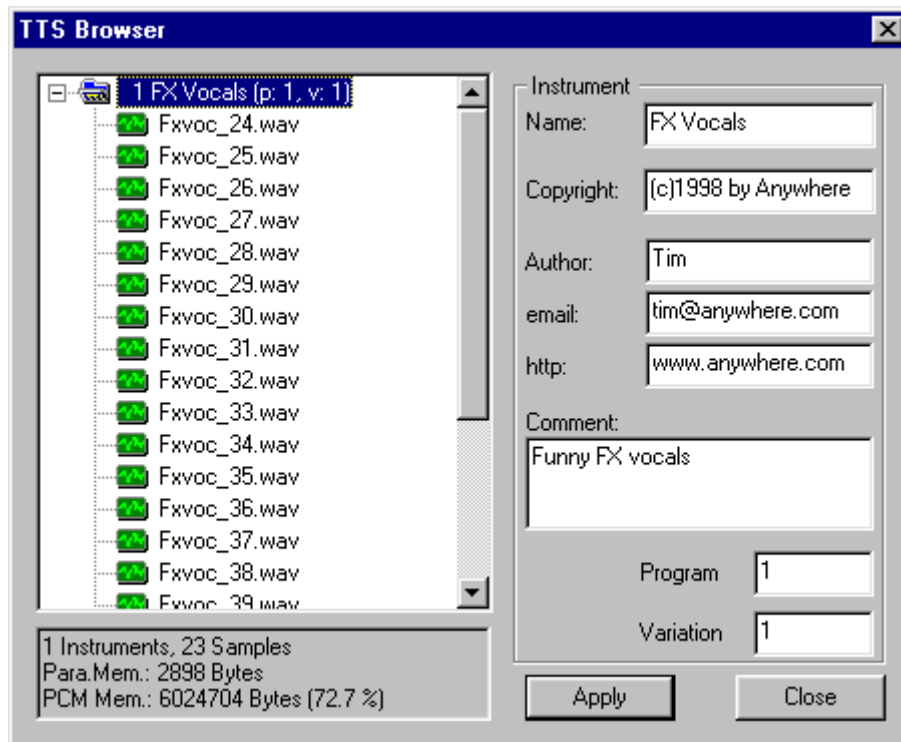
Recent Files lists the most recently used soundsets for direct access.

Exit ends Ed!son after a safety prompt.

Edit

Instrument List [Ctrl + I] opens a dialog box which displays the internal structure of a soundset. It also permits comments, copyright notes and notes about the author to be added to a soundset. The *Program Change* and *Variation* address of the individual instruments can also be determined. New instruments can also be added or moved simply by drag and drop. What's more, selecting an instrument or sample and pressing the Delete –key removes these quickly and easily.

Double-clicking on a sample with the left mouse button will cause it to be played a single time via the standard wave output.



The instrument list provides details regarding the structure and author of a soundset.

Optimize Size checks a soundset for identical samples and deletes redundant audio files. Although Ed!son checks samples for differences before deleting them, you should always make it a point to clearly name samples for 100% safety.

MIDI

[Ctrl + P] ...calls up the *Ed!son MIDI Settings* dialog.

Window

Always On Top [T] ensures that Ed!son is not covered by other windows.

Fit Size resets the Ed!son window to its default size.

Help

About Ed!son [?] provides information on the version, copyright and authors of Ed!son.

PART 4: APPENDIX

4.1 GLOSSARY

Attack designates the starting or attack phase of an >envelope generator or >LFO. A long attack time means that the envelope or LFO oscillation increases slowly.

Decay is the time in which the envelope falls to the >sustain level.

DSP is an abbreviation for Digital Signal Processor. A DSP manufactured by Dream handles the real-time processing of up to 64 audio channels in the EWS64.

Filters are signal shaping components present in practically all synthesizers and samplers.

Envelope generators are modulators which can be used to realize complex pitch, filter and volume progressions in the EWS64. An envelope generator is started by striking, and ended by releasing a key.

LFO (Low Frequency Oscillator) is a modulator based on a slow, periodical oscillation. It is used by the EWS64 for the >modulation of pitch, filter frequency or volume.

Mapping is studio jargon for assigning samples or >splits to certain keyboard zones or individual keys.

Modulation refers to the dynamic control of pitch, tone or volume using modulators such as >LFOs, >envelope generators, keyboard tables or key velocity.

Multi-sampling is a process for creating authentic instrument sounds by distributing a number of individual samples (known as >splits in Ed!son) across the keyboard.

Oscillator is the term for an electronic audio source. Instead of oscillators, the EWS64 uses samples in >wave format.

Program Change is a MIDI command to change instrument sounds.

Release is the term for the fade phase of an envelope. The release phase starts when the keyboard is released.

Root key designates the original pitch of an instrument sample.

Sample is another term for an audio file used in a sampler.

Sample loop is a process which shortens long samples or artificially lengthens short samples. This is primarily used to conserve >sample RAM.

Sample RAM is a special memory type used to store >samples for playback at any required pitch.

Soundset is the term for a collection of instruments. EWS64 soundsets can be recognized by the file endings TTS or 94B.

Split is an Ed!son term referring to a keyboard zone which has a sample assigned to it. A >multi-sample or drumkit is made up of several splits.

Sustain is the level at which an envelope remains until the key is released or the sustain time has elapsed.

Wave format is a format defined by Microsoft to exchange or archive audio data.

4.2 OTHER KEYBOARD SHORTCUTS

Note

The keyboard shortcuts for the menu commands can be found in Section 3.2, Menu reference. The prefix "Num" indicates that the appropriate key on the numerical keypad must be used.

Add Instrument	Ins
Delete Instrument	Del
Select next Instrument	Pg Up
Select previous Instrument	Pg Dn
Show SplitControl	Num Enter
Add Split	Num +
Delete Split	Num -
Copy Split	Ctrl + Num +
Delete all Splits	Ctrl + Num -
Select all Splits (toggle)	Num 5
Load new Wave in Split	W
Select next split	Num 8
Select previous split	Num 2
Transpose Keyboard + 1	Num *
Transpose Keyboard - 1	Num /
Define RootKey and Range via MIDI	R
Shift Range start up	Num 9
Shift Range start down	Num 7
Shift Range up (incl. RootKey)	Num 6
Shift Range down (incl. RootKey)	Num 4
Shift Range end up	Num 1
Shift Range end down	Num 3
Shift RootKey up	Num .
Shift RootKey down	Num 0
Panic	Esc